Beyond the Pitch Room: A Pipeline Framework of Gender, Diversity, and Access to Capital in Venture Financing

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ABSTRACT

Women and other underrepresented founders receive a disproportionately small share of external capital, particularly venture and angel equity, a pattern that has persisted despite decades of research and policy attention. Explanations such as investor bias, founder self-selection, network homophily, and sorting into low-capital sectors are usually studied in isolation, and recent evidence is mixed: some field experiments find no initial-contact bias against women, while other studies document unequal treatment later in the process. This conceptual paper develops a pipeline framework that differs from existing "leaky pipeline" and funnel models in three ways. It specifies stage-specific mechanisms rather than treating attrition as a residual, it models feedback loops through which later outcomes reshape earlier aspirations and investor beliefs, and it treats institutional context as a cross-cutting moderating layer rather than as a fifth sequential stage. Drawing on an integrative review of entrepreneurship, finance, and organizational sociology, we advance nine propositions, each paired with observable proxies, falsification conditions, and identification strategies. The propositions address when bias operates, how selection and discouragement obscure it, why investor diversity succeeds or fails as a remedy, why intersectional disadvantage is not additive, and how algorithmic screening may entrench or reduce gaps. The paper explains why seemingly contradictory findings can coexist, states the scope of the framework across financing channels and national contexts, and offers a research agenda and implications for investors, founders, and policymakers.

Keywords: gender and entrepreneurship; diversity; venture capital; investor bias; access to finance; intersectionality; algorithmic screening

INTRODUCTION

Access to external capital shapes which ventures are launched, how fast they grow, and who captures the resulting wealth. Yet capital is unevenly distributed. Women-led ventures have consistently received a small share of venture capital, typically in the low single-digit percentages of total dollars invested (Brush et al., 2018), and racial disparities in access to debt and equity have been documented among minority-owned start-ups (Fairlie et al., 2022). These gaps matter beyond fairness. If promising ventures are screened out for reasons unrelated to their prospects, the economy loses innovations that might otherwise have been commercialised, a concern that underlies arguments for greater diversity in innovation and investment (Gompers & Wang, 2017).

Scholars have proposed many explanations. Investors may hold tastes for working with people like themselves (Becker, 1957) or may use group averages as proxies when information is scarce (Phelps, 1972). Gender stereotypes may lead evaluators to see women as poor fits with entrepreneurial and leadership roles (Eagly & Karau, 2002; Heilman, 2001). Social networks tend to be homophilous, so deal flow reproduces the composition of investors' own circles (McPherson et al., 2001). On the supply side, women and minorities may sort into sectors that attract less capital or anticipate bias and forgo applying (Thébaud, 2015; Guzman & Kacperczyk, 2019). A parallel line of critique warns that research framing women's ventures as underperforming treats male-typed entrepreneurship as the norm and risks locating the problem in founders rather than in the system (Ahl, 2006; Marlow & McAdam, 2013; Jennings & Brush, 2013).

Each explanation has empirical support, and the evidence is not uniform. A large randomized field experiment found that female entrepreneurs received more interested replies than males pitching identical projects, suggesting no discrimination at the initial-contact stage (Gornall & Strebulaev, 2025), while a design comparing co-founders of the same start-up found that women raise substantially less capital in subsequent ventures and that investors treat women's failures and successes asymmetrically (Hebert et al., 2025). Studies typically isolate a single stage of the financing process: experiments examine evaluation, network studies examine access, and survey studies examine aspirations. Little theory explains how the stages interact, which matters for inference because observed outcomes are the product of filters operating in sequence. Losses at an early stage change the composition of the pool that reaches later stages, so evidence of bias, or of its absence, at any one stage can be misread when the stages are not considered together.

The idea of a pipeline is not new. The "leaky pipeline" metaphor has long been used to describe the attrition of women across successive career stages in science (Pell, 1996), and Blickenstaff (2005) argued that it misleads, because it implies a passive, uniform outflow, and proposed that a series of gender filters is a better description. Our framework builds on that critique and differs from existing pipeline and funnel accounts in three respects, set out in Section 2.5: it specifies stage-specific mechanisms with testable signatures, it models feedback loops between stages, and it separates the sequential stages from the institutional context that conditions them.

We therefore ask two questions. First, how do mechanisms of exclusion operating at different stages of the financing pipeline interact to produce observed funding gaps for women and other underrepresented founders? Second, under what conditions do common remedies, such as increasing investor diversity or opening alternative capital channels, narrow those gaps? We contribute by integrating dispersed explanations into a single pipeline framework, by showing how selection, discouragement, and feedback complicate inference about bias, by pairing each proposition with observable proxies and falsification conditions, and by specifying boundary conditions for remedies and for the framework itself. The scope is venture financing, meaning angel and venture capital equity, with comparative treatment of bank debt, crowdfunding, and public grants where evidence allows. The paper proceeds with a review of the literature, our approach, the framework and propositions, a section on testing the framework, and a discussion of implications and future research.

Theoretical background

Evidence on funding gaps

Observational studies consistently show that female-founded ventures are less likely to obtain venture funding (Guzman & Kacperczyk, 2019) and that male investors are less likely to invest in female-led start-ups in early-stage settings (Ewens & Townsend, 2020). Experimental studies show that differences can arise in evaluation itself. When investors evaluated pitches with identical content, they preferred those delivered by male narrators (Brooks et al., 2014). Analysis of investor questions at a start-up competition showed that investors asked male founders promotion-focused questions about gains and growth while asking female founders prevention-focused questions about losses and risk, and that this difference was associated with less funding for the latter (Kanze et al., 2018). Crowdfunding, which reduces some forms of interpersonal contact, provides further evidence. Female founders fare better where female backers are active in male-typed categories, consistent with homophily among supporters (Greenberg & Mollick, 2017), and race-related disparities have also been studied in this setting (Younkin & Kuppuswamy, 2018).

Recent work extends this evidence to later stages and to the supply side. Comparing men and women who co-founded the same start-up, Hebert et al. (2025) found that women raise less capital in subsequent ventures, that differences in founder quality and in interest in re-founding explain little of the gap, and that investors' experiences with failed women-founded firms in their portfolios spill over negatively onto other women founders, with no matching positive spillover from successes. In UK equity crowdfunding, female founders ask for less funding, have the same probability of campaign success, and raise less when successful, a pattern consistent with founders anticipating differences in investor demand (Hellmann et al., 2025).

Two cautions apply. Observational gaps may partly reflect differences in sector, stage, or growth ambitions that are themselves shaped by anticipated treatment. Experiments, in turn, isolate mechanisms under controlled conditions but may not capture the sequence of interactions in real deals. Neither type of evidence alone distinguishes discrimination from difference, which is why an integrative framework is needed.

Contrary, null, and mixed evidence

A credible account must engage evidence that does not fit a simple story of investor bias. The most prominent case is a randomized field experiment in which about 80,000 pitch emails for fictitious start-ups were sent to roughly 28,000 venture capitalists and angels under randomly assigned founder gender and race. Female entrepreneurs received 9 percent more interested replies than males pitching identical projects, and Asian entrepreneurs received 6 percent more than White entrepreneurs; the authors concluded that investors do not discriminate against these groups when evaluating unsolicited pitch emails and that research on investor bias should focus on networks and in-person interactions (Gornall & Strebulaev, 2025). Other studies suggest that gaps depend on context and measurement. Evidence on networking frictions suggests that part of the gender gap arises from how entrepreneurs and investors are connected, not only from evaluation (Howell & Nanda, 2019). Studies of ethnic matching find that investors tend to favour partners who share their ethnicity (Hegde & Tumlinson, 2014), while work on investor affinity shows that homophilous ties can reduce investment performance (Gompers et al., 2016), a pattern that is consistent with the claim that homophily distorts allocation and not only distribution. Research on Kickstarter documents gender differences in campaign outcomes and tests for taste-based discrimination among backers, which shows that the direction of gaps can depend on the platform and category studied (Gafni et al., 2021).

Outside equity, the picture varies by channel and region. A cross-country study of 34,342 firms in 90 developing countries found that female-owned firms in sub-Saharan Africa were more likely than male-owned firms to be financially constrained, while no such gap appeared in other developing regions (Asiedu et al., 2013). A study of manufacturing firms in 16 sub-Saharan African countries showed that the estimated gender difference depends on how credit constraints are measured: perception-based measures suggested women-owned firms were more constrained, formal access data showed no gender effect, and direct measures showed small male-owned firms disadvantaged (Hansen & Rand, 2014). In Italy, women were found to pay more for credit than men in comparable circumstances (Alesina et al., 2013).

These findings do not refute the case for bias, but they constrain it. They suggest that the location of the gap along the financing process, the channel, the measure, and the national context all matter, and that the absence of a gap at one stage, such as an email reply, is compatible with a gap at another, such as in-person evaluation, networks, amounts, or follow-on. This is the pattern that a pipeline framework is designed to explain.

Mechanisms proposed in the literature

Preference-based and statistical discrimination. Taste-based accounts posit that decision makers pay a psychic cost to interact with certain groups (Becker, 1957). Statistical accounts posit that decision makers use group characteristics as proxies when individual information is costly (Phelps, 1972). Early-stage investing is an information-poor environment in which information problems are severe, which enlarges the scope for proxies; the broader literature on credit markets with imperfect information makes a related point about screening under asymmetric information (Stiglitz & Weiss, 1981), though that work concerns debt rationing and we apply it to equity only by analogy. Signalling research adds that the same signal can be interpreted differently depending on who sends it (Alsos & Ljunggren, 2017).

Stereotypes and role congruity. Prejudice arises when the attributes ascribed to a group are seen as incongruent with a valued role (Eagly & Karau, 2002), and prescriptive stereotypes sanction those who violate expectations (Heilman, 2001). Investors' construction of potential can therefore differ by gender, as shown in a study of government venture capitalists (Malmström et al., 2017). Pitch styles that conform to stereotypes influence investor decisions (Balachandra et al., 2019), perceptions of fit with male-typed industries can penalise women (Kanze et al., 2020), and framing a venture's purpose can change how a founder's gender is evaluated (Lee & Huang, 2018).

Homophily and networks. People tend to associate with others like themselves (McPherson et al., 2001), and evaluators often favour candidates who resemble them in background and style (Rivera, 2012). In venture capital, where deals commonly arrive through referrals, homophily in networks shapes who is seen at all, before any evaluation begins.

Supply-side and structural mechanisms. Institutional arrangements, including family policy and labour market conditions, shape who becomes an entrepreneur and in which sectors, with women's entrepreneurship in some countries reflecting a response to constraints elsewhere (Thébaud, 2015). Founders who anticipate bias may adapt by bootstrapping, choosing capital-light sectors, or not seeking external investment. The literature on discouraged borrowers formalises this behaviour: firms that need credit may not apply because they expect to be refused (Kon & Storey, 2003), and the share of such firms can be measured in survey data (Cole & Sokolyk, 2016).

Critical perspectives and intersectionality

Critical work argues that the field has often taken male-typed ventures as the benchmark, casting women's ventures as deficient and neglecting the social construction of the entrepreneur (Ahl, 2006; Marlow & McAdam, 2013; Jennings & Brush, 2013). Organizational research also cautions that emphasis on merit does not guarantee fair outcomes: organizations that stress meritocratic values can show greater bias in favour of men (Castilla & Benard, 2010). Finally, the concept of intersectionality holds that overlapping categories, such as gender and race, create experiences that cannot be understood by considering each category separately (Crenshaw, 1989), and experimental work on leadership shows that race can change the stereotypes applied to women (Rosette et al., 2016). Most funding research examines one category at a time, and most treats gender as binary.

Positioning against pipeline and funnel models

The framework is related to, but distinct from, three families of models. The first is the leaky pipeline, which describes attrition across career stages, originally in science (Pell, 1996). The second is the gender filter account, which holds that a sequence of filters, not a uniform leak, produces attrition (Blickenstaff, 2005). The third is the practitioner funnel, in which a firm tracks the conversion of deals from sourcing to investment. We differ from these in four respects.

First, mechanisms are specified at each stage, with signatures that allow rival explanations to be separated (Section 4.8), whereas the pipeline metaphors describe where attrition occurs, not why. Second, the framework includes feedback loops: outcomes at later stages alter earlier ones by changing founders' expectations and investors' beliefs (Proposition 6), so the system is dynamic and path-dependent, not a one-way sequence. Third, the framework separates the sequential stages from the institutional and market context that conditions all of them (Proposition 7), which avoids treating context as a fifth filter. Fourth, it links the stages to inference: because selection at one stage changes the pool at the next, the framework identifies when funded-venture performance, applicant-pool composition, and stage-specific gaps can and cannot be read as evidence of bias (Proposition 5).

Approach

This paper is conceptual and follows the logic of theory synthesis, in which concepts from adjacent literatures are combined into a new theoretical account (Jaakkola, 2020). We conducted a purposive, integrative review (Snyder, 2019) of peer-reviewed research in entrepreneurship, finance, management, and sociology on gender, race, and access to capital. We prioritised foundational and frequently cited work, experimental and observational studies that isolate specific mechanisms, and critical contributions that question prevailing framings. Consistent with the principle of transparency in evidence-informed management review (Tranfield et al., 2003), we trace each proposition to the mechanisms and findings that motivate it.

Because a purposive review can be selective, we report the search and screening steps and took two further steps to reduce selection risk. *Search protocol.* [Authors to complete with actual details: databases searched,

e.g., Scopus and Web of Science; date of last search; search string, e.g., (gender OR race OR minority OR diversity) AND (venture capital OR angel OR "equity crowdfunding" OR "access to finance" OR "credit"); years covered; number of records identified, screened, and retained.] *Inclusion criteria.* We retained peer-reviewed articles, working papers from recognised research series, and foundational books that (a) test or theorise a mechanism linking founder characteristics to capital access or (b) provide evidence at a specific stage of the financing process. We excluded practitioner reports as evidence of mechanisms, though they are used only to illustrate scale. *Search for disconfirming evidence.* We searched specifically for studies reporting null or contrary findings, including field experiments, and for studies from outside the United States and from channels other than venture capital, and we report them in Section 2.2. *Recent literature.* We included work published between 2023 and 2026 where it bears directly on the propositions.

Coverage is nonetheless not exhaustive. The review remains purposive and not systematic, so selective coverage cannot be ruled out, and the propositions are theoretical statements to be tested rather than empirical findings.

A pipeline framework of funding gaps

Overview: four stages, feedback loops, and a context layer

We conceptualise the financing process as four sequential stages through which founders must pass, each of which can filter out or disadvantage some founders more than others: aspiration and application, access and sourcing, evaluation, and terms and follow-on. The central insight is sequential dependence: what happens at each stage alters the pool reaching the next. Two features distinguish the framework from a simple sequence. Feedback loops connect later stages to earlier ones, because outcomes alter founders' expectations and investors' beliefs. And institutional and market context, including investor demographics, decision rules, family and welfare policy, the design of public and alternative capital, and the tools used to screen applications, is a cross-cutting layer that conditions every stage but is not itself a filter that founders pass through. We therefore treat context as a moderating layer and not as a fifth stage. Figure 1 shows the structure, and Table 1 summarises stages, mechanisms, and levers.

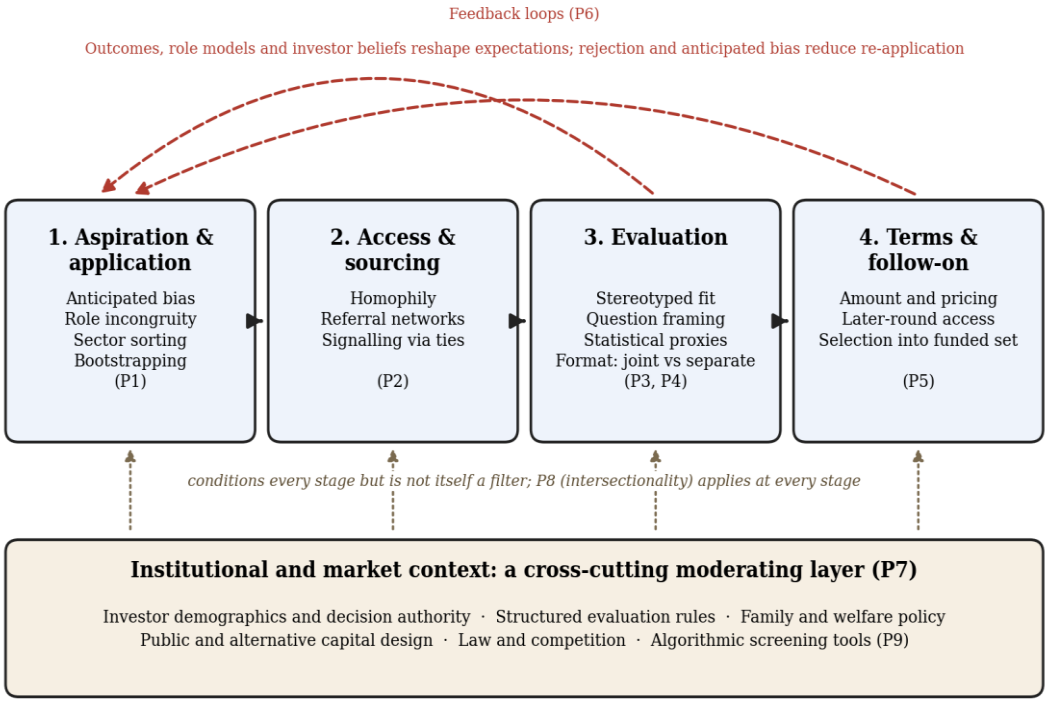


Figure 1. A pipeline framework of funding gaps: four sequential stages, feedback loops, and a cross-cutting institutional and market context layer.

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Table 1. The financing pipeline: mechanisms, evidence, and levers by stage

Pipeline stage	**Core mechanisms**	**Illustrative evidence**	**Diagnostic and remedial levers**
1. Aspiration and application	Anticipated bias; role incongruity; sorting into low-capital sectors; discouragement	Thébaud (2015); Guzman & Kacperczyk (2019); Hellmann et al. (2025); Kon & Storey (2003)	Track the application funnel by founder category; measure discouragement; visible role models; outreach
2. Access and sourcing	Homophily; warm-introduction networks; signalling through shared ties	McPherson et al. (2001); Greenberg & Mollick (2017); Ewens & Townsend (2020); Hegde & Tumlinson (2014); Howell & Nanda (2019)	Open and structured sourcing; diverse co-investor and referral networks
3. Evaluation	Stereotyped expectations; differential questioning; statistical discrimination	Brooks et al. (2014); Kanze et al. (2018); Balachandra et al. (2019); contrast Gornall & Strebulaev (2025)	Structured criteria; standardised questions; joint evaluation (Bohnet et al., 2016)
4. Terms and follow-on	Unequal amounts, pricing, and access to later rounds; asymmetric learning from failure	Fairlie et al. (2022); Brush et al. (2018); Hebert et al. (2025)	Benchmark terms by founder category; monitor follow-on rates
Context layer (cross-cutting)	Investor demographics and authority; welfare and family policy; public and alternative capital design; algorithmic tools	Thébaud (2015); Malmström et al. (2017); Fuster et al. (2022)	Public capital with accountable decision rules; reporting requirements; audits of screening tools

Source: Authors' synthesis of the literature reviewed.

Aspiration and application

The first filter operates before any investor is approached. Founders form expectations about whether external capital is attainable and whether investors will take them seriously. Where investor communities are visibly homogeneous, qualified founders from underrepresented groups may infer poor odds and either forgo applying, scale back ambitions, or choose sectors and financing modes that avoid investors, such as bootstrapping (Thébaud, 2015). This behaviour is a rational response to perceived bias and should not be mistaken for lower ambition. Evidence from equity crowdfunding is consistent with founders anticipating investor demand and asking for less (Hellmann et al., 2025), and the discouraged-borrower literature shows that non-application can be measured directly (Kon & Storey, 2003; Cole & Sokolyk, 2016). Its consequence is that the observed applicant pool understates the qualified population and may be less varied in quality than it otherwise would be.

Proposition 1. Among founders with comparable observable ex ante quality, the more visibly homogeneous an investor community is, the more likely founders from underrepresented groups are to forgo or downsize applications for external capital, reducing both the size and the quality of the applicant pool from these groups.

Access and sourcing

Founders who apply must still be seen. Deal flow in venture capital relies heavily on referrals and warm introductions, and homophilous networks mean that introductions travel along lines of shared background (McPherson et al., 2001). The composition of investors' networks therefore acts as a filter before evaluation begins, and evidence on ethnic matching and on networking frictions is consistent with this view (Hegde & Tumlinson, 2014; Howell & Nanda, 2019). Structured, open sourcing, such as open calls with standardised submission formats, reduces reliance on personal ties. Evidence from crowdfunding suggests that a wider base of potential backers can benefit founders in categories where they are underrepresented (Greenberg & Mollick, 2017). The experimental finding that unsolicited email pitches show no bias against women (Gornall & Strebulaev, 2025) is compatible with this stage being a primary location of the gap, since cold pitches bypass the referral channel through which most deals arrive.

Proposition 2. Reliance on referral-based sourcing reduces the share of underrepresented founders reaching evaluation, relative to open and structured sourcing.

Evaluation

Evaluation is the most studied stage. Stereotypes and statistical proxies operate most strongly where they have room to do so: when criteria are ambiguous, information is scarce, and candidates are assessed one at a time. Under such conditions, evaluators fall back on impressions of fit, and role incongruity and stereotyped expectations shape those impressions (Eagly & Karau, 2002; Heilman, 2001; Kanze et al., 2020). When evaluators compare candidates jointly rather than separately, performance information tends to weigh more heavily than gender stereotypes (Bohnet et al., 2016). Meritocratic rhetoric offers no guarantee against this: where organizations believe themselves to be objective, they may scrutinise their own decisions less (Castilla & Benard, 2010). The framework also helps to reconcile this literature with null results from cold-pitch experiments: a screening-stage reply is a low-stakes, low-information decision, whereas the evaluations studied in the stereotyping literature involve extended interaction in which fit judgements accumulate.

Proposition 3. Differences in evaluation outcomes by founder category are larger when criteria are ambiguous, information is scarce, and candidates are evaluated separately, and smaller under structured criteria and joint evaluation.

Evaluation also works through interaction. The questions investors ask frame how founders can present themselves. If founders are asked about gains, they can respond in terms of growth and vision, whereas if they are asked about avoiding losses, they are pushed toward defensive answers that signal lower potential (Kanze et al., 2018). Differences in questioning therefore act as a channel through which category-based expectations become differences in funding.

Proposition 4. Differences in the promotion or prevention framing of investor questions mediate the relationship between founder category and funding outcomes, and standardising question sets weakens that relationship.

Terms, follow-on, and the problem of selection

Founders who pass through evaluation may still receive smaller amounts, less favourable terms, or weaker access to follow-on rounds (Fairlie et al., 2022; Hebert et al., 2025). Evaluating post-investment performance introduces a selection problem. If underrepresented founders face a higher bar, those who are funded will on average be stronger than comparably funded majority founders, so equal or better performance among funded ventures is consistent with bias rather than evidence against it. This is the logic of the outcome test developed for discrimination research, whose interpretation requires care because the average and the marginal funded venture can differ (Becker, 1957; Knowles et al., 2001; Heckman, 1998). Moreover, the pattern depends on stage one. If discouragement removes high-quality founders from the pool before evaluation, the funded group may be drawn from a narrower distribution, and the performance advantage can shrink or vanish. Studies that

compare only funded ventures therefore risk drawing conclusions about bias from a sample shaped by the very filters in question.

Proposition 5. Conditional on comparable observable ex ante quality, where evaluation thresholds are higher for underrepresented founders, funded ventures from these groups outperform comparable funded ventures on average, but this advantage diminishes as discouragement removes high-quality founders from the applicant pool.

Feedback loops

Pipeline stages are linked in both directions. Rejection experiences and the visible fortunes of founders like oneself shape later decisions to apply, to seek follow-on funding, and to remain in entrepreneurship. Investor beliefs likewise update asymmetrically: evidence from serial founding shows that investors' experience with failed women-founded firms spills over negatively onto other women founders, with no matching positive spillover from successes (Hebert et al., 2025). Where such asymmetric learning operates, a single early failure can lower the funding prospects of a whole category, and a thin pipeline can then reinforce investor beliefs that few qualified founders exist. These loops make the system path-dependent and explain why gaps can persist even when no single stage shows large disparities in cross-section.

Proposition 6. Outcomes at later stages feed back to earlier stages: negative outcomes for founders of a category lower subsequent applications and follow-on funding for that category, and investors' beliefs update more strongly from failures than from successes of underrepresented founders, so that gaps are path-dependent and persist unless beliefs and visible role models change.

Institutional context as a moderating layer

The institutional environment conditions all stages: legal protections, family and welfare policy, the design of public capital programmes, and the composition of investment organizations (Thébaud, 2015; Malmström et al., 2017). It does not act as a separate filter. Instead it changes the strength of the stage-specific mechanisms, for example by increasing or reducing the discretion available at the evaluation stage or by changing the cost of anticipated bias at the application stage. A common remedy is to increase diversity among investors or to open alternative capital channels, including public venture funds and crowdfunding. Evidence that investor gender is associated with investment patterns (Ewens & Townsend, 2020) supports this logic, but diversity in numbers is not equivalent to diversity in influence. Newly recruited investors without decision authority, or alternative channels that replicate homophily and stereotyping, may leave gaps intact. Public programmes are not immune: government venture capitalists have been found to construct entrepreneurs' potential in gendered terms (Malmström et al., 2017).

Proposition 7. Institutional and market context moderates the strength of stage-specific mechanisms. In particular, greater investor diversity or the addition of alternative capital channels narrows funding gaps only when coupled with genuine decision authority and structured evaluation practices; otherwise, homophily and stereotyping reproduce gaps within the new arrangement.

Intersectionality and broader categories of disadvantage

Categories of disadvantage interact. A founder's gender may combine with race, age, class background, disability, sexual orientation, or immigration history to produce experiences that differ qualitatively from those of others in either category (Crenshaw, 1989). Stereotypes attached to intersecting categories are not additive: experimental evidence from leadership research shows that being Black and female does not simply sum the penalties attached to each category separately (Rosette et al., 2016). Research that estimates a gender effect and a race effect separately may therefore miss the distinctive position of, for example, Black women founders.

The framework extends to categories beyond gender and race, since the stage-specific mechanisms of anticipated treatment, homophily, stereotyped fit, and unequal terms are not specific to any one category. We

do not, however, assert magnitudes for categories such as age, disability, sexual orientation, or immigration status. Systematic evidence on access to venture capital for these groups remains sparse and mostly cross-sectional, and we therefore treat them as a research agenda in Section 7 and not as supported claims. Most existing studies also code gender as binary, often by inferring it from names or photographs, which excludes non-binary founders and may misclassify others.

Proposition 8. Funding disadvantages at the intersection of multiple underrepresented categories are not the sum of single-category disadvantages, and differ in form as well as in magnitude.

Algorithmic screening

Venture investors and lenders increasingly use algorithms and machine-learning tools to source and screen opportunities. Algorithmic screening may reduce the discretion in which stereotypes operate, but it may also encode historical patterns. Evidence from consumer lending shows both possibilities: algorithmic underwriting can reduce discrimination relative to face-to-face lending (Bartlett et al., 2022), yet machine-learning models can increase dispersion in outcomes across groups when they exploit rich information correlated with group membership (Fuster et al., 2022). A study of a widely used health algorithm illustrates a related mechanism: a model trained to predict cost as a proxy for need produced racially biased output because the proxy label itself reflected unequal access to care (Obermeyer et al., 2019). In venture settings, the equivalent risks are training on past funding decisions, which embed historical gaps, using features such as network position, prior funding, or elite affiliation that correlate with category, and optimising for outcomes observed only for the funded. We know of little causal evidence on algorithmic screening in venture capital, and the proposition below is offered as a conditional claim for testing.

Proposition 9. Algorithmic screening narrows founder-category gaps only when training data, features, and outcome labels are audited for historical bias and human override is structured; otherwise it reproduces historical patterns at scale, particularly where predictive features such as network position or prior funding correlate with founder category.

Rival explanations and identification

The framework does not claim that bias explains every gap. Differences in sector choice, growth ambition, and prior experience may account for part of the observed disparity, and the critical literature rightly warns against reading every difference as deficiency (Marlow & McAdam, 2013). What the framework adds is a way of separating rival accounts by their stage-specific signatures. A gap that arises before application points to aspiration and sorting; a gap among applicants who reach evaluation on equal observable terms points to sourcing or evaluation; a gap in amounts or follow-on among funded ventures points to terms. Where sorting into low-capital sectors is itself a response to anticipated treatment, the distinction between supply-side and demand-side explanations is blurred, because investors' expected behaviour shapes founders' choices. Empirical work should therefore avoid treating sector or ambition as neutral controls, since conditioning on variables that are downstream of anticipated bias can mask the very effect being estimated.

Scope and boundary conditions

The framework is developed for venture financing, in which a small number of investors screen many opportunities, deal flow relies on referrals, and decisions involve discretion. Its stages apply with different force to other channels, as summarised in Table 2. In bank lending, standardised underwriting reduces discretion at the evaluation stage, but discouragement, relationship lending, and pricing remain important (Alesina et al., 2013; Cole & Sokolyk, 2016). In crowdfunding, sourcing is open and evaluation is distributed across many backers, so homophily among backers and anticipated demand matter most (Greenberg & Mollick, 2017; Hellmann et al., 2025). In public grants, decision rules are formal and accountable, so context and decision authority dominate. Evidence is drawn mainly from the United States, with important exceptions from Europe and sub-Saharan Africa (Thébaud, 2015; Alsos & Ljunggren, 2017; Malmström et al., 2017; Asiedu et al., 2013); because institutions, financial systems, and norms differ across countries, the framework's mechanisms should be treated as transferable but their magnitudes as context-specific.

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Table 2. Scope: how the pipeline applies across financing channels

Channel	Stages most operative	Illustrative evidence	Transferability note
Venture capital and angel equity	All four; sourcing and evaluation discretion are high	Ewens & Townsend (2020); Gornall & Strebulaev (2025); Hebert et al. (2025)	Core scope of the framework
Equity and reward crowdfunding	Application (anticipated demand); access via backer homophily	Greenberg & Mollick (2017); Hellmann et al. (2025); Gafni et al. (2021)	Open sourcing reduces stage 2 but not stage 1
Bank and consumer-style debt	Application (discouragement); terms and pricing	Alesina et al. (2013); Cole & Sokolyk (2016); Kon & Storey (2003)	Standardised underwriting reduces stage 3 discretion
Sub-Saharan African firm finance	Application; terms; institutional context	Asiedu et al. (2013); Hansen & Rand (2014)	Measure choice affects estimated gaps
Public grants and programmes	Context layer and decision rules dominate	Malmström et al. (2017)	Accountable rules can limit or entrench gendered judgement

Source: Authors' synthesis of the literature reviewed.

Testing the framework: observable proxies and falsification conditions

Several propositions depend on quantities that are hard to observe, notably founder quality (Propositions 1 and 5). We therefore state for each proposition the observable proxies, the pattern that would falsify it, and an identification strategy. Table 3 summarises these, and we expand on the two most difficult cases below.

Table 3. Observable proxies, falsification conditions, and identification strategies

Proposition	Observable proxies	Falsified if	Identification strategy
P1 Discouragement	Intent-to-apply versus actual application among founders with comparable traction (revenue, prior exits, accelerator admission, patents); survey measures of discouraged founders; share of underrepresented partners and visible role models	Intent and application among comparable founders do not vary with investor-community homogeneity after controlling for sector and stage	Survey panels of founders before and after pitch events; variation across markets and over time in investor composition; difference-in-differences around entry of visible role models or funds
P2 Sourcing	Share of deals sourced by referral versus open call, by founder category	Share reaching evaluation does not differ between referral-based and open sourcing	Field or natural experiments that introduce open calls; platform data on channel of entry
P3 Evaluation conditions	Outcome gaps by ambiguity of criteria, information, and	Gaps do not differ between structured and unstructured, joint and	Audit and lab experiments varying format; adoption of structured scorecards as

	evaluation format	separate formats	natural experiment
P4 Question framing	Share of promotion versus prevention questions per pitch; transcript coding	Standardising questions does not weaken the founder-category effect on funding, or framing does not mediate it	Mediation analysis on pitch transcripts; field experiments with scripted question sets
P5 Selection and performance	Exit, valuation step-up, and follow-on outcomes conditional on pre-investment traction; market-level discouragement from P1	Funded underrepresented founders do not outperform on average, or outperformance does not decline with market-level discouragement	Outcome tests within investor and round (Knowles et al., 2001); co-founder comparison designs (Hebert et al., 2025); selection models with an exclusion restriction such as investor capacity shocks
P6 Feedback	Re-application and follow-on rates after failure or success; investor-portfolio spillovers	Investor portfolio failures of a category do not reduce later funding for that category, or successes spill over symmetrically	Event-study designs on portfolio outcomes (Hebert et al., 2025); panel data on re-application
P7 Context and diversity	Decision authority of diverse investors; presence of structured evaluation	Gaps narrow equally with and without decision authority or structure	Within-firm changes in partner composition and rules; comparisons across funds with different governance
P8 Intersectionality	Interaction terms for combined categories	Interaction terms are zero (effects additive)	Experiments with fully crossed designs (e.g., gender by race); large administrative samples
P9 Algorithms	Audit of model performance and false-negative rates by category; share of decisions overridden	Gaps do not differ between audited and unaudited tools, or with and without structured override	Audits of deployed tools; experiments varying algorithmic advice and override rules

Source: Authors' synthesis.

Proposition 1: observing discouragement without observing quality. Founder quality is unobservable, but pre-application indicators of traction can proxy for it without being outcomes of the financing process: revenue, customer count, prior exits, patents, and admission to accelerators or competitions. The test compares intent to seek capital and actual application among founders matched on such indicators, across markets that differ in the visible composition of the investor community. Survey measures of discouragement can be taken from the discouraged-borrower literature (Kon & Storey, 2003; Cole & Sokolyk, 2016). P1 is falsified if, among matched founders, application behaviour does not vary with investor-community homogeneity.

Proposition 5: identifying selection. The prediction is that funded underrepresented founders outperform on average where thresholds are higher, but that this outperformance declines with the intensity of discouragement. Three features help identification. First, conditioning on pre-investment traction compares founders who look alike ex ante. Second, within-investor, within-round comparisons net out investor and vintage effects, and comparisons of co-founders of the same venture net out venture quality (Hebert et al.,

2025). Third, to separate threshold effects from differences in the distribution of founders, one can use a selection model with an exclusion restriction, such as shocks to an investor's capacity to take deals that shift the number funded without changing founder quality, and the market-level measure of discouragement from P1 gives a direct test of the predicted decline. P5 is falsified if funded underrepresented founders do not outperform or if outperformance does not vary with discouragement. Even so, outcome tests need care, because the average and marginal funded venture can differ (Heckman, 1998; Knowles et al., 2001).

DISCUSSION

Theoretical contributions

The pipeline framework makes four contributions. First, it integrates explanations that have been studied separately by locating each at a stage and specifying how stages interact, and it differs from leaky pipeline and gender filter accounts by specifying mechanisms, feedback loops, and a separate context layer (Section 2.5). Second, it shows why contradictory findings can coexist. A null result at the email-reply stage (Gornall & Strebulaev, 2025) is compatible with gaps arising earlier, in sourcing and application, or later, in evaluation through extended interaction, amounts, and follow-on (Hebert et al., 2025). Selection and discouragement imply that funded women may perform as well as or better than funded men even where evaluation is biased, and that gaps may persist even where evaluators are not consciously prejudiced, because filters at earlier stages have already shaped the pool. Third, it gives a contingent account of bias in which ambiguity, information scarcity, and evaluation format determine when stereotypes matter, thereby moving the discussion from whether bias exists to when and where it operates. Fourth, it makes the propositions testable by stating proxies and falsification conditions, including for propositions that rely on unobservable quality. The framework also responds to critical scholarship by placing responsibility on organizational and institutional processes rather than on founders' supposed deficits.

Implications for practice and policy

For investors, the framework suggests monitoring the funnel by stage, since aggregate funding shares cannot show where filters operate, and reducing discretion where it is least needed through structured criteria, standardised question sets, and joint evaluation of candidates. Sourcing can be broadened through open calls and co-investment with investors whose networks differ, and diversity efforts should confer decision authority rather than symbolic presence. Investors should also audit any algorithmic screening tools for training-data bias and proxy features and should keep structured human override. Because investors' beliefs about a group can update asymmetrically after failures, firms should review whether portfolio experience with a few founders is being generalised to a whole category. For founders, awareness of how question framing works can help, but the burden of change should not fall on founders to alter their behaviour to suit biased expectations; interventions that ask founders to adapt without changing evaluators' practices leave the mechanisms intact. For policymakers, disclosure requirements for pipeline data, public capital programmes with accountable and diversified decision rules, audits of automated screening, and support for early-stage capital and networks in underserved communities are consistent with the framework. Programme design should avoid replicating the homophily it aims to correct, and in regions where evidence shows credit gaps, as in parts of sub-Saharan Africa (Asiedu et al., 2013), measurement of gaps should use more than one indicator (Hansen & Rand, 2014).

Limitations and future research

As a conceptual paper, this study offers propositions rather than tests, and the review is purposive and not systematic. The evidence reviewed comes predominantly from the United States and other high-income countries, with notable exceptions, and most studies treat gender as binary and examine one category at a time, which limits generalisability and the treatment of intersectionality. Evidence on age, disability, sexual orientation, and immigration status is sparse, and we have not claimed magnitudes for these groups. Recent experimental evidence is mixed, and the framework's reconciliation of null and positive findings depends on stage-specific differences that future work must test directly. Evidence on algorithmic screening in venture capital is limited, and Proposition 9 draws partly on evidence from lending and health.

Future research could test the framework using administrative or platform data that track founders through successive stages, allowing estimation of selection into and out of each stage. Audit and field experiments that vary sourcing channel, evaluation format, and question framing would test Propositions 2 to 4, while multilevel designs linking investor-team composition, decision rules, and portfolio outcomes would address Proposition 7. Event-study and panel designs on investor portfolios would test the feedback loops in Proposition 6. Qualitative studies of investment committees could reveal how criteria are negotiated in practice, provided that access can be secured. Configurational methods such as fuzzy-set qualitative comparative analysis (Fiss, 2011) may identify combinations of conditions that jointly narrow gaps. Studies should extend to age, disability, sexual orientation, and immigration status, to non-binary founders, and to settings in Africa, Asia, and Latin America, where the mix of channels differs. Finally, audits of algorithmic and AI-assisted screening tools in venture capital, including generative AI used in sourcing and diligence, would test whether automation reproduces or reduces the mechanisms identified here.

CONCLUSION

Funding gaps for women and other underrepresented founders are not the product of a single mechanism operating at a single moment. They emerge from a sequence of filters, from aspiration through access, evaluation, and terms, linked by feedback loops and conditioned by an institutional and market context that is not itself a filter. Each stage alters the pool that reaches the next, and later outcomes alter earlier expectations. Recognising this structure clarifies why evidence appears contradictory, including why some cold-pitch experiments find no bias while serial-founder and network studies find large gaps, identifies where interventions are most likely to work, and warns that remedies such as diversity targets, new capital channels, or algorithmic screening will fall short if they leave homophily and discretionary judgement intact. By pairing each proposition with observable proxies and falsification conditions, the framework offers a basis for more integrated research and for practices that treat funding gaps as properties of systems rather than of founders.

REFERENCES

1. Ahl, H. (2006). Why research on women entrepreneurs needs new directions. Entrepreneurship Theory and Practice, 30(5), 595–621.
2. Alesina, A. F., Lotti, F., & Mistrulli, P. E. (2013). Do women pay more for credit? Evidence from Italy. Journal of the European Economic Association, 11(S1), 45–66.
3. Alsos, G. A., & Ljunggren, E. (2017). The role of gender in entrepreneur–investor relationships: A signaling theory approach. Entrepreneurship Theory and Practice, 41(4), 567–590.
4. Asiedu, E., Kalonda-Kanyama, I., Ndikumana, L., & Nti-Addae, A. (2013). Access to credit by firms in Sub-Saharan Africa: How relevant is gender? American Economic Review, 103(3), 293–297.
5. Balachandra, L., Briggs, T., Eddleston, K., & Brush, C. (2019). Don't pitch like a girl!: How gender stereotypes influence investor decisions. Entrepreneurship Theory and Practice, 43(1), 116–137.
6. Bartlett, R., Morse, A., Stanton, R., & Wallace, N. (2022). Consumer-lending discrimination in the FinTech era. Journal of Financial Economics, 143(1), 30–56.
7. Becker, G. S. (1957). The economics of discrimination. University of Chicago Press.
8. Blickenstaff, J. C. (2005). Women and science careers: Leaky pipeline or gender filter? Gender and Education, 17(4), 369–386.
9. Bohnet, I., van Geen, A., & Bazerman, M. (2016). When performance trumps gender bias: Joint vs. separate evaluation. Management Science, 62(5), 1225–1234.
10. Brooks, A. W., Huang, L., Kearney, S. W., & Murray, F. E. (2014). Investors prefer entrepreneurial ventures pitched by attractive men. Proceedings of the National Academy of Sciences, 111(12), 4427–4431.
11. Brush, C. G., Greene, P. G., Balachandra, L., & Davis, A. E. (2018). The gender gap in venture capital: Progress, problems, and perspectives. Venture Capital, 20(2), 115–136.
12. Castilla, E. J., & Benard, S. (2010). The paradox of meritocracy in organizations. Administrative Science Quarterly, 55(4), 543–676.
13. Cole, R. A., & Sokolyk, T. (2016). Who needs credit and who gets credit? Evidence from the surveys of small business finances. Journal of Financial Stability, 24, 40–60.

14. Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. University of Chicago Legal Forum, 1989(1), 139–167.
15. Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. Psychological Review, 109(3), 573–598.
16. Ewens, M., & Townsend, R. R. (2020). Are early stage investors biased against women? Journal of Financial Economics, 140(1), 183–202.
17. Fairlie, R., Robb, A., & Robinson, D. T. (2022). Black and white: Access to capital among minority-owned start-ups. Management Science, 68(4), 2377–2400.
18. Fiss, P. C. (2011). Building better causal theories: A fuzzy set approach to typologies in organization research. Academy of Management Journal, 54(2), 393–420.
19. Fuster, A., Goldsmith-Pinkham, P., Ramadorai, T., & Walther, A. (2022). Predictably unequal? The effects of machine learning on credit markets. Journal of Finance, 77(1), 5–47.
20. Gafni, H., Marom, D., Robb, A., & Sade, O. (2021). Gender dynamics in crowdfunding (Kickstarter): Evidence on entrepreneurs, investors, deals and taste-based discrimination. Review of Finance, 25(2), 235–274.
21. Gompers, P. A., Mukharlyamov, V., & Xuan, Y. (2016). The cost of friendship. Journal of Financial Economics, 119(3), 626–644.
22. Gompers, P. A., & Wang, S. Q. (2017). Diversity in innovation (NBER Working Paper No. 23082). National Bureau of Economic Research.
23. Gornall, W., & Strebulaev, I. A. (2025). Gender, race, and entrepreneurship: A randomized field experiment on venture capitalists and angels. Management Science, 71(6), 5308–5327.
24. Greenberg, J., & Mollick, E. (2017). Activist choice homophily and the crowdfunding of female founders. Administrative Science Quarterly, 62(2), 341–374.
25. Guzman, J., & Kacperczyk, A. O. (2019). Gender gap in entrepreneurship. Research Policy, 48(7), 1666–1680.
26. Hansen, H., & Rand, J. (2014). Estimates of gender differences in firms' access to credit in Sub-Saharan Africa. Economics Letters, 123(3), 374–377.
27. Hebert, C., Yimfor, E., & Tookes, H. (2025). Financing the next VC-backed startup: The role of gender (NBER Working Paper No. 33943). National Bureau of Economic Research.
28. Heckman, J. J. (1998). Detecting discrimination. Journal of Economic Perspectives, 12(2), 101–116.
29. Hegde, D., & Tumlinson, J. (2014). Does social proximity enhance business partnerships? Theory and evidence from ethnicity's role in U.S. venture capital. Management Science, 60(9), 2355–2380.
30. Heilman, M. E. (2001). Description and prescription: How gender stereotypes prevent women's ascent up the organizational ladder. Journal of Social Issues, 57(4), 657–674.
31. Hellmann, T., Mostipan, I., & Vulkan, N. (2025). Entrepreneurial fundraising strategies and the gender gap: Theory and evidence from equity crowdfunding. Management Science. Advance online publication. https://doi.org/10.1287/mnsc.2024.06658
32. Howell, S. T., & Nanda, R. (2019). Networking frictions in venture capital, and the gender gap in entrepreneurship (NBER Working Paper No. 26579). National Bureau of Economic Research.
33. Jaakkola, E. (2020). Designing conceptual articles: Four approaches. AMS Review, 10(1–2), 18–26.
34. Jennings, J. E., & Brush, C. G. (2013). Research on women entrepreneurs: Challenges to (and from) the broader entrepreneurship literature? Academy of Management Annals, 7(1), 663–715.
35. Kanze, D., Conley, M. A., Okimoto, T. G., Phillips, D. J., & Merluzzi, J. (2020). Evidence that investors penalize female founders for lack of industry fit. Science Advances, 6(48), eabd7664.
36. Kanze, D., Huang, L., Conley, M. A., & Higgins, E. T. (2018). We ask men to win and women not to lose: Closing the gender gap in startup funding. Academy of Management Journal, 61(2), 586–614.
37. Knowles, J., Persico, N., & Todd, P. (2001). Racial bias in motor vehicle searches: Theory and evidence. Journal of Political Economy, 109(1), 203–229.
38. Kon, Y., & Storey, D. J. (2003). A theory of discouraged borrowers. Small Business Economics, 21(1), 37–49.
39. Lee, M., & Huang, L. (2018). Gender bias, social impact framing, and evaluation of entrepreneurial ventures. Organization Science, 29(1), 1–16.

40. Malmström, M., Johansson, J., & Wincent, J. (2017). Gender stereotypes and venture support decisions: How governmental venture capitalists socially construct entrepreneurs' potential. Entrepreneurship Theory and Practice, 41(5), 833–860.
41. Marlow, S., & McAdam, M. (2013). Gender and entrepreneurship: Advancing debate and challenging myths; exploring the mystery of the under-performing female entrepreneur. International Journal of Entrepreneurial Behavior & Research, 19(1), 114–124.
42. McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. Annual Review of Sociology, 27, 415–444.
43. Obermeyer, Z., Powers, B., Vogeli, C., & Mullainathan, S. (2019). Dissecting racial bias in an algorithm used to manage the health of populations. Science, 366(6464), 447–453.
44. Pell, A. N. (1996). Fixing the leaky pipeline: Women scientists in academia. Journal of Animal Science, 74(11), 2843–2848.
45. Phelps, E. S. (1972). The statistical theory of racism and sexism. American Economic Review, 62(4), 659–661.
46. Rivera, L. A. (2012). Hiring as cultural matching: The case of elite professional service firms. American Sociological Review, 77(6), 999–1022.
47. Rosette, A. S., Koval, C. Z., Ma, A., & Livingston, R. (2016). Race matters for women leaders: Intersectional effects on agentic deficiencies and penalties. The Leadership Quarterly, 27(3), 429–445.
48. Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. Journal of Business Research, 104, 333–339.
49. Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. American Economic Review, 71(3), 393–410.
50. Thébaud, S. (2015). Business as plan B: Institutional foundations of gender inequality in entrepreneurship across 24 industrialized countries. Administrative Science Quarterly, 60(4), 671–711.
51. Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. British Journal of Management, 14(3), 207–222.
52. Younkin, P., & Kuppuswamy, V. (2018). The colorblind crowd? Founder race and performance in crowdfunding. Management Science, 64(7), 3269–3287.