Women-led Firms on the Web: Challenges and Solutions
What Are the Challenges—and What Are the Solutions?

Kati Suominen

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ABBREVIATIONS

CEO	chief executive officer
FinTech	financial technology
FTA	free trade agreement
IADB	Inter-American Development Bank
IP	intellectual property
LDCs	least-developed countries
OECD	Organisation for Economic Co-operation and Development
SDGs	Sustainable Development Goals
SMEs	small and medium-sized enterprises
UK	United Kingdom
US	United States of America
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

Promoting women's economic opportunities has become a major global development tenet that permeates the United Nations 2030 Sustainable Development Goals. The purpose of this paper is to elucidate the role of women-led firms and regulatory challenges in trade by focusing on the most rapidly growing area of world trade—cross-border e-commerce in goods and services. Drawing on insight from several surveys of firms in developing countries and findings from a random sample of 779 small, medium, and large firms in 9 economies in Southeast Asia, Africa, and South Asia, this paper finds no meaningful differences between women- and men-led firms in their use of e-commerce, export performance, or growth. There is also no difference in the severity of regulatory challenges facing these companies after controlling for variables that typically shape firms' performance. This may suggest that getting women into business and into selling online may help level the playing field between women- and men-led firms, and it underscores the urgency to help women form formal businesses, digitise, and get online.

Online, smaller firms are uniformly less likely to export and more hampered in e-commerce and cross-border trade than large firms, regardless of whether they are run by men or women. If the policy objective is to alleviate challenges to cross-border e-commerce among small firms led by women, then a number of areas stand out across countries and regions as requiring improvements:

- customs procedures for e-commerce in both imports and exports;
- logistics costs, including in last-mile delivery;
- digital regulations, such as online intellectual property and copyright rules, legal liability for online sellers and platforms supporting them, and data privacy and localisation rules;
- access to finance, including early-stage financing, fast-disbursing working capital, and trade finance.

By addressing these areas, policymakers inherently also help men-led firms, given that the challenges of women- and men-led firms are very similar, controlling for firm size and country. This paper offers several potential solutions for governments to implement, such as (i) simplifying and digitising business registrations and regulatory and tax filings; (ii) securing and facilitating trade and revenue collection by using blockchain and predictive analytics that separate licit from illicit shipments efficiently; (iii) adopting digital regulations and programmes that encourage innovation, fuel the flow of data, promote secure online identities, and accelerate firms' and consumers' access to secure, interoperable, digitised payments; and (iv) making the financial services ecosystem much more agile and responsive to small business needs through promotion of financial technologies, open banking practices that enhance flows between banks and financial services, and equity crowdfunding that enables investors and companies looking for capital to connect at scale. Many of these reforms can have a disproportionately positive impact on women-led firms.

There is also an important research agenda: in general, samples of women-led firms are small, and generalisable findings are scarce. There is a great deal of work ahead to understand how women perform as online sellers and online exporters and importers, and whether and which types of women-led firms—or any firms for that matter—grow faster, create more jobs, and reduce poverty among their employees and communities than firms that do not sell online.

If the policy goal is to enable women-led businesses to engage in trade online, then much more research needs to be done on three questions: (i) What are the challenges facing women-led firms that seek to engage in e-commerce and cross-border e-commerce? (ii) What are the challenges facing women-led firms before they start selling online, to digitise, formalise, and start an online

business? And (iii) what are the impacts of business success online on women's lives, their businesses' growth and job-creation potential, and their countries' economies? This paper addresses the first question.

In addition, donors and policymakers need to be careful when interpreting data on gender differences and should not read too much into descriptive statistics when assessing them. Before deciding that women face higher hurdles or that women-led firms do better or worse than male-led firms, it is important to control for the many other variables that shape firms' performance: engagement in e-commerce, export participation, job creation, and growth. The gender of the chief executive officer or management team may be one of the factors that makes a difference, but it is hardly the only one and probably seldom the main one—and it may not matter at all.

1. INTRODUCTION

Promoting women's economic opportunities has become a major global development tenet that permeates the 17 United Nations Sustainable Development Goals (SDGs). It has also become common to seek to promote women in international trade. This is positive on at least three levels. First, while there are some studies on the impact of trade liberalisation by gender, there are few data on how women-led firms do in international trade as exporters and importers of goods and services. Gender-based reporting and data are useful for understanding what, if any, differences exist between women- and men-led firms in their participation in trade, export and import intensity and diversification, place in regional and global value chains, and export survival—and how those differences, if they do exist, vary by country, sector, and so on.

Second, women are becoming more prominent in many economies as employees, employers, business owners, consumers, families' main breadwinners, and investors. Since women's behaviours, choices, and constraints play a growing role in global economic activity, it is useful to know more about them.

Third, women's economic empowerment is widely viewed as a means to optimise a society's productive resources, expand the tax base, and improve economic growth, households' welfare, and intergenerational wealth transfer. In other words, societies are more likely to thrive when women thrive. Thus, it is useful to know more about what women do and prefer, and what challenges they face—including in trade.

The purpose of this paper is to elucidate the role of women-led firms and regulatory challenges in trade by focusing on the most rapidly growing area of world trade—cross-border e-commerce in goods and services.

This paper takes a broad definition of e-commerce as covering both physical goods ordered online and digital goods and services delivered over internet platforms. The paper is based on insights from several surveys, covering more than 7,000 firms, that Nextrade Group has run, both on its own and in partnership with entities such as the United States Agency for International Development (USAID), the Inter-American Development Bank (IADB), and the World Bank over the past 2 years in Latin America, South Asia, Southeast Asia, and Africa to understand how firms in developing economies engage in e-commerce and build a global database and country-level index of the enabling environment for digital trade. The survey design and first pilot were carried out in late 2016 and early 2017 with the support of USAID. Data in this paper draw on a smaller random sample of 779 small, medium-sized, and large firms in 9 developing countries in Southeast Asia, Africa, and South Asia.[1] The data are from two surveys carried out by Nextrade Group—one in December 2016–January 2017 with support from USAID, and another in August 2018.

The survey work has not been motivated by questions about gender; rather, it has been aimed at understanding how different firm types engage in cross-border e-commerce and develop a global, country-level database on the enabling environment for e-commerce. However, the surveys do capture the gender of firms' chief executive officers (CEOs) and owners and thus lend themselves to an analysis of gender differences, if any, in firms' participation in e-commerce and the barriers they face.

Given the attention on women in trade and development policy circles, one might expect to find enormous differences in the performance and barriers facing women-led firms compared with men-led firms in trade or e-commerce. In several recent surveys of firms, a striking finding is how

[1] Bangladesh, Ghana, Indonesia, Kenya, Nigeria, Pakistan, the Philippines, South Africa, and Viet Nam.

similar the online sales, export, and growth performance of women-led firms is compared with men-led firms of the same size and in the same country, and how similarly male and female business leaders assess and rate their barriers to e-commerce. In short, there appear to be no meaningful differences between firms run by women and firms run by men in terms of participation in e-commerce or in the severity of regulatory challenges facing companies, after controlling for other variables that are widely known to drive firms' export participation and barriers to trade, such as firm size and country. This finding may in and of itself suggest that getting women into business and into selling online may help to level the playing field between women- and men-led firms, a notion that would be cemented by more comprehensive data that showed that female owners of businesses that are not digitised and that do not have online commercial activities do notably worse than their male counterparts.

Where there is a difference is between firms of various sizes and between firms in countries at different levels of development. Smaller firms, whether run by men or women, are uniformly more hampered than large firms in e-commerce and cross-border trade. Firms in least-developed countries (LDCs) are more hampered than firms in emerging markets. Small firms uniformly see the various elements of the enabling environment for e-commerce, such as logistics, online payments, and access to staff capabilities for e-commerce, as more challenging than do large companies. These findings are extraordinarily consistent across countries and regions and align with a large body of literature on firms' participation in trade. What is new, of course, is that e-commerce appears to alleviate the fixed costs that have famously kept most small and medium-sized enterprises (SMEs) from exporting: according to most surveys, firms that engage in e-commerce, whether led by women or men, are more likely to export and import than offline sellers.

Another finding is that there are markedly fewer women-led firms than male-led firms in any one category in these surveys—offline buyers and sellers, online buyers, online sellers, and online buyer–sellers. This, of course, reflects the significantly smaller share of women-led firms in the broader economy in most countries, and it probably also reflects various challenges and entry costs that studies suggest women in particular face in becoming business owners, acquiring technology and capital, and growing their businesses. The question then is how to overcome these challenges and help women get into business and become active online.

If the policy objective is to champion small women-led firms in developing countries in e-commerce, then there are four major challenges to focus on across most regions:

- customs procedures for e-commerce imports and exports;
- logistics costs, including in last-mile delivery;
- digital regulations, such as online intellectual property (IP) and copyright rules, legal liability for online sellers and platforms supporting them, and data privacy and localisation rules;
- access to finance, including early-stage financing, fast-disbursing working capital, and trade finance.

In poorer countries, basic internet connectivity and functioning of online payments are also significant challenges. Helping women-led firms deal with these challenges would inherently help men-led firms as well. The first four areas can be improved through regulatory reforms; the latter two can be dealt with both through regulatory reforms (such as liberalising logistics services or passing equity crowdfunding laws), and by specific financing programmes, public–private partnerships, and tax incentives.

Section 2 reviews how women are behaving online as business owners, exporters, consumers, and borrowers, in order to assess whether their economic life is different on the web than offline, such

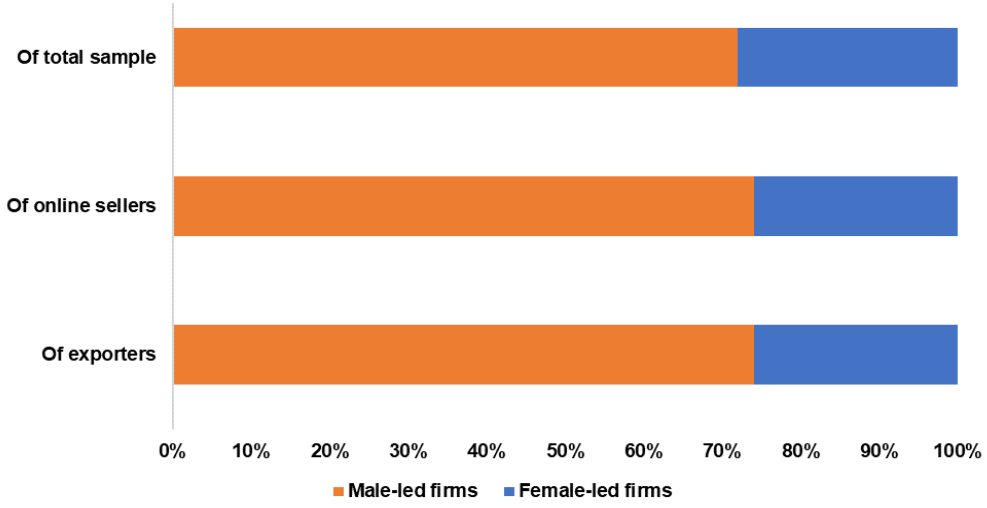
as to justify different policy prescriptions for the two spheres. Section 3 discusses the survey results on the regulatory challenges to doing e-commerce cited as most pressing by small businesses, including women-led firms, in selected economies in Southeast Asia, Africa, and South Asia. Section 4 offers remedies in light of the findings. Section 5 concludes.

2. WEB AND WOMEN: IS E-COMMERCE DIFFERENT FOR WOMEN?

Women and e-commerce intersect in the same way that men and e-commerce intersect: the opportunity to engage in e-commerce shapes how women behave as business leaders, exporters, online service workers, consumers, and borrowers. It appears the web is making a particularly notable difference for women in several areas discussed below:

Business owners: fewer women than men run and own companies in most countries. According to the World Bank's Enterprise Surveys data from 2015, 15 percent of Latin American firms, 13 percent of African firms, and 19 percent of Asian firms had a female CEO, and women held slightly more than a third of management positions in firms (Sekkat, Szafarz, and Tojerow 2015). In members of the Organisation for Economic Co-operation and Development (OECD) and China, 25 percent of self-employed people with employees are women (Adema et al. 2014). Online, these data are very similar—largely because many companies that sell online are the same as those that sell offline. Women-led firms in the sample represent about a quarter of all firms, of all online sellers, and of all exporters (Figure 1)—that is, the online economy simply reflects what goes on in the broader market. Data are sparse for digital pure-plays or "born digital" companies; however, one proxy is capital raised by tech start-ups, which in advanced economies in 90 percent of cases are founded by men (OECD 2018).

Figure 1: Distribution of surveyed businesses in developing countries by gender of chief executive officer, by different firm categories



Source: Nextrade Group surveys of 779 firms in 9 developing economies in December 2016—January 2017 and August 2018. The first survey and original survey design was conducted with the support of the United States Agency for International Development.

There is no appreciable difference in survey data between the ratio of online sellers to offline sellers for women-led firms and male-led firms, after controlling for firm size and country. Whether women-led firms are more or less likely than male-led firms to start to sell online can be tested with a larger set of data. Another hypothesis to be tested is whether online sellers employ more women than offline firms. A 2015 survey in the Pacific islands, including Fiji and Samoa, showed that businesses that are active online are newer and smaller and have a greater concentration of female executives under 45 years of age than "traditional" companies in the region (DiCaprio and Suominen 2015). These women reported a preference for e-commerce because they can run their online businesses while handling household obligations and expand their market reach to countries such as Australia to bolster their earnings.

A survey by the International Trade Centre suggests that while women offline sellers make up only a quarter of offline sellers, they make up half of online sellers (International Trade Centre 2017). This is an interesting finding—but it is based on a sample that is not random and is prone to pick up more women than men. The reporting also does not appear to control for the possibility that women-led firms are larger or based in more developed countries than male-led firms—so size and other variables drive the difference. In the survey here, as in other surveys, the share of women-led firms in all surveyed firms of online sellers is not higher than in the overall sample or the broader market. Overall, whether women are more likely to run or work in firms than men that sell goods and services online is still a hypothesis to be explored.

The survey data explored here suggest the distribution of women-led firms across different online activities is very similar to that of male-led firms across the various categories. While a third of women-run small firms (fewer than 50 employees) and 31 percent of male-led small firms do not sell or buy online, 26 percent of women-led firms and 28 percent of male-led firms sell online, and 23 percent of women-led firms and 26 percent of male-led firms sell and buy online—very small differences that are unlikely to be statistically significant (Figure 2).

Figure 2: Online sales activity of small businesses in developing countries, by gender

Source: Nextrade Group surveys of 779 firms in 9 developing economies in December 2016–January 2017 and August 2018. The first survey and original survey design was conducted with the support of the United States Agency for International Development.

Exporters: much policy attention has been paid to women in trade. Do women need this attention more than men? Some studies have shown that female employees in developing countries can be impacted more heavily by trade liberalisation than men, because of the sectors in which women tend to work (Aguayo-Tellez, Airola, and Juhn 2010). There is also some work on female workers in global value chains (Bamber and Staritz 2016). However, women-led firms are not found to be significantly less engaged in trade or doing worse as exporters than men-led firms, other things being equal (Parrotta and Smith 2013). A glance at the World Bank Enterprise Surveys suggests that 9.3 percent of firms with a female top manager export, compared with 11.3 percent of firms with a male top manager—a small difference that will probably not be statistically significant after controlling for variables that shape export participation rates such as firm size (World Bank 2018).

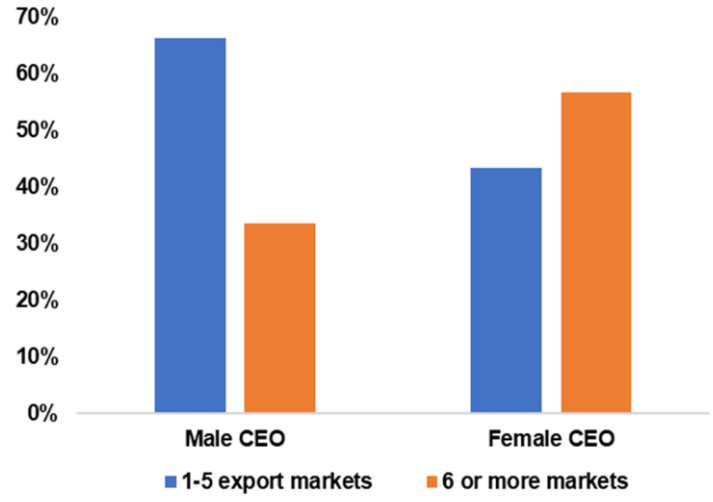
Surveys suggest that women-led small firms are just as likely as, and in many cases more likely than, male-led small firms to export and engage in domestic and cross-border e-commerce. Also, just like men-led firms, women-led firms that sell online are more likely to export than women-led

firms that do not sell online (Figure 3). There has barely been any difference in the export diversification of women- and men-led firms; in fact, this particular sample suggests that women-led small firms that export are more diversified than men-led small firms (Figure 4). Only in Latin America does there appear to be a small difference between women-led and male-led firms in export diversification (but not in export participation), but this difference is very small and statistically almost insignificant, after controlling for other factors that shape firms' export diversification, such as firm size, online sales activity, and country. In short, women-led firms seem to sell and export online just as much as men-led firms across various regions.

Figure 3: Export participation by small businesses in developing countries, by online sales activity and gender of chief executive officer

Source: Nextrade Group surveys of 779 firms in 9 developing economies in December 2016–January 2017 and August 2018. The first survey and original survey design was conducted with the support of the United States Agency for International Development.

Figure 4: Export diversification of small business exporters in developing countries, by gender of chief executive officer (CEO)



Source: Nextrade Group surveys of 779 firms in 9 developing economies in December 2016–January 2017 and August 2018. The first survey and original survey design was conducted with the support of the United States Agency for International Development.

What drives differences in export participation is firm size? Of firms with 51 or more employees and that sell and buy online, 71 percent of those run by women and 74 percent of those run by men export (Figure 5). These data are similar in survey after survey, including when assessed more granularly, for example comparing microenterprises and small firms, or medium-sized firms and

larger firms. The data suggest that e-commerce helps businesses export (although a share of firms that do e-commerce already exported before they started doing e-commerce) and also convey the familiar finding that trade economists have repeated for years: smaller firms are less likely than large firms to export. Of course, one might then reasonably ask whether a larger share of women-led firms are small firms—such that helping small firms would be about helping women in particular. In short, surveys have not found significant differences in the distribution of women-led firms and men-led firms across firm-size categories. This of course is not to say that promoting women as exporters would be futile or would not improve economic and social outcomes more than promoting men as exporters—it well might.

Figure 5: Export participation of medium-sized and large businesses in developing countries, by online sales and gender of chief executive officer

Source: Nextrade Group surveys of 779 firms in 9 developing economies in December 2016–January 2017 and August 2018. The first survey and original survey design was conducted with the support of the United States Agency for International Development.

Online service providers: online work can be particularly empowering for women in cultures where they are expected to stay at home and lack the professional networks and resources of men (World Bank 2016). Empirically, there may be a difference in women's job prospects online compared with offline: for example, there are proportionately many more women employed on the online platform Upwork (44 percent of total) than there are in the offline non-agricultural labour market (25 percent) (World Bank 2016). This may also reflect the flexibility that online work can provide for people to work. Online work opportunities enable women in developing countries, just like men in developed countries, to live as "digital nomads"; for example, Indian-born Upwork freelancer Radhika Basuthakur has provided social media and content marketing services online whilst living and working in various countries, including Colombia and Thailand (Feltham 2016).

Online shoppers: women hold more wealth than ever before, in both absolute and relative terms. By 2020 women will have US$ 5 trillion in disposable income in China and India alone, up from US$ 1 5 trillion in 2015 (Medaglio 2015). Accounting firm Ernst & Young believes women will hold 75 percent of the world's discretionary spending power by 2028 (Ernst & Young 2013). This is to an extent because women also direct their families' finances offline: for example, Asian women control household spending on groceries, clothing, and cosmetics in 70–80 percent of Asian families (The Economist Intelligence Unit 2014). It also appears that women are more voracious online shoppers than men: according to market research, compared with men, women spend 20 percent more of their online time on retail, spend 20 percent more in dollar terms online, and spend about 40 percent more time on social media, including interacting with brands (Febriana 2017). Studies suggest these gender differences are specific to the internet: compared with men, women

are more voracious as online shoppers but rather similarly disposed to buying in the offline economy.
Cross-border purchases show a different picture. Google's Consumer Barometer suggests that while young men are still the most voracious cross-border shoppers in most markets—for example, in Mexico 65 percent of men in the age group 25–34 years buy from overseas at least once a year, compared with 50 percent of women in the same age category. However, in China Generation X, the generation born between the mid-1960 and 1980s and Y women, the subsequent generation, are the most likely to fill their virtual shopping carts with foreign products (Consumer Barometer n.d.). These are descriptive statistics that do not account for such variables as buyers' income levels—which may be more impactful to their online purchase patterns than their gender. Indeed, empirical work in the United States (US) finds that gender has no particular explanatory power in online buying after other buyer characteristics, such as income, race, and educational level, are controlled for (Lieber and Syverson 2010). One interesting hypothesis is that the availability of online shopping or services, such as grocery delivery or cleaning services, enables women to save more time than they previously spent on going to the store—and thus put in longer hours at work, perhaps on their online businesses.[2]

Online borrowers and fundraisers: academic studies and anecdotal evidence suggest that women have a harder time than men in accessing financing, whether equity from angels or venture capital funds or loans from banks. This is partly because of gender biases among investors and lenders (Alesina and Lotti 2013; Calcagnini, Giombini, and Lenti 2015; Harkness 2016). In the US, women that successfully raise equity are found to get only 25 percent of the funding they seek, while men get 50 percent (Teare 2017). Women are widely found to be less likely to make these requests, perhaps because they do not want to raise money for their businesses or because they self-censor, believing gender biases will lead their applications to be rejected.

The internet may be changing this. PricewaterhouseCoopers (2017) finds that women-led rewards-based crowdfunding campaigns (not equity crowdfunding involving sales of securities) are 32 percent more successful than men-led campaigns. However, the study does not control for other variables that may affect these outcomes, such as the type and size of organisation led by women compared with those led by men—we do not know whether women seem to succeed more because they are women or because of some other variable. Other studies have found that women have an easier time getting loans online, compared with offline, from peer-to-peer platforms, even if they tend to ask for less money than men (Barasinska and Schäfer 2014; Marom, Robb, and Sade 2014).

It is not entirely clear whether success is due to the web being more gender-blind, or to the rise of women as online lenders and investors and women-focused platforms such as Portfolia, or to other factors (Brush et al. 2014). It is also not clear whether women do better in equity crowdfunding than in purely offline raises—and biases may seep in more easily, as often in equity requests investors and investees still "kick the tyres," talk, meet, discuss, and take things offline after meeting online. There is some evidence to the contrary in banking: women may do worse when relationship banking is replaced by data-driven banking. A study in Sweden found that bankers' analysis of a borrower's creditworthiness based on data and papers had a greater gender bias against women than when the bankers met the borrower (Malmstrom and Wincent 2018).

Overall, the jury is still out on whether the online economy is bridging the distance between men's and women's economic opportunities. Yet, whether women's behaviours as shoppers, businesses owners, or exporters are different in the online economy than in the offline world is somewhat irrelevant. The point is that women use the internet intensively as consumers, producers, exporters,

[2] Another hypothesis is that by accelerating job growth in warehousing and delivery, e-commerce may be enabling blue-collar males to get back to work. I thank Michael Ferrantino for engaging discussions on these questions.

and investors, and thus policies and regulations that shape the online economy critically shape the economic prospects of women. And, to the extent that women are more active online than men, policies and regulations that shape economic activity on the internet can have an outsized impact on women.

What, then, are the challenges facing women who are seeking to do, or are doing, cross-border e-commerce?

3. CHALLENGES FACING WOMEN-LED FIRMS IN E-COMMERCE

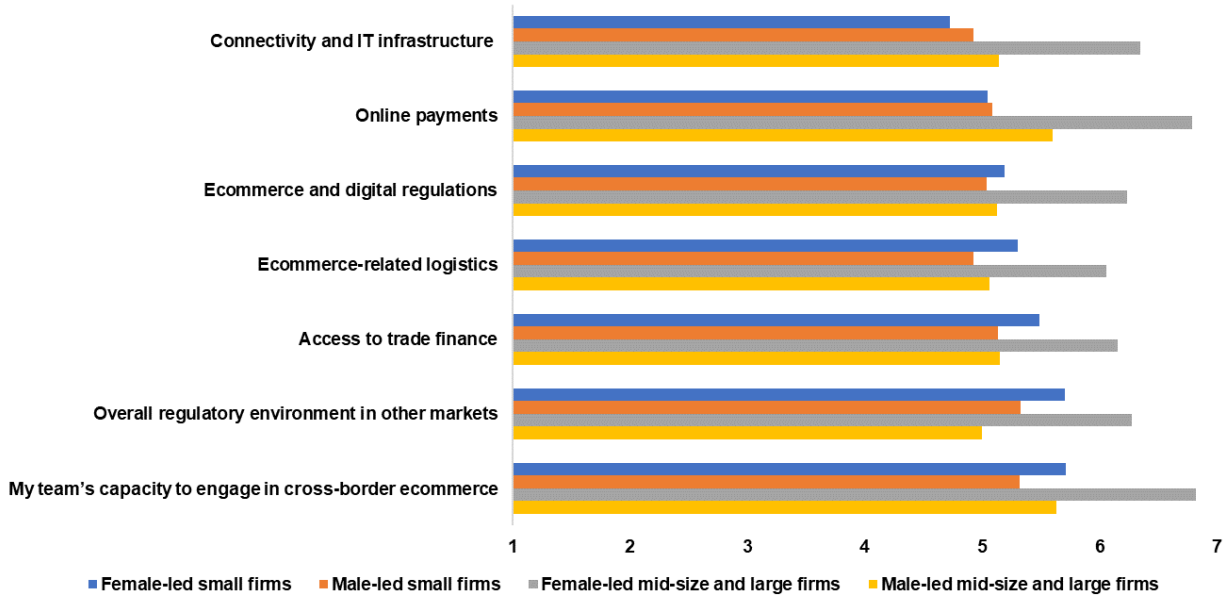
For firms to engage in cross-border e-commerce, there must be an enabling environment with (i) excellent internet connectivity and information technology, (ii) e-commerce logistics, (iii) online payment facilities, (iv) a skilled workforce, and (v) an accommodating regulatory environment, including digital and payment regulations that encourage online transactions and innovation and business access to data and digital services; regulations that enable and incentivise entrepreneurs to open, formalise, and run a business online; and regulations that facilitate cross-border e-commerce, such as market access regulations and customs procedures at home or abroad (Suominen 2017). Firms that engage in e-commerce and cross-border e-commerce also require various forms of capital—fast-disbursing working capital loans needed to buy supplies and labour to fulfil a large order, early-stage financing to set up an e-commerce business, and trade finance to ensure foreign buyers will pay for the good shipped.

Which of these areas should policymakers prioritise to best fuel e-commerce? And how can they best assist smaller women-led firms to engage in e-commerce? While useful, existing databases in areas such as internet connectivity or logistics performance do not yield answers specific to e-commerce: they do not say anything about the central issues facing e-commerce sellers such as interoperability of sellers' and buyers' online payments systems, cost of last-mile logistics, or quality of online copyright rules and consumer protections. They also do not differentiate the severity of challenges by firm size or type, which limits policymakers' ability to target interventions to specific firm types. To answer these questions, Nextrade Group has developed data based on business surveys carried out worldwide since 2016. The benefit of doing firm-level surveys is that the information collected is specific not only to a country but also to different segments of business, enabling policymakers to focus targeted interventions on firms in different sectors or size categories.

There are six major results, all of which are echoed by three other surveys coordinated by Nextrade Group:

Challenges to doing e-commerce are steepest for small businesses, whether run by men or women. Firm size is consistently associated with firms' experience of barriers to e-commerce (Figure 6). In all regions surveyed, small firms give the various elements of the enabling environment for cross-border e-commerce an average score of 5 out of 10, a sign of dissatisfaction and much room to improve. There are practically no differences in the scores given by women-led and men-led firms; if anything, respondents from women-led firms give better scores, controlling for firm size, country, growth, and export-orientation. A study carried out by Nextrade Group for USAID in 2017 found that women-led small companies tend to report somewhat larger gaps in access to capital compared with their men-led counterparts (Suominen 2017). In general, however, male and female CEOs report similar broad challenges of equal severity, controlling for company size. Thus, the policy question is not how to help bridge gaps between women- and men-led firms' performance online, but how to get more women into the formal economy and selling online.

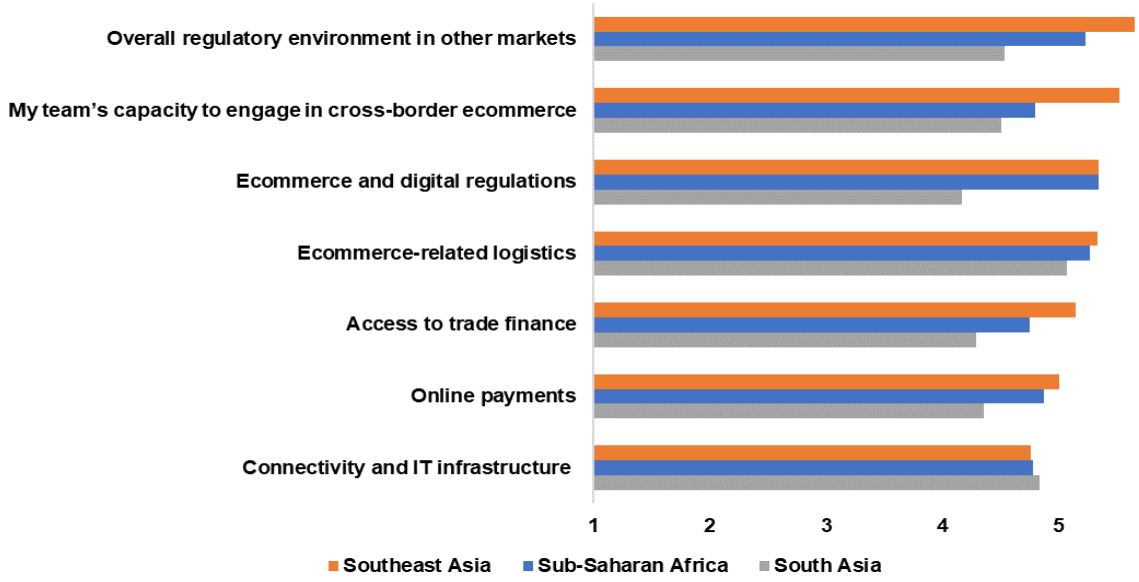
Figure 6: Views of small and large exporters in developing countries on the components of the enabling environment for cross-border e-commerce, by country and firm size (1 = very poor; 10 = extremely good)



Note: 1 = very poor; 10 = extremely good.
Source: Nextrade Group surveys of 779 firms in 9 developing economies in December 2016–January 2017 and August 2018. The first survey and original survey design was conducted with the support of the United States Agency for International Development.

Challenges to doing cross-border e-commerce vary by region and country—and they are significant in all regions. In this sample, small Southeast Asian firms highlight connectivity and online payments as the main challenges. South Asian firms score digital regulations and online payments as lowest, and African firms struggle with their own capabilities to do e-commerce cross-border and with trade finance (Figure 7). In all regions, these challenges affect firms both in cross-border e-commerce and in domestic e-commerce. The overall regional score is correlated with development levels, as in other surveys. Given that the surveyed firms are in low-income economies, internet connectivity is still an important impediment in all these economies; it is less relevant in regions such as South America.

Figure 7: Small firms' views on the components of the enabling environment for cross-border e-commerce, by country and firm size



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Of 67 specific challenges that shape doing domestic and cross-border e-commerce, topping small exporters' lists are access to finance; costs and quality of logistics; customs procedures for e-commerce exports and imports; and, in the area of digital regulations, IP and copyright rules, liability rules, data privacy and localisation rules, and consumer protection laws (Tables 1–3). Regulatory issues related to registering a business, accessing licences and permits, and preparing taxes are of secondary concern as impediments to e-commerce. It is not clear how sophisticated the knowledge of the survey-takers is about the actual underlying regulation, but perceptions are essential in that they shape whether a firm even tries to engage in e-commerce, let alone cross-border e-commerce. The findings also highlight the growing importance of digital regulations as a consideration for small businesses to export, alongside the traditional themes of customs clearance and market access. Non-exporters are less concerned about the regulatory issues for cross-border trade; their primary concerns are the basic issues of accessing financing and low-cost logistics.

Access to finance and alternative finance solutions is a major and universal binding constraint to small firms, including women-led firms, to thrive in e-commerce. Small online sellers need financing for a number of things: equity financing to start and grow their online businesses; working capital and small lines of credit to fill incoming orders and run their day-to-day cash flow; and trade finance, such as letters of credit or trade credit insurance, to ensure they get paid from foreign buyers when shipping abroad. All of these areas are major constraints for small sellers in developing countries to run and scale their online businesses. Promising regulatory innovations such as financial technology (FinTech) sandboxes, equity crowdfunding laws, and open banking practices can lower these hurdles.[3]

[3] Sandboxes are used widely around the world to enable FinTech applications to deploy quickly with temporary regulatory authorisation for a certain period, such as 24 months. Companies can quickly and more cheaply test the market for their technologies, and regulators can learn about technologies' uptake and operation, and learn which, if any, areas would need to be regulated—for example, in areas such as consumer protection or competition policy.

Table 1: Southeast Asian small exporters' rank-ordering of specific regulatory and other challenges for cross-border e-commerce

1	Availability of early-stage funding and growth capital
2	IP protections in other markets
3	Availability of working capital loans (from banks etc.)
4	Postal services for cross-border ecommerce - import or export
5	Copyright laws in other markets
6	Censorship rules
7	OTT regulations (application of telecom and broadcast rules)
8	Customs rules for ecommerce imports
9	IP protections for ecommerce merchants
10	Cyber-security concerns
11	Availability of digital finance (online P2P working capital loans, etc.)
12	Tax rules in other markets
13	Copyright laws
14	Availability to trade finance for merchants
15	Legal liability laws for online sellers in other markets
16	Customs rules for my ecommerce exports
17	Preparing taxes for my business
18	Legal liability laws for platforms and merchants
19	Registering a business
20	Tax rules
21	Getting permits and licenses for my business
22	Customs rules on low-value shipments
23	Consumer protection laws
24	Data localization requirements
25	Consumer protection laws in other markets

Note: out of 40 challenges.
Source: Nextrade Group surveys of 779 firms in 9 developing economies in December 2016–January 2017 and August 2018. The first survey and original survey design was conducted with the support of the United States Agency for International Development.

Table 2: Sub-Saharan African small exporters' rank-ordering of specific regulatory and other challenges for cross-border e-commerce

1	Availability of digital finance (online P2P working capital loans, etc.)
2	Availability of early-stage funding and growth capital
3	IP protections for ecommerce merchants
4	Cost of cross-border online payments
5	Availability of outside working capital loans (from banks etc.)
6	IP protections in other markets
7	Customs rules for ecommerce imports
8	Availability to trade finance for merchants
9	Cyber-security concerns
10	Customs rules for my ecommerce exports
11	Postal services for cross-border ecommerce - import or export
12	OTT regulations (application of telecom and broadcast rules)
13	Tax rules
14	Legal liability laws for platforms and merchants
15	Copyright laws
16	Customs rules on low-value shipments
17	Legal liability laws for online sellers in other markets
18	Tariffs for imports in my own market
19	Copyright laws in other markets
20	Registering a business
21	Consumer protection laws
22	Tax rules in other markets
23	Foreign exchange restrictions in cross-border payments
24	Data privacy requirements
25	Licensing regulations for my business in foreign markets

Note: out of 40 challenges.
Source: Nextrade Group surveys of 779 firms in 9 developing economies in December 2016–January 2017 and August 2018. The first survey and original survey design was conducted with the support of the United States Agency for International Development.

Table 3: South Asian small exporters' rank-ordering of specific regulatory and other challenges for cross-border e-commerce

1	Availability of early-stage funding and growth capital
2	Data privacy requirements
3	Interoperability of my country's digital regulations with those of trading partners
4	Postal services for cross-border ecommerce - import or export
5	Consumer protection laws
6	Censorship rules
7	Cost of cross-border online payments
8	Availability of outside working capital loans (from banks etc.)
9	IP protections for ecommerce merchants
10	Cyber-security concerns
11	Tax rules in other markets
12	Data localization requirements
13	Customs rules for my ecommerce exports
14	Customs rules on low-value shipments
15	Legal liability laws / safe harbor from liability for platforms and merchants
16	Availability to trade finance for merchants
17	Tax rules
18	Censorship rules in other markets
19	Consumer protection laws in other markets
20	Availability of digital finance (online P2P working capital loans, etc.)
21	Copyright laws
22	OTT regulations (application of telecom and broadcast rules)
23	Data localization requirements in other markets
24	Tax filing for my business
25	Copyright laws in other markets

Note: out of 40 challenges.
Source: Nextrade Group surveys of 779 firms in 9 developing economies in December 2016–January 2017 and August 2018. The first survey and original survey design was conducted with the support of the United States Agency for International Development.

In some countries in South Asia and Latin America, online sellers are concerned about the interoperability of their countries' digital regulations with those of their main trading partners. For a small company to have to meet different consumer protection, copyright, data privacy, and other digital regulations in each new market is excessively costly and discourages export diversification. Divergent product standards or rules of origin have discouraged export diversification for years in the offline economy, especially among small firms, for which the fixed costs of trade compliance are relatively higher than for larger firms with large production runs. Paradoxically, small firms that are empowered by e-commerce to sell across many markets are also least likely to be able to shoulder the costs of complying with disparate national digital regulations in each new market.

Firms that are still selling products or services offline tend to worry about the costs of starting to sell online and uncertainties related to the return on investment. Asked to highlight their top three challenges for starting to sell online, more than 40 percent of respondents from women-led firms highlighted concerns about the upfront costs. This result appears in survey after survey for both men and women and is reflected in firms' highlighting access to early-stage funding as a key impediment to e-commerce (Figure 8). Also, access to basic internet connectivity, e-commerce logistics, and questions about the return on investment in online sales capabilities hold women back. Men are more likely than women to highlight small domestic market and logistics issues as impediments to starting to sell online.

Figure 8: Percentage of small offline sellers agreeing an area is among their top three challenges to start to sell online, by gender

Source: Nextrade Group survey of 245 firms in 9 developing economies conducted in August 2018.

It must be remembered that these survey results are self-reported and based on perceptions. However, the data behave as any trade economist would expect: the severity of challenges reported by online sellers is highly and systematically correlated with a country's level of development and firm size, a familiar predictor of firms' participation in trade. As in many other databases, good things go together: a country where businesses assign good scores in one area tends to also get good scores in all areas. These empirical regularities tend to hold, survey after survey.

Another important issue to keep in mind is that this paper surveys mostly people who are working in a business and do some e-commerce, as they are the people who know something about the regulatory issues associated with selling and exporting online. Thus, this paper omits a large set of people who are still dealing with issues related to establishing a business, getting networked to clients and partners, accessing information technologies, and so on—areas where, studies suggest, women in many countries tend to face more obstacles than men.

This survey did not ask firms which e-commerce platforms they use; some respondents may well have classified themselves as "online sellers" even if they use a social media platform such as Facebook or Instagram to market online and then perform transactions offline based on those leads, using cash, cheques, or bank transfers. Anecdotal evidence suggests that most sellers in developing countries are indeed Facebook and Instagram sellers (Suominen forthcoming b). In the study in the Pacific islands, women were marketing to Australian shoppers on Facebook until at some point they were able to set up their own online stores and proper online payment capabilities. A hypothesis to explore is whether social media platforms such as Instagram and Facebook are effective incubators of online sellers, who then graduate to transacting online after certain events occur, such as securing a bank account to effect online payments or securing capabilities to create online stores. If this were the case, then the path to an online seller with online payments could be shortened with donor support—or by Facebook offering transactional e-commerce capabilities. The data suggest that once women-led firms are in business and selling online, women do not do worse than men; if anything, they do better.

4. POLICY IMPLICATIONS AND AGENDA

E-commerce is opening up new sales and export and import opportunities for companies large and small, but many challenges, especially in developing countries, hamper both women- and men-led firms from taking advantage of online commerce for exports and imports. Governments and donors intent on helping women-led small online sellers to thrive, sell more, and export should improve market access, customs regulations, and the range of digital regulations that fuel online transactions and provide companies with certainty that their IP is protected and their data are accessible, and enhance women-led firms' access to early-stage finance and working capital. Specific challenges in these areas vary by country, but they are steepest for small businesses and non-exporters, irrespective of whether they are run by men or by women. Thus, improvements in these areas will help businesses run by either men or women.

There are a number of specific suggestions for helping small firms, including those run by women, to sell online:

Promote women in setting up formal businesses, acquiring technology, and starting to sell online. Studies have found several barriers facing women in segments not captured by this survey—those that are seeking to establish a business and access technologies, financing, business networks, and talent. Meanwhile, it seems that women-led businesses covered in this survey—firms that are in the formal economy, digitised, and online—experience fewer if any gaps compared with similar men-led businesses. While much more research is still needed, there is no question that policy attention is critical to design and support programmes that enable women to get into business, formalise their companies, acquire technologies, and access financing. These aspects should be the first step towards building an economy where there is a more equal share of women-led and men-led firms, offline and online and in trade.

A number of countries have created programmes to help women get connected in business and into trade. For example, the United Kingdom (UK) has had a programme to enable women-led firms to access superfast broadband connections. It also created its Women in Innovation campaign to understand the challenges of being a female entrepreneur, and it hosts a women-only competition with awards offering innovation grant funding and mentoring (Suominen Forthcoming a). A number of countries have also created export-promotion programmes specifically to women. For example, ProChile's programme Mujer Exporta is aimed at helping women's companies to export. The programme offered training during 2017 through several regional workshops in Chilean cities. The Brazilian Agency for the Promotion of Exports and Investments (Apex-Brasil) has had a Women in Export project, held seminars for women entrepreneurs who want to enter the international market, and staged meetings for women entrepreneurs with international buyers (Suominen Forthcoming a).

Facilitate and digitise customs clearance for e-commerce imports and exports. Online sellers are, almost everywhere in the developing world, hampered by arcane customs procedures and trade compliance rules. The solution is regulatory reform and technology. For example, countries can create a Trusted eTrader programme so that frequent and compliant small e-commerce exporters and importers qualify for similar benefits as participants in Authorised Economic Operator or Trusted Trader programmes (Suominen 2015). Customs in developing countries need to modernise risk-targeting of exporters and importers and parcels through predictive analytics and machine learning in order to identify illicit shipments and fraudulent transactions aimed at avoiding duties, while accelerating customs clearance of legitimate trade (Suominen Forthcoming a). Several customs authorities are experimenting with blockchain technology, including in Costa Rica, Peru, the Republic of Korea, the UK, and the US. In January 2018, 15 countries in east Africa announced the launch of Digital FTA, a web of blockchain ledgers that enables easy generation of certificates

of origin. Digitising customs documents and clearance can be particularly useful for women in segments and countries where there is gender discrimination and harassment in border procedures (USAID 2012).

Adopt digital regulations that enable small firms in e-commerce to interoperate across countries. Many governments in developing countries have yet to establish domestic digital regulations in areas such as liability (and safe harbour laws) for internet intermediaries, data privacy, consumer protection laws and systems, and regulations surrounding alternative finance. Adopting digital regulations and programmes can encourage innovation, fuel cross-border flow of data, promote secure online identities, and accelerate firms' and consumers' access to secure, interoperable, digitised payments (Suominen Forthcoming a). In addition, at a time when countries are fashioning and revising their digital regulations, it is critical that countries work regionally and multilaterally to ensure digital regulations interoperate and are compatible between countries in order for online sellers to easily sell their goods and services across markets without worrying about complying with different copyright, consumer protection, liability, and data laws in each market. Free trade agreements (FTAs) can be used to enhance interoperability and cooperation in digital regulations, as has been done in the Chile–Uruguay and Chile–Argentina FTAs and in the Pacific Alliance.

Promote financing of women-led firms. Many governments in developed and developing countries have created programmes to further financing of women entrepreneurs. In a USAID-supported mapping of 40 countries' policies to fuel SME e-commerce, 21 countries were found to have created specific financing programmes for women entrepreneurs. Such programmes are typically formed to overcome what the empirical literature suggests are gender biases among lenders and investors (Alesina and Lotti 2013; Calcagnini, Giombini, and Lenti 2015; and Harkness 2016). For example, Business Development Canada's Women in Technology Fund has had US$ 70 million under management to invest and co-invest in early-stage women-led technology companies. Mexico has a programme under which micro-, small, and medium-sized enterprises with at least 51 percent female ownership are eligible for loans from Mex$ 50,000 to Mex$ 5,000,000 (up to about US$ 500,000) with 12–13 percent interest for 5 years (Government of Mexico 2017). Many governments are, or have recently been, creating venture funds to boost early-stage financing especially for technology companies; given the research on gender biases in financing and venture capital in particular, it is advisable that these programmes ensure a certain portion of the funds are allocated to women-led firms.

Open banking for data-driven lending. The quickly spreading government practices to encourage or mandate "open banking"—data-sharing between banks and other players in the finance ecosystems, such as payment providers and online lenders through application programming interfaces or shared data platforms—is expected to expand SMEs' access to fast-disbursing loans. The European Union has been particularly proactive, driving open banking through the updated version of the Payment Services Directive 2. Developing countries could embrace this practice because it can make lending more data-driven, open new opportunities for the long tail of less frequent and smaller borrowers, and possibly be less susceptible to gender biases in lending decisions as long as bankers are aware of their biases when looking at data and use lending algorithms that are explicitly free of gender biases.

Improve the environment for FinTechs, including through a regulatory sandbox. FinTechs are helping to bring financial services to smaller borrowers and, some studies suggest, help women entrepreneurs raise capital. Inspired by the UK, many governments, especially in East Asia, have pioneered lowering FinTechs' time and money to market with the sandbox approach. This allows companies to bring to market a new financial product or service without the entire gamut of regulatory approvals, and regulators can watch the market develop and regulate undesirable behaviours out. The approach has been found to help energise financial services and innovation, and

a number of countries have now adopted it. Some countries also see the sandbox approach as useful for financial inclusion (Jenik 2017).

Adopt legislation for crowdfunding. Online sellers uniformly complain about access to early-stage and growth capital. Studies suggest that women are facing fewer biases in securing equity financing online than offline. Equity crowdfunding where companies can sell securities online to investors has expanded dramatically in recent years and opened financing to companies that may not have extensive investor networks or that are run by women or minorities. Most developing countries in Africa and Southeast Asia still do not have equity crowdfunding laws. Legislation and regulatory oversight are seen as important means to fuel the crowdfunding market and keep the costs of issuance reasonable, while lowering the incidence of fraudulent practices and educating newer investors about the high risks inherent in early-stage deals (Alibhai, Bell, and Conner 2017). Women investors in developing countries can follow the footsteps of women investors in advanced countries, who have started angel funds and crowdfunding platforms focused exclusively on women-led firms.

Understand what keeps firms from formalising and, thus, doing online business. A major problem in developing countries is informality. Women-led companies are found to be particularly likely to remain informal. This impedes their access to bank accounts and investors. Companies are typically informal because it is a rational choice: the costs of being a formal business exceed the benefits. It would be useful for donors to take a deeper look at seller journeys—the steps and pain points that companies, especially online sellers, in different countries face when formalising their companies and when making transactions and running their businesses (banking, paying taxes, filing for paperwork in customs, and so on), and then determining how formalising a company could be made easier and more attractive, especially for online sellers whose success critically hinges on financial inclusion. These mappings could be disaggregated by gender in order to discover unique biases against women in the journey to becoming an online seller and operating an online business.

Collect data on the contents and impact of e-commerce-related regulations, disaggregated by gender. Gender-specific data in international trade and e-commerce are very nascent, and yet firm-level data disaggregated by gender are critical for developing programming specific for women and targeting development assistance to the hurdles women-led firms face. Governments have already made progress with some gender-related reporting, as part of the United Nations' semi-annual paperless trade surveys. There is much more work to be done to classify and quantify the range of regulations that impact on firms doing business online and uncover best practices. One recent effort is by the Alliance of eTrade Development the author coordinated with USAID, King & Spalding, Google, PayPal, and eBay, which analysed 50 regulatory and policy areas across 40 countries (Suominen Forthcoming a). This work also analysed countries' programmes aimed at women, such as helping women-led firms use high-speed internet or access early-stage funding. This type of regulatory mapping appears to be very useful for developing countries crafting e-commerce strategies or developing digital regulatory frameworks. It needs to be scaled up and made regular for the policy community to keep a finger on the pulse of the critical regulatory development shaping the global digital trade and economy. The next step is to assess the impact of these various regulations on different firm types, including women- and men-led firms.

There are also excellent opportunities for public–private partnerships to support women in e-commerce, given many corporations' keen interest in empowering women-led firms and meeting SDGs related to women. For example, TCS Holdings, Pakistan's leading logistics company, has been rolling out gender diversity initiatives aimed at increasing the participation of women in the workforce in Pakistan, where women make up 49 percent of the population but only 25 percent of the workforce. TCS Holdings has been working on increasing gender parity within its ranks through a series of women's initiatives, such as hiring women as e-commerce couriers to teach other women in remote villages how to use e-commerce on mobile phones or tablets. MasterCard has worked

with the IADB on the #100KChallenge, an initiative to coach, connect, and certify more than 100,000 women entrepreneurs in the Americas by 2021.

Donors can use social impact bonds (also known as development impact bonds), in which the private sector invests first and, upon achieving metrics of interest to the donors (such as some percentage point expansion of online export sales or number of online sellers), the donor "buys" successful projects and compensates the private investor for generating social impact (Suominen 2017).

On a more general note, it is important for governments to mainstream trade considerations into digital regulations. Regulations crafted by one agency can inadvertently have negative implications on small businesses seeking to do online commerce. For example, consumer protection or data privacy laws intended to protect consumers may be crafted in a way that makes it complicated and costly for small businesses to market or sell online. Data are still quite sparse on the trade effects of various digital regulations on trade, but it is clear that these effects can be detrimental to governments' other objectives, such as to promote digitisation and small business exporters. In drafting and revising digital or other regulations that impact on doing business off- or online, governments need to mainstream digital trade considerations into the process of drafting digital and other business regulations. Regulatory processes need to ask, for example, is this data regulation designed to enable small online businesses? How do privacy and transfer rules limit my country's companies' competitiveness in the global digital economy? Does this consumer protection law or financial regulation or internet intermediary liability law promote or undermine my country's companies' and consumers' abilities to do cross-border e-commerce in goods and services?

These questions can be extended to firms of different segments, such as by asking how a given digital regulation might impact on women-led firms, or rural firms, or firms that are still informal.

5. CONCLUSION

This paper has made six main points: first, women do no worse as online sellers than do men. A very similar share of women-led and male-led firms sell online, and women-led online sellers tend to export to just as many markets as do male-led firms. Women-led firms that sell online also tend not to perceive higher barriers to doing e-commerce than male-led firms of the same size from the same country. However, the share of women-led firms in all firms that have online sales activity is still small and simply reflects the share of women-led firms in the overall economy. This, along with some other early evidence, suggests that women may do better online than offline as business leaders.

Second, these data do not say that women do not face higher hurdles to start a business, make it profitable, secure technology and financing, and so on compared with male-led firms. Studies suggest that, in many countries, women wage a bigger uphill battle in these areas than men, which may be one reason why most formal enterprises are run by men. The survey here tends not to capture people who are still trying to get into business; rather, it is biased towards people who are digitised (as the surveys are in part fielded, and thus taken, online), are working as employees or business owners, and often are using e-commerce to buy or sell online—because it is those people who have something meaningful to say about the challenges of selling online. In this particular set of people, there are few differences between men and women in performance as business leaders, size of business, export propensity, and challenges faced in selling online. The policy question is not how to help bridge gaps between women- and men-led firms' performance online; rather, the question is how to get more women into the formal economy and to sell online.

Third, if the policy goal is to promote e-commerce by women-run firms in developing countries, then policies need to be tailored to the country and the type of firm: regulatory and other challenges vary significantly and consistently by firms' country, size, and export status. The hurdles that, for example, a medium-sized company in El Salvador faces in doing e-commerce at home and across borders are different from those that a medium-sized company in Indonesia faces, regardless of whether the firms are run by men or women. Likewise, hurdles faced by small Indonesian firms are often different from those faced by large Indonesian firms, and hurdles faced by small Indonesian exporters are different from those faced by Indonesian non-exporters, whether run by men or women. Presumably, other characteristics, such as a firm's sector or the gender of the CEO, matter far less—if at all.

Fourth, small firms led by women (and by men) across markets face higher hurdles relative to larger firms to doing e-commerce and cross-border e-commerce: they uniformly rate the elements of the enabling environment for e-commerce, such as logistics and customs procedures, online payments, access to finance, and access to staff capabilities for e-commerce, lower than do large companies. They also struggle with digital regulations, such as IP and copyright rules online; legal liability for online sellers and platforms supporting them; and data privacy and localisation rules. The various traditional regulatory issues related to doing business, such as registering a business, handling paperwork, filing taxes, and so on, appear to pose fewer obstacles to firms, whether run by men or women, to sell online than the regulatory issues related to customs clearance, market access, and copyright and liability protections online.

Fifth, developing countries have yet to adopt the range of regulations that would enable their companies to engage in cross-border e-commerce. But regulations are just one piece of helping women-led firms trade more online. Policymakers should also focus on two other leading constraints facing women-led (and men-led) firms in developing economies: logistics costs and access to finance. Of course, these areas can be improved through regulatory reforms (such as

liberalising logistics services or passing equity crowdfunding laws), but they can also be remedied with specific programmes, public–private partnerships, and tax incentives.

Sixth, there are several potential solutions: (i) simplifying and digitising business registrations and regulatory and tax filings; (ii) securing and facilitating trade and revenue collection by using blockchain and predictive analytics that separate licit from illicit shipments efficiently; and (iii) adopting digital regulations and programmes that encourage innovation, fuel the flow of data, promote secure online identities, and accelerate firms' and consumers' access to secure, interoperable, digitised payments. It would also be helpful to make the financial services ecosystem much more agile and responsive to the needs of small businesses through promotion of FinTechs, open banking practices that enhance flows between banks and financial services, equity crowdfunding that enables investors and companies looking for capital to connect at scale, and leveraging blockchain in banking to run know-your-customer checks and accelerate trade finance. All of these reforms help women-led businesses in developing countries to engage in online commerce; many of them may help women disproportionately by removing gender biases in customs, banking, venture capital, and marketing.

Three final points: first, while it is not at all clear and seems unlikely that women are severely disadvantaged when selling online or in trade—and some evidence appears to suggest the opposite—opening opportunities for women and girls to get into business and learn about exporting is valuable, particularly in countries where women have less access to technology, finance, knowledge, and networks, and where they are seldom business owners. Once the starting points in these areas are the same, the outcomes depend less on the entrepreneurs' environment or gender than on their ability. Empowering women is also critical because of the central, perhaps outsized, role of women in household welfare and intergenerational wealth transfer.

Second, policymakers need to be careful in interpreting data on gender differences and to not read too much into descriptive statistics. Before deciding that women face higher hurdles or that women-led firms do better or worse than male-led firms, it is important to control for the many other variables that shape firms' performance, engagement in e-commerce, export participation, job creation, and growth. Gender of the CEO or management team may be one of the factors that makes a difference, but it is hardly the only one, and probably seldom the main one—and it may not matter at all.

Third, research is only incipient: samples of women-led firms are small, and generalisable findings are still scarce. There is a great deal of work ahead to understand how women perform as online sellers and online exporters and importers, and whether and which types of women-led firm—or any firms for that matter—grow faster, create more jobs, and reduce poverty among their employees and communities than firms that do not sell online. If the policy goal is to enable women-led businesses to engage in trade online, then much more research needs to be done on three questions: (i) What are the challenges facing women-led firms that seek to engage in e-commerce and cross-border e-commerce? (ii) What are the challenges facing women-led firms before they start selling online to digitise, formalise, and start an online business? And (iii) what are the impacts of business success online on women's lives, their businesses' growth and job-creation potential, and their countries' economies?

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