

Female Entrepreneurship and Alternative Opportunities Inside an Established Firm

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ABSTRACT

Using data on mutual funds between 1980 and 2005, we examine gender inequality in entrepreneurship. We propose and empirically show that women are less likely to become *start-up entrepreneurs* (i.e., launch new organizations) but more likely to become *intrapreneurs* (i.e., launch new internal ventures). These findings are partially explained by the demand-side perspectives, suggesting that gender-stereotyped perceptions are weaker in the corporate setting than in the marketplace, giving women relative advantage in pursuing opportunities inside the firm. We also find partial support for the supply-side perspectives: work-life conflicts incline women to pursue opportunities inside established firms. We do not find evidence that differences in risk taking across men and women drive gender differences in entrepreneurship. More generally, the study emphasizes the need for a broader definition of entrepreneurship in order to illuminate an important component of gender inequality in entrepreneurship.

INTRODUCTION

Sociological accounts of entrepreneurship have generated important insights into who becomes an entrepreneur and why (cf. Aldrich and Ruef, 2006; Thornton, 1999). Gender inequality is a persistent feature in entrepreneurship outcomes, with women being less likely to become entrepreneurs than men (Aldrich, 2005; Dobrev and Barnett, 2005; Ruef, Aldrich, and Carter, 2003) and less likely to outperform once a new venture is founded (Aldrich, 2005; Kim, Aldrich, and Keister, 2006; Ruef, Aldrich, and Carter, 2003; Yang and Aldrich, 2014). As a result, sociologists and management scholars have long sought to identify factors contributing to unequal outcomes for men and women in entrepreneurship. A common set of explanations suggests that existing processes systematically favor men, thus disadvantaging women. For example, scholars have argued that significant barriers in entrepreneurship arise due to women's limited exposure to entrepreneurial knowledge and skills (Belcourt, Burket, and Lee-Gosselin, 1991; Loscocco, Robinson, Hall, and Allen, 1991); small and homogenous social networks (Loscocco et al., 1991; Renzulli, Aldrich, and Moody, 2000); and persistent gender stereotypes rooted in cultural beliefs about gender (Gupta and Bhawe, 2007; Thébaud, 2010; Yang and Aldrich, 2014).

Though past studies have been instrumental in laying the foundation for understanding how gender impacts transition into entrepreneurship (e.g., see Jennings and Brush, 2013 for review), surprisingly little research has fully engaged with the complexity of the underlying mechanisms. Specifically, less is known about the ways in which men and women might pursue entrepreneurial opportunities, even though such opportunities and the well-established individual-opportunity nexus are at the core of the entrepreneurial process (Shane and Venkataraman, 2000).

In identifying the gender gap in entrepreneurship, scholars have generally focused on start-ups and examined whether women and men launch new organizations at different rates. However, a well-established research tradition suggests that entrepreneurship need not require a transition to self-employment or organizational founding *per se*. Beginning with Schumpeter (1954), a number of scholars have conceptualized entrepreneurship more broadly as the identification and exploitation of a value-creating opportunity, which leads to the creation of future goods, raw materials, and services (e.g., Venkataraman, 1997; Shane and Venkataraman, 2000). From this perspective, entrepreneurship is not limited to start-ups and small business; rather, it may also occur within a large, established firm, leading to the creation of new products or new divisions (Amit, Glosten, and Mueller, 1993; Burgelman, 1983; 1984; Pinchot, 1985; Hellman, 2007; Sørensen and Fassiotta, 2011). Hence, employees may exploit entrepreneurial opportunities on behalf of an incumbent firm, acting as *intrapreneurs* (Burgelman, 1983; 1984; Kacperczyk, 2012; Pinchot, 1985; Sørensen and Fassiotta, 2011).

Re-framing entrepreneurship in Schumpeterian terms has important implications for understanding the gender gap in entrepreneurship. After all, women may pursue entrepreneurial opportunities not only through start-ups but on behalf of an established, mature firm as well. Hence, to fully understand gender inequality in entrepreneurship, both modes of opportunity exploitation need to be considered.

In this study, we investigate whether there exist gender differences not only in the rates of start-ups but in the rates of intrapreneurship as well. We first propose that women are more likely to become *intrapreneurs* than *start-up entrepreneurs*. We subsequently argue that the rates of intrapreneurship will be higher for women than for men. We rely upon two broad

classes of mechanisms to theorize the reasons behind these predictions: demand-side explanations, which typically stress discrimination based on gender, and supply-side explanations, which usually focus on the occupational choices of female and male workers. With respect to the former, we consider: (a) status-based discrimination theories; and (b) resource-dependence theories to predict that negative gender stereotypes are weaker in the corporate setting than in the marketplace, facilitating women's access to opportunities and resources internally. With respect to the latter, we consider: (a) work-life balance theories; and (b) research on individual dispositions to predict that women will be more likely to become intrapreneurs than men.

Methodologically, identifying different modes of opportunity exploitation raises important empirical challenges. Though entrepreneurial opportunity is core to the entrepreneurial process (Shane and Venkataraman, 2000), finding a context in which researchers are able to observe the rates of start-ups as well as the rates of intrapreneurship can be difficult. We address this challenge by using unique data on internal ventures as well as external start-ups in the mutual fund industry between 1980 and 2005. In this setting, it is possible to identify fund managers who pursue entrepreneurial opportunities either through start-ups, by launching new firms, or through intrapreneurship, by taking charge of new funds inside a large, mature firm.

THEORY AND HYPOTHESES

Gender Gap in Entrepreneurship

We begin by assessing whether there is a gender gap in founding new organizations and then gauge its magnitude. There is a strong rationale to expect that, on average, women

will be less likely than men to leave paid employment in pursuit of entrepreneurship, defined as launching a start-up. First, a long tradition of research has documented gender differences across a range of entrepreneurial and scientific activity, such as joining corporate scientific advisory boards (Ding, Murray, and Stuart, 2013); assuming a leadership role in a new venture (Yang and Aldrich, 2014); or successfully running a new organization (Ruef, Aldrich, and Carter, 2003). This work has established a gender disadvantage in entrepreneurship and has concluded that differences in abilities and opportunities limit women's chances of successfully launching and managing entrepreneurial ventures. Studies have generally attributed gender disadvantage to three distinct factors: cultural beliefs about gender, social-network structure, and the lack of skills and knowledge conducive to successful entrepreneurship.

First, scholars have argued that the lower performance and higher failure rates of female-run start-ups reflect persistent stereotypes and deep cultural beliefs about women (e.g., Heilman and Chen, 2003; Thébaud, 2010). Because entrepreneurship is a male-typed activity (Gupta et al., 2009), women are put at a systematic disadvantage in the process of accumulating resources critical for new-venture survival (Gupta and Bhawe, 2007). For example, a number of studies have established that women tend to be perceived as lacking credibility, and as being less competent entrepreneurs more generally (Buttner and Benson, 1988; Thébaud, 2010), when seeking entrepreneurial funding (Moore and Buttner, 1997) or when being a member of the founding team (e.g., Yang and Aldrich, 2014).

Second, many studies have related lower performance of women-run ventures to gender differences in network structure and composition (Aldrich, 1989; Cromie and Birley, 1992). Such differences have been shown to reflect the patterns in the general population

(Marsden, 1987; Moore, 1990), whereby women overinvest in strong ties (Fischer and Oliker, 1983), or develop relatively small and homogenous networks (e.g., Aldrich, 1989; Aldrich, Elam, and Reese, 1997; Ruef, Aldrich, and Carter, 2003; Renzulli, 1998), all of which tends to limit access to diverse information and instrumental support central to entrepreneurial entry (Aldrich, 1989).

Finally, studies have suggested that the underperformance of female-run ventures reflects women's lack of exposure to the type of opportunities and knowledge that facilitate entrepreneurial success. Structural inequalities in occupation status, observed in the overall population, carry over to entrepreneurship and hinder women's ability to acquire entrepreneurial skills and resources (Hisrich and Brush, 1994; Loscocco, Robinson, Hall, and Allen, 1991). Because female employees are concentrated in low-profitability industries and occupations unlikely to facilitate the acquisition of entrepreneurial skills, they face systematic barriers when seeking to explore entrepreneurial opportunities (Loscocco et al., 1991; Kalleberg and Leicht, 1991).

Given that systematic barriers hinder women's success as entrepreneurs, we begin with a baseline expectation that women are *less likely than men to pursue entrepreneurial opportunities through start-ups*.

Intrapreneurship in an Established Firm

Beginning with Schumpeter (1954), many scholars have argued that entrepreneurship is a process of value creation through unique resource combinations for the purpose of exploiting an opportunity. From this perspective, an entrepreneur creates new combinations, which might take a form of new processes, products, services, or organizations. When defined as creating a new combination, entrepreneurship may, but does not have to, involve the

creation of new organizations. To the contrary, new combinations may be carried out in start-up ventures as well as in large conglomerates. Indeed, many scholars consider mature organizations as the engines of entrepreneurship, spurring the creation of new products, new divisions, and new technologies (Amit, Glosten, and Mueller, 1993; Damanpour, 1991; Burgelman, 1983; Pinchot, 1985, 1987; Schumpeter, 1954).

Building on this tradition, others have suggested that some processes of entrepreneurship are similar, regardless of whether an individual exploits an opportunity via a start-up or on behalf of an incumbent firm. In the latter case, employees act as *intrapreneurs*, who seek to exploit value-creating opportunities, much like start-up entrepreneurs (Stevenson and Jarillo, 1990; Morris, Kuratko, and Covin, 2013; Burgelman, 1983; Kacperczyk, 2012; Pinchot, 1985; Hellman, 2007; Sørensen and Fassiotto, 2011).¹ In particular, research has shown that intrapreneurs may generate, develop, and implement novel and risky initiatives inside an established organization (Damanpour, 1991; Burgelman 1983; 1984; Stevenson and Jarillo, 1990; Lumpkin and Dess, 1996). For example, at Fidelity, managers take charge of new “pilot funds” to experiment with novel investment objectives and test the market. Similarly, at Google, the engineer, Paul Buchheit, initiated Gmail, recognizing that the Internet had progressed to a point at which he could build a rich and complex web-based email tool (Stone, 2014).

But despite those similarities, entrepreneurship takes on unique attributes and distinct nuances in a corporate setting (Covin and Miles, 1999). Notably, scholars have observed that the distribution of risks and rewards is significantly different across start-up entrepreneurs and intrapreneurs. While the former are able to realize larger returns from their ownership of the

¹ Scholars have used the terms “intrapreneur” and “corporate entrepreneur” interchangeably (e.g., Burgelman, 1983; Pinchot, 1985; Hellman, 2007). In our study, we will use the term “intrapreneur.”

firm, rewards for the latter are generally limited to salary, a bonus, or small share of profits, because the company owns the core ideas and ventures (Hellman, 2007; Morris, Kuratko, and Covin, 2013; Stevenson and Jarillo, 1991). At the same time, intrapreneurs are ultimately less accountable for the risks incurred in the entrepreneurship process because they do not invest their own resources to develop a new concept or a new idea. Indeed, it is the parent company that supplies the necessary resources (e.g., finances, production facilities, brand, sales force and distribution channels) and therefore assumes the financial risk associated with intrapreneurship (Morris, Kuratko, and Covin, 2013). Yet intrapreneurship is not risk-free in that it might involve significant career concerns, potentially jeopardizing an employee's future career advancement, pay increases, or even the job, if the new venture fails (e.g., Gromb and Scharfstein, 2002). For example, at Google, senior vice president Vic Gundotra saw in 2010 that Google was being outmaneuvered by Facebook. He initiated the internal effort that became the social network Google Plus. When Google Plus did not catch on, Gundotra left the company (Schmidt and Rosenberg, 2014). At the same time, an intrapreneur benefits from a stable income and access to attractive amenities procured through paid employment (e.g., health insurance or a retirement fund), while start-up entrepreneurs generally hold poor-quality jobs with unstable salaries (e.g., Litwin and Phan, 2013; Sørensen and Fassiotto, 2011).

In sum, the decision about the mode of opportunity exploitation (paid employment versus self-employment) involves an acute tradeoff between risk and return. As discussed below, gender is likely to influence this tradeoff and incline women to exploit value-creating opportunities through intrapreneurship.

Gender and Intrapreneurship: Mechanisms

We propose that gender influences whether an individual exploits an entrepreneurial opportunity through a start-up or an established firm. Specifically, we focus on two broad classes of theories: demand-side explanations, which stress discrimination based on gender that reduces women's access to attractive opportunities, and supply-side explanations, which focus on workers' occupational preferences and choices to explain career outcomes. Below, we consider each of those explanations in turn.

Demand-Side Explanations. A fundamental challenge in launching start-ups lies in the entrepreneur's ability to attract resources for new ventures, which often hinges on the legitimacy and status of the entrepreneur (e.g., Stuart, Hoang, and Hybels, 1999). Indeed, an entrepreneur's ability to access opportunities and resources determines the long-term viability and success of the venture (Thornton, 1999). Two theoretical perspectives, status-based theories of discrimination (e.g., Correll and Ridgeway, 2003; Podolny, 1994; Ridgeway, 1991) and resource dependence (Pfeffer and Salancik, 1978), are relevant to revealing why opportunities for intrapreneurship might be more available and enticing to women.

First, the theory of status-based discrimination posits that evaluators rely on observable ascriptive characteristics when objective information might be difficult to assess (Ridgeway, 1991). Because gender is a prominent social category (Ridgeway and Correll, 2004), it is often used as a signal of quality and status, eliciting presumptions about an individual's qualifications and providing cues about status. Studies have shown that men are generally perceived as "higher-status actors" than women (Correll and Ridgeway, 2003), generating negative gender stereotypes. But the prevalence of common gender stereotypes within an organizational context is more complex, because the significance of status generally declines when uncertainty is lower and actors' competences can be assessed more directly

(e.g., Podolny, 1994; Simcoe and Waguespack, 2011). The reliance on gender decreases as additional cues on individual merit become more easily available to resource holders or evaluators in the firm. Indeed, a growing number of studies have suggested that women may not necessarily face more severe career disadvantages as they progress within an organization, because status-based discrimination is more difficult when information about an actor's merit becomes available. Scholars have found that the largest gender differences in wages exist at hire and become eradicated with organizational tenure (Petersen and Saporta, 2004), and that organizational decision makers rely less on gender in evaluating employees' competences, generating less subjective interpretations of women's qualifications (Stangor, Lynch, Duan, and Glass, 1992; Ridgeway and Correll, 2000). In the case of entrepreneurship, we expect that opportunities for entrepreneurship will be more available to women in a corporate setting than in the marketplace because gender stereotypes are generally weaker in the former context.

Resource-dependence theory (Pfeffer and Salancik, 1978) similarly suggests that organizational resource holders may be less prone to promote gender stereotypes. However, this theoretical perspective proposes a different causal mechanism, emphasizing instead the cost of discriminating based on gender when talent is in short supply. That is, women's chances improve when attracting and retaining men is difficult, because firms consider substitution with nontraditional candidates to assure an adequate supply of qualified personnel (Pfeffer and Salancik, 1978). For example, studies of occupational sex segregation have argued that the relative magnitudes of the demand and supply of qualified workers can prevent employers from acting on their implicit preferences in filling jobs (see Reskin, 1993, for review). Empirically, scholars have found that a shortage of qualified male workers

enhances women's access to traditionally male-dominated jobs and that women benefit when male talent is scarce (e.g., Abrahamson and Sigelman, 1987; Reskin and Roos, 1990).

Applied to the context of entrepreneurship, these studies imply that women's chances to pursue entrepreneurship will be greater in a corporate setting than in the marketplace. This is because men tend to exploit entrepreneurial opportunities through start-ups (Dobrev and Barnett, 2005; Reynolds, Carter, Gartner, and Greene, 2004; Ruef, Aldrich, and Carter, 2003), leaving a greater share of attractive opportunities to women. Overall, the status-based discrimination and resource-dependence perspectives suggest that negative gender stereotypes will be weaker in established firms than in the marketplace, facilitating women's pursuit of intrapreneurship. Hence, we expect:

Hypothesis 1: *Women are more likely to pursue entrepreneurial opportunities through intrapreneurship than through start-ups.*

To further explore these demand-side mechanisms, we follow a general approach in Petersen and Saporta (2004) to investigate the conditions under which the prevalence of gender-based stereotypes is expected to modify the relationship between gender and intrapreneurship in a systematic way. First, our argument that gender stereotypes are weaker as additional cues on individual merit become available, implies that women with longer tenure at the focal firm will reveal greater likelihood of intrapreneurship than will women with shorter tenure at the focal firm. Second, our argument that women have a relative advantage in a corporate setting because men are more likely to pursue entrepreneurship through start-ups, implies that women in organizations with a lower proportion of male workers (and a higher proportion of female workers) will be more likely to pursue intrapreneurship than women in organizations with a higher proportion of male workers (and a lower proportion of female workers). Hence,

Hypothesis 1a: *Tenure in the focal firm has a positive effect on women's likelihood to pursue entrepreneurial opportunities through intrapreneurship.*

Hypothesis 1b: *The proportion of female workers in the focal firm has a positive effect on women's likelihood to pursue entrepreneurial opportunities through intrapreneurship.*

Supply-Side Explanations. Next, we consider the supply-side approaches. While the demand-side theories highlight the factors that might reduce negative gender stereotypes, the complementary supply-side perspectives focus on factors that drive individual differences in preferences, shaping career choices and labor-market outcomes. Two perspectives rooted in the supply-side mechanisms – theories of work-life balance (e.g., Brett and Stroh 2003; Rothbard, 2001) and of individual differences in preferences and dispositions (Holland, 1985) – are particularly relevant for predicting gender-based differences in how entrepreneurial opportunities are exploited.

Scholars have long argued that women face disproportionate work-life demands due to childrearing and household chores, which tend to fall to a greater extent on women and to generate an acute conflict for female workers (e.g., Brett and Stroh 2003; Rothbard, 2001). Researchers have further found that the demands outside of work shape the perceived attractiveness of the occupational paths available to women, encouraging them to self-sort into employment options compatible with work and family (Aldrich and Cliff, 2003; Barbulescu and Bidwell, 2013; Konrad et al. 2000).

A number of studies suggest that launching a start-up is less compatible with work-family demands than working in dependent employment. First, work-family conflict tends to be greater among self-employed workers and small business owners, due to increased time commitment (Kalleberg and Leicht, 1991; Parasuraman and Simmers, 2001). For example, studies have found that even after a new venture takes off, entrepreneurs continue to work

longer hours and to be more involved in their jobs than wage workers (Parasuraman and Simmers, 2001; Harris, Salstone, and Fabroni, 1999). Moreover, due to small scale and constrained resources, start-ups provide their employees with poor-quality jobs, characterized by poor health care coverage and weak retirement plans (Litwin and Phan, 2013). The weak safety nets and scarce social benefits found in start-ups exacerbate the work-family conflicts for start-up entrepreneurs (Parasuraman and Simmers, 2001).² These studies collectively imply that women may hold a stronger preference for intrapreneurship than men, as paid employment is more compatible with the work-family demands that women face.

The second way in which supply-side perspectives can generate predictions about women's preferences for intrapreneurship is by explaining gender differences in individual dispositions and job preferences. Studies in this vein draw a link between the features of personality and vocational preferences, suggesting that fixed individual attributes are a reliable predictor of career choices (e.g., Holland, 1985). In the context of entrepreneurship, scholars have predominantly focused on risk taking and argued that a greater risk-taking propensity generally increases the hazard of launching a start-up (Kihlstrom and Laffont, 1979; Cramer et al., 2002; but see Xu and Ruef, 2004). Importantly, other studies have suggested that there are systematic differences in risk taking between men and women and that such differences might explain lower rates of female entrepreneurship (Pellegrino and Reece, 1982; Sexton and Bowman-Upton, 1990). Building on this research, we expect women

² One could argue that greater schedule flexibility, typically associated with launching a start-up, provides the latitude to balance the competing demands of work and family life. But the extant studies have generally found that work-family conflicts tend to be more acute for entrepreneurs than for wage workers, despite the potential benefits of schedule flexibility (e.g., Parasuraman and Simmers, 2001). Scholars have concluded that job involvement required by entrepreneurial roles, when coupled with parental demands, creates pressures that are not easily resolved by schedule flexibility. Hence, empirical evidence suggests that the benefits of autonomy and flexibility are unlikely to outweigh the costs of the long working hours and weak safety nets associated with self-employment.

to hold a stronger preference for intrapreneurship relative to men, given that intrapreneurship tends to be associated with lower risk than launching a start-up (Gromb and Scharfstein, 2002). Hence, a so-far untested implication of the supply-side arguments is that, relative to men, women will be more likely to pursue intrapreneurship.

Hypothesis 2: *Women are more likely than men to pursue entrepreneurial opportunities through intrapreneurship.*

To probe for the supply-side mechanisms in greater depth, we examine whether individual attributes might influence the relationship between gender and intrapreneurship. First, work-life demands theories imply that women's interest in pursuing intrapreneurship will be amplified as work-life conflicts increase. The supply-side family-work trade-off suggests that women will be more likely to pursue intrapreneurship than will men, when faced with greater work-life demands. Second, theories of gendered preferences suggest that (a) the propensity to take risk will be weaker for women than for men; and that (b) such gendered differences might drive higher rates of female intrapreneurship. Hence, we expect women to be less likely than men to take on risk and, in consequence, be more likely to pursue intrapreneurship. Together, the supply-side perspectives lead to the following hypotheses:

Hypothesis 2a: *Work-life conflict has a greater positive effect on women's likelihood to pursue entrepreneurial opportunities through intrapreneurship than it has for the likelihood for men.*

Hypothesis 2b: *Women are less likely than men to take on risk.*

Hypothesis 2c: *Gendered differences in risk taking mediate the differences in the pursuit of intrapreneurship by men and women.*

METHODS

Empirical Context: Mutual Funds

Methodologically, it is challenging to examine the pursuit of entrepreneurial opportunity

in a corporate setting as well as in the marketplace because the two modes of entrepreneurial entry are rarely observed in conjunction. This study takes advantage of a clean setting in which it is possible to identify a range of occupational choices available to male and female employees. In particular, with the current research design, we are able to convincingly measure the pursuit of entrepreneurial opportunity through an incumbent firm as well as through a start-up. By choosing a context in which those options can easily be measured, it is possible to account with greater precision for the mechanisms responsible for the gender gap in entrepreneurship. We take advantage of the U.S. asset-management industry between 1979 and 2005 to examine whether there exist gender differences in the rates of entrepreneurial-opportunity exploitation.

A mutual fund is a financial company that pools money from multiple investors to make investments in securities such as stocks or bonds. Fund managers, who are in charge of buying and selling securities, might pursue new-market or product opportunities in two distinct ways. First, they might become start-up entrepreneurs by leaving the parent organization in order to launch an independent start-up (i.e., asset-management company). For example, Renée Haugerud left paid employment to found Galtere Ltd., with assets under management estimated at \$2.5 billion. However, female transitions to self-employment are believed to be infrequent because of the systematic disadvantage associated with gender. A female entrepreneur working in the industry emphasized this challenge, noting: “It is harder for women to take the jump” (Kim, 1997). Similarly, accessing capital for an entrepreneurial venture is believed to be relatively more difficult for women. A limited access to start-up capital is often attributed to women’s small network of “personal connections” (Kim, 1997). As one of the female fund managers notes: “It’s an old boys’ club. Put differently, women are

excluded from informal networks on a day-to-day basis. One day, when you want to strike out on your own, this makes raising any money very challenging.”

Alternatively, fund managers may become intrapreneurs by initiating or running a new internal fund. Such funds represent internally-launched ventures that typically exploit new market opportunity, delivering products and services that the company does not currently offer (e.g., a company may start offering a socially-responsible investment funds). New funds lack performance track record, resources, and a customer base (Evans, 2010); fund managers in charge seek to grow and scale a new fund, attract and retain investors, and develop a differentiated investment strategy. Often, fund managers take the initiative to launch a new fund: They pitch their ideas to senior managers or executives in order to secure corporate buy-in and the internal seed capital (Evans, 2010).

From the manager’s perspective, launching a new fund holds the promise of future career advancement: If a new fund succeeds, a manager will boost his or her income, gain control and status in the firm. At the same time, taking charge of a new fund puts a fund manager’s reputation at stake because new ventures are more likely to fail (Burgelman and Valikangas, 2005). Indeed, past research has documented that managers of underperforming funds are more likely to be demoted or to experience involuntary turnover (Chevalier and Ellison, 1998).³

We conducted a number of semi-structured interviews with fund managers and found that women perceived starting or running a new internal fund in a corporate setting as more attractive. Notably, female fund managers admitted that they were attracted to paid employment and its accompanying family benefits. For example, one female fund manager

³ Although new-fund development involves significant risks, interviews with fund managers confirm the notion that managers typically view such activities as opportunities for career advancement.

explained that instead of going it alone, she “chose to stay in the firm rather than to become an entrepreneur, because [she] wanted to take advantage of numerous amenities that would make [her] family-life easier.” Another manager echoed this argument, claiming: “Striking out on my own would put a significant financial strain on my family. By keeping my job, I was able to satisfy the demands of work, while also being a good mom.” Finally, female managers emphasized that keeping paid employment was more appealing than going it alone due to the predictable and typically shorter work hours, relative to launching a start-up. In short, constraints on external opportunities as well as the attractiveness of internal opportunities were both evoked as determinants of relatively low rates of female start-ups.

Sample Construction

We obtained data on mutual funds from the Center for Research in Security Prices (CRSP) Survivorship-Bias-Free U.S. Mutual Fund Database on all live and defunct funds in the United States between 1980 and 2005. The main advantage of this database is that it provides rich monthly data on all types of mutual funds, including equity, bond, money market, and international funds. Fund characteristics include information on fund returns, age, and investment objectives. The complete database includes 8,013 mutual funds.⁴ In addition to information on funds and asset-management firms, we compiled data on fund managers, including both male and female workers. Using the Morningstar Mutual Funds OnDisc databases, we constructed each manager’s monthly career history in the industry, including their names, mutual fund employers, dates when their tenures began and ended in any asset-management firm, and the particular funds they supervised during the period of the study. The

⁴While the CRSP database reports more than 30,000 fund share classes, the latter being defined as load and fee structures, it is customary to aggregate across multiple share classes of the same fund. Consistent with the existing research, we aggregated the CRSP data across funds’ share classes to be able to uniquely identify each fund in the sample (Nanda, Wang, and Zeng, 2009). This reduces the sample size to 8,013 unique funds.

total sample includes 7,447 fund managers with complete career history data between 1980 and 2005. We used manager-month as the unit of analysis. For managers in charge of more than one fund, we aggregated observations across funds for any manager who supervises more than one fund in a mutual fund company. For robustness, we conducted the analyses on non-aggregated data and obtained similar results.

Variables

Dependent Variables. We used a categorical variable as the main dependent variable in our analyses. The variable specifies two main outcomes and varies monthly between the years of 1980 and 2005.

Start-up. The dependent variable equals “1” if an employee exits the parent company and launches a new firm at time $t + 1$. Organizational founding involves either launching another mutual fund or a hedge fund.⁵ To identify hedge fund foundings, we used the Lipper TASS Hedge Fund Database that tracks information on live and defunct hedge funds and the managers in charge of them. The database is considered highly suitable for academic research, because it provides the most complete and accurate information on hedge funds (Liang, 2000). Because the data report the name of each fund manager, they allow for identification of individuals who left the mutual fund industry to found a hedge fund. Organizational founding is coded “1” if the manager’s appearance in the company coincides with the company’s founding year and month. Unfortunately, the database does not report the fund’s founder. However, it is reasonable to assume that a manager who joins a new fund at the time this fund has been founded is likely to be either the fund’s founder or one of the fund’s co-founders. To

⁵ Although the two types of organizations have different regulatory constraints, mutual funds and hedge funds are essentially similar in that they represent professionally managed collective investments that pool money from multiple investors and typically invest in investment securities, such as stocks or bonds. However, for robustness, we focused on the creation of mutual funds only and obtained quantitatively and qualitatively similar results.

further improve identification, we only focused on cases in which a manager's appearance in the newly founded venture is followed by that manager's disappearance from the previous company.

Intrapreneurship. To measure intrapreneurship, we focus on launching a new fund inside an established firm. Prior research indicates that creating and running a new business unit is one of the primary ways in which entrepreneurial activity takes place within a large, established firm (Vesper, 1984; Morris, Kuratko, Covin, 2011). The variable is coded as "2" if an employee begins to supervise a newly-launched internal fund at time $t + 1$. Operationally, this activity is distinct from other changes in tasks and functions inside the firm: It indicates an event whereby a fund manager takes charge of a new mutual fund in the firm (e.g., Burgelman, 1983a; Lumpkin and Dess, 1996). In particular, the variable equals "2" if the fund manager's starting date of a new fund's supervision coincides with that fund's inception date inside the firm, and "0" otherwise. By contrast, we coded as "0" other internal job changes, which include the instances in which a manager joins an already existing fund within the firm. Moreover, we limited the set of fund managers at risk to individuals employed in the firm for at least six months prior to the new fund's inception; this mitigates the possibility that the measure of internal venturing is confounded with the firm's decision to hire external talent in order to supervise a new but already existing venture.⁶ We coded as "0" if an employee stayed put at time t and $t + 1$. This category encompasses managers who continue supervising their current fund at time t and $t + 1$, as well as managers who are appointed to supervise an already existing internal fund at $t + 1$.

Explanatory Variables. We used a number of explanatory variables at the individual

⁶ The results are robust to alternative interval specifications, such as 10 months or one year.

and organizational level. The main explanatory variable is gender. We constructed a dummy variable coded as “1” if an individual is a male and “0” otherwise. Unfortunately, the CRSP dataset does not provide information regarding a fund manager’s gender. However, as CRSP reports all managers’ first, middle, and last names, we extracted these data to identify a fund manager’s gender. To construct the gender variable, we used the U.S. Social Security Administration (SSA) name list. This publicly available list contains the most popular first names by gender for the last 10 decades, accounting for differences in spelling. To identify the gender of managers based on their names, we merged the SSA list with the names of mutual fund managers. For names that are difficult to classify according to gender, we used the middle name, if available. For international names, we conducted an additional search using on-line resources, fund prospectuses, and press releases. Finally, we collected the missing data for gender by using fund managers’ photographs available on-line.

We further controlled for managers’ human capital and experience. These controls are important, because gender differences in entrepreneurship activity are likely to reflect differences in education, and in human capital more broadly (Lerner, Brush, and Hisrich, 1997). We controlled for monthly fund returns, derived from the CRSP database. For managers who supervise multiple funds, we calculated an average monthly fund performance. Moreover, we controlled for a fund manager’s industry experience by including a measure of firm and job tenure. Prior research has used tenure in the firm or the industry to proxy for accumulation of job-specific or firm-specific experience. We constructed two variables: (a) tenure in the current firm as dating from the first month an individual was recorded as having worked in the firm; and (b) tenure in the job as dating from the first month an individual was recorded as having worked as a portfolio manager. These variables are measured in years.

Because both measures are highly skewed, we winsorized them at a 5% level to reduce the effect of outliers (Dixon, 1960). For robustness, we took a natural logarithm of job and firm tenure and found the same results. Moreover, we controlled for educational credentials by accounting for the degree the manager received. Accordingly, we included one dummy variable to indicate that a manager earned an MBA degree and another dummy variable to indicate that a manager earned a BA degree; a PhD degree was used as a reference category. Finally, we included a control for a manager's ethnicity. Ethnicity measure was collected from corporate websites, brochures and other Internet sources. Two coders independently coded ethnicity as either White or non-White, with the inter-rater reliability being 90%. When public profile was missing, we used the first name, the middle name, and the last name to infer ethnicity.

Opportunity Cost. An important determinant of entrepreneurial transition constitutes the opportunity cost of leaving current employment. Greater opportunity cost should reduce the probability that an employee will launch a new venture outside. In particular, controlling for opportunity cost is important, because such cost may potentially differ across men and women. For example, if women have a higher opportunity cost of leaving current employment, they may be less likely launch a start-up. Fund managers face greater opportunity costs of when the present returns to funds that they supervise are greater relative to the returns that they could earn outside. To proxy for one's opportunity cost of leaving current employment, we constructed a measure that calculates a fund's return for the focal manager at time t relative to return of funds supervised by other managers in the industry. We subtracted the focal manager's monthly fund return from the average monthly fund return of other managers in the industry. For managers who supervised multiple funds, we calculated the average monthly

fund return. To facilitate interpretation of the results, we took the inverse of the measure to indicate that the opportunity cost of leaving current employment increases with higher values of our measure.

Organizational Attributes. We additionally controlled for firm size, age, and performance. To measure size, we used a natural logarithm of the total assets under management. This variable is observed monthly. Age is the number of years since the firm's inception. We used the CRSP data to extract the date of incorporation for each mutual fund company. Firm performance is calculated as the average fund return for the focal firm using a value-weighted approach that involves multiplying each fund's return by its relative size in the investment firm and taking the sum across all weighted fund returns in the firm. We excluded performance of the focal fund manager. Moreover, we included a control for the extent to which a firm is diversified. To measure the extent of firm diversification, we counted the number of funds with different investment objectives within any given firm. In addition, we accounted for firm cash flow by using outside fund flows measured as firm total assets at time t minus firm total assets at time $t-1$ multiplied by return on the firm from period $t-1$ to t . For ease of comparison, we divided cash flow by firm total assets at time $t-1$. Hence, this variable measures monthly changes to proxy for how much new money flows into funds period by period.

We further accounted for two types of task attributes that may influence organizational founding: task breadth and task discretion. Controlling for such attributes is important, because gender inequality in entrepreneurship may reflect, in part, segregation across different tasks and jobs inside the firm. To measure task discretion, we focused on managers' decision-making power over the supervised funds. Relative to individually managed funds, team-

managed funds impose greater constraints on managers' discretion to select stocks to buy and sell. Consistent with this claim, past research suggested that managers supervising funds with others experience reduced discretion (Bar, Ciccotello, and Ruenzi, 2010). Hence, for each manager, we counted the number of co-managers with whom the focal manager supervises any given fund. Since a higher number of co-managers indicates lower discretion, we took the inverse of this measure to facilitate interpretation. We subsequently calculated the average discretion for any manager who supervises more than one fund. To proxy for task breadth, we counted the number of distinct investment objectives associated with funds currently under the focal manager's supervision. The greater the variety of funds' objectives, the greater the probability that a manager holds a variety of skills necessary to satisfy different customer segments. To identify a fund's investment objectives, we used the Standard & Poor's Classification System that distinguishes 176 unique fund categories. We divided the number of distinct funds supervised by the focal manager by the total number of distinct funds in the firm in order to adjust for firm-level attributes.

Model Specification

We used continuous-time, event-history techniques as the main empirical method to assess the potential gender differences in entrepreneurial activity.⁷ In particular, we modeled the two transitions as competing choices: At time t , an employee pursues one choice only and the two choices are mutually exclusive. This technique involves conducting analysis for each event type separately, while treating other competing events as censored categories. We modeled the hazard rate using semiparametric Cox models (Cox, 1972), a common approach used to model competing risk-survival data (e.g., Box-Steffensmeier and Jones, 2004). The

⁷ Though event-history techniques have been implemented as the main specification, we were able to replicate all findings using multinomial logit and multinomial probit models (McFadden, 1973).

Cox model takes the form,

$$h(t) = q(t)exp\{\alpha'X(t)\},$$

where $h(t)$ is the hazard rate of transitioning to a venturing destination at time t , $q(t)$ is a (possibly time-dependent) unspecified baseline rate; $X(t)$ is a vector of covariates, some of which may vary over time; and α' is the vector of coefficients corresponding to covariates.⁸ A notable feature of the Cox model is that it provides high-quality estimates even when many observations are right-censored (Tuma and Hannan, 1984). By contrast, discrete-time analyses discard information on censored events, potentially leading to biased estimates (Blossfeld and Rohwer, 1995). With event-history analyses, it is possible to alleviate an important concern that temporal variations in the probability of job transfers (inside or outside the firm) may bias the estimates. The dependent variables in our analyses are instantaneous rates of transition to a venturing activity, defined as,

$$r_m(t) = \lim_{dt \downarrow 0} \text{prob} \left(\frac{t \leq T < t+dt | T \geq t}{dt} \right),$$

where $r_m(t)$ is the hazard rate of movement from one state to another, $\text{prob}(\cdot)$ is the probability of movement between times t and $t + dt$, given that an individual is in the sample at time t . The main analyses were performed at an individual level and modeled as competing risk. This means that each individual is at risk of pursuing a start-up or intrapreneurship. We defined duration as the time (in months) elapsed since an individual enters the sample or the time since the last transition. Since virtually all individuals are represented more than once, this may lead to inflated t -statistics of the effects of individual-level characteristics. We therefore

⁸ An important advantage of the Cox model is that this analysis technique does not make any particular assumptions about the effect of time on the hazard rate. Instead, the coefficient estimates α' measure changes in the baseline rate due to the covariates in X , assuming that $q(t)$ does not depend on the covariates and that all such changes are proportional. This model was particularly appropriate for our analyses, because the initial non-parametric results fit no simple parametric formulation and reveal no clear pattern regarding the effect of time on the hazard rate.

adjusted for clustering standard errors at the individual level to provide robust-variance estimates (Lin and Wei, 1989). The main analysis produces three sets of parameter estimates, one corresponding to each of three types of transitions.

RESULTS

The final sample contains 516,808 individual-month observations, of which 465,486 have male managers and 52,764 have female managers. There are 922 women and 6,591 men in the sample. Women represent 12% of all fund managers. The data includes 3,682 instances of intrapreneurship and 658 instances of organizational founding. Female managers are on average younger (46.6 years old) than male managers (47.1 years old) ($p < 0.1$), and their firm tenure is typically shorter (51.6 months for women vs. 58.6 months for men; $p < 0.01$). Women are more likely to hold an MBA degree ($p < 0.1$), but men are more likely to hold a PhD degree ($p < 0.1$). As these characteristics might influence the behavior of fund managers, we controlled for them in the following analyses. Table 1 reports descriptive statistics and correlations for the main variables.

Insert Table 1 about here

Gender Differences in Launching a Start-up

Table 2 presents the results from continuous-time, event-history analyses, with employees who stay put being a base category. We begin by estimating the Cox regression model to explore whether the rates of start-ups differ by gender (Model 1). Results reported in Model 1 are consistent with prior findings (e.g., Aldrich, 2005; Dobrev and Barnett, 2005; Reynolds, Carter, Gartner, and Greene, 2004; Ruef, Aldrich, and Carter, 2003; Sørensen, 2007): The hazard of launching a start-up is systematically lower for female workers. As

Model 1 shows, the coefficient on *Female* is negative and statistically significant at less than 1% level. The estimated hazard of founding a new firm decreases by 2.1 times [$\exp(0.745)=2.1$], if the worker is a female. Having replicated prior findings, we now turn in Model 2 to the primary empirical strategy of assessing gender differences in intrapreneurship rates. As Model 2 shows, the coefficient on *Female* reverses: It is now positive and statistically significant at the 1% level. This reversal indicates that women are more likely to exploit new opportunities internally on behalf of the incumbent firm than externally via a start-up, consistent with our prediction in Hypothesis 1. In further analyses, we re-estimated the baseline specifications, now including a firm-fixed estimator to alleviate the concern that unobserved time-invariant characteristics of the firm might drive our findings. In Model 3, which estimates the hazard of launching a start-up, the coefficient on *Female* increases by 6%. In Model 4, which estimates the hazard of intrapreneurship, the coefficient on *Female* decreases by 5%. Overall, including a firm-fixed effect estimator helps increase our confidence that the results do not reflect unobserved firm-level heterogeneity.

Insert Table 2 about here

Mechanisms: Demand Side

In subsequent analyses, we investigated the demand-side explanations. To assess status-based discrimination, we examined whether an employee's tenure in the firm might moderate the gender effect on intrapreneurship in a systematic way. The estimates for the Cox models are reported in Table 3. Model 1, estimated on a subsample of women, shows a positive and statistically significant coefficient on *Firm Tenure*, indicating that the women with longer firm tenure are more likely to exploit internal opportunities than women with

shorter firm tenure. This result is consistent with the notion that firm tenure attenuates negative gender stereotypes (Petersen and Saporta, 2004), exposing women to more attractive opportunities internally. However, one concern is that our result might only reflect an employee's accumulated experience, if employees with longer tenure acquire experience that is conducive to exploiting new opportunities (either via start-ups or intrapreneurship). If experience drives our result, women with longer firm tenure will be more likely to launch start-ups, as well. To assess this possibility we re-estimated the baseline model to predict the hazard of launching a start-up. However, in Model 2, the coefficient on *Firm Tenure* is negative and not statistically significant, failing to lend support to this alternative explanation.

To investigate the demand-side mechanisms even further, we assessed the heterogeneous impact of firm tenure across women and men. As women are subject to negative gender bias, we expected the positive impact of firm tenure to be stronger for women than for men. We interacted *Firm Tenure* with the *Female* dummy and estimated their joint impact on intrapreneurship. As shown in Model 3, the coefficient on the interaction term is positive and statistically significant at less than 1% level, indicating that the positive impact of firm tenure on intrapreneurship is stronger for women. Taken together, these results are consistent with Hypothesis 1a, lending support to the notion that negative gender bias is likely weaker in the corporate context, increasing women's chances to pursue intrapreneurship.

In Models 4-6, we assessed the argument that internal opportunities are more accessible and attractive to women, as gender stereotypes become weaker due to shorter male-talent supply. *Female Proportion* was computed as a monthly proportion of female workers in the firm, with higher values indicating lower proportion of men.⁹ Model 4, estimated on the

⁹ To calculate this proportion, we computed the sum of all workers in the firm and subtracted 1 to account for the focal individual in the sample.

subsample of women, shows that the coefficient on *Female Proportion* is positive and statistically significant at the 5% level, suggesting that women are more likely to pursue intrapreneurship when their male coworkers are in shorter supply. This finding is consistent with the predictions generated by the resource-dependence theory in Hypothesis 1b, which suggests that shorter supply of male talent will reduce negative gender stereotypes, facilitating women’s access to opportunities in the firm. However, our finding may also reflect an alternative causal process: When male talent is scarce, women may gain better access to the kind of knowledge and training that are conducive to the pursuit of new opportunities. If access to knowledge drives the observed effect, women in organizations with fewer male coworkers will be more likely to launch start-ups. As shown in Model 5, the coefficient on *Female Proportion* is negative and not statistically significant, failing to provide support for the alternative mechanism. Finally, in Model 6, we assessed the heterogeneous effect of *Female Proportion* across women and men. The demand-side explanations predict that the positive effect of *Female Proportion* will be amplified for women, as gender stereotypes subside in organizations with lower proportion of male workers. We investigated this possibility by interacting *Female Proportion* with the *Female* dummy and estimating their joint effect on intrapreneurship. As shown in Model 6, the coefficient on the interaction term is positive and statistically significant at the 1% level. Taken together, these results are consistent with the claim that women’s access to opportunities inside the firm increases, as the supply of male talent in the firm diminishes, reducing negative stereotypes about gender.

Insert Table 3 about here

Mechanisms: Supply Side

We next turn our attention to the supply-side explanations. The supply-side perspectives predict that, relative to their male counterparts, women will hold stronger preferences to pursue intrapreneurship. As shown in Model 2 of Table 2, the prediction in Hypothesis 2 received an empirical support: The estimated hazard of launching an internal venture increases by 1.2 times [$\exp(0.209)=1.2$], if the worker is a female. This reversal from the result for start-ups suggests that women exhibit a higher propensity to pursue intrapreneurship than do men.

To probe the mechanisms behind this finding, we first focused on work-life demands. Based on the theories of work-life balance, we expected that women would be more likely to become intrapreneurs when work-life demands were stronger, enhancing women's preferences for paid employment. We used fertility age as a proxy for the strength of work-life demands because women in fertility age are more likely to make occupational choices compatible with acute work-family demands (e.g., Barbulescu and Bidwell, 2013). We followed prior studies and computed *Fertility Age* equal to "1" if an employee was between 30 and 40 years old, and "0" otherwise (Barbulescu and Bidwell, 2013). In Model 1 of Table 4, we interacted the *Female* dummy with the *Fertility Age* dummy in order to examine whether men and women exhibit differential propensities to pursue intrapreneurship depending on their life-cycle stages. A positive coefficient on the interaction term indicates that women are more likely than men to become intrapreneurs when between the ages of 30 and 40. This finding provides support for Hypothesis 2a.

To rule out the possibility that women in that age group exhibit a more general tendency to exploit new opportunities, we re-estimated the baseline model with launching a start-up as the dependent variable. As shown in Model 2, the effect reverses, revealing a

negative and statistically significant coefficient on the interaction term. This result suggests that women in fertility age are less likely than their male counterparts to launch start-ups. In subsequent analyses, we estimated the models for women and men separately. Model 3 estimates the impact of fertility age on the hazard of intrapreneurship for women. The coefficient on *Fertility Age* is positive and statistically significant at less than 1% level, validating our prediction that fertility age increases women's propensity to become an intrapreneur. In Model 4, we subsequently estimated the impact of fertility age on launching a start-up. The coefficient on *Fertility Age* is positive but not statistically significant, indicating that fertility age has a zero effect on women's propensity to launch a start-up. In Models 5-6, we re-estimated those specifications on the subsample of male workers. The results in Model 5 show a negative coefficient on *Fertility Age*: Men are less likely to become intrapreneurs when between the ages of 30 and 40. The results in Model 6 show a positive and statistically significant coefficient on *Fertility Age*: Men are more likely to launch start-ups when between the ages of 30 and 40. In combination, these findings are consistent with our argument that work-life demands are in part responsible for higher rates of female intrapreneurship.

Insert Table 4 about here

Finally, we assessed whether gendered preferences might drive the differences across women and men in the exploitation of entrepreneurial opportunities. Although risk-taking propensity is generally difficult to measure, we took advantage of the mutual fund context in which it is possible to account for an individual's risk-taking propensity (e.g., Brown, Harlow, and Starks, 1996). We followed prior studies and measured risk taking as fund volatility of returns, computed as the standard deviation of returns over the 12 months preceding a given

month. We considered risk-adjusted returns because returns may reflect the overall market volatility. Risk-adjusted returns were measured as the difference between fund return and market return in order to evaluate fund returns against the passive investment benchmark.¹⁰

In Model 1 of Table 5, we first estimated the OLS model to assess gender differences in risk-taking behavior. The coefficient on *Female* is negative and statistically significant, lending support to Hypothesis 2b, which suggests that men and women will vary in their propensity to take risk. In Model 2, we subsequently estimated the impact of risk taking on intrapreneurship. However, the coefficient on risk taking is not statistically significant, suggesting that risk-taking behavior does not mediate the relationship between gender and intrapreneurship. Accordingly, we conclude that the result fails to provide support for our prediction in Hypothesis 2c. In Model 3, we re-estimated the baseline specification to predict the impact of risk taking on the hazard of launching a start-up. The coefficient on *Risk Taking* is positive and statistically significant, suggesting that risk-taking propensity increases the hazard of founding a new organization. Although differences in risk taking partly account for differential rates of start-up entrepreneurship, they fail to explain differential rates of intrapreneurship. Overall, then, we find no support for the supply-side theories focused on individual dispositions.

Insert Table 5 about here

Robustness Checks

We performed several robustness checks to rule out alternative explanations. An important concern may be that our analyses reflect gender differences in promotion rates, with female workers exhibiting a greater tendency to be promoted. Though we had no reason to

¹⁰ We used the S&P 500 Index as our benchmark, because it is commonly used as a benchmark for equity funds.

expect this empirical regularity, we inspected this possibility by re-estimating the baseline specifications to estimate the hazard of internal promotion. To measure internal promotions, we created a dummy variable coded “1” if at time $t+1$ the fund manager moves to another *already-existing* fund with greater assets than the fund supervised at time t . Because salary in mutual funds is based on the percentage of assets under management, a move from a smaller to a larger fund is likely to represent career advancement. With this measurement, we were able to isolate 1,657 instances of internal promotions. The results presented in Model 1 of Table 6 estimate gender differences in the internal-promotion rates: The coefficient on *Female* is positive but not significant statistically. This suggests that women and men are equally likely to be appointed to larger funds.

A related concern may be that our results reflect higher propensity of female workers to be demoted. This concern is particularly credible because newly-launched funds are by default smaller and less attractive than more mature funds. To assess this possibility, we estimated the hazard of moving to a smaller *already-existing* fund. We investigated such possibility by re-estimating the baseline models with internal demotion as our dependent variable. Demotion equals “1” when a manager at time $t + 1$ moves to a fund with fewer assets under management than the fund supervised at time t . With this measurement, we were able to isolate 2,863 instances of internal demotions. Estimates presented in Model 2 of Table 6 show a negative and statistically significant coefficient. This result indicates that women are less likely than men to move to a smaller fund. Combined, these results increase our confidence that the main findings do not merely reflect gender differences in promotion or demotion chances.

DISCUSSION AND CONCLUSION

Past studies have shown that stark gender differences exist between men and women in entrepreneurship rates and new-venture performance (e.g., Aldrich, 2005; Dobrev and Barnett, 2005; Reynolds, Carter, Gartner, and Greene, 2004; Ruef, Aldrich, and Carter, 2003; Yang and Aldrich, 2014). This study complements past research, by devoting attention to the well-documented gender inequality in entrepreneurship. Building on the Schumpeterian view of entrepreneurship (Schumpeter, 1954; Shane and Venkataraman, 2000; Venkataraman, 1997) as well as research on intrapreneurship (e.g., Amit, Glosten, and Mueller, 1993; Damanpour, 1991; Burgelman, 1983; Pinchot, 1985, 1987; Schumpeter, 1954), we uncover a novel process behind gender inequality in entrepreneurship. First, consistent with past research, our study suggests that women are less likely than men to exploit entrepreneurial opportunities via start-ups. At the same time, we find that women are more likely to exploit new-market opportunities through intrapreneurship, by launching and supervising new ventures within established organizations. Demand-side and supply-side processes shed light on this empirical pattern. From the demand-side perspective, we find support for the theories of status-based discrimination: our results suggest that women have better access to entrepreneurial opportunities and resources in the corporate setting because gender bias is likely to be weaker in an established firm than in the marketplace. Although providing direct evidence for discrimination is rarely accomplished (Petersen and Saporta, 2004), the results are consistent with the demand-side perspectives for at least two reasons. First, we find that firm tenure, shown to reduce gender bias held by organizational decision makers (Petersen and Saporta, 2004), increases women's propensity to act as intrapreneurs. Second, higher proportion of female workers in the focal firm, shown to reduce negative gender biases, increases women's propensity to pursue intrapreneurship. Together, these findings imply that

negative gender stereotypes are likely to be weaker in organizations than in the marketplace, opening up attractive opportunities for female workers.

Moreover, we find partial support for the supply-side perspectives. Specifically, our findings indicate that stronger work-life demands which women face are in part responsible for higher rates of female intrapreneurship. Interestingly, we find no support in our data for the notion that higher rates of female intrapreneurship (and lower rates of female entrepreneurship) may reflect systematic gender differences in risk taking. In this way, our findings are consistent with studies suggesting that entrepreneurs might be risk-tolerant (Xu and Ruef, 2004).

The current findings open numerous avenues for future research. First, the present study extends the existing research on gender and entrepreneurship by documenting that women are more likely than men to pursue entrepreneurial opportunities via intrapreneurship, taking charge of new projects and divisions within established, mature organizations. In doing so, we contribute to the emerging line of work asking whether there is more or less gender inequality in entrepreneurial activity within an established firm (e.g., Jennings and Baruch, 2013). To our knowledge, our study is the first to empirically assess gender differences in the exploitation of an entrepreneurial opportunity in a corporate setting. Though we shed some light on the causal processes, future studies should investigate those mechanisms in greater depth. Specifically, scholars may want to leverage survey methods and qualitative research design to better understand how internal firm dynamics shapes the differential propensities of women and men to leave paid employment in order to launch a start-up. For example, women might be more likely to pursue internal opportunities, because they are less prone to engage in strategic disagreements with their employers (Klepper, 2007). More broadly, in examining the

gender gap in entrepreneurship, scholars may want to consider other forms of entrepreneurship as well. For example, a fruitful avenue of future research might investigate whether there exist gender differences in hybrid entrepreneurship and assess if women and men are equally likely to run start-ups, while also maintaining paid employment. More generally, examining potential gender differences in other forms of entrepreneurial activity will significantly enhance the understanding of when and why women pursue entrepreneurial opportunities.

Methodologically, the mutual fund setting offers key advantages: Alternative advancement opportunities within current employment are observable and easy to quantify directly. These characteristics of mutual funds enhance empirical precision. Although mutual funds are in many ways idiosyncratic, the theoretical mechanisms delineated in this context are likely to generalize beyond mutual funds to other professional settings with female representation. We expect our findings to be at least as strong in less professional contexts, where female workers assume weaker professional, but stronger family roles. Nonetheless, there are important scope conditions and limitations to consider. In particular, internal opportunities may be less prevalent in some industries, where the role of such options in driving the gender gap in entrepreneurship would be weaker. Similarly, our findings are less likely to apply to contexts where large established firms provide workers with fewer social benefits. In such contexts, women may be more likely to become start-up entrepreneurs, as a result of blocked opportunities in paid employment. For example, relative rates of female entrepreneurship may be higher in developing economies, where women have limited access to other advancement options (Jamali, 2009; Hisrich and Öztürk, 1999). Indeed, in those settings, mechanisms accounting for female entry into entrepreneurship are likely to differ.

Our findings have several implications for policy-makers. The first implication is that policy interventions most likely to succeed in fostering female entrepreneurship should be directed toward the conditions in large organizations. Our findings suggest that the corporate setting is more advantageous to female entrepreneurs than is the marketplace. Therefore, encouraging female entrepreneurship within large, established firms may be a more effective way to foster female participation in the economic growth. Second, our findings also point to the specific areas in which the gender gap in launching start-ups might be relieved with greater efficacy. Specifically, our findings accord with the notion that improving social benefits provisioned by entrepreneurial start-ups might encourage higher rates of female-run ventures. Finally, our study is consistent with the demand-side perspectives, highlighting the need to relieve negative gender stereotypes to foster greater female participation in entrepreneurship.

Table 1. Descriptive Statistics and Correlations Matrices

Variables	Mean	SD	Firm Size	Firm Age	Fund Performance	Employee's Age	Firm's Cash Flow	Task Breadth	Opportunity Cost	Firm Performance	Task Discretion
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Firm Size	8.102	2.753	1.000								
2. Firm Age	33.484	22.598	0.536	1.000							
3. Fund Performance	0.010	0.041	-0.012	-0.011	1.000						
4. Employee's Age	44.434	7.944	0.015	-0.032	-0.019	1.000					
5. Firm Cash Flow	4.620	1975.0	-0.052	-0.032	0.004	-0.002	1.000				
6. Task Breadth	0.306	0.333	-0.753	-0.398	0.020	0.029	0.051	1.000			
7. Opportunity Cost	0.000	0.036	-0.009	0.002	-0.296	-0.005	-0.001	-0.001	1.000		
8. Firm Performance	0.008	0.050	-0.002	-0.007	0.764	-0.013	0.003	0.011	-0.738	1.000	
9. Task Discretion	0.673	0.290	-0.080	0.007	0.007	-0.061	0.012	-0.014	0.010	0.002	1.000
10. Firm Tenure	3.290	1.200	0.052	0.092	0.002	0.223	-0.010	0.129	-0.002	0.001	0.029
11. Job Tenure	3.633	1.172	0.069	0.044	-0.008	0.299	-0.009	0.029	-0.003	-0.005	-0.004
12. Diversification	13.327	14.203	0.704	0.524	-0.021	0.047	-0.032	-0.569	-0.001	-0.008	0.017
13. White	0.856	0.350	-0.004	0.009	-0.001	0.038	-0.002	0.033	-0.010	0.004	-0.059
14. MBA	0.788	0.409	0.081	0.056	-0.002	0.012	-0.002	-0.087	0.009	-0.004	0.063
15. BA	0.195	0.396	-0.079	-0.051	0.002	-0.029	0.002	0.081	-0.009	0.005	-0.054
16. Female	0.890	0.302	0.059	0.030	-0.004	-0.032	-0.005	-0.072	0.002	-0.003	0.002

Variables	Firm Tenure	Job Tenure	Diversification	White	MBA	BA	Female
	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Firm Size							
2. Firm Age							
3. Fund Performance							
4. Employee's Age							
5. Firm Cash Flow							
6. Task Breadth							
7. Opportunity Cost							
8. Firm Performance							
9. Task Discretion							
10. Firm Tenure	1.000						
11. Job Tenure	0.698	1.000					
12. Diversification	0.031	0.023	1.000				
13. White	0.038	0.038	0.004	1.000			
14. MBA	-0.035	-0.051	0.092	-0.025	1.000		
15. BA	0.032	0.042	-0.085	0.033	-0.948	1.000	
16. Female	-0.033	-0.036	0.052	0.046	0.020	-0.012	1.000

Table 2. Cox regressions of the Effect of Gender on Entrepreneurship

Variables	Start-up (1)	Intrapreneurship (2)	Start-up (3)	Intrapreneurship (4)
Female	-0.745*** (0.202)	0.209*** (0.067)	-0.797*** (0.207)	0.198*** (0.063)
White	0.062 (0.126)	0.076 (0.070)	0.120 (0.131)	0.165** (0.071)
MBA	-0.952*** (0.234)	-0.319** (0.152)	-1.069*** (0.240)	-0.345** (0.142)
BA	-1.018*** (0.243)	-0.485*** (0.160)	-1.141*** (0.253)	-0.481*** (0.151)
Employee's Firm Tenure	0.004*** (0.002)	0.006*** (0.001)	0.002 (0.002)	0.003*** (0.001)
Employee's Job Tenure	-0.004*** (0.001)	-0.006*** (0.001)	-0.300*** (0.038)	-0.005*** (0.001)
Employee Age	-0.295*** (0.035)	-0.120*** (0.024)	-0.294*** (0.041)	-0.103*** (0.024)
Employee Age Squared	0.003*** (0.000)	0.001*** (0.000)	0.003*** (0.000)	0.001** (0.000)
Firm Size	-0.063** (0.027)	0.156*** (0.017)	-0.133** (0.062)	0.098*** (0.036)
Firm Age	-0.004* (0.002)	0.003*** (0.001)	-0.067*** (0.024)	0.061*** (0.014)
Fund Performance	1.044 (1.769)	-1.551** (0.727)	0.636 (2.054)	-1.863** (0.820)
Firm Cash Flow	-0.014 (0.025)	-0.032** (0.015)	-0.003 (0.007)	-0.002 (0.002)
Task Breadth	-0.229 (0.187)	1.668*** (0.111)	-0.114 (0.314)	3.128*** (0.167)
Opportunity Cost	-2.610 (2.418)	-2.274*** (0.818)	-2.318 (2.256)	-1.535* (0.832)
Firm Performance	-2.823 (2.561)	0.061 (0.855)	-2.850 (2.663)	0.538 (0.872)
Task Discretion	-0.225 (0.155)	0.621*** (0.079)	-0.002 (0.196)	0.549*** (0.104)
Firm Diversification	-0.006*** (0.001)	-0.003*** (0.000)	-0.016*** (0.003)	-0.012*** (0.001)
Observations	516,808	516,808	516,808	516,808
Log likelihood	-7740	-44066	-7221	-42373

Robust standard errors in parentheses; *** p<0.001, ** p<0.01, * p<0.05, + p<0.1

Table 3. Cox regressions of the Effect of Gender on Entrepreneurship: Demand-Side Perspectives

Variables	Intrapreneurship	Start-up	Intrapreneurship	Intrapreneurship	Start-up	Intrapreneurship
	Women (1)	Women (2)	Full sample (3)	Women (4)	Women (5)	Full sample (6)
Female *Empl. Firm Tenure	-	-	0.0049** (0.002)	-	-	-
Female *Female Proportion	-	-	-	-	-	0.7351*** (0.220)
Female Proportion	-	-	-	3.7365* (1.685)	-4.5395 (4.297)	0.0614*** (0.018)
Female	-	-	0.0264 (0.082)	-	-	0.1749 (0.124)
White	-0.7973*** (0.183)	-0.0074 (0.537)	0.0770 (0.070)	-0.7919*** (0.183)	0.0142 (0.549)	0.0865 (0.070)
MBA	0.3556 (0.527)	-0.0438 (1.077)	-0.3274* (0.150)	0.3747 (0.489)	-0.0765 (1.050)	-0.3218* (0.148)
BA	-0.3257 (0.549)	-0.4366 (1.053)	-0.4950** (0.159)	-0.3066 (0.513)	-0.4934 (1.026)	-0.4895** (0.157)
Employee's Firm Tenure	0.0071*** (0.002)	-0.0065 (0.007)	0.0055*** (0.001)	0.0068*** (0.002)	-0.0061 (0.007)	0.0058*** (0.001)
Employee's Job Tenure	-0.0079*** (0.002)	-0.0047 (0.006)	-0.0061*** (0.001)	-0.0077*** (0.002)	-0.0046 (0.006)	-0.0061*** (0.001)
Employee Age	0.2771+ (0.163)	-0.0494 (0.512)	-0.1185*** (0.024)	0.2865+ (0.162)	-0.0745 (0.519)	-0.1175*** (0.024)
Employee Age Squared	-0.0046* (0.002)	-0.0010 (0.007)	0.0007** (0.000)	-0.0047* (0.002)	-0.0007 (0.007)	0.0007** (0.000)
Firm Size	0.0618 (0.040)	-0.2534* (0.100)	0.1567*** (0.017)	0.0782+ (0.041)	-0.2620** (0.100)	0.1565*** (0.017)
Firm Age	0.0036 (0.003)	-0.0084 (0.009)	0.0033** (0.001)	0.0040 (0.003)	-0.0085 (0.009)	0.0033** (0.001)
Fund Performance	-3.5030 (2.338)	3.5054 (3.088)	-1.4879* (0.733)	-3.4304 (2.328)	3.6434 (3.048)	-1.5058* (0.728)
Firm Cash Flows	-0.0447 (0.057)	0.0010 (0.002)	-0.0317* (0.015)	-0.0472 (0.058)	0.0006 (0.002)	-0.0334* (0.016)
Task Breadth	1.2162*** (0.314)	-1.0135+ (0.601)	1.5866*** (0.110)	0.6746** (0.235)	-0.2031 (0.736)	0.6962*** (0.079)
Opportunity Cost	-9.1723*** (2.339)	13.3001 (10.273)	-2.3333** (0.822)	-9.1032*** (2.312)	13.5078 (10.302)	-2.3284** (0.823)
Firm Performance	5.3707* (2.636)	-12.2095 (8.614)	0.1298 (0.864)	5.2605* (2.601)	-12.4442 (8.631)	0.1217 (0.859)
Task Discretion	0.6779** (0.235)	-0.2646 (0.746)	0.6697*** (0.080)	0.6746** (0.235)	-0.2031 (0.736)	0.6962*** (0.079)
Firm Diversification	-0.0057 (0.005)	-0.0041 (0.005)	-0.0116*** (0.002)	-0.0058 (0.004)	-0.0046 (0.005)	-0.0127*** (0.002)
Log Likelihood	52,607	52,607	516,808	52,607	52,607	516,808
Observations	-4532.6	-324.4	-43356.45	-4534.6	-324.8	-43364.3

Robust standard errors in parentheses; *** p<0.001, ** p<0.01, * p<0.05, + p<0.1

Table 4. Cox regressions of the Effect of Gender on Entrepreneurship: Supply-Side Perspectives (Work-Life Demands)

Variables	Intrapreneurship	Start-up	Intrapreneurship	Start-up	Intrapreneurship	Start-up
	Full sample (1)	Full sample (2)	Women (3)	Women (4)	Men (5)	Men (6)
Fertility Age * Female	3.4342*** (0.257)	-1.1619** (0.426)				
Fertility Age	0.0144 (0.079)	3.5439*** (0.216)	5.3524*** (0.307)	0.5792 (0.744)	-0.3088*** (0.075)	3.6722*** (0.218)
Female	1.7843*** (0.223)	-0.0017 (0.239)				
White	0.1013 (0.076)	-0.0054 (0.138)	-0.8041*** (0.220)	0.0159 (0.518)	0.2555** (0.082)	-0.0063 (0.144)
MBA	-0.1585 (0.174)	-0.7110** (0.262)	1.0393+ (0.577)	0.1447 (1.040)	-0.3761* (0.157)	-0.7325** (0.275)
BA	-0.4148* (0.183)	-0.9749*** (0.268)	-0.0611 (0.593)	-0.2941 (1.039)	-0.4749** (0.166)	-0.9900*** (0.283)
Employee's Firm Tenure	0.0057*** (0.001)	0.0032+ (0.002)	0.0087*** (0.002)	-0.0063 (0.007)	0.0056*** (0.001)	-0.0031+ (0.002)
Employee's Job Tenure	-0.0064*** (0.001)	-0.0090*** (0.001)	-0.0107*** (0.002)	-0.0053 (0.006)	-0.0057*** (0.001)	-0.0092*** (0.001)
Employee Age	-0.0880*** (0.024)	0.0652 (0.052)	-0.0663 (0.126)	-0.1502 (0.551)	-0.1414*** (0.024)	0.1079* (0.055)
Employee Age Squared	0.0005* (0.000)	0.0003 (0.000)	0.0022 (0.001)	0.0005 (0.007)	0.0009*** (0.000)	-0.0001 (0.000)
Firm Size	0.1588*** (0.017)	-0.0581* (0.026)	0.0122 (0.045)	-0.2572** (0.100)	0.1742*** (0.018)	-0.0470+ (0.027)
Firm Age	0.0026* (0.001)	-0.0052* (0.002)	0.0024 (0.004)	-0.0090 (0.010)	0.0031* (0.001)	-0.0050* (0.002)
Fund Performance	-1.3920+ (0.760)	0.8630 (2.117)	-4.5501+ (2.682)	3.6493 (3.258)	1.8774* (0.747)	0.5054 (2.244)
Firm Cash Flows	-0.0246 (0.015)	-0.0026 (0.009)	-0.0322 (0.047)	0.0008 (0.002)	-0.0298+ (0.016)	-0.0034 (0.012)
Task Breadth	1.5287*** (0.114)	-0.4029* (0.188)	0.5033 (0.319)	-1.1462+ (0.614)	1.6585*** (0.115)	-0.3663+ (0.196)
Opportunity Cost	-2.6075** (0.856)	-3.0544 (2.655)	-11.9027*** (2.930)	13.6970 (10.844)	-1.5138+ (0.870)	-4.4174+ (2.615)
Firm Performance	0.2277 (0.891)	-3.0487 (2.859)	7.2880* (2.898)	-12.5546 (8.960)	-0.4236 (0.899)	-4.3163 (2.877)
Task Discretion	0.7286*** (0.084)	-0.2493 (0.165)	0.8602** (0.284)	-0.2810 (0.744)	0.6914*** (0.085)	-0.2809+ (0.170)
Firm Diversification	-0.0123*** (0.002)	-0.0062*** (0.001)	-0.0170* (0.007)	-0.0044 (0.005)	-0.0124*** (0.002)	-0.0064*** (0.001)
Log Likelihood	-42871.5	-7286.3	-3850.9	-324.03	-37369.7	-6806.1
Observations	516,808	516,808	52,607	52,607	464,201	464,201

Robust standard errors in parentheses; *** p<0.001, ** p<0.01, * p<0.05, + p<0.1

Table 5. Cox regressions of the Effect of Gender on Entrepreneurship: Supply-Side Perspectives (Risk taking)

Variables	Risk Taking	Intrapreneurship	Start-up
	Full sample (1)	Full sample (2)	Full Sample (3)
Risk Taking		-1.0818 (1.176)	8.3752*** (1.300)
Female	-0.0018** (0.001)	0.2135** (0.067)	-0.7439*** (0.206)
White	-0.0002 (0.001)	0.0744 (0.070)	0.0782 (0.125)
MBA	-0.0027+ (0.002)	-0.3159* (0.148)	-0.9309*** (0.221)
BA	-0.0007 (0.002)	-0.4856** (0.157)	-1.0167*** (0.231)
Employee's Firm Tenure	-0.0000 (0.000)	0.0058*** (0.001)	0.0042* (0.002)
Employee's Job Tenure	0.0000 (0.000)	-0.0061*** (0.001)	-0.0038** (0.001)
Firm Size	0.0001 (0.000)	0.1568*** (0.017)	-0.0512+ (0.027)
Firm Age	0.0001*** (0.000)	0.0033** (0.001)	-0.0045* (0.002)
Fund Performance	0.0163** (0.006)	-1.4596+ (0.773)	0.0055 (1.087)
Employee Age	-0.0006*** (0.000)	-0.1200*** (0.024)	-0.2860*** (0.035)
Employee Age Squared	0.0000** (0.000)	0.0007** (0.000)	0.0025*** (0.000)
Firm Cash Flows	-0.0000** (0.000)	-0.0341* (0.016)	-0.0127 (0.024)
Task Breadth	0.0081*** (0.001)	1.6105*** (0.110)	-0.3159+ (0.187)
Opportunity Cost	0.0612*** (0.005)	-2.2344** (0.838)	-3.8578+ (2.110)
Firm Performance	-0.0648*** (0.006)	0.1059 (0.893)	4.1832+ (2.189)
Task Discretion	-0.0025*** (0.001)	0.6688*** (0.080)	0.2619+ (0.155)
Firm Diversification	-0.0004*** (0.000)	-0.0117*** (0.002)	-0.0052*** (0.001)
R-Squared	0.115	-	-
Log Likelihood	-	-43797	-7574.0
Observations	515,626	515,626	515,626

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, *p<0.1

Table 6. Cox regressions of the Effect of Gender on Internal Promotion and Demotion: Alternative Explanations

Variables	Internal Promotion (1)	Internal Demotion (2)
Female	0.050 (0.093)	-0.160** (0.078)
White	-0.146* (0.085)	0.136** (0.069)
MBA	-0.257 (0.206)	0.012 (0.182)
BA	-0.438** (0.213)	-0.331* (0.188)
Employee's Firm Tenure	-0.020*** (0.002)	-0.039*** (0.002)
Employee's Job Tenure	-0.003*** (0.001)	-0.003*** (0.001)
Employee Age	-0.118** (0.055)	-0.215*** (0.030)
Employee Age Squared	0.000 (0.001)	0.002*** (0.000)
Firm Size	0.091*** (0.018)	0.014 (0.015)
Firm Age	0.005*** (0.001)	0.007*** (0.001)
Fund Performance	-1.067 (1.380)	0.903 (0.854)
Firm Cash Flows	-0.000 (0.000)	-0.000 (0.001)
Task Breadth	-0.066 (0.149)	-0.236** (0.114)
Opportunity Cost	-2.689 (1.662)	-1.151 (1.174)
Firm Performance	2.637 (1.675)	-0.821 (1.071)
Task Discretion	0.034 (0.107)	0.490*** (0.080)
Firm Diversification	-0.019*** (0.003)	-0.016*** (0.002)
Observations	516,808	516,808
Log Likelihood	-18118	-32428

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

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