

# Financial Inclusion in the CAREC Region: Promoting Fintech to Meet Underserved Needs in Trade Finance

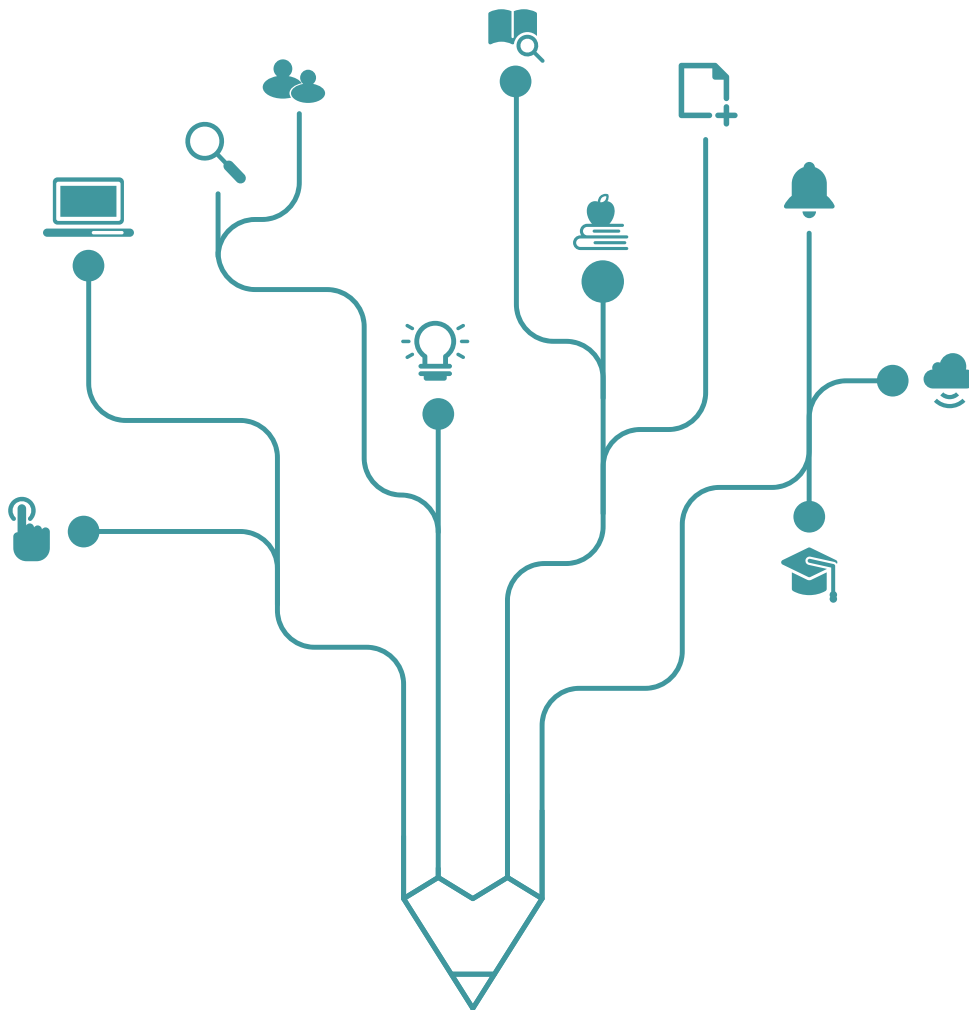
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## ABSTRACT

Trade financing inadvertently falls short to the needs of even the viable transactions from smaller firms, unmet demand expected to reach around \$2.4 trillion by 2025 if effective solutions are not in place. In 2018, 57 percent of trade finance applications from firms in Central Asia Regional Economic Cooperation (CAREC)—mostly from the Kyrgyz Republic and Pakistan—were rejected, almost half of which no longer seek alternative finance, altogether withdrawing from a potentially viable trade activity. Applying the Heckman two-step correction to analyze a cross-section of firms in various waves of the ADB’s Trade Finance Gaps, Growth, and Jobs Survey, the paper validates that smaller firms experience higher incidence of trade finance rejections relative to larger firms, owing largely to their weak company financial health and history. Interestingly, results suggest potential of fintech in reducing the incidence of trade finance rejections disproportionately experienced by smaller firms, thus advancing financial inclusion. The paper maps the financial ecosystem in CAREC member countries and explores the potential opportunities and limitations of fintech adoption and entry points for intra-regional cooperation. Policy proposals put strong emphasis on efficient financial structures, effective regulatory frameworks, and the needed capabilities to advance inclusive trade and finance.

*Keywords:* financial inclusion, fintech, CAREC

*JEL Codes:* G21, G23, G28, O16

### 1: Introduction

The availability of adequate trade and supply chain finance is paramount to keep trading profits buoyant. The World Trade Organization (2009) estimates that trade finance facilitates around 80-90 percent of international trade. International trade transactions is largely relies on trade finances (e.g., Korinek et al 2010; Auboin and Engemann 2014; Amiti and Weinstein 2011; Chor and Manova 2012), whereas the lack of adequate trade finance is found to have played an important role in the slump of global trade during the financial crisis.

Despite evidence of significant role, there is, however, sizable unmet demand for trade finance – estimated at \$1.5 trillion in 2017 and expected to rise to more than \$2.4 trillion by 2025 (WEF and Bain & Company 2018). The trade finance gap, the common term denoting the amount of requested trade finance that is rejected, is disproportionately large among micro, small, and medium-sized enterprises (MSMEs) as well as women-owned enterprises even though they account for more than half of the trade finance applications received by banks in Asia and the Pacific.

Trade finance rejections have far reaching effects, not only among MSMEs but also the overall economy. MSMEs consistently report lack of access to trade finance as a constraint on their ability to conduct cross-border transactions (CBI 2013). Considering how finance influences the decision to export, and without alternative sources of financing, these underserved client segment would find it hard to participate in the overseas markets. Export volumes could be below its potential levels, at the same time, missing opportunities to link to global value chains. Rejecting viable transactions from MSMEs makes trade less inclusive, missing a valuable potential source for growth and resiliency.

From the macro perspective, the level of financial sector development is generally identified driving the unmet trade finance needs in some regions. The capacity to handle trade finance instruments efficiently hinges on the development of the local financial system and the integration of local firms in international trade (Auboin and DiCaprio 2017). In a similar vein, Amiti and Weinstein 2011 found that incidence of trade finance rejections is higher when firms are associated with financially unhealthy banks. In a recent paper, Garraldaa and Vasishtha (2019) found a negative and statistically significant coefficient before the CDS spread indicating that an increase in the riskiness of banks and their short-term funding costs curtails trade finance growth. It remains therefore a challenge among developing countries to provide adequate trade finance flows. High sovereign risk also impedes provision of more trade credit, especially true for transactions in developing regions. Financial institutions prefer low-risk environment considering security of financing business.

The regulatory environment could also trigger trade finance rejection. Based on 2019 Trade Finance Gaps, Growth, and Jobs Survey, Kim et al. (2019) found that more than three-quarters of respondent banks identified as the largest barrier to expanding their trade finance operations the requirements on anti-money laundering (AML) and know-your-client (KYC). While they said regulations ensure robust financial systems, MSMEs and less developed markets are evidently denied from an important form of financing they need to carry out their overseas transactions.

From the micro-level, trade finance requests from firms are primarily hampered by insufficient collateral or guarantees, lack of a relationship with a financial institution, and insufficient credit or performance history. For lenders, a major disincentive to serving these sectors are the high transaction and information costs of having to stringently comply with international regulations and standards, such as anti-money laundering and know your client (or KYC).

This report examines the issue of trade finance gap in the context of the Central Asia Regional Economic Cooperation (CAREC) where more than half (57%) of trade finance applications from firms in the region—mostly from the Kyrgyz Republic and Pakistan—were rejected in 2018 (Kim et al. 2019). The insights from this work could complement efforts that aim to bolster intra-

CAREC trade performance as well as to gear more exports going to other Asian subregions. The COVID-19 pandemic can be expected to pivot value chains closer to the main global demand and production centers, which will build up the Asian economic cluster (Holzhacker 2020).

The report begins with broad discussions on the financial sector development and international trade landscape of the CAREC region from the lens of trade and supply chain finance. This highlights the significant differences across member countries, which will serve as entry point for cooperation and collaboration. The paper compares the region's current landscape with that of advanced economies to draw strategic insights on what areas need further improvement.

The report then reviews the existing knowledge on the issue of trade finance gap, focusing on its causes. Using the ADB's Trade Finance Gaps, Growth, and Jobs Survey microdata, the paper builds a cross-sectional dataset of firms in four periods (2015–2017, and 2019) and performs empirical exercises to analyze the various factors driving trade finance rejections affecting largely the needs from smaller firms. To overcome bias from the non-randomly selected samples, the two-step Heckman correction approach is used. It is evident from the results that indeed smaller firms experience higher incidence of trade finance rejections relative to larger firms, owing largely to their weak company financial health and history. Further, findings suggest that the lower incidence of trade finance rejections in higher income countries can be explained by their well-developed financial system.

The report finally discusses the emergence of and potential solutions from using financial technologies in addressing trade finance gap. The empirical exercises reveal that the use of fintech could aid in lowering incidence of trade finance rejections disproportionately experienced by smaller firms. The paper maps and compares the existing fintech environment in CAREC member countries, explores the entry points for cooperation, identifies potential limitations, risks, and specific circumstances that fintech adoption might pose to the financial well-being of consumers and the financial system. From the mapping exercise, the report recommends policy actions to gear fintech adoption in the CAREC region grounded on efficient financial structures, effective regulatory frameworks, and the needed capabilities to advance inclusive trade and finance.

## **2: Understanding the Unmet Trade Financing Needs**

Trade finance facilitates around 80-90 percent of international trade, in an estimate by the World Trade Organization. Literature abound suggesting the importance of supply of trade finance for international trade transactions (Korinek et al 2010; Auboin and Engemann 2014; Amiti and Weinstein 2011; Chor and Manova 2012). The slump of global trade during the



financial crisis, among other relevant factors, can be attributed to a lack of adequate trade finance.

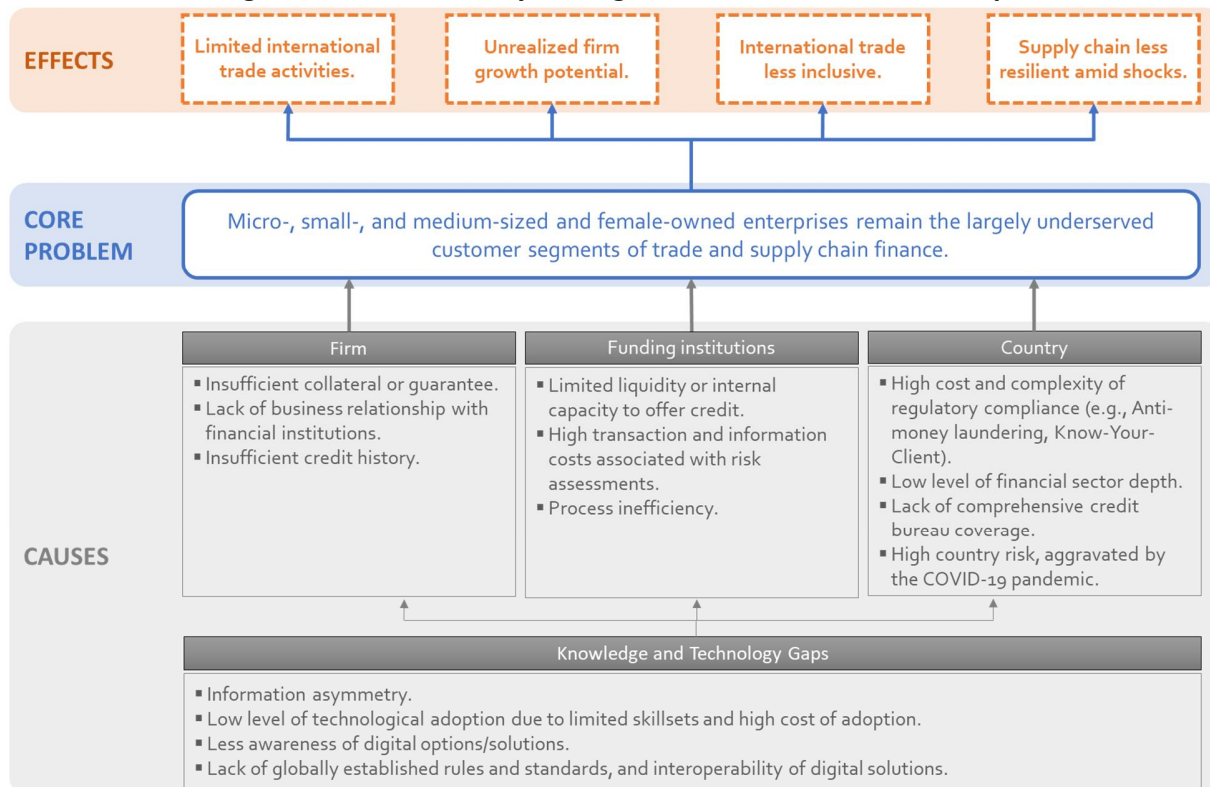
The essential role of trade finance is evident; the lack of adequate access to it denies entrepreneurs from the benefits of trade. Enterprises generally abandon potential international trade transactions if their trade finance applications are rejected, especially those that are unable to find appropriate alternative financing (Kim et al. 2019). The use of trade finance mitigates traders' risks by bridging the time-lag in international transactions between the manufacture of goods, shipment and the receipt of payment. For many smaller firms, trade finance helps in their cash flow issues that arise from when they export goods and when they receive payment.

Despite the potential to reverse the tepid recovery of global trade, a large and growing percentage of businesses remain facing difficulty seeking adequate trade finance. The unmet demand for trade finance amounted to \$1.5 trillion in 2017<sup>1</sup> and is expected to rise to more than \$2.4 trillion by 2025 (WEF and Bain & Company 2018). The trade finance gap, hindering some businesses to trade and access markets, poses repercussions toward investment flows and financial inclusion that could affect future economic growth and development (Figure 1). Finding solutions to bridge the gap would foster business dynamism, enforcing the ability of even smaller firms to benefit from the reallocation of production and investment within the global supply chains.

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<sup>1</sup> Forty percent of which are from the Asia and the Pacific (ADB and UNESCAP 2019).

**Figure 1: Problem Analysis Diagram of the Trade Finance Gap**



Source: Authors' illustration.

Many existing studies identified the array of factors that explain trade finance gaps, all of which generally points toward costs and risks. Processing trade finance applications are largely associated with high transaction and information costs. Banks and other financial institutions incur fixed costs from maintaining branch networks, IT systems, and other support services. Regulation and supervision also add to the cost of trade finance transactions.

It appears clear, however, that smaller firms are disproportionately rationed in trade finance transactions, implying that international trade remains less inclusive. In a 2019 Trade Finance Gaps, Growth, and Jobs Survey by the ADB, 45% of rejected trade finance transactions come from small and medium-sized enterprises. Female-owned firms, majority of which are micro, small, and medium-sized enterprises (MSMEs), also face the same challenge.

This situation emerges because dealing with smaller companies is accompanied with higher costs. The financial sector caters less the transactions that appear to involve greater risk, a condition that applies primarily among smaller firms with infrequent and small-ticket transactions. The issuance of letters of credit and guarantees are particularly less attractive for transactions involving smaller firms because of the relatively high operational costs. The cost-to-income ratio in traditional trade finance is 50-60% even before covering costs of risk, liquidity, and capital (WEF and Bain & Company 2018).

The volume of trade finance rejections among smaller firms is greatly linked with their inability to provide quality know-your-client (KYC) as banks are subjected to increasingly stringent and complex regulatory, sanctions, KYC, and anti-money laundering requirements. Smaller firm borrowers often lack formal documentation, formal registration, formal financial information, and assets that can be used as collateral. Documentation requirements therefore are too burdensome and involve high bank fees. The stricter standards limit the availability of bank credit, and Basel IV will reduce this scope even further when it comes into full effect by 2022. Other trade finance providers identify poor credit quality or inability of applicants to provide financial statements as major reasons for rejecting applications from smaller firms. Country-specific factor such as the lack of correspondent banking relationships exacerbated by large global banks pulling out of emerging countries due to the perceived risk of doing business there also matter in successful trade finance applications.

#### A. Global Actions Bridging the Trade Finance Gap

The global community has taken a proactive role in addressing the pressing trade finance gaps disproportionately affecting the smaller firms, especially from the developing economies. Since 2005, the World Trade Organization, in cooperation with multilateral development banks, has taken various measures to cater the needs for trade finance in developing economies. Multilateral development banks' financing and/or guarantees supporting around \$30 billion in trade transactions in low-income countries, with a greater focus on smaller firms, increased 50% from 2016 to 2018 (Auboin and Behar 2020). The Asian Development Bank, the European Bank for Reconstruction and Development, the Inter-American Development Bank, the International Islamic Trade Finance Corporation, and the World Bank Group (through its private sector arm, International Financial Corporation) operate programs and schemes generally aim to support financial and trade inclusion of developing economies.

In Asia and the Pacific, the ADB provides guarantees and loans through its Trade and Supply Chain Finance Program (TSCFP) to support international trade. Backed by its AAA credit rating, the ADB's TSCFP works with over 200 partner banks to provide companies with the financial support they need to engage in import and export activities in Asia's most challenging markets. With dedicated trade finance specialists and a response time of 24 hours, the TSCFP has established itself as a key player in the international trade community, providing fast, reliable, and responsive trade finance support to fill market gaps. Since April 2020, amid providing efficient response during the COVID-19 pandemic, the TSCFP supported 10,734 transactions amounting to almost \$8 billion, including \$4.5 billion in co-financing. By end 2020, the program helped more than 2,000 small and medium-sized enterprises in their trade financing needs.

The International Chamber of Commerce (ICC), for its part, offers knowledge products crucial to better understand relevant issues involving trade and supply chain finance. These include the

publication of the Global Survey on Trade Finance every year to better understand the implications of the regional and global trends in trade and trade finance as well as the Trade Register and Standard Definitions for Techniques of Supply Chain Finance (ADB and UNESCAP 2019). In 2009, the Group of Twenty (G20) committed to greater co-lending and risk sharing between banks and international and national institutions. The G20 Shanghai statement in 2016 underscored the importance of trade finance. In 2018, an intergovernmental agreement on financing for development under the United Nations called for ECAs and MDBs to further develop trade and supply chain finance programs (UN Economic and Social Council 2018).

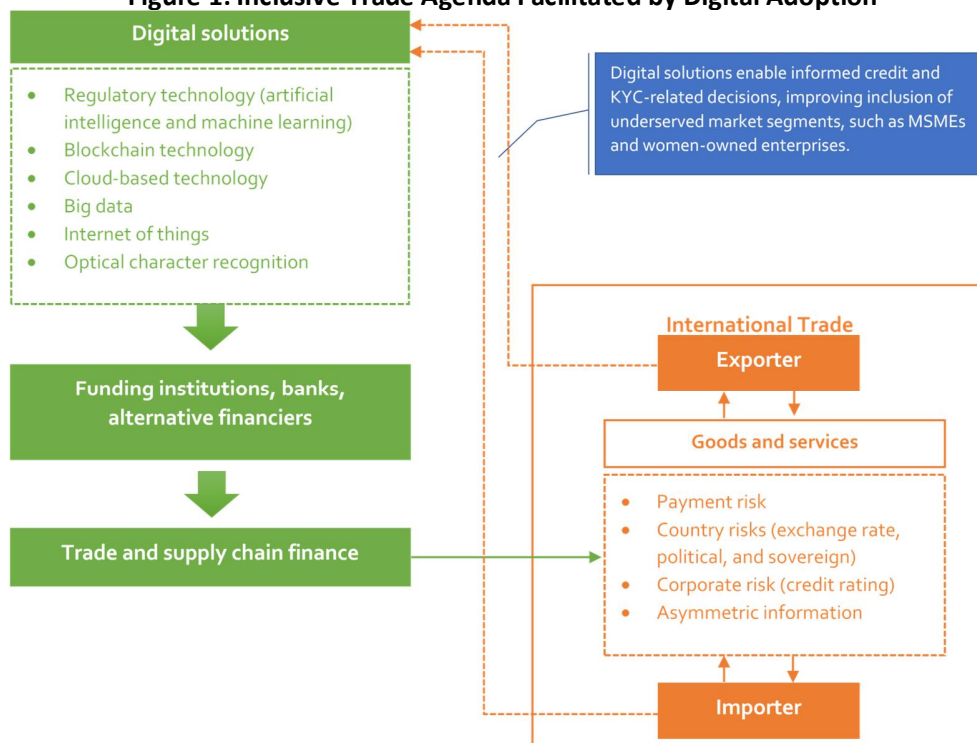
## **B. Framework for a Tech-facilitated Inclusive Trade**

Trade finance is one of the crucial elements to ensure international trade flows by mitigating or reducing the risks involved in transactions between importer and exporter. Alongside the exchange of goods and services, firms also deal with risks relating to, among other things, payments, exchange rates, and political environment. Figure 2 illustrates the inclusive trade agenda facilitated by digital adoption, particularly in the provision of trade and supply chain finance.

Bank and nonbank institutions, as well as alternative financiers, offer trade and supply chain finance products. Doing this requires a thorough understanding of the underlying risk of the borrowing company, which is fundamental to the pricing and structure of these products. Needed information for this includes trade cycles; creditor books, debtor ledgers, and stock held; company performance, and any underlying assets. Exporters and importers use different types of trade and supply chain finance depending on the risks they try to mitigate or reduce.

The growing unmet demand in trade finance, alongside abovementioned efforts, calls for the introduction of financial innovation in the form of new delivery channels, products, and providers. Financial innovation should feature more effective risk management and digitalization that could overcome barriers leaving behind the underserved smaller firms. The digital revolution has pushed out the access possibilities frontier by providing tools to overcome the scale of, and risk barriers to, widespread financial inclusion across the developing world (Beck 2020).

**Figure 1: Inclusive Trade Agenda Facilitated by Digital Adoption**



KYC = Know-Your-Client, MSME = micro, small, and medium-sized enterprise.

Source: Authors' illustrations.

New types of credit intermediation are progressively competing with banks in their core lending function, both of which uses new and advanced technologies. Fintech highlights credit activity facilitated wholly by digital and online platforms not operated by traditional and commercial banks. The second innovation involves the expansion of big tech companies, whose primary activity is digital nonfinancial services including e-commerce, into offering financial products and services. Such business diversification is largely made possible by their access to valuable data on individuals and firms (BIS 2019). Prominent big tech firms in Asia include tech giants, Alibaba and Tencent, now offering financial services.

The many capabilities of fintech can be mapped to the identified barriers and factors making trade finance—thus trade—less inclusive. The emergence of innovative fintech solutions, including next-generation payments, peer-to-peer lending, biometrics, blockchain, and artificial intelligence help automate and streamline processes and promote financial inclusion through the delivery of financial services that is faster and cheaper, and more convenient and secure.

In 2019, fintech and big tech credit flows amounted for \$223 billion and \$572 billion, respectively, a dramatic rise from the combined amount of these new types of lending of \$20.5 billion in 2013. While fintech credit is emerging in many countries, fintech lending volumes has been trending downward in the PRC, driven by regulatory reforms and a series of platform exits (Cornelli et al 2020). The major markets for fintech credit are the PRC, the United States, and

the United Kingdom while big tech credit is growing fast in the PRC, Japan, Republic of Korea, and Southeast Asia.

Using distributed ledger technology, supply chains can be more cost effective and efficient by replacing complex and paper-based procedures. Blockchain technology can directly enhance the flow of information and overcome compliance challenges, thereby facilitating an inclusive trade and supply chain finance structure. The Hong Kong Monetary Authority's eTradeConnect is a blockchain-based trade finance platform to digitalize trade documents and automate trade finance processes. In collaboration with the Monetary Authority of Singapore, the Global Trade Connectivity Network creates a cross-border blockchain infrastructure to help make trade finance cheaper, safer and more efficient.

Some of the innovation and technology-backed initiatives and efforts are found to have enhanced the efficiency and availability of finance benefitting especially the smaller enterprises. The ADB-supported artificial intelligence-enabled credit score system facilitated credit access of more than 8,000 small and medium enterprises in the Greater Mekong Subregion of \$50,000 each through the end of March 2018. Using AI, the 310 online lending model of Ant Group, taking only less than three minutes to apply, one second to approve with zero human intervention, has already served 29 million small and medium enterprises in the People's Rep. of China while maintaining the nonperforming loans ratio under 2%, even during the height of COVID-19 pandemic. Similarly, the ADB-backed cloud-based banking app in the Philippines and branchless banking in Indonesia have contributed to financial inclusion in member economies of the Association of Southeast Asian Nations.

Measures to incentivize adoption of digital solutions among trade finance providers should therefore take place. Digital solutions applied in documentary trade finance could boost bank revenues by as much as \$2 billion and increase trade volumes by over \$1 trillion. Global trade banks could save as much as US\$2.5 billion by adopting an integrated digital solution that incorporates intelligent automation, collaborative digitization and future technology solutions, and increase their revenues by approximately 10 percent, and reduce operational and compliance costs by 15% to 25% if they embrace digital technology.

Interestingly, Cornelli et al. (2020) found strong empirical association between fintech credit volumes and unmet demand for credit, measured by the density of bank branch network. It is broadly consistent with the view that fintech helps serve clients in underbanked areas, thus the underserved segments including smaller businesses. With improved access to trade and supply chain finance, trading firms, including smaller ones, are in better position to innovate and be more productive and competitive. Innovation plays a critical role in firms' learning-by-exporting, a concept that suggests entry into international trade improves firm performance. This learning is intensified when firms innovate by producing new export products rather than just improving

on their existing ones. This can also be applied to exports markets—producing for new markets is more valuable than producing for existing markets.

### **3: Financial Development, International Trade Structure, and Fintech in CAREC**

Based on ADB's 2019 Trade Finance Gaps, Growth, and Jobs Survey, more than half (57%) of trade finance applications from firms in CAREC member countries—mostly from the Kyrgyz Republic and Pakistan—were rejected in 2018. Trade finance requests from firms in the CAREC region are primarily hampered by insufficient collateral or guarantees, lack of a relationship with a financial institution, and insufficient credit or performance history. Inefficiencies of this sort in trade finance result in many applications being unfunded and cross-border trade transactions not being executed.

The gap is further complicated by the absence of national export credit agencies in many CAREC member countries, including in Afghanistan, Azerbaijan, Georgia, the Kyrgyz Republic, Mongolia, Tajikistan, and Turkmenistan (ADB and UNESCAP 2019). Export credit agencies are particularly suited to the trade finance needs of SMEs since they offer insurance for extended payment terms and facilitate lower financing costs. These advantages are highlighted in an ADB project that looks at setting up a multilateral trade credit and investment (re-) guarantee agency in the Central Asia, West Asia, East Asia, and South Asia subregions (ADB 2018).

This section discusses the financial sector development and international trade landscape of the CAREC region from the lens of trade and supply chain finance. The non-homogenous economic structure across member countries is apparent and serves as potential entry point for cooperation and collaboration in addressing the trade finance gap. Further insights on what areas need further improvement can be drawn by conducting comparison of the region's current landscape with that of advanced economies.

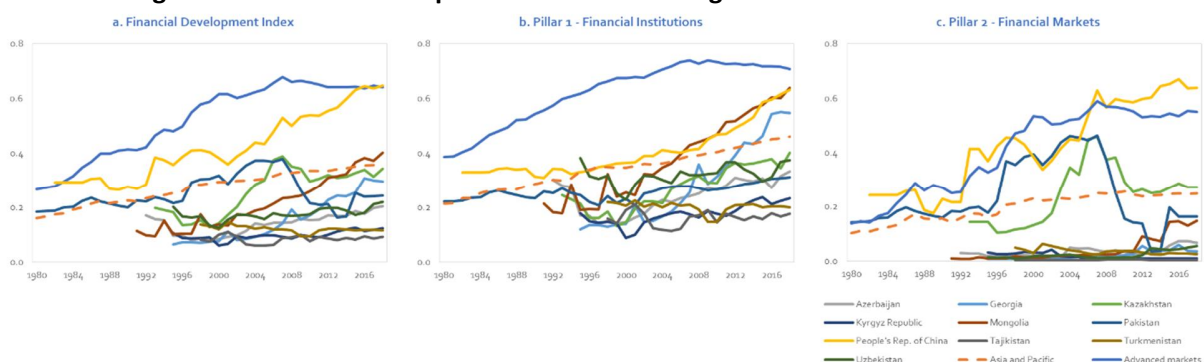
#### **A. Bridging the Gap Through the Financial Development Lens**

The unmet trade finance needs in some regions can be associated with their level of financial sector development. Developed financial institutions enable to create financial products and services more attuned to the needs of the MSMEs. Greater diversification of bank assets through increased lending to smaller firms is also more likely to countries with developed financial institutions. Development of the local and international financial system are required to handle trade finance instruments efficiently (Auboin and DiCaprio 2017).

In a similar vein, Amity and Weinstein (2011) found that incidence of trade finance rejections is higher when firms are associated with financially unhealthy banks. Advanced financial markets allow firms to diversify their savings and raise money through stocks, bonds, and wholesale money markets, circumventing challenges from the traditional bank lending.

Figure 3a illustrates the dire need to improve financial development in many CAREC member countries, tracing the path taken by the People’s Republic of China (PRC), if possible. The PRC has made great strides during the 2000s leading to its at par status with that of advanced economies. The country has made substantial improvements in developing its financial markets (Figure 3c) upon, among others, aggressive efforts in tapping advanced technologies to serve financial needs of the people. The PRC is considered a global leader in fintech, with huge consumer base (Ernst and Young 2019). Mongolia has also done quite well in steering towards financial sector development, albeit the banking sector still accounts majority of financial assets. Georgia also performs relatively well in terms of improving access and efficiency of its financial institutions; bank concentration, however, is growing.

**Figure 2. Financial Development in the CAREC Region vis-à-vis Advanced Markets**



Source: International Monetary Fund. Financial Development Index Database. <https://data.imf.org/?sk=F8032E80-B36C-43B1-AC26-493C5B1CD33B> (Accessed November 2020)

The advances in financial sector development in Kazakhstan and Pakistan had been stalled during the height of the global financial crisis. The financial market efficiency in Pakistan had been hit hard following the Pakistan Stock Market (KSE-100) benchmark index down by more than half (57%) on 30 December 2008. However, it is worth to note that Pakistan has made consistent gains over time in terms of improving credit availability to the private sector as well as ensuring efficiency of its financial institutions. Meanwhile, the financial development in other CAREC member countries remain subdued by weak financial market framework, alongside slow improvement of their traditional banking sector.

Another area of financial development that is worth noting in assessing the trade finance gap in the CAREC region is the sustained drop in correspondent banking relationships. Correspondent banking plays a crucial role in cross-border payments; thus, it facilitates cross-border commercial transactions including trade. Erbenová et al. (2016) issues growing concern on the potential adverse effect on availability of trade finance of the sustained withdrawal of commercial banking relationships whereby large global banks pulling out of emerging countries. Rice, von Peter, and Boar (2020) warn that such retreat might hurt financial inclusion either by



raising the cost of cross-border payments or driving firms towards less regulated or unregulated channels.

There are two glaring insights that could be drawn from Figure 4. First, the correspondent banking, which is essential for international trade activities, is limited in Central Asia relative to regional peers from the East and Southeast Asia. Second, it exhibits sustained retreat, reaching almost 8 percent in 2019. While the retreat of correspondent banks occurs global, such situation is putting the CAREC region at a more disadvantage.

**Figure 3. Correspondent Banking Landscapes in Selected Asia Subregions, 2011–2019**



Note: Regional grouping is based on the United Nations Statistics Division geographic classifications.

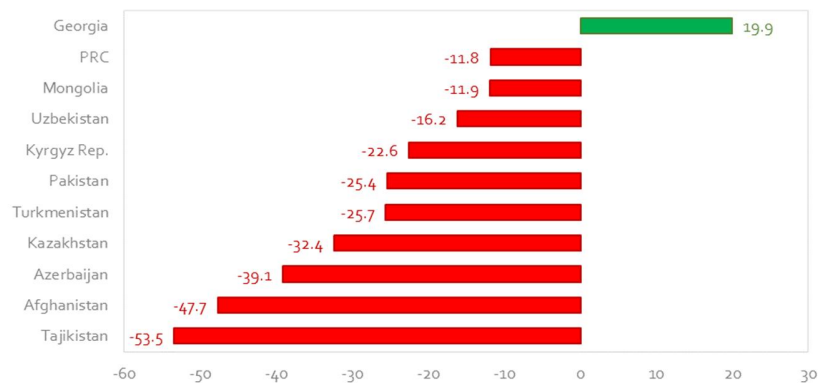
Source: Bank for International Settlements. CPMI quantitative review of correspondent banking data.

[https://www.bis.org/cpmi/paysysinfo/corr\\_bank\\_data.htm](https://www.bis.org/cpmi/paysysinfo/corr_bank_data.htm) (Accessed November 2020)

Global banks withdraw of correspondent banking relationships often relate to the correspondent bank's lack of confidence in the respondent bank's capacity to effectively manage risk linked largely to prudential requirements, economic and trade sanctions, anti-money laundering and combating the financing of terrorism (AML/CFT) and tax transparency standards (Erbenová et al. 2016).

Looking at the country-level, Tajikistan exhibits the largest decline and had lost more than half of the correspondent banking relationships from 2011 to 2019 (Figure 5). It is followed by Afghanistan, Azerbaijan, and Kazakhstan, with more than 30 percent of decline in such relationships. Georgia seems to have endured the global trend, allowing its correspondent relationships to grow by almost 20 percent during the same period.

**Figure 4. Changes in the Number of Correspondent Banking Relationships between 2011 and 2019 in CAREC Member Economies**



PRC = People's Republic of China.

Source: Bank for International Settlements. CPMI quantitative review of correspondent banking data.

[https://www.bis.org/cpmi/paysysinfo/corr\\_bank\\_data.htm](https://www.bis.org/cpmi/paysysinfo/corr_bank_data.htm) (Accessed November 2020)

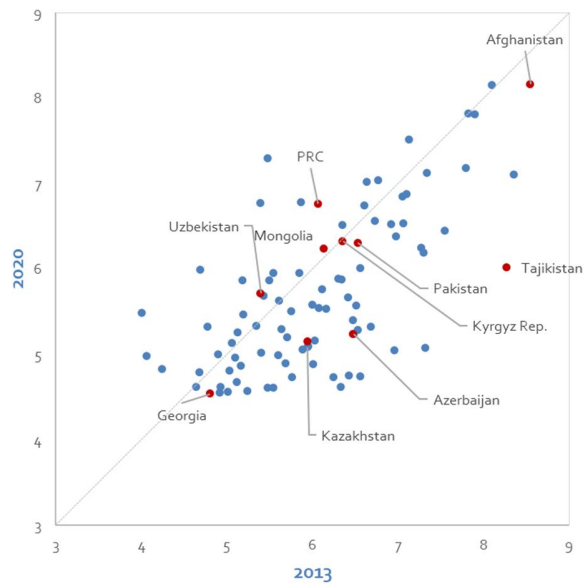
The above situation risks the potential of many countries in the CAREC region to providing access to safe, low-cost cross-border payment channels. As the IMF (2017) noted, addressing complications from such situation involves strengthened, coordinated, and collective action on the part of public and private stakeholders. This is high time as some of the member economies are effectively addressing concerns on risks associated to money laundering and terrorist financing.

Using the Basel AML Index (Figure 6), substantial drop in such risks is observed in Azerbaijan, Kazakhstan, and Tajikistan between 2013 and 2020. Georgia, on the other hand, sustained low risk of money laundering and terrorist financing, which partly explains the growing correspondent banking relationships amid global retreat. Afghanistan remains largely risky, with financial system too exposed to money laundering, terrorist financing, and related crimes.

Initiatives toward financial sector development in many countries in the region need to continue to better address the goal of financial inclusion, particularly in financing trade activities. The region has much to gain from tapping alternative financial markets that could cater the financial needs of smaller clients.

This should complement ongoing efforts in many economies in the region in improving their traditional financial institutions. Institutional adjustments also matter if the region hopes to boost correspondent banking relationships. Policy actions should be geared towards facilitating overall confidence of the global financial players in their transactions with many economies in the region.

**Figure 5. Basel AML Index (0 = Low risk, 10 = High risk), 2013 vs. 2020**



Source: Basel Institute on Governance. Basel AML Index Report.  
<https://baselgovernance.org/basel-aml-index> (Accessed November 2020)

## B. Potential Solutions from Stronger Cooperation and Integration

The key to financial inclusion in CAREC may involve a great deal of intraregional efforts. A stronger economic cooperation and integration could take advantage of the in-house capabilities in some member countries in overcoming the weaknesses of the other members. Within CAREC, the PRC has proved to be in advanced phases of financial development in both traditional and tech-heavy sectors.

The region should facilitate further cooperation in many dimensions, which the Association of Southeast Asian Nations has done quite successfully in recent years (Figure 7). While the CAREC has made great strides in infrastructure and connectivity and regional value chains, the region should exert more efforts to link member economies' money and finance, trade and investment, and institutional and social integration. In the area of money and finance, the region may stand to benefit from the ADB project that looks at setting up a multilateral trade credit and investment (re-) guarantee agency in the Central Asia, West Asia, East Asia, and South Asia subregions (ADB 2018).

**Figure 6. Regional Integration Landscape in CAREC and ASEAN, 2018**



0 = not integrated, 1 = fully integrated

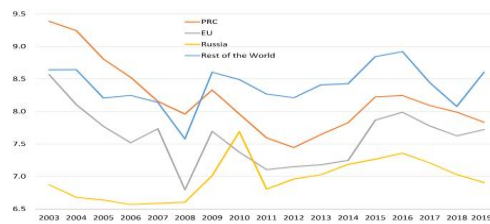
Source: Asian Development Bank. Asia-Pacific Regional Cooperation and Integration Index Database.

<https://aric.adb.org/database/arici> (Accessed November 2020)

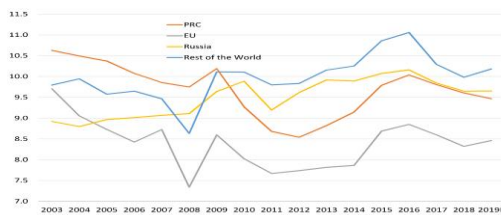
The PRC, for its part, could play a huge role in building capacity within the region and share best practices. Over time, CAREC member countries form closer trade link with the PRC, diversifying away from the Russia (Figure 8a).

**Figure 7. Trade Distance of CAREC (excl. PRC) to Major Partners, 1995–2019**

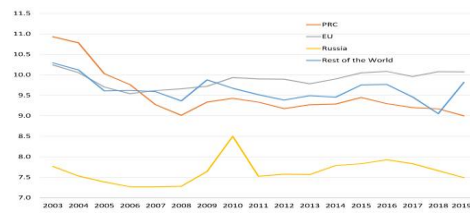
**a. Total Trade (Exports + Imports)**



**b. Exports**



**c. Imports**

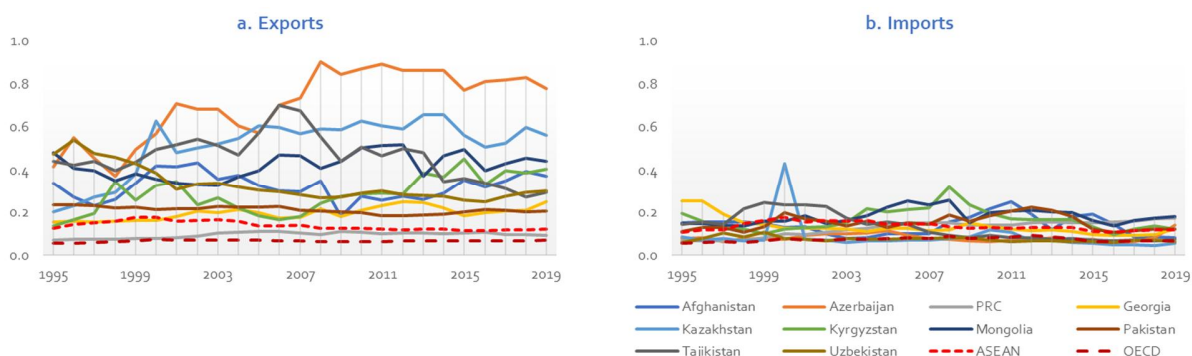


Source: Holzhaecker, Hans. 2020. Intra-CAREC Trade: Business as Usual or About to Change. CAREC Institute Economic Brief.

While trade distance gradually shortened allowing for diversification of markets, it remains a challenge for many economies in the region to tackle high product concentration of their exports (Figure 9). Trade in the region remains to be concentrated in mineral fuels, metals, and

agricultural products. Product diversification may become more urgent as global decarbonization will reduce the use of fuels toward a green, sustainable development.

**Figure 8. Product Concentration Index of (a) Exports and (b) Imports by Selected Economies, 1995–2019**



Source: United Nations Conference on Trade and Development. <https://unctadstat.unctad.org/EN/> (Accessed November 2020).

### C. An Overview of the Fintech Market in CAREC

In general, the rise of fintech lends to the intention of helping the poor gain access to the basic financial services necessary to achieve financial inclusion, improve lives and livelihoods, and help countries reach their full economic potential. Trade finance rejections disproportionately affecting smaller firms can be potentially addressed in the short to medium term with the emergence of institutions and instruments that attempt to serve the underserved market needs. The growing role and interest in fintech is evident in some countries especially more adept at keeping pace with the digitalization.

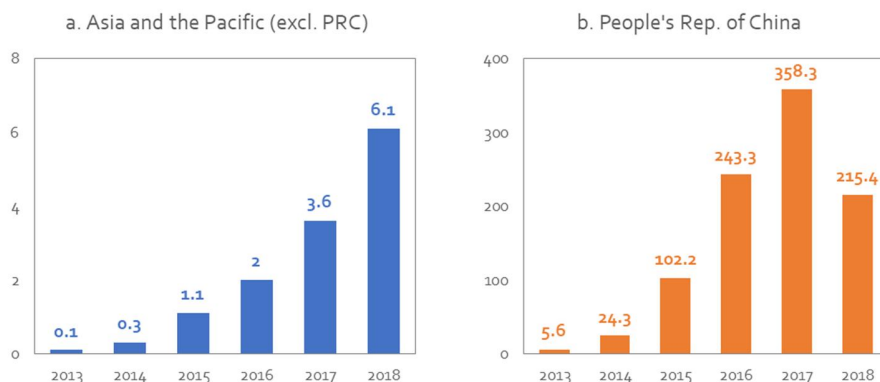
The advancement of fintech market in Asia and the Pacific gears the financial sector to a new age of technology and transparency driven by innovation and financial inclusion. While the region plays a lead role in the global fintech, it remains concentrated in few countries including the PRC and advanced member countries.

Using information from the Cambridge Centre for Alternative Finance (CCAF) Global Alternative Finance database<sup>2</sup>, which is largely based on an annual online questionnaire of alternative finance volumes and characteristics (Ziegler and Shneor 2020), the fintech market size across Asia and the Pacific, excluding the PRC, has an estimated valued \$6.17 billion in 2018, up 69% from \$3.6 billion in 2017 (Figure 10). The online alternative business funding for start-ups and smaller firms across the region surged to \$3.5 billion in 2018 from \$2.2 billion in 2017. Over the past few years, alternative finance has increasingly becoming a viable funding source for start-ups and small entrepreneurs. The largest alternative finance models are P2P Business Lending

<sup>2</sup> Information representative of funds that were raised via an online alternative finance platform for consumers, business, and other fundraisers.

(accounting for 28.7% of total alternative finance), P2P Consumer Lending (16.1%), and Balance Sheet Business Lending (15%).

**Figure 9. Alternative Finance Market Volume (\$ billion) in Asia and the Pacific and the PRC, 2013–2018**



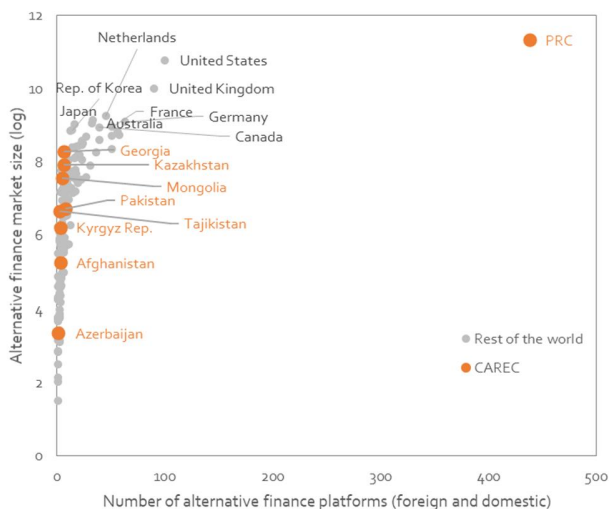
Source: Authors' illustration using information from the CCAF Global Alternative Finance database.

The alternative finance market volume in the PRC totaled \$215.4 billion (Figure 10), more than half of the global alternative finance industry facilitating \$304.5 billion in transaction volume. However, it exhibits 40% drop from the \$358 billion recorded in 2017 largely due to the closures of numerous P2P lending platforms upon the introduction of stricter regulation around P2P lending in the country. The country is also home to 61% of digitally active small and medium enterprises that use fintech, the highest adoption rate in the world (Ernst and Young 2019). The country's advances in developing and applying payment platforms and big data management have created a new financial ecosystem.

The other CAREC members, meanwhile, lags in the use of fintech, including its application for digitizing trade finance. Figure 11 illustrates the relative infancy of the fintech market in CAREC, except the PRC, in terms of market size and the number of platforms. Georgia's alternative finance industry facilitated around \$193 million in transaction volume in 2018, followed by Kazakhstan (\$87 million) and Mongolia (\$38 million). The rest of the member economies has less than \$10 million in transaction volume, with the lowest recorded in Afghanistan (\$184,479) and Azerbaijan (\$2,222).

Ziegler and Shneur (2020) observed that homegrown or domestic-based alternative finance platforms account for larger proportions of firms especially in countries with fairly developed alternative finance ecosystems. In contrast, foreign-based platforms were most prevalent in emerging markets and accounts majority of the transaction volumes. This can be similarly observed in CAREC where, in the PRC, 429 of the 438 firms operating in the country by 2018 are homegrown (Figure 12). Other member economies depend heavily on foreign firms, particularly Georgia, Tajikistan, Kyrgyz Republic, Afghanistan, and Azerbaijan.

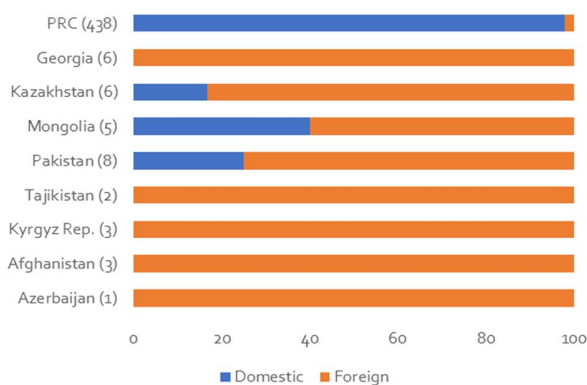
**Figure 10. Alternative Finance Landscape (Market Size and Platforms) by Selected Region, 2018**



ASEAN = Association of Southeast Asian Nations, CAREC = Central Asia Regional Economic Cooperation, PRC = People’s Rep. of China

Source: Authors’ illustration using information from the CCAF Global Alternative Finance database.

**Figure 11. Alternative Finance Firms Operating in CAREC, 2018**



PRC = People’s Rep. of China

Source: Authors’ illustration using information from the CCAF Global Alternative Finance database.

The fintech ecosystem in the region remains dominated by the payments segment, such as e-wallets. Innovations leading to the emergence of RegTech, trade processing, Market Place Lending, and crowdsourcing remains in the nascent stage (Davletov et al 2020). Progress is far from complete with digitalization initiatives facing several challenges, such as the high cost of adopting the technology and lack of international rules and standards covering digital trade (see Box below discussing readiness of CAREC in e-Phyto certification).

### Box. CAREC readiness for e-Phyto Certification

Agricultural trade plays a dominant role in CAREC. However, the digital landscape for the adoption of e-Phyto certificate across the region is uneven (see Box Table below). Majority of the CAREC countries are still using hard copy exchanges as a mode of transmission except Uzbekistan, which has so far fully transitioned electronically. The People's Rep. of China (PRC) and Uzbekistan, countries that have successfully transitioned towards adoption of digital technologies, have issued substantial number of e-certificates, especially facilitated by shorter amount of time needed for processing.

**Box Table: Mode of Transmission and Validity of Phyto Certificate**

Country	Mode of transmission of PS certificates to other users like Customs and other countries	Validity/ duration of PS certificates after issuance and prior to export	Fee for PS certificate	Number of PS certificates issued per year
Afghanistan	Hard Copy	-	100Af (1.28 US \$) per sheet	-
Azerbaijan	Hard Copy	14 Days	10 AZN (5.88 US\$)	40,000
People's Republic of China	Hard as well as Electronic (where countries can transmit/ receive)	Fresh Goods-14 Days Other Plant Products-21 Days In North Region (during Winter)-35 Days	Free	0.69 Million (690,000/)
Georgia	Hard Copy	15 Days	25-50 GEL (8.67- 17.33 US \$)	3428 (Border by Georgia Revenue Service) 10,333 (National Food Agency)
Kazakhstan	Hard Copy	30 Days (from the date of issuance)	Free to Individuals and Legal Entities	Around 0.3 Million
Kyrgyz Republic	Hard Copy	Requirements of the importing country	200 SOM (2.86 US \$)	40,000
Mongolia	Hard Copy; Via the media and the website; By e-mail	5 Days to 1 month depending upon commodities	10000 MNT (10 thousand tugrik) 3.69 US \$	10,000
Pakistan	Hard Copy	90 Days	PKR 50-300 (0.32- 1.94 US \$)	Around 0.15 Million
Tajikistan	Letter or application to legal entities and individuals	30 Days	Based on estimates and volume of products	Depending on the volume of the shipment of goods
Turkmenistan	Hard copy as well as through email (where required)	30 Days	Based on tariffs approved by Ministry of Finance and Economy of Turkmenistan	Depends on the number of contracts awarded
Uzbekistan	Electronically	Unlimited until the delivery to the importer's country	up to 10 kg - 0.15 MRZP( MP3Π); up to 100 kg - 0.18 MRZP( MP3Π); up to 500 kg - 0.20 MRZP( MP3Π); up to 1000 kg - 0.25 MRZP( MP3Π);	0.25 Million

Source: ADB and CI Joint Study (forthcoming)

The issuance of e-certificate in the PRC takes less than an hour allowing issuance of 0.69 million e-certificates per year. Similarly, for Uzbekistan, the process takes less than 5 days to issue 0.25 million Phyto certificates per year. The fundamental factors that push e-Phyto readiness in these countries include: (i) legislation for trade facilitation in general and Phyto certification in particular, (ii) adapting standardized terms and codes used for computer languages, (iii) secure data exchanges, and (iv) integrating with the hub. For the rest, there is no indication of digital capacities to recognize ePhyto certificates using the hub, in which case they may opt for the GeNS web-based system to produce, receive, and exchange e-Phyto through the hub. The magnitude of the issuance of e-certification reflects how technological adoption could ease trading and potentially trade financing across borders.



## 4: Empirical Analysis

This section details the econometric approach to analyze the essential factors behind rejections of trade finance applications. In particular, the paper is interested in tracing the systematic differences in the incidences of trade finance rejections across firm sizes, with the end goal of determining the major or combination of issues that leads to the outcome.

### A. Data and Empirical Strategy

The report works on the available firm-level microdata on ADB's Trade Finance Gaps, Growth, and Jobs Survey, and builds a cross-section of firms responding to the survey years 2015–2017 and 2019. The survey is a joint product of the Private Sector Operations Department and the Economic Research and Regional Cooperation Department of the ADB, which aims to gather information on companies involved in international trade about their use of trade finance. The survey asks the firm respondents of the percentage of the total value of trade finance application that was rejected by service providers, as well as their perceived reasons for such an outcome. The survey also gathers various firm-level information on their sales, international trade transactions, major export and import markets, number of employees, the percentage of female employees, female ownership, and foreign ownership, among others.

The paper investigates the major determinants of trade finance rejections using a Heckman-type selection model pioneered in Heckman (1976). Using this framework, the analysis and the corresponding results could overcome sample selection bias embodied highly likely from the (i) survey's non-probability sampling strategies, (ii) non-response on some important questions, and (iii) the non-random missingness in the outcome variable, trade finance rejection rates. The latter is simply explained by the fact that rejection rates can only occur if firms apply for trade finance, hence it is observable for a portion of the data.

The main specification for the analysis, following Heckman (1976), involves two separate equations (the main and sample selection equations) as follows:

$$y_i = x_i' \beta + \mu_i \quad (1)$$

$$s_i^* = z_i' \gamma + v_i \quad (2)$$

Equation 1 refers to the response equation with outcome  $y_i$ , while Equation 2 is the selection equation where  $s_i^*$  is a latent variable, with  $y_i$  only observed when  $s_i^* > 0$ . The vectors of explanatory variables are given in  $x_i'$  and  $z_i'$ , where  $x_i'$  is assumed to be a subset of  $z_i'$  suggesting that the factors predicting the main outcome of interest  $y_i$  also predict the selection  $s_i$ .  $\mu_i$  and  $v_i$  are error terms assumed to be normally distributed.

The model is estimated using the two-step method by first estimating a probit regression for Equation 2 followed by a least squares regression of Equation 1 adjusted to add first step results. For the exercises from this paper,  $y_i$  refers to the trade finance rejection rates of

company  $i$ . The  $x_i'$  vector for the baseline model include firm size, firm age, annual sales, foreign ownership dummy, female ownership dummy, sector of which company  $i$  operates, and the income classification of the country where the company operates. The vector  $z_i'$ , which determines whether  $y_i$  is observed or not, includes international trade activity dummy (1 if exporter/importer, 0 otherwise), familiarity to trade finance products (measured as the number of trade finance products a company is familiar about), and trade finance requirement dummy (1 if a firm needs trade finance to execute export/import activities, and 0 otherwise).

*Dependent variable.* To analyze causes of underserved trade finance demand by smaller firms, the dependent variable is the incidence of trade finance rejections of respondent firms. It is measured as the percentage of the total value of the company's trade finance application. By firm size, it is evident that MSMEs experience larger rejection rates relative to large firms, also true in CAREC. Table 1 shows that rejection rates of large firms are, on average, 6% of their total trade finance applications while that of smaller firms range from 15%–32%.

**Table 1. Rejection rates by Firm Size, % of trade finance application**

Firm size	No. of observations	Mean	Std. Dev.	Min	Max
a. All samples					
Micro and small firms					
	571	19.9	35.6	0	100
Medium firms	965	16.6	30.7	0	100
Large firms	89	5.6	15.6	0	100
b. CAREC samples					
Micro and small firms					
	11	32.4	44.8	0	100
Medium firms	98	15.1	29.4	0	100
Large firms	25	5.9	21.6	0	100

Note: Resulting statistics are based on pooled sample of firms during the multiple survey periods, 2015–2017 and 2019.

Source: Authors' calculations using ADB's Trade Finance Gaps, Growth, and Jobs Survey.

By industry, there is little to moderate variation in rejection rates faced, with the agriculture and mining sector experiencing a higher average incidence of trade finance rejections (Table 2). It is interesting to note though that in CAREC, the agriculture and mining sectors experience too high rejection rates, almost four times that of manufacturing and services sectors. This observation does not sit well with the fact that agriculture and mineral products dominate intra-CAREC and trade outside the region (Holzhacker 2020).

**Table 2. Rejection rates by Industry, % of trade finance application**

Industry	No. of observations	Mean	Std. Dev.	Min	Max
a. All samples					
Agriculture and mining	289	23.3	35.7	0	100
Manufacturing	430	15.0	29.9	0	100
Services	894	16.5	31.9	0	100
b. CAREC samples					
Agriculture and mining	11	47.7	43.9	0	100
Manufacturing	51	11.8	26.0	0	100
Services	72	12.0	27.7	0	100

Note: Resulting statistics are based on pooled sample of firms during the multiple survey periods, 2015–2017 and 2019.

Source: Authors' calculations using ADB's Trade Finance Gaps, Growth, and Jobs Survey.

Another important element of financial inclusion is to ensure that female-owned enterprises are not disproportionately rationed out of trade finance access. However, Table 3 shows that the rejection rates is higher for female-owned companies in both samples, albeit in CAREC the figure is way higher.

**Table 3. Rejection rates by Female Ownership, % of trade finance application**

Female ownership	No. of observations	Mean	Std. Dev.	Min	Max
a. All samples					
Female-owned enterprise	576	19.8	34.7	0	100
Non-female-owned enterprise	570	14.9	30.4	0	100
b. CAREC samples					
Female-owned enterprise	13	29.2	42.7	0	100
Non-female-owned enterprise	47	17.5	34.3	0	100

Note: Resulting statistics are based on pooled sample of firms during the multiple survey periods, 2015–2017 and 2019.

Source: Authors' calculations using ADB's Trade Finance Gaps, Growth, and Jobs Survey.

The detailed summary statistics is presented in Table 4.

*Firm-level characteristics.* The independent variables forming the baseline model include firm size, firm age, annual sales, foreign ownership dummy, female ownership dummy, industry, and the income classification of the country where the company operates. Firm size is a categorical variable taking value of 1 for micro and small enterprises, 2 for medium-sized firms, and 3 for large firms. The size of firm employment also takes on a categorical value for consistency purposes across the surveys. The value of 1 denotes employment size ranging from 1 to 25, 2 refers to employee size of 26-50, 3 denotes firms employing 51-100, 4 are firms employing more than 100 but not more than 200, and 5 refers to firms employing more than 200 persons. Age of firm is another categorical variable with 4 values: 1 for firms established for less than 10

years, 2 for firms in operation for 11–30 years, 3 for firms operating for 31–50 years, and 4 for those operating for more than 50 years.

A company’s financial health and banking relationship also helps explain their incidence of trade finance rejections. This information is weakly measured by firms’ responses to survey questions asking them which factor they think made their trade finance applications rejected. Dummy variables taking the value of 1 if a firm responds and thinks that it has (i) insufficient collateral and guarantee, (ii) lacks documentation requirements, (iii) lacks business relationship with financial institutions, and (iv) lacks credit and financial performance history. The lack of formal documentation, formal financial information, and assets that can be used as collateral or guarantee categorizes smaller firms as risky borrowers, explaining therefore the huge discrepancy relative to larger companies.

**Table 4. Summary Statistics**

Variables	No. of observations	Mean	Std. Dev.	Min	Max
Rejection rate, % of trade finance application	1,676	16.9	31.9	0.0	100.0
Firm size	2,282	1.7	0.6	1	3
Employment size	2,226	2.5	1.6	1	6
Sales (log)	1,590	12.3	3.2	0.0	23.4
Age of firm	811	2.6	0.8	1	5
Industry	2,336	2.4	0.8	1	3
Foreign ownership dummy	1,568	0.1	0.3	0	1
Female ownership dummy	1,562	0.5	0.5	0	1
<i>Company financial health and structure (dummy)</i>					
Insufficiency of collateral and guarantee	2,135	0.2	0.4	0	1
Lack of documentation requirements	2,135	0.1	0.3	0	1
Lack of business relationship with financial institutions	2,135	0.1	0.3	0	1
Lack of credit and financial performance history	2,135	0.1	0.3	0	1
<i>Country-specific factors</i>					
World Bank country income classification	2,551	1.6	0.8	0	3
Financial development index	1,779	0.3	0.2	0.1	1.0
Basel AML index	1,685	5.9	1.1	1.8	8.5
<i>Use and/or consideration of using digital or web-based financial instruments (dummy)</i>					
Crowd funding	1,211	0.3	0.4	0	1
Peer-to-peer	1,234	0.4	0.5	0	1
Debt-based securities	1,153	0.2	0.4	0	1
Others	576	0.3	0.5	0	1

Note: Resulting statistics are based on pooled sample of firms during the multiple survey periods, 2015–2017 and 2019.

Source: Authors' calculations using ADB's Trade Finance Gaps, Growth, and Jobs Survey, World Bank, International Monetary Fund, and Basel Institute on Governance.

*Financial development and sovereign risks.* Following the literature associating the level of financial development with trade finance gap, the empirical analysis adds financial development index from the baseline trade finance rejection model. The index is sourced from the International Monetary Fund and measures how developed financial institutions and financial markets are in over 180 countries. The literature also identifies the influence of country risk to access to trade finance. The paper uses the Basel AML Index, which assesses the risk of money laundering and terrorist financing in over 140 countries.

*Fintech use.* The recent waves of the survey also gather information on the awareness and use of firms of available digital or web-based financing instruments including crowd funding, peer-to-peer, invoice financing, and debt-based securities. Dummy variables corresponding to each fintech-related instrument are added from the model to evaluate the role it plays in serving trade finance needs of smaller businesses. Note that this is a weak proxy for fintech use because not all who considered using fintech-assisted trade finance actually used one. The latter information cannot be generated from the dataset.

## B. Limitations

The analysis and corresponding results have limitations. In so far as the framework is concerned, the baseline model does not take into account the interaction of firms with their confirming and issuing banks. The exports potential of firms supported by trade finance is influenced by the overall health of banks providing them needed financing (Amiti and Weinstein 2011). In addition, the rejection outcome of firms may be induced by their banks' internal structure including fund availability, among others. This is somehow less of a concern considering that many of the firms are indirect exporters (ADB and UNESCAP 2019). There is also drawback from using cross-sectional data into analysis by failure to capture the complexity and intertemporal dynamics within firms.

## C. Discussions of Findings

### **Smaller firms experience higher incidence of trade finance rejections relative to larger firms.**

From Column 1 in Table 5, it is evident that the rejection rates are relatively higher for smaller companies among those seeking for trade finance, keeping all other factors constant. Rejection rates among micro and small enterprises are, on average, 12.4 and 17.9 percentage points higher than the medium and large enterprises, respectively. It is also interesting to note that rejection rates are relatively lower among firms in high-income countries. This result can be attributed to country-level factors such as risk rating and overall financial system, both of which are more favorable in advanced and richer economies. The results also give indication that the

incidence of rejection of trade finance applications is relatively more acute in CAREC, albeit not statistically significant due to low representation.

The results from Column 2 validates the baseline finding that trade finance rejection rates vary by firm size, often disproportionately affecting smaller companies. Replacing firm size categories with the number of employees, the results suggest, albeit statistically insignificant, that companies with more employees have generally experienced lower rejection rates. The addition of annual sales as one of the explanatory variables further strengthens the evidence, i.e., companies generating larger revenues have lower rejection rates. Banks and other financial service providers tend to approve applications from financially viable firms, thus reducing the risk they bear for such transactions. Similar finding on country-income classification is observed. Meanwhile, the addition of sales variable to the firm size category leads to a rather ambiguous estimates on large firms. Note that firm size category highly correlates with sales considering that in some countries classifying firm size is based on sales revenue in lieu of number of employees.

**Table 5. Trade Finance Rejection Model Results**

<b>Dependent variable: Trade Finance Rejection Rate</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
Firm size (Base: Micro and small enterprises)			
Medium enterprise	-12.378*** (3.234)		-8.635** (3.355)
Large enterprise	-17.867* (10.787)		-10.519 (10.930)
Number of employees (Base: 1-25 employees)			
26-50 employees		-4.122 (4.848)	
51-100 employees		-9.242 (6.067)	
100-200 employees		-11.090 (7.555)	
200 employees and above		-11.247 (8.282)	
Annual sales (log)		-1.605*** (0.520)	-1.611*** (0.517)
Age of firm (Base: Less than 10 years)			
11-30 years	-1.453 (3.220)	1.272 (3.239)	0.582 (3.218)
31-50 years	-10.169 (6.743)	-4.492 (6.824)	-6.922 (6.709)
more than 50 years	-13.676 (13.264)	-6.541 (13.004)	-10.471 (13.178)
Foreign ownership dummy (1 for firms with foreign ownership, 0 for domestic firms)	4.613 (6.080)	3.484 (5.937)	3.972 (6.014)
Female ownership dummy (1 if firm is owned or founded by a woman, 0	-0.985	-2.458	-2.744

otherwise)			
	(3.246)	(3.225)	(3.230)
Sector (Base: Agriculture and mining)			
Manufacturing	4.839	4.998	5.103
	(7.221)	(7.187)	(7.144)
Services	2.496	1.174	1.068
	(3.560)	(3.548)	(3.532)
World Bank Country Income Classification (Base: Low and lower middle income)			
Upper middle income	-5.536	-3.641	-5.311
	(3.827)	(3.698)	(3.791)
High income	-7.790*	-4.638	-6.742
	(4.702)	(4.555)	(4.638)
CAREC member countries	6.857	8.412	7.792
	(7.964)	(7.861)	(7.869)
Constant	52.231***	66.588***	71.372***
	(6.446)	(8.971)	(8.975)
Inverse Mills ratio	-37.428***	-40.494***	-40.258***
Observations	864	860	862
Wald chi2	23.98	29.81	32.41
Prob > chi2	0.021	0.013	0.002

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Authors' estimates.

Table 5 also suggests the absence of systematic variations in trade finance rejection rates in terms of firm's age, foreign ownership, and sector. The estimates, however, gives inconclusive indications that more mature and foreign firms have lower rejection rates relative to younger and domestic firms. The baseline model satisfies conventional diagnostic test given in Wald Chi square, justifying the use of Heckman selection model in analyzing the data. The inverse Mills ratio indicates the presence of negative selection that could result in a downward-biased estimate if sample selection is not properly corrected.

**Relatively weak company financial health and history among smaller firms significantly explain why their trade finance applications are more often rejected.** Table 6 reveals that the trade finance rejections smaller firms are experiencing are highly associated with their lack of formal documentation, formal financial information, and assets that can be used as collateral or guarantee, making them appear as more risky borrowers than larger companies. The results could also reflect the general tendency of banks and other financial service providers to reject small-ticket transactions from smaller companies.

**Table 6. Company-level Financial Health and Structure Driving Higher Trade Finance Rejection Rates Among MSMEs**

Dependent variable: Trade Finance	(1)	(2)	(3)	(4)
-----------------------------------	-----	-----	-----	-----

Rejection Rate	Insufficiency of collateral and guarantee	Lack of documentation requirements	Lack of business relationship with financial institutions	Lack of credit and financial performance history
Company financial health and structure	37.062*** (3.088)	25.425*** (4.667)	15.018*** (4.124)	26.399*** (4.394)
Annual sales (log)	-1.477*** (0.456)	-1.537*** (0.502)	-1.714*** (0.510)	-1.614*** (0.498)
Age of firm (Base: Less than 10 years)				
11-30 years	2.481 (2.880)	0.185 (3.180)	0.524 (3.233)	1.929 (3.166)
31-50 years	-3.897 (6.012)	-6.278 (6.695)	-6.076 (6.812)	-6.199 (6.632)
more than 50 years	-13.439 (13.677)	-20.424 (15.602)	-12.884 (15.797)	-6.623 (15.350)
Foreign ownership dummy (1 for firms with foreign ownership, 0 for domestic firms)	3.796 (5.565)	4.306 (6.205)	3.107 (6.312)	3.956 (6.147)
Female ownership dummy (1 if firm is owned or founded by a woman, 0 otherwise)	-3.050 (2.936)	-1.818 (3.228)	-1.992 (3.283)	-1.008 (3.212)
Sector (Base: Agriculture and mining)				
Manufacturing	2.399 (6.361)	3.576 (7.192)	1.998 (7.310)	0.480 (7.100)
Services	-0.295 (3.118)	1.691 (3.484)	1.811 (3.544)	0.956 (3.450)
World Bank Country Income Classification (Base: Low and lower middle income)				
Upper middle income	-2.625 (3.283)	-3.489 (3.688)	-4.193 (3.751)	-5.306 (3.651)
High income	-3.422 (4.127)	-3.612 (4.571)	-5.043 (4.640)	-7.692* (4.548)
CAREC member countries	9.090 (6.953)	5.048 (7.758)	7.990 (7.875)	6.415 (7.671)
Constant	40.481*** (8.555)	59.802*** (9.490)	63.465*** (9.685)	58.791*** (9.393)
Inverse Mills ratio	-20.997***	-43.099***	-44.104***	-38.587***
Observations	767	767	767	767
Wald chi2	171.7	51.38	34.71	58.64
Prob > chi2	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Authors' estimates.

Also, worth noting from Table 6 is the consistent significant variation, except Column 4, in rejection rates in terms of where the company operates. This observation likely indicates that there are existing country-level factors, which are highly associated with the country's level of



development, that makes smaller firms from developing economies in a relatively disadvantaged position in the current trade finance structure and system.

It seems evident in Table 7 when financial development index is added from the baseline trade finance rejection model using MSME sample. The index is sourced from the IMF and measures how developed financial institutions and financial markets are in over 180 countries. The addition of the variable resulted in non-significant estimates for the World Bank country income classifications variable, indicating a case of multicollinearity. The coefficient estimates before the financial development index, however, is intuitive and economically large despite statistically not significant. Once the World Bank income classification is removed, the coefficient estimates has improved accuracy and stable though remained statistically not significant. Nevertheless, it gives indication that the lower incidence of trade finance rejections in higher income countries, especially among smaller firms, can be explained by their well-developed financial system.

**Table 7. Country-specific Drivers of Higher Trade Finance Rejection Rates Among MSMEs**

<b>Dependent variable: Trade Finance Rejection Rate</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
	Financial Development Index	Financial Development Index	Basel AML Index
Country-specific factors	-15.491 (12.975)	-11.539 (8.855)	-0.129 (1.632)
Annual sales (log)	-1.445*** (0.527)	-1.477*** (0.520)	-1.354*** (0.515)
Age of firm (Base: Less than 10 years)			
11-30 years	-3.230 (3.413)	-3.480 (3.386)	-6.044* (3.444)
31-50 years	-5.270 (6.985)	-5.484 (6.980)	-3.620 (7.132)
more than 50 years	-4.284 (19.288)	-5.046 (19.278)	-5.379 (18.481)
Foreign ownership dummy (1 for firms with foreign ownership, 0 for domestic firms)	0.033 (6.925)	-0.207 (6.920)	0.141 (7.134)
Female ownership dummy (1 if firm is owned or founded by a woman, 0 otherwise)	-1.432 (3.472)	-1.649 (3.466)	-0.028 (3.554)
Sector (Base: Agriculture and mining)			
Manufacturing	-6.134 (10.141)	-6.074 (10.147)	-6.196 (9.869)
Services	0.518 (3.728)	0.752 (3.708)	2.093 (3.746)
World Bank Country Income Classification (Base: Low and lower middle income)			
Upper middle income	-1.805 (4.139)		

High income	1.600 (6.738)		
CAREC member countries	10.947 (9.319)	11.846 (8.863)	14.627* (8.727)
Constant	63.586*** (10.382)	62.401*** (10.187)	54.181*** (13.930)
Inverse Mills ratio	-38.877***	-39.184***	-34.931***
Observations	699	699	659
Wald chi2	17.30	16.75	15.95
Prob > chi2	0.139	0.08	0.101

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Authors' estimates.

Meanwhile, in Column 3, it remains ambiguous how country-risk influence trade finance rejection incidence among smaller companies. The results are based on using the Basel AML Index, which assesses the risk of money laundering and terrorist financing in over 140 countries. However, it gives inconclusive indication that the higher country-risk where the company operates is poised to have higher rejection rates among smaller firms, other factors remaining constant.

**The use of fintech could aid in lowering incidence of trade finance rejections disproportionately experienced by smaller firms.** The applications of technology to the trade finance ecosystem has the potential to advance financial inclusion. This appears to be how results from Table 8 can be interpreted, albeit with some limitations. Using the MSME sample, the baseline equation adds the variable indicating the knowledge and use of digital or web-based financing instruments of firms. Consulting the literature on fintech, the hypothesis from this exercise is to observe a negative coefficient attached to the variable added. Despite low level of fintech use, especially among smaller firms, Table 8 shows that MSMEs that have considered and/or used debt-based securities typically available in web-based or digital platforms exhibited lower rejection rates, other factors remaining constant. Firms using digital-enabled debt-based securities have lower incidence of trade finance rejections that averages around 8.7 percentage points.

**Table 8. Fintech Use and Trade Finance Rejection Rates Among MSMEs**

Dependent variable: Trade Finance Rejection Rate	(1)	(2)	(3)	(4)
	Crowd funding	Peer-to-peer lending	Debt-based securities	Others
Use and/or consideration of fintech-enabled trade finance	-5.237 (3.514)	1.341 (3.490)	-8.431** (3.712)	2.003 (4.423)
Annual sales (log)	-2.611*** (0.611)	-2.399*** (0.586)	-2.483*** (0.647)	-2.464*** (0.773)

Age of firm (Base: Less than 10 years)				
11-30 years	-0.600 (3.646)	0.454 (3.641)	1.038 (3.741)	1.595 (4.559)
31-50 years	-8.201 (8.255)	-8.118 (7.631)	-6.750 (8.142)	-11.618 (9.958)
more than 50 years	-13.417 (16.072)	-14.454 (16.346)	-25.976 (20.692)	-23.122 (21.107)
Foreign ownership dummy (1 for firms with foreign ownership, 0 for domestic firms)	4.349 (6.842)	4.722 (6.954)	3.518 (6.870)	7.041 (8.451)
Female ownership dummy (1 if firm is owned or founded by a woman, 0 otherwise)	-2.401 (3.680)	-2.908 (3.691)	-2.434 (3.765)	-0.369 (4.446)
Sector (Base: Agriculture and mining)				
Manufacturing	1.691 (7.703)	1.629 (7.678)	2.552 (7.956)	4.861 (9.561)
Services	1.934 (3.996)	2.841 (3.962)	1.113 (4.091)	3.417 (4.919)
World Bank Country Income Classification (Base: Low and lower middle income)				
Upper middle income	-4.190 (4.128)	-4.384 (4.179)	-3.111 (4.252)	-4.124 (4.978)
High income	-6.655 (5.236)	-5.183 (5.245)	-4.012 (5.277)	-4.521 (6.732)
CAREC member countries	7.193 (8.485)	7.832 (8.908)	6.262 (8.827)	3.552 (9.834)
Constant	83.385*** (10.892)	77.132*** (10.894)	83.062*** (11.455)	80.216*** (13.909)
Inverse Mills ratio	-43.762***	-43.805***	-44.182***	-40.336***
Observations	678	696	655	537
Wald chi2	27.65	25.31	26.98	19.17
Prob > chi2	0.006	0.013	0.008	0.085

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Authors' estimates.

Meanwhile, the results in other digital financing options remain inconclusive albeit the magnitude of the estimate is non-negligible in crowdfunding option. It must also be noted from Table 4 that the coefficients of the country income classification variable are no longer statistically significant upon adding the fintech use/knowledge variable, which is also observed when financial development indicator was added. It seems to indicate that the systematic variation in incidence of trade finance rejections of countries across level of development reflects the general structure of the financial system, including the availability of fintech solutions. This empirical observation implies that countries should gear their financial system that is compatible with digital solutions to make greater impact on financial inclusion.

**There are various ways fintech is designed to overcome challenges that have disproportionately affected smaller businesses in accessing trade finance.** Big data analytics and artificial intelligence reduces the costs borne by financial service providers in analyzing

MSMEs' financial information and making credit decisions even without one. Such cost is relatively large when transacting with smaller businesses considering the small amount and infrequent transactions involved. Lee, Yang, and Kim (2019) argue that fintech could improve supply chain finance efficiency by reducing the probability of misclassifying good firms as bad.

Table 9 displays the empirical results evaluating some potential channels through which the use of digital platforms in trade finance could alleviate the incidence of rejections among smaller companies. Largely depending on data availability, the report empirically tests the interaction term between the firm's use and/or consideration of tech-enabled trade finance and reported financial-related issues. The expected coefficient of the interaction term is negative, i.e., the use of fintech is associated with lower incidence of rejection by overcoming the specific company financial-related challenges. Again, tech-enabled trade finance in the exercises are (a) crowd funding, (b) peer-to-peer lending, (c) debt-based securities, and (d) others; while financial issues include (a) insufficiency of collateral and guarantee, (b) lack of formal documentations, (c) lack of business relationship with financial institutions, and (d) lack of credit and financial performance history.

While results remain ambiguous, the insights that could be drawn are clear. The potential to repress the rationing of smaller companies from the trade finance ecosystem is apparent with the use of fintech. Many of the coefficients of the interaction terms are expectedly negative, although not statistically significant. It is worth to note the result from Table 9c, with the use of web-based platform in debt-based securities. In Column 2, the interaction term between its use and lack of documentation requirements is statistically significant, which tells that the lower rejection rates of some MSMEs can be attributed to the use of fintech in overcoming the challenge of lack of documentation requirements necessary for successful applications, keeping other factors constant.

**Table 9. Channels on Fintech Impact on Trade Finance Rejection Rates Among MSMEs**

*a. Crowd funding*

<b>Dependent variable: Trade Finance Rejection Rate</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
	Insufficiency of collateral and guarantee	Lack of documentation requirements	Lack of business relationship with financial institutions	Lack of credit and financial performance history
Use and/or consideration of fintech-enabled trade finance	-0.982 (3.734)	-4.788 (3.670)	-7.812** (3.780)	-4.104 (3.586)
Company financial issues	38.440*** (4.266)	23.814*** (6.753)	13.285** (5.834)	29.501*** (6.142)
<i>Interaction term</i>	-4.907 (6.491)	-4.730 (10.290)	9.177 (8.591)	-1.736 (9.455)
Observations	678	678	678	678
Other explanatory variables	YES	YES	YES	YES

Inverse Mills ratio	-18.570*** (6.815)	-40.436*** (7.924)	-38.797*** (7.893)	-35.386*** (7.649)
Wald chi2	151.9	46.67	45.69	66.42
Prob > chi2	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Source: Authors' estimates.

### b. Peer-to-peer lending

	(1)	(2)	(3)	(4)
<b>Dependent variable: Trade Finance Rejection Rate</b>	Insufficiency of collateral and guarantee	Lack of documentation requirements	Lack of business relationship with financial institutions	Lack of credit and financial performance history
Use and/or consideration of fintech-enabled trade finance	-1.056 (3.730)	-2.078 (3.586)	-0.994 (3.735)	-0.184 (3.594)
Company financial issues	32.677*** (5.135)	15.284* (8.946)	10.132 (7.176)	22.006*** (7.740)
<i>Interaction term</i>	5.593 (6.485)	14.386 (10.697)	10.711 (9.072)	6.943 (9.487)
Observations	696	696	696	696
Other explanatory variables	YES	YES	YES	YES
Inverse Mills ratio	-19.408*** (6.856)	-38.970*** (7.790)	-39.100*** (7.912)	-34.590*** (7.676)
Wald chi2	147.7	54.40	41.50	60.10
Prob > chi2	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Source: Authors' estimates.

### c. Debt-based securities

	(1)	(2)	(3)	(4)
<b>Dependent variable: Trade Finance Rejection Rate</b>	Insufficiency of collateral and guarantee	Lack of documentation requirements	Lack of business relationship with financial institutions	Lack of credit and financial performance history
Use and/or consideration of fintech-enabled trade finance	-3.208 (3.907)	-6.403* (3.807)	-8.790** (3.995)	-6.616* (3.822)
Company financial issues	38.948*** (4.173)	29.165*** (6.435)	16.498*** (5.424)	30.108*** (5.715)
<i>Interaction term</i>	-7.714 (6.951)	-19.312* (10.837)	2.654 (9.284)	-6.519 (9.855)
Observations	655	655	655	655
Other explanatory variables	YES	YES	YES	YES
Inverse Mills ratio	-18.529*** (6.765)	-40.827*** (7.794)	-39.648*** (7.809)	-35.937*** (7.554)
Wald chi2	143.8	49.61	42.78	64.04
Prob > chi2	0.000	0.000	0.000	0.000

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Source: Authors' estimates.

d. Other digital-enabled financial products

<b>Dependent variable: Trade Finance Rejection Rate</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
	Insufficiency of collateral and guarantee	Lack of documentation requirements	Lack of business relationship with financial institutions	Lack of credit and financial performance history
Use and/or consideration of fintech-enabled trade finance	-2.896 (4.747)	2.454 (4.587)	-1.066 (4.800)	2.808 (4.571)
Company financial issues	33.256*** (6.050)	15.404* (9.168)	5.970 (7.182)	30.093*** (8.383)
<i>Interaction term</i>	6.330 (8.241)	-1.054 (14.428)	18.196* (10.910)	-3.500 (12.268)
Observations	537	537	537	537
Other explanatory variables	YES	YES	YES	YES
Inverse Mills ratio	-18.852** (7.332)	-38.275*** (8.272)	-37.142*** (8.313)	-32.026*** (7.938)
Wald chi2	91.42	23.75	28.59	42.02
Prob > chi2	0.000	0.049	0.012	0.000

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

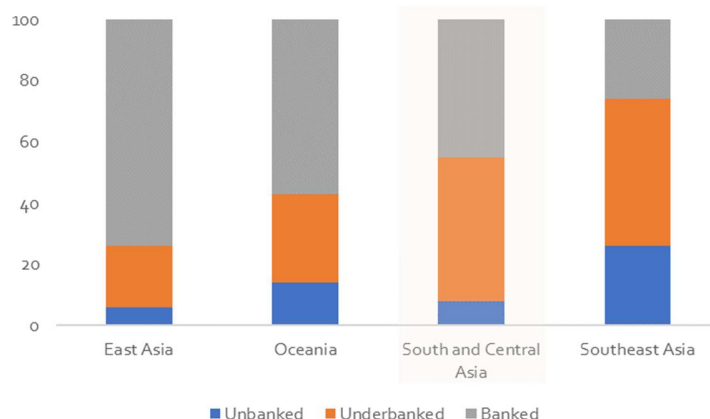
Source: Authors' estimates.

The empirical literature on fintech use and its impact on financial inclusion remains limited. The results from these exercises serve as additional evidence on how useful fintech could be to bridge the gap in trade finance. To draw further policy insights, knowledge gaps need to be addressed in this area of empirical research by linking firm-level financial health information with their trade finance experiences.

## 5: Policy Implications: Leveraging Fintech in Narrowing the Trade Finance Gap in CAREC

Based on the latest assessment of the extent to which alternative finance promote financial inclusion, the CAREC has a lot more to do, especially in serving the un- and underserved market needs for adequate finance. Asking debt-based platform respondents to indicate the banking status of their borrower-customer base, i.e., unbanked, underbanked, and banked, Ziegler and Shneor (2020) found that only 8 percent of the borrowers/customers that are unbanked are provided with credit in South and Central Asia, relatively lower compared to Southeast Asia's 26 percent (Figure 13). It is interesting to note though that there are a large proportion of borrowers/customers that are underbanked already served in South and Central Asia (47%) comparably close with Southeast Asia (48%).

**Figure 12. Banking Status of Borrower/Customer Base of Alternative Finance Industry in Asia and the Pacific by Subregion, 2018**

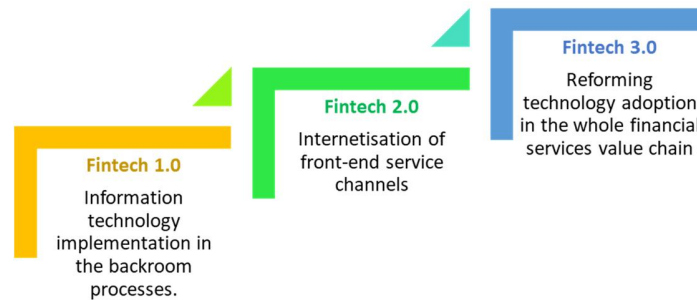


Source: Authors' illustration using information from the CCAF Global Alternative Finance database.

To examine how fintech applies to solving the trade finance gap issue of the region, it matters to determine the environment at which fintech could flourish. Fintech credit is more prominent in richer countries, with less competitive banking system, as well as less stringent banking regulation (Claessens et al 2018). Meanwhile, Rau (2019) finds that crowdfunding volumes are greater among larger economies, especially those with strong regulatory regimes and more efficient legal systems.

For the CAREC region to become Asia's next fintech hub, member countries need to bring their financial, regulatory, and technology infrastructure into the 21st century. They should follow the three-stage fintech upgrade (Figure 14), which has led the PRC to its current global leader position in fintech ecosystem. Efforts should start from transforming the traditional financial services industry with the introduction of information technology to digitize and automate business processes that could lead to improved management and operations efficiency. At the next stage, financial service providers should be encouraged to build online platforms, leveraging the internet collate users and information. Lastly, efforts should focus on integrating different new technologies to reorganize traditional financial services such as financial information collection, financial risk management, and investment decision making, among other financial intelligence. In general, fintech development follows a phased track all leading to improvement in the efficiency in providing traditional financial services.

**Figure 13. Stages of Fintech Upgrade and Development**



Source: Sinai Lab from Academy of Internet Finance (AIF), Zhejiang University International Business School, Zhejiang University-Institute of Data & Risk, Zhejiang Association of Internet Finance, and Beijing Frontier Institute of Regulation and Supervision Technology. 2020. Global FinTech Hub Report 2020.

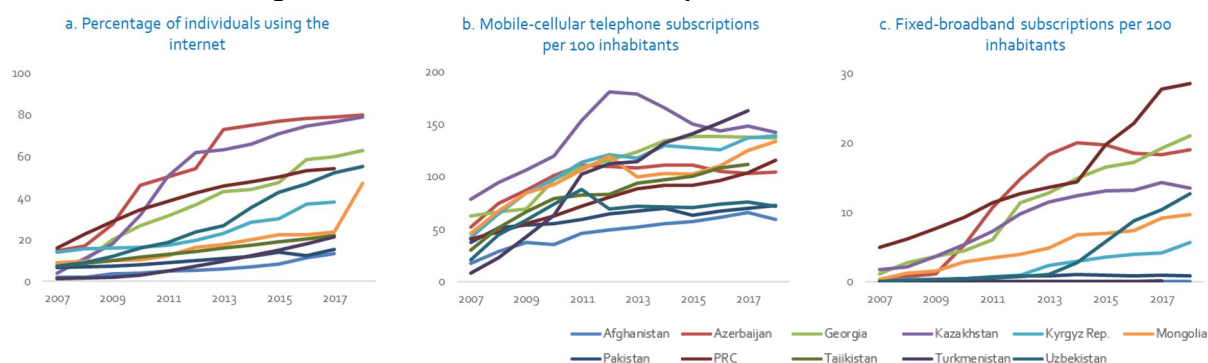
**In the short to medium term, CAREC member countries should focus on building its fintech foundation.** The region should consider efforts to lower transaction costs due to the continued use of conventional trade clearing procedures. Initiatives like e-Phyto certification and easing custom clearance procedure at border are already kicked off. The reap the huge benefits of the trade the region required successful implementation of paperless trade. The cost (time delays and payments) at Businesses Crossing Points (BCPs) are still high in Pakistan and in Afghanistan. Greater use of cross-border paperless trade can help SMEs reach global markets and compete internationally (ADB and UNESCAP 2019). Another critical element for establishing a solid fintech ecosystem is the availability of adequate human resources, which involves hiring, training, and retaining the best talents. Kazakhstan, for its part, has been proactive in developing talent in fintech & ICT-related sectors, e.g., launch of programming school, QWANT<sup>3</sup>.

**The region needs to further bolster the ICT and digital infrastructures.** The region's growing mobile and broadband use, and internet penetration (Figure 15) can be leveraged for the growth of fintech and other digital financing solutions. The volume of digital payments in Kazakhstan increased more than 2 times in 2019, which amounted to \$34.9 billion, largely attributed to the development of the infrastructure of trading POS-terminals, the market entry of Apple Pay and Samsung Pay, as well as aggressive promotion of the active use of cashless payments (Davletov et al 2020). Ecommerce also exhibits steady expansion led by Kazakhstan and Uzbekistan. Further investments in the digital infrastructure are needed to improve the interface between the digital and nondigital economies for the poor.

<sup>3</sup> QWANT is a totally online tech school that currently focuses on software engineering, data science and full stack development.



**Figure 14. ICT Infrastructure Landscape in CAREC, 2007–2018**



Source: Authors' illustrations using data from the ITU's World Telecommunication/ICT Indicators Database.

This is particularly relevant in Asia, where 95% of banks are running on outmoded core banking technology<sup>4</sup>, hindering innovation that could reduce costs. The imposed technology gap for infrastructure is increasing banks' cost-to-income (C/I) ratios by 3-5%. Limited ability to automate processes and decisioning adds another 4-7% to the C/I ratio (Thought Machine 2020).

**CAREC member countries should ensure regulatory quality (e.g., cybersecurity and other technical vulnerabilities, data governance, and privacy protection) and regionwide consistency.** Across the Asia and the Pacific, cybersecurity breach is consistently cited by alternative finance players as the major risk that needs to be tamed (Ziegler and Shneor 2020). In East Asia, excluding the PRC, 47% of the respondents reported the cybersecurity risk as high or very high, followed by Oceania (45%) and Southeast Asia (34%). Fintech firms are also concerned about uncertainty surrounding changes in regulation as another major risk that could potentially hurdle further growth of the alternative finance industry in Asia and the Pacific.

Large knowledge gaps are hindering getting the most out of this form of finance, alongside other impediments that include high cost, inefficient processes, high information asymmetry, and e-commerce regulations that are simply too stringent. Because the fintech revolution is quite new, the proliferation of competing platforms complicates its financial infrastructure because as yet there are no standardized processes or procedures. Consider, for example, a situation where a small company uses one type of platform, but its trading counterparty uses a different platform. Clearly situations such as this will have a negative impact on digital trade.

#### A. Lessons from Global Fintech Leaders

In the Global FinTech Hub Report 2020, there are three apparent forces leading towards fintech development, taking the case of global fintech leaders from the PRC, the United States, and the United Kingdom. These include the **market**, **technology**, and **regulations**. The PRC's success is

<sup>4</sup> The average age of core banking technology in Asia is estimated at 20 years or more.

largely driven by large consumer base embracing technological advances in financial services. The United States has benefitted from technological revolutions while building adequate and relevant infrastructures. The United Kingdom, meanwhile, hinges largely on regulatory innovations, focusing on improving the regulatory systems and ecosystem improvements.

Overall, the global fintech hubs (i.e., Beijing, San Francisco [Silicon Valley], New York, Shanghai, London, Shenzhen, Hangzhou, and Chicago) have fostered an ecosystem with good mix of the three identified drivers of market, technology, and regulations. The percentage of fintech users among the total population is, on average, 68.8% among global fintech hubs. The digitization rate of the traditional financial sector in the global fintech hubs is relatively high with an average score of 64.7. The global leaders' overall digital infrastructure comprising cybersecurity and internet adoption has an average score of 84.3, while research capacity is high at an average score of 70. The global fintech leaders have relatively higher level of supportive policy environment, i.e., an average score of 86.5 in fintech support and 80.9 for fintech regulatory capability.

## **B. Trade Finance in Time of COVID-19 Outbreak**

International trade transactions have become difficult to carry out during the COVID-19 pandemic due to disrupted shipping, in-person interactions, and travel. It also affected trade finance process in the areas of deal origination and distribution, negotiable instruments, document transmission, authorized signatures, and shipping (ICC 2020). During the height of COVID-19 related restrictions in April 2020, most banks report difficulties arising from the lack of staff with 75–90% of operational staff working from home, the inability to print, and other logistical matters.

The COVID-19 pandemic and consequent movement restrictions provide a compelling case for adopting fintech—and, globally, the pandemic has spurred more firms to adopt digital platforms in trade and finance. The COVID-19 pandemic creates opportunities to further expand the role of fintech in financial inclusion in developing economies while preserving the resiliency of the global trading ecosystem.

Alternative procedures took place to settle trade finance transactions, with many players moved towards full or partial digitalization in terms of digital channels, electronic documents, electronic signatures, and new business processes and controls (ICC 2020). Fintech can efficiently unlock new sources of finance for vulnerable groups that are underserved by banks and other traditional financial institutions. This include providing new turn-key loan origination and underwriting platforms to allow banks and lenders to provide financing for small businesses. These platforms encompass risk assessment and insurance capabilities.

## 6: CONCLUDING REMARKS

The availability of trade and supply chain finance has enabled 80 to 90 percent of global trade. The current system, however, inadvertently falls short to the financing needs of even the viable transactions from smaller firms, especially from the developing economies. The unmet demand for trade finance is estimated at \$1.5 trillion but could amount to more than \$2.4 trillion by 2025 if effective solutions are not in place.

In 2018, 57 percent of trade finance applications from firms in Central Asia Regional Economic Cooperation (CAREC) member countries—mostly from the Kyrgyz Republic and Pakistan—were rejected, almost half of which no longer seek alternative finance, altogether withdrawing from a potentially viable trade activity. Trade finance requests from smaller firms are often rejected due to high perceived costs and risks associated with their insufficient collateral or guarantees, lack of a relationship with financial institutions, and insufficient credit or performance history. For lenders, smaller ticket transactions involve high transaction and information costs of having to stringently comply with international regulations and standards, such as anti-money laundering and know your client (or KYC).

The report works on the available firm-level microdata on ADB's Trade Finance Gaps, Growth, and Jobs Survey, and builds a cross-section of firms responding to the survey years 2015–2017 and 2019. Applying the Heckman two-step, the paper validates that smaller firms experience higher incidence of trade finance rejections relative to larger firms, owing largely to their weak company financial health and history. The lower incidence of trade finance rejections in higher income countries can also be explained by their well-developed financial system. Interestingly, results indicate that the use of fintech could aid in lowering incidence of trade finance rejections disproportionately experienced by smaller firms, advancing financial inclusion.

The many capabilities of financial technology (fintech) can be mapped to these factors making trade finance—thus trade—less inclusive. The permeation of digital technologies in financial services makes risk management more effective, facilitates transactions across larger distances and at a faster speed, allows transactions without having to rely on personal relationships, and increases transparency. The greater use of fintech in trade and supply chain finance aligns with ongoing efforts to support the further development of e-commerce while overcoming challenges related to COVID-19 restrictions.

The paper maps the financial ecosystem in CAREC member countries and explores the potential opportunities and limitations of fintech adoption and entry points for intra-regional cooperation. The CAREC region—with the notable exception of the People's Republic of China (PRC)—lags in the use of fintech, including its application for digitizing trade finance. In the PRC, 61% of digitally active SMEs use fintech, facilitated by the country's advances in developing and applying payment platforms and big data management. In terms of market size and number of

platforms, the other CAREC member countries demonstrate relative infancy requiring further advancements of financial, regulatory, and technology infrastructure.

In the short to medium term, CAREC member countries should focus on building its fintech foundation. The region should consider efforts to lower transaction costs due to the continued use of conventional trade clearing procedures. Facilitating greater use of fintech in trade and supply chain finance is in line with ongoing efforts to step up support for the development of e-commerce in the region. The region needs to further bolster the ICT and digital infrastructures while ensuring regulatory quality involving cybersecurity and other technical vulnerabilities, data governance, and privacy protection.

Three forces has led global fintech leadership of the PRC, the United States, and the United Kingdom. The PRC's success is largely driven by large consumer base embracing technological advances in financial services. The United States has benefitted from technological revolutions while building adequate and relevant infrastructures. The United Kingdom, meanwhile, hinges largely on regulatory innovations, focusing on improving the regulatory systems and ecosystem improvements. Learning from these country-specific lessons, the CAREC region's fintech adoption and advancement should be grounded on efficient financial structures, effective regulatory frameworks, and the needed capabilities to advance inclusive trade and finance.

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