

Discrimination and Access to Capital: Experimental Evidence from Ethiopia *

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Capital is a key accelerator for business growth, yet female-owned businesses have less access to capital than their male-owned counterparts. One explanation may be gender discrimination by financial providers. We study whether financial providers in Ethiopia discriminate against female-owned businesses in the context of a large business plan competition. Using an audit study design in which applicants' gender was randomly assigned, we recruited 84 financial providers from thirteen lending institutions to evaluate real businesses that applied to the competition. In a sample of over 3,600 evaluations, we find no evidence that financial providers considered business owner gender when evaluating businesses, either for the competition prizes or for consideration for a loan at their own institution. Our confidence intervals are tight enough to exclude any meaningful gender differences in these capital allocation decisions. In an incentivized belief elicitation, financial providers' beliefs about future business performance also did not differ by business owner gender. However, measuring the businesses' survival and profit after 18 months, gender was in fact predictive of business profits, even after conditioning on financial providers' evaluations of business quality. Our results suggest that gender discrimination may not be a primary barrier in access to capital, and we discuss the implications of our findings for equity and profit maximization.

*This study was funded by the Center for Effective Global Action and in collaboration with the Entrepreneurship Development Center in Ethiopia.

1 Introduction

Capital is a key accelerator for business growth and productivity (Blattman, Fiala and Martinez, 2014). Yet, female business-owners in many low-income countries are less likely to obtain formal financing and earn lower profits (The World Bank Group, 2019; Hardy and Kagy, 2020). One explanation may be gender discrimination by credit providers. Observable differences between male and female entrepreneurs explain only a small portion of the profit gap, suggesting gender discrimination may be an important, yet understudied, factor inhibiting the success of female entrepreneurship (Buvinić, 2018). If loan officers and other funding sources discriminate in their evaluation of female-owned businesses, this may reduce female entrepreneurs' ability to obtain capital, which would in turn reduce the performance of female-owned businesses.

In addition to equity considerations, the use of gender in capital allocation decisions may have implications for profit maximization. Because financial providers do not have perfect information about business performance, they may use gender as a proxy for identifying high-performing businesses. In this case, efforts to increase capital for female businesses may reduce financial providers' accuracy in targeting businesses to maximize returns to capital.

These equity and profit-maximization implications depend on whether discrimination exists, whether financial providers believe that gender predicts business performance, and whether gender is in fact an accurate proxy for predicting business success. Our study takes each of these in turn : we identify if financial providers discriminated by gender, if this was aligned with providers' beliefs about differences in business performance by gender (i.e., statistical discrimination), and if those beliefs were accurate (i.e., inaccurate versus accurate statistical discrimination).

We study these questions in the context of a large business plan competition in Ethiopia. To apply to the competition, business owners completed an application form designed to mimic information commonly captured in initial loan applications. 84 financial providers

(spanning thirteen different financial institutions) that regularly review business loans were recruited to evaluate the 915 real businesses that applied to the competition. We use an audit study design to causally identify whether these financial providers discriminated against female business-owners. On each application given to a financial provider for evaluation, the gender of the business owner was randomly assigned to be shown as either male or female.¹ Each business was evaluated multiple times, and each financial provider evaluated multiple businesses.

We find no evidence that financial providers discriminated against female-owned businesses. Financial providers' evaluation scores, which determined the awarding of capital in the competition, did not statistically differ by the randomly assigned gender of the business-owner. Similarly, when given the opportunity to forward the application for loan consideration at their own financial institution, financial providers were equally likely to recommend female-owned businesses. Moreover, the point estimates of gender differences in both capital decisions are small: less than .03 standard deviations in the competition score and less than .01 percentage points in forwarding of the application to their own lending institution. Our sample size of over 3,600 evaluations allows us to obtain tight standard errors and rule out meaningful differences in these capital allocation decisions by gender. We find no evidence for discrimination against female-owned businesses across a battery of robustness tests, nor as a function of business-owner or business characteristics (e.g., marital status, education, household size, male-dominated industry, profits).

Consistent with the lack of gender discrimination in these capital allocation decisions, we find that financial providers expected similar future business performance (i.e., future survival, profits, and assets) for both genders in an incentivized belief elicitation. These predictions had no bearing on the capital awards, and were incentivized for accuracy. Gender did not predict financial providers' beliefs about future business performance in either of two scenarios: one where businesses received no additional capital and another where businesses

¹The application form also included additional characteristics of the business owner and the business that would be typically included in an initial loan application.

did receive additional capital. By comparing these two predictions, we find no evidence that financial providers expected the return to capital to differ based on business-owner gender. This highlights that the lack of gender discrimination is consistent with financial providers acting on a belief that business-owner gender is not predictive of business performance, conditional on observing relevant information about a business' performance typically found in loan applications.

We show that financial providers were attentive and thorough in their evaluation of businesses, confirming that the lack of responsiveness to gender does not reflect general inattention to the task. Financial providers' scores for the business plan competition and decision to forward the applicant to their own institution responded to other information in the application form, such as profits, assets, and projected growth. We also find that these two decisions are highly correlated with each other, that financial providers' decisions are highly correlated with their expectations of the business' future performance, that financial providers' decisions are highly predictive of future business performance, and that in the vast majority of cases, financial providers expected more successful future performance with capital than without. These patterns highlight the validity of the financial providers' evaluations and capital allocation decisions.

Despite financial providers' beliefs, we do find evidence that the gender of the business owner is predictive of business performance. A key innovation of our study is being able to link our discrimination results with a follow-up survey of competition applicants 18 months after the competition. We find that business profits were significantly lower among female-owned businesses, even after accounting for the evaluation of the businesses by the financial providers. This suggests that the gender of the business owner did have predictive power, above and beyond the evaluations provided by the financial providers. This gender gap remains even if we account for the observable quantifiable information provided in the original application, and when using the initial profit measures at the time of the competition. Our results suggest that though financial providers' lack of gender discrimination is consistent

with belief-based behavior, those beliefs were not accurate.

Our study design has several key features that bolster its internal and external validity. First, by using real businesses, we accurately capture the distribution of characteristics of businesses that apply for capital. Second, the competition is judged by experts that are regularly involved in determining capital allocation decisions through loans in the financial industry. Third, we incentivize the capital allocation decisions and belief elicitation of future business performance predictions by these financial provider experts. Fourth, each business application is evaluated multiple times and each financial provider evaluates multiple businesses. This allows us to identify the effect of discrimination using fixed effects for each business and each financial provider, ensuring that the type of business or financial provider does not drive our results. Finally, we connect the results of the audit study with a follow-up survey of the businesses. This allows us to connect financial providers' behaviors and beliefs on gender with actual gender differences in business performance.

Our study builds on a significant literature exploring gender gaps in capital access. For example, in Ethiopia, male managers are more likely to take out loans, and tend to borrow significantly more than female managers (The World Bank Group, 2019). Though gender gaps in financial access have been documented in many contexts, understanding what drives such gender gaps is difficult to disentangle. In particular, it is difficult to distinguish discrimination from differences in demand or supply decisions based on correlates of gender (e.g., less collateral, lower profits).

We contribute to a growing literature aimed at cleanly identifying discrimination in capital allocation in low and middle income countries. To identify discrimination, earlier studies have estimated the continued importance of gender in survey data after controlling for a businesses' observable characteristics and have found mixed results.² We are aware of only

²For example, Muravyev, Talavera and Schäfer (2007) find that female-managed firms are less likely to obtain a bank loan across 34 countries, primarily representing Central and Eastern Europe. In contrast, Aterido, Beck and Iacovone (2013) find that across Sub-Saharan Africa, the gender gap in using formal bank credit, and being rejected conditional on applying for a loan, disappears after controlling for the firm characteristics. Beck and Cull (2014) find some evidence that female-owned firms are more likely to have bank loans in Africa, likely reflecting survival bias. See Klapper and Parker (2011) for a more thorough

three other papers that use an experimental approach to identify the role of discrimination in explaining gender gaps in credit markets, two in Turkey and one in Chile.³ Using lab-in-the-field experiments, Alibhai et al. (2019) find evidence of discrimination on the intensive margin of capital provision (i.e., loan size) and (Brock and De Haas, 2019) find discrimination in stricter conditions placed on credit offers. Montoya et al. (2020) study consumer credit rather than business finance in Chile, and find evidence that female borrowers are less likely to be approved due to taste-based discrimination. We are not aware of other studies that identify gender discrimination in the context of a business plan competition, an important and growing method of capital allocation in its own right.

We build on these studies by rigorously testing for discrimination in a high-stakes context: a business plan competition with large prizes from Ethiopia’s flagship agency for entrepreneurship promotion. We observe real capital allocation decisions and compare them to financial providers’ underlying beliefs, measured using an incentive compatible elicitation. Finally, we provide a novel contribution by studying the implications of these decisions for financial providers’ profit maximization, based on actual business performance 18 months after the competition.

We also contribute to a limited literature on gender discrimination in low-income countries more broadly. There is a significant literature documenting gender gaps in a wide variety of outcomes in low-income countries (see Duflo (2012) and Jayachandran (2015) for a review). However, gender discrimination has been studied in particular contexts such as early childhood investments (Jayachandran and Kuziemko, 2011; Bharadwaj and Ladakhawala, 2013) and political leadership (Beaman et al., 2009), but evidence is more limited in labor market and employment settings. And while there is a large literature on labor market discrimination in high-income countries (Bertrand and Duflo, 2017), in previous work in Ethiopia, we show that the patterns of gender discrimination in low-income country labor markets may be

review.

³A related literature explores credit decisions when clients and loan officers share traits, which suggests that discrimination may be an underlying phenomenon (Fisman, Paravisini and Vig, 2017; Beck, Behr and Madestam, 2017).

quite different from high-income countries (Ayalew, Manian and Sheth, 2021). We further contribute to this larger discrimination literature by showing that capital allocation decisions are consistent with financial providers' beliefs about business performance by gender. Because we do not observe discrimination or gender differences in beliefs, we can rule out both taste-based and belief-based (i.e., statistical) discrimination. Relatively few papers on discrimination distinguish between these mechanisms, particularly in developing countries (Guryan and Charles, 2013; Ayalew, Manian and Sheth, 2021).

The rest of the paper proceeds as follows. Section 2 provides details of the context in which we implement our study and details of our methodology. In Section 4 we present our findings, and Section 5 discusses implications for policies that promote increased female access to capital and concludes.

2 Context and Experimental Design

2.1 Ethiopian context

Ethiopia generally performs poorly on global indicators of gender equality. For example, in the World Economic Forum's 2016 Global Gender Gap Report, Ethiopia ranked 109 of 144. This low rank was driven by their rank on sub-indices related to education and labor market outcomes: they ranked 106 on economic participation and opportunity and 132 on educational attainment. These stark gender differences suggest that gender discrimination (both belief-based and alternative mechanisms such as social norms or prejudice) may be present in various contexts in Ethiopia.

After the agricultural sector, the most common way women participate in the labor force in Ethiopia (and in Sub-Saharan Africa) is as entrepreneurs. This highlights the importance of gender gaps in capital and business performance. Based on data from the Ethiopia Socioeconomic Survey, the World Bank (2019) documents that male business managers⁴ are 3.7

⁴A business manager is defined as an individual within a household in charge of the decisions regarding

percent more likely to borrow and borrow approximately 50 percent more than their female counterparts. There is increasing acknowledgement of these gender gaps, which has driven policy responses. For example, Ethiopia has a financial inclusion policy that specifically targets gender gaps and many lending institutions are encouraged to lend to female clients.

2.2 The Business Plan Competition

The Entrepreneurship Development Institute (EDI)⁵ is a key agency tasked by the government of Ethiopia to increase entrepreneurship and economic growth, with specific attention to the needs of women entrepreneurs. A key element of EDI’s mission is to improve access to finance.

In 2019, EDI launched a business plan competition, EthioSpur, to provide capital and other awards to promising businesses. We partnered with EDI to study whether financial providers, recruited to judge the competition, discriminated against female-owned businesses during the judging process. Business plan competitions are an increasingly common method to stimulate entrepreneurial growth in developing countries. For example, during the time of our own competition, we were aware of two other business plan competitions in Ethiopia itself.

EthioSpur targeted existing entrepreneurs to help support firm growth. The eligibility criteria for the competition were that the applicant: (i) was the majority owner of an existing business in Ethiopia; (ii) the business was operational for at least four months prior to the competition; and (iii) had an idea to expand or scale the business.⁶ The competition’s prizes were 300,000 ETB, 220,000 ETB, and 140,000 ETB for the top three businesses. In addition, the top 20 businesses were awarded with media and marketing coverage, and the top 100 were awarded with a “fast track to credit.”

the earnings from an enterprise.

⁵At the time of the intervention, the Entrepreneurship Development Institute was named as the Entrepreneurship Development Center.

⁶Businesses were not required to have a license at the time of the application, but were informed that they would be required to get a business license to receive any prizes.

2.3 The Application Form

The application form was designed to reflect the criteria used by financial providers when making capital lending decisions. We interviewed financial providers from nine different financial institutions on the criteria they used when evaluating businesses, and reviewed their standard loan application forms. The application form collected information on current business characteristics (e.g., industry, profits, years of operation, etc.) and a business expansion plan (e.g., description of plan, expected revenue). The form also collected additional information on the business owner (e.g., marital status, age, gender).⁷

To ensure the application was widely accessible, the competition was promoted on a national level via social media, SMS, and targeted outreach by EDI staff. The application was designed to be simple and available in multiple languages, and could be submitted online, in hard copy, or via email. EDI also provided assistance in completing the application to a subset of entrepreneurs that had previously used their services. To ensure that applicants were truthful, they were informed that all information would be audited and verified for winning businesses. If a business was found to have provided false or misleading information, they would not only be disqualified from the competition, but also from all future EDI initiatives. All applications were digitized and translated into English, with the exception of the detailed business plan narrative if it was submitted in Amharic, the most prevalent local language in Ethiopia.

2.4 Applicants

The competition attracted 915 businesses. Table 1 provides summary statistics for the business owners that applied to the competition. 44 percent of applicants were female-owned businesses. The sample is highly educated: we observe that nearly 50 percent report having a bachelors degree or higher, though this varies by business owner gender. We similarly see that female-owned businesses have more children (1.95 vs 1.62), though we see smaller

⁷The complete application form can be found in Appendix A.

differences by gender on marital status (54 percent are married or co-habiting). Both genders report being a household head⁸ and having high self-reported risk preference (8.64).

Table 2 provides summary statistics on the business performance of the applicants. Since many aspects of business performance are highly skewed, we report medians, means, and standard deviations. The median years in the industry is 5 years for both male and female businesses. The median profit for the previous month was 15,000 Birr (500 USD), but female businesses report nearly 5000 Birr (USD 167) less than their male counterparts. We see similar gaps in the median number of employees (3 versus 2), assets (247,500 Birr vs 220,981 Birr), and liabilities (4,450 Birr vs 3,000 Birr). These gender differences are discussed in greater detail in Section 4 of the paper. Below the median, we report the mean and standard deviation. The mean is generally much higher than the median, highlighting that there is a significant right tail of larger businesses that applied to the competition. Table 1 and Table 2 suggest that the majority of businesses that applied to the competition were relatively small, but likely more successful and larger than the median small business: applicants are much more highly educated than the average Ethiopian, and the median number of employees is 3.

By design, our sample comprises existing businesses seeking capital to grow their businesses. This is the relevant margin for beliefs and behaviors of loan officers. Among our sample, in the initial application, 32 percent of businesses report having applied for a loan in the previous 12 months, and 10 percent report receiving that loan. We do not see male businesses being more likely to have applied for a loan in the last 12 months, no statistically significant difference in the amount of loan for which they applied (and point estimate is in favor of women), and no statistically significant difference in whether they received the loan (though the point estimate is not in favor of women). Similarly, the Kolmogorov-Smirnov tests finds no statistical difference in the amount requested by gender.

One concern with an audit study approach is that despite randomizing the business

⁸This includes sharing the status of household head with a spouse.

owner’s gender on the application form, if sectors are gender specific, then the type of business may be reveal the business owner’s true gender. Table 3 decomposes the businesses into their respective industries. Though industries differ in their representation of female business owners, all industries have both genders represented. Furthermore, our local partners at EDI were not concerned that businesses were gendered to the extent that the type of business would reveal the true gender of the business owner. This also runs counter to a mechanism for discrimination where evaluators are responding to the gender of the business owner being uncommon in the industry.

In addition, because broad industries may not reflect gendered businesses, we asked the local survey firm we hired to digitize the application materials to have two employees review each business description/application and categorize a business as belonging predominately to women, predominately belong to men, or to neither.⁹

As a final check, the local survey firm explicitly reviewed the digitized application materials and confirmed that there was no information in any digitized form that would reveal the gender of the applicant.

2.5 Financial Providers as Judges

The competition was judged by financial providers recruited from lending institutions (i.e., banks and microfinance institutions) across Addis Ababa. Institutions were asked to provide experts that met the following criteria: (i) involved in reviewing applications seeking capital from the institution, with specific attention to urban clients, capital for business purposes, and individual applicants or enterprises (i.e., not applicants that are socially collateralized); (ii) employed as a loan officer or a member of the loan approval committee; and (iii) employed

⁹For each application, employees were requested to answer the following two questions: In your opinion, are over 90 percent of businesses that supply the main product described in B5 run by women [men] (i.e., are over 90 percent of the business owners of such businesses female [male])? In practice, the employees appeared to be more lenient than a 90 percent threshold and responded to each question with Yes, No, or Unsure . We use this question to define indicators for male or female industries for the businesses that were marked affirmative for each of these respective questions. 28 percent of applications were coded as female-dominated, 38 percent as male-dominated, 30 percent as unsure, and 3 percent were missing.

Table 1: Applicants: Mean Owner Characteristics

	(1) Total	(2) Male	(3) Female
Female	0.44 (0.50)	-	-
Bachelors Degree or Higher	0.49 (0.50)	0.56 (0.50)	0.39 (0.49)
Married/Cohabiting	0.53 (0.50)	0.54 (0.50)	0.53 (0.50)
Number of Children	1.76 (1.70)	1.62 (1.80)	1.95 (1.56)
Household Head	0.86 (0.35)	0.85 (0.36)	0.87 (0.33)
Self-Reported Risk Preference	8.64 (2.15)	8.60 (2.16)	8.69 (2.14)
Observations	911	510	401

Table reports mean and standard deviation. Self-reported risk preference ranges from 0 to 10, increasing in risk tolerance.

Table 2: Applicants: Business Median, Mean, and Standard Deviation

	(1) Total	(2) Male	(3) Female
Years in Industry	5 6.04 (4.59)	5 5.93 (4.84)	5 6.16 (4.28)
Profits (birr)	15000 182164.33 (1604381.59)	16979 292824.06 (2141166.98)	11867 43688.49 (170800.21)
Employees	3 14.79 (201.79)	3 11.09 (108.49)	2 19.44 (277.74)
Assets (birr)	240000 1760022.06 (15964599.96)	247500 2245586.07 (20855224.76)	220981 1142471.83 (5067656.09)
Liabilities (birr)	4000 644890.51 (7948469.09)	4540 1024134.42 (10621612.67)	3000 168653.27 (750248.51)
Observations	911	510	401

Table reports median, followed by mean and standard deviation in parentheses. Profits refer to reported profits from the previous month.

Table 3: Applicants: Industry Decomposition

	(1)	(2)	(3)
	Total	Male	Female
Agribusiness	0.11	0.13	0.08
Business or Personal Services	0.10	0.10	0.11
Clothing and Textiles	0.10	0.07	0.13
Construction and Infrastructure	0.08	0.11	0.05
Education and Skills Development	0.06	0.06	0.06
Food/Nutrition/Beverages	0.13	0.10	0.17
Manufacturing	0.17	0.21	0.13
Retail and Distribution	0.08	0.08	0.09
Other	0.10	0.09	0.11
Observations	900	502	398

for at least one year at the institution. Thus, just as applicants were real businesses interested in growth and capital, judges were real experts that reviewed and evaluated of loans for businesses as their primary profession.

The recruited loan officers spanned 13 different lending institutions, representing a significant portion of the institutions in the financial sector serving Addis Ababa. 14 percent were female and 65 percent were recruited from microfinance institutions. On average, the judges had been at their respective institution for five years, and in finance for 11 years.

Recruited judges were given a packet of applications in which the gender of the applicant had been randomly assigned. We describe the randomization process in the following section. This is the audit study design we use to identify the causal effect of gender discrimination on evaluation of businesses by the financial providers.

Judges reviewed the applications remotely and completed an evaluation form for each application they reviewed.¹⁰ To protect against concerns of social desirability bias, all communication with judges, including the orientation, was through the local project manager

¹⁰Judges underwent an orientation that was generally done over the phone or internet due to the COVID-19 pandemic.

who was blinded to the key question of interest and to the randomized gender assignment.¹¹ Judges were compensated 2,500 ETB for their time upon completion of their evaluations. Judges were requested to complete their review of applications in two weeks, but we granted extensions if needed.

2.6 Evaluation Form: Treatment Salience and Outcomes

The evaluation form that the financial provider completed for each reviewed business was divided into four sections (see Figure 1). Section A was designed to ensure salience of the randomly assigned gender without revealing the research question. This section asks the judge to confirm basic demographics of the applicant: ID, age, gender, total years of experience, and whether the applicant was also employed outside of the proposed business. Judges were informed that this section was used to verify that the correct application was being reviewed. In addition to ensuring that the judge was aware of the randomly assigned gender of the business-owner, we used this section as a check that the judge was paying attention to the information in the application. 98.5% of evaluations noted the gender correctly.

Section B asked the judge to provide a prediction of the business' performance in January 2021, exactly one year after the submission of applications. Importantly, the majority of the evaluations were completed only a few months prior to January 2021, so judges were well aware of the shocks in the economy, including those related to the COVID19 pandemic, at the time of their predictions. They were asked to provide these predictions for two scenarios: if the business did or did not win the competition prize. The judges predicted the likelihood of survival, monthly profit, capital stock, and number of paid employees in these two scenarios. Our interviews with financial providers indicated that a businesses' future profitability is a key metric used when deciding whether to allocate capital to a business at their institution. In addition, in an exit survey of 43 financial providers that served as judges,

¹¹The project manager was not informed about the gendered randomization until necessary for the debriefing of judges.

Confidential Evaluation of Applicant

Date of evaluation (DD/MM): _____

Judge ID: _____

Section A: Application Verification (For verification purposes only)

Application ID:
Applicant's age: <input type="checkbox"/> 18-25 <input type="checkbox"/> 26-35 <input type="checkbox"/> 36-45 <input type="checkbox"/> 46-55 <input type="checkbox"/> above 55 <input type="checkbox"/> Information is missing
Applicant's gender: <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Information is missing
Applicant's total years of experience: <input type="checkbox"/> 0-4 <input type="checkbox"/> 5-9 <input type="checkbox"/> 10-19 <input type="checkbox"/> 20 or more <input type="checkbox"/> Information is missing
Applicant employed outside of the proposed business: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Information is missing

Section B: Understanding Business Growth (For determining judge bonus only)

Suppose that the applicant receives **no capital** from the competition:

What is the probability that this business will be operational in January 2021: <input type="checkbox"/> 0-10% <input type="checkbox"/> 11-20% <input type="checkbox"/> 21-30% <input type="checkbox"/> 31-40% <input type="checkbox"/> 41-50% <input type="checkbox"/> 51-60% <input type="checkbox"/> 61-70% <input type="checkbox"/> 71-80% <input type="checkbox"/> 81-90% <input type="checkbox"/> 91-100%
Assuming that the business is operational in January 2021, provide your best estimate of: The number of operational hours in January 2021 will be: <input type="checkbox"/> Less than in January 2020 <input type="checkbox"/> Similar to January 2020 <input type="checkbox"/> Greater than January 2020
The value of the business' capital stock in January 2021: _____ Birr
The monthly profits or losses of the business in January 2021 (Only one should be filled). Monthly Profit: _____ Birr Monthly Loss: _____ Birr
The number of paid employees (excluding the owner) in January 2021: _____

Suppose the applicant receives **300,000 ETB** from the competition:

What is the probability that this business will be operational in January 2021: <input type="checkbox"/> 0-10% <input type="checkbox"/> 11-20% <input type="checkbox"/> 21-30% <input type="checkbox"/> 31-40% <input type="checkbox"/> 41-50% <input type="checkbox"/> 51-60% <input type="checkbox"/> 61-70% <input type="checkbox"/> 71-80% <input type="checkbox"/> 81-90% <input type="checkbox"/> 91-100%
Assuming that the business is operational in January 2021, provide your best estimate of: The number of operational hours in January 2021 will be: <input type="checkbox"/> Less than in January 2020 <input type="checkbox"/> Similar to January 2020 <input type="checkbox"/> Greater than January 2020
The value of the business' capital stock in January 2021: _____ Birr
The monthly profits or losses of the business in January 2021 (Only one should be filled). Monthly Profit: _____ Birr Monthly Loss: _____ Birr
The number of paid employees (excluding the owner) in January 2021: _____

If the applicant was instead given a **3-year 100,000 ETB loan**, which of the following do you believe is most likely?

<input type="checkbox"/> Applicant will repay the loan: Applicant will have enough financial resources and will repay.
<input type="checkbox"/> Applicant will strategically default: Applicant will have enough financial resources, but will still not repay.
<input type="checkbox"/> Applicant must default: Applicant will not have enough financial resources to repay the loan.

Section C: Reviewing the Applicant

Rate applicant's managerial skills: <input type="checkbox"/> very poor <input type="checkbox"/> poor <input type="checkbox"/> acceptable <input type="checkbox"/> good <input type="checkbox"/> excellent
Which do you expect that the applicant can access to cover shortfalls in demand? Check all that apply. <input type="checkbox"/> Personal savings/assets <input type="checkbox"/> Gifts/Loans from family or friends <input type="checkbox"/> Business loans from microfinance <input type="checkbox"/> Business loans from bank <input type="checkbox"/> Government assistance
Estimate the total amount of additional capital the applicant can secure (from all sources): _____ Birr
Applicant's business is most likely the primary source of income for the applicant's household? <input type="checkbox"/> Yes <input type="checkbox"/> No
Rate market demand of applicant's business: <input type="checkbox"/> very low <input type="checkbox"/> low <input type="checkbox"/> medium <input type="checkbox"/> high <input type="checkbox"/> very high

Section D: Determination of winner Overall impression will be half the final score, and value proposition and entrepreneurial credibility will be the other half of the final score. **This final score is the only measure that determines the competition winners.**
Final Score = Overall Impression + 1/2 * Value Proposition + 1/2 * Entrepreneurial Credibility.

OVERALL IMPRESSION:	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
VALUE PROPOSITION:	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
ENTREPRENEURIAL CREDIBILITY:	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10

Internal: Should applicant's information be sent to your institution for loan consideration? Yes No

Figure 1: Evaluation Form

86 percent reported that growth potential (i.e., future profits) was either an important or very important factor when determining whether to approve a loan. In addition to beliefs on future firm performance, loan repayment is another key requirement for loan approval. We therefore also asked judges explicitly about the likelihood of repayment for a 3-year loan for 100,000 ETB.

This section on beliefs was incentivized for accuracy. The judges were informed that the person with the most accurate evaluations for Section B would receive 15,000 ETB (500 USD).¹² They were also informed that their responses in this section would have no bearing on the awarding of the capital from the competition. In this way, we ensured that beliefs of business performance were not affected by a judge’s preference on how capital should be allocated.

Section C collected additional information about the judge’s beliefs about the business owner. They were asked to evaluate the business owner’s managerial skills, sources and amount of capital for the business, market demand for the business, and whether the business was the primary source of income for the household. This section was not incentivized, and was designed to shed light on potential beliefs that did not affect business performance, but could be influenced by gender and affect an evaluation of a business.

Section D was the judge’s overall score for the business. This is the key outcome that was used to determine the competition’s prizes. The judges were asked to score the business on overall impression, value proposition, and entrepreneurial credibility with a range of 1 to 10 each. This was then aggregated into a final score using the following formula: $FinalScore = OverallImpression + .5 * (ValueProposition + EntrepreneurialCredibility)$. Importantly, the financial providers were informed that this was the *only* measure that would determine the competition’s winners.

It may be the case that judges make different decisions about capital that is not sourced from their own employer or lending institution. To address this, the financial providers were

¹²The recruited judges were not informed of the exact way that accuracy would be determined. They were simply told “the judge who provides the most accurate evaluations” will receive the bonus.

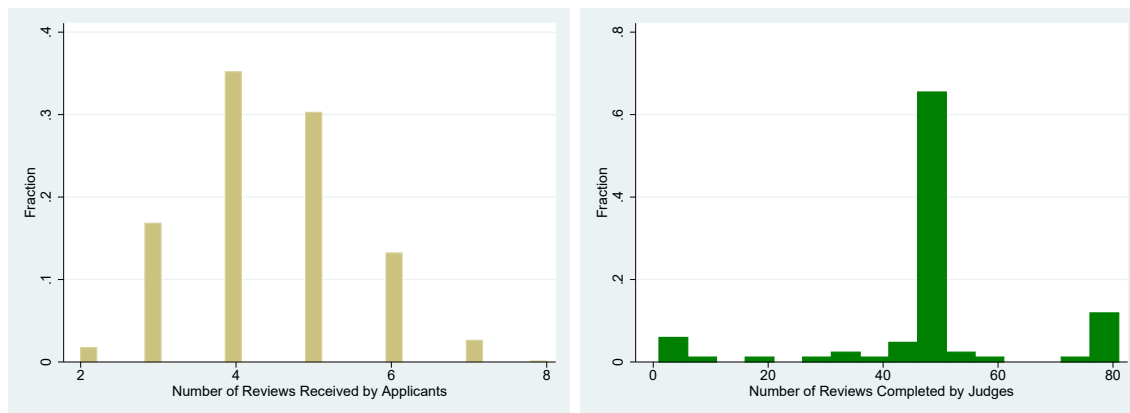


Figure 2: Reviews per Application and Evaluation per Judge

also asked whether they wanted the applicant’s information to be sent to their institution for consideration for a loan. We included this question as a proxy for capital allocation decisions from the provider’s own lending institution.

Our main outcomes of interest for capital decisions are 1) the judge’s final score from Section D, and 2) whether they requested the applicant’s information be sent to the institution for consideration for a loan.

2.7 Random Assignment

Each application was reviewed multiple times with a randomly assigned business owner gender, and each financial provider evaluated multiple applications. Figure 2 illustrates that the median number of reviews per business was 4, and that the median number of evaluations completed by judge is 48.

The random assignment of the business owner’s gender on the application form was done as follows. We created four sets of application forms from the 916 applicants (i.e., we created copies of each applicant to generate four application forms corresponding to each applicant). Each applicant was depicted as male in two of the sets and female in the remaining sets. The set in which the applicant was depicted as male was randomly determined. We then randomly ordered the application forms in each given set, such that we had a list of 3,664 application forms in random order. We then assigned 48 application forms to each judge

in order (i.e. Judge 1 was given 1 to 48, Judge 2 was given 49-97, etc.). We refer to the application forms assigned to a judge as their “application packet.” The random ordering of applicants within each set of application forms ensured that the same applicant was unlikely to be assigned more than once to the same judge. However, if it was the case that an applicant was assigned to the same judge twice, we simply dropped one of the application forms before providing the packet to the judge. Thus, each judge was given 48 application forms to review and each applicant was reviewed four times.¹³

Because of this random ordering of application forms, our causal identification is valid even if assignment is incomplete (i.e., not all packets are given to a judge) or there is attrition (i.e., judges do not complete the application forms assigned to them).¹⁴ This design feature also allowed us to rerandomize based on ongoing financial provider recruitment. Specifically, our initial randomization (as described above) was based on a sample of 75 judges. To accommodate judges who were recruited after the first 75, we randomly selected 490 applicants and repeated the random assignment process using sets of two application forms for each applicant (rather than four), and judge packets containing 49 applications (rather than 48).

Not all judges completed the review of all applicants. If a judge did not complete an entire packet, we generally reassigned it to another judge. In some instances, a packet was reassigned, but the original judge did eventually complete their evaluations. This would only affect our causal interpretation if non-completion was a function of the gender shown on the application form. Since we reassigned an entire application packet (not individual applications), this is unlikely. We confirm that non-completion was uncorrelated with the gender shown on the application form.

In practice, each judge’s application packet was divided into four different segments, where the application forms in each segment were randomly assigned. This was meant to make the review more manageable and to signal to judges to not rush through all of them

¹³We also make use of a pilot round in which applicants were reviewed up to 6 times, and judges were given 55 application forms to review; and a re-randomization to accommodate recruitment of additional judges.

¹⁴That is, the missing observations are random, by design.

at one time. We had expected that subsequent segments would be provided only after initial segments were completed. However, due to COVID-related contact restrictions, this became unsustainable, and towards the end of the evaluation period, all application forms were provided to the judge at one time. However, they were still provided in four different segments. In general, some judges did not complete all of the segments assigned to them.

Due to COVID-19, there was a delay between the submission deadline to the competition and the evaluation process, and the evaluation process itself took longer than planned. The competition closed on January 20, 2020, and evaluations were conducted from September 2020 to December 2020¹⁵. Thus, judges were aware of COVID when they scored the applications and predicted business success. Judges benefited from the delay because they had more contextual information to predict business performance in January 2021, given information on past business performance in January 2020.

We limit our primary analysis sample to evaluations in which judges completed all our pre-specified primary and secondary outcomes.¹⁶ Our primary analysis sample consists of 3,696 completed evaluations of 915 businesses by 84 financial providers. In this sample, 910 businesses were evaluated by multiple (2 to 8) financial providers, and 83 financial providers reviewed multiple applicants (2 to 79). 82 of these financial providers had variation in the gender of the applications they reviewed.

2.8 Ethical Considerations

As in all audit study designs, our methodology uses deception by randomizing the gender depicted in the application that a judge is reviewing. The justification for using deception in audit studies is that no alternative method exists to rigorously identify discrimination, as was the case in our setting. Given the scarcity of studies identifying gender discrimination in low-income country settings, we argue that the benefits of the research justified the design. The

¹⁵A few judges also returned packets after the December deadline

¹⁶Results are robust to expanding the sample to include all evaluations submitted on a given outcome of interest. We limit the analysis sample for our main specifications to ensure that results across outcomes are not driven by a change in the sample composition.

study was approved by the IRB at UC Merced. It was also approved by the Entrepreneurship Development Institute, the local organization with whom we collaborated. EDI is a highly respected institution in Ethiopia and had a reputational stake in the study. All judges were debriefed and informed after the completion of the study that demographic information was manipulated for research purposes in the applications they were reviewing. Another ethical concern with audit studies is the time spent by experts in reviewing fake materials. In our case, experts were evaluating real businesses for a real business plan competition, and they were compensated for their time.¹⁷

3 Empirical Strategy

3.1 Identifying Gender Discrimination

We estimate whether capital allocation decisions differ when the business owner was randomly assigned to be shown as male using the following estimating equation:

$$Y_{ij} = \beta_1 * RandomlyAssignedMale_{ij} + \alpha_i + \alpha_j + \epsilon_{ij} \quad (1)$$

where *RandomlyAssignedMale* indicates that applicant *i* assigned to judge *j* was shown as a male. The specification includes applicant and judge fixed effects and uses robust standard errors. We study two primary outcomes that reflect capital allocation decisions. The first outcome is the overall final score given to the application, which determined the winners of the business plan competition. The second outcome is an indicator for whether the judge selected the business application to be forwarded to their institution for consideration of a loan.

¹⁷An additional ethical concern is the scores given to the applicants for the business plan competition. If we had observed discrimination, there were two possible ways we would have proceeded: using only real gender or using only one gender when determining scores to award the competition prizes. However, since we did not observe gender discrimination, EDI chose to use all evaluations in determining the prizes.

3.2 Beliefs about Gender and Business Performance

We next estimate Eq 1 on a pre-specified set of judge predictions of future business performance in the upcoming months: survival, profits, and assets. We estimate these for the judge’s beliefs on expected business performance with and without having received additional capital. We use the differences in these predictions as a measure of the judge’s expectations on the return to capital as a function of gender.

3.3 Measuring Business Performance After the Competition

We implement an endline survey on the businesses’ performance from June to August 2021, 18 months after the close of the competition and 6 months after the completion of the evaluations. We conducted three rounds of the survey to capture monthly profits and survival (i.e., whether the business was operational at the time of the survey). In the initial survey, we also asked additional questions that reflect business performance (e.g., number of employees, capital assets), perceptions of gender discrimination, experience with theorized gender-specific constraints, and response to shocks, including experience and response to COVID-19.

We use the survey to test how well financial providers targeted the best performing businesses, and whether a business owner’s gender is a predictive factor in the performance of a business. We can compare these actual differences with financial providers’ beliefs about how a business owner’s gender affects the performance of a business.

We estimate whether there are gender differences in business performance, above and beyond the evaluations the business received in the competition, using the following equation:

$$\bar{Y}_i = \gamma_0 + \gamma_1 * Male_i + \gamma_2 * CapitalDecisionMean_i + \epsilon_i \quad (2)$$

where \bar{Y}_i is the average response from the three surveys on whether the business is operational or the inverse hyperbolic sine of the businesses’ profits. *CapitalDecisionMean* is the

average (demeaned) capital decision the business received in the competition (either the final score or being considered for a loan).¹⁸ The parameter γ_1 provides an estimate of whether being a male-business owner is predictive of successful business performance, conditional on the evaluation of the business in the competition. This comparison informs whether being a male-business owner predicts business performance above and beyond the assessment of the financial providers. In other words, once we account for the business characteristics that matter to financial providers, do businesses run by male owners have a different expected survival rate and profits?

In addition to this regression estimation, we compare the cumulative distribution function of profits by business owner gender, and test whether these distributions are statistically different from one another using the Kolmogorov-Smirnov test. This allows for a transparent non-parametric comparison of business performance by gender. We further confirm whether results are robust to using baseline information provided in the applications in place of the capital decision made by judges.

If we observe that a business owner's gender continues to predict business performance beyond baseline characteristics, then this suggests that gender information may increase the efficiency of targeting capital towards high performing businesses, though at a cost to equity. However, if gender is not predictive, then financial providers would not benefit from incorporating gender into their capital allocation decisions, and gender is not a proxy for improving capital allocation.

As the businesses in our sample did not actually receive capital, we assume that strong business performance without additional capital is a proxy for businesses' performance with capital. We confirm this assumption by showing that the predictions for business success without capital are a valid proxy for predictions for business success with capital.

¹⁸The decisions are relative to the mean decision made by the judge to account for judge fixed effects in the evaluation process.

Table 4: Causal Effect of Gender on Capital Allocation Decisions

	(1) Score	(2) Overall Impress	(3) Value Prop	(4) Entrepreneurial	(5) Loan
Male	-0.105 (0.116)	-0.0478 (0.0611)	-0.0550 (0.0626)	-0.0596 (0.0650)	0.00159 (0.0140)
Observations	3696	3696	3696	3696	3696
Female Mean	12.06	5.990	6.079	6.069	0.495

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, determined by Overall Impression (Overall Impress) + .5* Value Proposition (Value Prop) + .5*Entrepreneurial Credibility (Entrepreneurial). Each of these subscores is on an increasing scale of 1 to 10. Loan indicates whether the application was forwarded by the judge to their own institution for loan consideration. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

4 Results

4.1 Audit Study: Identifying Discrimination

We find that the randomly assigned gender of the business owner did not affect capital allocation decisions by the financial provider, neither for the capital prize in the competition nor for consideration of a loan at their own institution. Table 4, Column 1 finds that the final score, which was used to determine who would be awarded the capital, is not statistically different whether the applicant was shown as male or female. In fact, when applicants were shown as male, they received slightly lower scores. The point estimate for the difference in scores is 0.105 points (on a scale from 0 to 20), which amounts to a difference of less than .03 standard deviations. The 95 percent confidence interval for the differences in scores is similarly very small (-.337 to .127), a range of merely -.07 to .03 standard deviations. These results suggest that financial providers did not discriminate by applicant gender in the allocation of capital in the business plan competition. Columns 2 through 4 document differences in each component of the final score, we continue to find no meaningful differences by randomly assigned business owner gender.

We then turn to the decision of whether the loan officer wanted to forward the application

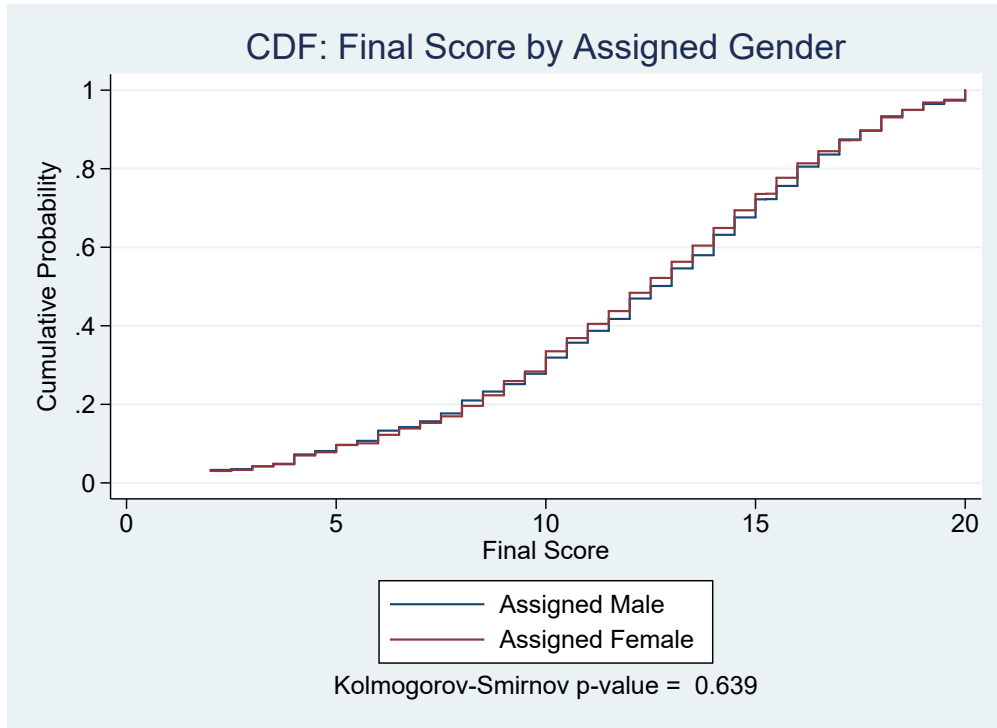


Figure 3: CDF of Final Score by Randomly Assigned Gender

to their own institution. This addresses the possible concern that decisions for a grant given by an external institution may not reflect decisions a loan officer would make for a loan in their institution. We similarly find that financial providers did not discriminate when making decisions about their own institution's capital. Randomly assigned gender did not affect loan officers' decision to consider the applicant for a loan at their own institution (see Table 4, Column 5). That is, loan officers were equally likely to recommend businesses in which the owner was randomly assigned as female or randomly assigned as male. The point estimate on the difference in recommendation is less than .01 percentage points. The 95 percent confidence interval allows us to rule out a difference of more than 3 percentage points.

The similarities we observe across both outcomes suggest that there is significant external validity across the two settings. Although a loan decision relies on the expected probability of repayment, while a capital grant does not, the probability of repayment is increasing in business performance. Moreover, in formative discussions, the loan officers themselves

indicated that the viability of the idea is important and given credit rationing, there is an incentive to allocate loans toward more promising business ideas. We also explicitly asked judges their beliefs about the applicants ability to repay a loan and find no meaningful difference in their expectations of either strategic default, or default due to lack of resources, based on randomly assigned business-owner gender.¹⁹ The standard errors for both capital allocation decision estimates are very small, allowing us to rule out any meaningful differences in how the application was treated as a function of the randomly assigned gender of the business owner.

This lack of discrimination is consistent across the distribution of business performance. Figure 3 displays the cumulative distribution functions of scores for applicants shown as male versus female. The figure highlights that throughout the distribution of business quality, randomly assigned gender had no meaningful effect on the evaluation of the businesses for the competition. A Kolmogorov-Smirnov test fails to reject equality of these two distributions, with a p-value of 0.639. Similarly, we find no differences in the variance of final scores by gender.²⁰

We generally find no evidence of gender discrimination conditional on the business owner's marital status, education, or number of children (see Table 5). We do observe gender discrimination against female widows for consideration of a loan. This is consistent with female widowhood signaling being uniquely vulnerable and having access to fewer resources.

We next consider the possibility of heterogeneity by business performance and business industry. Even if there is no gender discrimination on average, if high-performing female business owners face discrimination, this could explain why they are not able to grow further. We study heterogeneity by business performance, as measured by profits and size. Similarly, if female business owners face discrimination in male-dominated industries that tend to

¹⁹In 19 and 13 percent of evaluations, judges believed the applicant would be unable to repay a loan or strategically default, respectively. Differences by randomized gender were .7 and .1 percent. The loan was described as being for 3 years for 100,000 ETB.

²⁰We test for differences in variance using the the STATA command `sctest` and `robvar`, reflecting the proposed tests by Levine (1960) and the alternative specifications proposed by Brown and Forsythe (1974).

Table 5: Heterogeneity by applicant characteristics

	(1) Score	(2) Score	(3) Score	(4) Loan	(5) Loan	(6) Loan
Male	-0.168 (0.191)	-0.313 (0.423)	-0.143 (0.177)	-0.0144 (0.0227)	-0.0343 (0.0530)	-0.0115 (0.0226)
Male × Married=1	0.152 (0.249)			0.0261 (0.0300)		
Male × Separated=1	-0.455 (0.511)			-0.0662 (0.0569)		
Male × Widowed=1	0.388 (0.749)			0.214** (0.0930)		
Male × Highest Education		0.0254 (0.0614)			0.00459 (0.00772)	
Male × Number children			0.0482 (0.0736)			0.00981 (0.00962)
Observations	3602	3605	3093	3602	3605	3093
Female Mean	12.06	12.06	12.06	12.06	12.06	12.06

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Loan indicates whether the application was forwarded by the judge to their own institution for loan consideration. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

be more profitable, this could explain the gender profit gap. We explore heterogeneity by business industry in two ways. First, during the data entry process, we asked our survey firm to categorize the business industry as female-dominated, male-dominated, or neither, based on the specific description of products and services provided by the business. We explore heterogeneity according to this measure. Second, we look at heterogeneity based on the actual gender of the applicant. That is, since women are more likely to be in female-dominated industries and men are more likely to be in male-dominated industries, we can proxy for industry using true applicant gender. We study whether true male applicants are rated differently when they are randomly assigned to be shown as female, and whether true female applicants are rated differently when they are randomly assigned to be shown as male.

We do not find heterogeneity in gender discrimination as a function of business baseline profits or the number of employees (see Table 6). There is also no heterogeneity based on our survey firm's categorization of industries as female-dominated or male-dominated (see Table 7, Column 1 and 2). However, we do see some evidence of heterogeneity by business industry using true gender as a proxy (Table 7, Column 3 and 4). Among businesses that are truly female-owned, applicants received *lower* scores when they were randomly shown as male. In contrast, among businesses that are truly male-owned, applicants received relatively higher scores when they were randomly shown as male. Overall, among businesses that are truly male-owned, there is no discrimination against women (shown in the bottom row of Table 7). There is no heterogeneity on the loan consideration decision.²¹ These results suggest that financial providers may discriminate against men in female-dominated industries, but we do not find evidence that discrimination against women in male-dominated industries can

²¹The fact that we find lower scores for female-owned businesses shown as male may raise the question of whether the judges guessed the research design or believed that the applications were fake. We do not believe this is a plausible explanation for these results for three reasons. First, we do not see similar results for the loan consideration decision; if judges believed the applications were fake, they should have been even less likely to forward them to their own institution for consideration for a loan. Second, we do not see lower scores for male-owned businesses that were shown as female; if judges guessed the research design, they should have been just as likely to discount these applications. Third, our project manager at our partner organization, the Entrepreneurship Development Center, was in close contact with the judges throughout the judging process. No concerns were raised by judges at any point about the validity of the applications.

Table 6: Heterogeneity by business performance

	(1)	(2)	(3)	(4)
	Score	Score	Loan	Loan
Male	-0.0798 (0.117)	-0.120 (0.132)	0.00108 (0.0149)	-0.000677 (0.0161)
Male \times Baseline profits	4.31e-08 (5.94e-08)		5.48e-10 (7.91e-09)	
Male \times Number employees		0.00185 (0.00980)		0.000298 (0.00139)
Observations	3367	3593	3367	3593
Female Mean	12.06	12.06	0.495	0.495

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Loan indicates whether the application was forwarded by the judge to their own institution for loan consideration. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

explain the gender profit gap.

In addition to testing for discrimination within subsets of business type, we also look for differences by whether the judging loan officer was employed at a microfinance institution (MFIs) or by loan officer gender. We find no heterogeneity in discrimination based on financial provider characteristics (Table 8). Though MFIs often prioritize female clients, none of the MFIs that participated in the judging serve women exclusively. In our exit survey of judges ($N = 43$), no judge reported having a portfolio of borrowers that they review having no women or all women. The highest percent of borrowers in a judge’s portfolio that were women was 82.5 percent.²²

Consistent with the lack of a discrimination in capital allocation decisions, financial providers also predict similar business performance for applicants shown as male or female. As described in Section 2.5, financial providers were asked to predict business performance one year after the application submission. Table 9 finds no difference in expectations of the business’ profit (Column 1), survival likelihood (Column 2), or assets (Column 3) as

²²We pre-specified additional judge characteristics for heterogeneity tests based on an exit survey of the judges. However, our response rate on the exit survey was only 63 percent (43 judges), and thus we do not report these additional tests.

Table 7: Heterogeneity by business industry

	(1)	(2)	(3)	(4)
	Score	Loan	Score	Loan
Assigned Male	-0.239 (0.215)	0.0261 (0.0243)	-0.408** (0.169)	-0.00312 (0.0205)
Assigned Male=1 × Fem Industry=1	0.137 (0.293)	-0.0407 (0.0350)		
Assigned Male=1 × Male Industry=1	0.247 (0.285)	-0.0336 (0.0335)		
Assigned Male=1 × Actl. Male=1			0.518** (0.232)	0.00647 (0.0280)
Observations	3696	3696	3680	3680
$\beta_1 + \beta_2$ (p-val)			0.489	0.861
Assigned Female Mean			12.06	0.495

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Assigned refers to the randomly assigned gender on the evaluation, and True refers to the actual gender of the applicant. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 8: Heterogeneity by loan officer characteristics

	(1)	(2)	(3)	(4)
	Score	Score	Loan	Loan
Male	-0.0540 (0.223)	-0.0528 (0.128)	0.0135 (0.0267)	0.00607 (0.0157)
Male=1 × MFI=1	-0.0718 (0.281)		-0.0167 (0.0324)	
Male=1 × Fem. Judge=1		-0.244 (0.377)		-0.0130 (0.0433)
Observations	3695	3647	3695	3647
Female Mean	12.07	12.07	0.495	0.495

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Loan indicates whether the application was forwarded by the judge to their own institution for loan consideration. MFI is an indicator for whether the judge was employed at a microfinance institution. Fem. Judge is an indicator for whether the judge was female. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 9: Effect of Gender on Business Performance

	(1)	(2)	(3)
	Surv., w/o Cap	Win. Profit, w/o Cap	Win. Assets, w/o Cap
Male	-0.0944 (0.636)	1.665 (4.208)	60.09 (46.85)
Observations	3696	3696	3696
Female Mean	50.47	42.41	778.4

	(1)	(2)	(3)
	Surv., w/ Cap	Win. Profit, w/ Cap	Win. Assets, w/ Cap
Male	-0.0339 (0.666)	-8.534 (7.895)	52.75 (65.42)
Observations	3696	3696	3696
Female Mean	60.08	84.57	1089.4

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Survival, Profits, and Assets are expectations of the judge's with and without additional capital. Profit and Assets are in thousands of birr. Survival is the probability of survival, from 0 to 100; Win. specifications winsorize the variables at 1 percent. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

a function of the business owner's gender. This lack of difference in expected business performance remains true for both predictions without additional capital (Panel A) and with additional capital (Panel B).²³ These results are robust to comparing the CDF of expected profits and assets by gender (see Figure 4). In each scenario and outcome, Kolmogorov-Smirnov tests fail to reject equality across the two distributions. We also find no differences in the variance of these distributions by gender, except for profit predictions in the condition with capital, where we observe a slightly higher variance in expected profits with additional capital among female-owned businesses.²⁴ Taken as a whole, our results generally suggest that financial providers did not expect gender differences in a business' growth potential on average, even after receiving a capital infusion.

²³Appendix Table 27 finds no support for differences in the beliefs about return to capital by business owner gender. Appendix Table 14 includes beliefs on employment, an additional prespecified variable.

²⁴This difference in variance is not robust to using winsorized levels of profit expectations.

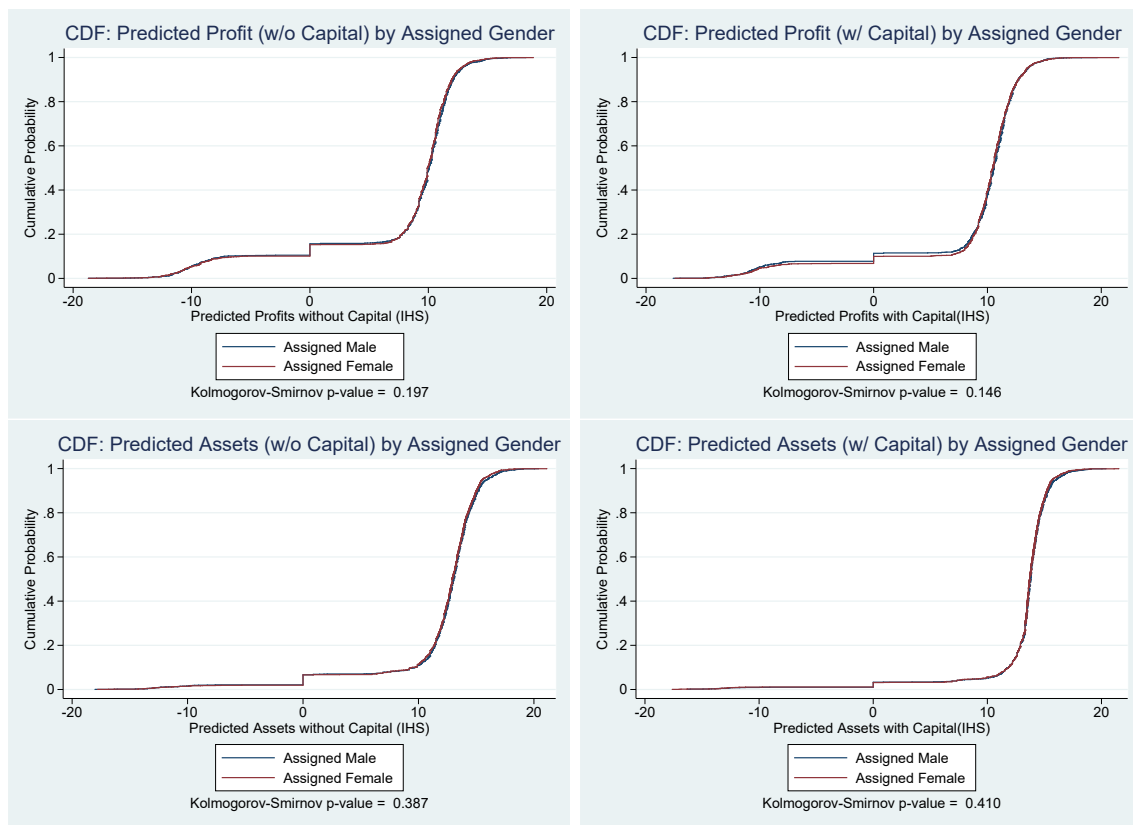


Figure 4: Distribution of Profits and Assets by Assigned Gender

Table 10: Heterogeneity by Missing Information in the Application

	(1)	(2)
	Score	Loan
Male	-0.0230 (0.139)	-0.00498 (0.0161)
Male=1 × Mssng Indx	-0.112 (0.140)	0.00895 (0.00984)
Observations	3696	3696
Female Mean	12.06	0.495

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Loan indicates whether the application was forwarded by the judge to their own institution for loan consideration. Mssng Indx ranges from 0 to 8 and is a count of missing the following information in the application: profits, number of employees, total assets, total liabilities, years of operation, years of experience in the industry, projected employees, and projected revenue. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Further bolstering the finding that financial providers expect business performance to be similar by gender, we do not observe heterogeneity in capital allocation decisions as a function of missing information in the application. If financial providers were statistically discriminating, we may expect that when the application is missing key information, they would be more likely to use gender as a proxy for capital allocation decisions. We test for heterogeneity in the capital allocation decision as a function of missing information, defined as a count of how many of the following data points are missing in the application: profits, number of employees, total assets, total liabilities, year of operation, years of experience in the industry, projected employees, and projected revenue. Table 10 finds no evidence for increasing discrimination against female-owned businesses in applications with more missing information.

Finally, we conducted an additional battery of pre-specified robustness tests to confirm the finding of a lack of discrimination. The following tests are shown in the Appendix:

weighting evaluations so that each judge has equal weight (Table 15 and 16); controlling for the order in which evaluations were assigned (Table 17 and 18); using the gender as reported by the judge (Table 19); excluding 5 percent of judges with the least amount of variation in their final score (Table 24); limiting the sample to the first five applications given to judges (Table 25); and removing judge fixed effects (Table 26). We also confirm robustness to limiting the sample to judges who passed various attention and internal consistency checks: correctly answering 75 and 100 percent of the verification questions (Table 20 and 21), baseline information in the application predicted the final score with a p-value of less than .15 (Table 22), and prediction of profits and firm survival with capital were higher than predictions without capital (Table 23). The main finding that there is no discrimination in the evaluation of businesses is remarkably robust.

4.2 Validity of Evaluations

We provide several pieces of evidence that the financial providers were attentive and thorough when evaluating businesses. First, though randomly assigned gender did not affect evaluations, we find that financial providers did consider other aspects of the business when evaluating the applicant. Table 11 shows that businesses with higher profits, greater assets, and business plans that projected greater employees and revenue were more likely to receive higher scores and be recommended for loan consideration. Evaluation outcomes are strongly predicted by baseline business information, which indicates that judges reviewed the businesses with effort and attention.

Second, judges completed the initial verification section of the evaluation form with high accuracy. As described in Section 2.6, judges were asked to verify the applicant's gender and other demographic characteristics before filling out the evaluation. Judges correctly indicated the applicant's gender in 98.5 percent of evaluations, the applicant's age in 97 percent of evaluations, the applicant's experience in 96 percent of evaluations, and the applicant's employment status in 95 percent of evaluations.

Table 11: Baseline Business Characteristics Predictive of Capital Allocation Decisions

	(1) Score	(2) Loan
Profits (IHS)	0.136*** (0.0201)	0.0104*** (0.00173)
Employees	0.000141 (0.000359)	0.0000563** (0.0000269)
Assets (IHS)	0.254*** (0.0258)	0.0190*** (0.00255)
Liabilities (IHS)	-0.0108 (0.0116)	-0.000353 (0.00135)
Initial Yr	0.0197* (0.0114)	0.00125 (0.00101)
Projected Employees	0.00313** (0.00143)	-0.0000309 (0.000104)
Projected Revenue (IHS)	0.224*** (0.0290)	0.0137*** (0.00300)
Industry Exp.	0.0136 (0.0155)	0.00239 (0.00187)
Observations	3696	3696
F	40.59	28.18
pvalue	4.41e-57	7.79e-35

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Each independent variable is interacted with an indicator for the variable being missing, which is not shown. All independent variables are information reported by the applicant and viewed by the judge. Specifications include judge fixed effects, and standard errors are clustered by application.

Table 12: Final Score Correlates with Business Performance Expectation

	(1) Profit	(2) Profit	(3) Survival	(4) Survival	(5) Assets	(6) Assets
Score	22.73** (9.233)		2.529*** (0.344)		116.5 (71.29)	
Loan		164.7** (64.39)		14.58*** (2.283)		897.0* (507.8)
Constant	-220.0** (106.7)	-28.07 (32.23)	20.38*** (4.714)	43.63*** (2.460)	-6.312 (767.9)	950.0*** (182.6)
Observations	3696	3696	3696	3696	3696	3696

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Profits, Survival, and Assets are expectations of the judge's without additional capital. Profit and Assets are in thousands of birr. Survival is the probability of survival, from 0 to 100. Judge clustered standard errors in parentheses.

Third, evaluations were internally consistent in several ways. Judges predicted businesses would have better performance with capital than without in the vast majority of evaluations. In 92 percent of evaluations, judges predicted that the business would be as or more likely to be operational in a year if they received additional capital than if they did not. We observe similarly high percentages of internally consistent evaluations with and without capital for projected number of employees (93 percent), capital stock (93 percent), and profits (84 percent).

Fourth, businesses with stronger predicted performance were more likely to be awarded capital. Table 12 finds that judges provided higher scores and were more likely to consider for a loan those businesses that they expected to have higher profits and a greater likelihood of survival (Column 1 to 4). Column 6 highlights that a judge was more likely to consider a business for a loan when they expected that business to have greater assets, an important consideration for collateral and loan contracts, but a factor which is likely less important for a capital grant.

Finally, judges had significant variation within their own evaluations, suggesting that they were thoughtful in evaluating the information in the application. The average range

of scores used by a judge in their evaluations is 13.8 out of a possible 20, and the average standard deviation for final scores within a given judge is 3. Judges recommended 49 percent of their businesses for loan consideration, on average, and all judges except five recommended at least one business for the loan consideration. None of the judges recommended all of the businesses they reviewed for consideration of a loan.

These results are consistent with the fact that the study context provided significant incentives for judges to complete the evaluations carefully. Judges were responsible for the allocation of a significant amount of capital by a prominent national agency in a well-publicized business plan competition. They were typically referred by their manager to serve as judges. Thus, there would be reputational costs to negligent work on the evaluations. Compensation was also contingent on complete evaluations. Together, these features underscore that loan officers took the evaluation process seriously.

4.3 Endline Survey: Targeting high performing businesses and the accuracy of beliefs

A key contribution of our paper is to connect the audit study results to real performance outcomes using endline measures of business performance. We can identify whether financial provider's beliefs on the relationship between gender and business performance were accurate. That is, we next test whether the business owners *true* gender can predict business performance above and beyond the evaluations of the financial providers.²⁵

We first document that female-owned firms perform worse at compared to male-owned businesses based on profits measured 18 months after the competition. There are no statistically significant differences in survival by gender. However, Figure 5 shows that female business owners are earning lower profits than their male counterparts across the distribution, and this differences is statistically significant ($p\text{-value} = 0.002$).

²⁵Appendix Table 28 confirms that our main results on discrimination in capital allocation are robust to the sample for which we successfully survey at endline.

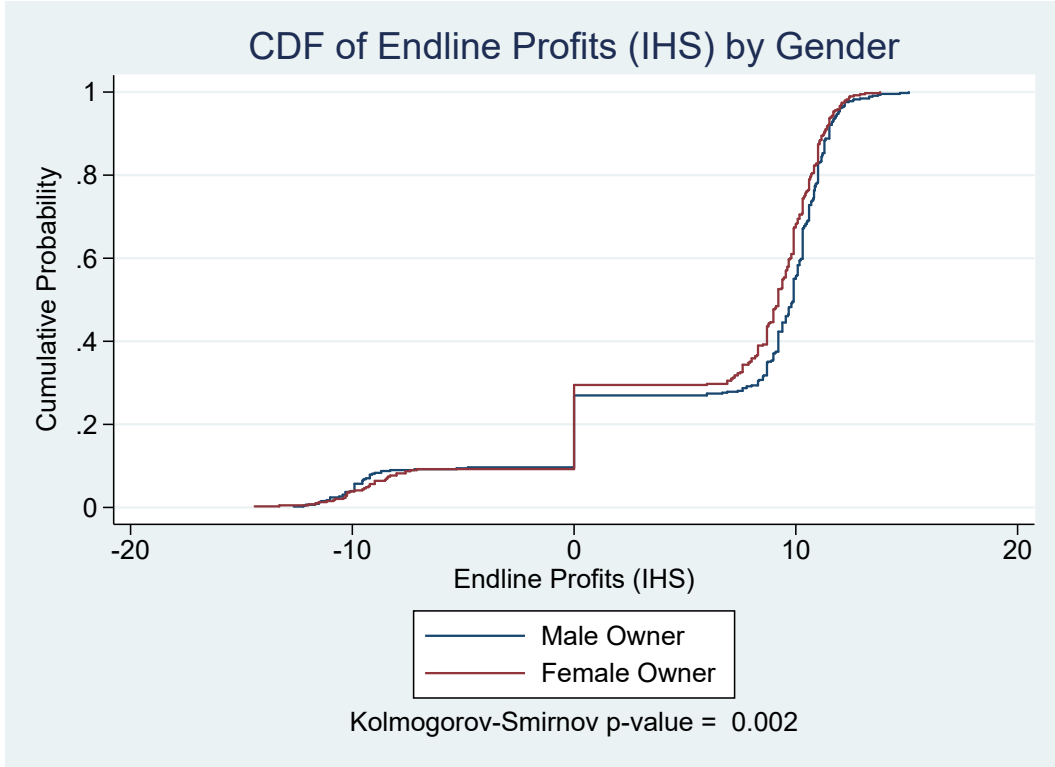


Figure 5: Distribution of Profits by True Gender

We then turn to our main analysis of interest: whether business owner gender has additional predictive value beyond judge evaluations. Table 13 estimates how business performance differs as a function of the true gender of the business owner, conditional on the business' capital allocation decisions by the judges.²⁶ The final scores in the competition and loan consideration are predictive of firm survival and profits, indicating that judges were able to predict endline performance with some accuracy. However, we do not find statistically significant differences in the average likelihood of survival by business owner gender. The differences in profit are more mixed, and results are sensitive to whether we focus on levels or percent changes.

Given the large standard errors in these estimates and the mixed results on profit, we test for differences by business-owner gender using the more transparent CDF. Figure 6 highlights that the distribution of residual profits (i.e., inverse hyperbolic sine transformed

²⁶Appendix Table 29 estimates differences in gender on additional measures of business performance pre-specified in the study's preanalysis plan.

Table 13: Predicted Value of Gender for Business Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Firm Survival	Firm Survival	Profit	Profit	Win. Profit	Win. Profit	Firm Profits (IHS)	Firm Profits (IHS)
Male	0.0269 (0.0245)	0.0284 (0.0245)	13317.3** (6094.1)	13645.5** (6018.3)	4539.4* (2345.1)	4922.0** (2352.2)	0.437 (0.451)	0.484 (0.452)
Mean Final Score	0.00953** (0.00421)		2132.2 (1422.6)		2366.1*** (496.8)		0.292*** (0.0863)	
Mean Loan Consideration		0.0825* (0.0439)		13033.9 (21947.4)		22915.9*** (5487.5)		2.994*** (0.944)
Constant	0.840*** (0.0186)	0.839*** (0.0186)	11827.8*** (3053.6)	11638.3*** (3053.7)	14144.8*** (1524.4)	13991.0*** (1530.4)	6.125*** (0.325)	6.107*** (0.328)
r2	0.00702	0.00527	0.00950	0.00687	0.0379	0.0332	0.0157	0.0152
N	847	847	846	846	846	846	846	846

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Mean final score (loan consideration) is the relative mean for the applicant, in which the score or loan consideration has been demeaned by the judge average score or consideration of loan. Robust standard errors in parentheses.

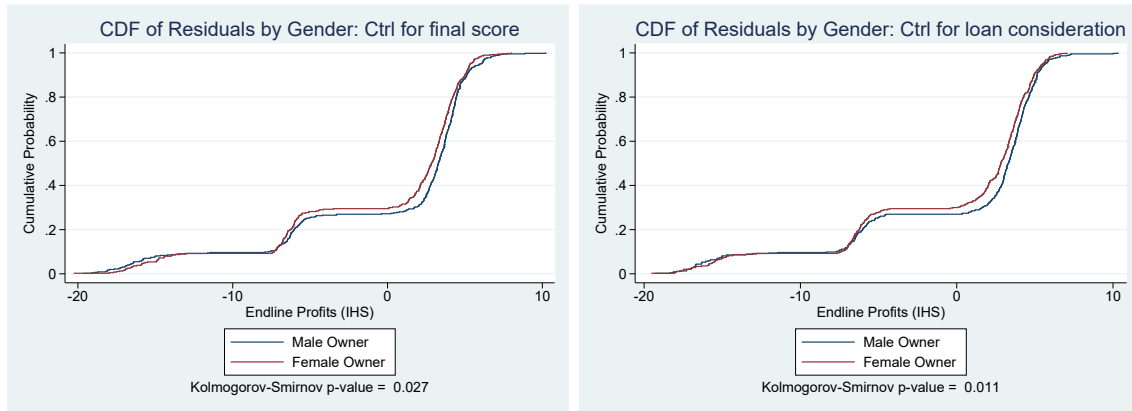


Figure 6: Distribution of Profits by True Gender, Conditional on Judge Evaluations

profits unexplained by the evaluations of the business) do differ by business owner gender even after accounting for judge evaluations. These results are robust to either evaluation measure of the judges, and to using non-transformed profit levels and winsorized profit levels. These results suggest a potential short-term trade off between equity and targeting of successful businesses.

We also observe that the variance of winsorized profits (in levels) is statistically different by gender, with male business owners having greater variance.²⁷ The difference in risk by gender may be an important mediating factor in why it may not be optimal to target higher-earning male businesses.

In summary, though judge did not expect differences in business performance as a function of business owner gender in an incentivized belief elicitation, this does not match the true relationship between gender and business performance (both in expected value and variance). Importantly, judges did successfully identify successful businesses. One possible explanation is that judges have limited attention and focus on other information in the application that is more predictive of business performance.

²⁷This difference in variance has a p-value value ranging from 0.05 to 0.07 across the three tests for difference in variance. The difference is not robust to using the inverse hyperbolic sine transformation of profits, and is sensitive to the test used for profits in levels.

5 Conclusion

Taken as a whole, our results do not find support for gender discrimination as an explanation for gender gaps in capital and entrepreneurial success. Recruited financial providers across 13 financial institutions did not differ in their evaluation for capital allocation in a business plan competition. Our application process is similar to the first stages of loan applications and to other business plan competitions, which are a growing method of capital allocation, particularly in low-income countries. We find that the lack of discrimination by financial providers is consistent with their underlying beliefs about future business performance by gender, a key factor considered in loan decisions. We also find that the financial providers were responsive to key information about the business, such as current profits and projected revenue, that they report as being important factors in reviewing loans.

We also find that financial providers were no more likely to request that a male-owned business be sent to their own institution for consideration for a loan, confirming that decisions in the business plan competition were similar to initial decisions for considering a loan request. We also confirm a lack of responsiveness to business-owner gender along dimensions that may be relevant in only a loan decision (i.e., loan repayment, riskiness in performance). We find that financial providers did not believe that female-business owners were more (or less) likely to be able to repay a loan. We also find no difference in the variance of financial providers' beliefs. That is, judges did not appear to believe men were riskier given their predictions of future performance of male-businesses. Finally, both initial interviews and an exit survey with a subset of the judges confirmed that the measures of business performance described in the application are important factor in loan decisions (i.e., collateral is not the only factor considered).

In contrast to the lack of gender differences in beliefs, our follow-up survey shows that there were gender differences in business performance in reality. Even after accounting for financial providers' overall assessment of business quality, as captured in the final score for the competition, female businesses were still less profitable. This raises the question of why

financial providers did not discriminate, and whether the lack of discrimination entailed a cost of allocating capital to less promising businesses in the business plan competition,

One explanation of why financial providers did not utilize the information in gender may be limited attention. Limited attention refers to the concept that individuals may have limited cognitive capacity or attentional resources. Though gender is a factor in predicting business performance, its importance may have been dwarfed by the other detailed information provided in the application (and in a loan application more generally). We find suggestive evidence consistent with this hypothesis in an exit survey we conducted with 43 financial providers who served as judges. When asked explicitly whether gender was an important consideration in approving loans, just 33 percent of financial providers reported that the gender of the business owner is an important factor when deciding whether to approve a loan. In comparison, 98 percent reported current profits as being important, 91 percent reported capital stock as being important, and 86 percent reported growth potential (i.e., future profits) as important.²⁸ Thus, given a large amount of information to assess a business, financial providers may have focused on key measures of business performance factors over other factors, due to limited attentional resources.

Another possible explanation is that financial providers imperfectly update their expectations of business performance based on their beliefs about selection into the sample. Our sample is conditional on businesses that had a history of success, were slightly larger than the median business, and importantly, that selected into applying for capital. This is the relevant dimension for loan officers, but is different from the broader population. Thus, in a sample of businesses applying for capital, where they are given detailed information about business performance, financial providers may see gender differences as relatively small and not a worthwhile proxy for business performance. This is reflected in the lack of gender differ-

²⁸We asked about the importance of current profit, capital stock, growth potential, collateral, business sector, marital status, children, age of the business, experience of business owner, gender, age, and customer references. For each factor, judges were asked whether the factor was not at all important, somewhat important, important, or very important. Statistics on importance reflect those that responded with important or very important.

ences in their incentivized beliefs. Nevertheless, this situation has external validity to capital access more generally: when financial providers make capital allocation decisions, they are typically evaluating businesses who have made a capital request and provided significant information about their performance.

The fact that gender continued to be predictive of business performance after accounting for business quality suggests that discriminating in favor of men could have resulted in targeting higher performing businesses on average. However, we do see some evidence that male-owned business performances have higher variances. If we assume that financial providers are risk averse, the increased riskiness of male-owned businesses could be a motive against discriminating.

Although our results have identified a key margin on which female entrepreneurs do not face discrimination in access to capital, this does not imply that capital allocation processes are entirely free of gender discrimination. Our context is most similar to the earlier stages of a loan or grant process, but capital requests often involve further steps and interactions, during which gender discrimination may become a factor. For example, loan processes generally include multiple visits and communications between a potential business and the lending institution. However, models of statistical discrimination, taste-based discrimination, and discrimination based on violation of gender norms would all predict that discrimination would be most present at earlier stages of the process. For statistical discrimination, this is because information reduces reliance on gender as a signal, and every interaction between a financial provider and a loan or grant applicant increases information. Similarly, backward induction of taste-based discrimination or discrimination due to violation of gender norms would suggest that a loan officers would not start a process that would be less likely to be successful due to their preferences. Thus, if discrimination were to emerge in later stages, this would be most consistent with information being interpreted differently by gender or with a limited attention model, in which gender discrimination emerges once gender become more salient through in-person interactions. It may also be the case that though we observe

no discrimination in the extensive margin of capital allocation decisions, there may have been discrimination on the intensive margin or contractual features of loans (e.g., collateral requirements).

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A Appendix

Table 14: Appendix Table: Prespecified Secondary Outcomes

	(1) Surv., w/o Cap	(2) Surv., w/ Cap	(3) Win. Assets, w/o Cap	(4) Win. Assets, w/ Cap	(5) Win. Jobs, w/o Cap	(6) Win. Jobs, w/ Cap	(7) Loan
Male	-0.0944 (0.636)	-0.0339 (0.666)	60.09 (46.85)	52.75 (65.42)	87.85** (43.00)	162.0 (205.3)	0.00159 (0.0140)
Observations	3696	3696	3696	3696	3696	3696	3696
Female Mean	50.47	60.08	778.4	1089.4	219.2	878.0	0.495

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Loan indicates whether the application was forwarded by the judge to their own institution for loan consideration. Survival, Assets, and Employees are expectations of the judge's with and without additional capital. Assets are in thousands of birr. Survival is the probability of survival, from 0 to 100. Employees is the number of people employed by the business. Win. specifications winsorize the variables at the 1 percent. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 15: Appendix Table: Primary outcomes with judge weights

	(1)	(2)	(3)	(4)	(5)
	Score	Profit, w/o Cap	Win. Profit, w/o Cap	Profit, w/ Cap	Win. Profit, w/ Cap
Male	-0.0727 (0.116)	-30.13 (77.97)	0.701 (4.197)	-1141.5 (990.2)	-14.20* (8.323)
Observations	3696	3696	3696	3696	3696
Female Mean	11.96	52.98	42.74	713.8	86.19

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Profits are expectations of the judge's with and without additional capital, and measured in thousands of birr. Win. specifications winsorize the variables at the 1 percent. Specifications include judge and application fixed effects, and weight each judge equally. Robust standard errors in parentheses.

Table 16: Appendix Table: Secondary outcomes with judge weights

	(1) Surv., w/o Cap	(2) Surv., w/ Cap	(3) Win. Assets, w/o Cap	(4) Win. Assets, w/ Cap	(5) Win. Jobs, w/o Cap	(6) Win. Jobs, w/ Cap	(7) Loan
Male	0.276 (0.665)	0.531 (0.703)	57.58 (45.28)	46.95 (66.18)	81.51** (38.63)	93.86 (191.3)	0.00127 (0.0144)
Observations	3696	3696	3696	3696	3696	3696	3696
Female Mean	49.74	58.10	771.5	1105.8	155.3	692.7	0.479

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Loan indicates whether the application was forwarded by the judge to their own institution for loan consideration. Survival, Assets, and Employees are expectations of the judge's with and without additional capital. Assets are in thousands of birr. Survival is the probability of survival, from 0 to 100. Employees is the number of people employed by the business. Win. specifications winsorize the variables at the 1 percent. Specifications include judge and application fixed effects, and weight each judge equally. Robust standard errors in parentheses.

Table 17: Appendix Table: Primary outcomes with ordering FE

	(1)	(2)	(3)	(4)	(5)
	Score	Profit, w/o Cap	Win. Profit, w/o Cap	Profit, w/ Cap	Win. Profit, w/ Cap
Male	-0.114 (0.116)	-25.15 (73.46)	1.721 (4.220)	-948.8 (907.6)	-8.159 (7.910)
Observations	3685	3685	3685	3685	3685
Female Mean	12.06	43.26	42.41	709.2	84.57

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Profits are expectations of the judge's with and without additional capital, and measured in thousands of birr. Win. specifications winsorize the variables at the 1 percent. Specifications include the order of the application presented to the judge, judge, and application fixed effects. Robust standard errors in parentheses.

Table 18: Appendix Table: Secondary outcomes with ordering FE

	(1) Surv., w/o Cap	(2) Surv., w/ Cap	(3) Win. Assets, w/o Cap	(4) Win. Assets, w/ Cap	(5) Win. Jobs, w/o Cap	(6) Win. Jobs, w/ Cap	(7) Loan
Male	-0.108 (0.639)	-0.0501 (0.670)	57.63 (47.14)	50.45 (65.39)	90.41** (42.93)	160.8 (206.1)	0.00108 (0.0141)
Observations	3685	3685	3685	3685	3685	3685	3685
Female Mean	50.47	60.08	778.4	1089.4	219.2	878.0	0.495

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Loan indicates whether the application was forwarded by the judge to their own institution for loan consideration. Survival, Assets, and Employees are expectations of the judge's with and without additional capital. Assets are in thousands of birr. Survival is the probability of survival, from 0 to 100. Employees is the number of people employed by the business. Win. specifications winsorize the variables at the 1 percent. Specifications include the order of the application presented to the judge, judge, and application fixed effects. Robust standard errors in parentheses.

Table 19: Appendix Table: Reported Gender

	(1)	(2)	(3)	(4)	(5)
	Score	Profit, w/o Cap	Wind. Profit, w/o Cap	Profit, w/ Cap	Wind. Profit, w/ Cap
Reported Male	-0.114 (0.117)	-26.87 (76.04)	2.276 (4.273)	-990.6 (937.4)	-7.967 (7.995)
Reported No Gender	-0.0292 (0.451)	-57.08 (93.75)	-2.715 (16.26)	-754.8 (701.2)	-32.09 (31.22)
Observations	3696	3696	3696	3696	3696
Reported Female Mean	12.06	43.18	41.99	717.2	84.32

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Profits are expectations of the judge's with and without additional capital, and measured in thousands of birr. Win. specifications winsorize the variables at the 1 percent. Independent variables are those reported by the judge. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 20: Appendix Table: 75 percent correct on Verification Questions

	(1)	(2)	(3)	(4)	(5)
	Score	Profit, w/o Cap	Wind. Profit, w/o Cap	Profit, w/ Cap	Wind. Profit, w/ Cap
Male	-0.105 (0.116)	-24.26 (74.49)	1.665 (4.208)	-962.1 (911.4)	-8.534 (7.895)
Observations	3696	3696	3696	3696	3696
Female Mean	12.06	43.26	42.41	709.2	84.57

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Profits are expectations of the judge's with and without additional capital, and measured in thousands of birr. Win. specifications winsorize the variables at the 1 percent. Observations limited to judges that corrected answered verification questions on at least 75 percent of their evaluations. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 21: Appendix Table: 100 percent correct on Verification Questions

	(1)	(2)	(3)	(4)	(5)
	Score	Profit, w/o Cap	Wind. Profit, w/o Cap	Profit, w/ Cap	Wind. Profit, w/ Cap
Male	1.625 (2.518)	19.06 (22.94)	19.06 (22.94)	36.21 (60.90)	36.21 (60.90)
Observations	329	329	329	329	329
Female Mean	12.00	54.82	41.40	105.4	85.13

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Profits are expectations of the judge's with and without additional capital, and measured in thousands of birr. Win. specifications winsorize the variables at the 1 percent. Observations limited to judges that corrected answered verification questions on at least 75 percent of their evaluations. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 22: Appendix Table: Judges Responsive to Application Information

	(1)	(2)	(3)	(4)	(5)
	Score	Profit, w/o Cap	Wind. Profit, w/o Cap	Profit, w/ Cap	Wind. Profit, w/ Cap
Male	-0.111 (0.118)	-14.73 (69.24)	2.499 (4.257)	-842.5 (800.8)	-7.358 (8.057)
Observations	3542	3542	3542	3542	3542
Female Mean	12.00	42.41	42.42	736.6	85.32

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Profits are expectations of the judge's with and without additional capital, and measured in thousands of birr. Win. specifications winsorize the variables at the 1 percent. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 23: Appendix Table: Judges Responsive to Capital

	(1)	(2)	(3)	(4)	(5)
	Score	Profit, w/o Cap	Wind. Profit, w/o Cap	Profit, w/ Cap	Wind. Profit, w/ Cap
Male	-0.0409 (0.132)	-58.81 (107.1)	1.958 (4.197)	-1324.8 (1394.7)	-3.953 (9.984)
Observations	2973	2973	2973	2973	2973
Female Mean	12.30	34.36	37.14	898.5	102.5

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Profits are expectations of the judge's with and without additional capital, and measured in thousands of birr. Win. specifications winsorize the variables at the 1 percent. Observations limited to evaluations in which predictions with capital were greater than predictions without capital. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 24: Appendix Table: Excludes 5 percent of judges with lowest variance of final scores

	(1)	(2)	(3)	(4)	(5)
	Score	Profit, w/o Cap	Wind. Profit	Profit, w/ Cap	Wind. Profit, w/ Cap
Male	-0.105 (0.117)	-16.10 (70.96)	1.735 (4.376)	-864.0 (816.5)	-9.143 (8.211)
Observations	3663	3544	3544	3592	3592
Female Mean	12.05	44.77	43.88	731.7	86.86

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Profits are expectations of the judge's with and without additional capital, and measured in thousands of birr. Win. specifications winsorize the variables at the 1 percent. Observations limited to judges with variation in outcomes at least at the 5th percentile. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 25: Appendix Table: First Five Evaluations

	(1)	(2)	(3)	(4)	(5)
	Score	Profit, w/o Cap	Wind. Profit, w/o Cap	Profit, w/ Cap	Wind. Profit, w/ Cap
Male	2.195 (4.520)	-29.66 (63.82)	-29.66 (63.82)	45.13 (66.87)	44.97 (66.69)
Observations	410	410	410	410	410
Female Mean	11.76	62.90	45.10	8.228	93.27

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Profits are expectations of the judge's with and without additional capital, and measured in thousands of birr. Win. specifications winsorize the variables at the 1 percent. Observations are limited to the first round of applications given to the judge. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 26: Appendix Table: No Judge Fixed Effects

	(1)	(2)	(3)	(4)	(5)
	Score	Profit, w/o Cap	Wind. Profit, w/o Cap	Profit, w/ Cap	Wind. Profit, w/ Cap
Male	-0.0328 (0.138)	-14.25 (64.67)	4.011 (4.331)	-750.1 (781.4)	-1.344 (8.266)
Observations	3693	3693	3693	3693	3693
Female Mean	12.07	43.19	42.33	710.2	84.55

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, ranging from 1 to 20. Profits are expectations of the judge's with and without additional capital, and measured in thousands of birr. Win. specifications winsorize the variables at the 1 percent. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 27: Appendix Table: Effect of Gender on Return to Capital

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Survival	Profit	Win. Profit	Profit (IHS)	Assets	Win. Assets	Assets (IHS)
Male	0.0605 (0.513)	-937.9 (851.3)	-9.446* (5.687)	-0.0932 (0.0906)	-582.6 (710.4)	-1.745 (11.17)	-0.0584 (0.0982)
Observations	3696	3696	3696	3696	3696	3696	3696
Female Mean	9.610	665.9	41.70	1.856	926.3	241.0	4.776

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Survival, Profits, and Assets are the difference in expectations of the judge's with and without additional capital (i.e., the return to capital). Profit and Assets are in thousands of birr. Survival is the probability of survival, from 0 to 100; Win. specifications winsorize the variables at the 1 percent; and IHS specifications transform the variables using the inverse hyperbolic sine transformation. Specifications include judge and application fixed effects. Robust standard errors in parentheses.

Table 28: Appendix Table: Main specification robustness to endline sample

	(1)	(2)	(3)	(4)	(5)
	Score	Overall Impress	Value Prop	Entrepreneurial	Loan
Male	-0.0792 (0.119)	-0.0270 (0.0632)	-0.0561 (0.0644)	-0.0485 (0.0671)	-0.00311 (0.0145)
Observations	3430	3430	3430	3430	3430
Female Mean	12.09	5.999	6.092	6.085	0.496

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Score is the final score in the business plan competition, determined by Overall Impression (Overall Impress) + .5* Value Proposition (Value Prop) + .5*Entrepreneurial Credibility (Entrepreneurial). Each of these subscores is on an increasing scale of 1 to 10. Loan indicates whether the application was forwarded by the judge to their own institution for loan consideration. Specifications include judge and application fixed effects. Sample is limited to those observed in endline survey. Robust standard errors in parentheses.

Table 29: Appendix Table: Prespecified endline variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Ttl Bus Prof	Win. Ttl Bus Prof	Ttl Bus Prof (IHS)	Hh Bus Prof	Win. Hh Bus Prof	Hh Bus Prof	Pers Income	Win. Pers Income	Pers Income (IHS)
Male	15684.4** (6306.1)	7802.6*** (2699.3)	0.431 (0.437)	11343.0* (6470.7)	3783.3 (3130.4)	-0.0877 (0.416)	15684.4** (6306.1)	7802.7*** (2699.3)	0.442 (0.432)
Mean Final Score	2549.4* (1435.9)	2730.4*** (575.6)	0.248*** (0.0841)	2829.2* (1453.9)	3030.9*** (642.5)	0.184** (0.0800)	2549.4* (1435.9)	2730.4*** (575.6)	0.243*** (0.0831)
Constant	14098.3*** (3293.5)	15829.0*** (1639.1)	6.767*** (0.312)	20606.9*** (3524.6)	22448.2*** (2067.4)	7.701*** (0.291)	14098.7*** (3293.5)	15829.3*** (1639.1)	6.839*** (0.309)
r ²	0.0125	0.0423	0.0124	0.0100	0.0329	0.00671	0.0125	0.0423	0.0123
N	846	846	846	844	844	844	846	846	846

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Mean final score is the relative mean for the applicant, in which the score has been demeaned by the judge average score. Columns 1 to 3 reflect total business profits earned by the applicant, Columns 4 to 6 reflect all business profits earned by all members in the applicant's household, and Column 7 to 9 reflect all income earned by the applicant. Robust standard errors in parentheses.