BREAKING BARRIERS
Female Entrepreneurs Who Cross Over to Male-Dominated Sectors
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Foreword

Female entrepreneurship is on the rise globally and in some countries, women are as or more likely than men to own a business, yet they operate smaller businesses and concentrate in less profitable sectors than men. Social norms, unconscious biases, lack of exposure to male-dominated sectors, and time and capital constraints are just some of the factors holding women back from entering more profitable male-dominated sectors.

This new report, *Breaking Barriers: Female Entrepreneurs Who Cross Over to Male-Dominated Sectors*, produced by the Africa Gender Innovation Lab, the East Asia and Pacific Gender Innovation Lab, and the Latin America and the Caribbean Gender Innovation Lab under the guidance of the World Bank’s Gender Group offers insight into who are the women who break into male-dominated sectors. Based on this analysis, the report highlights policy and program options for policy makers and other key stakeholders including development partners, civil society, and corporations.

The report spans three regions and ten countries, while also drawing upon a global survey of entrepreneurs through a social media platform. This multi country exploration unearths common themes across the globe while also demonstrating country-specific findings on gendered occupational segregation. While programs and policies to support female entrepreneurs who would like to enter male-dominated sectors will need to consider the country context to appropriately target specific sectors, several key messages emerge across countries in the report’s analysis.

In almost all countries in the sample, women who operate businesses in male-dominated sectors outperform women in female-concentrated sectors. Even though the sectoral composition might change from one country to another, helping women cross over to more profitable male-dominated sectors could contribute to their business performance more generally, and may also make them as profitable as male entrepreneurs. And this will contribute to economic growth as skills are more efficiently distributed.

Policy makers could explore a number of interventions that appear promising to support women to cross over. These include encouraging spousal support; safely connecting women to mentors and role models; providing early exposure to and training in male-dominated sectors; enhancing women’s education; and increasing access to capital and loans. Complementary measures, such as tackling discrimination and harassment, which work against female crossovers, could help women establish and grow their businesses once they have crossed over.

The broader economy loses when individuals consider only a limited set of occupations based on their gender. As businesses start to recover from the COVID-19 pandemic, we hope that the report’s findings will guide key decision-makers to implement programs and policies that enable women and girls to enter more profitable sectors, diversify their economic opportunities, and contribute to a faster, more equitable recovery.

Mamta Murthi
World Bank’s Vice President for Human Development
Acknowledgments

The *Breaking Barriers: Female Entrepreneurs Who Cross Over to Male-Dominated Sectors* report was prepared by a team led by Naira Kalra and Markus Goldstein, and included Maria Emilia Cucagna, Fannie Delavelle, Leonardo Iacovone, Hillary C. Johnson, Paula Lorena Gonzalez Martinez, Eliana Carolina Rubiano Matulevich, Elizaveta Perova, Rachael Pierotti, Gareth Roberts, and José Daniel Trujillo. Some sections are based on work by Salman Alibhai, Ana Maria Munoz Boudet, Niklas Buehren, Francisco Campos, Ludovica Cherchi, Daniel Kirkwood, Laura McGorman, Sreelakshmi Papineni, and Obert Pimhidzai.

This report is a collaboration of the World Bank’s Africa Gender Innovation Lab, the East Asia and Pacific Gender Innovation Lab, and the Latin America and the Caribbean Gender Innovation Lab under the guidance of the World Bank’s Gender Group.

The team thanks Cansu Birce Gokalp for leading the editing and production process, Tigist Assefa Ketema for providing research assistance and Amy Elizabeth Copley for her support with editing. The report was designed by Vito Raimondi and copyediting was carried out by Zuzana Johansen.

The authors would like to gratefully acknowledge Elena Ianchovichina and Maurizio Bussolo, who peer reviewed the report.

We are grateful to the United States Agency for International Development (USAID) and the World Bank Umbrella Facility for Gender Equality (UFGE) for funding the research. The UFGE is a multidonor trust fund administered by the World Bank to advance gender equality and women’s empowerment through experimentation and knowledge creation to help governments and the private sector focus policy and programs on scalable solutions with sustainable outcomes. The UFGE is supported with generous contributions from Australia, Canada, Denmark, Germany, Iceland, Latvia, the Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom, the United States, and the Bill and Melinda Gates Foundation.
BREAKING BARRIERS

Female Entrepreneurs Who Cross Over to Male-Dominated Sectors

Executive Summary
Picture the owner of a construction firm, a computer programming company, or an automotive repair store.1 Is it a man or a woman? If you pictured a man, you are not alone, and you are not far from reality. A recent study that uses global survey data from businesses with a Facebook Business Page showed that more profitable sectors, such as the three mentioned above, tend to be dominated by male-owned firms while female entrepreneurs tend to concentrate in sectors which are relatively less profitable (Goldstein, Gonzalez, and Papineni 2019). In addition to the glass ceiling women face in rising to leadership positions, female entrepreneurs are also potentially surrounded by glass walls, making it challenging for them to enter more profitable, traditionally male-dominated sectors (MDS).

Unconscious biases, societal norms, lack of exposure to the sector, and time and capital constraints are just some of the many push and pull factors holding women back from entering male-dominated sectors. Yet very little research has been undertaken to identify the factors that support women to enter such sectors. This report aims to fill this and other gaps in the literature on gender-based sectoral segregation.

In the first section, the report provides an overview of the sectors that are typically dominated by male entrepreneurs, and the sectors that have a concentration of female microentrepreneurs across the ten countries studied. Based on this understanding of gender-based segregation of sectors, the second section then presents an overview of the hierarchy of profits, referred to in this report as “the profitarchy”2 (Goldstein, Gonzalez, and Papineni 2019), for male and female entrepreneurs who are operating microenterprises across male-dominated and female-concentrated sectors. Within this profitarchy, the specific focus is on exploring the difference in profits among female entrepreneurs who cross over into male-dominated sectors compared to those who remain in traditionally female-concentrated sectors (FCS). The third section of the report offers a snapshot of the factors associated with being a female entrepreneur who crosses over to MDS and identifies the most salient cross-country factors that are associated with breaking into and surviving in these more profitable sectors. In its final section, the report outlines priority action areas and aims to provide policy makers and other key stakeholders including development partners, corporations, and civil society with concrete solutions to galvanize action around this agenda while highlighting the remaining knowledge gaps that require more experimentation and research.

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1 This exercise was inspired by a study by Tina Kiefer (2018), a professor of organizational behavior at the University of Warwick, where she asks the question, “Picture a leader. Is it a man or a woman?”

2 The profitarchy term was coined by the authors to describe the hierarchy of profits for male versus female entrepreneurs across sectors found in the Future of Business Survey
Executive Summary

What’s New in This Report?

A focus on microentrepreneurs: Data in this report, with the exception of the Future of Business (FoB) study, focus on microentrepreneurs. Globally, microenterprises account for an average of 39 percent of all firms (Aterido, Hallward-Driemeier, and Pages 2009), and in low-income countries, the “informal” microenterprise sector accounts for an average of 47.2 percent of gross domestic product (GDP), with women disproportionately overrepresented in this category of entrepreneurs (ICRW 2019; Mayoux 1995).

Synthesis of rich data: The report builds on previous research using data from 10 low- and middle-income countries across three regions as well as a global survey of entrepreneurs in 97 countries through the Future of Business (FoB) data set to provide (1) a multicountry overview of male-dominated sectors and female-concentrated sectors and (2) patterns in the hierarchy of profits, with a focus on comparing average profits of enterprises run by female entrepreneurs in FCS vs. those in MDS.

A multicountry exploration: This report aims to conduct an in-depth analysis of the characteristics of “crossovers,” women who cross over into male-dominated industries, in multiple countries to identify which policies and interventions could support more women to enter higher-paid, male-dominated sectors. The studies were conducted in Sub-Saharan Africa: Botswana (Cherchi and Kirkwood 2019), Ethiopia (Alibhai et al. 2017), Guinea, and Uganda (Campos et al. 2015, 2017); in Latin America: Mexico and Peru; and in Southeast Asia: Cambodia, Indonesia, Lao People’s Democratic Republic (Lao PDR), and Vietnam. The report also draws from the previously mentioned global multicountry FoB survey of entrepreneurs carried out through Facebook (Goldstein, Gonzalez, and Papineni 2019).

Policy focus: The report presents an overview of the types of policies and programs that can support crossing over to the typically more profitable male-dominated sectors.
Female-owned firms tend to concentrate in trade and retail industries, especially in textile and footwear, and pharmaceutical and perfume products, whereas male-owned enterprises dominate most manufacturing sectors as well as agriculture, forestry, and fishing.

The services sectors are neither male-dominated nor female-concentrated sectors. There appears to be a concentration of female entrepreneurs in some services such as hairdressing, personal services, hospitality, and food in all countries where these were assessed, while other services like automobile maintenance and sales, and small transport services are dominated by men. However, despite some common trends across countries we discuss in the report, there is no universal definition of which sectors are male dominated and which ones are not. As such, policies to support female entrepreneurs who would like to enter male-dominated sectors will need to consider the specific country context to appropriately target specific sectors.
Female entrepreneurs who cross over to male-dominated sectors perform better than female entrepreneurs in female-concentrated sectors in all countries studied except for Cambodia, where operating in FCS appears to be more profitable. In Botswana, Guinea, Lao PDR, and Uganda, crossing over to male-dominated sectors also ensures that female entrepreneurs are on average as profitable as male entrepreneurs operating in MDS.

In some countries, firms owned by men continue to do better than those owned by female entrepreneurs irrespective of the sectors they operate in, suggesting crossing over as only one promising tool in a broader set of policies to support female entrepreneurs. This is observed in Indonesia, Mexico, and Vietnam. This might be a result of women clustering in less profitable roles and activities within the same sector, discrimination faced by women in male-dominated sectors, or other gendered barriers that limit female profits.
Executive Summary

Characteristics such as women’s education, past exposure to male-dominated sectors through work experience or training, exposure to MDS through male relatives, mentors, or role models, and spousal support appear to be positively associated with crossing over in almost all countries where these were assessed. Other factors that are explored in this report include sociodemographic and family-related characteristics such as age, marital status, household size, number of children, household assets, parental education, and parent’s occupation; skills and training-related factors including education levels, self-efficacy and locus of control, cognitive abilities, and exposure to a male-dominated sector through previous work experience; factors associated with social capital, networks, and family support such as receiving support from a spouse or partner, having a role model or mentor, and inheriting the business. Last but not least, we explore the characteristics of the business itself, such as whether it is run with a partner and jointly owned or owned solely by the entrepreneur, age of the business, number of workers it has, and whether the entrepreneur also works as an employee of the business. Even though only a handful of characteristics are consistently assessed across all studies, we find that each one of the abovementioned factors is associated with crossing over in at least one country if not more. Furthermore, spousal support appears to be key in successfully crossing over and operating in male-dominated sectors among married women.
Evidence-based programs and policies could support women to cross over and contribute to their business performance more generally. At its heart, occupational segregation is a constraint on growth. Limiting workers to certain sectors based simply on their sex prevents the economy from making the best use of the skills available. Public policy has a role to play in breaking down these barriers. The goal of these recommendations is not to make women more like men, but rather to level the playing field, opening up all sectors of the economy to women. Overall, we recommend policies and programs that encourage spousal support, safely connect women to mentors and role models, and provide early exposure to and training in MDS. Increasing spousal support, task sharing, and joint decision-making through couples’ training and mass media programs may help women cross over and continue to operate successfully in MDS. Initiatives that safely link female entrepreneurs to mentors in male-dominated sectors and expose them to MDS in general, such as internship and mentorship programs, can also be a promising approach to open these sectors to women. Furthermore, providing trainings that improve women’s socioemotional and cognitive skills, as well as their technical skills and access to information on MDS at early stages are other ways of encouraging women to cross over. In addition to addressing skills, it is also important to lift constraints around access to loans for businesses and access to networks within sectors, as well as to improve the overall conditions of working in MDS for women. Safety in the workplace should be guaranteed through measures including safe transport, reporting and redressal mechanisms, and gender sensitization for men in these sectors.

Since the impact of the COVID-19 pandemic has been disproportionately faced by female entrepreneurs, particularly those employed in the services sector, we hope that this report will shape policies and programs that will enable female entrepreneurs to diversify to other sectors of employment, strengthening their income potential and ensuring the stability of their income in crisis situations.
Executive Summary
INTRODUCTION

Sectoral Segregation and the Gender Profit Gap
Women make up a greater share of entrepreneurs worldwide than ever before. Globally the gaps in the ratio of female to male participation in entrepreneurial activity are shrinking, and in some countries, women are as or more likely than men to own a business (Buvinic, Knowles, and Witoelar 2018; Kelley et al. 2017; Kelley, Singer, and Herrington 2016; Meunier, Krylova, and Ramalho 2017). Women’s greater participation, however, does not mean that they are benefiting equally. Profits and sales of female entrepreneurs continue to be lower on average than those of male entrepreneurs and their businesses have higher closure rates and less potential for growth (Bardasi, Sabarwal, and Terrell 2011; Buvinic, Knowles, and Witoelar 2018; Carranza, Dhakal, and Love 2018; McKenzie and Paffhausen 2017; Rijkers and Costa 2012; World Bank 2019). The gender gap in profits may also be partly explained by the fact that women tend to run smaller firms than men (Hallward-Driemeier 2013; Carranza, Dhakal, and Love 2018; Buvinic, Knowles, and Witoelar 2018).

In addition to firm characteristics, the concentration of male and female entrepreneurs in different sectors of the economy may also explain this gap. Globally, women who enter male-dominated sectors earn 67 percent higher profits on average than women who remain in traditionally female-concentrated sectors (Goldstein, Gonzalez, and Papineni 2019). When comparing profits between male and female entrepreneurs across 26 countries in Eastern Europe and Central Asia (ECA), Sabarwal and Terrell (2008) found that women run smaller firms in terms of the number of employees and there is a gap in revenue between the average female and male entrepreneur in a given country. However, this gap significantly shrinks from 63.1% to 37.2% when the industry they operate in is accounted for. Even when we look among microentrepreneurs, where the firm’s size does not vary substantially, this gender difference in profits persists in many countries. Figure 1 shows the gender differences in profits among microentrepreneurs, where the size of the firm ranges from 0 to 5 or 6 employees. Microenterprises owned by men earn 12% more than those owned by women in Benin, 34% more in Botswana, and 80% more in Mexico.

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3 This is true for Sub-Saharan Africa as a whole, which is the only region where women make up the majority of those who are entrepreneurs (World Bank 2019).
4 The studies varied in their definition of microentrepreneurs. Some defined microentrepreneurs as those who own small or ‘micro’ enterprises/businesses with up to 5 employees while others defined them as having up to 6 employees.
5 While these are not all the results of representative surveys, they do provide a useful picture of gender gaps in profit.
Figure 1 Differences in past month or past year profit between female-owned and male-owned microenterprises

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**GENDER GAP IN MONTHLY PROFITS BETWEEN MALE AND FEMALE MICROENTREPRENEURS**

<table>
<thead>
<tr>
<th>Country</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin a</td>
<td>-7%</td>
<td>12%</td>
</tr>
<tr>
<td>Congo, Dem. Rep. a (census)</td>
<td>49%</td>
<td></td>
</tr>
<tr>
<td>Ethiopia a (manufacturing)</td>
<td>45%</td>
<td></td>
</tr>
<tr>
<td>Ghana a</td>
<td>36%</td>
<td></td>
</tr>
<tr>
<td>Malawi a</td>
<td>31%</td>
<td></td>
</tr>
<tr>
<td>Togo a</td>
<td>-7%</td>
<td></td>
</tr>
<tr>
<td>Uganda a</td>
<td>30.5%</td>
<td></td>
</tr>
<tr>
<td>Guinea a</td>
<td>41%</td>
<td></td>
</tr>
<tr>
<td>Botswana b</td>
<td>34%</td>
<td>80%</td>
</tr>
<tr>
<td>Mexico b</td>
<td></td>
<td>53.5%*</td>
</tr>
<tr>
<td>Indonesia b</td>
<td>1.6%*</td>
<td></td>
</tr>
<tr>
<td>Cambodia b</td>
<td></td>
<td>48.5%*</td>
</tr>
</tbody>
</table>

Sources:

a Profiting from Parity report (World Bank 2019).
b Data from the individual World Bank studies included in this report.

* = Yearly profits.
Overall, economic growth is hampered when individuals consider only a limited set of occupations to pursue work opportunities or open businesses. When this results from restrictive gender norms or gender differences in access to resources, growth potential is stymied for both female-owned enterprises themselves and the broader economy. Macroeconomic research on the consequences of occupational segregation of the workforce indicates that over the past 50 years, the increased participation of women and other marginalized groups in highly skilled professions in the United States has led to a 20–40 percent growth in gross domestic product (GDP) per capita (Hsieh and Klenow 2016; Hsieh et al. 2019). Complete removal of gendered occupational segregation could result in approximately another 10 percent increase in GDP today (Hsieh et al. 2019).

Studies that focus specifically on gendered sectoral segregation among just entrepreneurs, instead of the occupational segregation of the entire workforce, continue to highlight that segregation of male and female entrepreneurs into different sectors results in a misallocation of talent that can contribute to the gender gaps in profit. Firm profits are significantly lower in the sectors where women are overrepresented compared to sectors where they are underrepresented (Hallward-Driemeier 2013; Rijkers and Costa 2012; Bardasi, Sabarwal, and Terrell 2011; Hardy and Kagy 2020; Singh, Reynolds, and Muhammad 2001; World Bank 2019). A study from Michigan, USA, estimates that choosing to operate in the personal services sector, a typically female-concentrated sector, over construction and professional services, which are typically male dominated, explains as much as 9 percent to 14 percent of the earnings gap between male and female entrepreneurs (Hundley 2001). Globally, women who enter male-dominated sectors earn 67 percent higher profits on average than women who remain in traditionally female-concentrated sectors (Goldstein, Gonzalez, and Papineni 2019). Despite this, women tend to start businesses in fewer and less profitable sectors than men (Kalleberg and Leicht 1991; Fairlie and Robb 2009; Bardasi, Sabarwal, and Terrell 2011).
Why Do Female Entrepreneurs Concentrate in Less Profitable Sectors?

Female entrepreneurs tend to cluster in low-profit-yielding sectors, with lower returns, more informality, and lower potential for growth, compared to men who dominate a wider selection of industries (Carranza, Dhakal, and Love 2018; Hallward-Driemeier 2013; Bardasi, Sabarwal, and Terrell 2011). This is potentially driven by factors such as social norms about women’s interactions with men, the social roles attributed to them, their smaller, more family-related networks, financial discrimination, and lack of gender-equal property and labor laws, as well as the risk of facing gender-based violence, to name a few (World Bank 2019; Carranza, Dhakal, and Love 2018; Jayachandran 2020). These characteristics can impact both sector choice and profits. For example, social norms around what is acceptable for a woman to do in a particular culture may lead to women concentrating in a handful of sectors that then tend to be overcrowded, thereby making them less profitable (Hardy and Kagy 2020).

We highlight some of the many ways in which sector choice and resulting profit gaps are a cause and consequence of the systematic gender differences in societal expectations from female entrepreneurs.

Flexibility

One characteristic that may drive women’s concentration in some sectors is the flexibility of timing and location offered by the sector. Women may choose to operate in sectors that require less mobility and allow for home-based work due to safety concerns, care work, and household responsibilities (de Mel, McKenzie, and Woodruff 2009). Women typically shoulder a greater burden of care for small children and elderly relatives and are likely to locate their businesses in their homes to manage their household responsibilities (Carranza, Dhakal, and Love 2018). The occupational segregation literature also suggests that mothers tend to concentrate in stereotypically female occupations compared to nonmothers (Okamoto and England 1999).

However, the choice of location can impact the visibility and legitimacy of the businesses in the customer’s eyes and thereby reduce sales (Carranza, Dhakal, and Love 2018). Furthermore, women who run businesses out of their homes are likely to make working capital–related investments beneficial to both the business and the household. This contributes to lower returns on investments by women compared to men, who are less likely to work in sectors that allow flexibility of location and are also less likely to factor in household needs in their business investments (de Mel, McKenzie, and Woodruff 2009).
Introduction

Barriers to Entry

Linked closely to the flexibility offered by a sector are the barriers to entry and business formalization. Female-concentrated sectors typically have a lower share of formalization and fewer barriers to entry, such as a lower need for previous business experience, human capital, or social networks (Hallward-Driemeier 2013; Carranza, Dhakal, and Love 2018). The concentration of female entrepreneurs in sectors with lower barriers to entry is also not surprising given that worldwide, men and women have access to different opportunities, and there are essential gender gaps in educational attainment. This human capital constraint inherently makes these sectors less profitable.

The degree of formality within a sector, lower barriers to entry, and higher labor intensity can predict female entrepreneurs’ participation in the sector (Hallward-Driemeier 2013). Data from Sub-Saharan Africa (SSA), for example, demonstrate that the industry with the lowest share of formal entrepreneurs is the textile and garment industry, where 35 percent of the workforce is women. In contrast, the industry with the highest share of formal entrepreneurs is basic metal and metal products, where the female share is only three percent. The resistance to work in formal sectors can be due to many factors such as a lack of access to formalization processes because of literacy barriers, complex administrative processes with high costs in terms of time and money, or cultural barriers in engaging with business associations (Babbitt, Brown, and Mazaheri 2015; Benhassine et al. 2018 Demenet, Razafindrakoto, and Roubaud 2016; Jayachandran 2020).

Access to Capital

Male-dominated sectors are usually more capital intensive (World Bank 2019), which may be a barrier for women’s entry given the constraints women face in accessing capital. In Sub-Saharan Africa, for example, male-owned firms have six times the capital investment of female-owned firms (World Bank 2019). Due to these constraints, female entrepreneurs may select sectors that typically have smaller and less efficient businesses and require fewer capital inputs (Bardasi, Sabarwal, and Terrell 2011). Despite the fact that limited access to capital is one of the primary drivers of sectoral segregation, we sometimes see that when the sector is accounted for, the difference in profits or firm size due to access to capital is not always as stark. For example, when comparing the number of employees of male- and female-owned firms within Ethiopia’s services and manufacturing sectors, Bardasi and Getahun (2008) find that female-owned firms despite being younger on average, are larger and have greater revenues compared to male-owned firms within the same sector. And our study in Uganda also finds that once they are established in male-dominated sectors, there is no difference between male- and female-owned firms in the levels of capital (Campos et al. 2017).

In addition to constraints related to access to capital, investment decisions may also be a function of men and women facing societal pressure to perform different social roles, impacting their sector choice and profit motive (Carranza, Dhakal, and Love 2018).
For example, a series of experiments that provide grants to female entrepreneurs across Ghana, India, and Sri Lanka, find that these grants, when given to female entrepreneurs in multientrepreneur households, result in lower returns compared with when they are given to those who are the sole entrepreneurs in their households (Bernhardt et al. 2019). This profit gap is largely because women invest in their husbands’ firms rather than their own in multientrepreneur households and opt into different sectors than if they were the sole entrepreneur in their household. Another experiment in Sri Lanka finds that female entrepreneurs invest their existing income in capital that may benefit the household, while male entrepreneurs do not invest in the same way (de Mel, McKenzie, and Woodruff 2009). The experiment in Sri Lanka also finds that unconditional cash grants to microentrepreneurs led to profit increases for men but not for women. The authors attribute this to sector choice where they find that returns to investments are lower when the proportion of female entrepreneurs in a sector increases (de Mel, McKenzie, and Woodruff 2009). Therefore, the association between reduced capital and sector choice may run both ways: lower levels of capital may sort entrepreneurs into some sectors, but also sectors which require fewer capital inputs may not produce the same return to capital, ultimately undermining women’s earnings.

Regional differences in sectoral segregation are expected as gender norms continue to evolve. For example, in the past decade, qualitative research in Kenya and Zambia finds that men and women both report an increasing comfort with crossing gendered lines of work (Pike 2018; Evans 2014). Drawing on this notion that context matters, this report systematically explores data across ten countries in three different regions and analyzes whether sectoral segregation contributes to lower profits for female entrepreneurs who operate in traditionally female-dominated sectors by comparing their profits to women who cross over to traditionally male-dominated sectors. In contexts where women in MDS make more profit than those in FCS, we then explore context-specific factors that may contribute to crossing over and operating in sectors that are traditionally dominated by men.
Understanding the Common Barriers to Crossing Over to Male-Dominated Sectors across Ten Countries in Three Regions

We draw the data from a mix of existing studies conducted in Botswana (Cherchi and Kirkwood 2019), Ethiopia (Alibhai et al. 2017), Uganda (Campos et al. 2015, 2017), newly conducted surveys in Guinea, Mexico, Peru, and existing data in Cambodia, Indonesia, Lao PDR, and Vietnam of female entrepreneurs in male-dominated and female-concentrated sectors. We also draw from the Future of Business survey, which entailed a multi country survey of female entrepreneurs using a social media platform (Goldstein, Gonzalez, and Papineni 2019). Across all countries where female entrepreneurs who cross over to male-dominated sectors stand to make more profits, we aim to understand the characteristics that differentiate those in the more profitable male-dominated sectors from those in the less profitable female-concentrated sectors. Given that our data are cross-sectional, we cannot separate whether the characteristics we identify are constraints that hold women back from entering more profitable male-dominated sectors or whether they result from sectoral choice. As we see from the complex literature on women’s sectoral choices, many individual and cultural constraints that drive sectoral segregation also drive gendered profit gaps. Identifying these characteristics and potential points of intervention can help maximize profits for female entrepreneurs in general, even if not through helping them cross over.

However, before answering these questions, we must first understand what male-dominated and female-concentrated sectors are. In the following section, we build on previous studies and research conducted for this report to offer an overview of male-dominated and female-concentrated sectors in individual countries, within and across regions. Finally, we compare and contrast existing evidence to establish trends and highlight differences in sectoral segregation across countries in the three regions that are the focus of this report.

6 More details of the surveys can be found in tables A.1 and A.2 in appendix A of this report. In some settings we also obtained data from male entrepreneurs in male-dominated sectors and female-concentrated sectors.
SECTION 1

Gender-Based Sectoral Segregation of Firms
How Do We Determine if a Sector of a Firm is Male Dominated or Female Concentrated?

The research we synthesize uses two approaches to classify sectors in each study as male dominated or female concentrated (see appendix B for details on sector classification in each study).

The first approach used in most of the studies in this report (8 studies) classifies sectors as male dominated if men own at least 70 percent of enterprises in that sector, otherwise the sector is classified as female concentrated (except for Uganda, where a 75 percent threshold was used). Data from representative surveys were used for sector classification in Cambodia, Indonesia, Lao PDR, Mexico, and Vietnam, and nonrepresentative surveys were used in Guinea and Uganda (see appendix A for details on surveys used). This approach to sector classification builds on the percentage-based approach for sector classification that has been used in previous research. Notably, in their study of entrepreneurs in Brazil, Mexico, and Sri Lanka, de Mel, McKenzie, and Woodruff (2009) use a 75 percent threshold to determine if a sector is dominated by one gender. They consider industries in which both the male and female share of firms exceed 25 percent to be gender-mixed industries. Rijkers and Costa (2012) also used a similar approach in their study of nonfarm enterprises in Bangladesh, Ethiopia, Indonesia, and Sri Lanka, in which they divide the sectors reported in their surveys into three categories: manufacturing, trade, and services, and provide percentages of female participation across these sectors. Like de Mel, McKenzie, and Woodruff (2009), our study goes a step further by attempting to categorize sectors as male dominated or female concentrated (MDS or FCS) using a threshold.

In the second approach, women’s perceptions of sectoral segregation were used instead. Sectors were classified as male dominated if at least 70 or 75 percent of respondents answered that men own most enterprises in their business sector, otherwise the sector was classified as female concentrated. The Future of Business (FoB) survey (with a 70 percent threshold) and surveys carried out in Botswana and Ethiopia (with a 75 percent threshold) used this approach. This use of perception for sector classification was used and tested in a previous study of businesses by Anna et al. (1999) in Illinois and Utah, who asked survey respondents to provide their perceptions of the gender composition of their respective industries. They found that this approach to sector classification results in a very close estimate of the data they collect from the US Census. For example, women business owners operating in industries identified as nontraditional perceived that the industry consisted of 12 percent female owners, and US Census data showed an average of 17 percent women ownership in those sectors. Their
study reinforces that using women’s perceptions of whether their sector is male dominated or female concentrated is also a valid approach to classifying sectors.

While several sectors can be classified as male dominated based on these two approaches, only one sector (hairdressing and personal services) is consistently dominated by female entrepreneurs, i.e., where more than 70 or 75 percent of entrepreneurs are women across all the countries in which data on that sector are available.\textsuperscript{12} Previous studies that used such thresholds to categorize sectors as female dominated were carried out in industrialized countries. For example, Sappleton (2009) defines an industry as female dominated if it consists of at least 65 percent women, based on the European Social Survey. However, this approach cannot be applied in developing countries, as potentially there is relatively lower overall participation of women in entrepreneurial activity compared to men (Kelley et al. 2017; Kelley, Singer, and Herrington 2016), resulting in too few sectors that would meet this criterion. Given the paucity of truly female-dominated sectors in our studies, for the purpose of understanding gendered sectoral segregation, we consider all sectors that have less than 70 or 75 percent male entrepreneurs as female-concentrated (see box 1 and appendix table B.1 for details on cutoffs used in each country).

### What Are Male-Dominated Sectors and Female-Concentrated Sectors?

We find consistent patterns in the sectoral concentration of female entrepreneurs across the three regions (see figure 2 and table 1 below for a summary of MDS and FCS by country).\textsuperscript{13} Female-owned firms tend to concentrate in trade and retail industries, whereas male-owned enterprises dominate manufacturing sectors and agriculture. In manufacturing, male-dominated sectors include metal works and engineering, construction, other manufacturing and repair, and leather manufacturing/shoemaking and repair (except Indonesia and Vietnam, where some of these are female concentrated).\textsuperscript{14} We find that only two manufacturing sectors are female concentrated across almost all studies: food processing (except in Mexico) and textile manufacturing and repair. Additionally, agriculture (including forestry and fishing) are dominated by men across all countries (except in Cambodia, where it is female concentrated).\textsuperscript{16}

In contrast, automobile maintenance and sales are the only sectors dominated by male entrepreneurs on the trade and retail side, whereas many trade and retail sectors are female concentrated (i.e., are composed of more than 30 or 35 percent female entrepreneurs). These include the trade of textiles and footwear (except in Mexico), other retail trade (except

\textsuperscript{12} No data were available for that sector for Cambodia, Indonesia, Lao PDR, or Vietnam.

\textsuperscript{13} It is important to note that not all sectors are captured in all countries and that the sampling strategy differs from country to country. The trends reported in this section are broad and based on the data available as well as a function of who was surveyed in each country. A visual representation that specifies where we are drawing these trends from is provided in table 1. More details of the individual countries’ survey samples are provided in appendix D.

\textsuperscript{14} Metal works and engineering, and construction in Vietnam, and mother manufacturing and repair, and leather manufacturing/shoemaking and repair in Indonesia.

\textsuperscript{15} No data were available for that sector in Guinea.

\textsuperscript{16} No data were available for that sector in Botswana, Ethiopia, or Uganda.
in Mexico), trade of pharmaceutical products, perfume, and small electronic products, and wholesale trade (except in Botswana and the FoB survey). These results confirm findings from previous studies that female-owned firms tend to concentrate in trade and retail, whereas male-owned firms dominate manufacturing\(^{17}\) (see appendix table B.2 for a comparison of our findings on sectoral segregation compared to previous research).

Services as a whole are not clearly male dominated or female concentrated in our study. A number of services are male dominated across almost all countries, such as transportation and storage, electricity and gas supply, water supply and waste management, and small transport services. Still, many services are female concentrated, notably waitering and food services/accommodation, hairdressing, personal services (no data available for Southeast Asia), and tourism services (except in Ethiopia).

\(^{17}\) In their literature review of female entrepreneurs globally, Klapper and Parker (2010) find that female-owned firms tend to concentrate in labor-intensive sectors such as trade and services, and similar trends are shown by Bardasi, Sabarwal, and Terrell (2011) in Europe and Central Asia, Sub-Saharan Africa, and Latin America and the Caribbean; Hallward-Driemeier (2013) in Sub-Saharan Africa; and Anna et al. (1999) in the United States.
### Figure 2
Likelihood of being categorized as male dominated or female concentrated in sectors that were identified across all three regions

<table>
<thead>
<tr>
<th>Sector</th>
<th>Sub-Saharan Africa</th>
<th>Latin America and the Caribbean</th>
<th>Southeast Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry, and fishing</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Water supply and waste management</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Wood manufacturing and repair</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Leather manufacturing/shoemaking and repair</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Textile manufacturing and repair</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Automobile maintenance and sales</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Metal works and engineering</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Food processing</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Trade of food, beverages, and tobacco retail</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Trade of textile and footwear</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Trade of pharmaceutical products and perfumes, small domestic electronic products</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Other retail trade</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Waiter/food services and accommodation</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Hairdressing and personal services</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Small transport services</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
<tr>
<td>Real estate activities</td>
<td>Male-dominated</td>
<td>Female-concentrated</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**

- a. Female concentrated in Cambodia, male dominated in Vietnam and Indonesia
- b. Female concentrated in Vietnam, male dominated in Indonesia
- c. Female concentrated in Vietnam, male dominated in Cambodia
- d. Female concentrated in Botswana, male dominated in Uganda and Ethiopia
- e. Female concentrated in Indonesia, male dominated in Vietnam
- f. Female concentrated in Indonesia, male dominated in Vietnam
- g. Female concentrated in Indonesia and Cambodia, male dominated in Vietnam and Lao PDR
This report goes one step further than previous studies and provides a more granular analysis of sectoral segregation. In most sectors our findings bring to light the need for more nuanced analyses by country and subsector.

**Broad Sector-Level Data May Hide Important Differences in Subsectors**

Our findings call for more granular analyses by subsector. Where available, sector-disaggregated data in our studies show that classifying broad sectors as male dominated or female concentrated may hide gender differences in subsectors. For example, Bardasi, Sabarwal, and Terrell (2011) find that the garments and leather goods are female concentrated in Europe and Central Asia and Sub-Saharan Africa. While we also find that textile manufacturing and repair is female concentrated in all countries in our study, except for Botswana, leather manufacturing/shoemaking and repair is male dominated in Ethiopia, Mexico, and Uganda. We also see this nuance within our studies, where typically the general “textile manufacturing and repair” sector is female concentrated. In the case of Guinea, where more granular sectoral disaggregation is available, sewing is a female-concentrated subsector, but carpets and weaving, as well as textile dyeing, are male dominated.

Similarly, in Ethiopia, Rijkers and Costa (2012) find that women are overrepresented relative to men in manufacturing, which includes food and beverages, brewing, grain milling, and manufacturing in their classification. This differs from the findings of our study, which shows that when we look at subsectors, leather, building, and other manufacturing are male dominated in Ethiopia, while food and beverage and textile manufacturing are female concentrated. However, without more information on the proportion of subsectors represented in Rijkers and Costa’s manufacturing category, it is difficult to assess whether this difference in findings is due to their results being skewed by specific subsectors within manufacturing or are a result of differences in the respective sample characteristics.

**Highlighting the Need for Finer Country-Level Analyses**

Our data show that few sectors are consistently categorized as MDS or FCS across all countries studied in the report or even within regions. We only detect homogeneity in sectoral segregation within regions in one sector, wood manufacturing and repair, which is dominated by male entrepreneurs in Africa (Botswana, Ethiopia, Guinea, and Uganda) and Latin America and the Caribbean (Mexico). However, this sector classification is not consistent across regions, and we find that this sector is female concentrated in Southeast Asia (Cambodia, Lao PDR, and Vietnam). Apart from this sector, all others have outliers within each region. For example, while a regional analysis of most of our Asian studies would point to manufacturing as a male-dominated sector, several manufacturing sectors are female concentrated in Indonesia. 

18 Excluding grain milling, food and beverages, distilling, and wearing apparel.

19 That women are concentrated in certain manufacturing sectors in Indonesia is aligned with other studies, including Asia Foundation (2013).
Similarly, comparisons with other studies also highlight regional and classification-based differences. For example, previous studies find that male-owned firms concentrate in the information technology (IT) sector much more than female-owned firms in ECA, SSA, and the US (Bardasi, Sabarwal, and Terrell 2011 and Anna et al. 1999). However, country-by-country analysis in this report brings to light a more nuanced gender distribution of entrepreneurs in the IT sector. This sector is male dominated in Botswana (information and communication), Indonesia (internet service providers, web search information services), and Mexico, as well as in the Future of Business study. Still, it is female concentrated in Ethiopia (information and communication) and Vietnam (internet service providers, web search information services). Other studies also find that while sector sorting patterns by gender are very pronounced, they can vary from country to country. For instance, Rijkers and Costa (2012) find that in Bangladesh and Ethiopia, female firms are engaged in manufacturing, and almost none are trading firms. In contrast, in Indonesia they find that only 3 percent of all female firms are in manufacturing, compared with 14 percent of all male firms.

Therefore, we highlight that policies to encourage female entrepreneurs to cross over into a specific male-dominated industry should not be based on broad region-level sector classifications. Analyses based on gender-disaggregated sectoral data from one or two regions are not generalizable across countries, and context-appropriate analyses are needed to provide policy recommendations.

Now that we have established that female and male entrepreneurs cluster in certain sectors within each country, and the need for a granular look at male and female concentration in sectors and subsectors, we explore whether and how gender-based sectoral segregation/clustering is associated with business outcomes in the next section.
Section 1: Gender-Based Sectoral Segregation of Firms
### Table 1: Which sectors are male-dominated or female-concentrated for firms?

<table>
<thead>
<tr>
<th>Sector</th>
<th>SUB-SAHARAN AFRICA</th>
<th>LATIN AMERICA AND THE CARIBBEAN</th>
<th>ASIA</th>
<th>Facebook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry, and fishing</td>
<td>1</td>
<td>2</td>
<td>1, 3, 4</td>
<td></td>
</tr>
<tr>
<td>Poultry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity and gas supply</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Mining and quarrying</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water supply and waste management</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

#### MANUFACTURING

<table>
<thead>
<tr>
<th>Sector</th>
<th>SUB-SAHARAN AFRICA</th>
<th>LATIN AMERICA AND THE CARIBBEAN</th>
<th>ASIA</th>
<th>Facebook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood manufacturing and repair</td>
<td>13</td>
<td>11</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Building materials manufacturing</td>
<td>12</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Manufacturing furniture and related products (mattresses, curtains)</td>
<td>17</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leather manufacturing/shoemaking and repair</td>
<td>19</td>
<td>20</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>Textile manufacturing and repair</td>
<td>23</td>
<td>24</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td>Other manufacturing and repair</td>
<td>28</td>
<td>27</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>Fitting and machinery</td>
<td>30</td>
<td></td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Automobile maintenance and sale</td>
<td>31</td>
<td>32</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Metal works and engineering</td>
<td>35</td>
<td>36</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>Foundry</td>
<td>38</td>
<td></td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>Plastic and rubber industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food processing</td>
<td>39</td>
<td>41</td>
<td>44</td>
<td>43</td>
</tr>
</tbody>
</table>

#### TRADE AND RETAIL

<table>
<thead>
<tr>
<th>Sector</th>
<th>SUB-SAHARAN AFRICA</th>
<th>LATIN AMERICA AND THE CARIBBEAN</th>
<th>ASIA</th>
<th>Facebook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade food, beverages, and tobacco retail</td>
<td>45</td>
<td>47</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>Trade of textiles and footwear</td>
<td>49</td>
<td>50</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>Trade of pharmaceutical products, perfume, small domestic electronic products</td>
<td>51</td>
<td>52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wholesale trade (no automobile)</td>
<td></td>
<td>53</td>
<td>53</td>
<td>53</td>
</tr>
<tr>
<td>Other retail trade</td>
<td>46</td>
<td>54</td>
<td>46</td>
<td>46</td>
</tr>
<tr>
<td>Waiter/food service and accommodation</td>
<td>56</td>
<td>56</td>
<td>57</td>
<td>57</td>
</tr>
</tbody>
</table>

#### SERVICES

<table>
<thead>
<tr>
<th>Sector</th>
<th>SUB-SAHARAN AFRICA</th>
<th>LATIN AMERICA AND THE CARIBBEAN</th>
<th>ASIA</th>
<th>Facebook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration and support services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information and communication</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism services</td>
<td></td>
<td></td>
<td>57</td>
<td>57</td>
</tr>
<tr>
<td>Human health and social work</td>
<td></td>
<td></td>
<td>57</td>
<td>57</td>
</tr>
<tr>
<td>Computer programming activities</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leasing services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet service providers, web search information services</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hairdressing and personal services</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation and storage</td>
<td>65</td>
<td>66</td>
<td>67</td>
<td>66</td>
</tr>
<tr>
<td>Small transport services</td>
<td>68</td>
<td>69</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Real estate activities</td>
<td></td>
<td></td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>Arts, entertainment, and recreation</td>
<td>72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounting and auditing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage and warehousing</td>
<td></td>
<td></td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>Printing</td>
<td>75</td>
<td>76</td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>Chemistry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section 1: Gender-Based Sectoral Segregation of Firms

Note: FCS = female-concentrated sectors; MDS = male-dominated sectors.

1. Fishing
2. Agriculture
3. Agriculture/farming
4. Forestry
5. Electrical
6. Electricity, gas, and water
7. Construction services (plumbing, electrical, etc.)
8. Waste management
9. Water, sewage, and waste
10. Water transportation
11. Artisan: carpentry/woodwork
12. Carpentry
13. Woodwork
14. Wood industry
15. Manufacturing: wood
16. Wood products
17. Brick making
18. Artisan: furniture making
19. Shoemaking and repair
20. Manufacture of leather and fur products
21. Other manufacturing
22. Other
23. Textile: sewing is FCS, but Textile: carpets/weaving and Textile: dye are MDS
24. Tailoring /knitting
25. Industry: clothing
26. Manufacturing: wearing
27. Artisan: handicraft and Artisan: windows
28. Maintenance: non-auto
29. Industry: other
30. Repair of computers or household goods
31. Mechanic
32. Automotive repair and maintenance
33. Sales of motor vehicles
34. Automotive repair
35. Metal fabrication
36. Manufacture of products based on minerals and basic metal industries; manufacture of metal products
37. Fabricated metal products
38. Foundry and forgery
39. Food and beverage
40. Catering
41. Food/beverage production
42. Custom-made food preparation services
43. Industry: food
44. Manufacturing: food
45. Butcher, Baker
46. Retail trade
47. Restaurants, food sales
48. Shop/store
49. Retail trade textiles, clothing
50. Finance, insurance, real state
51. Pharmacy
52. Trade of perfumery and jewelry
53. Wholesale
54. Retail trade in ironmongery articles, chain and glass; motor vehicles, fuels and lubricants
55. Not food sales
56. Bars, cafes, and restaurants
57. Accommodation and food services
58. Food and beverage services (e.g., restaurants)
59. Communication services
60. Information services activities
61. Orientation services and social work
62. Software development
63. Telecommunications
64. Beauty salon
65. Storage and warehousing
66. Includes small transport services
67. Transportation and communication
68. Land transportation (except railway)
69. Service: transportation
70. Land transportation
71. Finance, insurance, real estate
72. Video club and CD rental
73. Creative, arts and entertainment
74. Warehousing
75. Printing/internet cafe
76. Printing and reproduction of recorded media
77. Printing or reproduction
SECTION 2

The Profitarchy
What is the Profitarchy?

In the global Future of Business (FoB) study, a hierarchy of profits by gender—the profitarchy—emerges when comparing firm profits. Male entrepreneurs in male-dominated sectors are the top earners, female entrepreneurs in male-dominated sectors and male entrepreneurs in female-concentrated sectors are in the middle tier, and finally, female entrepreneurs in female-concentrated sectors are located at the bottom (Goldstein, Gonzalez, and Papineni 2019). Simply put, the profitarchy is the gendered hierarchy of profits for entrepreneurs driven by the concentration of women in less profitable sectors compared to men, and the concentration of women in less profitable economic activities within sectors.

Globally, the average male-owned firm in a male-dominated sector has slightly more than double (+116 percent) the profits of a female-owned firm in a female-concentrated sector (Goldstein, Gonzalez, and Papineni 2019). From the multicountry FoB study, which surveys businesses on a social media platform, we find that this profitarchy differs slightly in developing and developed countries and further differs when we consider only the subset of microentrepreneurs in the data (see table 2). However, irrespective of these small deviations in rankings, the data from the FoB study generally indicate that women in male-dominated sectors (MDS) on average make more profits than female entrepreneurs in female-concentrated sectors (FCS), who are at the bottom of this profitarchy. We also find that male entrepreneurs, irrespective of their sectors, typically perform better than female entrepreneurs in FCS.

Table 2 The “profitarchy” rankings using the Future of Business survey with entrepreneurs across 97 countries

<table>
<thead>
<tr>
<th>Multicountry analysis by groups*</th>
<th>In MDS</th>
<th>In FCS</th>
<th>% gap in average profit between females in FCS and females in MDS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Males</td>
</tr>
<tr>
<td></td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
</tr>
<tr>
<td>All countries in the survey: SME + microentrepreneurs</td>
<td>61%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing countries: SME + microentrepreneurs</td>
<td>63%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developed countries: SME + microentrepreneurs</td>
<td>54%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All countries in the survey: microentrepreneurs</td>
<td>31%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing countries: microentrepreneurs</td>
<td>19%*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developed countries: microentrepreneurs</td>
<td>58%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE:
FCS = female-concentrated sectors;
MDS = male-dominated sectors;
SME = small and medium enterprises;
* = not statistically significant;
** = not statistically different from males in FCS but significantly lower than males in MDS.

20 The sample for the FoB study includes only business owners with Facebook business pages. Given the large gap in digital access faced by women compared to men in developing countries, the study may be underpowered to detect a difference between female microentrepreneurs in FCS vs. those in MDS in the developing country context.
Looking at the rankings of average firm profits by a combination of gender and sector (table 3), we find that female entrepreneurs who operate in male-dominated sectors outperform female entrepreneurs in female-concentrated sectors in all countries studied except Cambodia, where the opposite is true. While we lack the data to look at how women perform compared to men within MDS and FCS in all countries, where we do have these data, we see two trends emerge (figures 3 and 4, based on appendix table C.1). First, in Sub-Saharan Africa and Lao PDR, female entrepreneurs who cross over to male-dominated sectors are on average as profitable as the men who operate in these sectors. However, these are not the trends everywhere: in Indonesia and Mexico, men outperform women irrespective of sector. In Vietnam, men in MDS continue to perform better than women who cross over. Second, among firms in FCS, male entrepreneurs continue to outperform female entrepreneurs.

These two findings are in line with previous research, showing in some settings the gender gap in profits may diminish when sector is accounted for while in others, gender gaps remain even within female-concentrated or male-dominated sectors. In a study that uses data from Latin America and the Caribbean, Sub-Saharan Africa, and Europe and Central Asia but unlike our studies does not focus on microentrepreneurs, Bardasi, Sabarwal, and Terrell (2011) find the extent to which sector choice and gender of the entrepreneur explain gender gaps in profits depends on the region. On the one hand, in Sub-Saharan Africa, female-owned firms operating in MDS are as large as the male-owned firms in these sectors. While no gender gap in sales remains after the sector is accounted for, male-owned firms compared to female-owned firms perform slightly better in terms of sales revenue within the FCS. In Europe and Central Asia, sales revenue for male entrepreneurs in MDS was 70 percent greater than that of female entrepreneurs in FCS. However, the gender gap in sales remains after accounting for sector, indicating that other factors beyond sectoral choice contribute to this gap, an issue we explore further below. On the other hand, in Latin America and the Caribbean, female-concentrated sectors have firms that are larger and on average have a higher value added compared to firms in male-dominated sectors. However, male-owned firms in FCS still outperform female entrepreneurs. While this trend is not what we see among microentrepreneurs in our studies in Mexico or Peru, it is similar to what is observed in Cambodia (see table 3).

While gender-based sectoral segregation is one main reason women in FCS perform relatively poorly compared to women in MDS across almost all countries in our data, the extent to which sectoral segregation explains the gender gap in profits of male and female microenterprises also varies by country and region. Analysis from Indonesia, Lao PDR, and Vietnam shows
that adding controls for the sector of activity does not significantly reduce the gender gap in the performance of microenterprises. Moreover, male-owned firms in any sector, including FCS, continue to perform better than women-owned firms in Indonesia, Mexico, and Vietnam. Nevertheless, in Sub-Saharan Africa and Lao PDR, once women cross over to male-dominated sectors, they perform as well as men in MDS. Here we discuss ‘horizontal’ and ‘vertical’ segregation—the two key contributors to the gendered hierarchy of profits.

Table 3 The “profitarchy” ranking for the individual countries in our analysis

<table>
<thead>
<tr>
<th>Country*</th>
<th>Males in MDS</th>
<th>Females in MDS</th>
<th>Males in FCS</th>
<th>Females in FCS</th>
<th>% gap in average profit between females in FCS and females in MDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinea</td>
<td>1</td>
<td>1</td>
<td>—</td>
<td>2</td>
<td>90.24%</td>
</tr>
<tr>
<td>Botswana</td>
<td>1</td>
<td>1**</td>
<td>—</td>
<td>3</td>
<td>119.11%</td>
</tr>
<tr>
<td>Uganda</td>
<td>1</td>
<td>1</td>
<td>—</td>
<td>3</td>
<td>140%</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>—</td>
<td>1</td>
<td>—</td>
<td>2</td>
<td>80%</td>
</tr>
<tr>
<td>Mexico</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>50.55%</td>
</tr>
<tr>
<td>Peru</td>
<td>—</td>
<td>1</td>
<td>—</td>
<td>2</td>
<td>70.5%</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>79.5%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>31.9%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>66.9%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>-18.5%</td>
</tr>
</tbody>
</table>

NOTE:

FCS = female-concentrated sectors;
MDS = male-dominated sectors;
* = calculated using the difference in average monthly profits (appendix C) between female entrepreneurs in MDS-FCS/FCS*100;
** = females in MDS rank lower than males in MDS if windsorized results are used and when jointly owned firms are removed.

Appendix A provides details of the data used in each country.
Section 2: The Profitarchy

Figure 3 Average profit for female entrepreneurs in FCS vs. MDS for all countries (USD)

![Profits comparison (monthly, USD)](image1)

Note: FCS = female-concentrated sectors; MDS = male-dominated sectors.

* Sales were used in Lao PDR instead of profits due to data constraints.

Figure 4 Average profit for female entrepreneurs in FCS vs. MDS for all countries except Botswana (USD)

![Profits comparison (monthly, USD), without Botswana](image2)

* Sales were used in Lao PDR instead of profits due to data constraints.
Horizontal Segregation: The Role of Sectoral Segregation in Creating the Profitarchy

The profitarchy emerges in part due to a concentration of female entrepreneurs in different economic activities compared to male entrepreneurs. This type of segregation by sectors, known as “horizontal segregation,” is not surprising given that previous literature strongly suggests that women concentrate in less profitable, fewer, and more crowded sectors and industries. As discussed earlier, multiple studies find that female entrepreneurs largely seem to operate in sectors characterized by lower initial investments and growth, lower barriers to entry, and higher labor intensity compared to traditionally male-dominated sectors such as manufacturing, construction, and mining (Nissan, Castano, and Carrasco 2012; Hallward-Driemeier 2013; Rosa and Sylla 2016; Bernhardt et al. 2019).

Furthermore, female entrepreneurs selecting into a small number of sectors contributes to sector crowding, making these sectors less profitable to operate in. A study in Ghana finds that female microentrepreneurs continue to crowd into fewer sectors, despite the absolute number of women in nonagricultural self-employment being far greater than the number of self-employed men (Hardy and Kagy 2020). This demand-side constraint is also reflected in the qualitative data from our study in Guinea, where women operating in FCS report that they are less likely to overcome the constraint of finding customers compared to women who cross over to MDS.

Other studies find that socially constructed push and pull factors such as safety, care responsibility, mobility, time use, training, and economic constraints may drive women’s selection into less profitable activities and sectors. For example, one reason for selecting a less profitable income-generating activity may be social norms around which businesses or occupations women should choose. Findings from agribusiness entrepreneurs in Nigeria (Das et al., forthcoming), show that when given a choice of 11 different value chains, 54 percent of entrepreneurs chose to enter into poultry, one of the least profitable value chains among the choices, and that women were significantly more likely to choose poultry than men. Their analysis points to restrictive gender norms as preventing many women from crossing over into the more lucrative value chains, along with differences in land ownership and work experience in the chosen value chain, as well as differential access to tertiary-level education.

Overcoming this horizontal segregation by operating an enterprise in a male-dominated sector can help bridge the gender gap in firm performance in MDS in many, but not all, countries where this was explored. On the one hand, in Sub-Saharan Africa and Lao PDR, we see that once women cross over to male-dominated sectors, they perform as well as men in MDS. On the other hand, in some countries like Indonesia and Mexico, while female entrepreneurs in MDS perform better than female entrepreneurs in FCS, male-owned firms in both MDS and FCS continue to perform better than female-owned firms. In Vietnam, women in MDS perform at par with males in FCS, but men in MDS continue to make more profits. These findings are consistent with the results of the multicountry FoB study by Goldstein, Gonzalez, and Papineni (2019), where we see a similar hierarchy of profits emerge in middle-income countries indicating that in addition to horizontal segregation, there are patterns of vertical segregation as well, i.e., men do better than female entrepreneurs irrespective of the sectors they operate in.
Vertical Segregation: Female-Owned Firms within the Same Sector Continue to Lag behind Male Firms

While this report is focused on horizontal segregation, it is worth examining some reasons why in certain countries—e.g., Indonesia, Mexico, and Vietnam—firms owned by men continue to outperform those owned by women even when they operate in the same sector. This pattern of hierarchical or vertical gendered segregation is commonly known as the ‘glass ceiling.’

Before turning to vertical segregation explicitly, we need to see if there is possible sorting within the set of sectors that make up the MDS. Goldstein, Gonzalez, and Papineni (2019) identify two types of male-dominated sectors: those that are capital intensive and those reliant on skills that may be more labor intensive. It is possible that women, who often lack access to capital, sort into the latter, which could have lower profits. To examine this in Indonesia, Mexico, and Vietnam, we carried out an analysis of profit difference between male- and female-owned firms within MDS while accounting for specific sectors. We found that a significant gender gap in profits persisted, indicating that the gap is not entirely because women are choosing to concentrate in less profitable male-dominated sectors.

Instead, the gender gap potentially remains due to gender-related barriers that influence productivity in ways other than through sectoral choice. Similar to horizontal segregation, a wide array of gender-specific constraints contribute to vertical segregation. These include differences in skill, education, and hours worked, self-imposed limitations to business growth and a desire for home-based flexible work, and a lack of access to networks (Rose and Hartmann 2004; Goldin 2014a; Carranza, Dhakal, and Love 2018; Hallward-Driemeier 2013). Additionally, several other key factors exacerbate vertical segregation specifically: clustering in less profitable roles or activities within the same sector, lack of access to capital, and the discrimination faced by female entrepreneurs. The following paragraphs explore how these key factors contribute to vertical segregation.

Hallward-Driemeier (2013) in her analysis of firms in Sub-Saharan Africa emphasizes that women tend to crowd into less profitable subsector activities, even in more profitable industries like manufacturing. She finds evidence of gender segregation within sectors, with most female-headed businesses clustered in activities with low profit margins such as food preparation, textiles, and garments in the manufacturing sector. This is supported by qualitative research with women who work in construction in South Africa, who report that certain aspects of the business such as bidding are only open to men while women carry out work in the background (Aneke, Derera, and Bomani 2017). A study in Ghana finds that men outperform women entrepreneurs within the traditionally female-concentrated garment-making industry (Hardy and Kagy 2018). When unpacking the cause of this gap in profits, the authors found that male-owned firms were older, had more capital, assets, and sales, and their owners worked longer hours. However, even after accounting for these factors, the gender gap in profits remained large. Through an experiment which involved randomly increasing demand for gender-neutral clothing, the authors establish that female-owned firms have lower demand and access to customers compared to male-owned firms. This low demand may be due to crowding of female entrepreneurs in specific activities. For example, female-owned firms produce women’s clothing, while men’s shirts are
typically produced by male-owned firms. In this way, segregation even within sectors continues to impact women’s business outcomes.

Another key factor driving vertical segregation is access to capital and gendered differences in investment decisions. Several experiments have highlighted reduced returns to capital for female entrepreneurs based on their choice of investments (Bernhardt et al. 2019; de Mel, McKenzie, and Woodruff 2009). Another study which seeks to explore the male-female gap in performance within a mixed-gender sector (vegetable selling) in India finds that sellers’ and buyers’ behavior do not drive the gender difference in profits when business characteristics are held constant (Delecourt and Ng 2019). In terms of characteristics, they find that capital constraints faced by female entrepreneurs that translate to lower inventory are potentially the primary cause of the gender gap in profits.

Discrimination may be an another explanation for lower profits of enterprises in female-concentrated sectors. We draw upon Goldin’s (2014b) ‘pollution’ theory of discrimination which aims to explain why vertical segregation occurs for women employed in male-dominated occupations. She posits that “male employees discriminate against prospective female employees as a way of protecting their prestige in an asymmetric information context” (p. 316). According to this theory, prestige for men is derived from how society views their occupation. An asymmetry in information arises as women, a group that is traditionally perceived as less skilled, enters male-dominated occupations. Society is unable to distinguish whether women’s entry in the male-dominated occupation reflects parity in skills between men and women in the occupation or if the occupation itself is no longer as highly skilled or prestigious. In this absence of information, society may lean toward presuming the latter. To prevent this loss of prestige, men would be incentivized to create social norms and barriers that keep women and the associated ‘pollution’ out of these occupations.

In the case of female entrepreneurs, as asymmetry of information arises, discrimination can come from both within the industry, i.e., men operating in the same sector, and from customers. Qualitative research with female entrepreneurs in MDS documents that while operating in MDS, women report many barriers to success, including lack of training by the industry, discrimination, overcoming men-only networks, and stereotyping by both the industry and customers who perceive that men would perform better in traditionally male-dominated fields (Haupt and Ndimande 2019; Aneke, Derera, and Bomani 2017). This discrimination from customers toward female entrepreneurs in MDS was also seen in our qualitative data in Uganda, where clients placing orders in the carpentry and metal fabrication sector preferred placing orders with male-owned firms (Campos et al. 2015). This preference may arise from the asymmetry of information that Goldin (2014b) refers to in her ‘pollution’ theory.
Section 2: The Profitarchy

What Do Our Data Tell Us about the Drivers of Sectoral Segregation in These Countries?

While vertical segregation will continue to be an issue in explaining the male-female gap in profits, horizontal segregation through the sector of operation plays a significant role in profits for female entrepreneurs. In all countries except Cambodia, women in MDS have higher profits (or sales) than women in FCS (figure 3 and figure 4). While gender-based sectoral segregation is one main reason that women in FCS perform relatively poorly compared to women in MDS across almost all countries, we know little about the extent to which the individual, household, and business characteristics are driving the profit gap between female entrepreneurs in MDS and those in FCS.

To unpack what drives the profit difference between female entrepreneurs in MDS and those in FCS, we adjust for business characteristics (other than sector) and for entrepreneurs’ personal and household characteristics. We find that the difference in performance between female entrepreneurs in male-dominated sectors and those in female-concentrated sectors remains, but the magnitude of the gap in profits/sales diminishes in most countries. While we account for only a limited number of characteristics, these analyses suggest that perhaps the choice of sector itself continues to play the main role in the underperformance of women in FCS but that individual, household, and business characteristics also contribute to this gap. For example, in countries like Mexico, Peru, Vietnam, and across the FoB study’s multicountry data, controlling for other characteristics somewhat shrinks the performance gap between women operating in MDS and FCS; however, the gap remains sizeable and statistically significant. This suggests that in these countries, both observed entrepreneur characteristics and sector of activity help explain why women in MDS outperform women in FCS. In Indonesia, we find that women in MDS have higher profits than women in FCS even after accounting for some key observed business characteristics and for entrepreneurs’ personal and household characteristics and accounting for these does not shrink the gap in profits. However, in Botswana, the gap in profits shrinks significantly and loses statistical significance once business characteristics are taken into account. This suggests that, in this case, the difference attributable to sector may come largely from differences in the characteristics of the businesses between MDS and FCS. At the same time in Ethiopia and Uganda, where we account only for a few business characteristics, the gap in profits between female entrepreneurs in MDS and those in FCS remains. Furthermore, in Guinea and Lao PDR, accounting for individual characteristics removes the profit gap between women in MDS compared to those in FCS. This may indicate that, in these cases, individual factors that largely drive sectoral segregation or are a result of sectoral segregation drive the gaps in profits between women in MDS compared to those in FCS.

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22 As discussed above, in Cambodia, the women in FCS outperform women in MDS, and this relationship exists even when controlling for observable individual, household, and business characteristics.

23 We carry out regression estimates of the gap in profits among female entrepreneurs due to sector of operation. We then check if the coefficients for the gap in profits attributable to being a female in MDS remain constant in magnitude and significance when we account for business, individual, and household characteristics. While we are limited in the variables we can account for and their temporality, we hope to provide suggestive evidence as to where the differences between women in MDS and women in FCS are coming from. More details of these analyses and adjustments can be seen in table C.2 in appendix C.

24 In Peru, accounting for household characteristics increases the profit gap between women in FCS and those in MDS.
In the next section, we aim to unpack what enables women to enter and operate in profitable (male-dominated) sectors. We identify and explore individual, household, and business characteristics that potentially drive the selection into MDS or FCS. Due to the cross-sectional nature of the data we draw from, it is also possible that these differences not only drive, but also result from sectoral segregation. In either case, identifying the characteristics of women that are successfully operating in male-dominated sectors and are on average earning higher profits can help design policies and programs that enhance these qualities. Policies encouraging diversity in sector choice may not only lead to greater profits for female entrepreneurs, as seen in the profitarchy patterns, but may also spur growth, as talent is allocated more efficiently across sectors.
In contrast to this finding from nine studies synthesized in this review, an interesting trend is seen in Cambodia, where MDS are less profitable and crossing over into male-dominated sectors is associated with lower profits for women. The types of sectors characterized as male dominated and female concentrated in Cambodia are similar to those of other countries in the region, and the results are not driven by one or two sectors. Moreover, the pattern holds across multiple years, suggesting that the finding is not driven by either a data aberration or something specific to the survey year. What then may be driving this surprising finding?

The unique results in Cambodia are most likely due to its economic, social, and political history. In 1970, a military coup overthrew Prince Norodom Sihanouk, who had governed Cambodia since its independence from France in 1953, and the country entered a period of civil war. In 1975, the Khmer Rouge took power and embarked on a massive campaign to radically transform Cambodian society, during which approximately 1.5 to 2 million people—one quarter of the Cambodian population in 1975—died as a result of politically motivated killings, starvation, exhaustion from overwork, lack of medicine, and increased exposure to malaria (Heuveline and Poch 2007). Adult men were most likely to die (de Walque 2005), leading to a skewed sex ratio which, while it has partially recovered from the rate of 89 men per 100 women in 1980, remains at 95 men per 100 women today (United Nations 2019). In addition, under the Democratic Kampuchea regime governed by the Khmer Rouge from 1975 to 1979, schools were decimated, and educated professionals and urban dwellers were forced to relocate or were killed (de Walque 2006). Economically, private ownership was banned, and entrepreneurship disappeared (Chhair and Ung 2016). Although households could engage in small trade or handicraft activities during the following regime of the People’s Republic of Kampuchea from 1979 to 1989, Cambodia did not transition back to a market-based economy until after 1989 (Chhair and Ung 2016).

Box 1 The curious case of Cambodia

In contrast to this finding from nine studies synthesized in this review, an interesting trend is seen in Cambodia, where MDS are less profitable and crossing over into male-dominated sectors is associated with lower profits for women. The types of sectors characterized as male dominated and female concentrated in Cambodia are similar to those of other countries in the region, and the results are not driven by one or two sectors. Moreover, the pattern holds across multiple years, suggesting that the finding is not driven by either a data aberration or something specific to the survey year. What then may be driving this surprising finding?

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25 Agriculture, forestry, and fisheries are FCS in Cambodia and MDS in other countries.
Demographic trends resulting from Cambodia’s recent history may have influenced the composition and performance of traditionally male-dominated sectors. Research from other countries has shown that when the sex ratio is skewed with more men than women, there are lasting effects on gender norms about women’s work (Grosjean and Khattr 2019), and occupational segregation along gender lines is more entrenched (Baranov, de Haas, and Grosjean 2018). While similar research has not been done exploring cases with sex ratios skewed toward more women than men, it is possible that the skewed sex ratio in Cambodia linked with the reign of the Khmer Rouge influenced norms about occupational segregation or shifted the gender composition within these MDS and FCS. Moreover, de Walque (2006) showed that the age and education gap between spouses lowered in the period after the Khmer Rouge, which may shift women’s bargaining power in the household. An increase in bargaining power could enable women to have more access to capital or resources to support their activities. Alternatively, changes in roles in the household and small businesses may be linked with higher rates of disability among men who experienced the Khmer Rouge regime as children, adolescents, or young adults.

Businesses in Cambodia are relatively recent. As entrepreneurship was decimated under the Democratic Kampuchea regime, the oldest businesses in Cambodia were founded in 1979 (Chhair and Ung 2016). A rise in entrepreneurship did not occur until after 1993, when the Kingdom of Cambodia began to liberalize the economy more fully (Chhair and Ung 2016). Perhaps the relatively recent establishment of businesses may have changed the dynamics of traditionally male- or female-dominated sectors. Another possibility is that lingering effects from the decline in education during the Khmer Rouge period and the following years also affected the skill base of the population, affecting the productivity of different sectors.
SECTION 3

Unpacking the Profitarchy
In an attempt to explore how to overcome horizontal segregation and support female entrepreneurs to cross over to more profitable male-dominated sectors, we analyze what is different about women who cross over from those who do not. In Table 4, we present a summary of common characteristics associated with female entrepreneurs in male-dominated sectors across the nine countries where women operating in male-dominated sectors (MDS) outperform those in female-concentrated sectors (FCS). We also corroborate these findings from previous research as well as the multicountry data collected via the Future of Business survey.
### Table 4: Characteristics correlated with female entrepreneurs crossing over to MDS and the direction of the correlation

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Botswana</th>
<th>Ethiopia</th>
<th>Guinea</th>
<th>Uganda</th>
<th>Mexico</th>
<th>Peru</th>
<th>Indonesia</th>
<th>Lao PDR</th>
<th>Vietnam</th>
<th>FoB developing countries</th>
<th>FoB developed countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
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<td>Being married (vs. single)</td>
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<td>Household size</td>
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<td>Number of children</td>
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<tr>
<td>Father's education</td>
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<td>Mother's education</td>
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<td>Father ran a business/owned an enterprise</td>
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<td>Mother had a business/owned an enterprise</td>
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<td>Household asset, quality of dwelling, or source of drinking water</td>
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<tr>
<td>Education</td>
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<tr>
<td>Self-efficacy, locus of control, and decision-making power</td>
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<tr>
<td>Cognitive ability (intelligence/abstract thinking)</td>
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<td>Support from spouse in running the business (or in the form of money)</td>
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<tr>
<td>Had a (male) role model or mentor</td>
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<td>Inherited the business</td>
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<tr>
<td>Exposure to male-dominated sectors through work experience</td>
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<td>Joint ownership/has partners</td>
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<td>Age of the business</td>
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Section 3: Unpacking the Profitarchy

a. Association is no longer significant after controlling for whether spouse owns a business himself and whether the woman has a male role model.

b. Association is no longer significant (in the OLS regression with the full sample) after controlling for exposure origination, i.e., entry to sector was a result of someone’s suggestion, was offered a job by family or friends, observed others in sector, and worked for a wage in the sector.

c. Relationship continues to be significant in developing countries after accounting for socioeconomic skills.

d. Relationship no longer significant when controlling for five noncognitive skills: generalized self-efficacy, error management score, entrepreneurial identity, career fit confidence: more committed to staying in sector, and career fit confidence: good relationships in sector.

e. Only significant when controlling for mentorship. No longer significant when controlling for cognitive skills.

f. Association is no longer significant when factors such as household size and socioeconomic status are accounted for.

g. Not associated with number of children nor with at least one child in the household between the ages of 0 and 2 and with at least one child in the household between the ages of 3 and 5.

h. Not associated with at least one child in the household between the ages of 3 and 5 but associated with at least one child in the household between the ages of 0 and 2.

i. Not associated with at least one child in the household between the ages of 0 and 2 but associated with at least 1 child in the house between the ages of 3 and 5 years of age.

j. Defined as, father was owner/manager of a firm in a male-dominated sector when respondent was a child; no longer significant when controlled or after controlling for ‘Any last five jobs were in an MDS’ or ‘Exposed to the current sector of operation by someone.’

k. The variable indicates father owned or managed family enterprise. Only significant in matched analyses.

l. Only significantly associated with reduced likelihood of crossing over when businesses that are not jointly owned are considered.

m. Crossing over is negatively associated with the mother or father working on a farm but positively associated with father having a government wage job.

n. Association is no longer significant after accounting for exposure origination, i.e., entry to sector was a result of someone’s suggestion, was offered a job by family or friends, observed others in sector, or worked for a wage in the sector.

o. Car and internet connection are considered as a measure of household asset and were positively associated, but owning at least one plot of land and livestock were not associated with being a crossover.

p. Positively associated with asset index for the household.

q. Walls of brick or concrete block and ceiling of reinforced concrete have positive correlation while source of drinking water has no significant association with operating a business in an MDS.

r. Source of drinking water being inside or near the house in dry season is positively associated with crossing over; the drinking water source being nearby or in the house in wet season is negatively associated with crossing over.

s. Cooking source is used as a measure of household asset.

t. Water source and cooking source are used as a measure of household asset.

u. Having less than primary education was negatively associated with being in an MDS. Other categories of education such as secondary education and more than secondary education were not associated with crossing over.

v. A negative association is seen with a household decision-making power index, but a positive association is seen with making business decisions.

w. No association with internal locus of control. A positive association is seen with self-efficacy that is no longer significant after accounting for exposure-enabling factors, i.e., entry to sector was a result of a suggestion, job offered by a family member or friend, observing others, working for a stranger, or training.

x. No association with self-esteem but a positive association with higher internal locus of control – which is an indicator of how much agency and control an individual feels they have over their life.

y. Positive association with Digit Span Score, no association with Ravens Test Score.

z. Negatively associated with Ravens Test score but no association with Digit Span Score.

aa. Positive association with Ravens Test score but no association with Digit Span score.

ab. Husband helped in some way to begin the business.

ac. Spouse is the main source of borrowing emergency funds.

ad. Spouse/partner started the business; analysis with no controls shows a positive effect of assisting with advice but negative association when support was in the form of money and assets.

ae. Association is negative when the spouse only supports in the form of money, but positive when spouse helps in the form of registering with authorities to get a license and is a co-owner.

af. Became insignificant in the OLS regression with the matched sample after controlling for exposure origination (idea originated from self vs. others) or exposure-enabling factors (exposure was self-initiated or came from training or others).

ag. Significant positive association with male mentors but significantly less likely to cross over with female mentors; only positively associated with male role models.

ah. Role model was a man who was significant and positively associated, but no longer significant when controlling for noncognitive skills.

ai. Having a first job in a non-male-dominated sector is associated with being a crossover.

aj. Crossover women report prior experience in the sector before starting the MDS business. Having any previous work experience is negatively correlated with crossing over, although having any previous experience as an entrepreneur is positively correlated with crossing over.

ak. Based on test of differences of means between crossover firms and noncrossover firms. Sensitivity analysis also finds that ‘profitarchy’ results are partly driven by the profits of high-performing outliers who tend to be foreign-born owners or those who jointly own their business with another owner.

al. Based on t-tests, test of differences of means between crossover firms and noncrossover firms.

am. Positively associated with number of full-time family employees. Negatively associated with number of full-time women employees.

an. It is for unpaid workers in the last four weeks.
The Correlates of Crossing Over to MDS

This section summarizes some of the findings across the ten studies on the key factors associated with crossing over to male-dominated sectors. These factors include spousal support, domestic responsibilities, business partnerships, exposure to the field through work experience, parents, role models, mentors, access to capital and wealth, number of workers, as well as cognitive and noncognitive skills and abilities.

**Spouses, Domestic Work, and Partnerships**

→ **Being married versus being single:**
In Nigeria, a study among female entrepreneurs who operate technology-based firms finds that unmarried women tend to be similar to men in terms of the diversity of their networks, while the networks of married women are focused on their family (Aderemi et al. 2008). Given the role of social and business networks in operating in a sector, this can be one pathway through which marital status negatively impacts women’s ability to cross over into MDS. We find support for this in Uganda, where female crossovers were in fact more likely to have never been married, but at the same time less likely to be divorced or widowed. However, the association between marital status and crossing over is not consistent across settings. For example, marital status is not associated with sector choice in Botswana, Indonesia, Lao PDR, or Peru. On the other hand, in Ethiopia, Mexico, Vietnam, and for entrepreneurs in developing countries in the FoB study, we find that being married is associated with an increased likelihood of operating in male-dominated sectors. An entrepreneur’s spouse’s entrepreneurial experience may be one potential pathway through which marital status can influence the decision to cross over in Ethiopia. Once the spouse’s entrepreneurial experience is accounted for, the association with marital status disappears. This is also reinforced by the finding that among married women who crossed over to MDS, 42 percent reported that the idea for the business came from their spouse. In Ethiopia and Peru, the spouses of crossovers are themselves more likely to be engaged in running or managing a business. In both countries, there is an association between crossing over to MDS and having a spouse who runs a business of his own. It is possible that spouses or partners who work in businesses themselves are providing some exposure that could facilitate crossing over in some settings.

→ **Spousal support among those who are married:** Among married entrepreneurs,
Breaking Barriers: Female Entrepreneurs Who Cross Over to Male-Dominated Sectors

Section 3: Unpacking the Profitarchy

Spousal support appears to be consistently associated with crossing over. In all the countries where the role of the spouse in crossing over was studied, a positive association between some form of spousal support and operating in MDS was observed. In Botswana and Ethiopia, women who cross over to male-dominated sectors are more likely to report that their spouse provided support by providing the business idea. Similarly, spouses are more likely to have created the business for female entrepreneurs who cross over to MDS in Guinea.

In Uganda, spouses are an important source of finance, with 10 percent of crossovers reporting that their spouse was a primary source of borrowing money compared to 3 percent of noncrossovers. This was also seen in the survey in Ethiopia, where crossovers reported that their spouses provided financial support. Furthermore, the qualitative research from Ethiopia finds that partners helped crossovers by expanding their networks and providing startup capital for the crossover business. In Botswana, crossovers are also more likely to report that their spouse shared know-how from their own business experience, and supported them with business registration, acquiring a license, and in skills-related aspects of the business.

The Future of Business multicountry study attempts to unpack the types of spousal support associated with crossing over to male-dominated sectors in their sample of married female entrepreneurs on a social-media platform. It finds that spousal support in the form of money or moral support alone was negatively associated with crossing over, while support in administrative tasks such as licensing and registration, and co-ownership alone is positively associated with being in a male-dominated sector.

When moral support and money are provided along with other types of support in running the business, they are only then positively associated with being in a male-dominated sector. When looking at developed and developing countries, the FoB study finds that in developed countries the relationship is no longer significant when accounting for generalized self-efficacy, error management abilities, entrepreneurial identity, commitment to staying in the sector, and having good relationships in the sector. Similarly, in Ethiopia, we find that the association between being married and being a crossover is no longer significant after controlling for the influence of others (spouse owns a business himself and the woman has a male role model). This absence of a relationship between marital status and crossing over to MDS when accounting for noncognitive skills and the influence of others indicates that it is possible that for those who are married, spousal support and the strengthening of noncognitive skills are pathways for crossing over into MDS.

Having fewer domestic responsibilities:

On average across 64 countries, women contribute more than three-fourths of unpaid care work, averaging 265 minutes per day compared to men’s 83 minutes per day. This influences their labor market choices (International Labour Organization 2018). Entrepreneurship can offer more flexible working hours and location, facilitating the combination of labor market work and domestic tasks (Bahramitash and Kazemipour 2011; Chen 2001; Manning 1998; Vanek 2013). This may also orient sectoral choice, if working hours and location are more flexible in certain sectors of activity.

In several countries, crossover women have characteristics that would suggest they face fewer time constraints related to domestic...
tasks than women in FCS. For example, in Guinea, Peru, and Vietnam, crossovers are less likely to have small children who would require more care, and in Lao PDR, crossovers are less likely to have elderly household members who also may require assistance. However, the trend is not universal. In Ethiopia, crossovers are more likely to have a greater number of children. Evidence is mixed for Indonesia, where women with children aged 0–2 are more likely to operate in MDS, but crossovers are also more likely to operate their businesses outside of the home, where it would be more challenging to simultaneously conduct entrepreneurial and domestic tasks. In addition to the association with childcare responsibility, there is some evidence from Lao PDR and Vietnam that reduction in other household responsibilities is also associated with crossing over. For example, in Lao PDR, crossovers are more likely to have water in the home during the dry season, which can reduce the time needed for fetching water. Similarly, in Vietnam, crossovers are more likely to be in households that use cooking fuels that require less time to gather and ignite.

→ **Having joint ownership or a business partner**: In Uganda, there is no association between joint ownership/partnership and crossing over. However, the studies in Botswana, Ethiopia, and the FoB survey find that crossover businesses are more likely to be jointly owned compared to noncrossovers. In Botswana, female-owned firms that operate in partnership with any male report being able to access more capital. Access to capital may help women working in capital-intensive male-dominated sectors perform as well as men in MDS. So much so that in Botswana, when the subgroup of jointly owned enterprises is removed from the analysis, women in MDS no longer perform as well as men in MDS (see note in table 3).

Research from Botswana attempts to unpack who co-owns these firms and finds that 18 percent of the female-owned businesses who cross over into MDS co-own their businesses with their spouses. Among these female crossovers they find that those businesses co-owned by spouses far outperform the firms in male-dominated sectors that are co-owned by other men or run by women alone. In Ethiopia, qualitative data also find that husbands were often partners in the business, providing financial support or support in the form of networks, skills, or management. Due to these reasons, partnerships, particularly with a spouse, become a success strategy for women-owned businesses operating in MDS.

Interestingly, selecting a partnership, especially with a male business partner, may not be what drives crossing over to MDS but instead can be a survival strategy for those facing gender-based barriers to operating in a sector dominated by men. A qualitative study of female entrepreneurs operating in the construction sector in South Africa finds that women overcome the gendered barriers of working in this predominantly male sector by strategically partnering with men to avoid harassment and the challenges of operating in an environment that is not welcoming of them (Aneke, Derera, and Bomani 2017). The following quotes from participants in the study explain the reasons why women in MDS partner with men in the sector and how a division of labor is formed: “In general, men hold prominent positions and are at the hub of affairs in the committees responsible for the awarding of tenders… this gives men the upper hand…” “Men can go for bidding while women work from the background…” (Aneke, Derera, and Bomani 2017:45).
Section 3: Unpacking the Profitarchy

Exposure to Male-Dominated Sectors

→ Having a (male) role model or mentor: Having a male role model while growing up appears to be positively associated with crossing over into male-dominated sectors in Mexico and Uganda. While it was not associated with crossing over in Ethiopia in the full sample, the top 25 percent of earners among crossovers were more likely to report having a male role model while growing up. The FoB study finds that having a male role model is significantly associated with crossing over in pooled data from all 97 countries. Additional analyses highlight the various pathways through which role models may be associated with crossing over. In the subset of developing countries, the association between having a role model and crossing over disappears when noncognitive skills such as generalized self-efficacy, career-fit confidence, and entrepreneurial identity are accounted for. In Uganda, the association between role models and crossing over disappears when exposure to the sector is accounted for. These analyses highlight the various pathways through which mentors and role models influence women to cross over to male-dominated sectors and are reminiscent of the pathways through which marital status may be associated with crossing over in the developed country analysis in the FoB study and in Ethiopia. For example, role models could be providing exposure through suggesting or offering jobs in these male-dominated sectors, providing introductions and networks information, and generally boosting women’s confidence about their fit and other noncognitive skills that help women operate in and select male-dominated sectors.

The study in Uganda attempts to unpack the role of role models and finds that crossovers are likely to be introduced to their sectors by men, including fathers, male friends, male community members, and male family members. The influence of these role models is not limited to owning an enterprise in that sector but exists above and beyond that. Qualitative research in Uganda finds that male role models and mentors help by providing training to gain skills specific to male-dominated sectors or coming up with the idea for the business. Relatedly, a study of vocational training applicants in the Republic of Congo (forthcoming study by the World Bank) emphasizes both the importance of exposure to MDS and women’s disadvantaged access to early exposure. The research finds that prior technical experience in MDS makes it more likely that women will opt for training in MDS. However, women are less likely to have network connections with people operating businesses in MDS, and men are more likely than women to obtain technical experience through their network connections. As a result, while technical experience is a correlate of selecting MDS, especially for women, women may have a hard time gaining that experience.
Noncrossovers, on the other hand, are more likely to be introduced to their sector by mothers and teachers, highlighting the role that teachers and female role models may play in perpetuating gendered segregation of sectors. Data from Mexico, where having a female mentor is negatively associated with crossing over into male-dominated sectors, also reinforce this finding. This is likely due to the fact that female role models are more likely to operate in female-concentrated sectors.

While it is possible that having a role model or mentor can increase the likelihood of crossing over, it is just as likely that we see this association only because women looking to cross over seek a male role model or mentor to help them develop skills and networks in a field that is new to them (Martin and Barnard 2013). An in-depth qualitative study in Guinea uncovers evidence of this complex relationship between role models and crossovers. In this study of women who were working or receiving training to work in MDS, some women articulated a long-standing interest in working in crossover sectors and described their efforts to identify male role models to help them succeed. Other women indicated that they had not had these aspirations initially but had been encouraged by friends and family members, both men and women, to consider training or working in MDS. Some of these mentors helped with getting admission to technical schools, securing apprenticeships, and paying for transport costs. For example, one woman said that she initially got the idea to go into plumbing when she was at a building site where her aunt worked as a mason. She decided to go to technical school after she failed her Brevet exam and her boyfriend, who was himself a plumber, suggested that she pursue plumbing. She said, “I told him that I couldn’t continue with my studies because I was discouraged by school, so he advised me, he encouraged me.”

→ Father or mother running an enterprise:

A study from Denmark finds strong empirical support for the hypothesis that entrepreneurial parents serve as role models for their children (Hoffmann, Junge, and Malchow-Møller 2015). Most interestingly, they find that while having self-employed parents in general increases the probability of becoming self-employed, the relative effect of a self-employed father is roughly twice as high for men as for women. In contrast, the relative effect of a self-employed mother is similarly about twice as high for women as for men. These findings also hold when they control for parental wealth and work experience from the parents’ firms and when they disregard cases where the offspring takes over the family business. It even holds to some extent when they exclude individuals that start in the same industry as their parents.

In Botswana, having a father who was an owner/manager of a firm in a male-dominated sector when the respondent was a child is associated with operating in a male-dominated sector. This potentially highlights the important role of early exposure. When the study accounts for ‘female entrepreneurs’ last job being in the male-dominated sector’ and for ‘being exposed to the sector by someone,’ the father being an owner or manager in MDS is no longer associated with crossing over, indicating that exposure and networks that result in the first job in a male-dominated sector are a potential pathway through which fathers in MDS can influence crossing over. This path dependence is corroborated by research from Uganda, where both initial employment in a female-concentrated sector and having a mother who managed or owned an enterprise are independently
associated with a reduced likelihood of being a female entrepreneur in a male-dominated sector.\textsuperscript{27}

In addition to providing exposure to a sector, parents may directly enable crossing over by passing on their business which operates in a male-dominated sector. In the FoB study, inheriting a business is associated with crossing over. In Guinea, too, crossovers were more likely to start the business because they inherited it from a family member.

→ **Exposure to male-dominated sectors through work experience**: Having been a worker in MDS or receiving previous training in the sector was not associated with being a crossover in Ethiopia. However, in Botswana, we find support for the role of previous exposure to and training in male-dominated sectors in helping women cross over to MDS. Women who cross over to MDS in Guinea not only report previous work experience, but we also find that having any previous work experience is negatively correlated with crossing over, although having any previous experience as an entrepreneur is positively correlated with crossing over. In Uganda, we see that previous exposure to FCS through the first job results in women being less likely to cross over. It is, however, not possible based on our data to determine if those with this exposure are encouraged to cross over or those who plan to cross over seek this exposure and training in MDS.

**Capital, Wealth, and Number of Workers**

→ **Household Assets**: An assessment of household wealth using a household asset index in Ethiopia finds a positive association between assets and crossing over. The association between having more assets and crossing over is also seen in Lao PDR, where those who have sources of drinking water inside the house in the dry season are more likely to cross over to male-dominated sectors. No association is seen between these assets and crossing over in Indonesia or Vietnam. In Peru, no association is seen with crossing over and overcrowding or access to water or electricity. However, the quality of their dwelling in terms of having more permanent and sturdy structures (a common measure of wealth and means) is associated with being a crossover. As the discussion above and de Mel, McKenzie, and Woodruff (2009) show, the association between household assets and crossing over may be driven by the fact that crossovers generally have higher profits and are able to use those profits to increase their household

\textsuperscript{27} The Uganda paper does not specify whether the mothers who manage or own an enterprise are in male-dominated or female-concentrated sectors. It is likely that women whose mothers are entrepreneurs continue the mother’s profession and are less likely to cross over.
assets. On the flip side, households with greater assets may have more capital to invest in relatively capital-intensive businesses in MDS.

→ **Financial capital, investments, and access to loans**: In Botswana, Indonesia, Uganda, and Vietnam, crossovers operate with a higher level of capital and production than noncrossover women. This is in line with what is found by Rijkers and Costa (2012), who note that FCS operate at a smaller scale compared to MDS that require more capital. Many crossover firms in Ethiopia are also concentrated in the capital-intensive transport and construction sectors, where the capital required to start a business is three times that of a business in a female-concentrated sector. In Guinea, too, accessing credit was listed as a primary constraint faced by crossovers in starting their businesses. Given that MDS are more likely to be capital intensive, it is likely that access to financial capital may facilitate crossing over. Crossovers in Vietnam were more likely to be in households that have borrowed money. However, it is not possible to determine whether access to loans allowed them to cross over into capital-intensive male-dominated areas or whether they were more likely to seek out capital to invest once they crossed over. Similarly, in Ethiopia, women in MDS report having more access to finances in an emergency compared to noncrossovers, and in Botswana noncrossovers are less likely than crossovers to be able to access the bank as a source of emergency funds.

The difference in profits may arise from how the capital is invested. An experiment in Sri Lanka that provided cash grants to microentrepreneurs found that return on cash investment were lower for women in female-concentrated sectors such as lace work and coir compared to women in more mixed industries such as bamboo and retail (de Mel, McKenzie, and Woodruff 2009). This gap in return on investment, according to them, may be partly explained by the tendency of women in food processing and garments sectors—typically female concentrated—to invest in equipment that benefits both the home and the business.

While more capital may certainly be needed by women who are starting businesses in capital-intensive MDS, the study in Uganda finds that ‘owning an enterprise in another sector’ was also consistently associated with being a crossover. The Uganda study also makes another important observation that the difference in capital and inputs alone does not drive the differences in sales between female entrepreneurs in MDS vs. those in FCS, as these differences exist even after accounting for capital invested.

→ **Number of workers**: Linked closely to the need for capital are factors like the size of the firm as assessed by the number of workers it employs. The FoB study finds that crossover businesses run by women in developing countries are more likely to employ more workers compared to noncrossovers. This pattern closely follows the ‘profitarchy’ that emerges in developing countries, while in developed countries the female-owned firms operating in MDS do not employ more workers compared to those in FCS. In Ethiopia, Guinea, and Uganda, we also see this positive association between crossing over and the number of employees. However, in Lao PDR and Vietnam, no significant difference is seen in the number of workers between women-

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28 In terms of composition of employees, as seen in table 4, not surprisingly, crossover firms in Indonesia are less likely to employ unpaid labor and in Guinea they are less likely to employ women.
owned firms in FCS and MDS, indicating that the businesses do not operate at a different scale in these countries. As noted in the previous paragraph, in Uganda, the authors account for labor, capital, and materials and find that crossovers continue to perform better than noncrossovers.

→ **Necessity vs. opportunity entrepreneurs:** An opportunity entrepreneur is someone who has started a business because they identified a good business opportunity or a good business idea. A necessity entrepreneur is someone who started a business because no other opportunity for employment presented itself. Data from Mexico and Botswana support the hypothesis that opportunity tends to drive crossing over to MDS as opposed to necessity. The study from Ethiopia also attempts to unpack what drives those who choose to cross over into MDS and whether they are necessity- or opportunity-driven entrepreneurs. Like in Mexico, they too find a positive association between crossing over and women starting a business because they saw an opportunity and chose to opt into the business. Similarly, in Indonesia, female crossovers are more likely to also have a wage job, suggesting that they may be running the business out of interest than because they do not have other income-earning opportunities. The necessity vs. opportunity findings align with previous research by Anna et al. (1999), who find that women operating in traditionally female-dominated sectors have higher expectations of work-life balance while those who cross over have higher expectations for money and wealth.29 These findings are also echoed in a study of women who started businesses in the technology sector in Nigeria, who indicated that personal interest was a primary motivator. In contrast, for those who operated in the nontechnology sector, unemployment was the most common reason for starting a business (Aderemi et al. 2008).

→ **Education:** The number of years of education was associated with being an entrepreneur in male-dominated sectors in Botswana, Guinea, Indonesia, Lao PDR, and Mexico. Having less than primary education was negatively associated with crossing over in Ethiopia. This is in line with previous research that finds years of education can be associated with being a crossover (Brouwers, Van de Vijver, and Van Hemert 2009). However, no association between education and crossing over to MDS was observed in Peru, Uganda, Vietnam, or the multicountry FoB study. The association seen in some studies could result from the relationship between education and

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29 Also, in line with these is the finding from Uganda, where crossovers are more likely to be entrepreneurial compared to noncrossovers. However, interestingly, the research from Peru finds that those who cross over are more likely to be risk averse.
wealth, or the prestige of male-dominated businesses, which could attract more educated entrepreneurs in some settings. It could also reflect the fact that in some countries, more educated women may have higher cognitive abilities, are able to access capital, have greater self-efficacy, or can overcome societal norms and cross over to male-dominated sectors. In Ethiopia, for example, the association between education and crossing over may be captured through indicators of cognitive ability, as this association disappears when Digit Span Test scores are accounted for. Furthermore, given the positive association between education and wealth, the greater average profits observed in the MDS could also be driven by these more educated entrepreneurs clustering in these sectors.

→ Self-efficacy: Self-efficacy as per Albert Bandura (1999) is the belief in one’s own capability to execute a task, perform a behavior, or achieve an outcome. A person’s self-efficacy is considered to be a function of performance accomplishments, vicarious experience, verbal persuasion, interpretation of one’s emotional arousal or physiological state that collectively determine these beliefs (Bandura 1977). The belief in one’s ability to achieve an outcome in turn drives perseverance, which could be an important skill needed to cross over. The association between self-efficacy and crossing over is not consistent across settings in this report. In Ethiopia, Mexico, and the multicountry FoB study among developing countries, no association is observed between self-efficacy and crossing over. However, a positive association is seen in developed countries in the multicountry FoB study and in some regression specifications in Uganda. For example, after accounting for exposure-enabling factors in Uganda, self-efficacy is no longer associated with crossing over. This may be explained by a key factor that drives self-efficacy: ‘verbal persuasion.’ Exposure-enabling factors such as persuasion or suggesting to someone that they possess the skills to cross over can positively reinforce self-efficacy. Therefore, it is likely that the perception that others believe you to succeed in male-dominated fields drives both self-efficacy and crossing over. For example, Barnir, Watson, and Hutchins (2011) find that role models have a strong influence on self-efficacy, which, in turn, influences entrepreneurial career intention.

Needing greater self-efficacy to operate as a crossover is another factor that emerged in the qualitative component of the study. Among women working in MDS in Conakry, Guinea, women talked about having to prove themselves as capable. For example, a woman painter said, “You have to work hard to show those people that even if you have work at home, you have children, you have your husband, you can also work like men do.” This suggests that women may need a high degree of self-efficacy to be able to persevere in work environments dominated by men where they can face regular questions about their competence and commitment to the work.

On the other hand, performance accomplishments can drive self-efficacy and we find that some of the women who managed to succeed in MDS reported increased self-confidence and pride due to their success. For example, when asked what she thought about crossovers, a female mechanic said, “I am proud of them and myself, I feel proud to be amongst men.” Of the four aspects that drive self-efficacy, ‘personal accomplishment’ is a key driver of self-efficacious belief and it is likely that being in a male-dominated sector that yields greater profits increases a sense of personal accomplishment and reinforces self-efficacy of women in male-dominated sectors.
sectors. A small survey of women engineers in the United States finds that women who persisted in engineering careers articulated higher levels of self-efficacy, were more likely to describe themselves as engineers, and were more motivated by the challenges and novelty of the profession (Buse, Bilimoria, and Perelli 2013). This association of success and self-esteem was also seen by Rauch and Frese (2007), who find in a meta-analysis that self-efficacy is positively correlated with business success.

While self-efficacy was not associated with crossing over in Peru, having a greater internal locus of control instead of an external locus of control is associated with increased probability of crossing over to MDS. At the same time, self-efficacy but not internal locus of control was associated with being a crossover in Uganda.

→ **Decision-making:** In Guinea, crossovers are likely to have greater decision-making power within the home. However, in Botswana, a negative association is seen between a higher score on a household decision-making index and crossing over. This is possibly due to what this index captures. For example, it is possible that women who cross over, especially at the scale that MDS operate at in Botswana, do not partake in daily decision-making around households' tasks compared to women who remain in FCS. Those who do participate in household decision-making are the women who are less likely to operate a business in MDS. Prior research has shown that FCS tend to be sectors that allow women the flexibility to manage daily housework and childcare along with their business (Anna et al. 1999). On the other hand, when asked specifically about decision-making in terms of their business, the crossovers in Botswana report a greater ability to participate in such decisions compared to noncrossovers.

→ **Cognitive ability:** No clear or consistent association is seen between crossing over and cognitive ability. Cognitive ability was measured across the studies in this report primarily in two ways. One was using the Ravens Progressive Matrices, an assessment of analytical or fluid intelligence and abstract thinking, and another was the Digit Span Test, an assessment of short-term working memory. In Ethiopia and Mexico, a positive association is found between higher scores on at least one of the two tests and crossing over to male-dominated sectors.31 However, in Uganda, a small but negative association was seen between analytical intelligence and being a female entrepreneur in a male-dominated sector. The link between crossing over and cognitive ability may be a function of the nature of the sectors that comprise FCS and MDS in a country. Not all MDS would attract those with higher memory ability or fluid or visual/spatial intelligence. For example, in Uganda, where FCS comprise sectors such as hair dressing and tailoring that may require abstract thinking, a negative association between MDS and Raven’s Progressive Matrices score is not fully surprising. Overall, further research is needed to establish the link between cognitive abilities and operating in MDS, keeping in mind the nature of the cognitive skills needed in the male-dominated sectors in the country.

30 Locus of control refers to self-determination and the extent to which one believes they can control their own outcomes and events in their lives. A greater internal locus of control indicates that they feel greater control over these outcomes and events, while a greater external locus of control refers to the external factors exerting control over an individual’s life.

31 In Ethiopia, there is a positive association with Digit Span score but no association with Raven’s Progressive Matrices scores. However, in Mexico, the positive association is with Raven’s Test score, while there is no association with Digit Span score.

32 Colom and Garcia-Lopez (2002) find males outperform women in Ravens Progressive Matrices in Spain and this improved performance of males can be attributed to items related to spatial and visual processing.
Even after crossing over, operating in male-dominated sectors can be fraught with discrimination and challenges (Haupt and Madikizela 2009; Haupt and Ndumande 2019). Qualitative research with female entrepreneurs that operate in the male-dominated construction sector in South Africa highlights the challenges with having to deal with “men in the industry” (p. 43), in obtaining loans due to a lack of collateral, as well as a low quality of employees (Aneke, Derera, and Bomani 2017). Qualitative data from Guinea and Uganda highlight challenges such as harassment, including sexual proposals and threats to shut down the business. In Guinea, women reported challenges including harassment by colleagues, paternalism, and consistent expectations of failure due to the incompatibility of work in MDS with women’s physical characteristics (e.g., strength and cleanliness) and social roles (e.g., housework and caregiving responsibilities). Women working in workshop environments reported more harassment. In the study sample, these women were usually apprentices or employees rather than business owners. Nonetheless, their stories are illuminating. A female mechanic explained that she has to resist advances from colleagues and has to confirm her commitment to the work repeatedly. She said that others tell her that “people will make you pregnant and you’ll go sit at home.” She counters by saying, “Me, I have decided that I am going to do this, I am going to do it.”

In the Guinea study, women working as business owners in sectors requiring higher levels of education articulate different types of experiences of discrimination from clients and suppliers. A pharmacist explained, “Discrimination is always there. People don’t talk about it but it’s there…” Similarly, a graphic designer described potential clients questioning her capabilities. She said, “When you go to an office to describe the services that you offer, there will be people who will underestimate you and say that a girl like you will not be able to do this work.” Women in the study did not report direct social sanctions for working in MDS; instead, they often described receiving encouragement. Moreover, both women and men expressed admiration for women operating in MDS. Rather than stemming from explicit social disapproval,
challenges to operating in MDS were related to more subtle demands to prove competence and suitability for the work in the face of low expectations.

Crossing over is also associated with reduced social capital. Current research indicates that operating in male-dominated sectors results in lower social capital through reduced trust, social network, and community participation for women (and men) compared to those operating in FCS (Sappleton 2009). Gender norms make it more difficult for women to network with men and ‘old boys’ clubs’ can be particularly difficult to penetrate for women who cross over, leaving them with the option of either finding a male business partner or networking with only women in their sectors (Aneke, Derera, and Bomani 2017; Sappleton 2009). Furthermore, even if they network with women, this is not always beneficial, as it is the men who hold powerful positions as the ‘gatekeepers’ of resources in most male-dominated sectors (Sappleton 2009; Aneke, Derera, and Bomani 2017). Reduced social capital can contribute to or amplify other harmful effects of operating in a sector that is dominated by the opposite sex. For example, women in male-dominated occupations are more likely to report depressive symptoms compared to women in female-concentrated economic activities (Tophoven et al. 2015).

This persistent discrimination and expectation to fail may be internalized and lead women to second-guess their abilities. This could even explain why we see an inconsistent association between crossing over and self-efficacy. In South Africa, female entrepreneurs already operating in the construction sector reported that they lack existing knowledge and experience of the industry (Aneke, Derera, and Bomani 2017). Female entrepreneurs operating in MDS in Uganda (Campos et al. 2015) similarly felt that they lacked technical and managerial skills. Another study of women who work in primarily male-dominated occupations in South Africa (Martin and Barnard 2013) also highlighted negative work-identity perceptions among women which were characterized by low self-esteem and low self-efficacy. Women report a lack of confidence in their competence and a reluctance to take on roles that are perceived to be more competitive and masculine. While it is possible that there are gaps in skill sets and the technical knowledge of crossovers, it is just as likely that these are the internalized societal expectations. It is important to unpack the extent to which they are real or simply a gender-role-induced skepticism of professional ability that holds women back.
**Context-Specific Factors**

Given the variety of settings in the review and the diversity in data sets, very few factors are associated with crossing over to MDS across all countries. This may be driven in part by the fact that sampling and what comprises MDS and FCS differs somewhat in each country. The enablers of crossing over to those country-specific male-dominated sectors may also differ. In almost all countries though, women's education and past exposure to male-dominated sectors through work experience or training, or through their father, spouse, male mentor, or role model appear to be associated with crossing over into MDS. Similarly, among married women, spousal support appears to be key in successfully crossing over. The role of support from family members and mentors in crossing over is not surprising, as women's choice of sector is potentially driven by beliefs of those important to them. When the traditional social norms of which sector a woman should operate in are questioned by influential others in women's life, it could support women to also challenge these societal norms and dare to operate in sectors that are not traditionally female friendly. A second and more direct pathway through which these influential male relatives and role models are likely to be encouraging crossing over is by providing their networks, financial support, information, and guidance, and by presenting opportunities for exposure and work experience in the sector.

**Which Came First, the Chicken or the Egg?**

While it is likely that the factors identified above encourage women to cross over, it is possible that those who already wish to cross over seek out factors such as role models, work experience, and training in that sector. This is less likely to be the case for education or role models identified at a younger age. However, these studies are correlational and not causal, and could be capturing the approaches female entrepreneurs adopt to deal with the challenges faced after crossing over to MDS. For example, having a male business partner is often a strategy adopted to deal with harassment and difficulty in operating in a male-dominated space (Haupt and Ndimande 2019). Qualitative research identifies other strategies that are adopted by female entrepreneurs to survive in a male-dominated sector, such as partnering with men and established women in the sector, joining business networking organizations, and attending training workshops (Aneke, Derera, and Bomani 2017; Haupt and Ndimande 2019). These women also emphasize the need for strong support systems to help them succeed in male-dominated sectors (Aneke, Derera, and Bomani 2017). Martin and Barnard (2013) in their
qualitative study find that women seek male mentors to help them deal with the challenges of crossing over and for emotional support. Further research is needed to unpack context-specific enablers of crossing over from survival and success strategies adopted by female entrepreneurs operating in MDS.

Whether the factors we identify existed before setting up a business and truly distinguish who chooses to operate in a male-dominated sector, or whether they reflect best practices after crossing over does not necessarily take away from the fact that female entrepreneurs in MDS are more successful. The factors identified above not only make them different from those who operate in FCS but also potentially contribute to their success and should be identified and strengthened.
SECTION 4

Conclusions and Policy Recommendations
n countries where women in male-dominated sectors (MDS) continue to outperform those in female-concentrated sectors (FCS), it is important to pursue policies that enable women to operate in a diverse set of sectors. Based on the studies analyzed in this report and the broader literature on drivers of sectoral segregation, we offer recommendations of successful interventions that key decision-makers can adopt to help female entrepreneurs cross over into male-dominated sectors. As we note throughout this report, several factors ultimately drive sectoral choice and segregation, including (1) support, networks, and exposure to the field; (2) skills and training; and (3) capital/assets and access to loans. Based on these characteristics, we propose a number of interventions that appear promising to support women to cross over into more profitable, male-dominated sectors. These include (1) encouraging spousal support, (2) role models and early exposure to MDS, (3) enhancing women’s education and socioemotional skills, and (4) providing access to capital and loans.

Whether the correlates of crossing over—observed in our studies and the literature—cause women to cross over to more profitable male-dominated sectors, or whether these are just factors that are found in successful businesses, is something we cannot unpack with the current evidence we have. Due to the lack of evidence on what works to help women cross over into MDS, the evidence we present below focuses on correlates and interventions that have transferability beyond helping women cross over, in that they are also generally associated with successful entrepreneurship. Additional research is necessary to grow the evidence base on the family of policies that work to support female entrepreneurs to cross over into more profitable, male-dominated sectors, particularly those in science, technology, engineering, and mathematics (STEM).
Support, Networks, and Exposure to the Field

Role models or mentors from MDS: There is some evidence that having male role models/mentors and fathers in MDS may be helpful to support women to cross over. Our data in Uganda, for example, highlight the importance of male role models and ‘gate openers’ in engaging female entrepreneurs in MDS and breaking traditional norms. Similarly, the WeXchange initiative in Latin America, which connects female entrepreneurs with mentors and investors, found that two out of three STEM entrepreneurs have the support of a mentor, compared to one out of two non-STEM entrepreneurs. Matching female entrepreneurs with male mentors could be particularly helpful. The WeXchange initiative finds that among the STEM entrepreneurs who have mentors, 86 percent have at least one male mentor, compared to 62 percent of non-STEM entrepreneurs (WeXchange and IADB, 2020). While few studies have been developed on the impact of mentorship on crossing over into male-dominated sectors, mentors have been shown to increase business performance of the entrepreneurs they mentor. For example, 82 percent of women who participated in the Going for Growth peer mentoring sessions in Ireland in 2015 reported a 30 percent increase in business turnover, on average, during the 6-month program. Therefore, policy makers and other key stakeholders should design programs matching aspiring or current female entrepreneurs with mentors in male-dominated sectors.

Developing role model interventions at the secondary or postsecondary level is particularly crucial as women’s educational choices and their first job set them on a path dependency which is subsequently more difficult to change at a later stage. This is perhaps why we see that early exposure to MDS also contributes to crossing over. For example, the Technovation Girls program enables girls in over 100 countries to work with female mentors to launch technology start-ups aimed at addressing a problem they have identified in their community. After participating in the program, 78 and 70 percent of the 32,000 girls who participated over the past nine years reported more interest in computer science and in entrepreneurship, respectively. Similarly, in a study of factors leading to innovation by women inventors in the US, Bell et al. (2019) find that early exposure to inventors, particularly female inventors, plays an important role in increasing women’s probability of holding a patent at a later age.
While limited evidence and fewer interventions exist on the impact of female role models to support current female entrepreneurs in crossing over, role models in general have been shown to increase business success. For example, including visits by successful alumni in training programs for microentrepreneurs can lead to increased business participation and income, as shown through an experiment in Chile (Lafortune, Riutort, and Tessada 2018). Exposing students to female role models in male-dominated disciplines may also have the potential to increase their likelihood of obtaining degrees in such disciplines and subsequently entering male-dominated sectors. For example, in the United States, assigning a female STEM professor to high-ability female students has shown to substantially increase their probability of receiving a STEM master’s degree and of working in a STEM occupation (Mansour et al. 2020). Governments could ensure that high schools and universities have a balanced gender representation among teachers of male-dominated courses.

Universities can also encourage their female students to obtain degrees in male-dominated disciplines by organizing sessions with successful female graduates in such disciplines. For example, a study by Lancaster University (2020) of undergraduate women studying introductory economics classes in the US revealed that women were substantially more likely to continue studying the subject if they encountered successful female graduates in the same course. Similarly, an intervention in France showed that a one-hour session with a female role model increases the probability of high-achieving high school female students to enroll in STEM classes the next year (Breda et al. 2020). While implementing role model interventions, potential negative impacts should be minimized. These potential harms include increasing students’ awareness of female underrepresentation in science and reinforcing the belief that women face discrimination in STEM careers, which may further discourage young women from entering those sectors.

**Apprenticeships:** Another way in which women seem to obtain exposure to male-dominated sectors is through apprenticeships. Our studies indicate that female entrepreneurs working in male-dominated sectors tend to have benefitted from apprenticeships in those sectors. In a qualitative study with women registered in apprenticeship programs in the US, female respondents indicated that they pursued an apprenticeship to break into a new, higher-paying occupation (Reed et al. 2012). Similarly, in Tanzania, Structured Engineers Apprenticeship Program (SEAP) provided female participants with subsistence allowances, additional training, and mentorship opportunities with follow-up after they achieved professional registration. The records show
that female apprentices with funding and complementary support had a much higher completion rate (86 percent) than those who were self-supported (20 percent). However, there is still a need for more rigorous evidence in developing countries on whether apprenticeships could help women cross over and improve the subsequent labor market outcomes of women in male-dominated sectors.

Women are underrepresented in apprenticeship programs in male-dominated sectors. Female recipients of the Women in Apprenticeship and Nontraditional Occupations (WANTO) technical assistance grant in the US indicated that they faced three main barriers in participating construction apprenticeships: lack of information and skills, unrealistic expectations about working in skilled trades, and harassment and exclusion at male-dominated worksites (Reed et al. 2012). Similarly, a study with female participants in Swiss STEM apprenticeships programs cites gender stereotypic beliefs about young women and their professional competencies and several adjustment strategies women adopt to succeed in these programs (Makarova, Aeschlimann, and Herzog 2016).

The literature offers outreach strategies that employers and public sector agencies could incorporate to increase women's participation and retention in apprenticeship programs. These include awareness-raising sessions, adapting language in advertising and descriptions in apprenticeships, and profiling real-life examples of women in these jobs to ensure they avoid gender stereotypes and attract a diverse set of candidates (Schomer and Hammond 2020). Part-time apprenticeships and complimentary childcare interventions could be considered to make apprenticeships more flexible (Schomer and Hammond 2020). Tackling harassment and discriminatory social norms and behaviors could ensure that women successfully complete these programs. We explore some strategies to achieve this in box 3 below.

Support from partner in running the business: Support from partners seems to be a key factor in female entrepreneurs’ business performance. For example, in Sub-Saharan Africa, Wolf and Frese (2018) find that women perform worst when their entrepreneurial efforts are ignored by their husband. Since our findings seem to indicate that female entrepreneurs who succeeded in crossing over had support from their husband, interventions that successfully increase cooperation between spouses could be helpful for crossover entrepreneurs to increase their profits. One option is to engage men at the family and household level to provide direct support to their wives and other female relatives. This support can be in the form of economic empowerment or business support that leverages the skills, knowledge, and networks of male family members. For example, a gender transformation and joint training intervention in Côte d'Ivoire showed that male export crop farmers who filled...
out a two-year action plan with their wives shared more agricultural decisions, and enabled women to manage more cash-crop tasks (World Bank 2020).

In addition, promoting spousal support by encouraging husbands to participate more in domestic work could also alleviate time constraints that can limit women’s sectoral choice. Gender transformation training for couples can result in increased task sharing and joint decision-making and reduce intimate partner violence perpetration by men (Doyle et al. 2014). Shifting individual and collective gender norms, practices, and beliefs of men and women can positively impact women to cross over to MDS. Another strategy that is emerging to be a potential source of gender transformation has been mass media (Chang et al. 2020). Telenovelas and soap operas can be a source of aspirational transformation in gender roles and couples’ relations. Current studies have found that telenovelas can reduce fertility levels (La Ferrara, Chong, and Duryea 2008) and can impact attitudes toward intimate partner violence (Banerjee, La Ferrara, and Orozco 2019). There is also extensive literature on the impact of edutainment interventions. A randomized controlled trial of an edutainment program promoting entrepreneurship among young adult viewers in a popular channel in Egypt found that the program had an impact on respondents’ gender-related attitudes toward self-employment. In particular, male respondents were less likely to report gender-discriminatory beliefs when exposed to the intervention (Barsoum et al. 2017).

Another intervention consists of inviting male family members and husbands to business-related trainings targeting women. This can help them understand what their household can gain from their wives’ businesses and how they can support them (Vu et al. 2015). Including men in these trainings can also help mitigate a sense of exclusion and encourage better communication and shared decision-making between household members. Focusing these mixed-gender trainings on business and economic empowerment rather than on gender discussions may be important, to increase the likelihood of men attending the sessions. The impact of this type of intervention on household cooperation should be evaluated in the future, as rigorous evidence on this topic remains scarce.
Section 4: Conclusions and Policy Recommendations

Enhancing Skills and Training

→ **Self-efficacy and cognitive ability**: Increasing self-efficacy may help facilitate female entrepreneurs’ transition to male-dominated sectors. Policy makers and other key stakeholders could implement programs designed to enhance women’s socioemotional skills and their self-efficacy. Such programs could include personal initiative training: a psychology-based entrepreneurship training aimed at developing participants’ entrepreneurial mindsets. For example, in Togo, the training increased female entrepreneurs’ profits by 40 percent—compared to a 5 percent increase among those who underwent a traditional business-training program—in part as a result of increased self-efficacy (Campos et al. 2018). Findings from a similar training in Ethiopia showed that women participants have higher index levels of self-efficacy, personal initiative, and entrepreneurial locus of control in comparison to those who did not participate in the training, as well as higher profits after the training (Alibhai et al. 2019). A training in Kenya that aimed to enhance personal agency and develop an entrepreneurial mindset among female entrepreneurs in the clean cooking sector also found that those receiving the intervention went on to have greater sales compared to those who did not receive this training (Shankar, Onyura, and Alderman 2015). These findings show that trainings addressing socioemotional skills can lead to increased self-efficacy and high levels of impact on business performance. Increased personal initiative may also increase women’s likelihood to cross over into male-dominated sectors, although this type of intervention has yet to be tested.

→ **Technical training, information, and education**: Policy makers and other key stakeholders, including universities, may also provide technical training in male-dominated occupations to encourage university graduates to enter male-dominated sectors. Croke, Goldstein, and Holla (2018) find that an information and communications technology (ICT) training, which gave access to 85 hours of classroom-based training spread across 10 weeks, resulted in university graduates being 26 percent more likely to work in the ICT sector. This suggests the potential for trainings to support women’s employment in male-dominated sectors despite initial lack of sector-relevant skills. Interestingly, the switching was more pronounced among women who initially held deep-seated biases against women’s professionalism. Such job training programs offer a potential opportunity to reduce occupational segregation by shifting norms about the appropriate sectors for men and women to work in, even without explicitly encouraging participants to defy social norms.
Organizing information interventions to highlight the earning potential of male-dominated sectors can also be a powerful incentive for women to attend training in these fields. Female entrepreneurs in traditionally female-concentrated sectors often incorrectly believe they make the same or more than their counterparts in male-dominated sectors. Accurate information can address misperceptions of earnings in traditionally female sectors and help women, especially young women, make more informed decisions when choosing their sector of activity. For example, providing information on real returns to vocational training and presenting persuasive messaging to encourage female participation in traditionally male-dominated fields led to increased take-up of male-dominated trades by women in Kenya (Hicks et al. 2011). Similarly, in the Republic of Congo, a World Bank Gender Innovation Lab study (publication forthcoming) found that providing information on returns per sector through a video at the time of application to the program increased the likelihood that women pick a male-dominated trade by approximately 30 percent when applying to a vocational training, and that women who cross over as a result of the intervention are not more likely to drop out from the training. The study also finds that women who cross over after seeing the video had already overcome some barriers: women were at least three times more likely to cross over when seeing the video if they had higher technical experience, higher technical knowledge, or a male role model. This shows that interventions aimed at helping young women to cross over should target several constraints at once. This could be done through programs that provide information on earning through career guidance in schools or informational sessions accompanying technical skills training programs.

Similarly, adolescent girls’ programs should enhance exposure to male-dominated sectors, to avoid path dependence in female-concentrated sectors at a young age. Integrating such programs within trainings that increase adolescent girls’ nonfarm employment, such as a vocational training in Rwanda, which increased the share of girls reporting businesses, wage employment, or internships from 50 percent to 75 percent, could help adolescent girls to obtain their first job in more lucrative sectors (World Bank 2015).
Providing capital: Programs that enable women to have access to greater capital may support entry into male-dominated sectors with higher start-up capital requirements. Facilitating access to credit may also help women stay and thrive in these sectors. This could be achieved through business plan competitions such as those tested by McKenzie (2017), that specifically target women who have proposals for business opportunities in male-dominated sectors. These competitions can take the form of grants or low-interest loans. Other innovative interventions, such as psychometric testing, can also be used to facilitate access to credit among women who want to establish or grow their businesses in male-dominated sectors. In an experiment in Ethiopia, Alibhai et al. (2018), for example, showed that customers who scored higher on psychometric tests provided by banks were seven times more likely to repay their loans compared to lower-performing customers. They conclude that psychometric testing could be a promising avenue to increase access to finance for female entrepreneurs, who otherwise tend to lack the collateral needed to obtain bank loans. Furthermore, insurance products that are specifically tailored to any disruptions likely to affect female crossovers are already being designed (IFC 2019).

Addressing potential gender discrimination in access to formal finance could improve access to credit. For example, an experiment by Alibhai et al. (2019) showed that in Turkey, 35 percent of loan officers studied in their analysis are biased against female applicants, with women receiving loan amounts $14,000 lower on average compared with men. They find that experience in the banking sector can attenuate this bias, with each year of experience reducing gender-biased loan allocations by 6 percent. This suggests that newly recruited and less experienced loan officers may use gender bias as a heuristic device given limited information, and training could improve their ability to discern loan application quality. It is, however, important to mention that other studies, such as Bardasi, Sabarwal, and Terrell (2011), show no evidence of discrimination in access to formal finance in the three regions they analyze—Europe and Central Asia (ECA), Latin America and the Caribbean, and Sub-Saharan Africa (SSA)—although in ECA women are less likely than men to seek formal finance.
Section 4: Conclusions and Policy Recommendations

Box 3 Ending discrimination and harassment against female crossovers

Harassment and discrimination are cited as key constraints for female entrepreneurs in male-dominated sectors in our studies. While there is still little evidence on the policies that work to end discrimination and harassment, certain steps could be taken to shift the norms around women’s participation in MDS, including launching communication campaigns (through the radio, TV, or newspaper) and showcasing women in male-dominated professions. Anti-harassment awareness campaigns may also be another approach that can be adopted. For example, Guizzo and Cadinu (2020) found that a web campaign against female objectification led to lower gender-harassing behavior, lower hostile sexism, and lower sexual coercion intention by the men who were shown the sensitizing video, in comparison to those in the control group. In addition, establishing public helplines to offer support and resources for targets of harassment and discrimination may be a helpful avenue.

Finally, expanding networks of support by connecting female entrepreneurs in male-dominated sectors to one another may help them to build strategies to operate in these sectors. For example, qualitative research shows that women’s social networks among firms in Sri Lanka helped to gain and give emotional and informational support through dialogue and information sharing related to sexual harassment (Adikaram 2017). Although more research is needed on the topic, this points to social support as a potential means of dealing with discrimination and sexual harassment.
Breaking Barriers: Female Entrepreneurs Who Cross Over to Male-Dominated Sectors

Section 4: Conclusions and Policy Recommendations

Strengths and Limitations of This Report

The primary limitation of the research synthesized in this report is that it is correlational, cross-sectional, and primarily descriptive in nature. While it speaks to characteristics associated with crossing over to MDS, it also potentially captures the characteristics of successful business owners who are surviving in MDS. It is also possible that the surviving female entrepreneurs captured in MDS are profitable because of characteristics such as higher education, self-esteem, ability to find mentors, inheriting a business, ability to find a business partner, or having a supportive spouse, and not because of the sector choice alone. Another limitation is that in many countries, national data sets were not available, and the sample is not representative of all microentrepreneurs. As a result of data-related limitations, this report and the studies we draw from only assess individual and household-level factors associated with crossing over and do not explore broader sociocultural factors.

At the same time, the strength of the studies in this report lies in overcoming this lack of existing data on gender-based sectoral segregation and profits by using creative sources of data, including data from existing impact evaluations and a multicountry survey through a social media platform. This report and the studies that it comprises are among the first to provide a global overview of understanding the importance of female microentrepreneurs crossing over to male-dominated sectors. This research has established that women operating in male-dominated sectors have greater profits than women operating in female-concentrated sectors in all countries studied, with the exception of Cambodia. In addition, the report highlights key correlates of crossing over, such as the role of a mentor or role models, supportive spouses, and prior experience in a field, which can form the basis of future research and policy action that can benefit female entrepreneurs.

Agenda for Future Research and Policy

This report deepens our understanding of sectoral segregation by systematically examining what constitutes FCS and MDS in various countries and regions, the performance differences of women operating in MDS and FCS, and factors associated with crossing over. The differences in sectoral classifications across countries and regions highlight the need for further research to develop rigorous analyses and policy recommendations on female crossovers at the country level. Even within sectors, a more uniform and granular approach in sector classifications will be helpful to unpack exactly what constitutes MDS and FCS and to understand continued segregation within sectors. Moreover, because sectoral choice is not the only factor influencing the productivity of women’s businesses in most contexts, identifying which constraints are most binding in specific countries is needed. To enable this type of detailed analysis, more nationally representative data across entrepreneurs and firms are needed.

In addition, further research is needed to enhance our understanding of the correlates of crossing over in different contexts, notably by including a mixed methods approach to better identify the barriers and facilitators to crossing over. While these should continue to
be explored at an individual level, as has been done in existing studies, there is also a need to explore the facilitators of crossing over at the household and community level. Longitudinal research may help with distinguishing what helps women to start operating businesses in MDS from what helps women survive and succeed in male-dominated sectors once they enter. In countries where crossing over leads to higher profits for female entrepreneurs, some of the promising policies outlined above could be tested, as large evidence gaps remain. For example, while there is promising evidence on the importance of role models, more research could be undertaken to identify at what stage and in what ways role models are most helpful.

Similarly, while there is some evidence that many of the policies suggested in this report can successfully increase female entrepreneurs’ profits, there is still little evidence on the impact of apprenticeship programs, spousal support training programs, or socioemotional skills training in encouraging crossing over. Conducting pilot projects based on the interventions outlined in this report and assessing their effectiveness would widen the evidence base on what works to support female entrepreneurs’ entry and success in more profitable, male-dominated industries. Finally, a major gap exists in the literature on ensuring women’s safety from sexual harassment and discrimination after crossing over into male-dominated sectors. Women’s safety should be a core focus in designing programs intended to support women to cross over. It is important to ensure that programs involving male role models and mentors do not contribute to women’s increased experience of discrimination or harassment.
Section 4: Conclusions and Policy Recommendations
APPENDIXES
### Appendix A: Description of the Sample

<table>
<thead>
<tr>
<th>Country/study</th>
<th>Sample size</th>
<th>Nationally representative household/firm survey</th>
<th>Selected sampling of enterprises/entrepreneurs</th>
<th>% of micro-entrepreneurs in the sample</th>
<th>Profit measurement (survey question)</th>
</tr>
</thead>
</table>
| **Cambodia**  | Full survey: 4,274 enterprises  
Sector classification, profitarchy, and crossover correlates: 4,118 | Cambodia Socioeconomic Survey (CSES) 2014 | N/A | N/A | Net profit = Revenue – Cost  
Where:  
1. Revenue: How much did your household receive under the different items listed for activity 1, during the past 12 months, that is, since [month] last year?  
2. Cost: How much did you spend on the different items listed for activity 1, during the past 12 months, that is, since [month] last year? |
| **Indonesia** | Full survey: 14,019 enterprises  
Sector classification, profitarchy, and crossover correlates: 10,571 | Indonesian Family Life Survey (IFLS) 2000, 2007, 2014 | N/A | 95.2% | What is the approximate amount in rupiah of net profit generated by the business during the past 12 months? |
| **Lao PDR**   | Full survey: 2,015 enterprises  
Sector classification, profitarchy, and crossover correlates: 1,989 | Lao PDR Expenditure and Consumption Survey (LECS V) 2012 | N/A | 88.7% | In an average sales month, what is your level of sales per month? |
| **Vietnam**   | Full survey: 2,406 enterprises  
Profitarchy and crossover correlates: 2,364 | Vietnam Access to Resources Household Survey (VARHS) 2008, 2010, 2012, and 2014 was carried out in 12 provinces in rural areas | N/A | 97.4% | Net profit = Revenue – Cost  
Where:  
1. Revenue: For the months the business was under operation for the past 12 months, what was the total revenue of this activity?  
2. Cost: During the past 12 months, how much was spent on raw materials and small nondurable tools? - During the past 12 months, how much was the labor cost, utilities, rent of land, workshops, transportation, loan interest, taxes and fees, water and solid sewage disposal, and other expenditures? |
## Appendix A: Description of the Sample

### Table A.1 (continued)

<table>
<thead>
<tr>
<th>Country/study</th>
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<th>Profit measurement (survey question)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mexico</strong></td>
<td>Full survey: 27,582 Sector classification and profitarchy: 27,540 Crossover correlates: 3,907</td>
<td>ENAMIN (Mexican National Survey of Microenterprises) 2014 was used to determine the classification of the sectors and the profitarchy</td>
<td>IE data was used to determine correlates of crossing over to MDS</td>
<td>98.63% in the IE survey 100% in the ENAMIN survey</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Peru</strong></td>
<td>Sector classification: 27,582 Profitarchy and crossover correlates: 1,148</td>
<td>Mexico’s ENAMIN 2014 was used to determine the classification of the sectors</td>
<td>Survey of women clients of the Program Palabra de Mujer – PDM (Word of a Woman) of Financiera Confianza were used for the profitarchy and to determine the correlates of crossing over</td>
<td>100%* N/A</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Guinea</strong></td>
<td>540 entrepreneurs</td>
<td>N/A</td>
<td>World Bank Enterprise survey and qualitative interviews 2014; Guinea crossover needs assessment survey 2014</td>
<td>94.62%</td>
<td>What was the total profits the business earned during the past month (30 days) after paying all expenses, including salaries, rents, materials, etc.? Expenses include payments to business owners if these were paid as a salary. That is, what were the profits of your business during the past month (30 days)?</td>
</tr>
<tr>
<td><strong>Botswana</strong></td>
<td>Full survey: 797 firms Sample size for analysis: 637</td>
<td>N/A</td>
<td>In-person survey of 797 firms in Gaborone, randomly sampled from the Botswana Business Registry</td>
<td>Approximately 80%</td>
<td>What was the total income the business earned during the past month after paying all expenses, including salaries, rents, materials, etc.? Expenses include payments to business owners if these were paid as a salary. That is, what were the profits of your business during the past month?</td>
</tr>
<tr>
<td><strong>Ethiopia</strong></td>
<td>Sector classification: 2,369 Profitarchy and crossover correlates: 790</td>
<td>N/A</td>
<td>Baseline survey of Women Entrepreneurship Development Project</td>
<td>95%</td>
<td>What was the total profit the business earned in the last 30 working days?</td>
</tr>
</tbody>
</table>
### Table A.1 (continued)

<table>
<thead>
<tr>
<th>Country/study</th>
<th>Sample size</th>
<th>Nationally representative household/firm survey</th>
<th>Selected sampling of enterprises/entrepreneurs</th>
<th>% of micro-entrepreneurs in the sample</th>
<th>Profit measurement (survey question)</th>
</tr>
</thead>
</table>
| Uganda                | Sector classification: 187  
Crossover correlates: 735 | N/A | Quantitative data from 2011 sampling of 735 entrepreneurs, most of whom belonged to the Katwe Small Scale Industry Association (KASSIDA). In addition, a quantitative and qualitative survey was administered in 2012 to 63 crossovers and to 120 women working in FCS. | 100% | What is the business NET PROFIT per day? That is, what was the total income the business earned each DAY after paying all expenses, including salaries, rents, materials, etc.? Expenses include the payments to business owners if these were paid as a regular salary. |
| Global: Future of Business | Full survey: 55,932  
Profitarchy: 17,351  
Crossover correlates: 9,827 | N/A | Survey offered by Facebook to administrators of Facebook-designated SME pages. | 65.9%** | To the best of your knowledge, in a typical month, what are the profits to the owner(s) of this business? (How much?) |

**NOTE:**

- **FCS** = female-concentrated sectors;  
- **IE** = impact evaluation;  
- **MDS** = male-dominated sectors;  
- **N/A** = not applicable;  
- **PDM** = Palabra de Mujer;  
- **SME** = subject-matter expert.

* 1,905 female PDM clients were surveyed, of which 1,148 were microentrepreneurs.  
** The total number of observations for which number of employees is available is 31,756. Out of these, 20,915 observations have 6 or fewer employees.
### Appendix A: Description of the Sample

#### Table A.2 Characteristics of the firms in the survey

<table>
<thead>
<tr>
<th>Firm characteristics (mean)</th>
<th>Study/Country</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Botswana</td>
</tr>
<tr>
<td>Age of business</td>
<td></td>
</tr>
<tr>
<td>Women MDS</td>
<td>9.54</td>
</tr>
<tr>
<td>Women FCS</td>
<td>8.75</td>
</tr>
<tr>
<td>Diff.</td>
<td>FCS – MDS = -0.794</td>
</tr>
<tr>
<td>Number of employees</td>
<td></td>
</tr>
<tr>
<td>Women MDS</td>
<td>4.94</td>
</tr>
<tr>
<td>Women FCS</td>
<td>1.07</td>
</tr>
<tr>
<td>Diff.</td>
<td>FCS – MDS = -3.87***</td>
</tr>
<tr>
<td>Number of business owners</td>
<td></td>
</tr>
<tr>
<td>Women MDS</td>
<td>1.41</td>
</tr>
<tr>
<td>Women FCS</td>
<td>1.15</td>
</tr>
<tr>
<td>Diff.</td>
<td>FCS – MDS = -0.262</td>
</tr>
<tr>
<td>What percent of firms have a business partner?</td>
<td></td>
</tr>
<tr>
<td>Women MDS</td>
<td>-</td>
</tr>
<tr>
<td>Women FCS</td>
<td>-</td>
</tr>
<tr>
<td>Diff.</td>
<td>-</td>
</tr>
<tr>
<td>What percent of firms are in urban/rural areas?</td>
<td></td>
</tr>
<tr>
<td>Women MDS</td>
<td>-</td>
</tr>
<tr>
<td>Women FCS</td>
<td>-</td>
</tr>
<tr>
<td>Diff.</td>
<td>-</td>
</tr>
</tbody>
</table>

**NOTE:**

- FCS = female-concentrated sectors;
- FE = Fixed Effects;
- MDS = male-dominated sectors;
- OLS = ordinary least squares;
- - = no data.

* = p < .10; ** = p < .05; *** = p < .01.
### Table B.1 Methods used to determine whether a sector is MDS or FCS

<table>
<thead>
<tr>
<th>Country/study</th>
<th>MDS if at least 70% of respondents answered that most enterprises in their business sector are owned by men, otherwise FCS</th>
<th>MDS if based on the survey data at least 70% of enterprises in that sector were owned by men, otherwise FCS</th>
<th>MDS if at least 75% of respondents answered that most enterprises in their business sector are owned by men, otherwise FCS</th>
<th>MDS if based on the survey data, at least 75% of enterprises in that sector are owned by men, otherwise FCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lao PDR</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vietnam</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guinea</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Botswana</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethiopia</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Future of Business*</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**

FCS = female-concentrated sectors;  
MDS = male-dominated sectors.

* Female respondents only.

### Table B.2 Comparing our findings on sectoral segregation to previous research

<table>
<thead>
<tr>
<th>Study</th>
<th>Male dominated</th>
<th>Female concentrated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender Innovation Lab (Botswana, Ethiopia, Uganda)</td>
<td>Construction, wood manufacturing and repair, electricity and gas supply, automobile maintenance and sale, transportation and storage, small transport services, trade food beverages and tobacco retail, metal works and engineering, water supply and waste management, tourism services (only in Ethiopia), trade of textiles and footwear (only in Uganda), real estate activities</td>
<td>Agriculture, forestry, and fishing (only in Guinea), ICT (only in Ethiopia), leather manufacturing (only in Botswana), tourism services (only in Botswana), computer programming (only in Ethiopia), trade of textiles and footwear (only in Botswana)</td>
</tr>
<tr>
<td>Bardasi, Sabarwal, and Terrell (2011): 22 countries</td>
<td>Other services, electronics, IT, nonmetals, metals, other manufacturing, construction and transportation, chemicals</td>
<td>Wholesale and retail trade, garments and leather goods, hotels and restaurants, food, other services, textiles</td>
</tr>
<tr>
<td>Hallward-Driemeier (2013): 41 countries</td>
<td>Metals, construction, chemicals, machinery</td>
<td>Food processing, garments</td>
</tr>
<tr>
<td>Rijkers and Costa (2012): Ethiopia</td>
<td>No data</td>
<td>Manufacturing (including food and beverages, brewing/distilling), manufacturing (excluding grain milling, food and beverages, distilling, wearing apparel), grain milling</td>
</tr>
</tbody>
</table>
### Appendix B: Sector Classification

<table>
<thead>
<tr>
<th>Study</th>
<th>Male dominated</th>
<th>Female concentrated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Latin America and the Caribbean</strong></td>
<td>Gender Innovation Lab study (Mexico and Peru)</td>
<td>Automobile maintenance and sale, agriculture, forestry and fishing, trade food, beverages and tobacco retail, transportation and storage (Mexico only), construction (Mexico only), wood manufacturing and repair (Mexico only), metal works and engineering (Mexico only), small transport services (Mexico only), water supply and waste management (Mexico only)</td>
</tr>
<tr>
<td></td>
<td>Bardasi, Sabarwal, and Terrell (2011): 13 countries</td>
<td>IT, construction and transportation, other services, chemicals, other manufacturing, nonmetals</td>
</tr>
<tr>
<td><strong>Asia</strong></td>
<td>Gender Innovation Lab (Cambodia, Indonesia, Lao PDR, Vietnam)</td>
<td>Agriculture, forestry, and fishing (except in Cambodia), construction (except in Vietnam), electricity and gas supply, other manufacturing and repair, automobile maintenance and sale, transportation and storage, human health and social work</td>
</tr>
<tr>
<td></td>
<td>Rijkers and Costa (2012): Indonesia</td>
<td>Manufacturing (including mining and excavation; manufacturing, including processing of agricultural products, electricity, gas and water, construction)</td>
</tr>
<tr>
<td></td>
<td>Rijkers and Costa (2012): Bangladesh</td>
<td>Trade (including wholesale and retail trade, excluding repair of motor vehicles, motorcycles, personal and household goods)</td>
</tr>
<tr>
<td></td>
<td>de Mel, McKenzie, and Woodruff (2009): Sri Lanka</td>
<td>Repair services</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>United States of America</strong></td>
<td>Anna et al. (1999): United States</td>
<td>High technology, construction, and manufacturing</td>
</tr>
<tr>
<td><strong>Europe and Central Asia</strong></td>
<td>Bardasi, Sabarwal, and Terrell (2011): 26 countries</td>
<td>IT, chemicals, others, electronics, nonmetals, metals, other manufacturing, construction and transport, food</td>
</tr>
</tbody>
</table>

**NOTE:**

- ICT = information and communications technology;
- IT = information technology.
Appendix C: Summary of the Data Used to Determine the Profitarchy

Table C.1 Average monthly/past month profits in each study

<table>
<thead>
<tr>
<th>Country</th>
<th>Women in MDS</th>
<th>Men in MDS</th>
<th>Women in FCS</th>
<th>Men in FCS</th>
<th>Percent change for women from FCS to MDS*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LCU</td>
<td>USD</td>
<td>LCU</td>
<td>USD</td>
<td></td>
</tr>
<tr>
<td>Botswana</td>
<td>55,189</td>
<td>5,411</td>
<td>85,731</td>
<td>8,405</td>
<td>25,195</td>
</tr>
<tr>
<td>Guinea</td>
<td>3,851,639</td>
<td>549</td>
<td>3,538,036</td>
<td>504</td>
<td>2,024,608</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>10,678</td>
<td>545</td>
<td>-</td>
<td>-</td>
<td>5,932</td>
</tr>
<tr>
<td>Uganda</td>
<td>494,000</td>
<td>197</td>
<td>515,000</td>
<td>206</td>
<td>205,000</td>
</tr>
<tr>
<td>Mexico</td>
<td>3,826</td>
<td>288</td>
<td>6,222</td>
<td>468</td>
<td>2,542</td>
</tr>
<tr>
<td>Peru</td>
<td>-</td>
<td>330</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Indonesia</td>
<td>443,333</td>
<td>37</td>
<td>483,667</td>
<td>41</td>
<td>265,667</td>
</tr>
<tr>
<td>Vietnam</td>
<td>1,253,167</td>
<td>59</td>
<td>2,180,500</td>
<td>103</td>
<td>950,417</td>
</tr>
<tr>
<td>Cambodia</td>
<td>994,500</td>
<td>246</td>
<td>891,500</td>
<td>221</td>
<td>1,220,667</td>
</tr>
<tr>
<td>Lao PDR**</td>
<td>8,557,000</td>
<td>1,069</td>
<td>5,438,000</td>
<td>679</td>
<td>4,768,000</td>
</tr>
</tbody>
</table>

NOTE:
USD average exchange rates for the year of the survey were used, using [https://data.worldbank.org/indicator/PA.NUS.FCRF](https://data.worldbank.org/indicator/PA.NUS.FCRF).
FCS = female-concentrated sectors;
LCU = local currency unit;
MDS = male-dominated sectors;
- = no data.
* = calculated using the formula (women in MDS – women in FCS/women in FCS) * 100.
** = uses monthly sales instead of profit.

Table C.2 Robustness of the profit gap between women in MDS compared to those in FCS with and without accounting for individual, household, and business characteristics

<table>
<thead>
<tr>
<th>Study/country</th>
<th>Profit variable</th>
<th>Controls</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botswana</td>
<td>The IHS and log transformation of profit during the past month</td>
<td>No controls</td>
<td>Crossovers have higher profit (statistically significant at 1%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>individual</strong> characteristics: married, completed more than secondary education; any of last 5 jobs was as business owner; any of last 5 jobs was in a male-dominated sector; role model was male; mother completed more than primary education; mother was owner/manager of a firm when respondent was a child; father completed more than primary education; father was owner/manager of a firm in a male-dominated sector when respondent was a child; foreign born; proportion of male siblings; firstborn in the family; number of siblings</td>
<td>Results hold at 1% significant level for the log transformation while they are no longer significant for the IHS transformation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>business</strong> characteristics: received previous training in sector of current business; knows more than 30 owners in any sector; business formally registered; business has written business plan; business has a written annual budget; business records revenues and expenses; business is part of any business association; share of male employees</td>
<td>No significant gap in profits for either the log or IHS transformation of profits</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>household</strong> characteristics: Household Decision-Making Index (High: 5, Low: 1); spouse completed more than primary education; spouse is owner/manager of other firm; HH asset index 0–14; number of children</td>
<td>Results hold for both the log (at 1% significance level) and IHS (at 5% significance level) transformation of profit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for all the above characteristics</td>
<td>No statistically significant gap in profits in either the log or IHS transformations</td>
</tr>
</tbody>
</table>
### Table C.2 (continued)

<table>
<thead>
<tr>
<th>Study/country</th>
<th>Profit variable</th>
<th>Controls</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guinea</td>
<td>Past month's profit winsorized at the top 1%</td>
<td>No controls</td>
<td>Crossovers have higher profit and the difference is significant at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>individual (household)</strong> characteristics: age and age squared, education; age and age squared started working; marital status; number of children; household size; region of birth; mother was female guardian when young; female guardian had some schooling; female guardian was an entrepreneur; female guardian had wage employment; father was male guardian when young; male guardian had some school; male guardian was an entrepreneur; male guardian had wage employment</td>
<td>Crossovers are still more profitable, but the gap is no longer statistically significant once individual characteristics are accounted for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>business</strong> characteristics: age and age squared of business; only owns business but does not manage; starting capital obtained from loan by family/friends; starting capital obtained from gift by family/friends; starting capital obtained from savings; number of full-time employees that are members of household; most business activities take place at home; ever involved in day-to-day production or service delivery; pays self a regular salary</td>
<td>Crossovers have higher profit and the difference is significant at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>individual (household) + business</strong> characteristics: all the above variables</td>
<td>Crossovers are still more profitable, but the gap is no longer statistically significant</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Last 30 days’ profit</td>
<td>No controls</td>
<td>Crossovers have higher profit and the difference is significant at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Without age of the business</td>
<td>Crossovers perform better and the difference is still significant at 1%</td>
</tr>
<tr>
<td>Uganda</td>
<td>Log transformation of previous month’s sales (revenue)</td>
<td>No controls</td>
<td>Crossovers have higher sales and this is statistically significant at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for capital, labor, and material inputs</td>
<td>Crossovers have higher sales (statistically significant at 10%)</td>
</tr>
<tr>
<td>Mexico</td>
<td>Profit per month winsorized at the top 1% as well as the log and IHS transformation of profit</td>
<td>No controls</td>
<td>Crossovers have higher profit and the difference is significant at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>business</strong> characteristics: retail; services; hours worked per week; age of business; firm registry with local authority; total workers</td>
<td>Still higher profit for crossovers (all are significant at 1% except for the IHS transformation, which is significant at 5%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>household</strong> characteristics: married; has children; high level of education; household size; Poverty Dummy Index; no access to toilet; indirect water access</td>
<td>Crossovers have significantly (at 1%) higher profit (in all three data transformations)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>individual</strong> characteristics: age (in years); age squared; father’s education level; mother’s education level; access to finance; FE education level; cognitive index span test; cognitive index Raven</td>
<td>Crossovers have significantly (at 1%) higher profit (in all the three data transformations)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for all the <strong>individual, household, and business</strong> characteristics</td>
<td>Including all controls together does not change the significance level for the level (still significant at 1%). However, it is significant only at 10% for the log transformation, while it is no longer significant for the IHS transformation of profit.</td>
</tr>
</tbody>
</table>
### Table C.2 (continued)

<table>
<thead>
<tr>
<th>Study/country</th>
<th>Profit variable</th>
<th>Controls</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Peru</strong></td>
<td>Monthly profit winsorized at the top 1%</td>
<td>No controls</td>
<td>Crossovers have higher profits and the difference is significant at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>business</strong> characteristics: number of employees; number of paid employees</td>
<td>Adjusting for business characteristics reduces the magnitude of the profit gap and it remains significant at 10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>household</strong> characteristics: water from public network inside the dwelling; drainage from public network, inside the dwelling; electricity; walls of brick or concrete block; ceiling of reinforced concrete; overcrowding in the household; household size</td>
<td>Adjusting for household characteristics increases the magnitude of the profit gap and it remains significant at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>individual</strong> characteristics: age (in years); language; marital status; years of schooling; number of children; woman has a dependent job; woman’s independent labor weekly hours; partner manages a business; partner’s income; instrumental risk taking; brief resilient coping; self-control; brief resilience and survival; abbreviated self-leadership; locus of control; self-esteem; big 5-11</td>
<td>Adjusting for individual characteristics reduces the magnitude of the profit gap and it remains significant at 5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>individual + household + business</strong> characteristics</td>
<td>Adding all controls together reduces the magnitude of the profit gap and it remains significant at 10%</td>
</tr>
<tr>
<td><strong>Indonesia</strong></td>
<td>Log transformation of profit during the past 12 months after winsorizing it at the top and bottom 1%</td>
<td>No controls</td>
<td>Crossovers have higher profits and the difference is significant at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>individual</strong> characteristics: married; schooling; age; work and self-employed; father highly educated; mother highly educated; credit other sources; father works</td>
<td>Both adding each group of control variables at a time and adding all together increases the magnitude of the profit gap and it remains significant at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>individual + household</strong> characteristics: rural; kids 0 to 2; kids 3 to 5; elderly; cooking source; need help</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>individual + household + business</strong> characteristics: business outside; business age; unpaid workers</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>individual + household + business + community</strong> characteristics: nonmotor; market</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for <strong>individual + household + business + community + network</strong> characteristics: artisans; voluntary labor</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix C: Summary of the Data Used to Determine the Profitarchy

<table>
<thead>
<tr>
<th>Study/country</th>
<th>Profit variable</th>
<th>Controls</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vietnam</td>
<td>Log transformation of calculated profit during the past 12 months after winsorizing it at the top and bottom 1%</td>
<td>No controls</td>
<td>The magnitude of the profit gap in (log transformed) profits is no longer significant once region is accounted for. However, the gap remains even when any or all the control variables are added to the model.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for individual characteristics: age, age squared, married, schooling, work for wage, member of a political party</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for individual + household characteristics: rural; elderly; kids 0 to 2; kids 3 to 5; water source; cooking source; housework; borrowed money; HH savings</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for individual + household + business characteristics: business in home, business age, unpaid workers</td>
<td></td>
</tr>
<tr>
<td>Cambodia</td>
<td>Log transformation of calculated net profit during the past 12 months after winsorizing it at the top and bottom 1%</td>
<td>No controls</td>
<td>Crossovers have lower profit and the difference is significant at 5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for individual characteristics: married; schooling; age; age squared; work for wage; household head; spouse of household head; violence victim</td>
<td>The above result is still significant at 5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for individual + household characteristics: rural; kids 0 to 2; kids 3 to 5; elderly; cooking source; drinking water inside; household members; men in HH</td>
<td>The above result is still significant at 5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for individual + household + business characteristics: female helpers; male helpers; paid workers</td>
<td>The above result is still significant at 1%</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>Log transformation of average sales per month after winsorizing it at the top and bottom 1%</td>
<td>No controls</td>
<td>Crossovers have higher profits and the difference is significant at 10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for individual characteristics: married; schooling; age; age squared; work for wage; household head; spouse of HH</td>
<td>The above result is no longer significant once control variables related to individual characteristics are added to the regression model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for individual + household characteristics: urban; kids 0 to 2; kids 3 to 5; elderly; own house; good walls; kitchen inside; public electricity; household size</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for individual + household + business characteristics: business age, fixed location business; HH business members; more than 1 business</td>
<td></td>
</tr>
<tr>
<td>Global: Future of Business</td>
<td>The IHS transformation profit in a typical month</td>
<td>Controlling only for regional FE</td>
<td>Crossovers have higher profits and the difference is significant only at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for individual characteristics: age of the respondent; university or college; more than secondary, vocational training, or apprenticeship; secondary; primary; do you have a spouse or long-term partner</td>
<td>The results still remain significant at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for business characteristics: more than one owner; single owner; number of employees</td>
<td>The results still remain significant at 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling for both individual and business characteristics</td>
<td>The results still remain significant at 1%</td>
</tr>
</tbody>
</table>

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Note: FCS = female-concentrated sectors; FE = fixed effects; HH = Households; IHS = inverse hyperbolic sine; MDS = male-dominated sectors.
### Appendix D: Details on Each Individual Study

## Botswana

### Our sample

| Number of enterprises: 637 informal and formal microenterprises in the urban context of Gaborone |

How and where were the data collected, and what are they representative of? Botswana Women Entrepreneurship Study is based on an in-person survey of 797 firms in Gaborone, randomly sampled from the Botswana Business Registry across all business sectors in our sample. Categories of business owners: Three categories of business owners: (1) women in male-dominated sectors (151); (2) women in female-concentrated sectors (262); and (3) men in male-dominated sectors (224).

### Identifying male-dominated and female-concentrated sectors

What methodology was used to define sectors as male dominated or female concentrated? As the Botswana Business Registry does not include the gender of the business owner, we classify sector gender dominance using a survey of a sample of business owners: the sector was classified as male dominated if at least 75 percent of the respondents answered that most enterprises in their business sector are owned by men, otherwise we classified the sector as female concentrated.

How many sectors are female concentrated? How many are male dominated? Out of 28 sectors, only 9 are classified as female concentrated. Our final gender classification of sectors is consistent with the gender-ownership data in the World Bank’s Enterprise Survey for Botswana.

### The profitarchy

Women operating in male-dominated sectors have monthly profits (116,522 pula) that are statistically similar to those of men in male-dominated sectors (111,178 pula) and significantly higher than those of women operating in female-concentrated sectors (25,195 pula). However, the profits of women operating in male-dominated sectors appear to be partly driven by high-performing outliers, including businesses that are jointly owned with a husband and those that have a foreign-born owner.

After winsorizing the profits to account for these high-performing outliers, men in male-dominated sectors have the highest profits (85,731 pula), followed by women in male-dominated sectors (55,189 pula), and then women in female-concentrated sectors (25,195 pula).

### Factors associated with being a female crossover

- Exposure to the sector through previous work
- Being a supplier to the sector, through friends and family or by receiving information about its potential
- Completing more than secondary education
- Having a mother who completed more than primary education

When we exclude businesses with foreign-born owners, the level of education of the owner and of the owner’s mother appear to be the most important correlates of crossing over: it might be that Batswana women who received an education and come from a family where the mother has a high level of education are more informed and exposed to promising business opportunities.

### Constraints to business performance faced by women who cross over

- Access to credit: Women in male-dominated sectors, women in female-concentrated sectors, and men in male-dominated sectors all identified access to credit as a constraint.
- Location: Women in male-dominated sectors and women in female-concentrated sectors were more likely than men to list finding a location as a constraint.
- Building networks and discrimination from clients and employees: Despite their success, women operating in male-dominated sectors face specific challenges that may have their roots in social biases against women operating in a traditionally male world, such as problems building networks and discrimination from clients and employees.

### Given these constraints, what policies could help women to cross over into more profitable, male-dominated sectors?

- Encourage women to cross over: Exposing women to more profitable male-dominated sectors through training, apprenticeship, and mentoring programs could help more women cross over.
- Social norms and spousal support: Policies that address discriminatory social norms and that sensitize husbands on the valuable role they can play in supporting their wives’ success in these sectors should be encouraged. While we do not find evidence that husbands help women to cross over, spouses do appear to provide important support that could help women to succeed in a given sector, such as by providing skills (either through their own labor or by imparting these skills on the wife), access to larger amounts of finance/capital, or by helping with business registration or the acquisition of a license.

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34 In our study, female-concentrated sectors include any sector that is not male dominated.
### Cambodia

<table>
<thead>
<tr>
<th><strong>Our sample</strong></th>
<th>Number of enterprises: 4,274 enterprises</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>How and where were the data collected, and what are they representative of?</em> The data come from the Cambodia Socioeconomic Survey (CSES) for the year 2014. The survey is a nationally representative household survey, and information on the businesses comes from the household business module.</td>
</tr>
<tr>
<td></td>
<td><em>Categories of business owners: Four categories of business owners: (1) women in male-dominated sectors (59); (2) women in female-concentrated sectors (2,238); (3) men in male-dominated sectors (935); and men in female-concentrated sectors (1,042).</em></td>
</tr>
<tr>
<td><strong>Identifying male-dominated and female-concentrated sectors</strong></td>
<td><em>What methodology was used to define sectors as male dominated or female concentrated?</em> Because the data are representative, we define a sector as male dominated if at least 70% of the owners of businesses in the sector are men.</td>
</tr>
<tr>
<td></td>
<td><em>How many sectors are female concentrated? How many are male dominated? Out of 19 sectors, 11 are classified as female concentrated and 8 as male dominated.</em></td>
</tr>
<tr>
<td><strong>The profitarchy</strong></td>
<td><em>How do profits of women in MDS compare to profits of men in MDS, and of women in FCS?</em> In Cambodia, male-dominated sectors are less profitable than female-concentrated sectors. Women crossovers have past year profits (11,934,000 KHR) that are lower than women operating in FCS (14,649,000 KHR), and men in male-dominated sectors have past year profits (10,698,000 KHR) that are lower than women operating in female-concentrated sectors. However, within MDS and FCS, men have higher profits than women: for example, men operating in female-concentrated sectors have past year profits (19,444,000 KHR) that are higher than women operating in those sectors.</td>
</tr>
<tr>
<td><strong>Factors associated with being a female crossover</strong></td>
<td>- Living in an urban area</td>
</tr>
<tr>
<td></td>
<td>- Having fewer female helpers in the business</td>
</tr>
<tr>
<td></td>
<td>- Having paid workers in the firm</td>
</tr>
<tr>
<td><strong>Constraints to business performance faced by women who cross over</strong></td>
<td>- Women in male-dominated sectors have less education than men in those sectors.</td>
</tr>
<tr>
<td></td>
<td>- Women crossovers are more likely than men in these sectors to have children under 2 in their household and more likely to have elderly household members, which may lead to challenges related to domestic work. They are also less likely to be married than men in these sectors, which means they may face additional challenges without the support of a partner.</td>
</tr>
<tr>
<td><strong>Given these constraints, what policies could help women to cross over into more profitable, male-dominated sectors?</strong></td>
<td>In Cambodia, female microentrepreneurs in male-dominated sectors make less profit than women in female-concentrated sectors. Therefore, it is not recommended to design policies in Cambodia to support a switch into male-dominated sectors.</td>
</tr>
</tbody>
</table>
Appendix D: Details on Each Individual Study

Ethiopia

Our sample

| How and where were the data collected, and what are they representative of? The sample came from women who were registered with the Women Entrepreneurship Development Project (WEDP). Baseline enterprise survey data were collected from a sample of 2,369 female WEDP entrepreneurs, and an additional survey module was administered to a subset of 800 female WEDP entrepreneurs that included more questions about sector choice. |
| Categories of business owners: Two categories of business owners: (1) women in male-dominated sectors (164); and (2) women in female-concentrated sectors (626). |

Identifying male-dominated and female-concentrated sectors

What methodology was used to define sectors as male dominated or female concentrated? We drew on a question administered in the WEDP baseline survey that asked the entrepreneur, “Are most enterprises in your business sector owned by men or women?” If more than 75 percent of responses from the entire baseline sample (2,369 female entrepreneurs) were that men owned most enterprises in their business sector, we defined that sector as male dominated. We used the entire core baseline sample of 2,369 entrepreneurs to determine this definition of a male-dominated sector and defined a woman who had a business in any of these sectors as a crossover.

How many sectors are female concentrated? How many are male dominated? Out of 24 sectors, 11 are classified as male dominated and 13 are classified as female concentrated.

The profitarchy

Women operating in male-dominated sectors (crossovers) have, on average, double the profits of women in female-concentrated sectors (noncrossovers). Monthly profits of women in MDS were (10,678 Ethiopian birr), which is statistically significantly higher than those of women operating in FCS (5,932 Ethiopian birr).

We also observe that women in male-dominated sectors are able to create larger firms in terms of number of employees and capital levels.

Factors associated with being a female crossover

- Opportunity entrepreneurs: started a business venture because of a market opportunity
- Having a husband who is in business himself strongly predicting crossing over
- Education and skills do not seem to predict crossing over
- Digit span recall and having a male role model growing up important for the top performing crossovers
- Good support networks, or assistance of a husband or a male role model

Constraints to business performance faced by women who cross over

- Women crossovers are significantly more likely to face difficulty in building networks in their sector of operation and do not seem to differentially benefit from networks of women in the same industry, with crossovers reporting that they are more likely to feel despised by other women business owners.
- Crossovers are more likely to face clients who prefer to do business with male business owners and more likely to face problems with male employees.
- Harassment outcomes are similar for crossover and noncrossover entrepreneurs, with as many as 11 percent of the women reporting being sexually harassed within the past 12 months and 22 percent experiencing some form of other abuse in the past 12 months, suggesting that female entrepreneurs in Ethiopia face harassment problems when attempting to operate businesses in general.
Given these constraints, what policies could help women to cross over into more profitable, male-dominated sectors?

• Access to finance: The higher capital requirements for crossover businesses mean that dedicated lending initiatives for female entrepreneurs are critical to easing financial constraints and helping these businesses grow.

• Targeting: Policy efforts to encourage women to enter nontraditional sectors should establish which women are committed to operating a business (measured as a preference for business rather than a necessity for money or inability to find wage work) as a first step in targeting the appropriate women for these programs.

• Training: Salaries for employees in crossover sectors are approximately double those of workers in noncrossover sectors. Programs that train women on the skills needed to operate in male-dominated sectors could help them compete for these higher-paying, salaried jobs.

• Networks: Facilitating access to networks and providing training on how to overcome discrimination and improve negotiation skills could give women a collective voice and improve some of the challenges women face when operating in male-dominated sectors.

• Spousal support: With the finding that women with supportive husbands and male role models are more likely to perform well in a male-dominated sector, programs could encourage men to introduce their wives to their own business networks, pass on key technical skills, and help them obtain start-up capital. A better understanding of how husbands support their wives in business would help inform policy to replicate the support or advice structures that they provide.
### Guinea

<table>
<thead>
<tr>
<th>Our sample</th>
<th>Number of enterprises: 465 microenterprises in Conakry. How and where were the data collected, and are they representative of? Face-to-face interviews were conducted in Conakry. To locate women entrepreneurs in male-dominated sectors, the study used a snowball sampling approach. Women entrepreneurs in non-male-dominated sectors and male entrepreneurs in male-dominated sectors were located using a systematic random selection in areas where the crossovers that we were able to interview were operating. Categories of business owners: Three categories of business owners: (1) women in male-dominated sectors (123); (2) women in female-concentrated sectors (213); and (3) men in male-dominated sectors (129).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifying male-dominated and female-concentrated sectors</td>
<td>What methodology was used to define sectors as male dominated or female concentrated? We used data from a survey of small and medium-size enterprises that was conducted by the World Bank in Conakry in 2014, as well as qualitative data collected in 2016 to identify male-dominated sectors. Specifically, the surveys collected information about the sector of operation and the gender of business owners. Sectors were classified as male dominated if 70% or more of the owners of businesses in the sector were male. How many sectors are female concentrated? How many are male dominated? Using the definition of male dominated as 70% or more of businesses in a sector that are owned by men, 18 out of the 25 sectors we identified are classified as male dominated. In nine of these sectors, more than 90% of businesses were owned by men, including trades such as baking, brickmaking, mechanics, and carpentry.</td>
</tr>
<tr>
<td>The profitarchy</td>
<td>Women operating in male-dominated sectors have mean monthly profits (3,851,639 Guinean francs) that are statistically similar to those of men in male-dominated sectors (3,538,036 Guinean francs) and significantly higher than those of women operating in female-concentrated sectors (2,024,608 Guinean francs). It is important to note, though, that the differences in the mean profits per month should be interpreted with caution because the samples we use are not randomly drawn from the population of firms in Conakry, as it was extremely challenging to find female business owners in male-dominated sectors that were willing to participate in our survey. Furthermore, a small number of the respondents in our samples refused to respond (or indicated that they did not know the answer) to the questions on the monthly profits of their businesses.</td>
</tr>
<tr>
<td>Factors associated with being a female crossover</td>
<td>• Education: Women crossovers are more likely to be literate and have higher levels of education. They are more likely to have learned about the business at school or university. They are also more likely to have taken a training course in a male-dominated sector. • Business knowledge: Women crossovers self-report higher levels of knowledge with regard to practices such as managing workers, bookkeeping and budgeting, accessing credit, and regulatory compliance. They are also more likely to market their businesses. • Agency: Women crossovers, when compared to noncrossovers, report higher levels of empowerment in terms of being able to make personal decisions or making decisions within the household. • Prior experience in the sector: Women who own businesses in traditionally male-dominated sectors are more likely to have previous experience working in the sector or previous experience as entrepreneurs. • Family support and inheritance: Women crossovers are more likely to have inherited the business or to have had their spouse/partner start the business (they are less likely to start the business by themselves). Furthermore, they are more likely to indicate that their father had suggested the idea to start the business. For those with a spouse/partner, crossovers were more likely to receive assistance with and advice on running the business from their spouse/partner.</td>
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</tbody>
</table>
### Constraints to business performance faced by women who cross over

Women crossovers were more likely than noncrossovers to list the following constraints to starting their businesses:

- **Accessing credit:** The businesses run by women crossovers were more capital intensive than those run by women noncrossovers, which may be one of the reasons why accessing credit is specifically mentioned.
- **Social norms:** Women crossovers were more likely to agree that if women wanted to work in a male trade, their family/friends would discourage them, to believe that women in male trades would have difficulty finding a husband, and to experience male employees looking down on them. They were also less likely to believe that people in the community took female business owners seriously. Finding staff to work for a woman was, for instance, listed as a constraint by crossovers.
- **Household responsibilities:** Women crossovers were also more likely to have to take care of household responsibilities than male business owners in male-dominated sectors.
- **Finding a location**

### Given these constraints, what policies could help women to cross over into more profitable, male-dominated sectors?

- **Education:** Policy makers should implement measures that further increase access to higher levels of education for girls and women in Guinea. This includes training that develops the general business knowledge, as well as the specific knowledge required to operate businesses in male-dominated sectors.
- **Social norms:** Policies should be designed to address discriminatory social gender norms in Guinea. First, this constraint should be addressed in the education system. Another approach would be to use specifically designed media programming or other campaigns at a community level. Training interventions can be used to target interiorized gender-role norms among women entrepreneurs (or women who would like to start businesses), or to help crossovers cope with the psychological pressure of working in male-dominated sectors. Training can also be developed that targets the spouses/partners or other male relatives who would support women to establish businesses in male-dominated sectors. Further, training can be developed that targets the succession planning, which includes female family members or other relatives of male business owners in male-dominated sectors.
- **Access to credit:** Promoting business plan competitions that specifically target women who have proposals for business opportunities in male-dominated sectors, with grants or low-interest loans as prizes, can support women crossovers. Other interventions such as psychometric testing can also be used to facilitate access to credit among women who want to establish or grow their businesses in male-dominated sectors. In addition, it may be possible to introduce business insurance products that are specifically tailored to any disruptions that are more likely to affect female entrepreneurs operating in male-dominated sectors (which may constrain their business’ performance and survival, and may inhibit women from crossing over).
### Indonesia

<table>
<thead>
<tr>
<th>Our sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of enterprises:</strong> 14,019 enterprises</td>
</tr>
</tbody>
</table>

**How and where were the data collected, and what are they representative of?** The data come from the Indonesian Family Life Survey for the years 2000, 2007, and 2014. The survey sample represented about 83% of the Indonesian population. Information on businesses is taken from the household business module.

**Categories of business owners:** Four categories of business owners are included in the analysis: (1) women in male-dominated sectors (262); (2) women in female-concentrated sectors (6,519); (3) men in male-dominated sectors (1,939); and men in female-concentrated sectors (5,299).

<table>
<thead>
<tr>
<th>Identifying male-dominated and female-concentrated sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What methodology was used to define sectors as male dominated or female concentrated?</strong> Because the survey data are from a fairly representative sample of the population, we use them to define male-dominated sectors as those in which more than 70% of businesses in the sector are owned by men.</td>
</tr>
</tbody>
</table>

**How many sectors are female concentrated? How many are male dominated?** Out of 17 sectors, 10 are classified as female concentrated and 7 as male dominated. On average, businesses in male-dominated sectors have almost twice the amount of start-up capital as businesses in female-concentrated sectors.

<table>
<thead>
<tr>
<th>The profitarchy</th>
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<tbody>
<tr>
<td><strong>In Indonesia, there is a premium for women crossing over into male-dominated sectors: those who cross over earn yearly profits (5,320,000 Indonesian rupiah) that are higher than those of women who operate in female-concentrated sectors (3,188,000 Indonesian rupiah). However, women still earn less than men, regardless of the sector in which they operate. Men in female-concentrated sectors earn yearly profits (6,273,000 Indonesian rupiah) that are higher than women in those sectors, and men in male-dominated sectors earn yearly profits (5,804,000 Indonesian rupiah) that are higher than women in these sectors.</strong> For men, male-dominated sectors are not more profitable than female-concentrated sectors: they actually have slightly higher profits when they work in female-concentrated sectors (although this difference is not statistically significant).</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Factors associated with being a female crossover</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>• Education:</strong> Female crossovers have slightly more education than women operating in female-concentrated sectors.</td>
</tr>
<tr>
<td><strong>• Wage job:</strong> Female crossovers are more likely to also have a wage job, which could enable them to have access to more capital to invest in their businesses or help broaden their networks.</td>
</tr>
<tr>
<td><strong>• Networking:</strong> Consistent with a hypothesis of the importance of networks for crossing over, crossovers are also more likely to participate in community service volunteering, through which women may benefit from expanded networks. Capital from wage work or from networks may be particularly important for enabling women to work in male-dominated sectors. Women operating in male-dominated sectors have start-up capital that is more than four times that of women operating in female-concentrated sectors.</td>
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</table>

<table>
<thead>
<tr>
<th>Constraints to business performance faced by women who cross over</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>• Access to finance:</strong> Crossovers may face more challenges securing adequate financing for their businesses, as crossovers have much larger capital requirements at start-up. In addition, crossovers’ profits are strongly correlated with the availability of credit in the village. <strong>• Time:</strong> Childcare constraints affect crossover women more than noncrossover women. Having a two-year-old or younger child in the household is associated with profits that are 49 percent lower for crossover women, whereas the profits for noncrossover women are not lower when young children are in the household.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Given these constraints, what policies could help women to cross over into more profitable, male-dominated sectors?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>• Access to finance:</strong> Programs that enable women to have access to greater capital may support entry into male-dominated sectors, which have higher start-up capital requirements. Facilitating access to credit may also help women stay and thrive in these sectors. <strong>• Skills:</strong> Programs that support the development of women’s skills through formal training could broaden the sectoral opportunities for female entrepreneurs. <strong>• Education:</strong> Formal education is positively correlated with both the likelihood of operating a business in a male-dominated sector and also with the profits of female crossovers. <strong>• Networks:</strong> Programs that expand women’s networks and provide opportunities to learn from others may also support female crossovers. An expanded network may enable women to learn about opportunities in male-dominated sectors and overcome barriers to entry. Mentorship programs connecting crossovers to knowledgeable individuals may also enable them to be more successful once they cross into the sector.</td>
</tr>
</tbody>
</table>
**Appendix D: Details on Each Individual Study**

### Lao PDR

**Our sample**

*Number of enterprises: 2,015 enterprises*

*How and where were the data collected, and what are they representative of?*  The data come from the Lao PDR Expenditure and Consumption Survey (LECS) for the years 2012–2013. The survey is a nationally representative household survey, and the information on businesses comes from the household business module.

*Categories of business owners: Four categories of business owners: (1) women in male-dominated sectors (40); (2) women in female-concentrated sectors (1003); (3) men in male-dominated sectors (311); and men in female-concentrated sectors (661).*

**Identifying male-dominated and female-concentrated sectors**

*What methodology was used to define sectors as male-dominated or female concentrated?*  Because the survey is nationally representative, we define a sector as a male-dominated sector if at least 70% of the owners of businesses in the sector are men.

*How many sectors are female concentrated? How many are male dominated?*  Out of 14 sectors, 8 are classified as female concentrated and 6 as male dominated. Male-dominated sectors have more paid workers and may be more physically demanding (such as construction, transportation, or agriculture).

**The profitarchy**

*Women crossovers have monthly sales (8,557,000 Lao kip) that are higher than the sales of women operating in female-concentrated sectors (4,768,000 Lao kip). They also have higher sales than men operating in any sector; however, while substantial in size, the difference in profits between female crossovers and men is not statistically significant. Due to the small sample of female crossovers, the results must be interpreted with caution.*

**Factors associated with being a female crossover**

- Fewer domestic constraints: Crossovers are more likely to have water in the home during the dry season, which can reduce the time needed for fetching water, and have fewer elderly household members that may require care.
- Education: Skills may play a role in helping women enter male-dominated sectors, as crossovers have slightly more education than women in female-concentrated sectors.

**Constraints to business performance faced by women who cross over**

- Time: Women operating in male-dominated sectors may need to be able to spend more time to fully dedicate to their businesses. When crossovers also hold a wage job, their profits are much lower, whereas the same is not true for women in female-concentrated sectors.
- Couple dynamics: Being married is also negatively associated with profits, only for crossover women. If married women spend more time on domestic tasks than unmarried women, this may signal a challenge with balancing multiple tasks. Aligned with this possibility, crossover women tend to have higher profits when they also have access to cooking fuel that requires less time to collect and ignite.

**Given these constraints, what policies could help women to cross over into more profitable, male-dominated sectors?**

- Domestic work: Promoting a more equal sharing of domestic tasks across household members of both genders or a reduction of domestic work overall could help women enter and be more profitable in male-dominated sectors. Facilitating affordable access to care services, such as child and elder care, could, for instance, be helpful, as well as increasing affordable access to modern technology that lowers the time needed for cooking and cleaning. Similarly, encouraging men and boys to participate more in domestic work could also alleviate time constraints that may orient female entrepreneurs’ choices.
- Skills: Supporting women’s skill development, for example, through training programs, may also help them cross over into male-dominated sectors.
Appendix D: Details on Each Individual Study

Mexico

Our sample

Number of enterprises: This study employs two sources of information: first, a nationally representative survey of microenterprises (ENAMIN), which contains data for 13,798 male and 13,784 female microentrepreneurs; and second, a baseline survey conducted as part of a randomized controlled trial to evaluate the impacts of a personal initiative training program paired with business skills. The sample consists of 3,907 informal and formal female entrepreneurs operating in five states of Mexico (México DF, State of Mexico, Guanajuato, Querétaro, and Aguascalientes).

How and where were the data collected, and what are they representative of? The ENAMIN survey was conducted in 2014 by the Institute of Geography and Statistics (INEGI) and it is a representative sample of Mexican microentrepreneurs at the national and state level. The sample frame for ENAMIN comes from the previous year’s Employment Survey, which identifies respondents, who are classified as self-employed or microentrepreneurs (owners of firms with less than 10 employees).

The impact evaluation survey (“the experiment baseline survey” hereafter) is a nonrandom sample of female entrepreneurs interested in the training program implemented by CREA (a Mexican nongovernmental organization specialized in programs and support for female entrepreneurs). Researchers launched a communication campaign in five states to seek female-owned businesses from the formal and informal sectors interested in improving and growing their businesses. Only entrepreneurs who already had a business which had been working for 12 months or more were eligible to participate; in this way a total of 3,907 entrepreneurs were admitted and at registration had to fill a baseline survey between November 2014 and August 2015.

Categories of business owners: The ENAMIN data include four categories of business owners: (1) men in male-dominated sectors (8,079); (2) women in male-dominated sectors (988); (3) men in female-concentrated sectors (5,719); and (4) women in female-concentrated sectors (12,796). The experiment baseline survey includes two categories of female business owners: (1) women in male-dominated sectors (368); and (2) women in female-concentrated sectors (3,539).

Identifying male-dominated and female-concentrated sectors

What methodology was used to define sectors as male dominated or female concentrated? We use the distribution of self-reported ownership by sex in ENAMIN to classify sectors into male dominated or female concentrated. If more than 70 percent of businesses from the ENAMIN sample were owned by men, we defined that sector as male dominated. This definition was applied to the sample of female entrepreneurs in the experiment baseline survey. Alternative definitions of male-dominated sectors at 65 and 75 percent were analyzed, and the results are robust across the different classifications.

How many sectors are female concentrated? How many are male dominated? Out of 22 sectors, 17 are classified as male dominated. Overall, male-dominated sectors in Mexico are capital intensive (automotive repair, land transportation, and mining), followed by sectors that require ICT-type skills, finance, and stock market activities.

The profitarchy

Excluding outliers, women operating in male-dominated sectors have weekly profits (2,563 Mexican pesos) that are significantly higher than those of women operating in female-concentrated sectors (1,391 Mexican pesos).

Based on the ENAMIN data, which also include male entrepreneurs, men in male-dominated sectors have the highest profits (6,223.3 Mexican pesos), followed by men in female-concentrated sectors (5,473.9 Mexican pesos). However, female-owned firms in male-dominated sectors have monthly profits (3,826 Mexican pesos) that are statistically higher than those of women operating in female-concentrated sectors (2,541.6 Mexican pesos).
Factors associated with being a female crossover

- Having a male mentor (but not a husband mentor): The subset of crossover women who had a male mentor reported that they help them improve or solve problems related to the business (39 percent), help them with starting or planning their business (25 percent), finding clients (20 percent), finding suppliers (10 percent), or accessing financing (7 percent). Having a male mentor is found to have a positive effect on key business performance indicators, even after controlling for the effect of crossing over. Out of the female entrepreneurs who reported having a mentor, those with a male mentor have on average 17 percent higher profits and 19 percent higher revenues per week.
- Being exposed to a male role model: The businesses of crossover women who report having an inspiring male role model also have better performance, compared to those who do not have one.
- Having higher levels of education: A female entrepreneur with secondary education is 3 percentage points more likely than one with primary education to enter a male-dominated sector. However, noncognitive skills do not seem to affect the probability of choosing a male-dominated sector.
- Having higher levels of cognitive ability: Women entrepreneurs with a high level of cognitive ability are also 0.8 percent more likely to cross over.
- Having a father with higher levels of education: One additional year in the father’s education increases the probability that a woman crosses over to a male-dominated sector by 0.3 percent. The mother’s level of education is, however, not statistically significant.
- Having a husband who makes decisions about the business

Constraints to business performance faced by women who cross over

Our survey did not include a review of constraints; however, the National Survey on Productivity and Competitiveness of Micro, Small, and Medium Businesses (ENAPROCE 2015) provides non-gender-disaggregated data on the topic. In their survey, 23 percent of microentrepreneurs identify the lack of credit as the main challenge for business growth, followed by competing with informal businesses (19.3 percent) and low demand of their goods or services (17 percent). Only 10 percent mention high or complex taxes as the main challenge for business growth.

Given these constraints, what policies could help women to cross over into more profitable, male-dominated sectors?

- Mentorship opportunities: Networks are often less available and less diverse for women entrepreneurs, which puts them at a disadvantage. Male mentors can be valuable as business partners or for support. They can also help women gain market or customer information.
- Engaging men: Skills training programs can engage husbands to offset gender norms or attitudes that might constrain women from successfully participating in programs. Men could be encouraged to introduce female entrepreneurs to their own business networks, pass on key technical skills, or help them access financing opportunities.
- Providing information about sector-specific profitability: Showcasing higher-return businesses in male- compared to female-dominated sectors could change beliefs about profitability and encourage women to enter male-dominated fields. It can also motivate women to enroll in skills training in nontraditional trades. Information can be provided through career guidance in schools, informational sessions accompanying skills training programs, or through ‘edutainment.’
- Skills: Training programs offer opportunities to improve outcomes for female entrepreneurs. However, it is often more difficult for women than for men to access and complete these programs due to family responsibilities, movement restrictions, and gender norms. Programs can integrate “smart design” aspects such as childcare options, holding training in accessible and safe locations, and making transportation easy and safe, to help women overcome these constraints.
### Peru

**Number of enterprises:** The baseline survey included 1,905 female PDM clients, 1,148 of whom reported running a microbusiness.

**How and where were the data collected, and what are they representative of?** The team worked with women clients of the Program Palabra de Mujer – PDM (Word of a Woman) of Financiera Confianza in Pucallpa, a city in the eastern region of Peru. Financiera Confianza is a regulated microfinance firm that has half a million clients, and the program Palabra de Mujer targets women microentrepreneurs using a group-based lending methodology. The survey was not intended to be representative of women microentrepreneurs in Pucallpa or of the microfinance clients of Financiera Confianza. As part of a randomized controlled trial, the sample was selected to be able to show, with some degree of confidence, the impacts of three different interventions: training in hard skills, training in hard as well as soft skills, and training in soft skills that promote employability. The clients were all initially contacted during the monthly group payment meeting, and appointments were arranged for the participants to be later visited by the surveyor. The mean age of the clients was 36 years old, 67% were married or had a civil partner, and their average business tenure was about 4 years.

**Categories of business owners:** The survey includes two categories of female business owners: women in male-dominated sectors (93); and women in female-concentrated sectors (1,055).

### Identifying male-dominated and female-concentrated sectors

**What methodology was used to define sectors as male dominated or female concentrated?** We use the distribution of self-reported ownership by sex in ENAMIN (Mexico’s nationally representative survey of microentrepreneurs) to classify sectors into male dominated or female concentrated. In this study, if more than 70 percent of businesses from the ENAMIN sample were owned by men, we defined that sector as male dominated. This definition was applied to the sample of female entrepreneurs in the experiment baseline survey. Alternative definitions of male-dominated sectors at 65 and 75 percent were analyzed, and the results are robust across the different classifications.

**How many sectors are female concentrated? How many are male dominated?** Out of 46 sectors, 26 are classified as male dominated. Overall, male-dominated sectors in Peru are primary activities (farming and forestry) and capital-intensive activities (automotive repair). On the other hand, female-concentrated sectors are related to services (grocery sales, food) and labor-intensive activities such as clothing.

### The profitarchy

Women in MDS have monthly profits (330 US dollars) significantly higher than those of women operating in female-concentrated sectors (193 US dollars). We found similar results on monthly sales, total number of workers, and paid workers.

### Factors associated with being a female crossover

- Women crossovers have higher soft skills as well as higher levels of locus of control.
- They are also more likely to have a dwelling of good quality: having walls of brick or concrete block or having a ceiling of reinforced concrete increase the probability that a woman crosses over. There is, however, no effect of access to water, electricity, or the level of overcrowding.
- We found an increase in the probability to cross over to a male-dominated sector if the woman had fewer children.
- Having an entrepreneur partner increases the probability of crossing over.

### Constraints to business performance faced by women who cross over

- This country survey did not include information on constraints to business performance.
Given these constraints, what policies could help women to cross over into more profitable, male-dominated sectors?

- Improving hard and soft skills: Provide women entrepreneurs with the training they need to develop the right skills and a growth-oriented mindset. Psychology-based trainings, such as personal initiative training, that enhance women’s noncognitive skills and foster a proactive, resilient, and entrepreneurial mindset, can help women introduce new innovative products in their businesses and increase their earnings.

- Reduce domestic work: Promote an equal sharing of domestic tasks across household members of both genders to allow women to invest more time in their businesses. Facilitating affordable access to care services, such as childcare, could also be helpful to increase women’s economic participation and agency while also stimulating early childhood development.

- Engaging men: Engage men to provide direct support to their wives. This support can be in the form of economic empowerment or business support that leverages the skills, knowledge, and networks of male family members. For example, a gender transformation and joint training intervention in Côte d’Ivoire showed that male export crop farmers who filled out a two-year action plan with their wives shared more agricultural decisions, and enabled women to manage more cash-crop tasks.

Peru (continued)
Appendix D: Details on Each Individual Study

Uganda

Our sample

Number of enterprises: 326 women and 409 male entrepreneurs in urban Uganda within and just outside Kampala.

How and where were the data collected, and what are they representative of? We used quantitative data from a 2011 sampling of 735 entrepreneurs, most of whom belonged to the Katwe Small Scale Industry Association (KASSIDA). In addition, a quantitative and qualitative survey was administered in 2012 to 63 crossovers and to 120 women working in traditionally female sectors. Of the latter, half of the participants were randomly sampled, and half were matched to the crossovers based on a number of pre-business characteristics, such as similar age and completion of primary school. To get a better sense of communitywide perceptions about female entrepreneurs, we also conducted 17 focus group discussions with crossovers, noncrossovers, clients, suppliers, and male employees, and interviewed 12 community leaders and credit providers.

Categories of business owners: Three categories of business owners: (1) women in male-dominated sectors (30); (2) women in female-concentrated sectors (296); and (3) men in male-dominated sectors (321).

Identifying male-dominated and female-concentrated sectors

What methodology was used to define sectors as male dominated or female concentrated? Sectors were classified as male dominated if, based on the baseline survey data, at least 75% of enterprises in that sector were owned by men, otherwise the sector was classified as female concentrated.

How many sectors are female concentrated? How many are male dominated? Out of 9 sectors, 4 are classified as female concentrated, and 5 as male dominated.

The profitarchy

Firms owned by crossovers make double the profits, on average, of firms owned by noncrossovers, with profits in the past month at 494,000 Uganda shillings compared to 205,000 Uganda shillings respectively. Within male-dominated sectors, businesses owned by women who cross over are just as profitable as businesses owned by men (494,000 Uganda shillings and 515,000 Uganda shillings respectively).

Factors associated with being a female crossover

• Information about sectors: Many female entrepreneurs are simply not aware that they could be earning higher profits in male-dominated sectors. About 75% of the noncrossovers we interviewed incorrectly believe that they make the same or more than crossovers, when in fact they do not.

• Role models: Most crossovers do not come up with the idea of working in a male-dominated sector by themselves. Rather, that decision originates from someone else’s suggestion, observing others, or being offered a job in the sector by a friend or family member. Women who reported having a male role model in their youth were 20%–28% more likely to be a crossover. Fathers and politicians are particularly strong role models for crossovers, either in introducing women to the sectors where they work, or by providing important contacts or financial support. On the other hand, noncrossovers are more likely to have been introduced to traditionally female sectors by mothers, and especially teachers. This suggests that the current education system actually reinforces the gender segregation of labor. Moreover, once women engage in a traditionally female sector, they are unlikely to make the switch to a male-dominated sector. Therefore, early influence by a male role model is very important in shaping women’s professional path to a more profitable sector.

• Apprenticeships: A significant intermediary step in becoming a crossover is active exposure to the sector by becoming an apprentice, engaging in actively learning the trade, or being taken to observe the trade.

Constraints to business performance faced by women who cross over

• Low technical skills: This is the most common constraint mentioned by crossovers, even though these women do not report making significantly lower profits than their male counterparts, nor do they have any trouble finding customers. But clients do acknowledge that crossovers have limited technical skills, which could influence their decision about who to engage for a large contract.

• Access to credit: Both crossovers and noncrossovers commonly cite access to credit as a primary business issue. Crossovers are more likely to obtain credit from a bank or from a spouse, whereas noncrossovers most frequently borrow from a female friend or community member.
Given these constraints, what policies could help women to cross over into more profitable, male-dominated sectors?

- Information on earnings: Provide information early to youth about the profitability of certain sectors, perhaps through informational campaigns or career guidance in schools. However, given teachers’ current strong role in preventing women from crossing over, any program using teachers requires significant training and sensitization of teachers.
- Networks and support: Offer supportive engagement with individuals who can guide female entrepreneurs as they seek to operate a business in a male-dominated sector. This is ideally done by drawing from the entrepreneur’s existing network of friends and family, perhaps within the context of a youth mentorship program.
- Early exposure to the sector: Facilitate active exposure to the sector through apprenticeships or other work experience programs. It is especially important to target young women who are just entering the labor force, as well as older women without previous experience in a female-dominated sector.
- Social norms: Engage figures of influence within communities to avoid potential opposition and to gain support in changing social perceptions of which sectors are appropriate for women.
- Support crossovers in maintaining their businesses, such as by facilitating access to networks or by creating business organizations dedicated to crossovers.
Vietnam

Our sample

Number of enterprises: 2,406 enterprises

How and where were the data collected, and what are they representative of? Our data from from the Vietnam Access to Resources Household Survey (VARHS) for the years 2008, 2010, 2012, and 2014. The survey is representative for 12 provinces in rural areas.

Categories of business owners: Four categories of business owners: (1) women in male-dominated sectors (106); (2) women in female-concentrated sectors (1170); (3) men in male-dominated sectors (354); and men in female-concentrated sectors (776).

Identifying male-dominated and female-concentrated sectors

What methodology was used to define sectors as male dominated or female concentrated? Because the data are representative, we define a sector as male dominated if more than 70% of the owners of businesses in the sector are men.

How many sectors are female concentrated? How many are male dominated? Out of 18 sectors, 13 are classified as female concentrated and 5 as male dominated.

The profitarchy

Both men and women operating in male-dominated sectors have higher profits than individuals of the same gender who operate in female-concentrated sectors. For women, crossing over into a male-dominated sector is associated with higher annual profits (15,038,000 Vietnamese dong for female crossovers compared to 11,405,000 Vietnamese dong for noncrossovers). While female crossovers have profitability comparable to men who operate in female-concentrated sectors (20,876,000 Vietnamese dong), their profits are still substantially lower than those of men who operate in similar sectors (26,166,000 Vietnamese dong). Although there is a premium to crossing over in Vietnam, a within-sector gender profit gap remains.

Factors associated with being a female crossover

- Fewer time constraints related to domestic tasks: Women with fewer young children in the household and who use cooking fuel that requires less time to gather and ignite are more likely to operate in male-dominated sectors.
- Access to finance: Aligned with the higher start-up capital needed in male-dominated sectors, female crossovers are more likely to be in households that have borrowed money and have fewer household savings.
- Being married
- Living in an urban area

Constraints to business performance faced by women who cross over

- Access to finance: Accessing finance with acceptable terms may be a binding constraint for female crossovers. Businesses operating in male-dominated sectors had start-up capital that was more than twice that of businesses operating in female-concentrated sectors. While they are more likely to have borrowed money than women operating in female-concentrated sectors, having a loan is negatively associated with profits for female crossovers. To secure the capital needed to operate in a more capital-intensive male-dominated sector, crossovers may feel pushed to accept loans with usurious terms, even if these terms can make it harder to turn a profit under the weight of repayment.
- Competition: Crossovers may also face challenges with competition. Although crossovers are more likely to live in urban areas, their profits are higher when they live in rural areas, where they may face less competition from other entrepreneurs in the sector.
- Time: Unpaid care work may also pose a greater constraint for female crossovers. While women with fewer young children and easier sources of cooking fuel are more likely to work in male-dominated sectors, having elderly household members who may require care has a stronger negative relationship with the profits of female crossovers than those of women operating in female-concentrated sectors.
<table>
<thead>
<tr>
<th>Given these constraints, what policies could help women to cross over into more profitable, male-dominated sectors?</th>
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<tbody>
<tr>
<td>• Fewer domestic responsibilities: Policies that support a reduction in the time needed for domestic tasks or a more equal sharing of domestic work across household members of both genders could support female crossovers. Women are more likely to cross over into male-dominated sectors if they have fewer young children and easier sources of cooking fuel, and their profits are more adversely correlated with the presence of elderly household members that may need care. To enable other women to cross over, policies could facilitate affordable access to care services, such as child and elder care. Increasing affordable access to modern technology that lowers the time needed for cooking and cleaning and encouraging men and boys to participate more in domestic work could also alleviate time constraints that may orient female entrepreneurs’ choices.</td>
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<tr>
<td>• Access to finance: Improving access to capital and the terms of credit could also support women in transitioning into more capital-intensive male-dominated sectors and support their performance once there. Interventions could promote savings or seek to improve the terms of loans that women entrepreneurs can receive through tools such as credit guarantee schemes or psychometric testing in absence of collateral.</td>
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<tr>
<td>• Facing competition and access to markets: Policies could also support women in facing competition in urban areas and having a greater access to markets in rural areas. A tailored needs assessment could help identify specific interventions that would support female crossovers in facing competition in urban areas or finding ways of opening businesses in more remote areas.</td>
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<td>Future of Business Survey</td>
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<td><strong>Our sample</strong></td>
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<td>Number of enterprises: The total sample size on which we base the analysis in the paper comprises 55,932 observations, with different sample sizes depending on the outcome being analyzed.</td>
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</table>

How and where were the data collected, and what are they representative of?

The survey was implemented on the Facebook mobile platform to administrators of Facebook Business Pages in the specified countries for a period of two weeks in early to mid-December 2018. The data were collected on the Facebook platform and the final clean and aggregated, anonymized data are now published on the World Bank Open Data portal. The sample of respondents of the Future of Business survey are limited to those business owners/managers with internet access and Facebook accounts with a business page. The sample should not be considered representative of all business owners but a select group of global micro, small, medium, and large enterprises (0 to 5,000 employees).

Categories of business owners: Four categories of business owners: (1) women in male-dominated sectors (3,237); (2) women in female-concentrated sectors (17,264); (3) men in male-dominated sectors (12,362); and (4) men in female-concentrated sectors (23,069).

<table>
<thead>
<tr>
<th>Identifying male-dominated and female-concentrated sectors</th>
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<tbody>
<tr>
<td>What methodology was used to define sectors as male dominated or female concentrated? In our paper we define male-dominated sectors based on the question, “Who owns most of the businesses in your sector? Men or women?” as reported by the subset of female respondents. If more than 70 percent of women report that men own most of the businesses within their sector, we define that sector as male dominated.</td>
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How many sectors are female concentrated? How many are male dominated?

Of the 42 sectors, 18 are classified as male dominated by this definition.

<table>
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<tr>
<th>The profitarchy</th>
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<tbody>
<tr>
<td>How do profits of women in MDS compare to profits of men in MDS, and of women in FCS? Men in male-dominated sectors are the top earners and make statistically significantly higher profits than all other categories. Men in male-dominated sectors, men in female-concentrated sectors, and female crossovers have 116, 82, and 67 percent statistically significantly higher profits than female noncrossovers, respectively. While different in magnitude, the difference between profits for males in female-concentrated sectors and female crossovers is not statistically different. After winsorizing, the mean in profits for the reference category (women in female-concentrated sectors) is equivalent to 126,489.20 US dollars for the pooled sample, 166,592.70 US dollars for the developed countries’ samples, and 112,189 US dollars for samples of developing countries.</td>
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<tr>
<th>Factors associated with being a female crossover</th>
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<tbody>
<tr>
<td>• Starting early: Age is negatively associated with being a female crossover. While statistically significant, these effects are very small: one year or more implies an increase in the probability of being a crossover by 0.1 percent.</td>
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<tr>
<td>• Spousal support: Female crossovers are more likely to be married than female noncrossovers. Once we control for the set of socioemotional skills variables, though, this correlation disappears, partly because we lose a significant proportion of the sample when including these variables (about 35% of the observations).</td>
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<tr>
<td>• Family support: Female crossovers were less likely to have started their business themselves and a chief reason for crossing over seems to be related to the fact that the business was inherited from the family.</td>
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<tr>
<td>• Male role models: Having a male role model while growing up positively affects the likelihood of crossing over into a male-dominated sector.</td>
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<tr>
<td>• Self-efficacy: Higher levels of self-efficacy are positively associated with the probability of being a female crossover. Conversely, women with higher levels of entrepreneurial identity and those more committed to staying in the sector are less likely to cross over.</td>
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</tbody>
</table>
### Constraints to business performance faced by women who cross over

- **Access to finance:** Female crossovers are significantly more likely to have a line of credit or loan from a financial institution than noncrossovers. Interestingly, female-owned firms in male-dominated sectors are also more likely to have credit than male-owned firms in the same sector. This could be due to lower assets to draw upon in capitalizing the business. Additionally, women in the higher-return crossover sectors rely more on family inheritance and savings provided by their spouse to start the business. Men in male-dominated sectors, on the other hand, are more likely to be able to draw from their own savings and loans from relatives and friends to start the business, relative to women.
- **Time:** Compared to their male peers in male-dominated sectors, female crossovers work 1.5 hours fewer, and this pattern is more pronounced in developed countries.

### Given these constraints, what policies could help women to cross over into more profitable, male-dominated sectors?

- **Male mentorship:** Women in male-dominated sectors are more likely to have had a male role model while growing up.
- **Apprenticeships:** Such programs could help provide the same kind of support that a role model does. A key programmatic aspect would be to target younger women, ideally before they choose a career. When introducing potential career paths to young women, highlighting the earnings potential and the growth in female representation in nontraditional sectors could also motivate them to pursue a career in that industry.
- **Socioemotional skills training:** We find that crossovers have higher self-efficacy, a socioemotional skill often associated with entrepreneurial success.
- **Improving household dynamics:** We find that certain types of spousal support can be helpful for breaking into male-dominated trades, which suggests that improving intrahousehold dynamics could support women to cross over.


REFERENCES


REFERENCES


REFERENCES


