



Paper to be presented at the DRUID Academy Conference 2017 at University of Southern Denmark, Odense, Denmark on January 18-20, 2017

Badge of Honor or Scarlet Letter? Unpacking Failure in Venture Teams

Diego Zunino
Copenhagen Business School
INO
dz.ino@cbs.dk

Mirjam Van Praag
Copenhagen Business School
INO
mvp.ino@cbs.dk

Gary Dushnitsky
London Business School
Strategy and Entrepreneurship
gdushnitsky@london.edu

Abstract

Describing the entrepreneurial endeavor, Schumpeter argues that “failure also threatens or actually overtakes many an able man.” Indeed, failure is frequent: for venture-backed entrepreneurs, the rate of failure reaches 78%. Earlier studies investigated largely how entrepreneurs make sense and cope with venture failure and what the consequences of the stigma of failure are. The studies assessing performance differentials of previously failed entrepreneurs lacked conclusions about the causal impact of failure due to the challenges in research designs using secondary data. In this paper we try to fill this gap by studying the effect of past founders’ failure on the investors’ behavior when deciding to fund the next venture. Investors offer an interesting perspective on studying failure for various reasons. First, they are the key stakeholders of a startup in a seed stage: capital and liquidity can be vital resources for ventures still lacking operations and a customer base. Second, we can measure the effect of failure in an early stage because investors’ perspectives are a lead-indicator of performance. Thus, our main outcome variable of interest is the investor’s willingness to invest in a given venture and the amount invested in the venture. When investors evaluate a venture whose founders previously failed, they discount them because of two reasons arising from the nature of failure. We argue that failure does entail a signal of quality and stigma. On the one hand, investors may simply offer poorer economic conditions because the founders failed in the past and they carry this label. This explanation is consistent with theories of stigma by association: irrespective from the quality of the stigmatized subject, economic transaction with a stigmatized subject are limited and stakeholders offer poorer economic conditions. On the other hand, failure is

a signal of lower quality, and investors form priors about the average founders' ability once they assess past failure, thus inducing a process of statistical discrimination. Stigma exacerbates the noise as it increases ambiguity and induces stakeholders to judge the subject based on group rather than individual characteristics. The discount they assign to failed founders is related to the information they extract from the signal and it can be removed with a more precise signal of quality, e.g., details about past performance. We test our theories using a "lab-in-the-field" or "artefactual field experiment", where subjects are investors "at risk" of investing on a venture at a seed stage through crowdfunding. They evaluate a business opportunity at a seed stage presented with similar information of an equity crowdfunding webpage. We manipulate the founders' entrepreneurial experience and we test how the differences change with an additional signal of ability through past performance. Our initial results show that investors do not discriminate between those who succeeded and those who failed showing a signal of past performance, but they do discriminate between failure observing and failure not observing past performance – supporting the second explanation. Our results join an ongoing conversation about failure and entrepreneurship by exploring failure and the associated stigma in an entrepreneurial context. First, we provide a novel perspective about failure in the eyes of investors where the effect is decomposed into two distinct components. Second, we expand and corroborate earlier quantitative studies about entrepreneurial experience through novel experimental evidence on the effect of business failure for early stage startups.

Badge of Honor or Scarlet Letter? Unpacking Failure in Venture Teams.

Diego Zunino

Dept. of Innovation and Organizational Economics
Copenhagen Business School

dz.ino@cbs.dk

Mirjam van Praag

Dept. of Innovation and Organizational Economics
Copenhagen Business School

mvp.ino@cbs.dk

Gary Dushnitsky

Dept. of Strategy and Entrepreneurship
London Business School

gdushnitsky@london.edu

PRELIMINARY VERSION!

Please do not quote from and do not (digitally) circulate.

INTRODUCTION

Entrepreneurship is one of the key drivers of innovation: industries arise and fall through the “creative destruction” of entrepreneurial firms (Schumpeter, 1934) and failure plays a prominent role (Nanda & Kerr, 2009). In such contestation, failure does not only rule out the incompetent entrepreneurs, but “also threatens or actually overtakes many an able man” (Schumpeter, 1950 p. 74). Indeed, for venture-backed entrepreneurs, the rate of failure reaches 78% (Gompers et al., 2010). The entrepreneurship literature has shown an “anti-failure bias” (McGrath, 1999), defined as an excess of attention towards entrepreneurial success.

A prominent reason for the lack of research about failure lies in the difficulties arising from measuring and testing hypotheses about it. First of all, there are several definitions of failure (Ucbasaran et al., 2013) which make it hard to operationalize and identify (Nielsen & Sarasvathy, 2016). In fact, failure is a compound of experiences that happen over time, even before failure itself is realized (Semadeni et al., 2008; Singh et al., 2015), and it is not limited to the entrepreneur but it extends to the stakeholders and the society in general (Cardon et al., 2011). Earlier studies investigated how entrepreneurs make sense and cope with venture failure (Shepherd, 2003; Ucbasaran et al., 2010) and what the consequences of the stigma of failure are (Sutton & Callahan, 1987; Shepherd & Haynie, 2011). With few exceptions (Cope et al., 2004), researchers have not devoted attention to the role investors have in the assessment of failure as prime category of stakeholders. The studies assessing performance differentials of previously failed entrepreneurs (Hsu, 2007; Gompers et al., 2010; Arora & Nandukmar, 2011; Nielsen & Sarasvathy, 2016) lacked conclusions about the mechanisms driving the impact of failure due to the challenges in research designs using secondary data. Through an online experiment, we try to study the effect of past founders’ failure on the investors’ behavior when deciding to fund the next venture.

Investors offer an interesting perspective on studying failure for various reasons. First, they are the key stakeholders of a startup in a seed stage: capital and liquidity can be vital resources for ventures still lacking operations and a customer base (Evans & Jovanovic, 1989; Hurst & Lusardi, 2004). Second, we can measure the effect of failure in an early stage because investors' perspectives are a lead-indicator of performance common across earlier research (Chen et al., 2009; Brooks et al., 2014). Third, those who invest in equity may react to failure in a relatively rational way vis-à-vis other stakeholders, being reluctant to allow entrepreneurs enjoying non-pecuniary benefits such as autonomy or status through their investment. Thus, our main outcome variable of interest is the investor's willingness to invest in a given venture and the amount invested in the venture.

When investors evaluate a venture whose founders previously failed, they discount them because of the dual nature of failure. First, failure is a (negative) signal of quality; second, failure carries a stigma. We draw from the literatures about signaling in the entrepreneurial finance literature and the literature about stigma to theorize about two candidate explanations that are not mutually exclusive.

During the evaluation of an early stage venture, there is substantial uncertainty about it due to information asymmetry and investors tend to rely on signals such as intellectual property (Hsu & Ziedonis, 2013; Conti et al., 2014), team composition (Higgins & Gulati, 2006), social capital (Hsu, 2007), and past success (Hsu, 2007; Ahlers et al., 2015). Analogously to past success, past failure represents a signal of negative quality. Because of that, investors form priors about the average founders' ability once they assess past failure, thus inducing a process of statistical discrimination (Aigner & Cain, 1977). Stigma exacerbates the noise as it increases ambiguity and induces stakeholders to judge the subject based on group rather than individual characteristics (Devers et al., 2009). The discount they assign to failed founders is related to the

information they extract from the signal and it can be removed with a more precise signal of quality (Aigner & Cain, 1977; Altonji & Pierret, 2001), e.g., details about past performance.

On the other hand, investors may simply offer poorer economic conditions because the founders failed in the past and they carry this label. This explanation is consistent with theories of stigma by association (Pontikes et al., 2010): irrespective from the quality of the stigmatized subject, economic transaction with a stigmatized subject are limited (Hudson & Okhuysen, 2009) and stakeholders offer poorer economic conditions (Sutton & Callahan, 1987; Shepherd & Haynie, 2011).

While the two explanations are not mutually exclusive, the prevalence of one over the other involves different policy responses. If the effect is explained by the lack of knowledge about the quality the “failed” label induces, the way to mitigate the cost of failure is to provide opportunities for less noisy signals that contribute to reduction of information asymmetries. On the contrary, if the effect of failure is driven by the intrinsic nature of “failed” label, then policies should target the perception of failure at the societal level, trying to lower the cost society applies to the stigma of failure – e.g., through bankruptcy laws (Lee et al, 2007).

We test our theories using a “lab-in-the-field” (Koudstaal et al., 2015) or “artefactual field experiment” (List, 2011), manipulating seed-stage ventures seeking funds through equity crowdfunding. The seed stage is particularly favorable because the level of uncertainty is high and signals can be even stronger, while equity crowdfunding allows balance between tractability and generalizability. Our study participants are individuals “at risk” of investing on an equity crowdfunding platform. They evaluate a business opportunity at a seed stage presented with similar information of an equity crowdfunding webpage. We manipulate the founders’ entrepreneurial experience and we test how the differences change when failure comes with an additional signal of ability. Our initial results show that investors do not discriminate between

those who succeeded and those who failed showing a signal of past performance, but they do discriminate between failure observing and failure not observing past performance – supporting the first explanation.

Our results join an ongoing conversation about failure and entrepreneurship by exploring failure and the associated stigma in an entrepreneurial context (Semadeni et al., 2008) and wishes to contribute to the field in two ways. First, we provide a novel perspective about failure in the eyes of investors where the effect is decomposed into two distinct components. Second, we expand and corroborate earlier quantitative studies about entrepreneurial experience through novel experimental evidence on the effect of business failure for early stage startups.

THEORY DEVELOPMENT

Investors' perspective

In this study we investigate “what is the effect of past business failure of an entrepreneur on investors' valuation?”. To study failure, we take the investor's perspective as unit of analysis. Other than being a rather underdeveloped perspective to study failure, looking at investors offers the following advantages vis-à-vis looking at the entrepreneurs. Investors are the key stakeholders of a startup in a seed stage, when the startup is lacking operations and a customer base. Indeed, understanding capital providers' decision making and their view in the early stage of ventures is relevant both for theory and practice.

Moreover, investors' perspective is a lead-indicator of performance and the earliest “hard” indicator we can study: it is one of the first goals of early stage startups that is fundamental to achieve growth. Alternative measures like revenues, revenue growth and size are lagging indicators of performance and they would require a longer time for ventures to perform or to

rely on simulations (e.g., Hoogendoorn et al., 2013; Jung et al., 2015). Earlier experimental studies (Chen et al., 2009; Brooks et al., 2014; Hoenig & Henkel, 2015) and papers in finance and strategy (Hsu, 2007; Chatterji, 2009) widely adopted investment propensity as focal outcome variable.

Finally, in the context of studying failure, it is arguably less noisy to study investors than entrepreneurs. On the one hand, entrepreneurs have several biases that may stifle acceptance of failure (Shepherd, 2003; Jenkins et al., 2014) and they may pursue different objectives (e.g., autonomy or social benefits). On the other hand, investors are driven by financial profit and they do not want to subsidize other entrepreneurial goals.

All in all, the investors' perspective is particularly favorable to our study because it is particularly overlooked by studies about business failure and its findings can inform not only theory but also practice, it is a first and important measure of success for ventures at the early stage, and particular biases are less likely to apply (e.g., autonomy-driven entrepreneurship).

Failure

Defining Failure

In this subsection, we acknowledge the difficulties the past literature had to overcome in working with failure and we provide our motivation for selecting a particular definition in this study. Deviations from such definition may work as boundary conditions. There is no consensus about the boundaries of failure because it is a complex phenomenon that takes place over time and involves both the business and the entrepreneur. Identifying when failure takes place is not trivial: exploiting private information, entrepreneurs take their likely failure into

account before the venture formally runs out of business¹ (Landier, 2005). In addition, failure takes place at different levels, and the literature identifies entrepreneurial (McGrath, 1999) and business failure (Shepherd, 2003). Entrepreneurial failure takes place whenever “an initiative [...] has fallen short of its goals” (McGrath, 1999: p. 14) and it extends to initiatives undertaken within corporations. Business failure, instead, is defined as the event when “a fall in revenues and/or a rise in expenses are of such a magnitude that the firm becomes insolvent and is unable to attract new debt or equity funding; consequently, it cannot continue to operate under the current ownership and management” (Shepherd, 2003: p. 318). In our study, we prefer business failure over entrepreneurial failure because we argue it represents a less noisy signal: first, there is less ambiguity over the timing of business failure; second, compared to entrepreneurial failure, attribution theory is less of a concern as a confounder.

In our study, we delimit failure as “cessation of the founders’ involvement due to discontinuity of operations”. We believe such delimitation allows a tractable operationalization. An alternative and more general definition would entail challenges in translation into a clean experimental manipulation. In their literature review, Ucbasaran et al. (2013) define business failure as: “cessation of involvement in a venture because it has not met a minimum threshold for economic viability as stipulated by the entrepreneur”² (Ucbasaran et al., 2013, p. 175). In such definition, cessation of involvement without discontinuity of operations may be problematic because founders could be fired or let go by investors, which does not directly translate into a failure for the business. As well-known example, Steve Jobs, founder of Apple, was fired by the board while Apple was still operating in 1985. Moreover, it is difficult to know the reason for cessation: if the venture did not meet the founders’ economic needs, it might have met other founders’ needs such as autonomy or status. We adopt “cessation of

¹ It also affects the type of business they undertake in the first place, but it goes beyond the scope of this paper (Landier, 2005: p. 22).

² Other notable cases the literature studied business failure are discontinuity of ownership (Wennberg et al., 2010), bankruptcy (Sutton & Callahan, 1987), or insolvency (Shepherd 2003).

involvement due to discontinuity of operations” as a definition we can translate failure into a more objective “running out of business.”

Failure as a noisy signal of quality

The organization literature found in the liability of newness the principal cause of new ventures’ mortality (Stinchcombe, 1965; Freeman et al., 1983). A major consequence of the liability of newness is the difficulty to assess the quality of a startup and the necessity to rely on signals (Stuart et al., 1999; Zott & Huy, 2007). Earlier studies in entrepreneurship documented the value of signals to deal with uncertainty at the level of venture capitalist’s funding (Hsu, 2007) and IPO (Higgins & Gulati, 2003, 2006). Other related studies found the same mechanisms in close settings such as family businesses (Dehlen et al., 2014), online platforms (Lanzolla & Frankort, 2016), and peer-to-peer lending (Lin et al., 2013). While the past literature devoted attention to team composition (Higgins & Gulati, 2006; Vogel et al., 2014), social capital (Conti et al., 2014; Hsu, 2007), industry experience (Higgins & Gulati, 2003; Hoenig & Henkel, 2015), and intellectual property (Hsu & Ziedonis, 2013; Conti et al., 2014), we know relatively little about past entrepreneurial experience as a signal of quality. Among the rich literature about signaling, only Hsu (2007) for venture capital and Ahlers et al. (2015) for equity crowdfunding document past success as a positive signal of quality.

However, failure is not only a mere negative signal of quality but also entails a stigma (Landier, 2005; Semadeni et al., 2008; Shepherd & Haynie, 2011). Earlier studies noted how the stigma arising from business failure leads to a decrease in the quality of stakeholders and the economic conditions they offer (Sutton & Callahan, 1987), how entrepreneurs are affected in their self-view (Shepherd & Haynie, 2011), and how this is associated to re-entry decision (Simmons et al., 2014; Eberhart et al., 2016). Stigma originates from labeling theory and de-individualizes an organization or an individual, thus attaching detrimental characteristics (Semadeni et al., 2008;

Devers et al., 2009). Stigmatized subjects are perceived more ambiguous by their stakeholders (Devers et al., 2009). This implies that due to stigma, compared to a signal of past success, the signal of past failure is noisier. All in all, past failure seems to influence investors' perception via two non-mutually exclusive candidate mechanisms.

On the one hand, investors may be reluctant to deal with failed entrepreneurs because of fear of stigma by association. The literature documents how stakeholders, such as suppliers, tend to avoid stigmatized organizations for the fear of stigma transfer (Hudson & Okhuysen, 2009). Stigmatized organizations and founders are left to deal either with a limited (Shepherd & Haynie, 2011) or with a negative selection of stakeholders and to negotiate worse economic conditions (Sutton & Callahan, 1987). Indeed, stigma by association explains negative job market performance in term of employability and mobility (Pontikes et al., 2010; Samadani et al., 2008). Analogously, the work of Azoulay et al. (2015) documents how, irrespective from quality, a stigmatizing event in science such as retractions leads to inferior performance of scientific articles that are not relate to the stigmatized article but are in the same field.

We argue that investors can have analogous behaviors when dealing with past failed founders. Irrespective of their quality, investors may decide to discount founders just in virtue of the label that is attached to them. For simplicity, assume the quality of entrepreneurs can be either good or bad and investors can infer the good quality of the entrepreneurs both for successful and failed entrepreneurs. If they still prefer past successful entrepreneurs they assign a stigma to the "failed" label. Therefore, we hypothesize:

Hypothesis 1. Independent from quality, investors evaluate negatively founders who previously failed vis-à-vis those who previously succeeded.

On the other hand, the discount investors assign to failure as a noisy signal of poor quality is due to the ambiguity over the quality of the founders. Indeed, negative information is less

diagnostic for forming and changing impressions about ability (Pfarrer et al., 2016). Labor economics studied the analogous phenomenon of statistical discrimination. Absent more precise information, employers tend to infer the ability of an individual from the observable characteristics (Aigner & Cain, 1977). Once a more precise signal of ability is received, the discount assigned to group membership tends to decline and disappear (Altonji & Pierret, 2001).

In the economics of innovation literature, there are similar examples. Arora and Gambardella (1997), and later Arora et al. (2009), show how firms tend to finance scientists with higher prior probability of being of high quality, i.e. those for whom there is track record of past success. Similarly, recent work by Azoulay et al. (2015) highlights how a retraction event has differential impact to scientists according to their reputation because of the information revealing power of the signal. For scientists with high reputation, the effect of a retraction due to honest mistake (almost exogenous) has little effect.

In the entrepreneurial setting, investors tend to largely rely on signals: for example, gender is considered “one of the best predictors we have of who will become an entrepreneur” (Shane, 2008 in Jennings & Brush, 2013). Recent experimental evidence showed that the amount of bias assigned to women drops when women entrepreneurs are presenting an innovative idea. The innovative idea “may signal additional “evidence” of entrepreneurial ability” for women entrepreneurs (Thebaud, 2015; p. 73).

According to this view, a stronger signal of quality can counterbalance association with failure (Rider & Negro, 2015). An investor who considers investing in a startup faces “extreme uncertainty” and relies on available signals (Huang & Pearce, 2015). Past failure represents a noisy signal of (poor) ability and may cause a discount because of the greater ambiguity over

ability. Additional information about ability reduces the cost of past failure for venture founders.

Thus, we hypothesize:

Hypothesis 2. Investors evaluate more favorably founders who failed in the past and for whom they have a signal of ability than founders who failed in the past without such signal.

Earlier, we theorized asymmetry between a signal of success and a signal of failure because the latter entails more ambiguity than the former. When founders succeeded in the past, the investors have less ambiguity about their ability. While in theory people can succeed due to sheer luck only, the contingency is so remote that investors already assume a higher level of ability just from observing success. Such asymmetry is reflected in the informational value of the signal of ability, which is stronger under failure than under success. We further hypothesize:

Hypothesis 2b. The effect of the signal of ability on the investment behavior is stronger under failure than under success.

Analogously to models about scientists' funding decision (Arora & Gambardella, 1997), the analysis presented so far is independent from considerations about learning. Such assumption is neither new nor unreasonable to the entrepreneurship literature. Compared to first time entrepreneurs, both past failed and past successful entrepreneurs learn from their previous venturing about how to start and run a company (Minniti & Bygrave, 2001; Thornhill & Amit, 2003). Further studies proved empirically that learning takes place also under failure, conditional on staying in the same industry (Chen, 2013; Eggers & Song, 2015). For these

reasons, in the study we simply assume that investors have beliefs about equal learning for both past successful and past failed founders³.

EXPERIMENT

Methodology

We prefer an experimental methodology over naturally occurring data because of the econometric challenges failure offers. First of all, failure is hard to define (Nielsen & Sarasvathy, 2016) and this implies a measurement error when we operationalize in a large scale dataset. Second, failure is not exogenous and selection plays a major role in explaining persistence of performance (Chen, 2013; Rocha et al., 2015). Finally, the diffusion of information is endogenous and without an experimental setting it would be hard to disentangle the hypotheses laid out in our theorizing.

In this paper we run an “artefactual field experiment” (List, 2011), also known as “lab-in-the-field” experiment (Koudstaal et al., 2015). Such methodology differs from a standard field experiment because investors are evaluating a realistic scenario via an online platform. Conversely from lab experiment, subjects are not students but individuals related to the topic investigated and it does not take place in the lab but online. Several replication studies validated experiments via online platforms and showed they perform as good as lab experiments (Paolacci et al., 2010; Berinski et al., 2012). We argue that “lab-in-the-field” is a desirable compromise between a field and a lab experiment. With respect to a field experiment, few investors would be willing to join an experiment where we alter information about founders, a chief criterion for their decision making (Bernstein et al., 2015), and they invest their money.

³ In order to alleviate potential concerns related to differential learning under failure due to industry change, the past venture involved in the manipulations is in the same industry of the current venture.

Thus it would lack feasibility. With respect to a lab experiment, we would be forced to rely on students acting as investors, thus lacking generalizability.

Setting

The setting of our experiment is the equity crowdfunding market in the UK. Equity crowdfunding is a particular form of crowdfunding where ventures ask capital to a pool of largely unspecialized investors in exchange of equity through an online platform. We prefer to run our experiment in the United Kingdom because it is the largest and most developed market for equity crowdfunding at the time of writing. In the United States, the market for equity crowdfunding took long to be regulated (Bruton et al., 2015).

Ventures on equity crowdfunding platforms are usually in their seed stage, and this is desirable because of the high degree of uncertainty that surrounds it. The seed stage is the initial contact between the investors and the founders, and the latter tend to focus their effort in informational signals over their quality (Huang & Knight, 2015). Investors at the seed stage usually invest their own money and tend to rely more on their “gut feeling” that can be triggered by signals rather than detailed formal analysis (Huang & Pearce, 2015).

Equity crowdfunding represent an ideal setting to study seed stage ventures because of two reasons. First, it is particularly tractable since it relies on signals compared to other investment conditions. Online marketplaces are characterized by limited impact of traditional constraints of investment decisions such as geography and social capital (Dushnitsky & Klueter, 2011; Agrawal et al., 2015; Ahlers et al., 2015) and in equity crowdfunding platforms, most of the investors’ focus goes towards human capital (Ahlers et al., 2015; Bernstein et al., 2015). As a consequence, interaction on equity crowdfunding platforms results into an exchange of signals between investors and founders (Estrin & Khavun, 2016).

Another factor that contributes to tractability of the setting is the nature of the investment decision on the equity crowdfunding platforms. Compared to alternative forms of entrepreneurial finance, the nature of the investment decision is more static. Investors on crowdfunding platforms have lower degree of involvement after the decision has been made (Chemmanur & Fulghieri, 2014). Moreover, the average size of the investment is negligible compared to business angels and venture capitalists. This allows investors to not incorporate further valuations that would be hardly tractable in an experiment.

Finally, tractability does not come at cost of generalizability on equity crowdfunding. Usually, experimental studies on traditional actors like venture capitalists are difficult because their time and attention is limited⁴. A larger share of the population is potentially involved in equity crowdfunding, as the minimum amounts required are significantly lower. Importantly, at the very early stage of investment decision, the investment decisions of a large number of small investors do not differ significantly from those of a small number of large investors (Nanda & Mollick, 2015). Thus, results coming from scenarios about an equity crowdfunding setting are more easily generalizable.

Design

We designed a completely randomized 2x2 between subjects design. The two manipulations originating the four experimental conditions are a signal of failure (opposed to a signal of success) and a signal of quality operationalized with information about past performance. Each subject reads about only one out of two possible ventures whose founders' experience falls in one of the four experimental conditions.

⁴ With few notable exceptions (e.g., Hoenig & Henkel, 2015), researchers have usually overcome this issue relying on MBA students (e.g., Chen et al., 2009) or simulation (e.g., Huber et al., 2014).

The venture is presented to subjects through three sections. The first section is an executive summary of the business idea and provides information about the business model, the market, the use of proceedings, and the milestones achieved so far. Each subject also observes the requested amount, the amount per share, and a pre-money valuation of the business. The second section looks like an essential resume of each of the two founders, with information about founders' education, their alma mater, and the year of graduation. Investors observe founders' last employer and job title and the past venture they founded. The third section is a Q&A wall, a common feature on crowdfunding platforms (Mollick, 2014). There, investors and founders usually interact and the former request for more information or challenge the founders before making their investment decision. These three sections represent the essential information for a potential investor to make a decision in a setting of equity crowdfunding. In the next paragraph, we illustrate how we designed the investment opportunity.

As a template, we chose two ventures that appeared on an equity crowdfunding platform and were founded by a team of two or more co-founders. Consistently with earlier literature (Chen et al., 2009) we selected one venture that succeeded to achieve their funding goals and one venture that did not. In this way we avoid that results may be driven by a particular scenario where investors are more forgiving (Manso, 2011) and we can control for venture quality. We also restrict the size of the founding team to two members, the most common team size (Ucbasaran et al., 2003; Coad & Timmermans, 2014). We label the cofounder with managerial background as CEO and the cofounder with technological experience as COO. With these edits, we intend to control for confounding elements like legitimacy from job titles (Jung et al., 2015), team size (Agarwal et al., 2016), and team composition (Beckman et al., 2007). For privacy concerns, we anonymized the name of the venture, the name of the founders, and their faces.

In this paragraph we discuss how we operationalized the manipulations in order to identify the effect of failure and tease out the two explanations. In the team section, each of the founders worked at a fictitious startup for two years. The information about the past startup is only limited to the name, which resonates to the same industry where the current startup is, and the ventures' duration. In the Q&A section, one investor asks a question about the past venture, inquiring about its outcome.

The choice of the Q&A section to disclose information about the past venture is particularly desirable because founders tend to hide their past failure (Shepherd & Haynie, 2011). The founders do not decide to disclose the outcome of the past entrepreneurial experience voluntarily, but they are induced by a third party. Compared to self-reported signals, these types of signals are perceived as more reliable (Gomulya & Mishina, 2016; Estrin & Khavun, 2016). Founders are usually bound to respond timely and sincerely because other investors observe them: if they provide no answer or if they dodge the questions they can provide a negative impression that undermines their fundraising effort. The reply is composed of a closed form answer about the outcome (either positive or negative) and an open form to disclose the reason. The closed form for the type of outcome controls for decoupling attempts through grammar and linguistics (Sutton & Callahan, 1987; Crilly et al., 2016).

We manipulate failure by selecting the failure option in the closed part of the answer and we provide the subject with a brief debrief. As explanation for the cause of failure, we choose a scenario that can be perceived as exogenous as possible to mitigate concerns about attribution theory and accountability⁵ driving our results (Eggers & Song, 2015). With the past failure as much as possible beyond the founders' control, we maximize ambiguity around founders' quality and sensitivity to further signals. In the manipulation, the entrepreneur explains that the startup "ran out of business because [their] main business partner, key to the previous

⁵ We also ask subjects how much they perceive the cause of failure/success is due to the entrepreneur.

business, died in a car crash.” In the case of past success, we select the success option in the closed part of the answer. Moreover, the entrepreneur explains that the past venture “was successfully sold for £ 500,000.”

We manipulate the positive signal of ability by providing information about the performance of the past venture. We choose this signal over other more established signals of ability like patents (Conti et al., 2013; Hsu & Ziedonis, 2013) because previous research showed that these are ineffective signals in the equity crowdfunding setting (Ahlers et al., 2015). Thus, we choose past performance by adding a sentence before the explanation of the outcome of the past venture where the entrepreneur explains that “[the past startup’s] sales trajectory was growing double digit when, [success/failure occurred].” We provide the summary of our four manipulations in Table 1.

*** INSERT TABLE 1 HERE ***

Procedure

Experiment

We ran a pilot experiment where we posted a call for 600 respondent-investors on Prolific, an online UK-based platform for survey and experiment tasks⁶. We offered a compensation of a small sum in British pounds for a task that took on average 11 minutes. In order to improve the quality of our subject pool, we requested a prescreening of subjects complying with the following specifications: first, their task acceptance rate had to be beyond the threshold of 90%; second, they had to live in the European Union or the United Kingdom; third, they must have invested at least once in the past. In the call, some attention and comprehension checks were included. Before collecting socio-demographic information, subjects answer two attention

⁶ The experiment is available through <http://goo.gl/cxSNep>

checks in order to screen out those who answered carelessly⁷. We also excluded those whose completion time was two standard deviations below the average since they might have not paid enough attention to the questionnaire. All in all, 249 subjects passed the attention check and were eligible.

In the introductory part of the experiment, subjects are informed about the object of the study and that the investment outcomes are not real. On the next page, subjects read the information about the venture. In order to discourage subjects from searching the projects through online search engines, the pages are presented in the form of png images. The order of the pages about the venture is fixed: idea, team, and Q&A sections.

After reading the venture description, subjects answer questions about their investment choice. In order to avoid a bias because of the sequence of responses, we randomized the order in which they were shown. There were two modules of interest: investment and team. In the module about the investment, the subject answers whether she would consider investing in the venture, how much money she would consider investing, and what the driver of the investment was, ranking among market, business idea, and entrepreneurial team. The second module asked subjects questions about the characteristics of the team and which were more salient for their investment decision.

We also collected information about their financial behavior: we administered subjects' risk aversion through a choice-based measure where subjects choose between a risky lottery ticket and a certain equivalent (Dohmen et al., 2010; Koudstaal et al., 2015). We also asked questions about past investments (both personally and professionally) as well as a measure of subjects' investment horizon. Subjects also answered questions related to participation both as a backer and requester in crowdfunding platforms. A final block asked subjects about their socio-

⁷ In order to retain the highest possible number of subjects, we allowed for a "back" button so that they could read the information another time.

demographic information, to be used as control variables in the analysis. Beyond asking traditional information such as age, gender, education, employment status, and location, we also added a question about housing status to approximate for the level of wealth.

Variables

Dependent variable. We operationalize investment behavior with two variables. The first variable is a Likert scale asking the subject his likelihood to invest in the venture on a scale from 1 to 7. This variable represents the extensive margin. The second variable asks how many pounds (if any) the subject would invest. This variable represents the intensive margin.

Explanatory variables. The explanatory variables are the two treatments and their interactions. Each but one of the experimental conditions represents a dummy variable (namely “Failure, no ability signal”; “Success, no ability signal”; “Success, ability signal”), whereas the condition “Failure, ability signal” is the baseline. In this way, we are able to test the hypotheses by looking directly at the coefficients.

Control variables. In additional analyses, we control for subjects’ sociodemographic information (age, gender, wealth proxy, location, past investments), and investment behavior.

RESULTS

Descriptive Statistics

Table 2 shows the descriptive results of the pilot experiments. Respondents are on average 36.63 years old, and 57% of them are males and 53% own their house. The share of males in our sample is similar to the share of male backers on other major crowdfunding platforms (Marom et al., 2015). Interestingly, the average risk profile of the subjects is conservative, averaging 3.23 (out of 10). Half of the sample has undergraduate education, and 30% of them have postgraduate education (masters or phd). These results are somehow encouraging because it is

more likely that a selection of wealthier and more educated individuals is “at risk” of investing in equity, and especially through crowdfunding.

For what concerns their personal financial experience, most of the subjects (78%) invested in stocks. Crowdfunding is the second largest investment category (45%) before government bonds (35%) and unit trusts (24%). Among the professional investors (55 subjects, equal to 19% of the sample), the distribution of financial instruments is more even, with stocks, options, private equity funds, and government bonds being the most prevalent financial instruments the subjects dealt with in the past.

Geographically, 15% of the subjects are from London, 12% of subjects are from outside England and within the United Kingdom (Scotland, Wales, and Northern Ireland), and 16% are from outside the United Kingdom.

*** INSERT TABLE 2 HERE ***

In table 3, we report the information about the investment decision and the four variables that serve as dependent variables. With an average score of 3.61 out of 5, subjects are considering investing in the opportunity £ 300 on average. The driver of investment seems to be the market rather than the team or the startup idea, while the driver for not investing is the startup idea, followed by the market and the team. This result differs from existing literature, where the attention seems to be more focused on the team rather than the idea (Bernstein et al., 2015).

The last panel of table 3 breaks down the dependent variables into the four groups (Success, Success with ability signal, Failure, Failure with ability signal). At first glance, we observe that the number of subjects who passed the attention check is lower for the conditions with the ability

signal. This may be because of the additional requirement of paying further attention to answer correctly.

*** INSERT TABLE 3 HERE ***

Results

Table 4 reports the results of the experiment. For investment propensity, which is an ordered variable, we use an ordered logit model; for amount invested, we use a Poisson model. Since we used two different projects of different quality, we control for better quality with a dummy variable that takes the value of one when the project is of better quality and we also cluster the standard errors at the project level. The positive and significant effect of project quality on both investment propensity and invested amount suggest that the subjects we pooled behave similarly to the investors on the equity crowdfunding platform we used.

Models 1 to 3 look at the investment propensity as dependent variable, while models 4 to 6 look at amount invested as dependent variable. In models 2 and 5, we control for sociodemographic and behavioral variables such as age, gender, wealth, and risk propensity. In models 3 and 6, we also control for a set of dummies for investment experience both at personal and professional level. The baseline of our analysis is success, and each other treatment is our variable of interest.

For what concerns investment propensity, we observe that there is a penalty for ventures whose founders experienced failure in the past and did not report a signal of ability. When founders report failure with a signal of ability, we observe that there is no significant difference compared to the success case in model 1, and there is actually a premium once we control for sociodemographic and behavioral variables in model 2 and investment experience in model 3. Surprisingly, success with a signal of ability does not translate into a significantly different level in investment propensity. We tested the difference across coefficients to support our hypotheses,

which result in no support for the Hypothesis 1 for investment propensity. The difference between coefficients of failure conditions, with and without ability signal delivers significant differences, lending support to Hypothesis 2: the discount of failure fades once there is a signal of ability that reduces the ambiguity around the past event. Hypothesis 2b, claiming a differential effect of the signal of ability under failure compared to under success is supported only in model 3, after controlling for investment experience.

For what concerns invested amount, failure with no signal of ability has a negative coefficient that is significant only when investment experience is controlled for. Failure with signal is not significantly different from the success condition for models 4 and 5, and it actually delivers a premium only once investment experience is taken into account by the regression. Success with ability signal is positive and significant for models 4 and 5 but not for model 6. The test of our hypotheses is consistent across the three models, lending no support for Hypothesis 1 and support for Hypothesis 2 and 2b. The consistent results once investment experience is taken into account suggest that models 3 and 6 are the preferred ones when performing robustness checks.

*** INSERT TABLE 4 HERE ***

Robustness Checks

In Table 5, we performed three types of robustness test. First, we exploited those subjects that failed the attention test using their perception of the outcome rather than the actual condition as explanatory variable in models 1 and 2. Second, we might be concerned that there might be unobserved heterogeneity related to the fact that the investors are evaluating one project only and they are somehow forced to choose. An unobserved factor driving the investment decision and biasing the result could be the market in which subjects are expert. While we do not have information about their job, we can alleviate the concerns about such unobserved heterogeneity by controlling for their main driver for investing (or not investing). In models 3 and 4 we include

as controls dummy variables for the ranking of the investment decision's driver. We argue that if a potential investor ranks the market as most attractive reason for investing (or not), this proxies the degree of information and knowledge they have about the market. We also control for venture attractiveness as driver since the investor may incorporate the fit between the venture and the market in this variable. Finally, we also try to alleviate the concerns that the positive effect of past failure on investment behavior is driven by compassion and reciprocity. We do that by controlling with dummy variables for past investment in crowdfunding and past participation as founder on crowdfunding campaigns, not only equity crowdfunding in models 5 and 6. While we do not report coefficients for sake of space, it is worth noting that those who raised equity crowdfunding in the past are more likely to invest, even if serial founders tend to invest on average a lower amount.

The results are overall consistent across models, where failure generally delivers a discount only when the signal of ability is not observed. Otherwise, when investors observe failure and a signal of ability they may also deliver a premium. The test of our hypotheses shows no support for Hypothesis 1: when the test for significant difference of the coefficient has a low p-value, there is a larger premium for Failure with Signal than Success with Signal. For what concerns Hypothesis 2, the effect of the signal of quality in overcoming the discount of past failure is consistent across all the specifications. Finally Hypothesis 2b is not supported only in the first robustness test where we used the perception of failure rather than our actual treatment.

*** INSERT TABLE 5 HERE ***

DISCUSSION AND CONCLUSION

We began the paper by addressing how failure, an intrinsic trait of the entrepreneurial practice, affects the performance of the next venture through investors' perception and their behavior. The entrepreneurial endeavor is so hard that "threatens or actually overtakes many an able man" (Schumpeter, 1950 p. 74), and thus it is hard for a stakeholder, and especially an investor to

discriminate between bad performance or simply bad luck. In an observational dataset these two effects are compounded and challenging to tease out, and past literature has called for more research on the topic (Gompers et al., 2010).

We theorize about the signals that past failure send to investors and, we theorize that past failure is a different signal vis-à-vis past success due to the greater ambiguity it evokes. Because of this ambiguity, the investor does not know about the real quality of the founders and, absent any other signal of ability, applies a discount. We further theorize that there might be an irrational component such that the investor does not want to be associated with someone who failed in the past, a phenomenon known as stigma by association (Hypothesis 1). We thus argue that a signal of ability is able to overcome the penalty assigned to failure (Hypothesis 2), and that such signal is stronger under past failure rather than under past success (Hypothesis 2b)

We designed a “lab-in-the-field” experiment that matches the treatments to our hypotheses. We chose equity crowdfunding as a setting because it is desirable for tractability and external validity reasons. On average, we find no evidence of investors discriminating entrepreneurs for the “failed” label, assigning no cost to bad luck, while investors tend to value the signal of past performance. Our results suggest that any discount to failed entrepreneurs is due to the ambiguity about the ability of the founders and it can be levied through a proper signal of ability.

Our study has some relevant boundary conditions. First, in our study failure has a particularly low stigmatizing effect among ventures. This can be because running out of business is very widespread across startups and entails small costs to society beyond the investors and the entrepreneur. There might be cases where stigma by association bites harder like in bankruptcy or failure of mature firms that involve larger losses to society. Second, our experiment tests for investors’ evaluation of the second attempt of a founding team. The entrepreneurs exited from paid employment, started a business, and then they are starting a new one. It may be that investors make different decisions depending on the degree of the founders’ persistence. Finally,

we observed that failure can deliver a premium compared to success when a signal of ability is observed. While we did not theorize about this result, it can be that investors value more failed ventures since there might be superior learning under failure compared than under success (Castellaneta & Zollo, 2014). While we assumed identical learning, we believe that releasing such assumption would not change the direction of our predictions, but it could reinforce the hypothesis about differential effect of the signal of ability under failure and under success.

Our study aims to contribute to the literature about signaling in entrepreneurship and the literature about stigma of failure. We disentangled failure into a rational component, failure as a noisy signal of quality, and an irrational component, stigma by association. Through an online experiment, we show that investors do not penalize entrepreneurs for failing *per se*, rather it is a rational stereotyping process that can be waived if the information about the entrepreneur's ability is good enough. Conditional of sending signals of good quality, founding teams run by entrepreneurs who failed in the past can carry their past failures as a badge of honor rather than a scarlet letter.

REFERENCES

DISCLAIMER: since the paper is a work in progress, there might be inconsistencies in the references as we have not updated them yet. Apologies for the inconvenience.

- Agrawal, A., Catalini, C., & Goldfarb, A. (2015). Crowdfunding: Geography, social networks, and the timing of investment decisions. *Journal of Economics & Management Strategy*, 24(2), 253-274.
- Ahlers, G. K., Cumming, D., Günther, C., & Schweizer, D. (2015). Signaling in equity crowdfunding. *Entrepreneurship Theory and Practice*, 39(4), 955-980.
- Aigner, D. J., & Cain, G. G. (1977). Statistical theories of discrimination in labor markets. *Industrial and Labor relations review*, 175-187.
- Altonji, J. G., & Blank, R. M. (1999). Race and gender in the labor market. *Handbook of labor economics*, 3, 3143-3259.
- Altonji, J. G., & Pierret, C. R. (2001). Employer Learning and Statistical Discrimination. *The Quarterly Journal of Economics*, 116(1), 313-350.
- Arora, A., & Nandkumar, A. (2011). Cash-out or flameout! Opportunity cost and entrepreneurial strategy: theory, and evidence from the information security industry. *Management Science*, 57(10), 1844-1860.
- Bernstein, S., Korteweg, A. G., & Laws, K. (2015). Attracting early stage investors: Evidence from a randomized field experiment. *Journal of Finance*, *Forthcoming*, 14-17.
- Boudreau, K. J., Jeppesen, L. B., Reichstein, T., & Rullani, F. (2015). Crowdfunding as 'Donations': Theory & Evidence. *Harvard Business School Strategy Unit Working Paper*, (16-038).
- Bruton, G., Khavul, S., Siegel, D., & Wright, M. (2015). New Financial Alternatives in Seeding Entrepreneurship: Microfinance, Crowdfunding, and Peer-to-Peer Innovations. *Entrepreneurship Theory and Practice*, 39(1), 9-26.
- 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.
- Cardon, M. S., Stevens, C. E., & Potter, D. R. (2011). Misfortunes or mistakes?: Cultural sensemaking of entrepreneurial failure. *Journal of Business Venturing*, 26(1), 79-92.
- Castellaneta, F., & Zollo, M. (2014). The dimensions of experiential learning in the management of activity load. *Organization Science*, 26(1), 140-157.
- Chatterji, A. K. (2009). Spawned with a silver spoon? Entrepreneurial performance and innovation in the medical device industry. *Strategic Management Journal*, 30(2), 185-206.
- Chemmanur, T. J., & Fulghieri, P. (2014). Entrepreneurial finance and innovation: An introduction and agenda for future research. *Review of Financial Studies*, 27(1), 1-19.
- Chen, J. (2013). Selection and serial entrepreneurs. *Journal of Economics & Management Strategy*, 22(2), 281-311.
- Chen, X. P., Yao, X., & Kotha, S. (2009). Entrepreneur passion and preparedness in business plan presentations: a persuasion analysis of venture capitalists' funding decisions. *Academy of Management Journal*, 52(1), 199-214.
- Coad, A., & Timmermans, B. (2014). Two's Company: Composition, Structure and Performance of Entrepreneurial Pairs. *European Management Review*, 11(2), 117-138.
- Cope, J., Cave, F., & Eccles, S. (2004). Attitudes of venture capital investors towards entrepreneurs with previous business failure. *Venture Capital*, 6(2-3), 147-172.
- Crilly, D., Hansen, M., & Zollo, M. (2016). The Grammar of Decoupling: A Cognitive-Linguistic Perspective on Firms' Sustainability Claims and Stakeholders' Interpretation. *Academy of Management Journal*, 59(2), 705-729.

- Dehlen, T., Zellweger, T., Kammerlander, N., & Halter, F. (2014). The role of information asymmetry in the choice of entrepreneurial exit routes. *Journal of Business Venturing*, 29(2), 193-209.
- Devers, C. E., Dewett, T., Mishina, Y., & Belsito, C. A. (2009). A general theory of organizational stigma. *Organization Science*, 20(1), 154-171.
- Dohmen, T., Falk, A., Huffman, D., & Sunde, U. (2010). Are risk aversion and impatience related to cognitive ability?. *The American Economic Review*, 100(3), 1238-1260.
- Dushnitsky, G., & Klueter, T. (2011). Is there an eBay for ideas? Insights from online knowledge marketplaces. *European Management Review*, 8(1), 17-32.
- Eggers, J. P., & Song, L. (2015). Dealing with Failure: Serial Entrepreneurs and the Costs of Changing Industries Between Ventures. *Academy of Management Journal*, 58(6), 1785-1803.
- Elliott, J. E. (1980). Marx and Schumpeter on capitalism's creative destruction: A comparative restatement. *The Quarterly Journal of Economics*, 45-68.
- Evans, D. S., & Jovanovic, B. (1989). An estimated model of entrepreneurial choice under liquidity constraints. *The Journal of Political Economy*, 808-827.
- Freeman, J., Carroll, G. R., & Hannan, M. T. (1983). The liability of newness: Age dependence in organizational death rates. *American sociological review*, 692-710.
- Gompers, P., Kovner, A., Lerner, J., & Scharfstein, D. (2010). Performance persistence in entrepreneurship. *Journal of Financial Economics*, 96(1), 18-32.
- Gomulya, D., & Mishina, Y. (2016). Signaler credibility, signal susceptibility, and relative reliance on signals: How stakeholders change their evaluative processes after violation of expectations and rehabilitative efforts. *Academy of Management Journal*, amj-2014.
- Hoenig, D., & Henkel, J. (2015). Quality signals? The role of patents, alliances, and team experience in venture capital financing. *Research Policy*, 44(5), 1049-1064.
- Hoogendoorn, S., Oosterbeek, H., & Van Praag, M. (2013). The impact of gender diversity on the performance of business teams: Evidence from a field experiment. *Management Science*, 59(7), 1514-1528.
- Huber, L. R., Sloof, R., & Van Praag, M. (2014). The effect of early entrepreneurship education: evidence from a field experiment. *European Economic Review*, 72, 76-97.
- Hurst, E., & Lusardi, A. (2004). Liquidity constraints, household wealth, and entrepreneurship. *Journal of Political Economy*, 112(2), 319-347.
- Hsu, D. H. (2007). Experienced entrepreneurial founders, organizational capital, and venture capital funding. *Research Policy*, 36(5), 722-741.
- Hudson, B. A. (2008). Against all odds: A consideration of core-stigmatized organizations. *Academy of Management Review*, 33(1), 252-266.
- Hudson, B. A., & Okhuysen, G. A. (2009). Not with a ten-foot pole: Core stigma, stigma transfer, and improbable persistence of men's bathhouses. *Organization Science*, 20(1), 134-153.
- Jung, H., Vissa, B., & Pich, M. (2015). How do entrepreneurial founding teams allocate task positions?. *Academy of Management Journal*, amj-2014.
- Kerr, W. R., & Nanda, R. (2009). Democratizing entry: Banking deregulations, financing constraints, and entrepreneurship. *Journal of Financial Economics*, 94(1), 124-149.
- Knott, A. M., & Posen, H. E. (2005). Is failure good?. *Strategic Management Journal*, 26(7), 617-641.
- Koudstaal, M., Sloof, R., & Van Praag, M. (2015). Risk, Uncertainty, and Entrepreneurship: Evidence from a Lab-in-the-Field Experiment. *Management Science*.
- Lanzolla, G., & Frankort, H. T. (2016). The Online Shadow of Offline Signals: Which Sellers Get Contacted in Online B2B Marketplaces?. *Academy of Management Journal*, 59(1), 207-231.
- Laureiro-Martínez, D., Canessa, N., Brusoni, S., Zollo, M., Hare, T., Alemanno, F., & Cappa, S. F. (2014). Frontopolar cortex and decision-making efficiency: comparing brain activity of experts with different professional background during an exploration-exploitation task. *Frontiers in Human Neuroscience*, 7, 927.

- Lee, S. H., Peng, M. W., & Barney, J. B. (2007). Bankruptcy law and entrepreneurship development: A real options perspective. *Academy of Management Review*, 32(1), 257-272.
- List, J. A. (2011). Why economists should conduct field experiments and 14 tips for pulling one off. *The Journal of Economic Perspectives*, 25(3), 3-15.
- Madsen, P. M., & Desai, V. (2010). Failing to learn? The effects of failure and success on organizational learning in the global orbital launch vehicle industry. *Academy of Management Journal*, 53(3), 451-476.
- Manso, G. (2011). Motivating innovation. *The Journal of Finance*, 66(5), 1823-1860.
- McGrath, R. G. (1999). Falling forward: Real options reasoning and entrepreneurial failure. *Academy of Management review*, 24(1), 13-30.
- Minniti, M., & Bygrave, W. (2001). A dynamic model of entrepreneurial learning. *Entrepreneurship: Theory and practice*, 25(3), 5-5.
- Mishina, Y., & Devers, C. E. (2012). On being bad: Why stigma is not the same as a bad reputation. *The Oxford handbook of corporate reputation*, 201-220.
- Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of business venturing*, 29(1), 1-16.
- Nielsen, K., & Sarasvathy, S. (2016). A Market for Lemons in Serial Entrepreneurship? Exploring Type I and Type II Errors in the Restart Decision. *Academy of Management Discoveries*, 2(3) 247-271.
- Pontikes, E., Negro, G., & Rao, H. (2010). Stained Red A Study of Stigma by Association to Blacklisted Artists during the “Red Scare” in Hollywood, 1945 to 1960. *American Sociological Review*, 75(3), 456-478.
- Schumpeter, J. A. (1934). *The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle* (Vol. 55). Transaction publishers.
- Schumpeter, J. A. (1950). *Capitalism, socialism and democracy*. Routledge. [2013]
- Shepherd, D. A. (2003). Learning from business failure: Propositions of grief recovery for the self-employed. *Academy of management Review*, 28(2), 318-328.
- Shepherd, D. A., & Haynie, J. M. (2011). Venture failure, stigma, and impression management: A self-verification, self-determination view. *Strategic Entrepreneurship Journal*, 5(2), 178-197.
- Singh, S., Corner, P. D., & Pavlovich, K. (2015). Failed, not finished: A narrative approach to understanding venture failure stigmatization. *Journal of Business Venturing*, 30(1), 150-166.
- Sorenson, O., & Stuart, T. E. (2001). Syndication networks and the spatial distribution of venture capital investments¹. *American journal of sociology*, 106(6), 1546-1588.
- Spence, M. (1973). Job market signaling. *The quarterly journal of Economics*, 355-374.
- Stinchcombe, A. (1965). Social structure and organizations. In J. March (Ed.), *Handbook of organizations*. 260-290. Chicago: Rand McNally.
- Stuart, T. E., Hoang, H., & Hybels, R. C. (1999). Interorganizational endorsements and the performance of entrepreneurial ventures. *Administrative science quarterly*, 44(2), 315-349.
- Sutton, R. I., & Callahan, A. L. (1987). The stigma of bankruptcy: Spoiled organizational image and its management. *Academy of Management journal*, 30(3), 405-436.
- Thornhill, S., & Amit, R. (2003). Learning about failure: Bankruptcy, firm age, and the resource-based view. *Organization science*, 14(5), 497-509.
- Ucbasaran, D., Westhead, P., Wright, M., & Flores, M. (2010). The nature of entrepreneurial experience, business failure and comparative optimism. *Journal of Business Venturing*, 25(6), 541-555.
- Ucbasaran, D., Shepherd, D. A., Lockett, A., & Lyon, S. J. (2013). Life after business failure the process and consequences of business failure for entrepreneurs. *Journal of Management*, 39(1), 163-202.
- Wennberg, K., Wiklund, J., DeTienne, D. R., & Cardon, M. S. (2010). Reconceptualizing entrepreneurial exit: Divergent exit routes and their drivers. *Journal of Business Venturing*, 25(4), 361-375.

Table 1. Overview of the manipulations

Manipulation	No ability signal	Ability signal
Success	<p>“2014-2016 Co-founder and CEO of [<i>Alpha</i>].” “2012-2014 Co-founder and CEO of [<i>Beta</i>].” “2010-2012 Manager of [<i>Sigma</i>].”</p> <p><i>What happened to Beta?</i></p> <ul style="list-style-type: none"> • Ran out of business • <u>Successful exit</u> <p><i>Why did it happen?</i> “The startup was successfully sold for £ 500,000”</p>	<p>“2014-2016 Co-founder and CEO of [<i>Alpha</i>].” “2012-2014 Co-founder and CEO of [<i>Beta</i>].” “2010-2012 Manager of [<i>Sigma</i>].”</p> <p><i>What happened to Beta?</i></p> <ul style="list-style-type: none"> • Ran out of business • <u>Successful exit</u> <p><i>Why did it happen?</i> “We were growing double digit, when the startup was successfully sold for £ 500,000”</p>
Failure	<p>“2014-2016 Co-founder and CEO of [<i>Alpha</i>].” “2012-2014 Co-founder and CEO of [<i>Beta</i>].” “2010-2012 Manager of [<i>Sigma</i>].”</p> <p><i>What happened to Beta?</i></p> <ul style="list-style-type: none"> • <u>Ran out of business</u> • Successful exit <p><i>Why did it happen?</i> “Our main business partner, who was key to that specific business, died in a car accident”</p>	<p>“2014-2016 Co-founder and CEO of [<i>Alpha</i>].” “2012-2014 Co-founder and CEO of [<i>Beta</i>].” “2010-2012 Manager of [<i>Sigma</i>].”</p> <p><i>What happened to Beta?</i></p> <ul style="list-style-type: none"> • <u>Ran out of business</u> • Successful exit <p><i>Why did it happen?</i> “We were growing double digit, when our main business partner, who was key to that specific business, died in a car accident”</p>

Table 2. Descriptive Statistics of investors

Variable	Obs	Mean	S.D.	Min	Max
Age	248	36.63	12.06	18	67
Male	247	0.57	.50	0	1
Own housing solution	247	0.53	.50	0	1
Risk profile	249	3.23	2.57	0	10
<i>Panel B: Education Levels</i>					
Highest Education Degree	Obs	Percentage			
High School	49	20.00			
Undergraduate	120	48.98			
Master	63	25.71			
PhD	13	5.31			
<i>Total</i>	<i>245</i>	<i>100</i>			
<i>Panel C: Past Investment Experience</i>					
Investment	Personal		Professional		
	Percentage		Percentage		
ETC or ETF	10.98		3.02		
Government Bonds	35.10		5.13		
Stocks	77.78		12.87		
Unit Trusts	23.77		4.80		
Angel Syndicates	3.25		2.57		
Options	11.57		5.60		
Private Equity funds	16.33		5.15		
Venture Capital Funds	5.31		4.26		
Crowdfunding	44.67		4.70		
Other	7.66		3.15		
<i>Panel D: Area of Residence</i>					
Area of residence	Obs	Percentage			
East Anglia	14	5.67			
East Midlands	12	4.86			
London	36	14.57			
North East	9	3.64			
North West	24	9.72			
South East (excluding London)	37	14.98			
South West	16	6.48			
West Midlands	9	3.64			
Yorkshire and the Humber	20	8.10			
Northern Ireland	2	0.81			
Scotland	16	6.48			
Wales	12	4.86			
Outside the UK	40	16.19			
<i>Total</i>	<i>322</i>	<i>100</i>			

Table 3: Investment Characteristics*Panel A: Descriptive Statistics*

Variable	Observations	Mean	S.D.	Min	Max
Investment propensity	249	3.614	1.021	1	5
Amount Invested	249	299.739	529.485	0	2000

Panel B: Reasons for Investing

Reason for...	Investing		Not investing	
	Score	Rank	Score	Rank
Market is attractive	1.661	1	1.778	2
Startup has a competitive advantage	1.873	2	1.764	1
Team is highly competent	2.467	3	2.458	3

Panel C: Team characteristics' salience

Variables	N	Investment propensity		Amount invested	
		Mean	S.D	Mean	S.D
Success	101	3.663	1.023	309.227	543.719
Success with ability signal	33	3.697	0.918	390.152	622.819
Fail	70	3.457	1.105	208.900	418.999
Fail with ability signal	45	3.689	1.019	353.444	573.107

Table 4. The effect of past failure on investment behavior.

	(1)	(2)	(3)	(4)	(5)	(6)
	Investment Propensity			Amount Invested		
Failure No Signal	-0.385*** (0.006)	-0.360* (0.149)	-0.478*** (0.0332)	-0.390 (0.283)	-0.301 (0.218)	-0.344* (0.159)
Failure with Signal	0.151 (0.112)	0.231*** (0.0190)	0.510* (0.250)	0.184 (0.247)	0.251 (0.206)	0.544* (0.234)
Success with Signal	0.006 (0.475)	0.083 (0.482)	0.128 (0.617)	0.241*** (0.010)	0.295*** (0.037)	0.120 (0.141)
Higher Quality Project	1.092*** (0.001)	1.096*** (0.000)	1.240*** (0.098)	0.448*** (0.013)	0.439*** (0.020)	0.537*** (0.126)
Age		-0.010 (0.019)	-0.002 (0.010)		0.001 (0.001)	-0.024* (0.012)
Male (=1)		-0.519 (0.455)	-0.512 (0.324)		-0.017 (0.023)	-0.083 (0.083)
Risk Aversion		0.051 (0.046)	0.074 (0.066)		0.079 (0.050)	0.034 (0.052)
Own where they live (wealth proxy)		0.088 (0.520)	-0.140 (0.139)		0.492+ (0.290)	0.732+ (0.395)
Investment Controls	No	No	Yes	No	No	Yes
<i>Pseudo R</i> ²	0.035	0.049	0.095	0.046	0.074	0.161
<i>N</i>	249	245	189	249	245	189
Wald Test	<i>p-value</i>	<i>p-value</i>	<i>p-value</i>	<i>p-value</i>	<i>p-value</i>	<i>p-value</i>
<i>H1: Stigma</i> (F A)>(S A)	0.804	0.749	0.298	0.823	0.874	0.258
<i>H2: Signal of quality</i> (F A)>(F)	0.000	0.000	0.000	0.000	0.000	0.000
<i>H2b:Signal heterogeneity</i> (F A - F)>(S A - S)	0.362	0.406	0.032	0.000	0.000	0.000

Note. Standard errors clustered at the project level. Investment controls are a set of dummies for personal and professional investment in Government Bonds, Stocks, ETF, Unit Trusts, Options, Private Equity Funds, Venture Capital Funds, Angels Syndicates, and Crowdfunding. Significance levels: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5. Robustness Checks.

	(1)	(2)	(3)	(4)	(5)	(6)
	Failure Perception		Market Drivers		Reciprocity	
Dependent Variable	Investment Propensity	Amount Invested	Investment Propensity	Amount Invested	Investment Propensity	Amount Invested
Failure No signal	-0.723* (0.292)	-0.430 (0.286)	-0.631*** (0.082)	-0.506*** (0.046)	-0.638*** (0.011)	-0.257*** (0.038)
Failure with signal	0.241+ (0.126)	0.418 (0.347)	0.346 (0.529)	0.179*** (0.028)	0.362 (0.419)	0.651*** (0.147)
Success with signal	-0.0403 (0.181)	0.222*** (0.004)	-0.239 (0.698)	-0.089 (0.220)	0.309 (1.152)	0.217 (0.353)
Better Quality project	1.233*** (0.049)	0.451*** (0.091)	0.806** (0.246)	0.237 (0.239)	1.729*** (0.010)	0.437*** (0.016)
Age	0.000 (0.014)	-0.013*** (0.003)	-0.000 (0.006)	-0.025*** (0.001)	-0.007 (0.020)	-0.034** (0.013)
Male investor	-0.541*** (0.119)	-0.152 (0.101)	-0.442+ (0.229)	-0.043 (0.097)	-1.167* (0.484)	-0.387 (0.263)
Elicited risk aversion	0.038 (0.061)	0.026*** (0.002)	0.120+ (0.064)	0.045 (0.052)	-0.044** (0.017)	-0.072 (0.047)
Owns housing solution	-0.338 (0.338)	0.471*** (0.090)	0.010 (0.10)	0.818+ (0.430)	-0.134 (0.129)	-0.046 (0.519)
Investment behavior controls	Yes	Yes	Yes	Yes	Yes	Yes
Market driver controls	No	No	Yes	Yes	No	No
CF Investment Controls	No	No	No	No	Yes	Yes
<i>Pseudo R</i> ²	0.074	0.207	0.259	0.442	0.213	0.548
<i>N</i>	271	271	189	189	187	187
Wald Test	<i>p-value</i>	<i>p-value</i>	<i>p-value</i>	<i>p-value</i>	<i>p-value</i>	<i>p-value</i>
<i>H1: Stigma</i> $(F A) > (S A)$	0.804	0.749	0.001	0.823	0.113	0.000
<i>H2: Signal of quality</i> $(F A) > (F)$	0.000	0.000	0.029	0.000	0.000	0.000
<i>H2b: Signal heterogeneity</i> $(F A - F) > (S A - S)$	0.362	0.406	0.000	0.000	0.079	0.000

Note. Standard errors clustered at the project level. Investment controls are a set of dummies for personal and professional investment in Government Bonds, Stocks, ETF, Unit Trusts, Options, Private Equity Funds, Venture Capital Funds, Angels Syndicates, and Crowdfunding. Market driver controls are a dummy variable that takes the value of 1 if the investor highlighted the attractiveness of the market or of the firm as the main driver for investment. Investment controls are a set of dummies for each behavior of past experience on crowdfunding on both the sides of the platform (raised and invested). Significance levels: + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$