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Trade finance for SMEs
in the digital era

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Trade finance for SMEs in the digital era

Access to trade finance, i.e. financial instruments and means of payments for international transactions, can enable SME engagement in international activities through direct exporting and participation in global value chains, and ultimately foster inclusive economic growth and innovation. The study examines trade finance for SMEs in the context of digital advancements and investigates how policy approaches can support SMEs in reaping the benefits of digitalisation in this respect. It also takes into account recent developments related to the COVID-19 crisis.

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Acronyms and abbreviations

ADB	Asian Development Bank
AML	Anti-money laundering
API	Application programming interface
BIS	Bank of International Settlements
BNY	Bank of New York Mellon
BPO	Bank payment obligation
Cedefop	European Centre for the Development of Vocational Training
DLT	Distributed ledger technologies
EBRD	European Bank for Reconstruction and Development
ECA	Export credit agency
EIF	European Investment Fund
EMCC	European Monitoring Centre on Change
FDI	Foreign Direct Investment
FSB	Financial Stability Board
GVC	Global Value Chain
ICC	International Chamber of Commerce
IFC	International Finance Corporation
IMF	International Monetary Fund
KYC	Know-your-customer
L/C	Letter of credit
NOPEF	Nordic Project Fund
OECD	Organisation for Economic Co-operation and Development
RPA	Receivable purchase agreement
SCF	Supply chain finance
SME	Small and medium-sized enterprise
UCP	Uniform Customs and Practice for Documentary Credits
UNCITRAL	United Nations Commission on International Trade Law

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Executive Summary

International trade is associated with positive impacts on growth, and acts as a particularly important channel of positive spill-overs for SMEs, including in the area of managerial skills, technology and innovation.

Access to trade finance can facilitate SME engagement in international trade by addressing two major challenges. First, both exporters and importers are exposed to significant counterparty risks, in particular when exploring new markets and dealing with new customers and suppliers. This is especially challenging for SMEs that have limited capacities and resources to engage in a sound due diligence process.

Second, SMEs are often constrained in working capital. In a trade deal, both parties however have diverging preferences in respect to the ideal point of time for making the payment. The exporting SME would prefer payment before shipment, or ideally even earlier to buy raw materials, etc., for the production of the good or service. The importer, on the other hand, prefers to hold back payment until the proper delivery of the ordered goods and services. Access to trade finance hence can enhance the cash constraints on the SME side. While this is true for transactions in general, payment delays for cross-border transactions tend to be longer, information asymmetries more pronounced, and disputes harder to resolve.

Across all countries, SMEs have a disproportionately smaller share of direct international trade than they do of economic activity in general, and the gaps between the two measures typically increase as firm size decreases. For example, in most OECD countries, between 10 to 25% SMEs in manufacturing export, compared to more than 90% for their large counterparts¹. However the contribution that SMEs make to overall trade is much more important when taking account of their role in indirect exports as suppliers to internationally operating larger firms, as well as when considering other sectors beyond manufacturing.

The coronavirus pandemic is affecting exports and international trade significantly; merchandise trade was expected to drop by an estimated 9.2% in 2020 (WTO, 2020^[1]), though the actual decrease may be less pronounced according to more recent estimates (WTO, 2021^[2]). As supply chains, both domestic and international, have come under strain, trade finance instruments appear increasingly likely to come under pressure. The scope to rely more on inter-firm lending to cushion the blow of the economic impact is also severely reduced in the current crisis, given its synchronised nature across countries and sectors (Boissay, Patel and Song Shin, 2020^[3]). Governments and development banks are therefore ramping up their trade finance programmes to compensate for shortfalls in commercially provided trade finance that may undermine global trade, and allow smaller firms to be part of global value chains. Across the world, countries have expanded the support of export credit agencies and working capital programmes, introduced new facilities, and eased the modalities of existing support schemes (OECD, 2020^[4]), (OECD, 2020^[5]). These policy instruments are often complemented by other measures to ease SME access to finance more generally (OECD, 2020^[6]).

Indeed, traditional bank-intermediated trade finance instruments can be a factor in driving trade performance of SMEs. These include short-term trade loans, letters of credit (L/C), documentary collection

¹ This paper's coverage is not limited to the manufacturing sector.

and guarantees. However, in particular after the financial crisis of 2008, the relevance of traditional trade finance has diminished significantly. The share of global trade using documentary credit, for example, has declined from about 50% in the 1970s to an estimated 15% in 2018 (Ganesh et al., 2018^[7]). In 2017, the volume of letters of credits continued its negative growth trend since 2014 and fell by 2.7% year-on-year.

At the same time, the global trade finance gap was estimated to be USD 1.5 trillion in 2018, difficulties in measuring this gap notwithstanding (Kim et al., 2019^[8]). SMEs struggle to access bank-intermediated trade finance instruments for a variety of reasons that vary by instrument, reflecting differences in barriers and complexities, such as high cost, high complexity and HR resource-intensive workflows on the SME side. On the supply side, information asymmetries and related resource-intensive due diligence processes generate high transaction costs but low transaction volumes, which work to disincentivise banks.

However, *Supply chain finance (SCF)* instruments², which bring in new providers of finance, by leveraging on players within global value chains, have opened up new possibilities for SMEs to manage working capital and payment risk associated with international trade. Supply chain finance refers to instruments such as factoring, forfaiting or payables finance – also known as reverse factoring – enable SMEs to better manage their cash situation in trade transactions, benefit from larger and well-known buyers or suppliers, and help costs and complexities for SMEs.

Digitalisation has the potential to increase SME access to trade finance³ by: (1) Improving how trade finance is done, i.e. in respect to process efficiency and quality, (2) enhancing the portfolio of trade finance instruments, and (3) expanding the field of dedicated trade finance and SCF suppliers.

In respect to process efficiency of trade finance, recent digitalisation efforts focus on solving Know-Your-Customer (KYC) frictions. The legal requirements to on-board clients for trade finance deals are often resource intensive, especially for SMEs. Ongoing efforts focus on the centralisation of KYC databases, in order to provide client information to a larger group of finance providers, thereby reducing redundancies and costs. In addition, decentralised blockchain-based efforts that have similar goals are also being explored. Some large multinationals (e.g. IBM, Microsoft, Walmart, Maersk), are building the infrastructure needed to offer this service on the market or directly to integrate more SMEs in their global supply chains and to offer better services to the ones that are already part of them (Chang, Iakovou and Shi, 2020^[9]). Replacing the current paper-based model with an automated, tamper-proof, data storing process can result in strong cost reductions (Morabito, 2017^[10]). Moreover, e-documentation is increasingly applied, which, in particular in the context of document-heavy traditional trade finance instruments, can reduce the cost and complexity for all parties involved. Innovative solutions based on distributed ledger technologies can play an important role in this transition in global supply chains, and are becoming more widespread in the market (Chang, Iakovou and Shi, 2020^[9]).

Digitalisation can also impact the quality of trade finance credit assessments. New tools building on big data and artificial intelligence, such as machine learning, can support the credit assessment of smaller firms, which are often opaque if a long-standing relationship with a financial intermediary is absent. Thanks to new tools, a variety of different data and information sources can be meaningfully interpreted, which go beyond simple balance sheet statements.

In line with increasing e-documentation, new products such as the bank payment obligation (BPO) are being introduced in the trade finance market. The BPO is subject to standardised regulation and enables the exchange of electronic documentation between banks that engage in the provision of trade finance.

² “The use of financing and risk mitigation practices and techniques to optimise the management of working capital and liquidity invested in supply chain processes and transactions” (Global Supply Chain Finance Forum, 2016^[46]).

³ Digitalisation may also, of course, stimulate demand for such finance when it spurs or facilitates international activity by SMEs.

Beyond traditional trade finance players, such as banks, and supply chain finance actors, such as factors and forfaitors, more new vehicles and actors are emerging from the process of ongoing digitalisation. Trade finance platforms for example are often consortia of large institutional banks that centre around the idea of digitising the trade finance process, for instance by digitising documentary credit, electronic issuances, exchange and documentation. Fintechs are also entering the space by either cooperating with banks or operating on a stand-alone basis, in particular in the supply chain finance sector, including through the provision of accounting software or invoice management tools and access to finance.

The COVID-19 pandemic has had significant implications for digitalisation and trade, with secondary effects on trade finance. The traditional reliance on paper-based processes represents a key weakness under current circumstances. Banks, for instance, face mounting difficulties to process transactions that require substantial in-person back office staffing (ICC, 2020^[11]). Early assessments have shown that trade between businesses (as well as with consumers) is increasingly taking place online given the limitations and restrictions imposed when combatting the crisis. Surveys from across the globe show that SMEs are increasingly using online trading.⁴ Moreover, large industry players advocate the wider acceptance of electronic trade documentation, which is a prerequisite for mainstreaming digital trade.

However, in order to fully realise the potential of digitalisation for SME access to trade finance, a variety of challenges has to be addressed. A major issue is that only parts of the trade and trade finance process are subject to digital innovation, whereas the end-to-end digitalisation across the trade value chain remains fragmented. Hence, solutions presented in this paper are often not interoperable, and efforts in this area remain nascent. Similarly, banks remain reluctant to view technology as the solution to the trade finance gap. In addition, SMEs have to ramp up internal digitisation efforts to adapt and adopt to the new landscape of trade finance instruments.

Current policy efforts have four different entry points: focusing on *trade*, the use of *technology*; a focus on *SME skills*, and access to *finance*. The *trade* dimension includes policies such as the adaptation of national export strategies to facilitate SME exports. With a focus on mainstreaming *technologies* in finance related fields but also beyond, many countries are using so-called regulatory sandbox approaches to test new products, services or business models. Several on-going policy efforts aim at improving the *skills of SMEs*. These entry points are also very much inter-related. For example, financing policy measures include financial support for SME access to training. Policy approaches also aim at improving access to *finance* to stimulate the exposure of SMEs to international trade or investments in digitalisation.

However, policy approaches remain as fragmented as the digitalisation process itself. Moreover, the acceptance and coherent regulation of new products and players in the field is limited. This report suggests a number of preliminary options for policy makers to leverage digitalisation to enhance SME access to trade finance:

- establish a conducive regulatory environment that fosters the adoption of innovative solutions, in particular to foster the wider acceptance of electronic documents,
- facilitate coherent industry-wide solutions that can operate at scale and are interoperable,
- develop tailor-made policy approaches to enable SMEs to harness the potential of digitalisation to improve access to trade finance, and
- support efforts to generate a sound evidence base to better understand the benefits of digitalisation for SMEs' access to trade finance, and also challenges impeding uptake.

⁴ <http://www.oecd.org/coronavirus/policy-responses/coronavirus-covid-19-sme-policy-responses-04440101/>

1 Introduction

Access to trade finance, that is financial instruments and means of payment for international transactions, can improve the ability of small and medium-sized enterprises (SMEs) to engage in international activities and participate in global value chains (GVCs), and in turn create new jobs and firms, boost innovation and, ultimately, foster inclusive economic growth. Recent data from France, Germany, Poland, Spain and the UK show that over half of exporting SMEs experienced robust revenue growth of 5% or more in 2018 compared with just over one-third for non-exporting SMEs without cross-border (Bpifrance et al., 2019^[12]).

Moreover, SMEs that are exposed to international trade and GVCs can absorb technology and managerial capacities, broaden and deepen skills sets, innovate, scale up and, in doing so, strengthen productivity (OECD, 2018^[13]). In addition, in countries where SMEs have a relatively high share of exports, there is a smaller average salary gap between SMEs and larger firms (OECD, 2019^[14]).

The coronavirus pandemic and government responses have had a significant impact on trade, and in turn, on economic growth and well-being. GDP is forecast to remain 5% below pre-crisis expectations in many OECD countries in 2022 (OECD, 2020^[15]). The World Trade Organisation (WTO) estimated merchandise trade dropping by an estimated 9.2% in 2020 (WTO, 2020^[1]). Moreover, even firms that are not directly impacted by the COVID-19 crisis are often affected indirectly through the supply chain. The impact on GVCs is in particular pronounced as the nature of the crisis is causing a negative ripples from downstream customer firms to upstream supplier firms, with the former more exposed to revenue breakdowns (McCann and Myers, 2020^[16]). In addition, there is evidence that the availability of trade finance products declined substantially because of the crisis (see e.g. (European Central Bank, 2020^[17])).

At the same time, the crisis has led to an acceleration in the digitalisation of business models (OECD, 2020^[18]), including cross-border business-to-business (B2B) e-commerce (WTO, 2020^[19]) as a response to disruptions in supply chains.

Trade finance can further boost the recovery boost by facilitating export and import growth, by addressing two major challenges associated with international trade. First, both exporters and importers face disproportionate counterparty risks when exploring new markets and dealing with first-time non-resident SME buyers and sellers. A lack of a track record, challenging access to information, currency risk, as well as information asymmetries in general impose barriers to international trade, barriers that are particularly pronounced for SMEs with limited resources and where the, typically, fixed costs related to due diligence are disproportionate.

Second, trade relationships bring about liquidity challenges on the exporter or seller side. There is not only a significant working capital need on the exporter side to bridge the time and investment span from production to payment, but more importantly, diverging views and preferences between sellers and buyers regarding the ideal time for payment. From the seller's perspective, the ideal time for receiving payment is right before shipping which would as such eliminate non-payment risk. However, the importer obviously prefers to pay only if the goods are received safely and in line with the order. A resulting extended stretched liquidity period is challenging for SMEs in particular which are typically constraint in their working capital reserves and access to external working capital. International transactions generally take longer than domestic transactions and involve more intermediaries, hence typically imply longer payment delays, and are often riskier, also as a result of transparency issues stemming from increased information asymmetries. Cross-border payments tend to be more costly, take more time and are less transparent than domestic

payments; electronic payments can address some of these factors, whereby its benefits strongly depend on the respective regulatory environment in place. In the recent OECD Digital Services Restrictiveness Index for example, only 4% of cross-border trade barriers are related to payments⁵.

Trade finance instruments are dedicated financial solutions to address trade-related challenges. For example, letters of credit address counterparty- and liquidity-related issues, whilst guarantees address risks associated with the trade counterpart's default or unwillingness to pay. Supply chain finance solutions are increasingly being used to manage liquidity or working capital in open account transactions that do not benefit from any risk mitigation before the shipment of the traded goods or services⁶.

However, SMEs in particular face significant structural obstacles to access trade finance instruments, originating in both demand-side and supply-side factors. Most importantly, small businesses lack the awareness, skills and expertise regarding trade finance products (World Trade Organization, 2016^[20]). Many SMEs are unfamiliar with the new technological solutions on the horizon, including innovative instruments in the area of supply chain finance such as forfaiting, or digital solutions as the bank payment obligations (BPO) (World Trade Organization, 2016^[20]).

Despite their strong presence in many countries, SMEs account for only 37% of global trade finance demand in terms of number of contracts, based on the trade finance proposals received by banks surveyed in a recent Asian Development Bank (ADB) survey, with a rejection rate of 45% (compared to a rejection rate of 17% for multinationals) (Kim et al., 2019^[8]). The survey covers more than 300 firms in almost 70 countries, beyond 112 banks, 50 export credit agencies, and 39 forfaitors around the globe.

In respect to access to trade finance for national or international trade, SME opacity is a major obstacle. A survey on trade finance by the Bank of New York (BNY) Mellon (2019) among more than 100 international, regional and domestic banks as well as specialist trade finance providers reveals that the lack of creditworthiness and lack of ability to provide financial statements among the most important reasons to reject requests from business seeking trade finance. The concerns were especially pronounced for specialist providers (BNY Mellon, 2019^[21]). This is clearly a structural issue beyond trade finance per se; small size is clearly a major credit constraint (Beck et al., 2006^[22]) related in large part from opacity.

Moreover, SMEs are often not able to provide collateral, which raises rejection rates (Kim et al., 2019^[8]). Once rejected, SMEs have severe difficulties to access any alternative form of financing, with almost 50% of SMEs rejected in the ADB study unable to find alternative access to finance. However, 18% of SMEs secured informal finance, and 16% could access formal financing alternatives (Kim et al., 2019^[8]).

Indeed, the study shows that the rejection rate of SME trade finance applicants is the highest among the different size groups of applicants with a rate of 45%, compared with 17% for multinational firms (Kim et al., 2019^[8]). Requirements around anti-money laundering (AML) and know-your-customer (KYC) regulation constitute the largest barriers for banks to expand trade finance business, as well as a lack of profitability, rooted in high transaction costs paired with limited fee-generation opportunities (Kim et al., 2019^[8]). Indeed, there is a need to build longer-term relationships to engage profitably in small firm lending (Petersen and Rajan, 1994^[23]).

A lack of capacity on the bank side can also contribute to low access to trade finance among SMEs, which is in particular the case in developing countries. Local banks often have limited capacities to engage in

⁵ The latest OECD Digital Services Restrictiveness Index Report can be found here: <https://issuu.com/oecd.publishing/docs/oecd-stri-policy-trends-2021?fr=sMGVIMij5ODk2NDE>

⁶ This study does not investigate export credits. Export credit agencies (ECAs) are dedicated, mostly publicly supported organisations, with the mandate to facilitate exports of a country's enterprises with normally longer-term maturities. Trade finance refers to short-term financial solutions traditionally provided by commercial banks.

trade finance, paired with fundamental regulatory environment issues and unavailability of foreign currency (World Trade Organization, 2016^[20]).

Regulation may also affect access to finance for SMEs. While a recent report of the Financial Stability Board (FSB, 2019^[24]) concludes that there are no significant and persistent effects of the Basel III capital and liquidity requirements on SME finance in general, there may be temporary effects caused by risk based capital requirements in certain jurisdictions. Fisera et al. (2019) find similar short-term negative effects on SME access to finance in emerging markets and developing economies, in particular for those SMEs that did not have access to bank credit before Basel III implementation, i.e. first time borrowers.

However, Basel III may indirectly affect access to finance of suppliers and buyers of SMEs, which may result in reduced demand and contraction in inter-firm trade finance availability, i.e. supply chain finance to SMEs from larger counterparts (Fisera, Horvath and Melecky, 2019^[25]). Indeed, recent evidence for European SMEs shows that during the recession in the aftermath of the financial crisis, smaller firms faced liquidity issues caused by a rise in net trade credit, which was not the case for larger firms. This effect is triggered by lower negotiation power vis-à-vis larger firms (Coricelli and Frigerio, 2019^[26]).

At the same time, digitalisation offers the potential to alter existing trade finance patterns and provide new financing opportunities to SMEs. The trade finance ecosystem is significantly impacted by new modalities of trade finance, e.g. with respect to process efficiency as well as creditworthiness assessments, the financial instruments that are available to SMEs, and new emerging providers of trade finance that go far beyond traditional bank-intermediated solutions. Also on the SME side, ongoing digitalisation, for instance with respect to processes and logistics, can support the adaptation to a new digital environment for trade finance.

The coronavirus pandemic is hitting the trade and trade finance ecosystem hard, as presented previously. SMEs' engagement in trade and exports may come under severe pressure. As trade deals are increasingly under pressure due to a lack of demand as well as supply side issues (OECD, 2020^[27]), default rates in trade finance, that are under normal times rather low, are expected to increase and to cause detriment to the large trade finance banks (S&P Global Market Intelligence, 2020^[28]). Banks can address potential defaults in advance by softening the terms and conditions of trade finance, for example by extending credit from 60 to 90 days if businesses are challenged on the sell side or the provision of additional working capital (Euromoney, 2020^[29]).

Moreover, the dominance of the US dollar in trade finance (see Chapter 2) is a major concern as it increases the pressure on banks which may consume more dollars than they generate, due to potential defaults in the trade finance sector (Financial Times, 2020^[30]). More technically, the trade finance sector is also discussing if the current pandemic constitutes a force majeure event, which is part of many trade finance contracts, with significant implications for lenders and borrowers (Nordea, 2020^[31]) (Deutsche Bank, 2020^[32]).

Indeed, SMEs themselves are experiencing a decline in the access to and availability of trade finance as a result of the pandemic, as shown in a survey of European enterprises conducted between September and November 2020. While the availability of bank loans increased, in part because of policy interventions, the availability of trade finance declined compared to the previous survey round (European Central Bank, 2020^[17]).

As a response, development actors are now stepping in to address potential shortfalls in trade finance. The World Bank Group's (WBG) private sector arm International Finance Corporation (IFC) has stocked up the existing Global Trade Finance Program by USD 2 billion to counter risks of non-payment for financial institutions, as a way of incentivising trade financing (WBG, 2020^[33]). IFC's trade finance programme already played a significant role in the financial crisis in 2009. An evaluation revealed that after the crisis, the programme no longer focused only on high-risk countries. The share of guarantee volumes issued in low risk countries increased by 11 percentage points (from 10% in 2006-2008 to 21% on average from

2009-2012), highlighting that demand for trade finance was not satisfied by a more risk-averse commercial banking sector (Independent Evaluation Group, 2013^[34]).

The European Bank for Reconstruction and Development (EBRD) is engaging in trade finance during the COVID-19 pandemic at unprecedented levels. In April, trade finance totalled EUR 503.5 million (via 179 trade transactions) (EBRD, 2020^[35]).⁷

Similarly, the Asian Development Bank (ADB) will provide USD 200 million through its Supply Chain Finance Program dedicated to enterprises that engage in manufacturing and distributing medicines and other items needed in the coronavirus pandemic (ADB, 2020^[36]).

As another example, the Export-Import Bank of the United States has taken several measures to assist SMEs in meeting their trade finance needs during the current crisis, including expansion of working capital guarantee, pre-export payment, and supply chain finance guarantee programs. Furthermore, the United States International Development Finance Corporation has now been authorised to lend to US businesses, including SMEs that support COVID-19 responses and broader supply chain resilience.

Beyond the increase in e-commerce presented earlier, the crisis may also accelerate digitalisation efforts in trade finance. The International Chamber of Commerce (ICC) issued a call to action to save SMEs in this pandemic and includes an explicit reference to trade (“Ensure open trade and the expedited flow of essential goods across borders” with “MSMEs and their workers, as well as entrepreneurs and the self-employed among the hardest hit” (ICC, 2020^[37])), as well as requests to use the crisis to foster the acceptance of electronic documentation, which is a major barrier to further digitalisation in trade and trade finance (ICC, 2020^[37]).

This report examines trade finance for SMEs in the context of increasing digitalisation and investigates how policy approaches can support SMEs in materialising the benefits of digitalisation in this respect, thereby overcoming the structural challenges mentioned above.

Trade finance sits at the crossroads of three longstanding priority topics on policy agendas worldwide: SME access to finance, digitalisation and trade. These three areas have been identified as priorities in the Programme of Work and Budget (PWB) of the OECD Working Party on Small and Medium-sized Enterprises and Entrepreneurship (WPSMEE).

The study follows up the work developed for the 2018 SME Ministerial Conference that took place in Mexico City. A plenary session of the Ministerial Conference focused on ‘Fostering greater SME participation in a globally integrated economy’. Along with digitalisation, access to finance was addressed as one of the factors influencing the ability of SMEs to internationalise (OECD, 2018^[38]). (BIAC, 2019^[39]).

The study builds on earlier work on widening the range of financing instruments available for small firms. The 2015 WPSMEE project on “New approaches to SME and entrepreneurship finance: broadening the range of instruments” was a milestone in this matter (OECD, 2015^[40]). As an example, the role of asset based finance as an alternative for SMEs was evidenced then, and has been confirmed by the rising importance of factoring and leasing volumes on SME finance (OECD, 2019^[41]). These instruments are a large part of supply chain finance, which also show a rising tendency in trade finance volumes. Along the same lines, the G20/OECD High-Level Principles on SME Financing highlights that “Special consideration should be given to venture and private equity financing, including capital for seed, early and later stage investments, as well as to trade finance instruments” (G20/OECD, 2018^[42]).

⁷ This is part of EUR 1 billion crisis response package with an explicit focus on trade finance, via the support of financial institutions that can work with SMEs.

This work is also part of the 2019-2020 project of the Working Party on SME and Entrepreneurship (WPSMEE) on “Enabling SMEs to benefit from Digitalisation”⁸, and contribute to the wider OECD *Going Digital Phase II* project.

The report aims to respond to increased interest by governments on instruments to enable SMEs to become active internationally and integrate in global value chains. This coincides with a more challenging trade environment. Evidence suggests that global trade is slowing down and increasingly becoming intra-regional, rather than truly global, a process that is sometimes coined “slowbalisation.” (see e.g. (OECD, 2019_[14])). These developments may reduce the opportunities for small companies to engage in international activities, either directly or indirectly (as suppliers to internationally active firms) (OECD, 2019_[14]). On the other hand, strategies to increase resilience by fostering increased diversification in supply chains, along with developments in cross-border e-commerce, can also create new opportunities for SMEs. It is therefore critical to explore how to improve SME access to trade finance to support international activity by these firms. At the same time, the COVID-19 crisis may reinforce relocation and reshoring trends. Less dispersed value chains concentrated within large trading blocks may alleviate some trade finance barriers, and offer opportunities for small businesses to become internationally active.

The report is structured as follows. Chapter 2 provides insights into the recent supply and demand side trends in trade and trade finance for SMEs. Chapter 3 discusses digital financial solutions in the trade sphere, along with challenges for their adoption. Chapter 4 presents current policy approaches in the increasingly digitised trade finance environment. Chapter 5 concludes with some suggested policy options.

⁸ An important component is for example work on blockchain and SMEs (see e.g. (Bianchini and Kwon, 2020_[62]) and (Bianchini and Kwon, 2020_[135])).

2 An overview of trade finance for SMEs

An introduction to SME participation in international trade

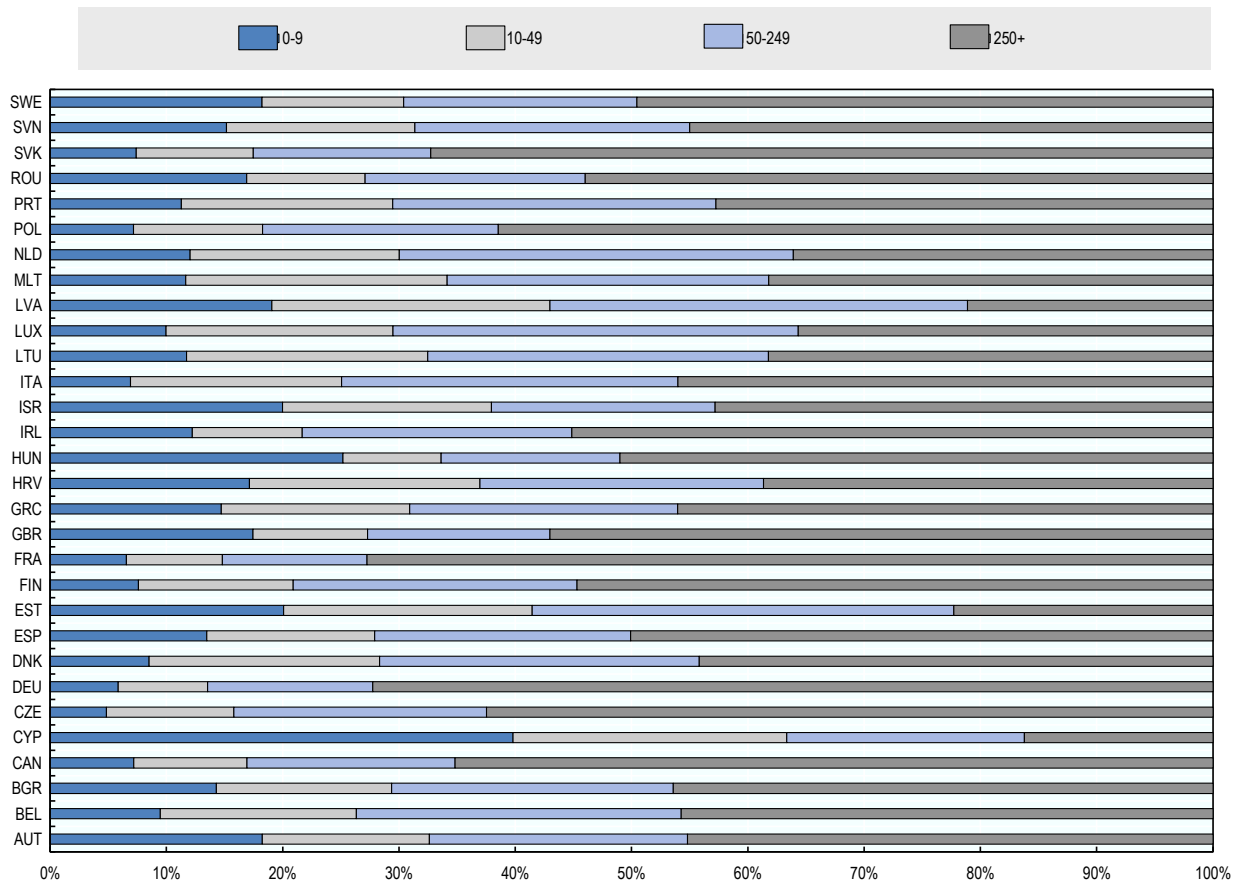
Compared to their larger counterparts, SMEs are relatively small players in international trade

In order to put trends on trade finance into context, the engagement of SMEs in imports and exports can serve as a proxy for the demand for trade finance products. Only a small proportion of SMEs is engaged in international trade including exports and imports. In most OECD countries, almost all large industrial firms export, compared to only between 5%-40% of industrial SMEs (OECD, 2019^[14]). Indeed, exporting firms have a higher propensity to use foreign inputs and engage in more imports (World Trade Organization, 2016^[43]).

The OECD Trade by Enterprise Characteristics database, which provides a disaggregation of importing and exporting enterprises by size, shows that firms with 0 to 9 employees account for only 10% of total trade. On average 57% of total trade value is generated by the group of largest firms with 250 or more employees (Figure 1). As such, this data can provide an approximation of the potential demand of trade finance stemming from SMEs.

Figure 1. SME export and import engagement

Trade value (imports + exports) by firm size, as a percentage of total trade value, 2017

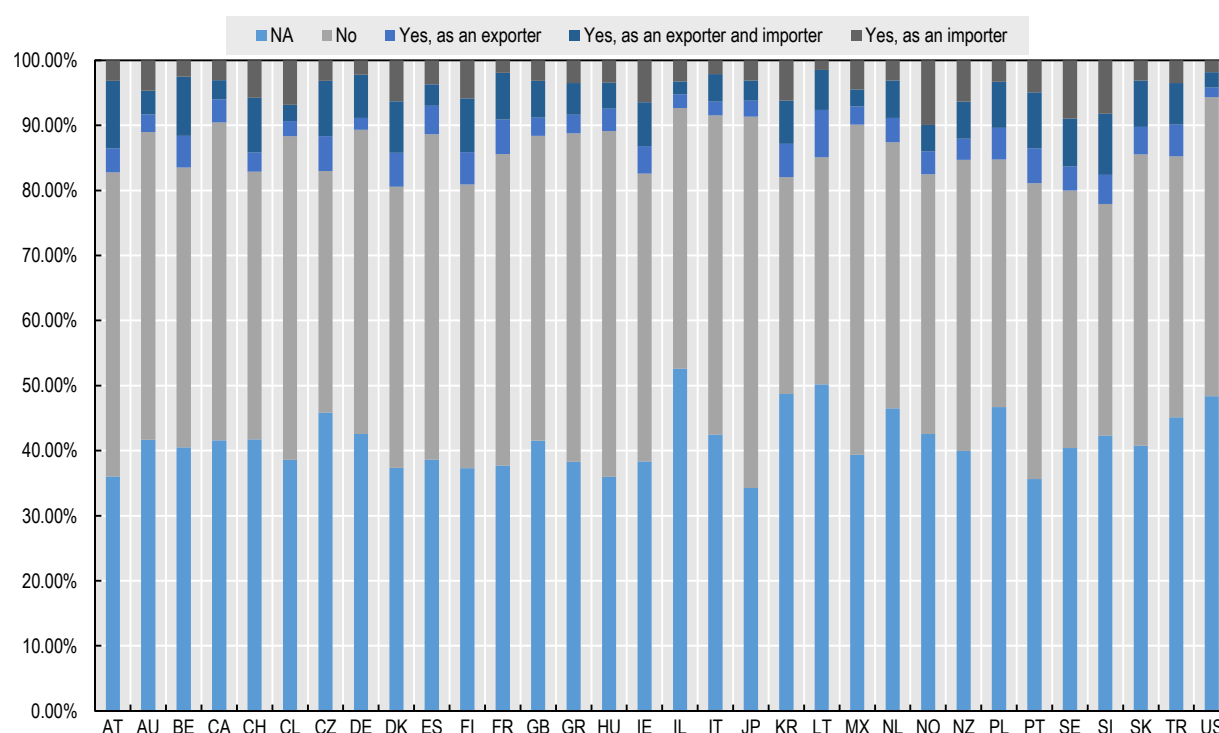


Source: Trade by Enterprise Characteristics Database, <https://www.oecd.org/sdd/its/trade-by-enterprise-characteristics.htm>.

Recent data from a joint Facebook-OECD-World Bank Future of Business Survey round in summer 2019 reveals that on average less than 15% of enterprises engage in international trade as both importer and exporter (5.6%), or importer (5.4%) or exporter (3.5%) only (Facebook, OECD and World Bank, 2020^[44]). The sample includes those enterprises with a Facebook page – and as such with a digital business dimension - who participated in the survey. For those OECD countries with available data, the share of those companies engaging in international trade in one form or the other varies between 5% and 22% (Figure 2).

Figure 2. Businesses engaged in international trade

Percentage of respondents, 2019



Note: Summer 2019 Data Collection.

Source: (Facebook, OECD and World Bank, 2020^[44])

However, an analysis of the SME contribution to total trade value, including both direct exports and imports, may underestimate the actual exposure of SMEs to international trade. Beyond direct exports, SMEs play a significant role in indirect exports as suppliers to internationally operating larger firms. This holds in particular for independent SMEs that are not part of a larger group, as well as in certain sectors such as the transport equipment sector (OECD, 2019^[14]). Here, supply chain finance instruments may play a role (section 2.3). The difference is more pronounced for larger economies such as France or Germany.

Traditional trade finance can be a factor in driving trade performance of SMEs

Access to traditional trade finance instruments is challenging for SMEs

Access to trade finance instruments⁹ is widely understood as a driver of internationalisation¹⁰. However, access to trade finance is particularly challenging SMEs that face structural issues in accessing traditional trade finance instruments (see Table 1 for an overview of trade finance instruments). The reasons are

⁹ The G20/OECD High-Level Principles on SME Financing highlight that “Special consideration should be given to venture and private equity financing, including capital for seed, early and later stage investments, as well as to trade finance instruments” (OECD, 2015^[128]).

¹⁰ As e.g. highlighted at the 2018 SME Ministerial Conference in a plenary session on ‘Fostering greater SME participation in a globally integrated economy’ (OECD, 2018^[129]).

rooted in particular in the characteristics of the different instruments, which are associated with barriers such as high cost, high complexity, HR resource-intensive workflows on the demand side, i.e. within the SME. On the bank side, information asymmetries and according resource-intensive due diligence lead to high transaction cost matched with low transaction volume. General access to finance, i.e. a banking relationship, does not solve the structural obstacles per se. Evidence shows that access to trade finance persists for SMEs and women entrepreneurs despite an established bank relationship, which is in part a result of local bank capacity as well as the regulatory environment (Auboin and DiCaprio, 2017^[45]).

Hence, the global trade finance gap is estimated to be USD 1.5 trillion in 2018, based on bank-reported rejection rates (Kim et al., 2019^[8]).

Table 1. An overview of trade finance instruments of relevance to SMEs

Traditional Trade Finance Instruments	Supply Chain Finance Instruments	
Short-term loans and working capital financing	<i>Receivables purchase mechanisms</i>	<i>Advance-based mechanisms</i>
Letter of credit (L/C)	<ul style="list-style-type: none"> • Factoring 	<ul style="list-style-type: none"> • Loan against receivables
Documentary Collection	<ul style="list-style-type: none"> • Receivables discounting 	<ul style="list-style-type: none"> • Pre-shipment finance
Guarantees	<ul style="list-style-type: none"> • Forfaiting 	<ul style="list-style-type: none"> • Distributor finance
	<ul style="list-style-type: none"> • Payables finance 	<ul style="list-style-type: none"> • Loan or advance against inventory financing

Source: Authors; SCF Instruments based on (Global Supply Chain Finance Forum, 2016^[46]).

Traditional trade finance instruments are decreasing in relevance for global trade

Traditional trade finance instruments such as letters of credit or documentary collections are typically short-term, bank-intermediated instruments that can address both risk and liquidity issues associated with foreign trade. However, traditional trade finance instruments are decreasing in relevance for global trade. The share of global trade using for example documentary credit declined from about 50% in the 1970s to an estimated 15% in 2018 (Ganesh et al., 2018^[7]).

In particular after the financial crisis of 2008, the relevance of traditional trade finance has significantly diminished (Van Wersch, 2019^[47]). In 2017, the volume of letters of credits (L/Cs, see section 2.2.4) continued its negative growth trend since 2014 and fell by 2.7% (International Chamber of Commerce (ICC), 2018^[48]).

In the same vein, an estimate by the International Chamber of Commerce suggests that 80% of global trade activity is taking place on open accounts, which means that goods are shipped in advance of payment (International Chamber of Commerce (ICC), 2018^[48]). The Bank of International Settlements highlights that one third of global merchandise trade is subject to one or more of bank-intermediated trade finance products (Bank for International Settlements (BIS), 2014^[49]). However, a clearer view on trade finance volumes, actors and flows, in particular in the context of SMEs, is currently missing (Box 1).

Total bank-intermediated trade finance revenues for traditional trade finance solutions such as documentary credits amounted to USD 27 billion in 2018 (ICC, 2019^[50]). Trade finance is a low risk asset class. Based on USD 12 trillion in trade finance volumes accumulated by 24 million transactions between 2008 and 2017, default rates are low between 0.05% for letters of credits for exports, and 0.76% for loans for both imports and exports¹¹. On average, trade finance instruments are associated with a default rate of

¹¹ These default rates are obligor-weighted.

0.15%. Compared to other asset classes as SME lending, which accumulates a default rate of 1.62% in the same period, trade finance is a relatively low-risk asset class for banks (ICC, 2019^[50]).

The traditional bank-intermediated global trade finance market is concentrated, with 13 banks providing about 90% in trade finance (International Chamber of Commerce (ICC), 2018^[48]). A high concentration also exists with respect to the currency of trade finance instruments. Traditional documentary credit is to a large extent processed via the SWIFT network, and data shows that 83% of documentary credit transactions in the SWIFT network is denominated in USD (International Chamber of Commerce (ICC), 2018^[48]). From an SME perspective, such exposure to currency risk is costly to manage.

Box 1. The data challenges in trade finance

Data on trade finance is scattered and sparse, not only for SMEs

Despite the importance of trade finance for global value chains, systemic data on trade finance volumes is largely missing. This is particularly the case for SMEs. While the G20¹² as well as the International Monetary Fund (IMF)¹³ have underlined the importance of structural collection of trade credit data, entry points to available trade finance data remain scattered.

Traditional bank-intermediated trade finance is tracked to some extent at a national level in a variety of OECD countries, mainly focusing on stock data of on-balance sheet lending activities (Bank for International Settlements (BIS), 2014^[49]). Traditional trade finance instruments as letters of credit can be proxied by using SWIFT data, which is the major transmission network for this bank-intermediated solution. Moreover, the International Chamber of Commerce (ICC)'s Trade Register data covers letter of credits for both import and export, performance guarantees and standby letters of credits, loans for imports and exports as well as a recent additional payables finance as an increasingly used supply chain finance. The register covers 25 banks operating in trade finance (ICC, 2019^[50]).

Alternatively, surveys such as those conducted by the International Chamber of Commerce (ICC) or the Asian Development Bank (ADB) can provide valuable insights into the trade finance market participants' strategies and trends. Banks' balance sheets can also provide useful insights in particular because the traditional trade finance market is rather dominated by a few banks (International Chamber of Commerce (ICC), 2018^[48]). Beyond such fragmented efforts, trade finance at a global level is currently mainly part of large macroeconomic datasets that are not specific to trade finance and hence insightful analysis cannot be derived.

Such data gaps also stem from the nature of trade finance. Documentary credits are short-term and off-balance sheet instruments issued by financial institutions, which constitute a contingent liability. In the same vein, guarantees are also contingent liabilities that become a liability only when called. As most trade transactions are on open accounts, i.e. without any bank-intermediated trade finance instruments, potential trade credit is issued at an inter-firm level between buyers and sellers. Finally, supply chain finance is gaining importance, which opens the door for new players such as Fintechs and other non-bank financial institutions, to engage in e.g. forfaiting. Tracking such a variety of different flows by different types of finance provider remains a challenge to be solved, and even more so for trade finance for SMEs.

Source: (Bank for International Settlements (BIS), 2014^[49]), (Van Wersch, 2019^[47])

¹² For further information, please see "G20 Trade Finance Experts Group - April Report Canada-Korea Chair's Recommendations for Finance Ministers" available at https://unstats.un.org/unsd/trade/globalforum/publications/mgt/UNDESA%20-%20G20%20-%20Trade%20Finance%20Experts%20Group%20-%20April_Report_2010.pdf

¹³ <https://www.imf.org/external/pubs/ft/bop/2018/pdf/18-05.pdf>

Short-term loans and working capital financing can provide liquidity to unlock trade

Short-term loans and working capital financing in the context of trade can enable engagement in exports by providing liquidity needed in the pre-shipment period to produce goods and services to be exported. While SMEs could also use access to short-term loans and facilities that are not directly dedicated to trade finance for this purpose, there are dedicated export working capital facilities provided by many commercial banks (U.S. Department of Commerce, 2016^[51]). While such short-term instruments can address liquidity issues, they are not tailored to specific economic transactions. As such, they may be combined with documentary credit forms or supply chain finance solutions in case of open account transactions. In combination with a letter of credit (L/C, see next section) the exporting SME can use the L/C as collateral to access pre-shipment finance from the bank more (Van Wersch, 2019^[47]).

Letters of Credit (L/C) provide security, but at relatively high cost

A letter of credit (L/C) is an established traditional trade finance instrument for both exports and imports that, however, comes with challenging characteristics in particular for SMEs. It is not only costly but it is also strongly dependent on the accuracy of the documentation prepared by the exporting SME concerning the transaction, including for example bills of lading. In order to leverage the full benefits of the legally secure trade finance instrument¹⁴, specialist skills are needed to deal with the documentation, which is at the heart of the financial instrument (Van Wersch, 2019^[47]). L/C are therefore being applied for larger scale transactions, which is reflected in the average value of an L/C in 2017 of USD 537,000 (International Chamber of Commerce (ICC), 2018^[48])¹⁵.

In fact, a L/C is a layering financial contract complementing but completely separate from the sales contract. For example, importers or buyers initiate the L/C by asking their bank to issue a credit to the benefit of the exporting or selling SME. The buyer pays a fee to his issuing bank. The payment obligation by the issuing bank¹⁶ to the exporter arises from the exporter's compliance with the terms and conditions of the L/C, namely the presentation of documents associated with the shipment of the ordered goods to the importer. These documents may include the commercial invoice, transport documents as bills of lading or insurance documents. The exporter generates the documents specified in the terms and conditions after shipment and receives payment immediately should the documents comply with the L/C. The issuing bank is obliged to debit the importer's account if the documents are compliant. The documents then will be released to the importer.

From a liquidity perspective, the exporting SME benefits from the payment directly upon shipment, which is basically secure if the terms and conditions pre-agreed in the L/C are met. From a risk perspective, the effect of the L/C is that the creditworthiness of the bank and not the buyer is relevant for the exporter, thereby overcoming issues regarding information asymmetries and the availability of information on the importer's creditworthiness. The issuing bank has to pay if the terms of the credit are fulfilled, even if the importer is unable or unwilling to pay. The banks participating in the L/C are exclusively concerned with the financial transaction, not the underlying economic transaction.

¹⁴ The L/C is framed by the universally adapted regulation "Uniform Customs and Practice for Documentary Credits" (UCP) by the International Chamber of Commerce (ICC).

¹⁵ While there is no central record keeping of L/C, 90% of L/C are transmitted via the SWIFT network, whose data then can be used to approximate the L/C trends (International Chamber of Commerce (ICC), 2018^[48]).

¹⁶ The L/C can include a confirming bank, which can receive and check the documents prepared by the exporter, which is for instance more secure when there are doubts about the creditworthiness of the foreign bank issuing the letter on behalf of the importer. Based on correct documents, the confirming bank can immediately pay the exporting SME. The issuing bank will reimburse the confirming bank rather than the exporter in this case. The confirming bank does reinforce and add its weight to pay the exporter; the issuing bank has to reimburse the confirming bank.

Beyond the standard L/C, special forms of L/Cs include so-called standby L/Cs, which are similar to guarantees and are only called in cases of non-payment by the importer, revolving L/Cs, i.e. a specification applying to regular transactions between buyer and seller, and transferable L/Cs, which are useful in case the exporters or importers work with intermediaries that buy or sell on their behalf.

Documentary collections can provide a cheaper alternative to letters of credit (L/C)

Alternatives to L/Cs are documentary collections. In these cases, the bank involved in the transactions operates as a facilitator of the financial transaction, but not as a guarantor. That is, the counterparty risk of the exporter is with the importing enterprise, as the intermediating banks are not obliged to pay in case of unwillingness or inability of the importer. As a result, the exporting SMEs faces higher risk, but in general, the instrument is less expensive and complex than L/Cs. In documentary collections, the exporting SME contacts the bank to initiate the instrument. The bank transfers the documents related to shipping to the importer's bank, which delivers the documents to the buyer on payment of the invoice. As with L/Cs, the exporting SME can seek pre-shipment finance from his bank against the incoming payments subject to the documentary collection, which can improve access to finance in particular for SMEs that often face issues of lacking collateral.

The risk of non-payment can be mitigated by the use of guarantees

Lastly, guarantees play a role in mitigating counterparty risk in trade finance. Different types of guarantees as demand guarantees or advance payment guarantees are available to address specific risk coverage requirements by exporters and importers. Demand guarantees¹⁷ for example are bank guarantees that - when called - reimburse the importer with a pre-guaranteed amount if the exporter fails to comply with contractual agreements. Compared to L/Cs, demand guarantees are also available to cover non-performance regarding with the underlying economic transactions. However, typically guarantees are issued taking into account local laws, which can involve unfamiliar jurisdictions – for example for first time SME exporters to unknown countries - that impose additional risk (Cowdell and McGregor, 2014_[52]).

Advance payment guarantees for instance can address risks associated with the importing entity's advance payment in case the exporter fails to deliver on the contract. Here, again, the banks assume the counterparty risk associated with the exporter. At the same time, banks do not hold any titles or collateral regarding the underlying transaction, as in L/Cs, where they hold back the documents until payment by the importer, so banks may be reluctant to issue guarantees for opaque entities such as SMEs.

Supply chain finance (SCF) solutions can improve the working capital conditions of SMEs

Supply chain finance solutions are gaining traction in the context of global value chains

As indicated, over recent years, the significance of traditional trade finance instruments has continuously decreased, which is also driven by the integration of both physical and financial supply chains into global value chains (GVCs) (Van Wersch, 2019_[47]). While physical supply chain processes refer to the logistics around trade, the financial supply chain aspect encompasses all financial processes associated with a transaction, whereby SCF is a service area in support of the financial supply chain (Global Supply Chain Finance Forum, 2016_[46]).

A growing majority of global trade is conducted in so-called open account transactions, which refer to trade transactions where goods are shipped in advance of payment (Bank for International Settlements (BIS),

¹⁷ Such guarantees are subject to widely adopted regulation by ICC's *Uniform Rules for Demand Guarantees*.

2014^[49]). Open account transactions typically facilitate supply chain finance (SCF) solutions. According to the Global Supply Chain Finance Forum (2016), supply chain finance refers to “the use of financing and risk mitigation practices and techniques to optimise the management of working capital and liquidity invested in supply chain processes and transactions”. SCF transactions take place inter-firm or is intermediated by both banks and non-bank financial institutions that for example provide logistics, or invoicing solutions (Global Supply Chain Finance Forum, 2016^[46]).

Banks are still relatively limited players in the SCF domain. The ICC Global Survey on trade finance among 251 banks in 91 countries shows that 85% of bank activities take place in traditional trade finance, whereas only 15% of activities are in the SCF area. In respect of volumes, USD 4.6 trillion of traditional trade finance was provided in 2017, compared to 813 billion in supply chain finance solutions (International Chamber of Commerce (ICC), 2018^[48]).

Total bank-intermediated trade finance revenues for both traditional trade finance solutions and modern supply chain finance solutions amounted to USD 48 billion in 2018. Thereof, open account trade revenues increased by 12% year-on-year to USD 21 billion in 2018. Banks that are among those most actively operating in this business area report more than 30% of growth over the last year. (ICC, 2019^[50]).

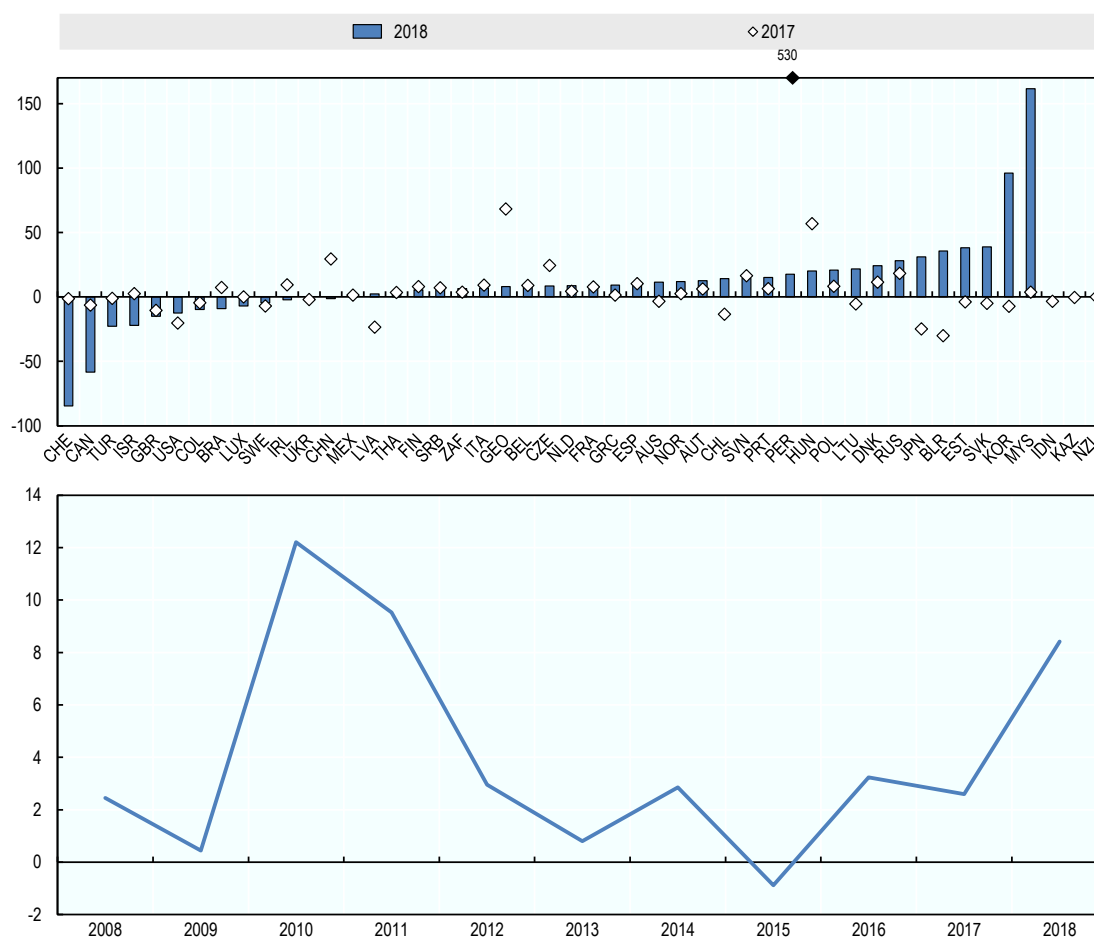
Factoring enables SMEs to access liquidity more quickly and to lower repayment risk

Supply chain finance covers two categories for entry points for financial mechanisms, including receivables purchase and advance-based mechanism (Global Supply Chain Finance Forum, 2016^[46]). Among the receivables purchase category, factoring is of major relevance for SME exporters. Factoring allows SMEs to improve their liquidity and risk situation without the use of traditional trade finance instruments. Thereby, the exporting SME can work with a factor as a provider of finance. In doing so, the factor will assess one or more transactions between the seller and buyer and agrees to provide up to 80% of advance financing to the SME exporter, as well as the remaining invoice amount at the invoice due date, deducted by a service charge. The exporting SME benefits from outright liquidity reflecting the outsourced counterparty risk to the factor, who, in the case of non-recourse finance, reimburses the SME exporter even if the importer does not pay.

Factoring has been increasingly used since 2010. In 2018, factoring showed a median growth of 8.42% in 31 out of 45 countries that are part of the OECD Scoreboard (OECD, 2020^[53]). While factoring volumes declined significantly in Canada, Switzerland and Turkey, growth rates in some countries as for example Korea nearly doubled in 2018 (see Figure 3).

Figure 3. Factoring growth rates by country and Scoreboard median

Year-on-year growth, as percentage



Source: Factors Chain International (2019) in (OECD, 2020^[53])

A variety of other receivable purchase instruments are available to improve the cash situation of SMEs

Other SCF instruments within the receivable purchase category include (1) receivables discounting, (2) forfaiting, and (3) payables finance, or reverse factoring (Global Supply Chain Finance Forum, 2016^[46]). (1) Receivables discounting is a concept typically used in the context of large corporate sellers and of less relevance for SMEs. A receivable purchase agreement (RPA) is established with a finance provider, who provides finance with a discount to the corporate upon presentation of a receivable subject to the agreement.

(2) Forfaiting is only used in international trade and does not concern the underlying economic transaction as in factoring, but deals with so-called negotiable instruments such as a L/C or bills of lading. The finance provider acts upon such payment-triggering documents and provides finance immediately upon receipt of them, improving the seller's liquidity situation and removing the counterparty risk associated with the default of the buyer. (3) Payables finance is particularly relevant for exporting SMEs delivering to and benefiting from large corporate partners. Such a corporate buyer can identify single or multiple transactions that he/she is committed to pay, and arrange financing that will be provided by a finance supplier to the

SME supplier. The financier here relies on the creditworthiness of the buyer, who is obliged to repay the financier.

Loan or advance-based instruments leverage SMEs' engagement in trade to access finance

Loan or advance-based SCF includes two instruments of major relevance to SMEs (Global Supply Chain Finance Forum, 2016^[46]). A loan or advance against receivables provides an opportunity for the exporting SME to access finance in the form of a loan or a credit facility by leveraging receivables as collateral vis-à-vis the financing provider. This improves the SME's access to, and terms and conditions of, external finance. The selling SME can use the invoice payment at due date to repay the loan. As such, this instrument addresses liquidity constraints by enabling earlier pre-shipment access to cash.

Pre-shipment finance, which is usually applied in the case of an SME obligor (Global Supply Chain Finance Forum, 2016^[46]), enables the seller to access finance in the form of a loan for raw materials or related working capital needs based on an order, a L/C or other documentary credit issued by the buyer on behalf of the seller. That is, the creditworthiness of the buyer and the resulting probability of future payment of the buyer are of relevance to the finance provider.

Distributor finance is another SCF mechanism that can benefit SMEs that operate as distributors, i.e. buy and resell products from sellers. In the case of distributor finance, the SME can benefit from the creditworthiness of a typically large corporate seller. A finance provider bridges the SME's liquidity gap between the purchase of the goods and the incoming payments from buyers.

Loans or advances against inventory financing enables access to finance by utilising an inventory of goods as collateral. The finance provider receives ownership of the inventory for the duration of the loan. The borrower can access liquidity in the phase between procurement and sales.

3 Digitalisation in SME trade finance: recent developments

Digitalisation in trade and trade finance may benefit SMEs in particular

Trade and supply chains, including related financing, are subject to innovations and changes driven by ongoing digitalisation and new technologies. Efforts to establish more efficient processes, to develop instruments that are more effective, and the emergence of a new landscape of players in the trade financing ecosystem, are driving the product class.

Technological solutions are likely to increase process efficiencies, and address costly regulatory compliance alongside information asymmetry issues, and SMEs may be well positioned to be the beneficiaries of ongoing digitisation. The Asian Development Bank (ADB) showed in a recent survey that 85% of banks participating in the survey were ramping up their efforts to harness technology to cater to more SMEs (Kim et al., 2019^[8]). Digitalisation is expected to improve engagement with SMEs in terms of its potential to conduct KYC procedures at lower cost and higher speed (79% of respondents agree), improve the data availability for SMEs (73%), enable the development of new products (70%), and, overall, may reduce the rejection rate of proposals by SMEs (46%) (Kim et al., 2019^[8]).

Digitalisation can impact and be harnessed not only from the supply side of trade finance, including traditional bank players providing traditional trade finance solutions, but also by new actors from the start-up sphere. In addition, demand-driven digitalisation by SMEs, for instance by digitising internal processes or trading on dedicated platforms, can enable a stronger position in accessing trade and supply chain finance.

Recent digital developments in the trade finance landscape are changing the ways trade finance is conducted

Banks and new players are driving processual digitalisation with respect to KYC procedures

Trade finance supply-side digitalisation concerns products and processes offered by banks and other financial institutions, but also non-bank financial institutions and new actors such as Fintech companies¹⁸. Digitalisation provides significant scope to improve operational efficiency as well as the quality of credit risk assessments (ICC, 2019^[50]).

¹⁸ Process digitalisation is also advancing on the ECA side, which are not subject to this paper. Public players as the French Bpifrance Assurance Export use online applications, online eligibility tests for credit insurance, as well as the advance on the digitalisation of the KYC processes.

Specifically related to trade finance, the centralisation of KYC databases is a promising solution for addressing compliance issues at cost-effective rates. These are centralised databases that provide the same information about a client to multiple finance providers. Currently, every provider has to conduct a due diligence process for each client, which increases transaction costs and time. While this process is similar for all financial products, it is particularly resource-intensive in trade finance, since often only the exporter (importer) is an immediate client of the issuing bank, whereas the importer (exporter) has a different house bank.

Consequently, banks rank this technological solution very high in importance in addressing compliance challenges (61% of respondents of a BNYM survey 2019 view centralised KYC databases as the most effective technology solution for addressing compliance issues (BNY Mellon, 2019^[21]). An example of an operating central KYC database is SWIFT's KYC Registry, which is connecting more than 5,000 banks with the aim to accelerate an exchange of KYC data and documents. Since December 2019, the platform is also open to corporates, which can manage their multiple bank relationships and the respective KYC requirements via the platform (SWIFT, 2020^[54]).

Distributed ledger technologies (DLT) (Box 2) are also being explored to provide decentralised access to KYC information, such as the Komgo SA platform, which brings together commodity trading partners including 15 global institutions as banks, trading companies and oil and gas corporates (Euromoney, 2019^[55]). The platform uses the Ethereum chain to enable encrypted exchange of documents on a need to know basis (Societe Generale, 2018^[56]). Moreover, a variety of banks such as BNP Paribas and China Merchants Bank and their corporate clients have tested decentralised KYC platforms building on R3's Corda DLT. In a pilot, banks accessed KYC information about clients through the network, whereby the DLT-enabled model enables self-sovereignty on the client side. Corporate customers are able to create and manage their own identities and consequently the amount of information shared with each bank (Finextra, 2018^[57]).

E-documentation is increasingly facilitating the digitalisation of trade processes

Such internal process digitalisation is complemented by increasing efforts to digitise trade and trade finance documentation in general. Research indicates that SMEs benefit from streamlining and the automation of trade documents and cross-border processes more than their larger counterparts (López González and Sorescu, 2019^[58]). So far, paper-based documentation constitutes the backbone of traditional trade finance instruments such as letters of credit, triggering and inducing payment obligations by banks involved. Preparation, processing and verification of paper-based documentation across the trade (finance) chain remains highly cost-ineffective and time-consuming. Electronic trade documents such as electronic bills of lading that are already operational include for example essDOCs, eTitle from Singapore, eDoxonline or eBLs, which are offered by Bolero, which is co-founded by SWIFT and has provided e-documentation since 2002 (Bolero, 2019^[59]). Moreover, CargoX provides electronic Ethereum-blockchain-based transport documents on-chain including bills of lading and future plans include cryptocurrency transaction system (European Union Blockchain Observatory & Forum, 2019^[60]), (CargoX, 2020^[61]). In another example, the Israeli company Wave, offers a document exchange network to facilitate international trade, which allows importers and exporters to exchange bills of lading easily, securely and transparently. The platform connects banks, carriers, traders and other trade-related entities, without the need to create electronic duplicates of the documents, thus increasing trust and lowering costs (Bianchini and Kwon, 2020^[62]).

More structurally across the global value chain, a so-called GVC passport (Business at OECD (BIAC), 2020^[63]) aims at providing a coherent solution for SME participation in international trade. This one-time effort enables SMEs (and larger companies, though SME would benefit most from such efforts due to relatively higher transaction costs) to keep up with financial compliance requests in the trade finance process, by proving its role as legitimate business entity across participating countries. Over time, SMEs

could build a digital track record in respect to their trade finance activities, without the need to duplicate efforts to verify such information vis-à-vis trade finance stakeholders such as banks.

Despite these efforts, digital documentation has not become fully mainstreamed (see section 3.5). For example, the actual usage of ebills of lading is limited, though conducive regulatory efforts at the level of the United National Commission on International Trade Law (UNCITRAL) are ongoing with the adoption of the Model Law on Electronic Transferable Records (MELETR) (see sections 4.5 and 5.2). Fragmentation of digitalisation efforts does play a role (section 3.5.1.), as well as the need for alignment and wide adoption of digitalisation efforts from public – e.g. customs and other border agencies - and private actors, including the legal frameworks in place (ICC, 2018^[64]). Moreover, challenges to digitalisation of documentation are associated with different modes of transport that require different types of documentation, i.e. rail, shipping, road (Digital Transport & Logistics Forum, 2018^[65]), as well as the different levels of development at country-level, including in the set up of the technological infrastructure.

Other areas of trade operations are being digitised with the goal to improve efficiency

The digitalisation of supply-side processes also include the digitalisation of internal systems so that trade finance applicants no longer need to prepare paper application forms that have to be manually signed (Ganesh et al., 2018^[7]). Moreover, the optical character recognition technology can support the verification of external document for internal use. As such, this technology can reduce cost and inefficiencies with the verification and compliance of external documents (Dicaprio and Malaket, 2018^[66]), (Ganesh et al., 2018^[7]).

An additional enabler of advance digitalisation and efficiency of processes in trade finance is the so-called application programming interfaces (APIs) that establish interoperability across IT infrastructure, as in the financial system for example. An API allows gathering data from a variety of different programmes and sources into one single programme. APIs in the banking sector allow a direct exchange of information between banks and the interfaces used by their clients, i.e. programs or applications. In doing so, banks become open platforms that can adapt to a variety of different functions that may also be developed and/or offered by third parties. As such, banking becomes a service that provides the clients with a variety of solutions beyond in-house ones.

In September 2019, a first bank guarantee for trade finance was issued via the API between ING and Standard Bank. The API for banking guarantees was developed by HSBC and allows other banks to the aforementioned two to provide transparency for clients. Clients can observe the status of their bank guarantees in real time on their own banking platform, while the guarantee itself is issued by HSBC (White, 2019^[67]) (ING, 2019^[68]).

Beyond operational benefits, digitalisation can reduce asymmetric information issues

Beyond such improvements of operational procedures, which by one estimate have the potential to generate between USD 2.5 and USD 6 billion in savings (ICC, 2019^[50]), digitalisation may impact the accuracy of credit risk assessments of trade finance applicants. For example, big data analytics enabled by artificial intelligence tools such as machine learning can enhance the due diligence process by retrieving data about and from the client from online sources such as digitised financial accounts or social media and allow an automated interpretation of such data. Such improved quantity and quality of data may in particular benefit SMEs, which are often unattractive clients for (trade) finance given the relatively high transaction costs triggered by their opacity and resulting asymmetric information issues in relation to low financing volumes (Owens and Wilhelm, 2017^[69]) (ICC, 2019^[50]).

An example of a platform working to leverage various information to overcome asymmetric information issues is Compeon, a German tech start-up that connects data and financing request from SMEs with large companies, banks, equity investors, guarantors, innovation support agencies, and public and private data

bases (Compeon, 2020^[70]). Though it is neither directed to trade finance or international operation, it shows the potential of digitalisation of information for access to finance.

Box 2. Blockchain and trade finance

Distributed Ledger Technologies (DLT) such as blockchain can play an important role in digitising traditional documentary credit (Ganesh et al., 2018^[7]), (World Trade Organization, 2016^[20]) as well as supply chain finance (World Trade Organization, 2016^[20]). Their key features address major bottlenecks that exist in trade finance. Most importantly, DLT can create trust between parties that do not know each other as well as trust in data and documentation. Applied to trade finance, DLT based technologies such as blockchain can enable

- trust in digital documents by certifying their provenience and correctness;
- trust in digital trade and trade finance transactions;
- digital identification of trade (finance) stakeholders and thus address KYC compliance;
- expanded access to carriers, freight forwarders and brokers, and other supply chain agents;
- smart contracts that could be applied to automate trade logistics and payment processes, thereby overcoming one of the biggest challenges in trade, i.e. the incongruence of preferences of payment (at shipment or delivery) (European Union Blockchain Observatory & Forum, 2019^[60]);
- secured and efficient transactions with an exchangeable virtual currency that could improve access to (trade) finance (OECD, 2019^[71]);
- better data availability by enabling a track record of trade transactions that could improve access help to reduce the number of rejected financing proposals (Kim et al., 2019^[8]), (OECD, 2019^[71]).

The blockchain's tamper-proof system is the major driver of trust; it also creates challenges in respect to erroneous data fed into the chain, which cannot be revised. Such issues need to be addressed before data is fed into the chain. Suggested solutions to manage data and ensure data quality include GPS trackers, or artificial intelligence (European Union Blockchain Observatory & Forum, 2019^[60]).

In general, while the expectations regarding blockchain in transforming (not only) the world of finance have been high, applications at scale are limited (see e.g. (Sandner, 2020^[72])). A variety of different actors is testing and already operating DLT-based trade finance solutions including many platforms (see below). However, interoperability between existing and developed solutions as well as scalability has not yet materialised. In order to achieve scale in trade, a position paper by the European Blockchain Observatory and Forum highlights that standardization as well as buy-in from regulatory authorities are needed (European Union Blockchain Observatory & Forum, 2019^[60]). The ICC moreover classifies DLT as a "wild card" technology that could transform trade finance, or just not hold up to expectations (ICC, 2019^[50]).

Source: Authors based on references indicated.

Ramping up their internal processes could help SMEs to harness the benefits of digitalisation

Moreover, in order to achieve broad uptake of digital solutions in trade finance, acceptance and adaption is required on the demand side. SMEs do not only need the technical skills for digitalisation of internal processes, but also upfront investments and organisational changes, which may be costly and time-consuming. Kim et al. (2019) show a limited adaptation of technology on the demand side of firms, whereby

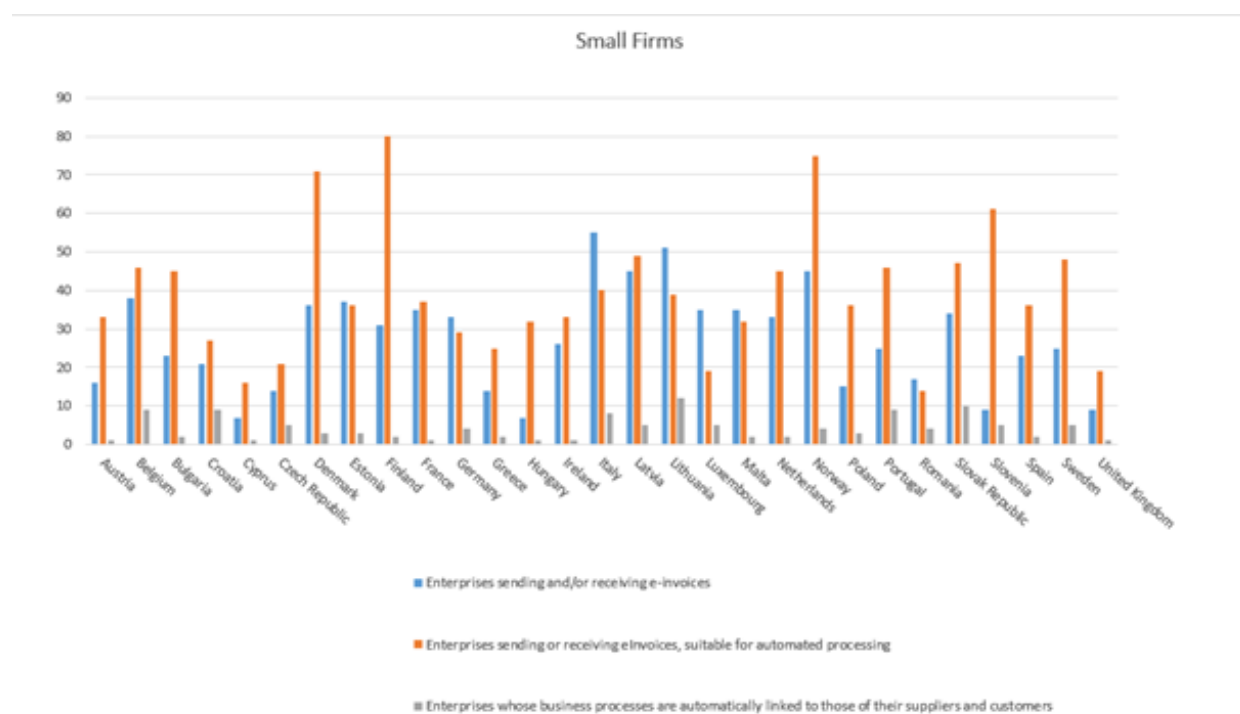
only 26% of firms surveyed make use of electronic documentation filing. Electronic invoicing, for example, would in particular facilitate payables financing models in supply chain finance solutions. Another potential benefit is quicker invoice approval, which would enable suppliers to discount such electronic invoices more efficiently (Global Supply Chain Finance Forum, 2016^[46]).

Data from European companies reveal that the adoption of relevant digital tools, such as e-invoice systems suitable for automatic processing, e-invoicing in general and business processes that are automatically linked to other firms in the value chain, varies significantly by firm size. In general, larger firms are much more likely to use these tools than their smaller counterparts.

According to a recent survey, about 60% of SMEs in France, Germany, Poland, Spain and the UK are already engaged in electronic invoicing, and an additional 24% are not yet engaged but plan to do so in the next two years. At the same time, the share drops to 20% with respect to the usage of artificial intelligence (Bpifrance et al., 2019^[12]).

At the same time, there is also considerable variation in the adoption rates of these tools among SMEs across countries. Small firms in countries in Central Europe, but also the United Kingdom, lag behind, while adoption rates are relatively high in Nordic countries (see Figure 4).

Figure 4. The adoption rate of selected digital tools among small businesses



Note: Data for “Enterprises sending and/or receiving e-invoices” refers to 2010. For the “Enterprises sending or receiving eInvoices, suitable for automated processing” variable, data refer to 2016 or 2017. One exception arises with the medium enterprises class for Portugal for which data refers to 2014. Lastly, for Enterprises whose business processes are automatically linked to those of their suppliers and customer” data refers to 2009.

Source: Eurostat, author’s calculations

Data from 2019 on German SMEs shows that SMEs were planning to ramp up their digitalisation activities. About 38% of survey respondents planned to invest in digitalisation in 2019, but in fact, average digitalisation expenditure stagnated at EUR 17 000 in 2019 (KfW, 2019^[73]). Furthermore, the COVID-19 crisis has exposed the importance of digitalisation and spurred SMEs to accelerate their adoption of digital

tools and technologies. An increasing number of jurisdictions are ramping up support measures in this area in light of the persistent “digitalisation gaps” between small firms and larger ones. Measures in this area broadly come in three areas: teleworking, e-commerce and digital infrastructure (OECD, Forthcoming^[74]).

The digital era is also expanding the range of trade finance instruments for SMEs

Digitalisation not only relates to processes, but also enables the establishment of new trade finance instruments and actors in the ecosystem. In respect to digitalisation and trade finance instruments, the bank payment obligation (BPO) was introduced in 2013 as an ICC-standardised electronic inter-bank trade finance instrument that serves as an enabling framework for supply chain solutions (Global Supply Chain Finance Forum, 2016^[46]) while complementing traditional trade finance instruments as L/Cs. It works in open account settings, since no documentation is exchanged between banks, as in L/Cs. Rather, documentation is transferred between seller and buyer, whereas data extracts of this documentations are exchanged electronically between banks. This is used to address payment risk between banks, whereby an irrevocable payment is provided by the buyer bank to the seller bank conditional on such information. In a traditional L/C, the beneficiary is the exporter, not the exporter’s bank. The BPO is an entry point for banks to provide further supply chain finance solutions (ICC, 2018^[75]).

While the BPO can reduce transaction costs of mitigating trade related payment risks by introducing electronic data exchanges, its uptake has been limited. It is criticised for only digitalising a sliver of the trade finance process, being too bank-focused, while making it too complex for businesses to understand the concept. Moreover, each bank has to be cleared to offer BPOs, and needs to establish the processes and skills enabling BPOs (Ganesh et al., 2018^[7]), (Ganne, 2018^[76]).

The landscape of players providing trade finance for SMEs is evolving

Online platforms connect SMEs with suppliers, buyers and finance providers

More and more online platforms and portals are connecting finance providers with buyers and sellers in order to provide both traditional trade finance solutions as letters of credit or supply chain finance solutions (Global Supply Chain Finance Forum, 2016^[46]), (Van Wersch, 2019^[47]), (International Chamber of Commerce (ICC), 2018^[48]). Many of those platforms are backed, developed and driven by financial institutions, often times in cooperation with technology companies. For example, a blockchain-based platform named Contour, recently incorporated in Singapore and formerly named Voltron, founded by banks such as BNP Paribas, HSBC, ING, NatWest, SEB, or Standard Chartered in conjunction with implementation partners as Bain or R3 is addressing inefficiencies in documentary credit by introducing electronic issuances, exchange and documentation of L/Cs. In a first international deal, Standard Chartered announced that the time to process L/C documentation had been reduced to 12 hours, compared to 5 days without the platform (Standard Chartered, 2019^[77]). The platform is based on R3’s Corda blockchain and still in the early phases of its development (Ledger Insights, 2020^[78]). In August 2020, Standard Chartered conducted its first cross-border Letter of Credit blockchain transaction. This pilot, involving the shipment of an oil product from Thailand to Singapore, was deemed successful and could be scaled up in the future (Standard Chartered, 2020^[79]).

In addition, Komgo SA is not only facilitating the KYC process in trade finance, but also enabling the issuance of digital L/Cs for commodity trade via the Ethereum based platform. The platform is backed by 15 large banks and trading companies, such as Citi or Macquarie. By October 2019, more than USD 700 million in trade finance were processed via the platform (Consensys, 2020^[80]).

Another platform is Marco Polo, which is built on R3's Corda blockchain as a joint undertaking between TradeIX and R3, which is bringing together banks and corporates (Euromoney, 2019^[55]). The platform will enable direct connection between corporates and financial institutions to facilitate both traditional trade finance and supply chain finance solutions. More specifically, the one-stop-platform can be directly linked to corporates' internal IT systems. The platform, after initial delays, is expected to go live in the second quarter in 2020 (Marco Polo, 2020^[81]).

Another platform already operational includes Singapore-based dltledger, which facilitated USD 3.3 billion of deals since the end of 2018 and announced an USD 12 million trade finance transaction involving a cross-continent shipment for agribusiness firms Cargill and Agropcorp. Rabobank was a financial provider involved in the blockchain-based documentary finance transaction (Ledger Insights, 2020^[82]).

Supply chains finance solutions are offered by digital platforms

For open account transactions that are not subject to any traditional trade finance solutions, several platforms are using blockchain-based smart contracts to deal with the payment risk. Such smart contracts can automate payments conditional on certain requirements regarding the transaction being met. Moreover, such platforms can facilitate the approval of orders and their use for receivable finance, as well as the tracking of shipment and payments (Global Supply Chain Finance Forum, 2016^[46]).

We.trade is a platform directed to SME buyers and sellers, facilitated by 12 European banks. By establishing a standardised registration process for SMEs subscribing to the platform, the platform clears all participants with respect to KYC compliance. The platform is based on Hyperledger's Fabric blockchain. It allows SMEs to find counterparts to undertake open account trade transactions, whereas the blockchain system allows all parties to have access to the same documentation in real time.

At the same time, the platform introduces a new supply chain finance instrument called bank payment undertaking (BPU). Smart contracts trigger automatic payment by the buyer's banks to the seller once the contracted conditions for a transaction are met. That is, counterparty risk of the seller is transferred to the buyer's bank, which is mechanically obliged to pay regardless of the buyer's ability or willingness to pay. According to we.trade, the instrument is very similar to the BPO, though a) it is based on smart contracts, and b) automatic payment is made from the buyer's bank to the seller, not the seller's bank. Moreover, it is not governed by ICC standards but by the law of England (we.trade, 2020^[83]).

Also for open account transactions, and similar to we.trade, eTradeConnect is a platform established by the Hong Kong Monetary Authority and 12 Asian banks. It focuses on Asia and builds on DLTs in order to prepare and exchange digital trade documents, as well as facilitating applications for and accessing working capital from participating banks (eTradeConnect, 2020^[84]).

Focusing on SMEs in emerging markets, the Trade Finance Market platform in Singapore engages in receivables and invoice finance instruments with a maturity of up to 120 days. The platform links SMEs with institutional investors, trade finance funds as well as family offices, i.e. only professional non-bank investors. The platform also offers blockchain-based solutions to perform invoice checks and warehouse receipts checks, thereby enabling a test to verify that the transaction or collateral is not submitted twice (Trade Finance Market, 2020^[85]).

Banks and Fintechs are joining forces to push and leverage the ongoing digitalisation

The strong presence in and push for platforms in trade finance by banks reveals that banks are integrating the ongoing digitalisation in the area of trade finance, as shown by the survey of the International Chamber of Commerce (2018). To that end, 45% of banks participating in the survey plan to focus on digital trade including engaging in developing and launching dedicated platforms to facilitate trade finance. Moreover, 43% will consider establishing partnerships with Fintechs which play often a pioneer role in trade finance facilitation (International Chamber of Commerce (ICC), 2018^[48]).

An example for such a partnership is the one between Barclays and the Israeli start-up Wave, which together conducted one of the first blockchain-based trade finance transactions in 2016. Wave is a start-up based in Israel that runs a blockchain-based peer-to-peer network for exchanging digitised bill of lading documents. The start-up participated in Barclays' accelerator programme in 2015 (Barclays Corporate, 2016^[86]) (Bianchini and Kwon, 2020^[62]). Such collaboration and integration of banks and Fintechs is called "Fintegration" (Van Wersch, 2019^[47]), which can take different strengths from customer referrals only to strategic and technology integration, joint ventures or acquisitions, for example (Owens and Wilhelm, 2017^[89]). However, while banks continue to play a significant role in traditional documentary credit and other trade finance instruments and are pushing for digitalisation in the field, they are operating to a lesser extent in the supply chain finance business.

Fintechs are proposing innovative solutions to trade and supply chain finance

Trade finance is undergoing significant changes due to the rise of Fintechs in supply chains (Rogers, Leuschner and Choi, 2016^[87]). As new player in the area of supply chain finance, they provide digital online solutions for managing working capital across the supply chain (Van Wersch, 2019^[47]). This includes accounting software or invoice management tools and access to finance providers such as Primerevenue. The platform offers both accounts payable and accounts receivable financing. After the buyer has approved the invoice, which can be digital, it can be uploaded to the platform and offered for early payment by one of the 60 financial institutions connected to the platform. Moreover, an online tool gathers relevant Know Your Customer (KYC) information from the supplier for the finance provider (Primerevenue, 2020^[88]).

Fintechs also operate at the interface between SME sellers and buyers. Blockchain-based solutions allow SMEs to engage in international trade as they remove potential intermediaries that are no longer needed to connect buyers and sellers. For example, FastTrackTrade builds on blockchain to facilitate trade between SMEs. Moreover, the participating SMEs have direct access to trade finance solutions provided by Fintechs based on their track record (Ganne, 2018^[76]). In a similar vein, an increasing number of more established digital retailers, such as Amazon and Ebay, are not only providing SMEs with the opportunity to connect digitally with potential buyers and sellers, but also offer complementary services related to logistics and finance, for example. Such one-stop shop solutions are viewed as particularly useful for MSMEs (Lopez-Gonzalez, 2019^[89]).

Amazon Lending, for example, is providing eligible sellers on their platform with a loan in order to purchase additional inventory, which can be sold through the website. The loans have interest rates between 6 and 17 per cent. However, despite high ambitions, the loan programme is facing declining growth rates (Financial Times, 2019^[90]). Ebay cooperates with Banco Santander-owned Fintech Asto to disburse loans to SMEs in the UK. Data from Ebay is used to assess SMEs' creditworthiness (The Economist Intelligence Unit, 2019^[91]).

Another example of new trade finance providers is the cooperation of the platform Twiga Foods with IBM. Twiga Foods was set up to connect sellers, in this case farmers, and buyers, such as food stalls and kiosks, in Kenya for the trade of bananas, potatoes, etc., via mobile phones. By collaborating with IBM, they are now able to provide working capital loans to buyers via a blockchain-based lending platform. The creditworthiness of the borrower is assessed with the help of machine learning and the processing of mobile data and historic transaction payment behaviour. Based on purchase order, the buyers are then offered microloans to fund a specific order. The loan is applied for via SMS and granted via smart contracts (IBM, 2018^[92]).

Challenges persist in making digitalisation work for SME trade finance

Mainstreaming technology across the supply chain remains a challenge

While trade finance is indeed increasingly affected, enhanced and transformed by the era of digitalisation, significant challenges continue to stand in the way of a wide uptake and hence major benefits for SMEs in accessing trade finance. These include challenges related to the technological solutions, as well as on the supply and demand sides of trade finance.

In terms of technology-related challenges, the major obstacle for mainstreaming digital solutions in trade finance is the fragmentation of current initiatives. Different platforms are emerging, involving exporting and importing SMEs, banks and other finance providers, export intermediaries such as brokers, credit insurers, shipping companies, insurance companies, tax authorities, technical regulation authorities and control bodies, among others. Often, these platforms are not interoperable, leading to a fragmented landscape and posing challenges for initiatives to operate at scale.

Along the trade process value chain, digital but stand-alone solutions are being developed for trade documentation, such as electronic bills of lading and invoicing, to trade finance (see also (World Trade Organization, 2016_[20])), operational examples include essDOCs which for examples allows a faster vessel turnaround (for more initiatives developing e-bills of lading see section 3.2.2.).

At the same time, multiple, sometimes overlapping, solutions are under development or already applied that are not integrated and often not even interoperable. Often times, there is no “end-to-end digitalisation”, and traditional paper-based solution bridge the last-mile (Ganesh et al., 2018_[7]). The industry is referring to so-called “digital islands” when highlighting the fragmentation challenge in international trade digitalisation (see (Dicaprio and Malaket, 2018_[66])). The disconnectedness across major platforms and technologies is considered to be a major systemic bottleneck (International Chamber of Commerce (ICC), 2018_[48]). For example, it is estimated that some exporters are currently dealing with more than 50 platforms (Sutter, 2019_[93]).

While technology can bring a variety of benefits in trade finance as presented in the previous chapter, it also introduces new risks, such as cyber risks and human and machine errors, as well as third party risks when banks and other trade finance actors engage with partners as Fintechs or in consortia (ICC, 2019_[50]).

Indeed, digitalisation is rather new, and many solutions are at an early stage. As the digitised solutions mature, the market may converge towards a limited number of interoperable solutions, similar to what took place in online finance after the initial proliferation of platforms and providers, as well as in the online payment sector.

Indeed, such a development can be seen in increasing collaboration in the sector, which is for instance reflected in a Memorandum of Understanding for future collaboration that was recently signed between eTradeConnect and we.trade, two major platforms in digital trade finance (Hong Kong Monetary Authority, 2018_[94]). Moreover, the platform eTradeConnect has conducted two proofs of concepts that spur interoperability with existing platforms and procedures, which includes the interoperability of data exchanges across the trade process from financing to shipping, as well as the integration of the platform with corporates’ procurement systems (eTradeConnect, 2019_[95]).

Banks remain hesitant to embrace digitalisation as a solution to trade finance issues

On the supply side of trade finance, the lack of globally accepted standards and laws concerning digital (trade) finance is one of the major concerns why banks refrain from using technology (Kim et al., 2019_[8]). Even more important are the high costs of adaptation, which are ranked by 57% of survey respondents as a reason to not use technology (Kim et al., 2019_[8]).

As a result, the traditional trade finance players such as banks have limited expectations concerning the impact of technology on trade finance. That is, only 15% of more than 250 banks around the globe responding to a recent survey view digitalisation as a game changer in transforming trade finance (International Chamber of Commerce (ICC), 2018^[48]). Technological solutions to reduce time and costs associated with trade finance are broadly in the development phase (almost 50% of respondents), while 37% of banks are not concerned with digitalisation currently (International Chamber of Commerce (ICC), 2018^[48]).

In the same vein, another survey among banks reveals that one third of respondents view technology as the most promising way to close the persistent gap in trade finance by addressing efficiency, data and transparency and security issues. On the other hand, one third of respondents are also rather critical and see technology as the least effective option to close the financing gap in trade finance (BNY Mellon, 2019^[21]). More concretely, in particular distribute ledger technologies (DLT) such as blockchain are seen by 43% of survey respondents as a least effective approach in addressing compliance issues (BNY Mellon, 2019^[21]).

SMEs face high costs of adaptation paired with a lack of skills to make use of digital solutions

On the SME side, high costs of adaptation play a role, too, including funds for investment in digital skills attraction or development. SMEs are indeed less likely to have the skills for managing their digital transformation and only to small extent do they offer their employees ICT training (OECD, 2019^[14]). However, capacities and skills are of critical importance to adapt to new digital solutions, including in trade finance (World Trade Organization, 2016^[20]).

A distinction between size classes of SMEs adds value. Traditional smaller enterprises for instance do not have the same needs and technological skills as technological start-ups and mid-sized firms. They also are less likely to trade abroad. Hence, any digitalisation policy approach for trade finance should take the heterogeneous nature of SMEs into account.

The smaller the firm, the less likely it is to use to digital business practices such as digital supply chain management systems or enterprise resource planning (ERP) systems that may facilitate the adaptation to the ongoing digitalisation in trade finance. Such systems can enhance process efficiency, as they integrate the management of internal and external information flows such as finance, sales, and inventory (OECD, 2019^[14]). At the same time, research shows that ERP systems are more beneficial for larger firms, whereas smaller firms benefit more from the digitalisation when adopting cloud computing and, as such, save large expenses for IT infrastructure investments (Gal et al., 2019^[96]) (OECD, 2019^[97]).

Moreover, challenges relating to cross-border data transfer such as restrictions concerning cross-border data flows as well as local storage requirements hold back SMEs' participation in digital trade, for instance with respect to digital order and delivery of services (Casalini and López González, 2019^[98]).

4 Current policy efforts to harness digitalisation for SME trade finance

Overview

Policies and frameworks can foster the development, adoption and dissemination of digital technologies in the context of trade finance. Such efforts generally aim to remove barriers and facilitate the participation in cross-border transactions fuelled by digitalisation. So far, however, significant barriers are hampering a wide uptake of digital solutions in trade finance.

Governments and policy makers see digitalisation as a major policy priority (OECD, 2019^[14]). A variety of different approaches is applied to enable SMEs to harness the impact of digitalisation. The remainder of this section provides insights on how policy makers can address some of the aforementioned challenges, such as SMEs' limited technology adoption, financial hurdles or skills shortages. Often, these policy levers are embedded within wider trade policies.

Policy makers use a variety of approaches that aim to facilitate technological adoption by SMEs

Governments and policy makers are working towards enhancing SME capabilities in respect to existing and emerging technologies. In order to facilitate the mainstreaming of new technologies in finance related fields but also beyond, many countries are using so-called regulatory sandbox approaches. Within a dedicated live space and pre-defined restrictions, the financial industry can pilot their digital business models.

The UK's regulatory sandbox operated by the Financial Conduct Authority is operational since 2016, and approved in 2019 a 5th cohort of 29 enterprises that aim to test innovative products or services, or business models and delivery mechanisms. Among those enterprises, large banks are participating, as well as new providers of finance and Fintechs. Diro Labs, for example, works on an identification tool related to KYC and due diligence data on a blockchain (Financial Conduct Authority, 2020^[99]). Further countries that use such an approach include for example Australia, Canada, Denmark or Singapore (OECD, 2019^[14]).

The recent EU strategy for artificial intelligence, for example, aims to enable "technology that works for people, a fair and competitive economy; and an open, democratic and sustainable society". It also highlights the strong role of SMEs in the European economy and encourages SMEs to leverage data in their business models to create value (European Commission, 2020^[100]).

Furthermore, in their SME policy response to COVID-19, several countries have included dedicated measures to speed-up the uptake of digital technologies by SMEs (OECD, 2020^[27]). For instance, the "Digital Team Austria" initiative consists of companies in the digitisation industry and offers digital services to SMEs free of charge for at least three months. This helps SMEs to switch to mobile working. The SME

Online initiative in Chile seeks for SMEs to increase their sales, lower their costs and improve their relationship with customers and providers, using available digital technologies and training, changes to Labor Code for regulating teleworking, the development of teleworking / digitalisation to connect affected SMEs with the main Chilean e-Commerce platforms and consumers.

Policy makers are seeking to stimulate financial support for trade and technological transition

Policy approaches can focus on access to finance for SMEs to stimulate the exposure of SMEs to international trade as well as on investments in digitalisation. The United Kingdom for example established a referral system in 2016, which urges banks that turn down SME finance applications to refer them to three alternative financial platforms that may address the need for external financing of the SME. Between its launch in November 2016 and June 2019, nearly 30 000 enterprises that have rejected have been referred under this framework. As a result, 1 700 businesses have secured more than GBP 32 million in financing (HM Treasury, 2019^[101]).

Moreover, governments can provide financial support for technological transition. For example, Hungary distributes finance for SME digital business developments such as ERPs through open tenders. Turkey has in place a funding programme for financially supporting SMEs in building IT capabilities. Brazil's national development bank BNDES issues loans to SMEs targeted for investments in technology and innovation (OECD, 2019^[14]).

Another entry point is that policy makers can leverage their official (loan guarantee) organisation to stimulate the provision of trade finance. While loan guarantee schemes play a major role in stimulating SME finance in general (see e.g. (OECD, 2019^[41])), they are less prevalent in facilitating access to short-term trade finance due to the challenges associated with underwriting risk related to opaque and foreign SME counterparty risk, a lack of resources and technical as well as legal experience in many credit guarantee institutions. Notable exceptions are SOWALFIN (Belgium), KredEx (Estonia), Finnvera (Finland), Bpifrance (France), Altum (Latvia) or Invega (Lithuania), which engage in export guarantees for SMEs. Moreover, credit guarantee organisations are active in fostering access to finance for digitalisation. Under the COSME Loan Guarantee Facility, the European Commission and the European Investment Fund (EIF) enable projects concerning the digital transformation of specifically SMEs (EIF, 2019^[102]).

More directly, policy makers can support digitalisation of trade finance by directly providing finance to or investing in specialised enterprises in this area. The EIF, for example, is holding equity and hence financially supporting Credimi, an Italian platform that engages in invoice financing (The Paypers, 2018^[103]).

Most recently, the involvement of official development actors is reinforced as a response to the coronavirus pandemic. For example, IFC, EBRD and ADB have set up or topped up dedicated trade finance programmes to maintain access to trade finance for in particular SMEs during the crisis (see Introduction).

SMEs are at the centre of a set of measures aiming at skills enhancement

SME-related policy interventions also take place without a specific focus on technology by addressing a general lack of skills. Several ongoing policy efforts aim at improving the skills of SMEs. Such policy measures include financial support for SME access to training as provided by Lithuania. The Ministry of Economy is providing competence vouchers up to EUR 4 500 for small enterprises in order to source training services from a central list training providers and programmes. The total investment provided by the EU is EUR 48.8 million between 2014 and 2020 (European Centre for the Development of Vocational Training (Cedefop), 2018^[104]).

Businesses operating in Quebec, Canada, are eligible for a refundable tax credit to financially stimulate on-the-job-training. A tax credit for up to 32% of eligible expenses for trainings of at least 140 hours should stimulate SMEs to provide training opportunities to their employees (OECD, 2019^[14]) (Government of Canada, 2020^[105]).

Another approach is to facilitate training via intermediaries such as a national agency dedicated to the promotion and facilitation of workforce learning as in Ireland, where Skillnet provides trainings and education to maintain a highly skilled workforce in Ireland. The cost of training for SMEs is subsidised by Skillnet; of more than 16 000 member companies, 95% are SMEs (Skillnet Ireland, 2020^[106]).

Skills development is fostered in France by introducing regulation that enables every employee to have a personal training account valid for the entire career. From 2020, the employer credits training account with up to EUR 500 per year, with a total limit of EUR 5 000. Total funds dedicated to the training accounts accumulated to nearly EUR 1.8 billion in 2016, resulting in almost 500 000 approvals for training hours accrued under this framework (CEDEFOP, 2018^[107]) (European Monitoring Centre on Change (EMCC), 2019^[108]).

In respect to specific technology skills, government-funded technology extension programmes target the enhancement of skills in enterprises that enable the adaptation to new technologies. This is in particular necessary as the proportion of businesses across size classes providing ICT training to their employees has not increased substantially since 2012 (OECD, 2019^[14]).

Singapore for example supports companies to establish absorptive capacity with a “National Centre of Excellence for Workplace Learning” set up in 2018. The programme aims to prepare employees to respond to the changing environment with on-the-job training structures that enhance their skills. Funding is available for enterprises for workplace learning consultancy services (National Centre of Excellence for Workplace Learning, 2020^[109]).

The UK’s “Small Business Leadership Programme” established in 2018 focuses on management skills by providing management training to 2 000 small business leaders in its first year. The goal is to reach 10 000 enterprises by 2025 (OECD, 2019^[14]).

Mexico promotes the expansion of managerial skills and ICT adoption in micro-enterprises in a programme called “Business incubators for basic enterprises”, established in 2015. Six hours of basic management training are provided to micro-enterprise owners under this framework (OECD, 2019^[14]).

Austria has set up a two-year programme (“KMU Digital”) in 2017 and 2018 that brings together a variety of measures such as events, webinars, analysis tools and training programmes targeted to fostering digital competencies in SMEs. Consultancy services cover status analyses, strategy consulting, or implementation. A maximum of 80%, 50% and 30%, respectively, is contributed by the government to projects costs in these consultancy areas. Contributions are ranging from EUR 5 000 to EUR 20 000. The budget for the two-year pilot is EUR 6.7 million (Austrian Federal Ministry of Digital and Economic Affairs, 2020^[110]; European Commission, 2018^[111]).

Germany’s “Go Digital” programme offers external advisory on IT security, online market expansion and digital business processes to SMEs. The Federal Ministry for Economic Affairs and Energy contributes 50% of SME expenses for hiring external consultants that support the analysis and implementations of projects in these three areas of digitalisation. The project length is limited to 30 days within six month (German Federal Ministry for Economic Affairs and Energy, 2020^[112]).

Trade-specific policy approaches are targeting SMEs

Moreover, to increase the exposure of SMEs in international trade, governments are adapting their national export strategies to facilitate SME exports. This includes for example Norway’s Strategy for Export and

Internationalisation, which includes a variety of measures to help SMEs strengthen their position in the international market. These measures include for example a funding dimension, whereby the Nordic Project Fund (NOPEF) preliminary studies for Nordic SMEs are supported that assess the international competitiveness (Norwegian Ministry of Trade, Industry and Fisheries, 2017^[113]).

The UK's export strategy was launched in 2018. Among other measures, it facilitates access to specialist support in exporting with the goal to support and encourage SMEs to access new markets as well as to access specialist advice and support from the private sector (HM Government, 2018^[114]).

Other examples of mainstreamed approaches for national export strategies include Spain's "Internationalisation Strategy of the Spanish Economy (2017-27)" supporting international SME engagement and providing financial support, or the "Programme for Internationalisation (2015-20)" in Slovenia which supports SMEs to develop new business models and to integrate into global value chains, among other measures (OECD, 2019^[14]).

The European Commission launched their new strategy on SMEs in March 2020, which includes a trade dimension. It includes the set-up of an information portal to raise awareness of SMEs on trade policies and will provide easy access to information on customs procedures for exporting outside of the EU. Moreover, the EC pursues to include dedicated SME aspects in new trade and investment agreements (European Commission, 2020^[115]).

Tailor-made policies to SMEs include the provision of financial support to SMEs for export activities as for example in Canada. CanExport provides funding of up to CAD 75,000 for SMEs to support up to 75% of expenses for international market development activities, including business travel or market research. By February 2020, 1 700 projects have been approved, with more than CAD 21 million in funding provided (on average CAD 30 000 by project). The programme is associated with more than CAD 376 million in new export revenues (Government of Canada, 2020^[116]).

Similarly, Australia's Export Market Development Grants (EMDG), which provides financial support for the expenses associated with export promotional activities to existing and potential Australian exporters. Such activities include marketing, free sample, or overseas representation expenses. Grants can cover 50% of expenses incurred limited to AUD 150 000 (business.gov.au, 2019^[117]).

In the same vein, New Zealand's International Growth Fund (IGF) was established in 2009. Its current policy settings have largely been in place since 2015. The IGF enables New Zealand Trade & Enterprise (NZTE), who administer the fund, to help firms acquire the capabilities and speed up entry of developing new markets for new or existing products, while at the same time reducing risk through co-investment. NZTE supports about 100 firms per year by co-investment through the IGF. The Government contribution was recently increased from 40% to 50% in light of the challenging market conditions brought on by COVID-19. The IGF is now a roughly NZD 60 million per year programme.

Trade-specific policy approaches include single windows that are increasingly being used to digitise trade. In general, the digitalisation of public services is an ongoing priority for governments, thereby offering SMEs new opportunities to access and undertake trade-related administrative processes (OECD, 2019^[14]). Single windows could also be a tool to encourage and drive the use of digital trade documents (ICC, 2019^[118]); however, these windows come with complex implementation and interoperability challenges since they entail bringing together relevant agencies, neighbouring countries and incentivising the private service providers to use them (OECD, 2018^[119]). By establishing a single electronic process for trade-related information sharing, governments are facilitating trade and most importantly, digitised trade processes for goods and services¹⁹. Regulatory documentation can be directly provided via a web-based interface to

¹⁹ The OECD, WTO and IMF have defined "digital trade" as any trade which is digitally ordered and delivered, whereas the only services can be digitally delivered (OECD, 2020^[133]). In that sense, it differs from the digitalisation of trade processes highlighted here, which focuses on trade of goods.

government agencies whose IT systems are integrated with the single window, with the ultimate goal to move to paperless trade (UNESCAP, 2018^[120]) (World Economic Forum, 2018^[121]).

For example, the single window of Hong Kong constitutes a trade service tool mandatory to use for the trading community. It enables trade parties to submit documents such as the import and export trade declaration as well as the certificate of origin to be submitted and processed electronically (UNESCAP, 2018^[120]).

The Republic of Korea has one of the most advanced electronic single windows which does not only allow for electronic clearance of customs but also other services for example related to finance, i.e. the submission and transfer of electronic letters of credit or electronics bills of lading. In Japan, the single window serves as an entry point for the processing of about 98% of import and export declarations (UNESCAP, 2018^[120]).

In addition, a new initiative launched in March 2020 by the ICC, supported by the Asian Development Bank and the Government of Singapore on Digital Trade Standards Initiative (DSI), puts the standardisation of open trade and technology efforts at the forefront, including the interoperability of emerging technology solutions (International Chamber of Commerce (ICC), 2020^[122]).

Moreover, in order to establish a conducive regulatory environment that fosters the adoption of innovative solutions e.g. in regard to the legal acceptance of digital trade tools such as electronic documentation and electronic signatures, the United National Commission on International Trade Law (UNCITRAL) has adopted the Model Law on Electronic Transferable Records (MELETR) in 2017 (Ganne, 2018^[76]), (ICC, 2019^[118]).

5 Conclusions and options for policy approaches

Digitalisation is making trade finance more accessible to SMEs, enabling more of them to integrate into global value chains

The trade finance landscape is undergoing profound changes, with digitalisation a major factor driving process and product innovation in the asset class. Existing players are forming new coalitions to respond to and leverage on the impact of technology in this business field, with new actors such as Fintechs entering the market.

SMEs stand to gain from these recent developments, which can contribute to mitigating structural challenges hampering access to trade finance, including through improved process efficiency and quality, new products and approaches to trade finance, as well as new providers that tailor solutions to SMEs.

The coronavirus pandemic and the corresponding restrictions have exposed the weaknesses of relying on paper documents to conduct trade and have disrupted many supply chains. Governments are encouraged to support exporters, for instance by removing new barriers and restrictions on exports in order to maintain and facilitate exports in response to the crisis (World Bank Group, 2020^[123]). An initial assessment of the impact of the crisis on trade shows that business to business trade has become more digital as a response to travel and logistic restrictions (WTO, 2020^[19]). While it is clear that the pandemic has boosted digitisation efforts by SMEs, SMEs continue to lag behind larger companies in uptake. Supporting SME digitalisation is essential to help SMEs recover from the crisis and strengthen their resilience (OECD, 2020^[27]).

Access to traditional trade finance instruments remains challenging for SMEs. On the other hand, their integration in GVCs and the corresponding rise of supply chain finance solutions open avenues to access working capital solutions for SMEs. In addition, ongoing digitalisation in the finance and trade finance space has the potential to benefit SMEs by addressing structural obstacles on both the supply side of finance, e.g. in respect to less costly and smoothed KYC processes and improved data availability for creditworthiness assessments, as well as on the demand side for trade finance. For example, SMEs that enhance their internal processes through digital solutions or participate in online platform trading are well positioned to harness the benefits of digitalisation in trade finance.

Digitalisation in the trade finance sector can potentially impact SMEs' access to finance positively by (1) Improving how trade finance is requested and provided, i.e. in respect to process efficiency and quality, (2) enhancing the portfolio of trade finance instruments, and (3) expanding the field of dedicated trade finance and SCF suppliers that, to some extent, focus exclusively on SMEs. Improved process efficiency stems for instance from recent digitalisation efforts focus on solving KYC frictions. The legal requirements to on-board clients for trade finance deals are often resource-intensive, especially for SMEs, which are often small and opaque. The centralisation of KYC databases with the help of digital technologies can provide the same information about clients to a larger group of finance providers, thereby resolving redundancies and reducing cost. Alternatively, decentralised blockchain-based efforts that have similar goals are being explored. Moreover, e-documentation is increasingly applied, which, particularly in the

context of documentary-heavy traditional trade finance instruments, can reduce the cost and complexity for all parties involved.

New products include the bank payment obligation (BPO), which leverages e-documentation for inter-bank communication in traditional trade finance deals. New actors are emerging, including digital platforms that aim to digitise the trade finance process, for instance by digitising documentary credit through the introduction of electronic issuances, exchange and documentation. Such platforms are often backed by financial intermediaries. Fintechs are entering the space, for example by cooperating with banks or operating on a stand-alone basis, in particular in the supply chain finance sector, by providing accounting software or invoice management tools and access to finance.

However, whether digital technologies can have a material impact on SME access to trade finance remains to be seen, since a number of challenges persist. This paper concludes by formulating several key policy considerations. The Working Party on SMEs and Entrepreneurship will continue to study these issues, including through its *Financing SMEs and Entrepreneurs: An OECD Scoreboard* and the *SME and Entrepreneurship Outlook*, as well as its work on SME digitalisation and skills, in order to contribute to a stronger evidence base to support policy making in this area.

Policy can help overcome current challenges

A more conducive environment regulating innovative solutions such as electronic documents, new finance instruments and actors would help expand SME access to trade finance

Despite individual country efforts to digitise trade with the help of single windows, the acceptance of electronic documents on a level playing field with paper-based documentation is lagging behind. This is hampering a wide uptake of digital trade solutions and corresponding financial instruments, which may facilitate SME participation in international trading activities. An ongoing effort in this respect is the Model Law on Electronic Transferable Records (MELETR) that aims to provide a regulatory environment that stimulates the legal acceptance of digital trade tools such as electronic documentation and electronic signatures (see section 4.5) (Ganne, 2018^[76]), (ICC, 2019^[118]). By 2021, two countries – Bahrain and Singapore - had introduced laws in line with the model law (ICC, 2019^[118]), (Thompson, 2021^[124]).

Moreover, the acceptance and coherent regulatory environment of new products and players in the field is limited, which hinders a wider adoption among SMEs. An example of the international standardisation of a digital trade finance instrument is the ICC regulation on bank payments obligations, which enable a safe and globally accepted use of this instrument. However, global agreement on regulations is a time-intensive process and does not reflect the pace of digital innovation, including in the trade finance space. So-called rulebooks could be a practical solutions for emerging trade solutions not yet covered by universally accepted regulations, whereby all parties participating in a transaction have to endorse and adhere to the same framework (Dicaprio and Malaket, 2018^[66]). Standardisation across the trade value chain is seen as a key factor in harnessing the potential of emerging technologies and viewed as a major issue for policy makers to address (Business at OECD, 2020^[125]).

There is a need for coherent industry-wide solutions that can operate at scale and are interoperable

A major challenge to policy making in the area of trade, trade finance and digitalisation is the fragmented and heterogeneous landscape of solutions under development. So-called “digital islands” are emerging, while an end-to-end digitalisation of the entire trade process remains to be developed. Moreover, most

innovations are still at the pilot and testing phases, so that material positive impacts of digitalisation on SMEs' access to trade finance cannot yet be observed.

This fragmentation may pose particular challenges for SMEs, which are less well equipped to navigate multiple rules and systems. At the moment, digital trade finance solutions address particular aspects of the trade supply chain, developed by different entities in the field, including banks or Fintechs. As a result, policy challenges at the industry level remain and include most importantly the absence of solutions that are scalable, as well as a lack of interoperability.

In respect to the digitalisation aspect of trade finance, policy efforts should take into account the heterogeneous landscape of solutions. Policy makers could facilitate coherent industry-wide solutions to enable a wide uptake of digital solutions, for example by jointly backing platforms, products or instruments under development. Policy makers should take into account the principle of technology neutrality when designing such policy.

More structurally, the increasing internationalisation of SMEs and participation in GVCs though digitalisation may be hampered by challenges relating to cross-border data transfer. This includes restrictions concerning cross-border data flows as well as local storage requirements. This may undermine SMEs' participation in digital trade, i.e. digital order and delivery of services (Casalini and López González, 2019^[98]). Such regulations may also impact digitised trade finance instruments and their provision, thereby potentially undermining the ambitions to reap the full potential of digitalisation on trade finance.

Regulatory aspects play a significant role in mainstreaming digital innovations in the trade finance sector. For example, the acceptance and coherent regulation of new products and players in the field is limited. Policy makers could take concerted efforts to design a regulatory environment that is favourable to the uptake of digital solutions, thereby building on existing efforts as for example the "Guidance on Digital ID" by the Financial Action Taskforce (FATF, 2020^[126]).

Policy makers should also seek to coordinate with their international counterparts to promote cross-border acceptance of digital trade finance solutions. Where appropriate, policymakers should identify and remove barriers to cross-border trade finance data flows.

Trade finance solutions require multifaceted and tailor-made policy interventions

The current landscape of policy approaches that are associated with the digital revolution in trade finance for SMEs are characterised by a multitude of approaches that target either SMEs, trade, technology, or financial aspects, but less so the four dimensions altogether.

Governments and policy makers could indeed continue to focus on encouraging employee and management skills development, ICT adoption by SMEs, encouraging SME participation in exporting, raising awareness among SMEs for trade finance tools, and other approaches presented. At the same time, coherent and tailor-made approaches that target specifically digital trade finance in the context of SMEs should be considered. Such a dedicated policy approach should take into account the different needs of different SMEs, whereby large and technology-affine start-up clearly have different needs than traditional SMEs operating for instance in manufacturing and services. It may be worthwhile to investigate how specific actors that already play a crucial role in providing access to finance for SMEs such as guarantee institutions can play a role in facilitating digital trade finance for SMEs in conjunction with existing payers as financial institutions and emerging players as Fintechs. The potential of digitalisation in trade finance is in particular promising for SMEs, and policy responses should be developed to ensure that this opportunity is not missed.

A stronger evidence base would help underpin policy making to foster SME access to trade finance

To promote a more holistic approach to supporting trade finance and addressing current fragmentation, policy makers and governments should evaluate the impact of existing programmes for SMEs with a view to scaling up successful programmes and discontinuing or adjusting those that have not performed well.

More research and data collection are needed to better understand SMEs' exposure to international trade and the role of trade finance. Currently, structural and comprehensive data on access to and volumes of trade finance used by SMEs are largely absent. Such data, beyond survey approaches, would be needed to better understand if and how trade finance can play a role in increasing exporting and importing activities of SMEs and thereby harness the positive effects for economic growth, innovation and skills. In the same vein, such data should be deployed in order to benchmark and assess the impact of process digitisation and digitalisation efforts in the trade finance space.

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