



# **Collective Action and the Financing of Innovation: Evidence from Crowdfunding\***

Kauffman Dissertation Executive Summary<sup>†</sup>

**Sean D. Carr**

## **ABSTRACT**

The emergent phenomenon of crowdfunding, whereby large groups of individuals act collectively to support creative and entrepreneurial endeavors, suggests an alternate model for the financing of innovation. Drawing from extensive field interviews and unique hand-collected datasets of crowdfunding campaigns, this dissertation explored the following question: Under what conditions and through what mechanisms do voluntary contributors freely support private enterprise in the absence of conventional financial incentives? The results of this study revealed the significance of relational factors in the funding outcomes for crowdfunded projects, thereby advancing our understanding of social influence in the context of innovation and entrepreneurial finance.

**CATEGORY:** Management: Entrepreneurship: Entrepreneurial Finance

**KEYWORDS:** Crowdfunding, Collective Action, Entrepreneurial Finance, Innovation

---

\* This research was funded in part by the Ewing Marion Kauffman Foundation. The contents of this publication are solely the responsibility of Sean D. Carr.

<sup>†</sup> Derived from a dissertation submitted and successfully defended in May 2013 to the faculty of the Darden Graduate School of Business at the University of Virginia in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

## EXECUTIVE SUMMARY

Neoclassical economic theory suggests that private investors will support the funding of innovation in exchange for the opportunity to appropriate financial returns. However, when expected returns are considered insufficient to motivate investment, market failure can occur; i.e., investment capital evaporates and innovations may languish. The emergent phenomenon of crowdfunding, whereby groups of individuals act collectively to support innovative and entrepreneurial activities *in the absence of* conventional financial incentives, suggests an alternate model for addressing this potential disequilibrium.

Given the dearth of empirical research about the crowdfunding phenomenon and the opportunity to contribute to our understanding of collective decision-making in the context of entrepreneurship and innovation, this dissertation addresses the following question: Under what conditions and through what mechanisms do voluntary contributors freely support private enterprise in the absence of financial incentives? With the advent and growing popularity of crowdfunding, this is an important issue for the financing of innovation and early-stage ventures. Therefore the results of this work may both deepen our knowledge about crowdfunding generally and shed light on the relational (i.e., non-financial) factors that motivate funders to support innovative and entrepreneurial endeavors.

### **Crowdfunding: brief background**

Crowdfunding is a method for soliciting financial support from (potentially) large numbers of people through the Internet (Belleflamme, Lambert, & Schwienbacher, 2010). Using online portals or third-party platforms (e.g., [www.kickstarter.com](http://www.kickstarter.com), [www.indiegogo.com](http://www.indiegogo.com)) to advertise a particular funding need, individuals, groups of people, or organizations can request money directly or indirectly from other individuals or institutions. Often these solicitations take

the form of donations in exchange for rewards or “perks,” although some crowdfunding portals also facilitate funding in the form of uncollateralized debt (e.g., [www.prosper.com](http://www.prosper.com)) or partial equity ownership (e.g., [www.symbid.com](http://www.symbid.com)). Globally there are an estimated 800 crowdfunding platforms (Crowdsourcing, 2013), and the number is expected to grow through the decade, particularly following the implementation of the crowdfunding provisions in the *Jumpstart Our Business Startups (JOBS) Act*, signed into law by President Obama on April 5, 2012.

Currently crowdfunding platforms are used to raise money for a broad range of applications, including: making a film, producing music, supporting philanthropic causes, underwriting scientific research, and refinancing personal debt, to name just a few examples. With the high-profile funding success of several entrepreneurial ventures recently and the easing of regulatory restrictions on equity-based crowdfunding in the United States, the potential for crowdfunding as a method for financing new ventures holds promise.

### **Research questions**

Since most reward-based crowdfunding platforms operate as pre-ordering systems for a broad range of innovative products or creative output, we should expect that prospective funders, also known as “backers,” would be highly responsive to the tangible perks or products offered by each campaign. Correspondingly this might suggest a fairly straightforward economic explanation of funder behavior; after accounting for individual preferences, funding outcomes will be dependent on the rewards as incentives. Therefore, the first part of the analysis in this dissertation tests this assumption and addresses the following question: In the absence of an expected return on capital, to what extent are campaign backers (i.e., the sources of capital) motivated by rewards and perks, and do more perks lead to more successful funding outcomes?

Organizational theorists have also observed that social factors, such as network ties, reputation, and other forms of social capital influence the process of innovation and entrepreneurship, including new venture financing (e.g., Baron, 2002; Shane & Cable, 2002; Stuart & Sorenson, 2005). Since crowdfunding has strong social and network characteristics (i.e., most crowdfunding platforms integrate social media tools for backers and entrepreneurs to communicate and connect freely), we should expect that social factors would play a role in funding outcomes as well. Therefore, the second part of the analysis in this study explores the effects of these intangible, relational factors on funding outcomes.

To address both of these perspectives – private investment motivated by tangible incentives and collective action motivated by intangible social factors – this dissertation advances a “private investment-collective action” model of innovation (von Hippel & von Krogh, 2003). Drawing from theories about collective action and the provision of public goods, this model serves as the foundation for the hypotheses in this paper, which were further grounded with insights from qualitative field interviews conducted with project creators, founding team members, and funders for fifteen crowdfunding campaigns.

Given limited theory about the financing of innovation in the absence of financial gain and given the relative newness of the crowdfunding phenomenon, in order to ground the research questions of this dissertation I undertook a modified inductive theory-building approach with embedded multiple cases (Eisenhardt, 1989). With the support of the principals from a major European crowdfunding platform, I conducted extensive personal interviews with individuals associated with innovation projects or new ventures that had actively solicited funding through Symbid, a popular Netherlands-based crowdfunding site. The sample of respondents for this research were drawn from nine projects that had successfully achieved their funding goals and

six projects that had not, as of December 31, 2012. Each interview was conducted in English via Skype; audio recordings of the interviews were made, and transcriptions of the conversations with informants provided the basis for analysis and hypothesis development. By integrating the economic and organizational literature with in-depth fieldwork, I offer a grounded and socially embedded explanation about the private-collective model of innovation in the context of crowdfunding, strengthening the relevance and richness of the research questions regarding the significance of tangible rewards and intangible, relational factors in the crowdfunding process.

### **Data & Methodology**

To test the research questions and the underlying theoretical mechanisms, I conducted a quantitative study of 71,304 crowdfunding campaigns, using logistic regression models to evaluate the likelihood of funding outcomes as a function of the rewards and relational characteristics of each campaign. To establish the internal validity of my findings, I supplement the main analysis with a detailed review of 1,316 technology-based crowdfunded projects from the main dataset; finally, to assess the external validity of the results I replicate the main analysis with 22,548 campaigns collected from an alternate crowdfunding platform.

#### **Main sample**

The primary data were derived from Kickstarter, a U.S.-based crowdfunding platform launched in April 2009. The sample consisted of publicly available data for 71,304 campaigns that occurred between April 2009 and January 2013; 34,262 of these campaigns successfully reached their funding goals and 37,042 did not. All campaigns that had ended by December 31, 2012 were included in the sample; 1,544 campaigns that were still pending at that time were

excluded, as well as six campaigns that were halted due to undisclosed disputes regarding intellectual property issues.

On Kickstarter every project seeking funding must declare a funding goal, and it is expected that an artifact or clear deliverable will be produced as a result of a successful funding campaign, such as a technology, a book, a work of art, a performance, a software application, or an event. The Kickstarter platform is also “curated,” in the sense that project creators must apply and be accepted by the Kickstarter team before their project will be featured on the site. Projects are pre-screened to determine if they meet the site’s project guidelines, but they are not evaluated on the basis of their quality or the qualifications of the project team.

Kickstarter adheres to an “all-or-nothing” funding model. Campaigns run for a limited or fixed period of time (usually about thirty days); if the project’s funding goal is not reached by the end of that period, then no pledges are collected from any funders. For projects that successfully reach their funding goals, Kickstarter charges a 5% fee on the total amount funded; in addition, there is a 3% to 5% fee charged by a third party for the processing of payments. All other funds raised go directly to the project creator. Projects that fail to meet their funding goals during the duration of the campaign, which typically lasts three or four weeks, are charged nothing.

Finally, Kickstarter requires project creators to offer specific rewards to supporters across a range of funding levels. Specific rewards are determined by the project creators themselves, and they may include personal acknowledgments (e.g., having a backer’s name appear in the credits of a movie), t-shirts, bumper stickers, and other trinkets related to the project; they may also include delivery of the product itself. If the project reaches its funding goal, Kickstarter states that project owners are “legally required” to deliver all promised rewards, although the mechanism for enforcing delivery is vague.

**Dependent variable: funding outcome**

The dependent variable was the funding outcome; this was a binary variable of one if the project reached its funding goal and a zero if it did not. For a subsequent analysis I operationalized the dependent variable as the percentage of the funds pledged relative to the campaign's funding goal. Since each campaign was seeking different amounts of funding and since the reward levels for each campaign varied widely, the relative amount of funding is a better measure of success when comparing projects of different sizes. Also, as mentioned earlier, Kickstarter is an all-or-nothing system: any project that does not reach its goal will not collect any funds, regardless of the number and amount of pledges it has attracted.

**Independent variable: selective incentives**

Project creators are required by Kickstarter to offer tangible rewards as incentives to prospective funders; however, they have discretion regarding how many levels of rewards to offer. Each campaign page on Kickstarter typically reports a range of reward levels; I operationalized selective incentives for each campaign as the number of reward levels available.

**Independent variable: social engagement**

Each project page on Kickstarter contains both direct and indirect measures of social engagement. The most direct measure of the degree of engagement provided by the project owner was captured in the number of *updates* that the project owner provided during the course of the campaign. Kickstarter encourages all project owners to post information to their project page in order to keep current or prospective backers engaged in the campaign. Not only are these updates presented on a special section of each page in reverse chronological order, but the number of updates is reported directly at the top of each project page.



The other measure of a project owner's degree of engagement with her (prospective or actual) community of supporters was somewhat more indirect: the extent to which she used her network of social media contacts to engage with her Kickstarter campaign. All project owners have the opportunity to link their Facebook account, if they have one, with their Kickstarter project page. For those owners who do establish this link, their Kickstarter page indicates this connection and reports the project owner's number of "friends" on Facebook. The reason this is an indirect measure of engagement is that we do not know the extent to which project owners actually leveraged this particular social-media network to generate support for their campaigns. However, the very existence and relative strength of a social media network (i.e., number of Facebook "friends") can serve as a proxy for the ability of a project owner to use these tools to establish direct connections with her prospective funders.

### **Control variables**

To provide more accurate estimates for the hypothesized variables I controlled for other factors that could affect the likelihood of successful funding. First, it is possible that the size of a funding goal will have a bearing on the funding outcome; campaigns with very modest funding goals (e.g., \$100) are more likely to be successful than those that have more ambitious targets (e.g., \$100,000). Following Mollick (2012) I controlled for the log of the funding goal.

Second, I controlled for the duration for each campaign. The Kickstarter platform permits campaigns to run from one to 60 days, although the platform's guidelines encourage projects to target 30-day limits. Since campaign length will affect the chances of successful funding (i.e., very short campaigns of only a few days will have less opportunity to generate interest and attention than those lasting several weeks), I used the log of each campaign's duration to control for this potential variability.

Third, I controlled for dimensions of project quality that previous research has found to be important for explaining venture finance decisions. For example, Delmar and Shane (2003) found that certain activities undertaken by entrepreneurs, such as business planning, may yield greater legitimacy and thus may have a positive impact on early venture survival. Other legitimacy-enhancing practices, such as adopting or mimicking organizational structures or ceremonial activities common within a certain industry or environment can contribute to firm survival and growth (Khair, 2012). An example of this form of preparedness and legitimation is the presence or absence of a website for each project. Approximately 61% of all projects in the sample provided a link to a website external to the Kickstarter page for the campaign; many of these websites offered additional information about the projects and their creators. I used a dummy variable to indicate whether the project provided a link to an external website or not.

Finally, prior research in venture capital has found that investors tend to favor certain industries over others (Haar, Starr, & MacMillan, 1988). Given the breadth of project categories on Kickstarter, we should expect variability in funding patterns across them. Therefore, I controlled for this variability by dummy coding each of thirteen project categories in the sample.

## **Results**

The theoretical premise of this research was that reward-based crowdfunding can best be explained by a private-collective theory of innovation, whereby selective incentives as well as nontangible, socially-motivated factors account for funding outcomes. Both the qualitative evidence and the results from the quantitative analysis showed that both of the main constructs were important, suggesting general support for the main premise of this paper. The main finding is that under conditions of uncertainty, non-financial social factors significantly outweigh material incentives for the financing of innovation. Specifically, whereas the tangible rewards

could explain about 15 percent of the variability in funding success, relational factors predicted nearly 60 percent of the variability in the outcomes. These findings were supported in the robustness checks using a subset of technology campaigns on Kickstarter and by examining a large sample of campaigns from a competing platform.

These results suggest that previous organizational theoretic explanations for the role of social factors, such as network ties and social capital, in the financing of innovation and entrepreneurship may have been too parsimonious. Prior literature on this subject has suggested that social factors may serve as a mechanism for mitigating information asymmetries between entrepreneurs or innovators and prospective funders (e.g., Shane & Cable, 2002; Stuart & Sorenson, 2005). The present study suggests a complementary view: funders may be seeking and may even be *motivated by* social engagement not only for private information or interpersonal trust, but because they place intrinsic value on being “involved” with a project, idea, venture, or person. The results from this research showed that even when tangible rewards are available, funders’ responsiveness to updates from projects creators dominates, even after controlling for a broad range of other motivating factors (e.g., funding goal size, project category, project quality, etc.). This is significant because it heightens our understanding of the role of community, affinity, participation and “joining” in the process of innovation and venture creation (von Krogh, Spaeth, & Lakhani, 2003). Moreover, it suggests that an *incentive* for investing in innovation or entrepreneurship may be offered by the “insider status” that comes with participation.

### **Practical Implications**

Given the importance of innovation and new venture creation for economic growth and social progress, an understanding of the evolution of the financing mechanisms available for

pursuing entrepreneurial opportunities is of vital interest to scholars, policymakers, educators, and practitioners. The main contribution of this paper is straightforward: social and relational factors have a significant influence on the funding outcomes for creative ideas and projects in the absence of conventional financial returns, even more so than other tangible rewards and incentives.

The practical implications of this central finding are highly relevant to the financing of innovation and new enterprise development in at least two ways. First it suggests that any entrepreneur or innovator seeking financial support should not underestimate the importance of social engagement with the providers of capital and other resources; establishing personal rapport, providing direct access, and encouraging a sense of belonging and inclusion may be a critical component of the new venture's value proposition, especially among early-stage backers. Moreover, this research illustrates how the ability of an entrepreneur to engage effectively with potential backers is a vital skill to be learned and developed.

This finding presents a novel contribution to our understanding of the significance of the collaboration and social relationship-building between an entrepreneur and her sources of capital, which is not strictly related to crowdfunding. Moreover, it provides us with a more nuanced and textured understanding of the motivations of angel investors, seed-stage venture capitalists, and others who may be willing to provide critical resources to a new enterprise.

This study also sheds light on an important mechanism underlying the new phenomenon of reward-based crowdfunding, which has emerged as a potential accelerator for the financing of innovation and new enterprise development in the U.S. and around the world. To date it remains unclear precisely how crowdfunding might change the pattern or direction of entrepreneurial activity, but it has quickly become established as an alternative to traditional sources of startup

capital. Therefore, this study provides useful insights for entrepreneurs, innovators, creators and “makers” about how best to leverage the opportunities offered by this new financial and market-building resource.

### **Future Research**

Crowdfunding offers many rich opportunities for understanding a wide range of social phenomena related to innovation, entrepreneurship, and venture finance. Future research might embrace new empirical approaches, including experiments, field studies, and further quantitative analyses of the drivers of voluntary behavior and the mechanisms that affect the collective evaluation process. The performance outcomes of crowdfunded ventures, the geographic patterns of crowdfunding activity, the legitimating effects of crowdfunding for new ventures, and the effects of social information on individual decision-making are among the many topics worthy of future consideration in this domain.

This dissertation was intended to help build a foundation for future work regarding the still-emerging phenomenon of crowdfunding. Certainly any research on this subject in this still-developing field will be exploratory, but it provides an exciting new lens through which to understand the drivers of innovative and entrepreneurial activity. As crowdfunding matures and as the regulatory regimes in the United States and elsewhere continue to adapt to the disruption and disintermediation brought about by this new phenomenon, we should expect this work to be among the first in a very long stream of scholarship on this important and consequential topic.

## REFERENCES

- Baron, R. A. 2002. OB and entrepreneurship: The reciprocal benefits of closer conceptual links. *Research in Organizational Behavior*, 24: 225-269.
- Delmar, F., & Shane, S. 2003. Does Business Planning Facilitate the Development of New Ventures? *Strategic Management Journal*, 24(12): 1165-1185.
- Eisenhardt, K. M. 1989. Building Theories from Case Study Research. *The Academy of Management Review*, 14(4): 532-550.
- Haar, N. E., Starr, J., & MacMillan, I. C. 1988. Informal risk capital investors: Investment patterns on the East Coast of the U.S.A. *Journal of Business Venturing*, 3(1): 11-29.
- Khaire, M. 2012. Young and No Money? Never Mind: The Material Impact of Social Resources on New Venture Growth. *Organization Science*, 21(1): 168-185.
- Mollick, E. 2012. The Dynamics of Crowdfunding: Determinants of Success and Failure, *Working Papers Series*: July 11, 2012. Philadelphia, PA: The Wharton School of the University of Pennsylvania.
- Shane, S., & Cable, D. 2002. Network Ties, Reputation, and the Financing of New Ventures. *Management Science*, 48(3): 364-381.
- Stuart, T. E., & Sorenson, O. 2005. Social Networks and Entrepreneurship. In S. A. Alvarez (Ed.), *Handbook of Entrepreneurship Research: Disciplinary Perspectives*: 211-228. New York: Springer.
- von Hippel, E., & von Krogh, G. 2003. Open Source Software and the "Private-Collective" Innovation Model: Issues for Organization Science. *Organization Science*, 14(2): 209-223.
- von Krogh, G., Spaeth, S., & Lakhani, K. R. 2003. Community, joining, and specialization in open source software innovation: a case study. *Research Policy*, 32(7): 1217-1241.