SELECTION COMMITTEES AND THE ACCELERATION OF WOMEN-LED VENTURES

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ABSTRACT

Entrepreneurship scholars are increasingly paying attention to the antecedents and consequences of the entrepreneurial gender gap, with increasing focus on ways to mitigate generally negative consequences for women entrepreneurs. We consider how a proliferating phenomenon—start-up accelerators—can help mitigate the gender gap in entrepreneurship by creating an environment that through better representation of women, mitigates bias in the selection of women entrepreneurs. Using data describing around 2,500 applicants to 49 different social innovation accelerators across the world, we consider how heterogeneity in the shares of women selectors is associated with the selection of women-led ventures into accelerator programs. Our analyses suggest that programs with greater shares of women selectors tend to attract more women applicants, yet accept women-led teams at lower rates. While women selectors are more prone to select women-led teams, it appears that increasing the number of women selectors also expands the size of selection committees, and larger committees—perhaps because it is harder to come to consensus about non-traditional applicants—tend to be more selective with respect to women entrepreneurs. These results illuminate limits to the actions of gender diverse selection committees in implementing structural interventions to address the gender gap in entrepreneurship.

Keywords: gender, entrepreneurship, accelerators, social enterprise, selection committees

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INTRODUCTION

Increasing attention—both in the scholarly literature and in the world of policy makers and practitioners—is being paid to the gender gap in entrepreneurship (Amoros and Bosma 2013, Coleman and Robb 2009, Kanze et al. 2018, Lee and Huang 2018). What was once assumed to be a merit-based system for encouraging and rewarding entrepreneurs is now understood to operate in gendered ways that in many cases disadvantage women founders (Ahl and Marlow 2012, Brooks et al. 2014, Carter et al. 2003, Ding et al. 2006, Guzman and Kacperczyk 2019, Kaplan and VanderBrug 2014, Scott and Shu 2017). This bias stems from the fact that gender is an instantly salient cultural frame that shapes our behavior and judgments, often devaluing the feminine contribution in particular in masculinized contexts (such as finance and entrepreneurship) (Botelho and Abraham 2017, Enloe 2013, Ewens and Townsend 2019, Niessen-Ruenzi and Ruenzi 2018, Ridgeway 2009, Ridgeway and Smith-Lovin 1999). Studies of diversity in organizations highlight the penalties the women pay in their efforts to participate in the economic system where, for example, success is seen as not conforming to gender expectations (Eagly and Karau 2002; Heilman 2001; Heilman, Wallen, Fuchs and Tamkins 2004).

As Jennings and Brush (2013) point out in their recent review, the main focus of the first 30 years of research in women's entrepreneurship has been in documenting these gendered outcomes. Even with the increasing acknowledgement of the disadvantages that female entrepreneurs face, there has been less research to understand structural interventions for how these biases might be mitigated. Thus, progress has been slow, with the number of female-led startups receiving venture capital funding in the U.S. stalemated at around 7% or less for the last decade or more (Brush, Carter, Greenwood, Greene and Hart 2004).

One of the most important gating factors is the process by which women-led ventures are selected into various opportunities to access resources: angel investors or venture capitalists select some ventures to pitch ideas and then choose to give funds to some of these and not others; banks choose to give loans to

some entrepreneurs but not others; innovation incubators and accelerators pick some applicants to participate in their programs but not others. Research suggests that gender biases may be particularly acute at these selection points. While many practicing venture capitalists have argued that this is because women propose lower quality ventures, scholars have shown that even controlling for quality, decision-makers devalue women-led ventures (Brooks et al, Bigelow et al). To mitigate this bias, both scholars and practitioners have recommended increasing the number of women on selection committees.

In our study, we examine the impact of having a critical mass of women on selection committees in shaping entrepreneurial outcomes for women-led ventures. We focus specifically on selection committees in social innovation accelerators deciding on which applicants will be accepted to participate in an acceleration program. Entrepreneurship accelerators—which provide cohorts of entrepreneurs training, mentoring, networking opportunities and, often, seed funding in intensive, time-limited, "boot camp" programs—are meant to provide specific learning and supports to new ventures such that they are able to thrive (Cohen and Hochberg 2014, Winston Smith and Hannigan 2014)(Cohen et al. 2018, Yu 2016). Therefore, being selected to participate in them should provide advantages while being excluded from them might set a new venture back.

While a few studies, all using the context of university accelerators, have found almost no benefits for women entrepreneurs from accelerator program (Lyons and Zhang 2017, Scott and Shu 2017, Treanor and Henry 2010), these analyses have not distinguished the effects of acceleration from the effect of the selection process into acceleration. In our study, we examine how the gender distribution of the selection committee is associated with differences in the acceptance rates of women relative to men entrepreneurs. Our conceptual model thus aims to explain whether and why there are systematic differences in acceptance rates to social-innovation accelerators for women-led and men ventures based on the heterogeneity in the share of women on the selection committee.

Because women selectors are more likely to understand the types of businesses women start, and discuss them as legitimate ventures in selection meetings, we expect improvements in selection rates for women entrepreneurs as the share of women selectors increases (Greenberg and Mollick 2017). While

there is theoretical support for the expectation that increasing shares of women selectors should correlate with higher acceptance rates for women applicants (Kanter 2006)(Kanter 1977), the empirical evidence is limited (van den Brink et al. 2010). Some studies have reasoned that this is because men on selection committees change their behavior as the share of women increases (Bagues et al. 2017). Other studies suggest that the types of women invited into selection committees are not systematically likely to favor women applicants (Roth 2004). A third category of studies suggest that the conditions under which women applicants are being considered bears greater influence upon selection outcomes; for instance, if women applicants are viewed as non-stereotypical and / or sub-par candidates, the whole sample of women applicants will be selected at lower rates independent of the gender of the selectors (Campero and Fernandez 2019, Triana et al. 2013). These mixed empirical findings suggest that our theoretical understanding of the gender dynamics and impact of selection committees is far from resolved.

To test our theory, we use a longitudinal sample of more than 2,500 ventures that applied to 49 social-innovation accelerators across developed and developing countries from the years 2013-2015 from the Social Enterprise @ Goizueta Entrepreneurship Database (Roberts and Lall 2019). The appeal of these data is that they capture all ventures who applied to the programs, those that were selected to participate, and reports on subsequent performance for a substantial sub-sample of ventures both that participated and did not participate. We complement this venture-level data with additional collection of accelerator-specific information through a survey, archival research and interviews to understand whether and when accelerators can be a tool for improving entrepreneurial outcomes for women entrepreneurs. We capture a number of variables describing program activities, including the numbers of women and men on selection committees.

Perhaps because of the increased attention to the ways that women are excluded from entrepreneurship, one-third of the programs we studied indicate that they have an explicit focus on women's empowerment. We were interested to see whether these accelerator programs had differential effects on the selection and acceleration of women-led ventures. While it is not a one-to-one correlation, these programs were also more likely to have a higher share of women on their selection committees. Our

findings show that accelerators focused on achieving women's economic empowerment did indeed attract proportionally more women entrepreneurs to apply. Yet, surprisingly, controlling for quality, women-led entrepreneurial teams are selected at lower rates (as compared to men-led ventures), highlighting the presence of possible selection bias against women entrepreneurs.

While the marginal benefit of more women on the selection committee is associated with better acceptance rates for women entrepreneurs, these women-heavy selection committees also tend to be larger, which instead is associated with women being selected at a systematically lower rate. Together, these findings highlight the tradeoffs of having more women selectors for women entrepreneurs in our sample and raise implications about the role of selection committees in mitigating the gender bias in entrepreneurship. The good intentions of accelerator programs that want to improve women's economic inclusion may have perverse selection effects: attracting more women into applying but not giving them equitable opportunities to benefit from acceleration. As women apply in greater numbers, they also get rejected in greater numbers, which may confirm their social expectations about not belonging in a traditionally male-dominated domain such as entrepreneurship (Brands and Fernandez-Mateo 2017). These results highlight the point of entry as the critical point of bias in the entrepreneurial pipeline.

DATA & METHODS

Setting: Social-Innovation Accelerator Programs

We examine systematic differences in patterns of selection of women-led and men-led teams that applied to 49 different social enterprise accelerator programs. These programs span 11 different countries, with 55% located in North America and the remaining 45% in emerging market countries in Africa, South America, and Asia. Furthermore, 33% of the programs have a mandate to help women entrepreneurs achieve better outcomes.

The social enterprise space is a useful context for study because it tends to attract more women entrepreneurs than the high-tech, "Silicon Valley" style entrepreneurship. Social entrepreneurship can be considered "gendered female" in that gendered cultural beliefs link women with caring and communalism in the economy (Dimitriadis et al. 2017, Eagly and Steffen 1984, Themudo 2009). In our dataset, 48% of

the applying ventures have at least one woman on the founding team, 20% are led by a woman, and 14% are all women teams. These numbers are higher than those found in more "traditional" entrepreneurship and small business spaces (Lee and Huang 2018). For example, the ICIC survey of 8 high tech incubators and accelerators found an average of 20% of ventures include women owners; similarly, the US Census Bureau Survey of Business owners in 2012 found 20% of privately-held firms with paid employees had one or more women owners (JPMorgan Chase and ICIC 2016).

Sample

To create the dataset for analysis, we combine multiple sources of data. The primary analysis occurs at the level of the entrepreneurial venture where we use data from a global survey of applicants to social enterprise accelerators across the world collected by the Entrepreneurship Database Program at Emory University (Roberts and Lall 2019, Yang et al. 2019). These data have several attractive features suited to answering questions about gendered processes in entrepreneurship. First, they document and thus allow us to control for a wide variety of measures of quality for all of the ventures (founding team members' genders, founding team experience, founding team demographic characteristics, prior financial performance, and numerous venture features such as sector, intellectual property, etc.). Second, these surveys were administered to all applicants, thus our data comprise information about both accepted and rejected ventures from all 49 of the programs. The average acceptance rate was 18.6%. This is quite a bit higher than the rates at some top hi-tech accelerator programs who accept 0.6-2.0% of applicants (Cohen et al. 2018, Yu 2016), but in the range reported in other studies of social innovation (Chen 2019). Third, follow up surveys of subsequent financial performance were administered to all of the ventures. The response rate for the follow up survey was extremely high: 74% for those ventures that participated in the accelerator programs and 50% for those ventures not selected. In addition, the differences between those that filled out the follow up survey and those that did not are statistically indistinguishable with respect to the main variables of interest (see Appendix)

We collected additional survey, archival and interview data on the accelerator programs themselves. The surveys asked general questions about whether the accelerator had a focus on women's

economic empowerment, about their focus on early vs. late stage ventures and expectations about financial and social performance of the ventures in their programs. It also asked specific questions about the processes for recruiting applicants (including sources of applicants such as networks, referrals chamber of commerce, etc.), selecting participants (including who was on the selection team and their gender, selection criteria, and selection processes), and conducting the program (who delivered the program, gender of mentors and staff, funding options offered to participants). The response rate was 63% (31 of the 49 programs). To complement and validate the survey data and complete as many of the variables for as many of the programs as possible, we also collected archival data from the program websites, newspaper articles and press releases. We were also able to triangulate our findings with interviews with program managers for 11 of the programs, in which we asked about their approaches to attracting, selecting, and accelerating ventures.

There are some important limits to these data, however. In some cases, we were not able to find appropriate archival data to complement survey responses. In other cases, respondents did not fill out responses to all of the questions. Therefore, the number of programs we can consider is decreased for some analyses. Checks on the omitted programs on observables do not suggest any substantive differences with those included. Combining these multiple sources of data, we create a primary sample for analysis of the selection processes that comprises over 2,500 ventures that applied to accelerator programs between 2013 and 2015.

Measures

Dependent Variables

We start by conducting an exploratory analysis to examine whether there are baseline differences in the application rates by which women apply to various accelerator programs. A weakness in the data from the standpoint of our inquiry is that we do not have data on a comparison set of ventures that did not apply to any of the accelerator programs (but were part of an "at-risk" set). Therefore, it will be harder for us to assess the degree to which different accelerators attract different sets of applicants net of the population of new ventures in the area. However, we can examine baseline differences in application rates by gender

and consider the degree to which differences in outcomes are driven by the ratio of women-led ventures applying to programs. We will focus on differences in ratios of men and women applicants by accelerator in an accelerator-level analysis. Therefore, we used *Women-led Venture Share* which calculates the count of women-led ventures applying to each program divided by the count of applications.

The primary analyses consider how different shares of women selectors are correlated with the likelihood of selection into an accelerator program. Correspondingly, the primary outcome variable is *Participated,* which is an indicator that a venture was selected and participated in the accelerator program[1]. We also conduct additional exploratory analyses, which examine the degree to which acceleration is associated with improvements in performance for the ventures. These analyses use data from the follow up survey, for which we have for a subset of all applicants both that participated and those that did not as described above, to calculate the log of *Revenue Change* one year after the acceleration program (and in robustness tests, log of *Philanthropy Change*).

Independent Variables

Our primary explanatory variable is *Women Led* which captures whether an entrepreneurial venture is led by a woman or not (if the venture has over 50% women founders, we consider this venture to be women led). The Social Enterprise Database includes information on the top three founders for each applicant. The majority of the ventures listed either one (22%), two (34%), or three founders (31%).[2] Using this method of assessing women led teams, our sample has 21% women-led ventures which is comparable to other samples of new ventures in the social innovation space (Lee and Huang 2018). Our results are robust to other methods of calculating this measure, including changing the percentage of women

[1] The overwhelming majority of ventures that were accepted into accelerators programs also participated in the programs, thus we consider acceptance and participation to be equivalent. However, we only have the count of those that participate.
[2] A minority of the sample listed four or more founders amounting to 13% of the overall sample but none of these bigger teams had any female founders, thus all women-led ventures comprise three or fewer founders. Thus, most women-led ventures in the sample are either a woman who is a sole founder, a two-woman team, or at least two women on a three-person team.

members of the team from as low as 30% up to 70% and to an analysis on solo-founder ventures only where the gender of the team leader is unambiguous.

For our theoretical construct of interest, we use several different measures of the number and percent of women, men, and total selectors to understand how these different measures associated with the likelihood of participation. For the exploratory analysis to examine differences in application rates by women-led ventures to different types of accelerator programs, we start by identifying those with a *Women's Empowerment* focus (whether the accelerator has a stated focus on women's empowerment). Next, we consider how different features of the selection committee associate with the acceptance rates of women-led entrepreneurial ventures. The primary focus of the analysis is to understand how women selectors influence the selection process. Thus, we measure both the percentage of women selectors using *Percent Women Selectors* and the raw numbers of women selectors using *No. Women Selectors*.

Control Variables

We also control for a number of features at the venture and accelerator levels that may influence the likelihood of applying to a program, being selected to participate and ventures' subsequent performance. At the venture level, we assure to the best of our ability that the effects we observe regarding venture outcomes could not be explained by underlying quality differences between women-led and men-led ventures. We include measures for *For Profit* (binary measure where for-profit is coded as 1 and not-for profit or unknown is coded as 0); *Founder CEO* (prior CEO experience is coded as 1 and the absence of CEO experience is coded as 0); intellectual property *IP Dummy, Founder Education* (measured as the count of the number of degrees possessed by the founding team); and prior financial success in the form of dollars raised from *Philanthropy Since Founding, Revenues Since Founding,* and *Debt Since Founding.*

At the accelerator level, we examined other factors that might be correlated with preference for women entrepreneurs. Because staged "pitching" of ventures is known to be a type of masculinity contest (Balachandra et al. 2013, Brooks et al. 2014) where women are disadvantaged, we included a dummy for whether the accelerator used a *Selection Pitch*. Because research suggests that gender stereotypes tend to be activated when there is more ambiguity in decision making (Gorman 2006), we controlled for whether

the accelerator program was primarily focused on *Early Stage Ventures*. We also coded for whether the accelerator programs had specific expectations about financial or social performance—*Financial Return Expected* and *Social Outcomes Expected*. Research suggests that women may differ in their taste for competition as compared to men (Niederle and Vesterlund 2007) or may not thrive in competitive contexts because of gender norms that sanction competitive behavior by women (Barbulescu and Bidwell 2013). To account for the degree to which the accelerator environment is competitive, we included a dummy for whether the program concluded by selecting a small number of participants to receive *Competitive Funding* or instead offered funding, e.g., grants or loans to all participants *(Non-competitive Funding)* (some programs offered neither). Similarly, we included an indicator for *Vertical Competition* because we assumed that programs that operated in a single industry sector (e.g., fintech) might be more competitive because the ventures would all be seeking resources in the same space. Since 45% of the accelerator programs were situated in developing economy contexts where gender norms are often different from in developed countries (Thébaud 2015, Vossenberg 2013), we added an *Emerging Market* indicator. We also controlled for the total *Number Applications* received.

Table 1 shows that the main variables are relatively uncorrelated with each other, suggesting no major concerns in terms of multicollinearity.

-- Insert Table 1 about here --

Analysis

We conduct the analysis in three stages. The unique data we collected allows us to get closer to understanding gender and entrepreneurship acceleration than scholars have in the past. Yet, some constraints make the ideal analytical framework impossible. We have worked to address the empirical concerns as directly as possible and have conducted multiple robustness tests to better assess the reliability of the patterns we observe.

We start by examining application rates for women-led teams at the accelerator level of analysis (because we do not have any data on ventures that did not apply). Because we have 49 observations, and to simplify the interpretation of the results, we conduct this analysis using ordinary least squares (OLS)

with *Women-led Venture Share* variable, and Poisson models with *Number of Women Led Teams* variable. Results are similar with other model specifications. Due to limits on degrees of freedom, we use *Revenues Since Founding* as a proxy for the broader set of "quality" controls.[3] While only broadly indicative of a pattern, the findings are important for helping to interpret the analyses at the venture level for the remaining two phases of acceleration: selection and impact of acceleration.

For analyzing selection, we move to the venture-level of analysis to examine the probability of participation in an accelerator program. To simplify the interpretation of these results, and in particular the interaction terms, we conduct this analysis using OLS with standard errors clustered at the program level. Results are similar with a logit regression. We control for both venture quality and characteristics of the accelerators that might lead them to under- or over-select ventures.

Finally, we consider the impact of acceleration on subsequent performance one year later. Because the outcomes of interest, *Revenue Change* (as well as *Philanthropy Change* in the robustness tests), are quite skewed, we use Poisson models, which are implemented robustly in Stata 15, to account for the skewed distribution of the dependent variables (Wooldridge 2014); results are consistent with OLS models. We include dummies to control for unchanging features of the *Year*, *Sector,* and *Selectivity* of the accelerator program that may also influence ventures' likelihood of application and acceptance into a program, and thereafter, their subsequent performance. While this extensive set of controls allows us to address some of the heterogeneity in the likelihood of participation as well as changes in revenues and philanthropy that may arise for reasons other than those identified by the main explanatory variables, these analyses do not allow us to assess causal relationship.

RESULTS

Women Entrepreneurs Applications to Accelerators

In Table 3, women do apply in higher rates (about 15%) when programs highlight their interest in women, suggesting one mode by which programs can encourage greater participation. While not surprising, this

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[3] Replacing this variable with other quality controls gives consistent results.

will have important implications for selection and acceleration impact. Descriptively, there is a wide range of application rates by women-led teams from 2.6% to 67%. The dependent variables are *Women Venture Share*, which is the share of women-led applications (in Models 1 and 2) and the *No. Women-led applicants* (in Models 3 and 4) who apply to the accelerator program (controlling for the total number of applicants). In Models 2 and 4, we control for different features of the accelerators that would be known to applicants and might shape women's expectations about the degree to which the accelerator would be welcoming of them while also including a limited control for venture quality (*Revenues since founding*).

-- Insert Table 2 about here --

Women Selectors and Participation

The primary focus of these analyses is to ascertain whether and how women selectors influence the likelihood that women-led teams are accepted into an accelerator. As a baseline, in Model 1, we start with a simple model of the main control variables and find a lower (but not significant) likelihood of *Women Led* teams' selection into programs. This suggests that on average, there is no systematic difference in selecting men or women entrepreneurs. Given that we examine a social innovation context, this result is not entirely surprising. Looking at the venture level controls, unsurprisingly, higher quality ventures (more educated, IP, more debt) are accepted at higher rates, while applicants to programs that have more requirements (financial outcome, social outcome) are less likely to be accepted.

-- Insert Table 3 about here --

Based on the results in Table 3, we know that both greater numbers and shares of women apply to *Women's Empowerment* programs and thus, in Model 2 we consider whether there are differences in the acceptance rates of women-led teams when comparing *Women's Empowerment* and other types of programs. The results suggest that although *Women's Empowerment* programs are associated with a higher acceptance rate—these programs are less selective on average than other programs—they are *less* likely to accept women entrepreneurs as compared to men entrepreneurs, by about 6 percentage points. Given that the average acceptance rate is about 18.1%, this is also practically meaningful. We can see the magnitude of this effect more clearly in Figure 1—while *Women's Empowerment* programs accept more

ventures of all types—including women-led ventures as compared to other programs—they accept women led ventures at a significantly lower rate than men-led venture. This is particularly surprising because these programs explicitly solicit women applicants, and yet appear to reject women at a greater rate. Thus, even in the context of social innovation, programs having the mandate to promote women's entrepreneurship appear to show selection practices consistent with gender bias.

-- Insert Figure 1 about here --

To decompose why this type of gender bias arises, we consider how women and men selectors influence the selection rates of women-led programs. In Model 3, the interaction of *Women Led* with *Percent Women Selectors* shows that a 10% increase in women selectors is associated with an increase in acceptance rates of women led teams of 0.66%, which includes a 0.29% increase specifically for women-led teams, providing support for the notion that representation amongst evaluators can be associated with improved outcomes for underrepresented minorities.

While the results around the percentage of women selectors seems intuitive, *Women's Empowerment* results do not. Programs that claim to focus on women, also reject women entrepreneurs at a higher rate than male entrepreneurs—why? First, it is worth noting that the difference in share of applications by women-led teams to different programs is substantial: 36% of the applicants to the 18 Women's Empowerment focused programs are women-led teams versus 15% of the applicants for the other 31 programs. Thus, even if acceptance rates were the same for men and women, a greater number of women-led teams would be rejected in raw numbers from Women's Empowerment focused programs.

Thus, while women are being solicited to apply to programs that claim to care about them, they are also being rejected at higher rates. One factor that may contribute to this effect is that women apply to programs with larger committees. In non-Women's Empowerment programs, the average selection committee is 13.5 members. For the Women's Empowerment programs, where the majority of women entrepreneurs in our sample apply, the average committee size is 35. The results also suggest that accelerators with larger selection teams tend to be tougher on applicants and have lower selection rates. Combining these findings suggests that women might be getting rejected at higher rates because they tend

to apply to programs where there are more women selectors, but that these committees appear to add women without removing men, creating a whole different set of selection dynamics. That is, consistent with research on diverse teams (Cronin and Weingart 2007, Hoogendoorn et al. 2014), while increased diversity may improve deliberation, it may also make decision-making more difficult. Importantly, these findings highlight that accelerator programs that state a preference for women do accept a larger number of women, but at a lower rate.

This underselection of women-led teams means that there is a bias in which kinds of teams get to participate in acceleration. T-tests show that those programs focused on women's empowerment have the highest bar for participation for women-led ventures, accepting ventures that are on average much higher quality than the men-led ventures. The opposite is true for programs that do not have a particular focus on women's empowerment. Here, we see that the average quality of women-led teams is lower than that of the men-led teams. As we will see below, this may shape the degree to which acceleration can actually help ventures.

Acceleration Analyses

Does the under-selection of women entrepreneurs matter? An examination of subsequent performance can help us assess the impact. To robustly identify the impact of acceleration on venture performance, ideally, we would conduct a two-stage analysis or have a natural experiment that would exogenously influence selection into different programs. However, we do not have strong instruments that can predict the likelihood of participation but not *Revenue Change* and *Philanthropy Change*. Additionally, weak instruments that do not pass the exclusion restriction provide less accurate results than OLS models (Wolfolds and Siegel 2019). Thus, while we recognize that we are unable to measure the causal effect of acceleration on performance, we focus instead on incorporating multiple correlational analyses in our empirical strategy.

We first examine the association between participation and changes in revenues for the full sample as well as a matched sample (Table 4). Model 1 suggests that Participation is associated with a 20-unit (22 percentage point) increase in logged revenues compared to non-participating ventures.

Furthermore, Women Led teams on average experience a 6 unit (6 percentage point) increase in their revenues as compared to men-led teams, but this effect is not associated with participation in the accelerator programs. As shown in on Model 2, acceleration benefits are associated with men-led teams only.

It is possible that women-led teams—who, as we showed above, are selected at a lower rate—are somehow selected using different criteria and thus do not benefit from acceleration. To test this hypothesis, we create a matched sample of ventures that differ only in participation into accelerator programs and are distributionally equivalent along seven quality measures such as prior revenues, sector and CEO background (the Appendix shows a comparison of these factors across treated and untreated samples). The match statistics suggested that this was a good match: the participating and non-participating ventures are indistinguishable on observables.[4] In Models 3 and 4, there is a positive association between *Participated* and revenue change, but not for the women-led teams. Additionally, women entrepreneurs tend to experience a greater jump in revenues (varying between 13 to nearly 17 units or about 14 percentage points) as compared to male entrepreneurs. There appears to be no support for the idea that participation is associated with a performance boost for women entrepreneurs. The women-led teams who were not selected to participate do just as well as their female counterparts who participate.

-- Table 4 about here --

These results are robust to the use of logged philanthropy dollars as the dependent variable (results available in Appendix). They are also robust to a variety of different specifications (as detailed in the Appendix).

Importantly, it appears that the relative under-selection of women into women's empowerment focused accelerators creates a missed opportunity. Many ventures who would be qualified to be selected

[4] We matched the observations exactly—i.e. we did not coarsen the data using bins—which led to extremely strong matches between the control (not participated in accelerator programs) and treatment groups (participated in accelerator programs).

into acceleration are not able to take advantage of the resources, funding, advice and networks that accelerators should be able to supply. These women-led ventures who are not selected do reasonably well on their own (without acceleration), but they may be precisely the ones that would benefit the most from participation. As a result, it is hard to conclude anything about whether "acceleration" works or not because the selection process may be determining outcomes.

DISCUSSION AND CONCLUSIONS

Taken together, our analyses suggest that much of the bias arises at the selection stage, and therefore it is difficult to assess the degree to which any acceleration intervention might be helpful for women-led ventures. In spite of this, we observe women entrepreneurs—largely driven by those that were not selected—improving their revenue performance to a greater degree than men entrepreneurs. This highlights the tremendous opportunity that accelerator programs are potentially foregoing by under selecting women entrepreneurs into their cohorts.

While some accelerators have focused attention on women's empowerment, their good intentions in adding women to selection committees may be backfiring, as they do not seem to be reducing the number of men, which leads to large committees that are tougher on women-led teams. This may explain the mixed findings in other studies of gender on selection committees (Bagues et al. 2017, van den Brink et al. 2010) by highlighting unintended consequences of formulaically adding women to these deliberative bodies.

In addition, this study is pertinent to scholarship in the field of entrepreneurship because entrepreneurship typically occurs in multiple stages: first an individual or team decides to become an entrepreneur, second, the entrepreneur or team makes choices about managing their business, and third they get selected to receive resources (acceleration, funding, advice, or other). Later, we know if they are able to succeed and perform. Our study allows us to disentangle the selection stage from the performance stage by using a unique dataset that through a cross-national dataset makes an important contribution to understanding global trends with regards to the gender gap in entrepreneurship.

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Table 1: Descriptive Statistics

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Women led	1																		
Participated	0.002	1																	
Women's Empowerment	0.191	0.242	1																
Tot. No. Selectors	0.25	-0.092	0.495	1															
Pct. Women Selectors	0.147	0.025	0.208	0.56	1														
No. Women Selectors	0.229	-0.06	0.392	0.957	0.647	1													
No. Men Selectors	0.113	-0.12	0.428	0.329	-0.177	0.04	1												
Selection Pitch	-0.049	-0.05	-0.207	-0.137	0.001	-0.103	-0.137	1											
Financial Return Exp.	-0.052	-0.4	-0.241	0.189	-0.014	0.115	0.276	0.043	1										
For Profit	-0.138	0.041	-0.138	-0.185	0.007	-0.088	-0.35	0.022	0.02	1									
Founder CEO	-0.09	-0.02	-0.016	-0.045	-0.061	-0.073	0.083	0.023	0.08	-0.011	1								
Founder Education	-0.135	0.028	-0.006	-0.055	-0.191	-0.118	0.195	-0.037	0.093	0.015	0.172	1							
IP Dummy	-0.08	0.01	-0.087	-0.125	0.047	-0.104	-0.092	-0.009	0.055	0.133	0.097	0.052	1						
Social Outcomes Exp.	-0.09	-0.274	-0.205	-0.769	-0.52	-0.869	0.179	0.015	0.294	-0.03	0.079	0.052	0.103	1					
Philanthropy Since Founding	0.039	-0.009	-0.003	-0.004	-0.021	-0.005	0.001	-0.009	0.008	-0.046	0.014	-0.019	-0.016	0.007	1				
Revenues Since Founding	-0.005	-0.009	-0.012	-0.009	0.002	-0.006	-0.01	0.005	0.008	-0.027	0.022	-0.025	0.015	0.008	0	1			
Debt Since Founding	0.013	-0.002	0.017	-0.023	0.02	-0.013	-0.038	-0.017	0.014	-0.008	0.008	0.033	0.023	0.019	0.184	0	1		
No. Apps	0.08	-0.046	0.063	0.047	-0.117	-0.032	0.263	-0.182	0.077	-0.062	0.016	0.069	-0.063	0.047	0.001	-0.007	-0.003	1	
Emerging Market	-0.057	0.114	0.147	-0.364	-0.402	-0.266	-0.388	0.1	-0.136	0.106	0.006	0.046	-0.024	0.067	0.019	-0.012	0.03	0.084	1
Mean	0.2	0.231	0.328	23.524	0.42	12.878	10.646	0.107	0.791	0.783	0.456	12.247	0.457	0.894	1.3E+5	3.4E+6	3.8E+4	9.6E+1	0.484
S.D.	0.4	0.422	0.469	34.393	0.156	32.506	10.013	0.31	0.407	0.412	0.498	8.044	0.498	0.308	4.6E+6	1.3E+8	6.2E+5	5.5E+1	0.5
Min	0	0	0	3	0.1	1	0	0	0	0	0	0	0	0	0	0	0	2	0
Max	1	1	1	200	1	200	40	1	1	1	1	30	1	1	2.7E+8	7.9E+9	3.0E+7	2.5E+2	1

TABLE 2: Application to Accelerators

Dependent Variable	(1)	(2)	(3)	(4)
	Women Venture Share		No. Women-led Applicants	
Women's Empowerment	0.148***	0.147***	9.599***	9.110***
	(0.049)	(0.049)	(2.899)	(3.102)
Selection Pitch		-0.002		1.517
		(0.057)		(3.680)
Financial Return Expected		-0.012		-1.710
		(0.048)		(2.960)
Social Outcomes Expected		-0.112		-3.681
		(0.068)		(4.384)
Competitive Funding		-0.049		-4.499
		(0.066)		(4.208)
Non-competitive Funding		-0.083		-2.558
		(0.056)		(3.679)
Early Stage		-0.050		-2.927
		(0.054)		(3.797)
Emerging Market	-0.097**	-0.091**	-6.244**	-6.441**
	(0.037)	(0.040)	(2.375)	(2.618)
Revenues Since Founding	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Number Applications			0.285***	0.282***
			(0.025)	(0.029)
Sector + year dummies	Yes	Yes	Yes	Yes
Observations	49	49	49	49
R-squared	0.526	0.622	0.813	0.829

Standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$

TABLE 3: Selection into Accelerators

DV: Participated	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Women led	-0.006	0.017	0.024	0.001	-0.001	0.008	0.027
	(0.018)	(0.017)	(0.052)	(0.020)	(0.030)	(0.026)	(0.056)
Women's Empowerment	0.152***	0.168***	0.148***	0.212***	0.213***	0.148***	0.165***
	(0.031)	(0.033)	(0.036)	(0.045)	(0.045)	(0.031)	(0.039)
Women led*Women's Empowerment		-0.061*					-0.055
		(0.033)					(0.046)
Percent Women Selectors	0.348**	0.352**	0.363***			0.356**	0.358***
	(0.149)	(0.147)	(0.095)			(0.149)	(0.096)
Women led*Percent WS			0.293**				0.338**
			(0.124)				(0.148)
No. Women Selectors				0.004**			
				(0.002)			
Women led*No. WS				0.004*			
				(0.002)			
No. Men Selectors					-0.004*		
					(0.002)		
Women led*No. MS					-0.004*		
					(0.002)		
Total No. Selectors	-0.004***	-0.004***	-0.004***	-0.007***	-0.003***	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.000)	(0.001)	(0.001)
Women led*Total No. S						-0.000	-0.000
						(0.000)	(0.001)
CONTROLS							
Selection pitch	0.027	0.027	0.027	0.021	0.020	0.027	0.027
	(0.029)	(0.030)	(0.031)	(0.032)	(0.032)	(0.030)	(0.031)
Financial return exp.	-0.162***	-0.161***	-0.166***	-0.122**	-0.121**	-0.166***	-0.163***
	(0.045)	(0.045)	(0.045)	(0.059)	(0.059)	(0.045)	(0.046)
For profit	0.019	0.019	0.020	0.020	0.019	0.020	0.020
	(0.014)	(0.014)	(0.016)	(0.017)	(0.016)	(0.014)	(0.016)
Founder CEO	0.017	0.017	0.017	0.017	0.017	0.017	0.017
	(0.021)	(0.021)	(0.015)	(0.015)	(0.015)	(0.021)	(0.015)
Founder Education	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
IP dummy	0.029*	0.028*	0.029**	0.032**	0.032**	0.029*	0.028**
	(0.015)	(0.015)	(0.014)	(0.014)	(0.014)	(0.015)	(0.014)
Social outcomes exp.	-0.518***	-0.526***	-0.519***	-0.385***	-0.384***	-0.525***	-0.528***
	(0.094)	(0.095)	(0.062)	(0.079)	(0.080)	(0.092)	(0.064)
Phil. Since Founding	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Rev. Since Founding	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Debt Since Founding	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number Applications	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Emerging Market	0.024	0.025	0.026	0.007	0.007	0.026	0.026
	(0.018)	(0.018)	(0.020)	(0.020)	(0.020)	(0.019)	(0.020)
Selectivity, Sector & Year Dummies	YES	YES	YES	YES	YES	YES	YES
Observations	2,521	2,521	2,521	2,521	2,521	2,521	2,521
R-squared	0.212	0.213	0.213	0.209	0.209	0.213	0.213

Figure 1: Aggregate predictive margins for men-led and woman-led teams, for participation in accelerator program based on Women's Empowerment
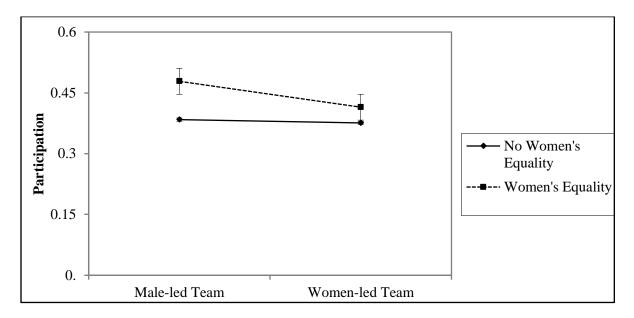
TABLE 4: Acceleration & Revenues: All Ventures

DV: Revenue Change	(1)	(2)	(3)	(4)
	UNMATCHED		MATCHED	
Participated	0.200***	0.213***	0.087**	0.067
	(0.027)	(0.030)	(0.042)	(0.047)
Women Led	0.059**	0.077**	0.167***	0.132**
	(0.027)	(0.031)	(0.046)	(0.058)
Participated x Women Led		-0.064		0.087
		(0.058)		(0.087)
Accelerator Controls				
Women's Empowerment	-0.025	-0.026	0.122	0.125
	(0.055)	(0.055)	(0.104)	(0.104)
Vertical Competition	-0.070	-0.071	0.083	0.097
	(0.065)	(0.065)	(0.124)	(0.124)
Non-competitive Funding	0.018	0.018	0.152	0.149
	(0.063)	(0.063)	(0.116)	(0.116)
Competitive Funding	0.119**	0.119**	-0.065	-0.071
	(0.058)	(0.058)	(0.100)	(0.101)
Selection Pitch	-0.075	-0.074	-0.079	-0.074
	(0.055)	(0.055)	(0.098)	(0.098)
Early Stage Ventures	-0.003	-0.003	-0.054	-0.050
	(0.040)	(0.040)	(0.076)	(0.076)
CM Women Selectors	0.207***	0.205***	0.163**	0.166**
	(0.046)	(0.046)	(0.082)	(0.082)
Financial Return Expected	-0.208***	-0.206***	-0.263**	-0.258**
	(0.069)	(0.069)	(0.118)	(0.118)
Social Outcomes Expected	0.240**	0.239**	0.979***	0.972***
	(0.114)	(0.114)	(0.209)	(0.209)
Emerging Market	0.092***	0.093***	0.143**	0.139**
	(0.031)	(0.031)	(0.060)	(0.060)

Number Applications	-0.001	-0.001	-0.008***	-0.008***
	(0.002)	(0.002)	(0.003)	(0.003)
Venture Controls				
For profit	0.171***	0.171***	0.240***	0.243***
	(0.028)	(0.028)	(0.050)	(0.050)
Founder CEO	0.112***	0.112***	0.079**	0.080**
	(0.022)	(0.022)	(0.040)	(0.040)
Founder Education	0.001	0.001	0.003	0.003
	(0.001)	(0.001)	(0.003)	(0.003)
IP Dummy	0.144***	0.144***	0.307***	0.307***
	(0.022)	(0.022)	(0.039)	(0.039)
Philanthropy Since Founding	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Revenues Since Founding	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Debt Since Founding	0.000	0.000	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	1.105***	1.100***	0.477**	0.487**
	(0.128)	(0.128)	(0.236)	(0.237)
Year + Sector + Selectivity Dummies	Yes	Yes	Yes	Yes
Observations	1,479	1,479	502	502
R-Squared	0.0458	0.0459	0.0850	0.0852