

Scale the Gap:

Exploring gender ownership
and growth experiences
for Canadian firms

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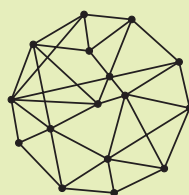
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Women
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The Women Entrepreneurship Knowledge Hub (WEKH) is a national network and accessible digital platform for sharing research, resources, and leading strategies. With ten regional hubs and a network of more than 250 organizations, WEKH is designed to address the needs of diverse women entrepreneurs across regions and across sectors. In response to COVID-19, WEKH adopted an agitator role connecting women entrepreneurs and support organizations across the country and led network calls and training sessions. WEKH's advanced technology platform, powered by Magnet, will enhance the capacity of women entrepreneurs and the organizations who serve them by linking them to resources and best practices from across the country.

With the support of the Government of Canada, WEKH will spread its expertise from coast to coast, enabling service providers, academics, government, and industry to enhance their support for women entrepreneurs. Ryerson University's Diversity Institute, in collaboration with Ryerson's Brookfield Institute for Innovation + Entrepreneurship and the Ted Rogers School of Management, is leading a team of researchers, business support organizations, and key stakeholders to create a more inclusive and supportive environment to grow women's entrepreneurship in Canada.



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EXECUTIVE SUMMARY

Does gender ownership structure matter for firm growth? This report explores differing experiences for Canadian entrepreneurs by examining how gender control of the firm impacts business growth and the likelihood a firm becomes a scale-up, a topic that is often overlooked in discourse and scholarship on high-growth firms. Using data from the *Survey on Financing and Growth of Small and Medium Enterprises* microdata linked to firm administrative data through Statistics Canada's Linked File Environment, descriptive and econometric analyses explore the relationship between ownership structure and growth, taking into account barriers to firm growth and exporting and the growth impact of firm innovation and intellectual property holdings.

We find that, while gender control does not directly impact the probability that a firm reaches scale-up status, there are systematic differences in the impact that growth barriers and growth supports have on firms with different degrees of women

ownership. Evidence shows that firms with higher share owned by women are less likely to reach scale-up status *conditional* on facing specific growth barriers, namely challenges regarding labour (shortages and recruitment and retainment), regulations, and consumer demand. We also find that firms with higher women ownership that innovate or hold intellectual property are less likely to reach scale-up status than those with men ownership, suggesting that these firms may have a more difficult time translating innovative inputs into growth. In other words, we find evidence that gender is a crucial mediating variable in a firm's growth process. A detailed analysis shows that the channel through which gender ownership structure impacts growth is complex. The findings in this report will inform both public discourse and policymaking regarding scale-ups and initiatives that seek to encourage and support women entrepreneurship.

This report considers the experience of high-growth firms with women ownership.¹ It explores the relationship between firm structure and the owner's gender on firm growth and performance in Canada, focusing specifically on firms with disproportionate economic impacts and potential for continued growth: scale-ups, or high-growth firms. Though the importance of founder characteristics has been emphasized in determining a company's early successes (Guzman & Stern, 2019), gender is not often considered. This is a problematic omission as there is an extensive literature that documents differential treatment of firms with women ownership (Industry Canada, 2015). Further, the literature on scale-ups—a research focus receiving greater attention in Canada and beyond—mostly focuses on the firm as a unit of analysis, with an emphasis on the number of such firms, their geographic distribution, and their economic significance (cf. Coad et al., 2014), with little focus on the entrepreneur, much less their gender.²

Using data from the *Survey on Financing and Growth of Small and Medium Enterprises* linked to the General Index of Financial Information through Statistics Canada's Linked File Environment, this report uses descriptive and econometric analyses to explore the relationship between ownership structure and growth as measured by employment and revenue. The analysis takes into account barriers to a firm's growth and its ability to export as well as growth supports in the forms of firm innovation and intellectual property holdings.

Our findings complement and corroborate the existing literature about women entrepreneurship and firms with women control. Where we add clear value is in showing how the same obstacles that firms with women ownership in general face also exist for high-growth firms owned by women. Achieving scale-up status is a rare feat for anyone but especially so for women. The findings are complex but can be summarized as follows.

First, women account for a disproportionately small share of all scale-up entrepreneurs. Depending on the growth metric used and year of observation, between 18 and 32 percent of scale-ups have women ownership. Furthermore, compared to scale-ups with men ownership, scale-ups with women ownership are smaller by both employee counts and recorded revenue.

Second, and related, firms with women ownership experience structural barriers to growth that those owned by men do not. We find that having faced the same challenges in growing their company or exporting, firms with women ownership are systematically less likely to achieve scale-up status than men-owned businesses. We also find that firms with women ownership have a more difficult time translating innovative inputs, specifically intellectual property, into growth. These findings are especially true for employment-based growth over revenue, but they hold for both types of growth. Detailed analysis shows that the channel through which gender ownership structure impacts growth is complex and multifaceted.

The findings presented in this report will inform public discourse, policymaking, and future research on scale-ups and initiatives that seek to encourage and support women employment and entrepreneurship. The report contributes to a growing body of research on the subject curated by the Women Entrepreneurship Knowledge Hub (WEKH), part of the Government of Canada's Women Entrepreneurship Strategy.³ The strategy seeks to narrow the gender gap in entrepreneurship. This report is the quantitative companion to the interview-based report, [Growing their own way: High-growth women entrepreneurs in Canada](#).

As firms with exceptionally high growth rates, scale-ups are rare. Research shows that most firms do not grow at all, and only a handful of firms realize high-growth status (Côté & Rosa, 2017). These enterprises are defined by significant gains in employment (or turnover) over time and are found to have not only a disproportionate impact on net job creation (Birch, 1979; OECD, 2010; Rivard, 2017) but also productivity gains (Du & Temouri, 2015; Haltiwanger et al., 2017).

Aside from their direct employment impact and other contributions, scale-ups are also organizationally the most sophisticated businesses. Firms mainly exist to reduce transaction costs and resolve the problem of coordinating across various resources, such as capital, labour, and technology (Coase, 1937), and scale-ups, with huge potential for growth and managerial sophistication (Penrose,

1995), are able to reduce such transaction costs even with their large size. Not altogether different from the concept of the “threshold firm” (Steed, 1982), these are firms that have survived the start-up and early-growth phase of the firm life cycle and are organizationally much less dependent on the whims of any one individual or changes in the business environment; they are capable of sustained and consistent growth.

Research also shows that the economic benefits accrued by scale-ups extend to the broader local, regional, and national economy. Du and Vanino (2020) find agglomeration externalities of fast-growing firms with non-fast-growing firms in the same industry and region showing higher productivity. There is also some proof of positive spillover effects for firms in other industries, too (de Nicola et al., 2019).⁴

The literature in entrepreneurship finds significant and enduring differences in business experiences by gender. Surveys show that businesses with a majority women control account for approximately one out of every five businesses in Canada. The latest figure, from 2017, puts the number at 15.6 percent, a proportion that has remained more or less unchanged over the last few decades (Grekou et al., 2018; Liu, 2018). Despite women owners having higher levels of educational attainment and being more likely to oversee innovative firms than their male counterparts, women-owned firms tend to be smaller and concentrated in service industries. They also exhibit lower growth rates and export less (Industry Canada, 2015). Despite improvements in women representation and capital access (Rosa and Sylla, 2018), export propensity, managerial experience, and growth performance (Industry Canada, 2015), substantive barriers remain, which research on the subject shows.

Exploring the impact of gender on capital availability, Malmström et al. (2017: 489) find that finance providers “reward the business characteristics of male and women entrepreneurs differently to the disadvantage of women.” Evidence shows that, compared to men, women

start their businesses with lower levels of financial capital and that the trend continues through the crucial early growth years (Coleman & Robb, 2009). They have less access to equity financing (Amatucci & Sohl, 2004; Becker-Blease & Sohl, 2007) and greater difficulty accessing debt financing (Bellucci et al., 2010). These barriers to capital access require that women rely more heavily on personal sources of financing for initial seed money and later stage investments (Coleman & Robb, 2009).

Multiple studies across advanced industrial economies find the framing of firms with women ownership display common and traditional gender stereotypes or show the subordination of women entrepreneurship to broader sociotropic or national goals, such as child-rearing and childcare (Achtenhagen & Welter, 2011; Ahl & Nelson, 2015; Gupta et al., 2009; Eikhof et al., 2013; and Giménez & Calabrò, 2018). In fact, any gendered discussion of entrepreneurship is understood as meaning the study of women only, indicating gender as a category to be problematized or maybe even the problem itself (Marlow & Swail, 2014). Further, identification with more masculine traits is typically associated with “higher entrepreneurial intentions” than among those who perceive themselves to be less masculine (Gupta et al., 2009).

The portrayal of women entrepreneurship as different from that of their male counterparts has significant psycho-sociological consequences. One study of university students finds that stereotypes surrounding gender and business disincentivizes many women from entrepreneurship (Malmström et al., 2017). Further, it also impacts their business relationships with key stakeholders (bankers, equity financiers, and clients), thus creating unfavourable conditions for entrepreneurial activity and business growth (cf. Cañizares & García, 2010).

WOMEN ENTREPRENEURSHIP AND HIGH-GROWTH FIRMS

Statistics Canada shows that, in 2017, 9.6 percent of women majority-owned firms (51%+) achieved a 20 percent annual average revenue growth over a three-year period (Statistics Canada 2019). However, the literature on high-growth firms (or scale-ups) is not particularly well developed, and even less so regarding matters of gender-based differences. Research that does focus on gender and high-growth questions does not yield outcomes significantly different from the overall literature.

Using survey experiments, Gupta et al. (2019) show that “high-growth entrepreneurship” is correlated with men and masculine stereotypes whereas “low-growth entrepreneurship” is most strongly associated with women. Only women respondents find some association between women gender roles and high-growth performance.

Using the Kauffman Firm Survey, Yacus et al. (2019) find that women in “non-feminine industries,” defined as industries with low feminine industry ownership, are significantly less likely to achieve high-growth status.⁵ Using the same Kauffman survey, Devine et al. (2019) present more encouraging outcomes, finding firms with women ownership positively moderate the relationship between human and financial capital and growth. This suggests that women may do a better job managing people and growth capital than men.

There is a well-established literature describing the unique challenges firms with women ownership face in building their businesses, especially outside of select industries such as services and retail. They receive less start-up capital, have greater barriers to equity financing, and are perceived to be low-growth oriented. Despite barriers, firms with women ownership in Canada fare relatively well compared to their peers in similarly developed countries. Hughes (2017), using the Global Entrepreneurship Monitor (GEM), finds “early-stage activity” among firms with women ownership significantly higher than in the UK, France, or Germany. However, Vu & Huynh (2017) also demonstrate using GEM that the gender gap in early entrepreneurship activity in Canada is also higher than in comparator countries. Building on recent studies in the women entrepreneurship literature and the broader literature on scale-ups firms, this report seeks to more thoroughly explore the association between growth trajectories, including whether a firm is a scale-up, and the firm characteristics and structure.

To explore the impact of ownership structure on firm performance for scale-ups, we make use of Statistics Canada's Linked File Environment, specifically responses from the *Survey on Financing and Growth of Small and Medium Enterprises* (SFGSME) that are linked to the firm's financial information in the *General Index of Financial Information* (GIFI).

The cross-sectional SFGSME includes only firms with a revenue of at least \$30,000 and employment levels of 1–499, excluding joint ventures, non-profits, and enterprises in industries “not of interest.”⁶ It asks detailed questions on business activities and focuses particularly on experiences of growth and the challenges associated with it. It also records characteristics of the primary decision makers as well as ownership composition of the firm (such as the share of the firm held by women). We use three separate waves of the survey from 2011–2017 to track the proportion of scale-up firms owned by women, focusing on the 2017 vintage for our detailed analysis.

Each survey wave samples more than 17,000 enterprises, with the final completed survey response number of 10,000. For our analysis,

we also focused on firms for which financial information for both two years prior to the survey and at least one year after the survey was available (for the purpose of scale-up calculations), with the final sample size of approximately 3,000 enterprises for each survey wave.

GROWTH BARRIERS AND SUPPORTS

For the 2017 survey, we explored three themes and multiple questions in detail. They include:

- + Barriers to growth
- + Reasons for not exporting
- + Whether the business innovated in the last three years
- + Whether the business held intellectual property at the time of the survey

For each question on growth obstacles, firm respondents are provided multiple items (see table 1 in [Appendix A](#)) that they are asked to evaluate on a rating scale (“Not an obstacle,” “A minor

obstacle,” “A moderate obstacle,” and “A major obstacle”). We collapsed each scale, counting those items rated a moderate or major obstacle as 1, else 0 (not an obstacle or only a minor one). Table 1 lists the growth barrier items analyzed here. The weighted counts by firm type (scale-up or not), growth metric, and gender control are provided in [Appendix A](#).

Table 1: Questions about Barriers from Survey on Finance and Growth of Small and Medium-Sized Enterprises (2017)

Which of the following are obstacles to the growth of your business?
1. Shortage of labour
2. Recruiting and retaining skilled employees
3. Fluctuations in consumer demand
4. Obtaining financing
5. Government regulations (please specify)
6. Increasing competition
7. Other
<i>Omitted due to small sample size: Rising cost of inputs; maintaining sufficient cash flow or managing debt; and corporate tax rate</i>

Regarding reasons for exporting, respondents were provided a list of reasons and asked to indicate whether the item was a reason (yes or no) the firm did not export in the years surveyed (2017 in this case). Reasons provided included internal and external obstacles and the “local nature” of the business (i.e., one that does not seek foreign markets). Our exploratory analysis finds that, due to the rare event that exporting is, too few respondents chose anything other than “local nature.” We analyzed by gender control those who chose this response, recognizing that this does not explore export barriers *per se* but rather firms that do not export because of their local/domestic market focus.

For whether a business is innovative and holds intellectual property (IP), respondents were provided a list of innovations and various forms of IP and asked to indicate with a simple yes or no whether their business “developed or introduced” that innovation and whether the business held that IP. [Table 2 in Appendix A](#) lists the options. If the respondent answered yes to any of the items, they were counted as being innovative or having IP.⁷

The exploration of growth barriers is motivated by our interest in understanding whether and how various growth challenges affect the growth trajectory of a firm and the likelihood of reaching scale-up status. Exporting is of interest given

Table 2: Questions about innovation and Intellectual Property from Survey on Finance and Growth of Small and Medium-Sized Enterprises (2017)

In the last three years, has your business developed or introduced any of the following innovations?	As of December 2017, did your business hold any of the following types of Intellectual Property?
1. A new or significantly improved good or service	1. Registered trademarks
2. A new or significantly improved production process or method	2. Patents
3. A new organizational method in your business practices, workplace organization, or external relations.	3. Registered industrial designs
4. A new way of selling your goods or services	4. Trade secrets
	5. Non-disclosure agreements
	6. Other type of intellectual property protection

the positive relationship between exporting and growth, especially for SMEs (Golovko & Valentini, 2011). Our interest in the impact of innovation is informed by research that shows a positive association between innovation and growth (Freel & Robson, 2004; Ganotakis & Love, 2012; Oke et al., 2007).⁸ Although we consider separate measures for innovation—specifically whether respondents say their firm innovated—and intellectual property (IP), we view them as belonging to the same categorical bin, broadly conceived. Innovation in particular should be viewed here as a signal for firm productivity (cf. Hall et al., 2009). IP can be read as an alternative measurement of innovation, or innovative capacity, insofar as intellectual property rights are understood as protecting a method that improves a product or service.

IDENTIFYING SCALE-UPS: OECD-EUROSTAT DEFINITION

Despite the various definitions used for a “scale-up” or “high-growth firm,” the OECD-Eurostat is the most commonly used for official statistics and international comparison (Bravo-Biosca, 2010; Coad et al., 2014; Vu & Huynh, 2019). First published in 2007, the OECD (2007: 61) defines a high-growth firm (or scale-up) as follows:

All enterprises with average annualized growth greater than 20 percent per annum, over a three-year period should be considered a high-growth enterprise. Growth can be measured by the number of employees or by turnover (i.e., revenue).⁹

We use this definition to identify scale-ups within the sample population of the SFGSME by revenue *and* employment growth. We use average annual employment from monthly payroll account deductions (PD7 form linkage) and real total revenue¹⁰ at year end from the corporation income tax return (T2 form linkage) for employment and revenue measures.

To identify scale-ups, we use firms’ financial information two years prior to the year of survey and two years after the year of survey, except for

the 2017 survey vintage (financial data was only available for one year after the survey). Thus, for the 2011 and 2014 surveys, this means we identify scale-ups for 2012 and 2013, and 2015 and 2016, respectively. For 2017, we measure scale-ups for 2018 only.¹¹

Using the method of identification described in this section, we are able to explore ownership characteristics and entrepreneurs’ assessments in the middle of a growth period as opposed to at the end or at the beginning. Structural differences (such as ownership make-up) are not considered pre- or post-growth.

MEASURING WOMEN OWNERSHIP

It is common to measure women ownership by majority control (Industry Canada, 2015; Grekou et al., 2018; Grekou, 2020). This definition is sound for studies that wish to focus on firms with majority women ownership. However, it notably excludes firms without majority women control (say, 49 or 50 percent). A body of work shows that having even one woman on a board of directors can affect business decisions (Zaichkowsky, 2014; Nguyen et al., 2015; Nadeem et al., 2017). Indeed, diverse boards are shown to perform better (Kramer et al., 2006; Kim & Starks, 2016). A recent study in Canada finds that adding women to majority male-run businesses (or vice-versa) is associated with revenue increase (Grekou, 2020). These findings are consistent with research which shows that in countries with both regulatory and normative frameworks supportive of gender inclusivity, more diverse firms perform better than less diverse ones (Zhang, 2020).

Furthermore, the discussions on the organizational sophistication of scale-ups (Steed 1982; Penrose, 1995), and the decline in the role any given entrepreneur (especially the founder/CEO) has in such firms, provides further justifications for substantively considering firms with equal or minority women ownership.

The Women Entrepreneurship Knowledge Hub also recognizes the diversity of definitions for

women control and discusses in particular the decision surrounding whether firms with less than 51 percent ownership by women are included in different analyses (Women Entrepreneurship Knowledge Hub, 2020). In this report, we use the share of a company owned by women to weight different observations. This means that every firm is considered in calculating the statistics for firms with women ownership and those with men ownership. However, firms wholly owned by women will simply receive the weight of 0 when calculating statistics for firms with men ownership and likewise for firms wholly owned by men when statistics for firms with women ownership are calculated. Outside of such extremes, a firm with, for example, 25% women ownership will receive 0.25 weight when calculating statistics for firms with women ownership while receiving 0.75 weight when calculating statistics for firms with men ownership.

We believe our measurement of gender ownership strikes the right balance of emphasizing firms where women own the controlling majority while also recognizing the impact of firms with women ownership where they do not have the majority control. Such strategies take into account the differential shares of women ownership, as has been done in other studies, such as in Bertrand et al. (2019) and Guzman & Kacperczyk (2018). All summary statistics presented in this report will thus be a weighted measure. The approach used here means that the gender ownership measurement will emphasize and place more weight on businesses fully or majority owned by women (and the same for men) while still taking into account the impact minority stake women are able to have on the strategic decision-making process of a growing firm.

EMPIRICAL STRATEGY

In addition to determining the proportion and economic profiles of scale-ups with women ownership by revenue and employment, our empirical strategy is twofold. First, we determine the probabilities of becoming a revenue or employment scale-up by gender control on having faced a barrier to either growth or exporting, being innovative, or holding intellectual property. These “conditional probabilities” reveal any difference in the probability of firms with women ownership or with men ownership becoming scale-ups if they share the same characteristics, such as having faced the same growth challenge.¹² Comparing firms by gender ownership in this way allows us to understand the specific areas in which gender-based differences occur in growth outcomes.

Second, using regression analysis,¹³ we examine whether the share of a firm with women ownership is associated with employment- or revenue-based scale-up status. Using different model specifications, we control for various firm characteristics, such as whether the firm exports, experiences growth barriers, or holds intellectual property, in addition to other relevant controls.

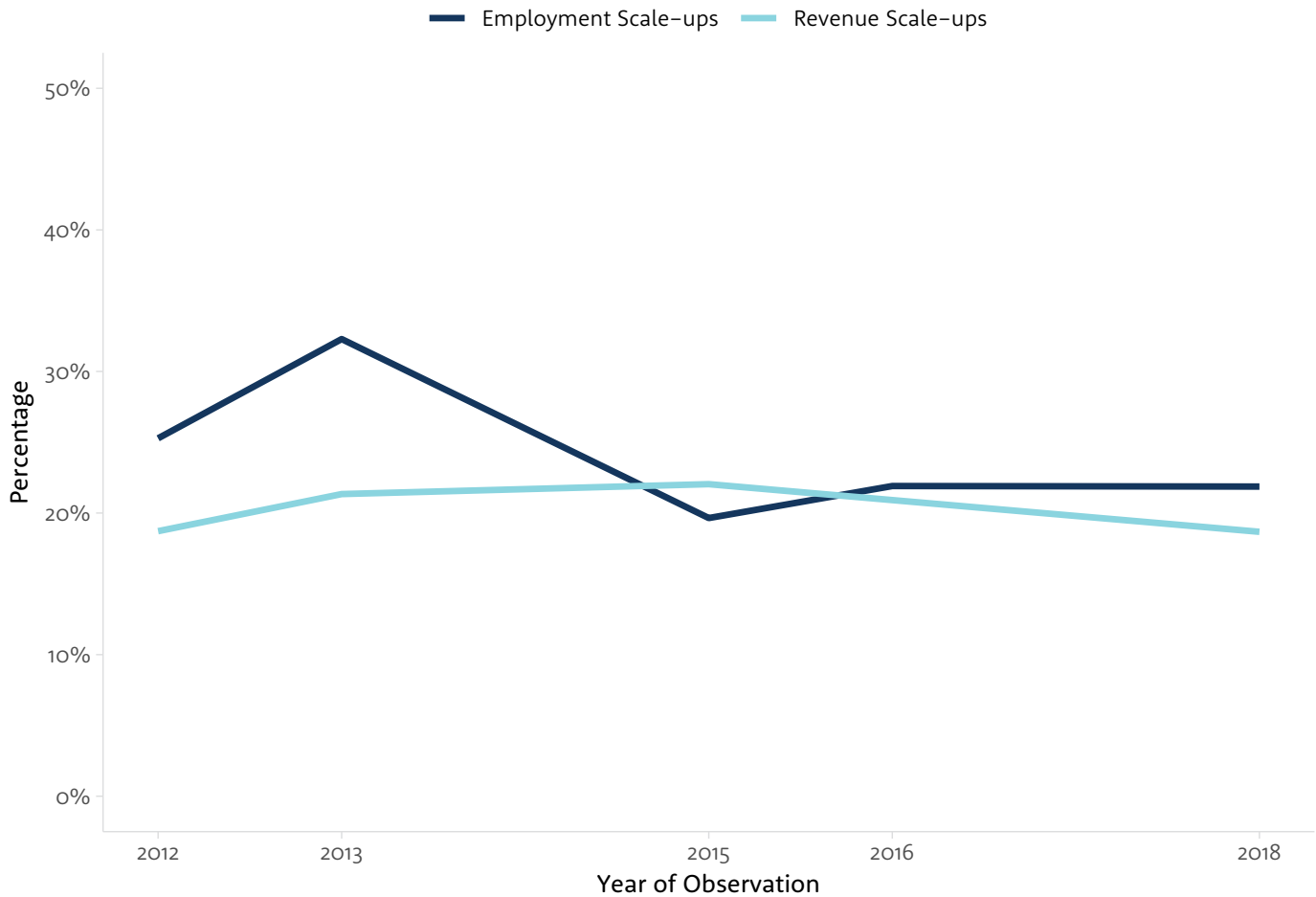
Taken together, our empirical approach explores whether there is a relationship between the ownership structure of firms and growth, with a focus on firms attaining scale-ups status. Due to space constraints, we do not explore the descriptive statistics from the surveys here. They are provided in [Appendix B](#).

In this section, we show the level of equivalent women ownership in scale-up firms (employment and revenue) from 2012–2018 and the economic footprint of scale-up firms in 2018 by gender control. Then we focus on the differences in probabilities of becoming a scale-up between firms with women ownership and those with men ownership (using the weighted approach introduced earlier) among businesses that have the same characteristics (i.e., having faced the same challenges in growing, exporting, being innovative, or holding intellectual property).

ECONOMIC PROFILES OF SCALE-UPS

Using the women ownership measure explained above, figure 1 shows the proportion of scale-ups with women ownership, according to the population sampled in the *Survey on Finance and Growth of Small and Medium Enterprises*. Across the years of observation and type of scale-up (employment or revenue), the equivalent of 22 percent of all scale-up firms are owned by women. The average is less for revenue scale-ups (20 percent) and higher for employment scale-ups (24 percent), but at no point did women own more than the equivalent of 32 percent of all scale-ups (employment scale-ups in 2013).¹⁴

Figure 1: Proportion of women-owned Canadian scale-ups, 2012–2018



Source: Survey on Financing and Growth of Small and Medium Enterprises (2011, 2014 & 2017)

When understanding the economic impact of scale-ups, it is not recommended to compare their performance against non-scale-ups as scale-ups are defined in part by their larger size (OECD, 2007: 63). However, it is in our interest to understand whether differences in performance exist between scale-ups by gender ownership. Based on 2018 financial information, employment scale-ups with women ownership employ an average of 35 people compared to 38 for firms with men ownership of the same type (figure 2). Revenue scale-ups show a gender difference as well (figure 3). Revenue scale-ups with men ownership have an average revenue of CAD \$7.38M whereas revenue scale-ups with women ownership have an average of \$6.18M, a 20 percent gap.

Among the scale-up firm population tracked in the survey from 2012–2018, we show that at no point were more than one-third of such firms are owned by women, but that number is, on average, significantly less (closer to one-fifth). Further, as of 2018, scale-ups with men ownership employ more people and generate more revenue.

Figure 2: Average employment in employment scale-ups in Canada, by gender-owners in 2018

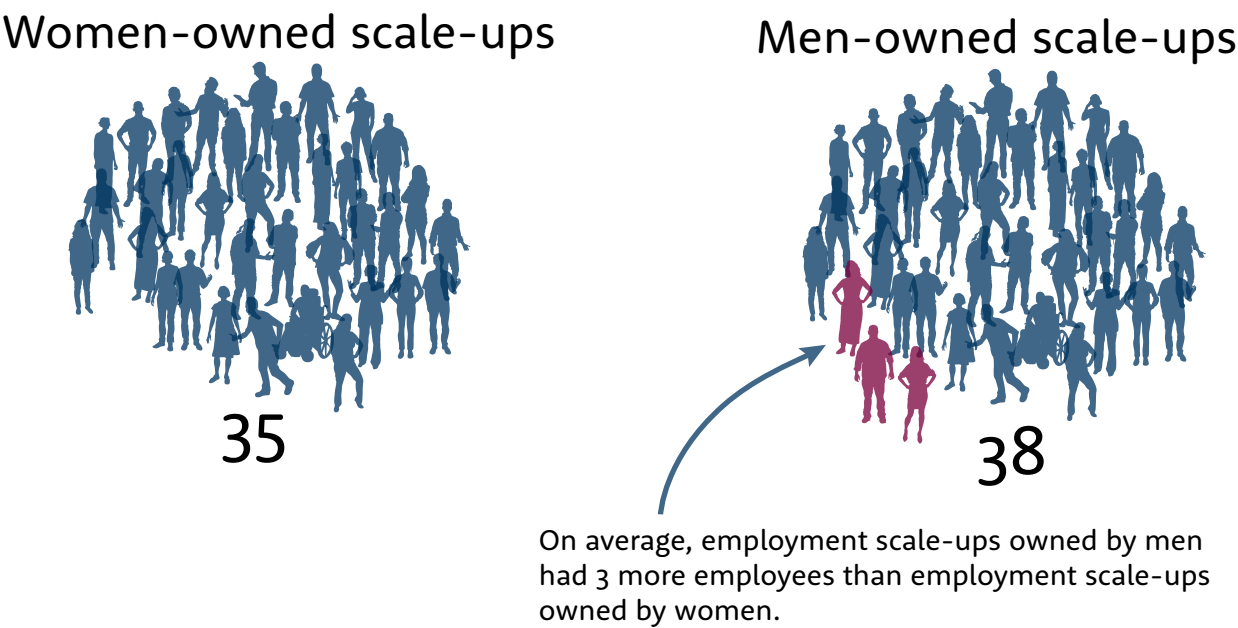
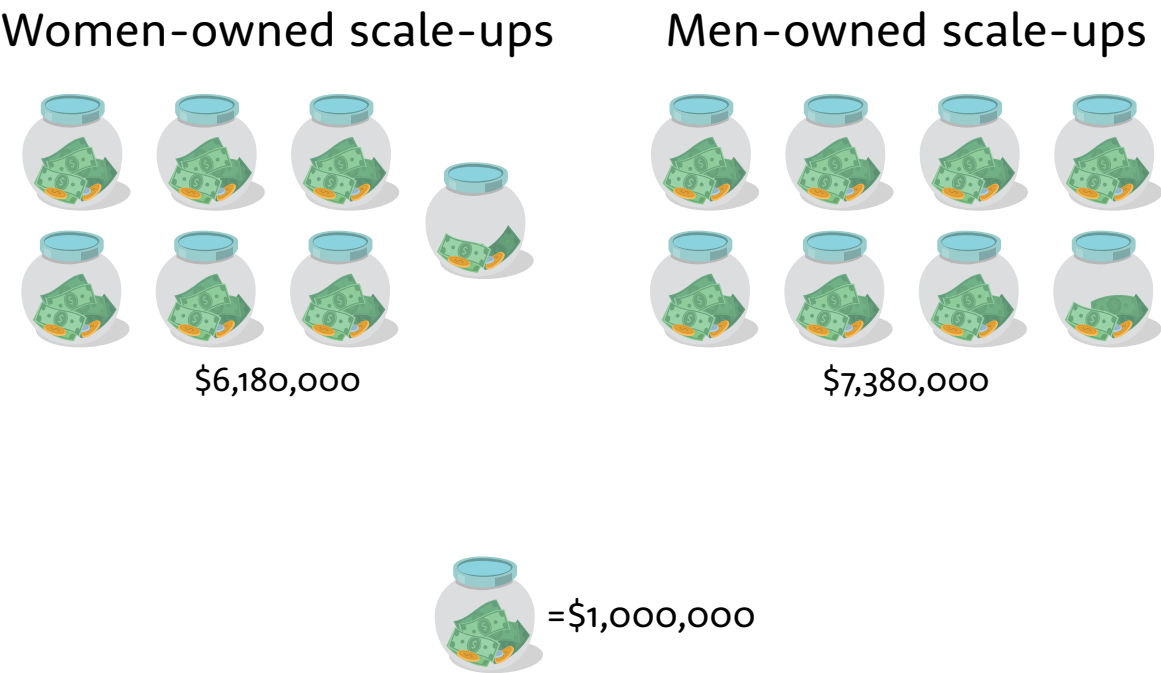


Figure 3: Average revenue in revenue scale-ups in Canada, by gender-owners in 2018



Source: Survey on Financing and Growth of Small and Medium Enterprises, Authors' Calculations

GROWTH BARRIERS

Figure 4 shows that, when conditioning for the impact of various growth barriers, firms with women ownership have systematically lower probabilities of reaching scale-up status, as measured by either employment or revenue. The percentages refer to the proportion of firms that, conditional on the barrier faced, reached scale-up status. When firms with women ownership encounter any growth barrier (except for financing-related barriers to growth), they are less likely to become scale-ups compared to firms with men ownership that faced the same barriers.

Notably, firms with women ownership and with men ownership are less likely to become employment scale-ups than revenue scale-ups, an indication of how much harder it is to grow by employment rather than revenue. However, none of the gender-based differences for employment scale-ups are statistically significant (i.e., we cannot reject the null hypothesis that there are no differences between the two groups).

The gender differences for revenue-based scale-ups are substantially greater than for employment scale-ups across all barriers, with several statistically significant differences. The biggest differences are for “labour shortage” (20 percent

Figure 4: Probability of becoming a scale-up condition on growth barriers in 2018

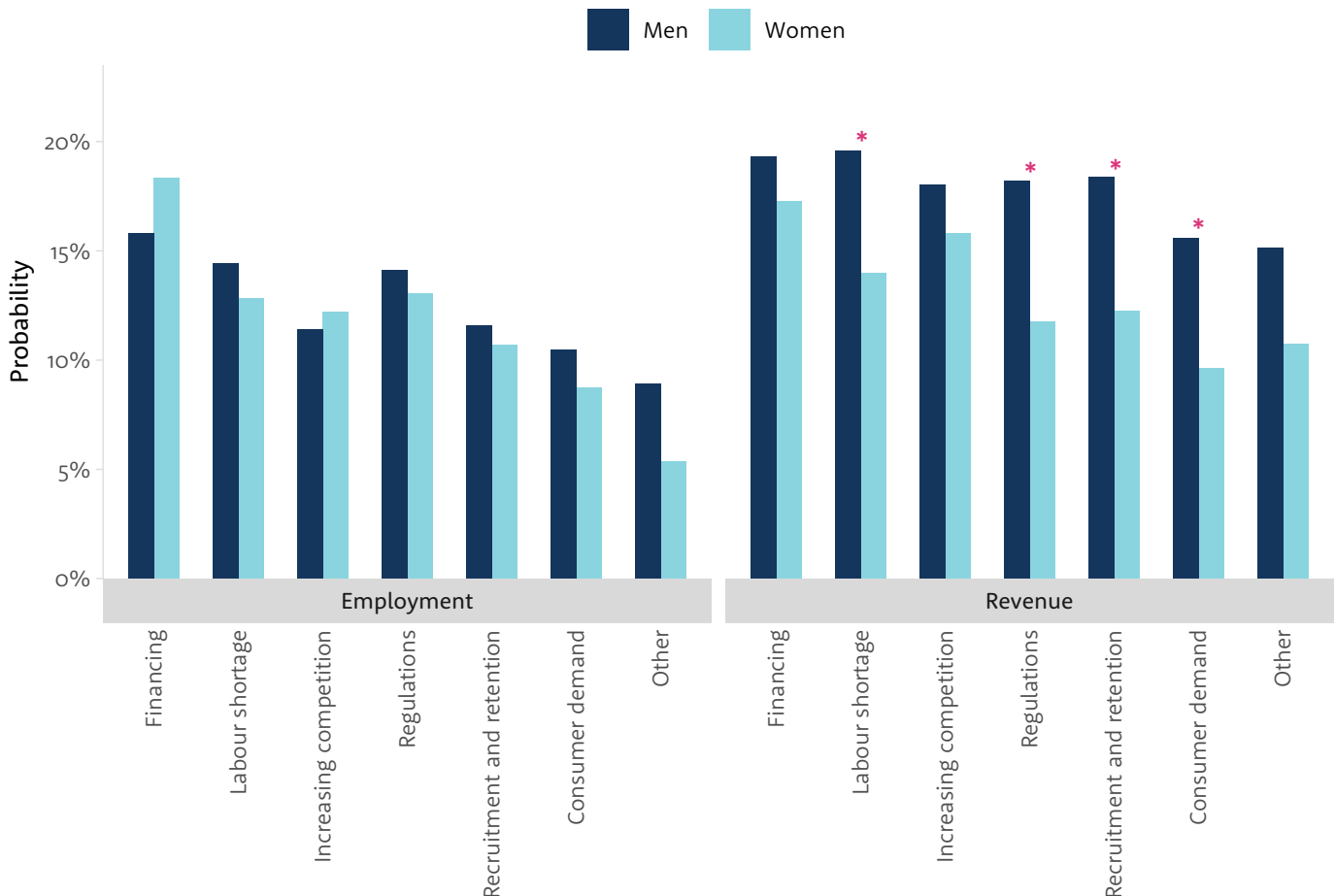


Figure shows probabilities for employment- and revenue-based scale-ups. Asterisk (*) indicates significance at 95% confidence.
Source: Survey on Financing and Growth of Small and Medium Enterprises

for men, 14 percent for women), “regulations” (18 percent to 12 percent), “recruitment and retention” (18 percent to 12 percent), and “consumer demand” (16 percent to 9 percent). According to two proportion z-tests (two-way), all differences are statistically significant at the 95% confidence level¹⁵. In the case of labour shortage, the findings show that 20 percent of firms with men ownership that face this barrier scaled up, whereas only 14 percent of firms with women ownership did the same. Given similar challenges, firms with men ownership are more likely to overcome growth barriers and grow their revenue at a high-growth rate.

EXPORT BARRIERS

In figure 5, we report the probabilities of becoming a scale-up conditional on citing “local nature of the business” as the reason for not exporting. As explained above, we report on only a single export barrier item due to the small sample size of firms exporting. Firms with men ownership that cite the local nature of business are more likely to become scale-ups than companies with women ownership (a two percentage point difference for employment and a five percentage point difference for revenue), meaning that more firms with men ownership that focus more on the domestic (Canadian) market reach scale-up status. Neither difference, however, is statistically significant.

Figure 5: Probability of becoming a scale-up in 2018
Local nature of business as reason for not exporting

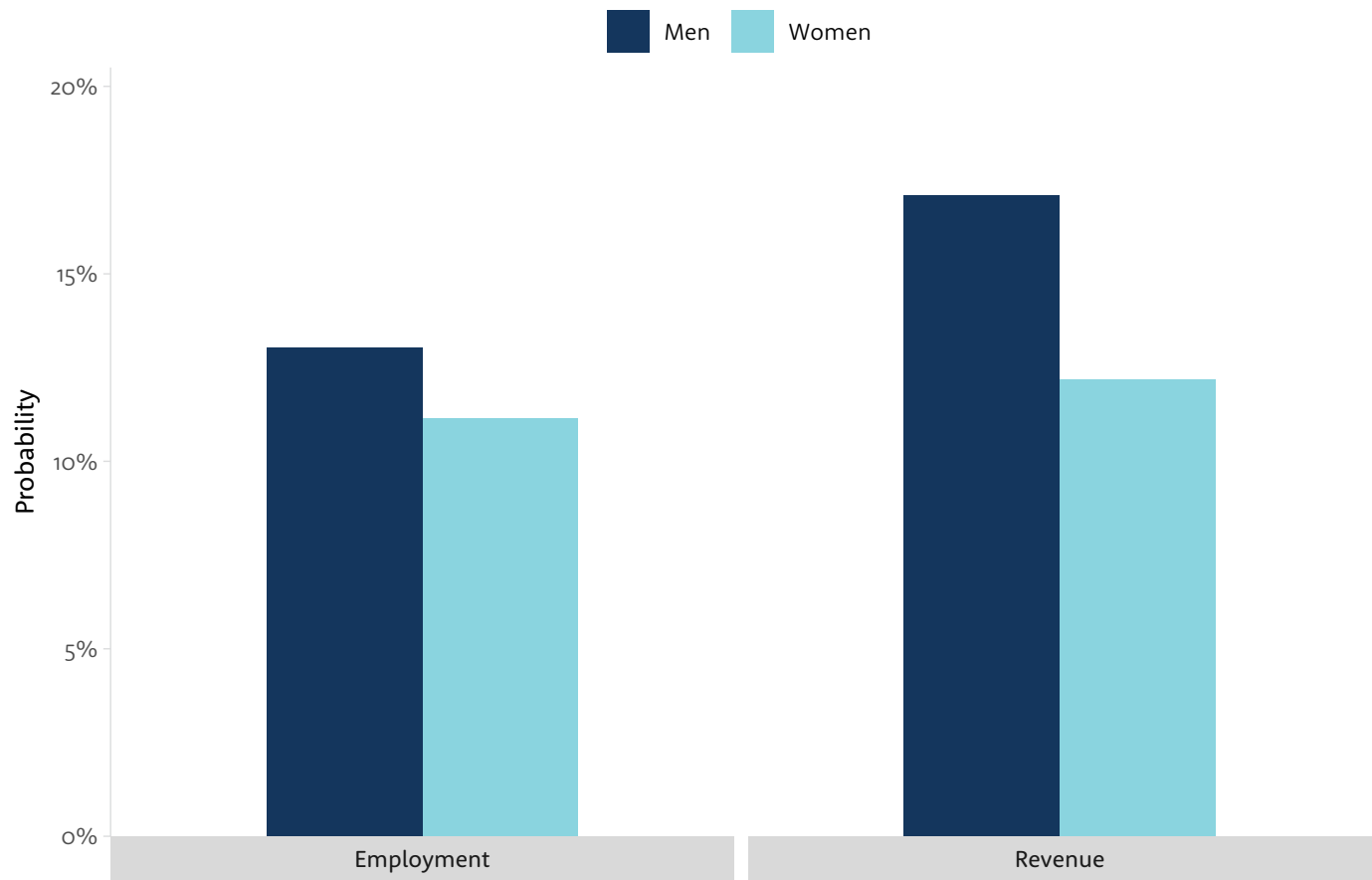


Figure shows probabilities for employment- and revenue-based scale-ups.
Source: Survey on Financing and Growth of Small and Medium Enterprises

INNOVATION AND INTELLECTUAL PROPERTY

Do firms with women ownership that innovate scale at the same rate as firms controlled by men that also innovate? In figure 6, we see that both firms with either women or men ownership are nearly equally likely to become an employment scale-up if they innovate (about 16 percent for firms with men ownership and 15 percent for women). However, we again see a substantive difference for revenue scale-ups. About 22 percent of firms with men ownership that innovate become scale-ups whereas only 16 percent of firms with women ownership do. For revenue scale-ups, the data show that fewer firms with women ownership that are innovative scale up.

If firms say they maintain intellectual property (IP) holdings, what is the probability they become scale-ups? Figure 7 shows that firms with IP are much more likely to become revenue scale-ups over employment scale-ups, a common finding in this report, but there are, once again, notable gender differences. The probability a firm with men ownership with IP becomes an employment scale-up is about 14 percent and for firms with women ownership, 12 percent (a statistically insignificant difference). The difference is greater for revenue scale-ups (22 percent for men and 17 percent for women). As with innovation, firms with men ownership are much more likely to become revenue scale-ups if they maintain IP.

Figure 6: Probability of becoming a scale-up given firm innovation in 2018

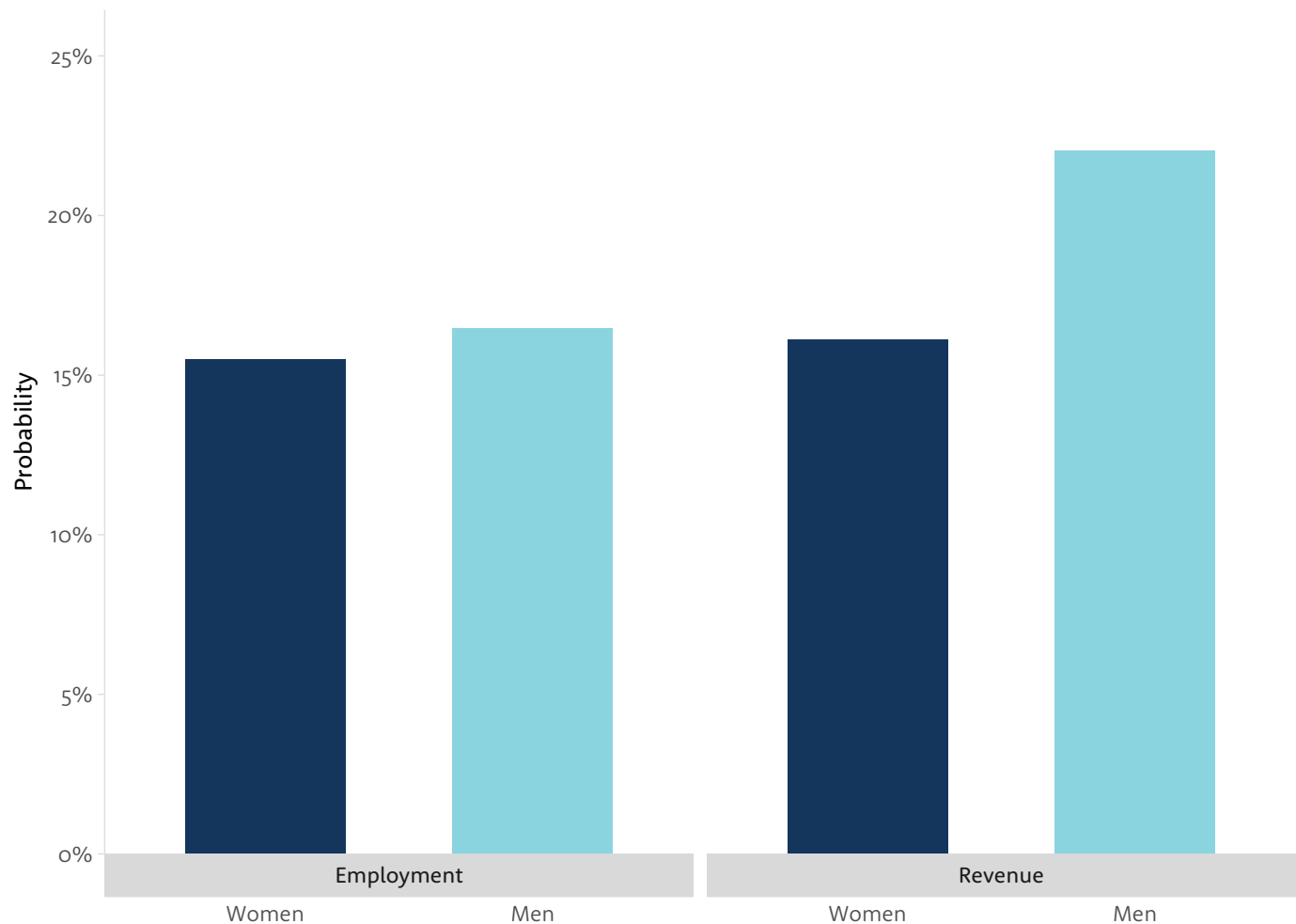


Figure shows probabilities for employment- and revenue-based scale-ups. Source: Survey on Financing and Growth of Small and Medium Enterprises

Figure 7: Probability of becoming a scale-up given intellectual property in 2018

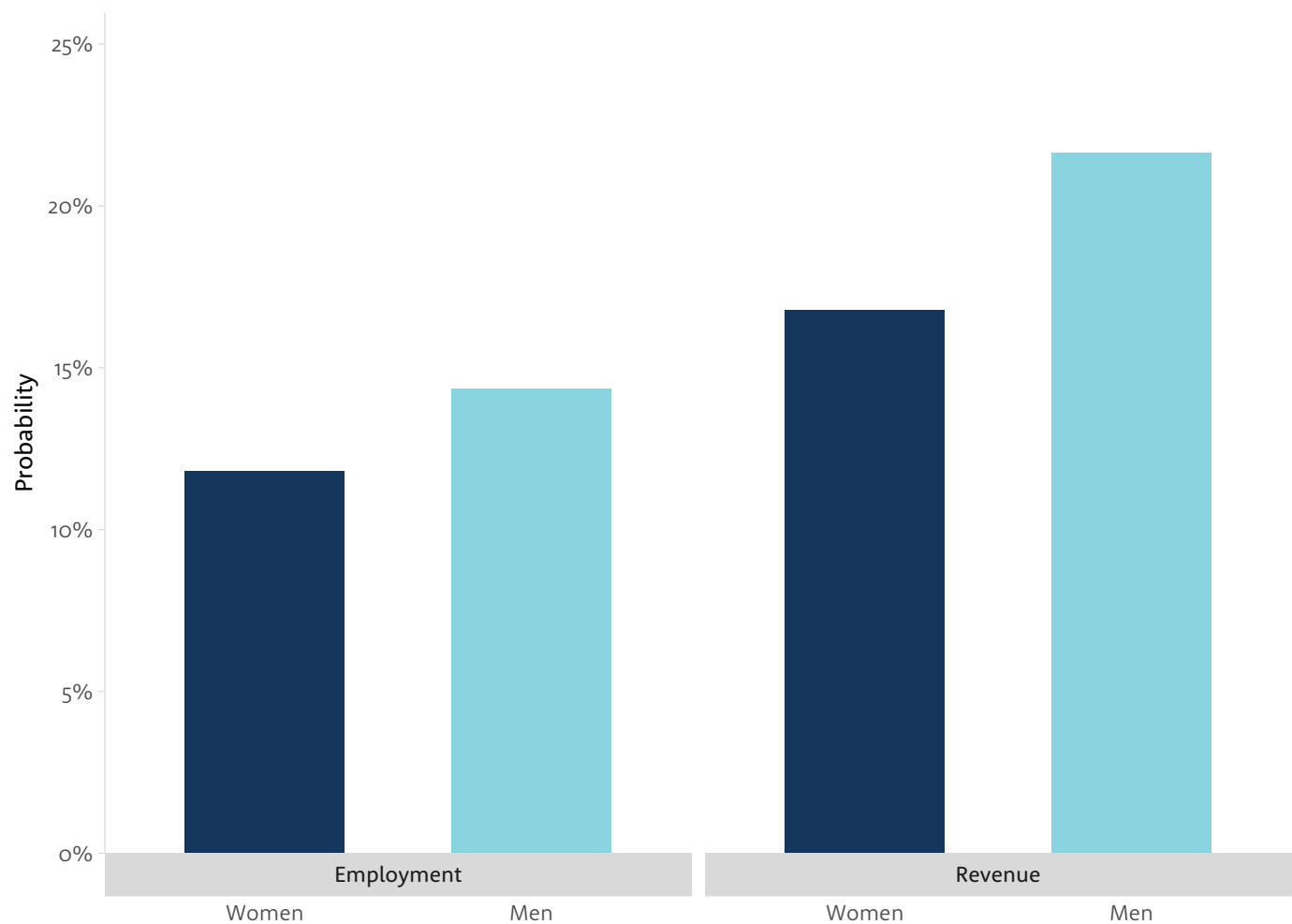


Figure shows probabilities for employment- and revenue-based scale-ups. Source: Survey on Financing and Growth of Small and Medium Enterprises

In summary, we find that firms with women ownership are systematically less likely to achieve scale-up status conditional on facing growth barriers, having innovative practices, or holding intellectual property. Notably, the systematic differences vary by type of scale-up, with consistent and sometimes notably large outcome differences for *revenue* scale-ups in favour of firms with men ownership. Using the same method and financial figures ending in 2015, we see effectively identical findings from the previous (2014) survey (see [Appendix C](#)).¹⁶ We discuss the significance of the finding more in the conclusion, but first we explore the association between ownership structure and firm performance in the next section.

IMPACT OF GENDER OWNERSHIP ON FIRM GROWTH

The previous section explored how gender ownership affects firms with different characteristics. We now try to isolate the impact of gender ownership structure of firms on growth by running regressions. We run three main specifications (with common dependent variables on whether the firm attains employment-based or revenue-based scale-up status) where each controls for export behaviour (percent of sales accounted for by exports in 2017), intellectual property holdings¹⁷ (firm reported IP holdings in 2017 equals 1, else 0), or growth barriers encountered.¹⁸ While it would be ideal to interact growth barriers or supports, sample size constraints do not permit it.¹⁹

We control for industry effects, location effects, and firm birth year using a logit specification, estimated by Maximum Likelihood Estimation (MLE).²⁰ Industry controls include fixed effects for all industries at the two-digit North American Industry Classification System (NAICS). Geographic controls include fixed effects for regions.²¹ Logit regressions were chosen given our interest in the binary outcome of whether a firm scales up or not and how different levels of gender ownership impact that binary outcome. For these regressions, we report Odds Ratio (OR).

In addition, we also test the impact of different gender ownership structures conditional on firm characteristics on the size of the firm (by employment and revenue) using Ordinary Least Squares²² (OLS) regressions. To ensure sample

consistency between the two sets of models, we restrict our OLS sample to include only firms with at least 10 employees. We first focus on discussing the results when employment scale-ups (and employment levels) are concerned, followed by when revenue scale-ups (and revenue levels) are considered.

Overall, we find that the gender ownership structure of the firm does not directly impact the odds of whether a company can attain scale-up status or not (under both employment and revenue metrics). However, firms with higher women ownership were associated with being smaller overall (in both employment and revenue). These size gaps are significant and consistent with evidence in the literature.

Odds Ratio

Odds Ratio in our case is the ratio between the odds (how likely it is compared to how unlikely it is) of scaling up for firms with different ownership shares of women. For example, an Odds Ratio of 1 reported in this report means that a company wholly owned by women has the same odds of becoming a scale-up as a company wholly owned by men. An Odds Ratio less than 1 indicates that firms with women ownership have lower odds of scaling compared to firms with men ownership, and the reverse is the case if the Odds Ratio is greater than 1.

EMPLOYMENT MEASURES IN 2017

Across multiple model specifications, the share of women ownership did not have a statistically significant impact on the odds of a firm becoming an employment scale-up, with or without²³ various controls present in the regression.

Just as the share of women ownership did not significantly impact the odds of a firm becoming a scale-up, neither the share of exports nor reported IP holdings have significant impacts on the odds of a company's attaining employment scale-up status. When growth barriers are considered, firms that faced financing barriers in 2017 had 35 percent

higher odds of achieving employment scale-up status in 2018 compared to firms that did not face financing barriers (significant at the one percent level). Facing financial constraint means that you have capability to grow, and facing the challenge is different from whether they are able to overcome it. It is a "good problem" to have.

On the other hand, firms that faced barriers around constraints in demand as well as high competition had 20 percent lower odds of achieving employment scale-up status in 2018 compared to firms that did not face such challenges (significant at the one percent level).

Table 3: Regression results for a family of logit regressions on attaining an employment scale-up status

Dependent	1 Employment Scale-up Indicator	2 Employment Scale-up Indicator	3 Employment Scale-up Indicator
Share of Women Ownership	0.138	0.135	0.091
Export Percentage	0.186	NA	NA
IP Holding	NA	0.066	NA
Growth Barriers	NA	NA	Talent Recruitment: -0.06 Regulatory Barriers: 0.11 Constrained Demand & Competition: -0.22(**) OR: 0.8 Financing Barriers: 0.303(***) OR: 1.35
Industry Controls	Yes	Yes	Yes
Province Controls	Yes	Yes	Yes
Birth Year Controls	Yes	Yes	Yes

The dependent variable is an indicator of whether a firm is an OECD employment scale-up across a variety of specifications. Parameter estimates are reported with associated Odds Ratio reported whenever the estimates are significant. (*): Significant at 5 percent levels, (**): Significant at 1 percent levels, (***): Significant at 0.1 percent levels.

Table 4: Regression results on a family of OLS regressions on employment levels of firms

	1	2	3
Dependent	Employment Levels	Employment Levels	Employment Levels
Share of Women Ownership	-27.2(***)	-28.04(***)	-28.59(***)
Export Percentage	48.98(***)	NA	NA
IP Holding	NA	29.29(***)	NA
Growth Barriers	NA	NA	Talent Recruitment: 2.01 Regulatory Barriers: -3.23 Constrained Demand & Competition: 4.28(*) Financing Barriers: -5.69(**)
Industry Controls	Yes	Yes	Yes
Province Controls	Yes	Yes	Yes
Birth Year Controls	Yes	Yes	Yes

The dependent variable is the employment level of firms in 2018, across a variety of specifications. Parameter estimates are reported with associated Odds Ratio reported whenever the estimates are significant. (*): Significant at 5 percent levels, (**): Significant at 1 percent levels, (***): Significant at 0.1 percent levels.

However, when employment levels are considered, firms with full women ownership had around 28 fewer employees on average than firms with full men ownership across all model specifications considered, adding further evidence that enterprises with women ownership are smaller (i.e., employ fewer people). These results stand in contrast to the previous trends that demonstrate non-significance of gender ownership structure to the odds of companies becoming an employment scale-up.

REVENUE MEASURES IN 2017

Across multiple specifications, the share of women ownership did not have a statistically significant impact on the odds of a firm becoming a revenue scale-up, with or without various controls present in the regressions.

Table 5: Regression results on a family of logit regressions on attaining a revenue scale-up status

Dependent	1 Revenue Scale-up Indicator	2 Revenue Scale-up Indicator	3 Revenue Scale-up Indicator
Share of Women Ownership	-0.018	-0.024	-0.056
Export Percentage	0.186	NA	NA
IP Holding	NA	0.25(*) (OR 1.28)	NA
Growth Barriers	NA	NA	Talent Recruitment: 0.053 Regulatory Barriers: -0.05 Constrained Demand & Competition: -0.073 Financing Barriers: 0.23(***) (OR 1.26)
Industry Controls	Yes	Yes	Yes
Province Controls	Yes	Yes	Yes
Birth Year Controls	Yes	Yes	Yes

The dependent variable is an indicator of whether a firm is an OECD revenue scale-up, across a variety of specifications. Parameter estimates are reported with associated Odds Ratio reported whenever the estimates are significant. (*): Significant at 5 percent levels, (**): Significant at 1 percent levels, (***): Significant at 0.1 percent levels.

Consistent with the results pertaining to employment scale-ups, the share of women ownership does not have a statistically significant impact on the odds of a company attaining revenue scale-up status across all specifications considered. Notably, firms with intellectual property holdings were associated with having 28 percent higher odds of attaining revenue scale-up status than firms without. Firms that faced financing constraints in 2017 also experienced higher odds of scaling-up compared to firms that did not.

When revenue levels are considered, firms with full women ownership show significantly (both statistically and in magnitude) lower performance compared to firms with full men. In fact, across all specifications, firms fully owned by women had revenues 75 percent lower than firms fully owned by men.

Table 6: Regression results on a family of OLS regressions on revenue levels of firms

	1	2	3
Dependent	Log Revenue Levels	Log Revenue Levels	Log Revenue Levels
Share of Women Ownership	-0.72(***)	-0.76(***)	-0.75(***)
Export Percentage	1.37(***)	NA	NA
IP Holding	NA	0.47(***)	NA
Growth Barriers	NA	NA	Talent Recruitment: 0.014 Regulatory Barriers: -0.08(*) Constrained Demand & Competition: 0.141(***) Financing Barriers: -0.194(***)
Industry Controls	Yes	Yes	Yes
Province Controls	Yes	Yes	Yes
Birth Year Controls	Yes	Yes	Yes

The dependent variable is the revenue level of firms in 2018, across a variety of specifications. Parameter estimates are reported with associated Odds Ratio reported whenever the estimates are significant. (*): Significant at 5 percent levels, (**): Significant at 1 percent levels, (***): Significant at 0.1 percent levels.

In summary, for both revenue and employment scale-ups, we find that the comparison of growth between firms controlled by men and those controlled by women is not simple. Firms with higher women ownership shares tend to employ fewer people and have lower revenue than firms with higher ownership by men. This is consistent with the finding that scale-up firms with women ownership tend to be smaller (in terms of employment) and record less revenue than scale-ups with men ownership (see figures 1 and 2 above). However, gender ownership share by itself does not impact the odds of a company's reaching scale-up status, only the total number of people employed and revenue generated. Given the fact that firms with women ownership tend to be smaller and produce less revenue, the evidence presented in this section further underscores gender-based disparity.

Findings from the regression analysis complicate the findings from the conditional probabilities, but they do not invalidate or contradict them. It is

important to note that the regression findings do not show an absence of gender-based differences in growth experiences of firms that faced specific growth challenges, nor do they show that gender does not matter. The impact of various growth barriers and enablers (the focus of the conditional probabilities) impact firms with varying degrees of women (and men) ownership differently. The regression-based findings merely indicate that there is no *direct* impact of gender ownership structure on the odds of becoming a scale-up.

Insights in the previous section point to other potential indirect channels through which gender disparity exists, underlying the complexity of the experience of firms with women ownership. Adding to this the fact that we only consider firms that are in operation (i.e., we do not consider firms that have exited) and thus face concerns of survivorship bias, we paint a complex picture of the way in which gender ownership structure impacts firm growth behaviour.

CONCLUSION AND DISCUSSION

Overall, the research and analysis presented here finds no association between being a scale-up and gender ownership, but conditional on certain barriers to growth or growth-supporting inputs, we show that there are systematic differences in growth experiences for companies with women ownership and those with men ownership. Further, few scale-ups are run by women (one-third of firms, at best), and they employ fewer people and generate less revenue than scale-ups with men ownership. The inequity in participation and performance is consistent with overall SME activity (Liu, 2019), but this research also shows that firms with women ownership are less likely to overcome barriers to growth and exporting and reach scale-up status, especially by employment. Even for factors associated with growth (innovativeness and intellectual property), firms with women ownership are still less likely to grow and reach scale-up status.

There are some limitations based on our sample (a survey of SMEs) and the target population (high-growth firms) worth highlighting. One

notable shortcoming is that we do not consider the conditional probability of scaling-up across different industries or geographies. We are certainly missing part of the story by analyzing at the highest level of aggregation possible (national). For instance, there is evidence that businesses with women ownership in industries with greater women participation perform significantly better and are more likely to reach high-growth status than industries with fewer firms with women ownership (Yacus et al., 2019). We can say that, on average, firms with women ownership are no more (or less) likely to become scale-ups, but that does not consider differential performance by industry or across geographies.

We also do not consider additional ownership characteristics, such as the education, nationality, race/ethnicity, or primary language spoken (English/French). One major challenge to doing survey-based research on high-growth firms is sample sizes. Once you subset for high performing firms, the sample size does not support detailed subgroup analysis.

However, our analysis provides several potential avenues for further research, including what kind of policy interventions may be warranted to address the gender disparities highlighted in this report. We conclude with a discussion of three takeaways.

1. Recognize that firms with women ownership grow less by revenue.

As noted in the report, firms with women ownership make significantly less revenue, are less likely to grow their revenue if they face certain growth barriers, and are less likely to reach revenue scale-up status if they innovate or hold IP. These findings can be difficult to interpret conclusively without additional information and insight that specifically target these issues, but linking the findings presented here with those of existing studies can help point us in the right direction or at least encourage new research questions and avenues of inquiry.

For instance, research shows that firms with women ownership tend to prioritize things like working environment over firm growth (Orser & Hogarth-Scott, 2003). Research on Canadian entrepreneurs comes to a similar conclusion. Robichaud et al. (2010) find that, among “opportunity-driven” entrepreneurs, women approach growth differently than do men. Insights from interviews with women entrepreneurs at Canadian high-growth firms corroborate this finding, showing that women entrepreneurs choose, in some instances, a longer trajectory to achieving high growth and value revenue growth alongside other factors, such as social and environmental issues (de Laat & Hellstern, 2020). There is additional research on Canadian firms (e.g., Rosa & Sylla, 2018) that finds some evidence that “profit per employee” for majority women-owned businesses is lower than for those with majority male-owned.

The findings presented here show a clear difference in outcomes by gender control by type of scale-up, with firms with men ownership performing significantly better when the measurement for growth is revenue. Does it matter that firms with women ownership are less likely to scale up

their revenue compared to businesses with men ownership? There is a case to be made that the focus should be mainly on employment. That employment and percent of women control of a firm are negatively associated makes this point all the more important. This leads us to the next point of discussion.

2. Focus on barriers to recruitment and employment in firms with women ownership.

A common finding in this paper is that firms with women ownership have a significantly harder time overcoming obstacles to growth by revenue, but the gendered differences for employment growth is significantly less stark. Vu & Huynh (2018) highlight the important differences between the various metrics used to measure how firms grow and emphasize how, in a public policy context, employment growth and opportunities are more important than other firm- and growth-related characteristics. There is a strong case to be made that employment growth is more important than revenue growth and that employment scale-ups are more important overall.

Employment scale-ups, by definition, have grown their employee counts, which adds jobs to the economy. To hire, train, and maintain new employees requires more sophisticated management strategies and greater managerial capacity. Together, these factors lower transaction costs. Only when transaction costs are sufficiently low can firms realize productivity gains and thus support greater, and sustained, growth. Revenue growth does not require the same organizational sophistication or capacity that employment growth does. It is thus notable that scale-up firms with women ownership employ fewer people than scale-ups with men ownership. Relatedly, firms with women ownership are less likely to overcome certain employment challenges and scale by revenue. Indeed, the bottlenecks for firms with women ownership appear to be concentrated in employment concerns—specifically, labour shortages and recruitment and retention.

A significant reason for the focus on women entrepreneurship has been the goal to advance

gender equality through economic empowerment. Under this view, employment scale-ups are the more important of the two considered here as such firms play a more direct role in generating further potential economic empowerment opportunities for women through job creation and positive spillover effects for other women working in the firm (cf. Kunze & Miller, 2017). A better understanding of how targeted programs for both supporting firms with women ownership and recruiting talent for these firms is warranted.

3. Why does gender ownership mediate innovation's impact on firm performance?

Even after firms with women ownership innovate or acquire IP, they are less likely than companies with men ownership to achieve scale-up status, indicating that firms with women ownership are unable to realize the same benefits accrued to firms with men ownership in growing their companies. It is unclear why this is occurring, but it points to unique challenges and different experiences that businesses with women ownership face in capitalizing on innovation. Bendell et al. (2019), for instance, find that self-motivated leadership strategies and innovation outcomes differ for men and women entrepreneurs in high-growth enterprises. The research does not explain why gender would mediate the impact of innovative behavior on growth, but it does underscore the fact that men and women realize innovation outcomes differently.

For intellectual property holdings, for which revenue- and employment-based growth show a disadvantage for women, this may be an issue of discerning between formal and informal intellectual property. Due to sample size constraints, we were unable to disaggregate for this report, but there is ample reason to investigate the impact of innovation on firm growth through a gendered perspective. This finding is worthy of further understanding from an advisory and/or policy perspective.

Striving to ensure gender parity in economic participation, and in particular in entrepreneurship and growth in entrepreneurship, is an important goal for Canada to pursue. To effectively do so, we must clearly understand the channels through which such disparities are realized and maintained in the first place to ensure we design policies that address the right concerns. The research presented here provides one lens through which we can understand the broader entrepreneurship ecosystem in Canada to help scale the gap of growth between women and male entrepreneurs.

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ENDNOTES

- 1 Throughout this report, we use the term “women” to formally denote the founder characteristics recorded as “women” in the Statistics Canada data used in this report. It is possible trans and some genderqueer individuals self-identified as women in the survey. We acknowledge the important ways in which experiences of trans and genderqueer entrepreneurs differ from those of cisgendered women, as demonstrated in studies such as Eddleston & Powell (2008) and Goktan & Gupta (2013).
- 2 This study is the quantitative part of a program of research in understanding the experience of growth for firms with women ownership in Canada, with another group of researchers having worked on interviewing women founders.
- 3 Read more about WEKH here: <https://wekh.ca/about/>
- 4 Although there are no studies known to the authors that explore the association between industrial clusters and scale-ups, employment growth (as well as income and patenting activity) is strongly and positively related with urban and regional clusters (Spencer et al. 2010; Delgado et al., 2014). It stands to reason, then, that the positive externalities associated with scale-up activity are part of a dynamic industrial and regional process. Qualitative insights support this interpretation (cf. Denney et al., 2020).
- 5 See Couture & Houle (2020) for a discussion on how Canadian men and women entrepreneurs tend to start firms in different industries and the consequences of gender control on firm performance by industry.
- 6 The population is stratified by age (of business), enterprise size, industry, and geography. Industries out of scope, by the North American Industry Classification System (NAICS), include utilities (22), finance and insurance (52), management of companies and enterprises (55), educational services (61), public administration (91), automotive equipment rental and leasing (5321), commercial and industrial machinery and equipment rental and leasing (5324), out-patient care centres (6214), medical and diagnostic laboratories (6215), other ambulatory health care services (6219), general medical and surgical hospitals (6221), psychiatric and substance abuse hospitals (6222), specialty (except psychiatric and substance abuse) hospitals (6223), community food and housing and emergency and other relief services (6242), and private households (814110). For more information on sample design, see survey documentation at https://www.ic.gc.ca/eic/site/o61.nsf/eng/h_o2774.html.
- 7 We recognize that relying on self-evaluation of innovation in surveys, such as the SFGSME, may lead to an inflation of innovation incidence. There is a case to be made that this question is better suited for measuring confidence in a firm’s innovative capacity.
- 8 As noted by Love & Roper (2015), the relationship between innovation and growth for SMEs is less well understood, especially problems of self-selection and survivor bias (i.e., better performing firms tend to innovate).
- 9 The OECD definition also has a minimum employee threshold of 10 for the start of the three-year observation period to eliminate bias due to small firm size.
- 10 We deflated revenue measures using Bank of Canada’s consumer price index.
- 11 Because survey waves are not administered yearly, our identification strategy assumes that the structure of the firm across all years covered by GIFI is effectively the same or insignificantly different. It is important to note that, based on our methodology, the 2012 and 2013 proportions are based on the 2011 sample; the 2015 and the 2016 proportions are derived from the 2014 survey; and the 2018 proportions come from the 2017 survey.

- 12 The conditional probabilities are based on Bayes' theorem. That is, the $P(A|B) = P(B|A)P(A) / P(B)$, where $P(x)$ is the probability of an event x happening (from 0-1), A is scale-up status, and B is some condition (e.g., a barrier to growth).
- 13 A regression is a form of statistical analysis used to elicit statistical relationship between an outcome (called a dependent variable) and a set of factors (called independent variables), under a specific set of assumptions.
- 14 Non-proportional weights for scale-ups with women ownership are not relevant due to the representative sample nature of the survey.
- 15 This means that if the same sampling method was done to collect the same data many times, 19 times out of 20, the real population estimate will be within the confidence interval of the estimated value. It does not mean that the real population value is definitely included within the confidence interval of this particular estimate. We note for non-growth barriers (i.e., exporting, IP, innovation), the effective sample sizes used are not sufficient for meaningful significance tests. Gender-based differences observed here should be read with care.
- 16 Conditional probabilities using the 2014 survey and financials ending in 2014 are provided as shown in figures SI.1-4 from the SI document.
- 17 We do not report models based on the firm innovativeness variable. Our analysis found the outcomes were effectively the same as IP holdings, and we view both variables as conceptually similar.
- 18 We use the same growth barriers as specified in table 1, grouped according to commonality (informed by principal component analysis for dimension reduction). "Talent Recruitment" includes "Shortage of labour" and "Recruiting and retaining skilled employees." "Regulatory Barriers" includes "Government regulations," "Rising cost of inputs," and "Corporate tax rate." "Constrained Demand & Competition" includes "Fluctuations in consumer demand" and "Increasing competition." Finally, "Financial Barriers" includes "Obtaining financing" and "Maintaining sufficient cash flow or managing debt." The original scales (1-4, excluding others) were summed and divided by the total to yield a proportion between 0 and 1.
- 19 To get the equivalent statistical power for an interaction term will require a much greater sample size than we have to obtain effects of non-interacted terms. The survey design and sampling were not for interaction terms; our estimates would be severely underpowered if we were to include interaction terms. This is one of the motivations behind using conditional probabilities.
- 20 Maximum Likelihood Estimation estimates parameters in a regression by treating the realized data points as a draw from a joint distribution and finds parameter values for the distribution that make the realized outcome the most likely outcome.
- 21 Due to sample sizes, some industry fixed effects were dropped. We specify five geographic regions: Ontario, Québec, the Prairies (Albert, Manitoba, and Saskatchewan), British Columbia and Territories (all three), and the Atlantic (New Brunswick, Newfoundland and Labrador, Nova Scotia, and Prince Edward Island).
- 22 Ordinary Least Squares estimates parameters in a regression by finding parameter values that minimize the squared errors between the predicted values and realized outcomes.
- 23 In the main body of this report, we focus on estimates obtained from the full specification with controls. The baseline model does not qualitatively impact our findings and is available in an online appendix.

APPENDICES

Appendices A–D provide supporting data and analysis to the main report. Appendix A supplements analysis from the main report with sample sizes of scale-ups and non-scale-ups by employment and revenue growth metrics, using the equivalent firms with women ownership and equivalent firms with men ownership measure (see Data and Methodology section of main report). Appendix B provides survey responses (proportions) by firm type (scale-up or not) and gender control from the 2017 *Survey on Finance and Growth of Small and Medium Enterprises (SFGSME)*

using financial information ending in the year 2018. Appendix C presents data from the conditional probabilities of scaling-up in 2015, using survey responses from the 2014 SFGSME. Lastly, appendix D reports all regression model specifications for analysis, using the 2017 SFGSME with firm financials ending in 2018.

APPENDIX A :

SAMPLE SIZES FROM SFGSME IN 2018

The following tables provide the equivalent sample sizes from firms with women ownership and with men ownership. It is important to note that the full survey sample is approximately 10,000 firms per year. However, we consider only those enterprises for which we have full financial information two years prior to and one year forward from the year of the survey (2018). This reduces our total sample size to approximately 3,000 observations per sample year.

Table SI.1: Counts for growth barriers

Counts (weighted)	Scale-up?	Growth metric	Gender control
377	No	Employment	Women
50	Yes	Employment	Women
1,157	No	Employment	Men
182	Yes	Employment	Men
368	No	Revenue	Women
55	Yes	Revenue	Women
1,108	No	Revenue	Men
239	Yes	Revenue	Men

Table SI.2: Counts for reasons firm did not export

Counts (weighted)	Scale-up?	Growth metric	Gender control
325	No	Employment	Women
43	Yes	Employment	Women
930	No	Employment	Men
148	Yes	Employment	Men
320	No	Revenue	Women
45	Yes	Revenue	Women
900	No	Revenue	Men
190	Yes	Revenue	Men

Table SI.3: Counts for Firm Innovativeness

Weighted women control	Weighted men control	Scale-up?	Innovative?	Growth Metric
267	743	No	No	Employment
110	413	No	Yes	Employment
30	101	Yes	No	Employment
20	82	Yes	Yes	Employment
258	717	No	No	Revenue
110	392	No	Yes	Revenue
34	129	Yes	No	Revenue
21	111	Yes	Yes	Revenue

Table SI.4: Counts for Firm Innovativeness

Weighted women control	Weighted men control	Scale-up?	Have IP?	Growth Metric
253	726	No	No	Employment
124	431	No	Yes	Employment
33	110	Yes	No	Employment
17	72	Yes	Yes	Employment
252	705	No	No	Revenue
116	403	No	Yes	Revenue
31	128	Yes	No	Revenue
23	111	Yes	Yes	Revenue

APPENDIX B:
PROPORTIONS FROM
SFGSME IN 2018

Figures SI.1 and SI.2 show the proportion of entrepreneurs who indicated they face the identified barrier to growth and exporting (“local nature of business” only) in the 2017 survey vintage. The answers are presented by both firm type (scale-up or not) for employment and revenue scale-ups, in addition to gender control. Figures SI.3 and SI.4 shows the proportion of companies that innovate or hold IP, respectively, by year, firm type (scale-up or not) for employment and revenue, and gender control.

Figure SI.1: Growth barriers for SMEs in Canada, 2018

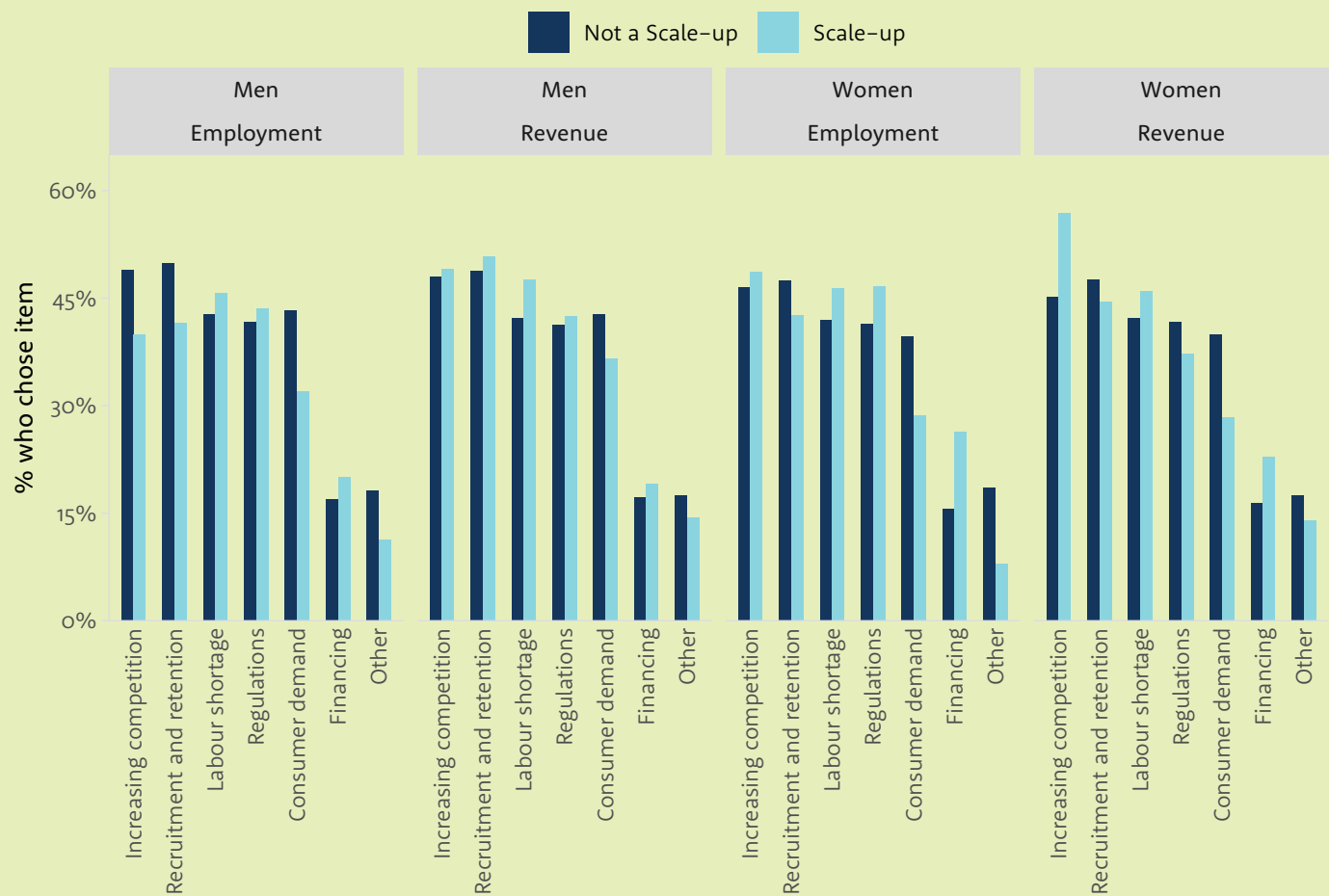


Figure shows percent who chose item.
Source: Survey on Financing and Growth of Small and Medium Enterprises

Figure SI.2: Local nature of business as reason for SMEs not exporting, 2018

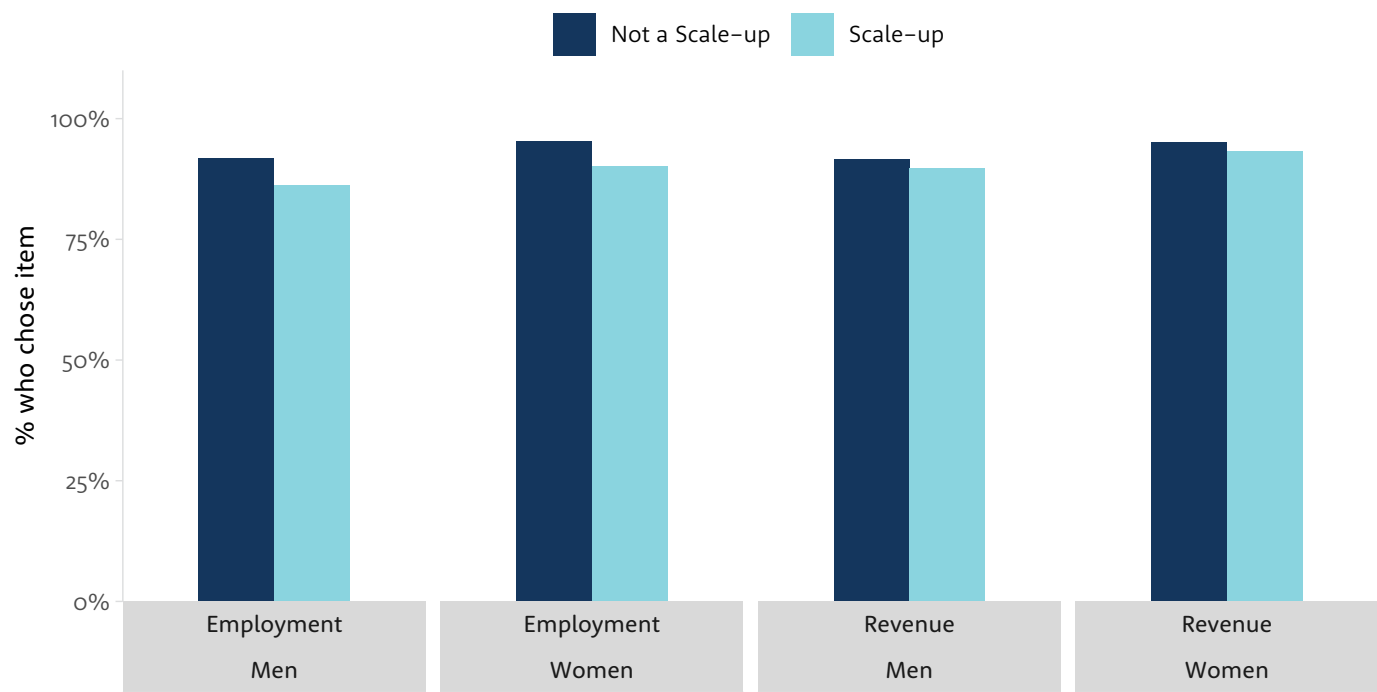


Figure shows percent who chose item.
Source: Survey on Financing and Growth of Small and Medium Enterprises

Figure SI.3: SMEs innovating in Canada, 2018

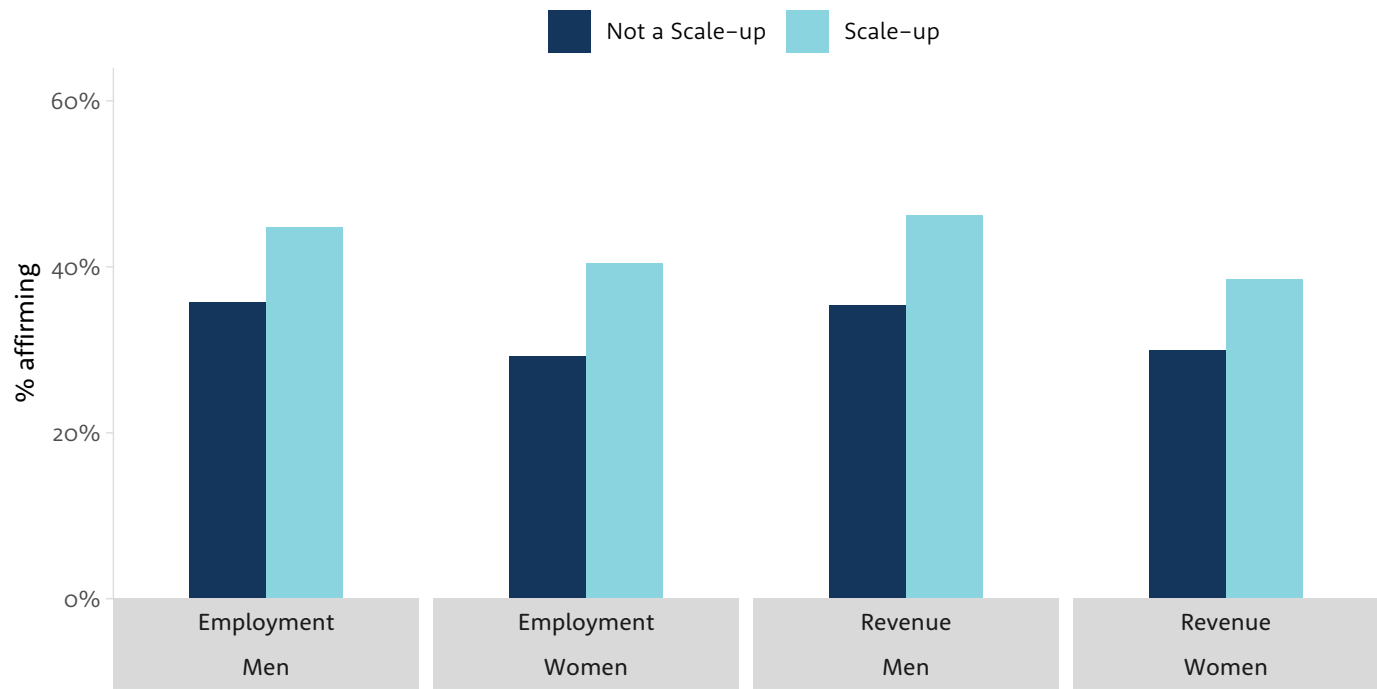


Figure shows percent who said their firm innovates.
Source: 2014 & 2017 Survey on Financing and Growth of Small and Medium Enterprises

Figure SI.4: SMEs with intellectual property in Canada, 2018

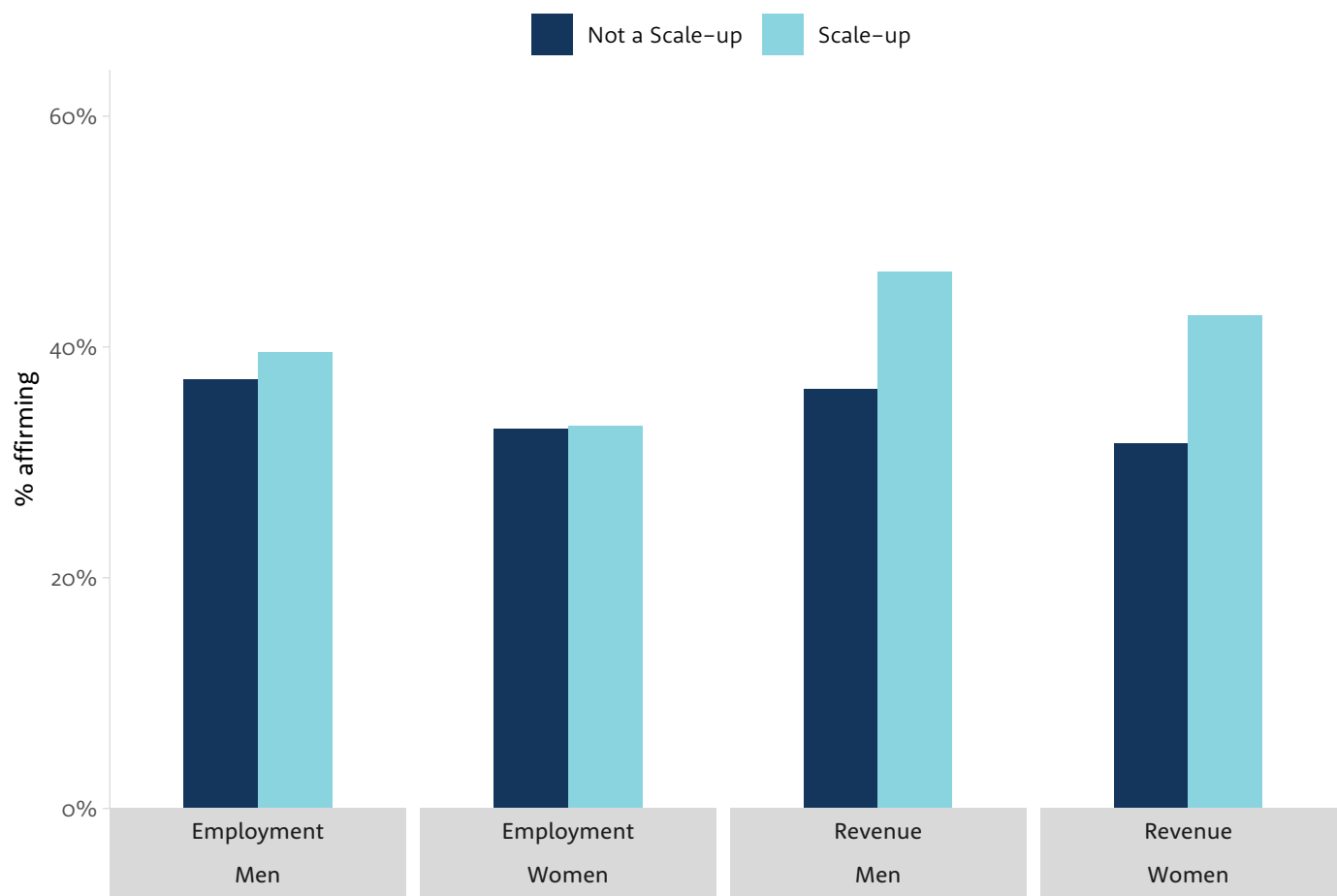


Figure shows percent who said their firm holds intellectual property.
Source: 2014 & 2017 Survey on Financing and Growth of Small and Medium Enterprises

APPENDIX C: CONDITIONAL PROBABILITIES OF SCALING-UP IN 2015

As noted in the main report, the findings presented therein are effectively replicated using SFGSME data from 2014 and GIF financials from 2013–2015 (to identify scale-ups). Figures SI.5 and SI.6 show the probability of reaching scale-up status by gender control conditional on having faced some barrier to growth or not exporting due to the local nature of the business. Figures SI.7 and SI.8 show the probability

of becoming a scale-up conditional on the firm innovating or holding intellectual property (IP). Overall, firms with women ownership are less likely to reach scale-up status conditional on having faced growth barriers. Firms with women ownership are also less likely to reach scale-up status if they innovate or hold IP.

Figure SI.5: Probability of becoming a revenue scale-up given growth barrier in 2015

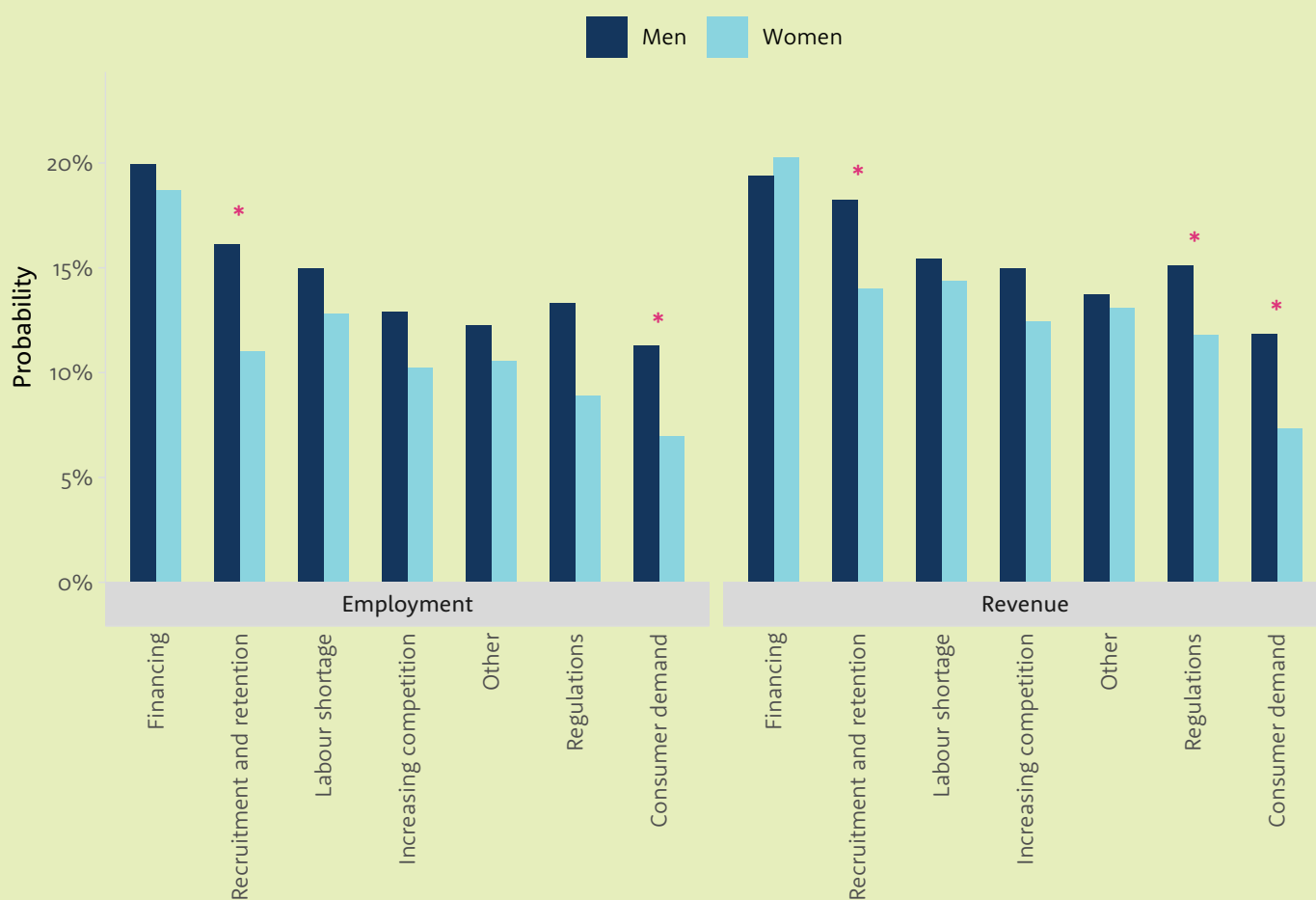


Figure shows probabilities for employment- and revenue-based scale-ups. Asterisk (*) indicates significance at 95% confidence.
Source: Survey on Financing and Growth of Small and Medium Enterprises

Figure SI.6: Probability of becoming a scale-up in 2016
Local nature of business as reason for not exporting

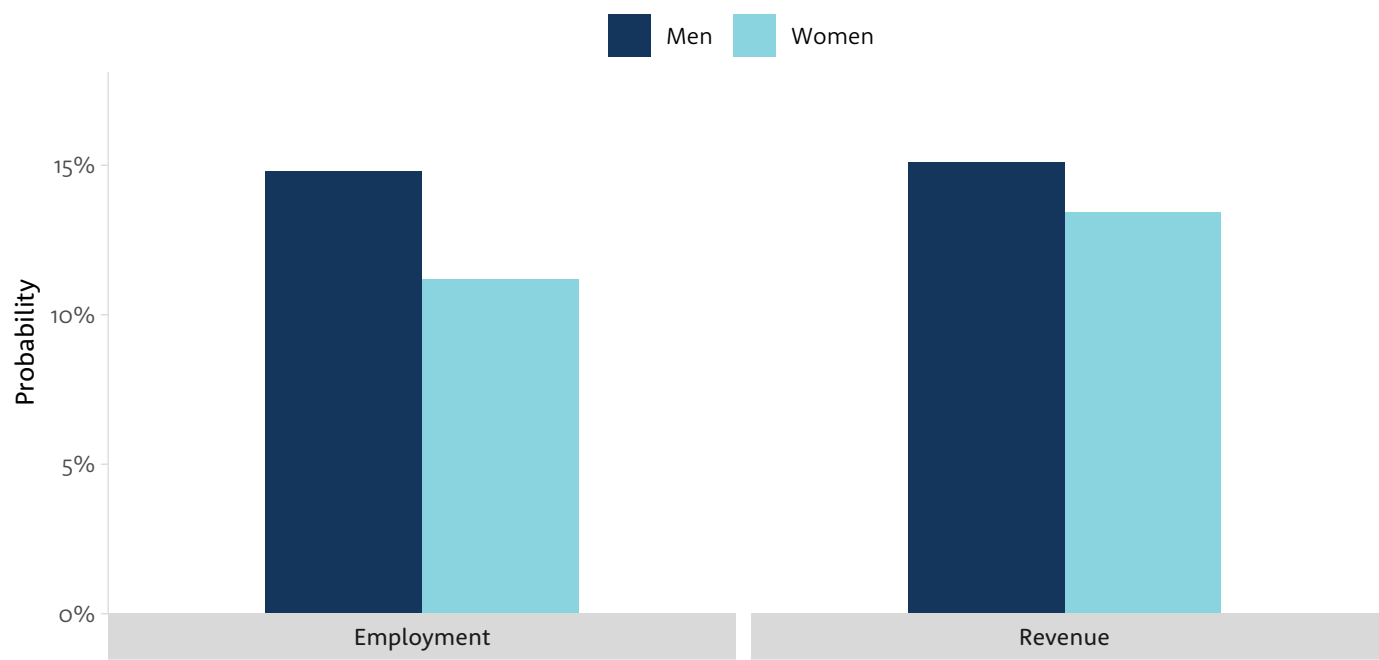


Figure shows probabilities for employment- and revenue-based scale-ups.
Source: Survey on Financing and Growth of Small and Medium Enterprises

Figure SI.7: Probability of becoming a scale-up given firm innovation in 2016

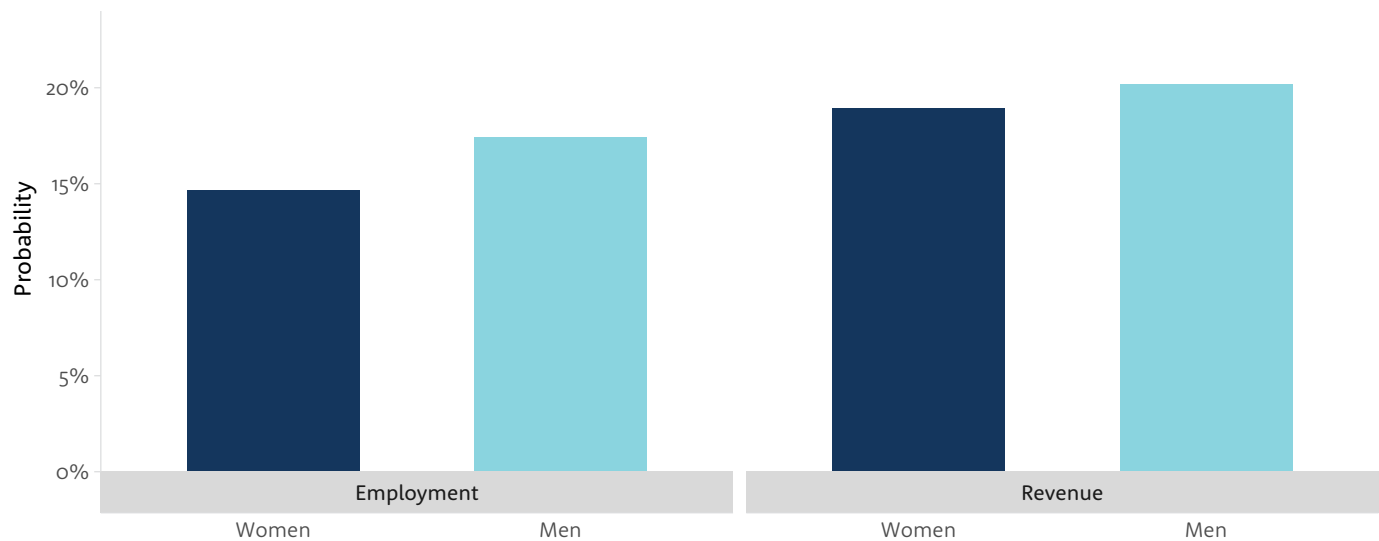


Figure shows probabilities for employment- and revenue-based scale-ups.
Source: Survey on Financing and Growth of Small and Medium Enterprises

Figure SI.8: Probability of becoming a scale-up given intellectual property in 2016

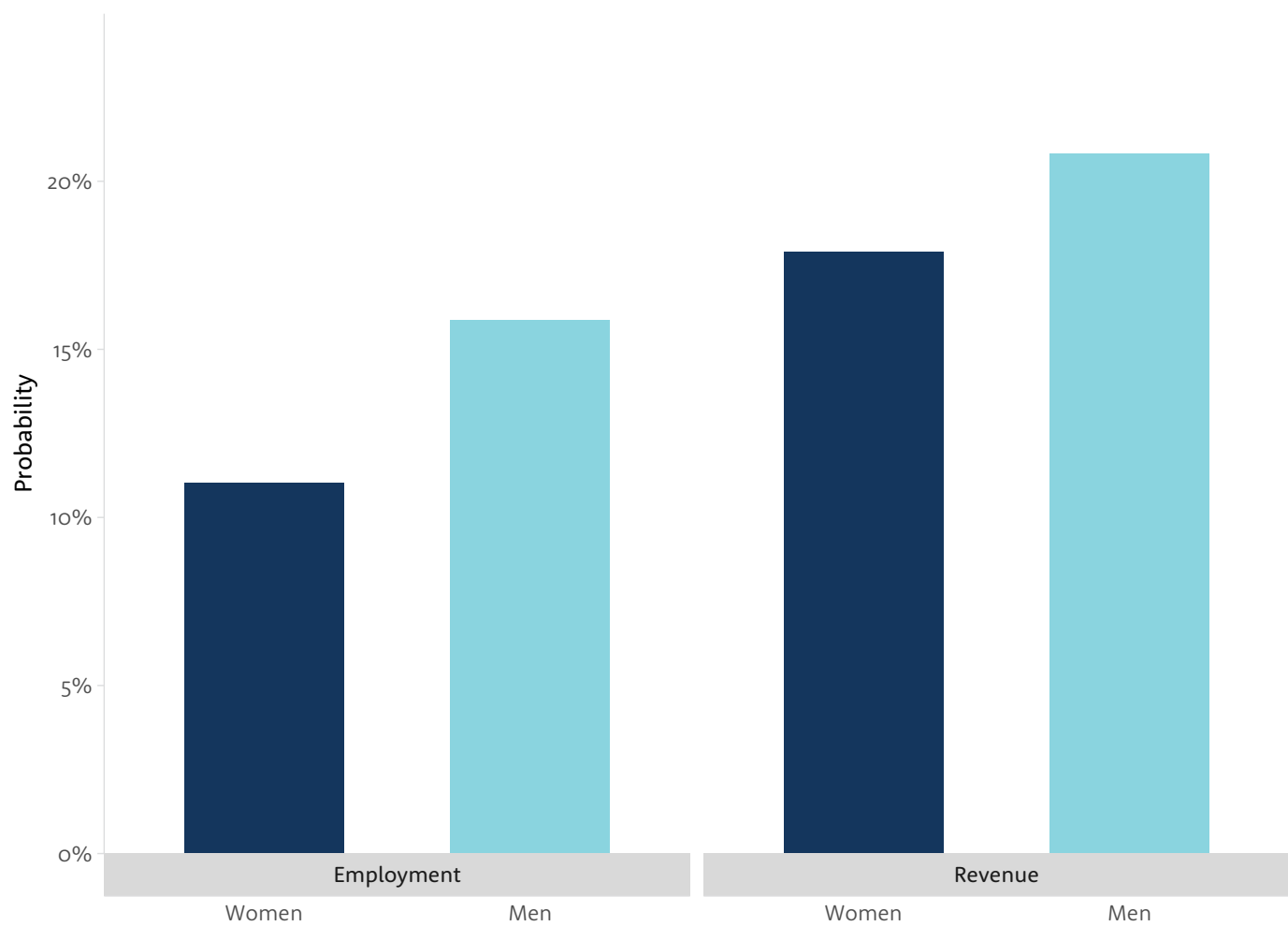


Figure shows probabilities for employment- and revenue-based scale-ups.
Source: Survey on Financing and Growth of Small and Medium Enterprises

APPENDIX D: REGRESSION MODEL SPECIFICATIONS

As noted in the report, we focused on estimates obtained from the model specifications with controls. Here, we provide the baseline models. There is no substantive difference between the models with controls and those without.

BASELINE MODELS PERTAINING TO GROWTH BARRIERS

Table SI.5: Regression specifications for employment scale-ups and growth barriers

	Logit		OLS	
	(1)	(2)	(3)	(4)
Recruitment Challenges	-0.06 (0.32)	-0.06 (0.06)	3.04* (1.52)	2.01 (1.55)
Cost of Regulations & Tax	0.003 (0.08)	0.11 (0.09)	-4.71* (2.1)	-3.23 (2.20)
Competition Concerns	-0.24*** (0.07)	-0.22** (0.08)	4.48** (1.83)	4.28* (1.88)
Financing Barriers	0.44*** (0.07)	0.30*** (0.07)	-6.59*** (1.94)	-5.69** (1.97)
Share of Women Ownership	0.09 (0.18)	0.09 (0.19)	-34.34*** (4.85)	-28.59*** (4.98)
Lagged Employment	NA	NA	0.17*** (0.02)	0.14*** (0.02)
Constant	-2.18*** (0.22)	-1.38*** (0.34)	80.82*** (5.8)	251.31*** (41.8)
Industry dummies	No	Yes	No	Yes
Province dummies	No	Yes	No	Yes
Birth cohort	No	Yes	No	Yes
N	3,44	3,113	3,216	3,089
R ²			0.04	0.09
Adjusted R ²			0.04	0.08
F Statistic			22.85	12.80

The dependent variable is an indicator of whether a firm is an OECD revenue scale-up, across a variety of specifications. Parameter estimates are reported with associated Odds Ratio reported whenever the estimates are significant. (*): Significant at 5 percent levels, (**): Significant at 1 percent levels, (***): Significant at 0.1 percent levels.

Table SI.6: Regression specifications for Revenue Scale-ups and Growth Barriers

	Logit		OLS	
	(1)	(2)	(3)	(4)
Recruitment Challenges	0.06 (0.05)	-0.05 (0.06)	-0.02 (0.03)	0.01 (0.03)
Cost of Regulations & Tax	-0.18* (0.08)	-0.05 (0.08)	-0.14*** (0.04)	-0.08* (0.04)
Competition Concerns	-0.08 (0.07)	-0.07 (0.07)	0.20*** (0.03)	0.14*** (0.03)
Financing Barriers	0.37*** (0.06)	0.23*** (0.07)	-0.23*** (0.04)	-0.19*** (0.04)
Share of Women Ownership	-0.13 (0.17)	-0.06 (0.19)	-1.01*** (0.1)	-0.75*** (0.09)
Lagged Employment	NA	NA	0.16*** (0.01)	0.08*** (0.01)
Constant	-2.03*** (0.20)	-1.38*** (0.34)	13.69*** (0.2)	15.66*** (0.79)
Industry dummies	No	Yes	No	Yes
Province dummies	No	Yes	No	Yes
Birth cohort	No	Yes	No	Yes
N	3,170	3,095	3,163	3,089
R ²			0.12	0.21
Adjusted R ²			0.12	0.21
F Statistic			73.9	36.3

The dependent variable is an indicator of whether a firm is an OECD revenue scale-up, across a variety of specifications. Parameter estimates are reported with associated Odds Ratio reported whenever the estimates are significant. (*): Significant at 5 percent levels, (**): Significant at 1 percent levels, (***): Significant at 0.1 percent levels.

BASELINE MODELS PERTAINING TO EXPORT INTENSITY

Table SI.7: Regression specifications for employment scale-ups and export intensity

	Logit		OLS	
	(1)	(2)	(3)	(4)
% Revenue From Export	0.38 (0.22)	0.19 (0.26)	46.51*** (6.38)	48.98 (7.09)
Share of Women Ownership	0.16 (0.17)	0.14 (0.19)	-32.08*** (4.84)	-27.2*** (4.95)
Lagged Employment	NA	NA	0.16*** (0.01)	0.13*** (0.02)
Constant	-2.07*** (0.07)	-1.25*** (0.26)	70.68*** (2.09)	245.3*** (41.3)
Industry dummies	No	Yes	No	Yes
Province dummies	No	Yes	No	Yes
Birth cohort	No	Yes	No	Yes
N	3,244	3,113	3216	3,089
R ²			0.12	0.21
Adjusted R ²			0.12	0.21
F Statistic			73.9	36.3

Table SI.8: Regression specifications for revenue scale-ups and export intensity

	Logit		OLS	
	(1)	(2)	(3)	(4)
% Revenue From Export	0.81*** (0.20)	0.50* (0.23)	1.29*** (0.13)	1.37*** (0.13)
Share of Women Ownership	-0.06 (0.17)	0.02 (0.19)	-0.95*** (0.10)	-0.72*** (0.09)
Lagged Employment	NA	NA	0.17*** (0.01)	0.08*** (0.01)
Constant	-1.89*** (0.07)	-0.45*** (0.263)	13.17*** (0.16)	15.47*** (0.78)
Industry dummies	No	Yes	No	Yes
Province dummies	No	Yes	No	Yes
Birth cohort	No	Yes	No	Yes
N	3,170	3,095	3,163	3,089
R ²			0.13	0.23
Adjusted R ²			0.13	0.22
F Statistic			153.4	45.6

The dependent variable is an indicator of whether a firm is an OECD revenue scale-up, across a variety of specifications. Parameter estimates are reported with associated Odds Ratio reported whenever the estimates are significant. (*): Significant at 5 percent levels, (**): Significant at 1 percent levels, (***): Significant at 0.1 percent levels.

BASELINE MODELS PERTAINING TO INTELLECTUAL PROPERTY HOLDINGS

Table SI.9: Regression specifications for employment scale-ups and IP holdings

	Logit		OLS	
	(1)	(2)	(3)	(4)
IP Holdings	0.09 (0.11)	0.07 (0.12)	30.3*** (2.90)	29.3*** (3.13)
Share of Women Ownership	0.14 (0.18)	0.13 (0.19)	-31.5*** (4.79)	-28.0*** (4.91)
Lagged Employment	NA	NA	0.16*** (0.02)	0.13*** (0.02)
Constant	-2.07*** (0.09)	-1.27*** (0.28)	61.4*** (2.38)	230.6*** (41.1)
Industry dummies	No	Yes	No	Yes
Province dummies	No	Yes	No	Yes
Birth cohort	No	Yes	No	Yes
N	3,244	3,113	3,216	3,089
R ²			0.07	0.11
Adjusted R ²			0.06	0.10
F Statistic			75.2	18.6

Table SI.10: Regression specifications for revenue scale-ups and IP holdings

	Logit		OLS	
	(1)	(2)	(3)	(4)
IP Holdings	0.33** (0.10)	0.26 (0.12)	0.63*** (0.06)	0.47*** (0.06)
Share of Women Ownership	-0.09 (0.17)	-0.02 (0.19) _v	-0.97*** (0.10)	-0.76*** (0.09)
Lagged Employment	NA	NA	0.17*** (0.01)	0.09*** (0.01)
Constant	-1.95*** (0.08)	-0.54*** (0.24)	13.0*** (0.16)	15.1*** (0.78)
Industry dummies	No	Yes	N	Yes
Province dummies	No	Yes	No	Yes
Birth cohort	No	Yes	No	Yes
N	3,170	3,095	3,163	3,089
R ²			0.13	0.22
Adjusted R ²			0.13	0.21
F Statistic			159.65	43.9

The dependent variable is an indicator of whether a firm is an OECD revenue scale-up, across a variety of specifications. Parameter estimates are reported with associated Odds Ratio reported whenever the estimates are significant. (*): Significant at 5 percent levels, (**): Significant at 1 percent levels, (***): Significant at 0.1 percent levels.

