

# Research on the Current State of Crowdfunding: The Effect of Crowdfunding Performance and Outside Capital

by

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## *Executive Summary*

The purpose of this study is to investigate the relationship between crowdfunding performance and several post-campaign benefits that entrepreneurs value; most notably, access to additional external financing for their venture. Using survey data on a sample of crowdfunding projects from Kickstarter, the world's most popular crowdfunding platform, we investigate the effect of crowdfunding success on the ability of entrepreneurs to obtain additional financing after the campaign ended. Our study found that crowdfunding performance, or more specifically, the dollars raised by the campaign does have a positive effect on the likelihood of external financing benefits. Moreover, this effect is concave, where the marginal effect of raising additional dollars begins to decrease after \$75,000 has been raised. It appears that crowdfunding serves as a useful "proof-of-concept" arena for entrepreneurs who seek additional financing. Moreover, we outline how several attributes associated with the project influence the effect of crowdfunding success on securing external capital. We also document the positive effect of crowdfunding success on several non-financial benefits valued by entrepreneurs, such as publicity and securing business partnerships, and evaluate its relative effect across these outcomes.

*Keywords: Crowdfunding, Kickstarter, Access to Capital, Entrepreneur Funding, Policy*

## **I. Introduction**

### BACKGROUND

It is widely acknowledged that entrepreneurship serves as a primary driver of economic development, by mitigating both temporal and spatial inefficiencies in an economy (Schumpeter 1934; Shane & Venkatraman, 2000). However, would-be entrepreneurs face several impediments to establishing new ventures once they identify an entrepreneurial opportunity. One of the most prominent challenges is raising adequate seed capital to launch the new venture (Cosh, Cumming, & Hughes, 2009). Entrepreneurs have traditionally relied upon seed funding from capital providers such as banks, venture capitalists, angel investors, as well as contributions from close friends and family members. However, recently a new source of financing has emerged in the form of "crowdfunding." Crowdfunding represents a form of informal venture financing that allows entrepreneurs to directly appeal to the general public (i.e., the "crowd") through online platforms for help in getting their innovative ideas off the ground (Belleflamme, Lambert & Schwienbacher, 2014).

Crowdfunding presents a new source of seed capital for new ventures and therefore has the potential to significantly spur entrepreneurship, as outlined in Title III of the Jumpstart Our Business Startups Act (JOBS) Act. To that end, crowdfunding is considered a potential policy tool for economic development with respect to small businesses. Therefore, this study is of import to entrepreneurs, business owners, and policy makers.

## PURPOSE OF THE STUDY

While much of the initial focus on crowdfunding has focused on identifying the factors that predict greater success on these crowdfunding platforms (Mollick, 2014), less attention has been paid to the ability of crowdfunding success to facilitate subsequent access to external capital from traditional financing entities – banks, venture capitalists, angel investors, etc. Such entities seek high-potential ventures and provide them with either debt or equity financing. However, in order to maximize their financial return, capital providers must accurately value these ventures and the market potential associated with their new ideas or business models. This process is often made difficult with either unavailable or imperfect information regarding consumer demand for the new product or service. In this regard, a venture’s performance on a crowdfunding platform – where thousands of new products and services are competing for attention and resources – can serve as validation of its market potential. As a result, crowdfunding platforms may serve as a “proof-of-concept” to risk-averse investors and lenders.

However, whether crowdfunding platforms can be used as a “proof-of-concept” tool has not been subject to rigorous empirical study. For the purpose of this study, we build on recent descriptive work by Mollick and Kuppaswamy (2015) by conducting more in-depth empirical analysis on the potential proof-of-concept benefits of crowdfunding. We first explore the potential shape of the relationship between crowdfunding success and attracting additional capital. Although successful campaigns raise more capital than failed campaigns, it is unclear whether raising a small amount is advantageous to a startup (the median goal size on Kickstarter, the most popular crowdfunding platform, is just \$5,000); or if more significant amounts need to be raised before the probability of leveraging crowdfunding success to access additional capital increases. In other words, we attempt to identify whether the relationship between crowdfunding performance and subsequent external capital exists and if it does whether it is linear, concave, or convex. Identifying the precise shape of the relationship is important because it gives entrepreneurs a much clearer sense as to how their campaign performance will relate to their ability to attain subsequent financing.

Furthermore, we explore whether any effect of crowdfunding performance on the ability to raise additional capital varies depending on certain attributes of the venture. Capital providers may exhibit a preference for certain types of projects or entrepreneurs. Therefore, in addition to examining the effect of crowdfunding performance on additional financing, we examine whether the effect is moderated by the original objective of the entrepreneur – whether he or she wanted to establish a new business, whether the campaign represented a new product of an existing business, or whether it was considered a one-time project. Moreover, we also explore whether the gender of the entrepreneur and prior experience seeking outside capital influence the magnitude of this relationship.

In addition, we conducted qualitative research (informal interviews) with crowdfunding entrepreneurs to explore whether entrepreneurs were also motivated to launch crowdfunding campaigns to gain non-financial benefits. According to Mollick and Kuppaswamy (2015), entrepreneur responses point to the ability of such campaigns to boost the overall awareness of the venture and to build a new customer base for the product, among other benefits. We validate whether this is the case by analyzing the impact of

crowdfunding performance along four specific non-financing benefits – publicity generated for the venture; increase in customer base; ability to find attract and retain employees; and ability to secure new business alliances or partnerships. Importantly, we compare the relative impact of crowdfunding performance on all our ex-post campaign benefits to better understand where crowdfunding campaigns help the most. In doing so, we hope to provide entrepreneurs more information to set reasonable expectations for the venture after the crowdfunding process ends.

Crowdfunding is a relatively new research domain and as a result, there exists little prior work on its ability to serve as a proof of concept, facilitating access to outside capital. Therefore, instead of proposing formal hypotheses, we take a more exploratory data-driven approach in this paper – a common approach when a research topic is fairly new (Zhang & Liu, 2012). However, we hope that our findings will be useful for future theory building allowing specific hypotheses to be formulated and explored.

#### RESEARCH INQUIRY FRAMEWORK

Our overall inquiry is to explore three specific research questions in this study. First, what is the shape of the relationship between crowdfunding success and the probability of attracting additional capital? Second, which project attributes moderate the relationship between crowdfunding success and attracting additional capital? Finally, what other non-financing outcomes are positively affected by crowdfunding success?

To explore our research questions, we used Kickstarter project data – the world’s most popular crowdfunding platform, measured by both the number of projects posted and the total capital raised through the platform (Kickstarter passed the \$1 billion mark in 2014). Another option would have been to examine projects posted on crowdfunding sites where individuals can actually purchase equity in the venture (rather than make contributions in return for non-financial “rewards” as in the case of Kickstarter). However, while the JOBS Act has opened the door to this equity-based crowdfunding, the Securities and Exchange Commission (SEC) rules governing its implementation had not been made final as of the date of this study. In light of this, equity-based crowdfunding in the United States is not available in a true sense (i.e., for individuals beyond “accredited investors”). As a result, we focus this study on the most popular form of crowdfunding that is actually available in the United States—reward-based crowdfunding through the Kickstarter platform. In an empirical sense, our analysis of reward-based crowdfunding represents a conservative test of the impact crowdfunding success can have on external financing and other post-campaign benefits. If we can establish a “proof-of-concept” benefit to reward-based crowdfunding, this benefit is likely to be much greater in the case of equity-based crowdfunding in the future. As a result, entrepreneurs, business leaders, and government policymakers can interpret our results as a conservative test of what the true potential of equity-based crowdfunding may be.

## EXPLANATORY RESULTS OF THE STUDY

### *Result 1: Crowdfunding Serves as “Proof of Concept” in Raising Additional Capital*

Our study shows that crowdfunding performance, or more specifically, the dollars raised by the campaign, does have a positive effect on the likelihood of external financing benefits. Moreover, this effect is concave, where the marginal beneficial effect of dollars raised decreases once approximately \$75,000 has been raised by the campaign. As a result, it appears that crowdfunding serves as a useful “proof-of-concept” arena for entrepreneurs who seek additional financing.

### *Result 2: “Proof-of-Concept” Effects Do Not Differ by Gender*

The financing benefits associated with higher performance crowdfunding projects were not found to vary by gender. As a result, while prior work has shown that women perform better than men in raising funds on crowdfunding platforms (Greenberg & Mollick, 2014), we find no statistically significant differences between men and women in their ability to secure post-campaign financing.

### *Result 3: “Proof-of-Concept” Effects Depend on the Original Project Objective*

We also found that the objective of the project also influenced the effect of crowdfunding performance on external financing benefits, to some extent. When a project has raised over \$250,000, we found that the effect of crowdfunding performance on external financing for one-time projects is greater than that for new products from existing entities at a statistically significant level.

### *Result 4: “Proof-of-Concept” Valid for Non-Financial Benefits*

In addition, we found that greater crowdfunding performance also resulted in higher levels of business partnerships, greater publicity, a stronger customer base, and an easier time finding employees. As a result, significant non-financing benefits do indeed result from crowdfunding efforts. Moreover, we compared the effects and found that crowdfunding performance had the strongest effects on building a customer base for the new product and generating publicity for it when under \$100,000 was raised. Above that amount, securing business partnerships was the more salient advantage.

Each of our study’s results relate to one or more research questions. We interpret these results and highlight the implications for entrepreneurs, business leaders, and policymakers. In the following section, we provide more background on this phenomenon of crowdfunding by reviewing key academic work related to this topic.

This research contributes to the academic body of knowledge on crowdfunding as it relates to an entrepreneur’s ability to gain external funding. The study also informs the literature on possible non-financial benefits entrepreneurs realize as a result of successful crowdfunding activities. It is anticipated that the study’s explanatory results will be useful to policymakers and will contribute to their understanding of entrepreneurial external funding potential capabilities. We also suggest that these results will inform public policy development impacting economic growth as moderated by positive entrepreneurial behavior related to crowdfunding.



## **II. Literature Review**

As crowdfunding has emerged as a viable source of entrepreneurial seed capital, it has also captured the attention of the academic community. Over the past few years, a small but rapidly growing literature has sought to better explain this new phenomenon. In this review, we focus on summarizing the key findings from the major empirical crowdfunding literature.

In general, crowdfunding platforms differ in terms of whether the contributor's primary motivation for participating is the expectation of a financial return. For example, crowdfunding communities like SellaBand and Wefunder offer consumer investors an interest in the venture in the form of equity or some sort of profit sharing agreement (Agrawal, et al. 2015; Ward & Ramachandran 2010). Other crowdfunding platforms such as Prosper and Zopa involve peer-to-peer lending in which it is expected that the original principal is repaid, along with fixed interest (Herzenstein, et al. 2011a; Zhang & Liu, 2012). Some crowdfunding communities involve no monetary compensation for participation. For example, JustGiving and Spot.us rely on altruistic motivations in which funders voluntarily donate their money with no expectations of any tangible reward (Burtch, et al. 2013a; Smith, et al. 2012). Finally, project backers in crowdfunding communities like Kickstarter and Indiegogo receive non-financial rewards for their financial contributions (Mollick, 2014). These rewards often take the form of tokens of appreciation (thank you message, artist's autograph, mentioning the crowdfunder's name in the credits, T-shirt) or the pre-purchasing of products or services (Hemer, 2011). By and large, most crowdfunding research has attempted to identify the determinants of fundraising success for entrepreneurs or borrowers.

### **EQUITY-BASED CROWDFUNDING RESEARCH**

Scholars of equity-based crowdfunding (non-U.S. platforms) assume that individuals are rationally motivated to contribute to projects in order to increase their net financial return. As a result scholars of equity-based crowdfunding have tended to focus on the effect of entrepreneur- and project-quality signals on the likelihood of fundraising success. Prior work in this domain has found that funding success is related to financial and risk transparency, indicators of leadership and human capital, and level of uncertainty surrounding the venture (Ahlers, et al. 2015). Other scholars of equity crowdfunding have explored the differences between contributors who are friends and family of the entrepreneur and those who are not (Agrawal, et al. 2015). Their findings illustrate that individuals who are not friends and family are significantly influenced by the fundraising performance of the project to date, but that such progress is irrelevant for friends and family. In addition, friends and family tend to contribute early in the venture funding cycle compared to other contributors. These findings support the view that individuals other than friends and family are more rational in their investments and are guided by several quality signals, including the performance of the project since its launch. By and large, the lack of active equity-based crowdfunding platforms in the United States has been an impediment to significant research in this domain. However, once such platforms are active, we can expect research on equity-based crowdfunding to increase dramatically.

## LENDING-BASED CROWDFUNDING RESEARCH

Studies of lending-based crowdfunding provide additional support for the rational motivation of contributors, who are looking to maximize their financial return (through interest payments plus principal). Prior work has found that bidding on a loan is positively related to borrower creditworthiness and others' prior bids (Desai & Kharas, 2009; Herzenstein, et al. 2011a; Hildebrand, et al. 2013). This "herding" behavior in peer-to-peer lending is considered rational, since only bids on projects with obvious credit defects are positively related to others' prior bidding decisions (Zhang & Liu 2012). In the context of lending-based crowdfunding, research has also explored how the attributes of the borrower and the actual pitch influence success. For instance, scholars have found that the bids a loan receives are subject to significant bias linked to culture and home region or country (Burtch, et al., 2014; Lin & Viswanathan, 2013). Furthermore, funding success for a loan is positively related to the borrowers' social networks (Lin, et al. 2013), as well as their race, gender, and other personal characteristics (Desai & Kharas 2009; Ly & Mason 2012; Pope & Syndor, 2011; Ravina, 2012). Interestingly, a few studies have analyzed the text of the actual campaign pitch, and have found the project narrative to play an important role in funding success (Herzenstein, et al., 2011b).

## REWARD- AND DONATION-BASED CROWDFUNDING RESEARCH

Apart from crowdfunding platforms with a financial incentive for contributors, reward-based and donation-based crowdfunding have also been the context for a number of crowdfunding studies, with *Kickstarter* representing the dominant setting. While studies have again documented the importance of several quality signals related to the entrepreneur and project in these domains as well (e.g., Colombo, et al. 2015; Marom & Sade, 2013; Mollick, 2014) research has also shown that non-financial motivations are quite salient on these crowdfunding platforms. For example, contributions on *Kickstarter* have been found to drop significantly once a project reaches its goal, despite the fact that rewards are guaranteed once the goal is reached (Kuppuswamy & Bayus, 2014). If rewards were the true driver of crowdfunding contributions, one would expect to see a sharp increase in contributions once these rewards are guaranteed. As a result, scholars argue that such behavior is evidence of "impact philanthropy" guiding contributions on reward- and donation-based crowdfunding platforms. Consistent with the importance of having an impact, prior work has found that in the context of donation-based crowdfunding, donations are positively related to charity efficiency and negatively related to competition (Meer, 2013). Furthermore, donations that complete the project's goal are larger than other donations (Wash, 2012).

In addition to these studies that have sought to document the drivers of project success on the platform, another stream of research compares crowdfunding behavior (mostly on *Kickstarter*) to traditional forms of venture financing for entrepreneurs. One study compared the decisions of venture capitalists to crowdfunders, and found that both these groups assess entrepreneurial quality in similar ways (Mollick, 2013). However, crowdfunding was found to alleviate some of the geographic and gender biases associated with traditional venture capital financing. These findings are echoed by another study of artistic projects, where the decisions of crowdfunders were compared to "expert" evaluators of art quality (Mollick & Nanda, 2015). The authors found no quantitative or qualitative differences between projects funded by the crowd alone, and those that were selected by both the crowd and experts. While

this line of work indicates that crowdfunders and venture capitalists (and other experts) share many similarities in their evaluation of projects, it remains to be seen whether crowdfunding success translates into greater access to capital through these more traditional sources of venture funding—a primary focus of the present study.

### **III. Methodology**

#### RESEARCH QUESTIONS

The purpose of this study was to investigate the relationship between crowdfunding performance and several post-campaign benefits that entrepreneurs value, most notably, access to additional external financing for their venture. Specifically, a primary focus of this study was to determine whether crowdfunding success translates into greater access to capital through more traditional sources of venture funding.

Research questions were formulated based on the primary focus of the research and formalized by the SBA Office of Advocacy. The selected topic—the effect of crowdfunding performance and outside capital—contained three research questions. Each of the research questions was designed to expand our knowledge of any relationship between successful crowdfunding campaigns and an entrepreneur’s ability to secure external funding.

**Research Question #1:** What is the shape of the relationship between crowdfunding success and attracting additional capital?

**Research Question #2:** Which project attributes moderate the relationship between crowdfunding success and attracting additional capital?

**Research Question #3:** What other non-financing outcomes are positively affected by crowdfunding success?

#### DATA

##### *Study Context: Kickstarter*

In order to explore the relationship between crowdfunding success and the ex-post benefits realized by entrepreneurs, we surveyed a sample of creators behind product-based Kickstarter projects. Kickstarter is the most successful crowdfunding platform on the Internet (both in the U.S. and internationally), raising over \$1 billion for creators since its launch, far exceeding its rivals. Moreover, Kickstarter is the most common platform analyzed in prior empirical work on crowdfunding. Therefore, we chose to focus on the experiences of crowdfunding entrepreneurs who used Kickstarter.

##### *Sample Frame for Survey*

The survey included questions that measured the extent to which the campaign helped facilitate several outcomes of benefit to entrepreneurs. For the survey, we chose a sample frame of Kickstarter projects that were most similar to those of traditional venture-backed entrepreneurial firms. Specifically, we

looked at successful projects between 2009 and 2012 in the technology, design, and games categories with goals of at least \$5,000 that had committed to delivering products to customers.

### *Survey Responses for Successful and Unsuccessful Projects*

Of the 592 successful projects we surveyed, we received 270 responses (a response rate of 45.6%). After accounting for incomplete and duplicate entries, we ended up with usable data from 192 successful projects (32.4% of the original sampling frame), although many partially complete surveys were usable for certain parts of the study. Of the 1,508 unsuccessful product-based projects, we sent survey requests to a random sample of 492 project creators. The survey sent to the creators of unsuccessful projects was nearly identical to that sent to successful project creators, but with the wording of the post-campaign benefits question altered slightly to minimize the risk of embarrassment (see the Technical Appendix for the exact questions used). Of these 492 unsuccessful projects, we received 135 responses (27.4% of the original sampling frame). After removing duplicate and incomplete responses, we ultimately obtained complete data for 92 unsuccessful projects (18.7% of the original sampling frame).

### *Final Sample*

Thus, our final sample consisted of 284 successful and unsuccessful projects. Since the survey questions used in our analysis were nearly identical across the surveys sent to successful and unsuccessful entrepreneurs, we were able to easily generate the full dataset for the analyses by appending responses from one subsample to the other. We then merge this survey data with project-level information obtained from each project's *Kickstarter* webpage. For each of our successful and unsuccessful subsamples, we conducted univariate t-tests to examine differences in key variable distributions between projects in our final sample and those for projects without responses. These t-tests revealed no differences in the mean values of goal size, the total dollars raised by the project, and indicators for each project category. Thus, overall there appeared to be little evidence of respondent bias in our sample.

## VARIABLES

### *Dependent Variables*

The dependent variables in our analysis represent measures of several ex-post benefits that may be influenced by crowdfunding success. First, survey respondents were asked to indicate the degree to which their *Kickstarter* campaign directly helped raise additional funds from outside sources after the campaign. Responses were recorded using a 4-point scale: 1 (None), 2 (Little), 3 (Some), and 4 (A Lot).

#### *1) Measure of External Financing Benefit*

In order to investigate whether crowdfunding performance affected the ability of project creators to secure external funding after the campaign, we create a binary indicator *External Funding*, which denotes whether the campaign helped “Some” or “A Lot.” Summary statistics for all variables in our analysis are presented in Table 1. From Table 1, we see that the mean value of *External Financing* is

0.257, indicating that approximately one fourth of all projects in our sample report at least some degree of benefit in securing additional financing from external capital providers.

## 2) *Measures of Non-Financing Benefits*

In addition to external financing benefits, survey respondents were also asked to indicate the degree to which their *Kickstarter* campaign directly helped with non-financing benefits in the form of business partnerships, publicity, building a customer base, and finding employees. As before, responses were recorded using a 4-point scale: 1 (None), 2 (Little), 3 (Some), and 4 (A Lot). We create binary indicators – *Business Partnerships*, *Publicity*, *Customer Base*, and *Employees* – to indicate whether the campaign helped “Some” or “A Lot” with respect to these benefits. From Table 1, we observe that the mean values of *Business Partnerships* (0.370), *Customer Base* (0.537), and *Publicity* (0.620) are all larger than the mean value for *External Funding* (0.257). As a result, at least on the basis of their mean values, it appears that crowdfunding entrepreneurs experience higher levels of non-financing benefits than they do financing benefits. The exception is the ability to find new employees (*Employees*), which has the lowest mean value of 0.137.

### *Key Explanatory Variable: Crowdfunding Performance*

Our key explanatory variable is a measure of the crowdfunding performance of the entrepreneur. Specifically, we use the dollar amount raised by the end of the crowdfunding campaign (*Dollars Raised*). The mean amount raised by projects in our sample is \$41,303.21, although this variable is highly skewed with a maximum value of \$830,827. While alternative measures of crowdfunding performance could be an indicator for whether the project was funded or not, or the percent of goal funded; these measures are likely inferior to using the actual dollar amount raised by the project. Competition for capital for a new entrepreneurial venture is very intense. Therefore, in order to truly attract the attention and confidence of external capital providers, campaigns likely need to raise significant sums of money (in absolute terms) to stand out from other successful campaigns. As a result, external capital providers likely pay more attention to the total dollar amount raised by a project, compared to the percent of goal achieved, or merely whether the campaign was successful or not.

### *Shape of the Relationship Between Crowdfunding Performance and External Financing*

An additional benefit of using a continuous measure of performance, such as dollar amount raised by the campaign, is that it allows us to easily test for a non-linear relationship between crowdfunding performance and post-campaign financing benefits by including both linear and quadratic (squared) terms for *Dollars Raised* in the empirical model. We expect a convex relationship due to the significant competition for external financing, where increases in performance towards the low end of the scale are unlikely to have large impact on financing because visibility is not significantly enhanced. However, at higher levels on the performance scale, additional increments in performance are more effective due to the higher visibility these campaigns already (likely) possess. Alternatively, it is also possible that the

crowdfunding performance exhibits a concave relationship with external financing. Beyond a certain threshold, additional performance may not help any more since the concept has already been “validated” at more modest amounts raised. If the effect of crowdfunding performance were indeed convex, the marginal effect of crowdfunding performance will increase at higher values of *Dollars Raised*. Conversely, a concave relationship would mean that the marginal effect of *Dollars Raised* decreases beyond a certain point. A linear relationship would be present if the marginal effect did not vary across the range of values of *Dollars Raised*.

An alternative approach to test for non-linear effects would be to transform *Dollars Raised* into a categorical variable with separate indicators for the different ranges of amount raised. Due to our relatively small sample size, such an approach would result in relatively large standard errors since the number of projects within each category would be relatively small. As a result, it would be quite difficult to detect differences in marginal effects across the range of values. Therefore, we prefer the quadratic specification to detect non-linear effects with the continuous version of *Dollars Raised*.

### *Control Variables*

While *Dollars Raised* serves as our primary predictor variable, we draw upon prior empirical work on crowdfunding to also include several control variables in our analysis.

#### *1) Project Goal*

First, following the prior literature on crowdfunding (e.g., Mollick, 2014), it is very important to control for the original fundraising goal of the project (measured in dollars; log transformed), in order to account for differences in complexity and/or scale across projects.

#### *2) Project Category*

Moreover, external capital providers and other entities, such as potential business partners, may exhibit distinct preferences for certain project categories (e.g., games over design projects). In order to account for potential category preferences, we include binary indicator variables that control for project category (design, technology, or games).

#### *3) Time-Related Controls*

Campaign benefits may also exhibit time trends, whereby projects with longer campaigns benefit from (potentially) greater visibility, or that projects launched in certain years enjoy greater benefits. Therefore, we also control for the duration of the crowdfunding campaign (in days), and include indicator variables to control for the specific year the project was launched (2010-2012).

#### *4) Campaign Endorsements*

Another attribute of a campaign that can influence post-campaign benefits is the extent to which the campaign lists outside endorsements. Such endorsements may increase the visibility of the project or enhance the confidence external capital providers may have in the project. Therefore, we control for endorsements by including a binary indicator for whether the project web page lists hyperlinks or quotes from outside organizations or new media.

#### *5) Gender of the Entrepreneur*

Prior literature on entrepreneurship has also documented the difficulty that women can often face in raising capital from traditional sources. As a result, we reason that the gender of the project creator may also influence the extent to which post-campaign benefits such as financing are achieved after the campaign. While recent work has illustrated that women do outperform men on crowdfunding platforms (Greenberg & Mollick, 2014), it remains to be seen whether this translates into greater post-campaign benefits. While the overall sign of the relationship between gender and post-campaign benefits is ambiguous based on prior findings, the need to control for gender effects is highlighted. Therefore, we include an indicator variable to control for whether the project creator is female.

#### *6) Project Objective*

We also consider the overall project objective as an important control in our models of post-campaign benefits. Individuals who launched a campaign for a one-time project may not seek additional financing to the extent that others do. Therefore, our models include indicators that control for the objective of the crowdfunding campaign—a one-time project; a new product from a new entity/group; or a new product from an existing organization.

#### *7) Previous Attempts to Secure Financing*

Finally, we also control for the efforts of the creator in raising funds from various sources prior to the campaign, including whether the entrepreneur sought prior funding from themselves, family/friends, and external capital providers. Prior efforts may have produced useful contacts or learning experiences that can be leveraged after the campaign to secure additional funding. Summary statistics for all our control variables can be seen in Table 1.

**Table 1: Summary Statistics**

Variable	Mean	Std. Dev.	Min	Max
<i>Post-Campaign Benefit Variables</i>				
External Financing	0.257	0.438	0.000	1.000
Employees	0.137	0.345	0.000	1.000
Customer Base	0.537	0.500	0.000	1.000
Publicity	0.620	0.486	0.000	1.000
Business Partnerships	0.370	0.484	0.000	1.000
<i>Other Control Variables Obtained from Survey</i>				
Objective: New Product from New Entity	0.577	0.495	0.000	1.000
Objective: New Product from Existing Entity	0.173	0.379	0.000	1.000
Sought Prior Funds: Creators	0.532	0.500	0.000	1.000
Sought Prior Funds: Family/Friends	0.141	0.348	0.000	1.000
Sought Prior Funds: External Financing	0.162	0.369	0.000	1.000
Female	0.134	0.341	0.000	1.000
<i>Other Control Variables Obtained from Campaign Webpage</i>				
Dollars Raised	41303.210	94717.970	0.000	830827.000
Goal	25141.690	44828.840	5000.000	500000.000
Campaign Duration	38.565	13.197	12.000	90.000
Category: Design	0.447	0.498	0.000	1.000
Category: Technology	0.299	0.459	0.000	1.000
Project Year: 2011	0.412	0.493	0.000	1.000
Project Year: 2012	0.504	0.501	0.000	1.000
Endorsements	0.335	0.473	0.000	1.000

**EMPIRICAL MODEL**

*Overall Objective of the Empirical Models*

In our analysis, we model the probability that an entrepreneur reports some benefit in securing external financing after the completion of the campaign. We do so by identifying the effect of crowdfunding success on the probability of external financing after controlling for the effect of other variables that might also influence this outcome (i.e., the control variables detailed earlier). We interpret a positive effect of crowdfunding success on this probability as evidence that crowdfunding can serve as a “proof of concept” for a new idea or business model. In addition, we attempt to identify whether any effect of crowdfunding performance on this probability is influenced by the gender of the entrepreneur or the objective of the project. Finally, in subsequent analyses, we also model whether crowdfunding



performance increases the probability that entrepreneurs report non-financing benefits after the completion of the campaign and compare the relative effects.

#### *Estimation Details*

To estimate whether crowdfunding performance affects the level of post-campaign benefits attained by entrepreneurs, we separately modeled each benefit (*External Funding, Business Partnerships, Publicity, Customer Base, and Employees*) as a function of *Dollars Raised* using a logit estimator, with robust standard errors. A logit model is the appropriate estimator given the binary nature of our dependent variables. Robust standard errors make adjustments to the estimates, accounting for potential misspecification or flaws in the data itself. Robust standard errors are computed using the Huber/White sandwich estimator. For robustness purposes, we also estimate our models using a probit estimator, and the results are very similar to those obtained using the logit model. To allow for the possibility that the effect of crowdfunding success on outside financing is non-linear, we include both linear and quadratic terms for *Dollars Raised*. Based on the results of these models, we compute the marginal effect of *Dollars Raised* across its range of values and examine whether the marginal effect exhibits significant non-linear trends.

#### **IV. Estimation Results Discussion**

We begin our discussion of the estimation results by outlining the overall structure of this section. Our empirical analysis has four specific sub-sections (key results also highlighted):

##### *Result 1: The Effect of Crowdfunding Performance on External Financing*

First, we present results that examine the effect of crowdfunding performance on the probability of external financing. *Key Finding:* There exists a positive effect of crowdfunding success on the probability that an entrepreneur secures external financing

##### *Result 2: Shape of the Relationship Between Crowdfunding Performance and External Financing*

Second, we present the results of a model where we explore whether the relationship between crowdfunding performance and external financing is linear, convex, or concave. *Key Finding:* We find that the effect of crowdfunding success is concave, where the marginal effect of dollars raised starts to decrease after a certain point - \$75,000 in our analysis.

##### *Result 3: The Moderating Effect of Project and Entrepreneur Characteristics*

Third, we present models where we attempt to identify whether the effect of crowdfunding performance on the probability of external financing depends on several project/entrepreneur characteristics. These include the objective of the crowdfunding campaign, the gender of the entrepreneur, and whether the entrepreneur made a prior attempt to obtain funding from external capital providers. *Key Findings:* Only the project objective and prior attempts to secure outside capital were found to influence the effect of crowdfunding performance on external financing.

#### *Result 4: The Effect of Crowdfunding Performance on Non-Financing Benefits*

Finally, the last set of models explores the relationship between crowdfunding performance and the probability of non-financing benefits. *Key Findings:* greater crowdfunding performance increased the probability of business partnerships, greater publicity, a stronger customer base, and an easier time finding employees. Also, crowdfunding performance had the strongest effects on building a customer base and generating publicity for the new product (compared to the other benefits), but only when the amount raised was less than \$100,000.

It is worth highlighting that asterisks in the result tables indicate that a particular variable has a statistically significant correlation with the outcome (at the 5% level or greater), with more stars indicating higher levels of statistical significance.

#### THE EFFECT OF CROWDFUNDING PERFORMANCE ON EXTERNAL FINANCING

We begin our analysis by first examining whether crowdfunding success improves the probability of securing additional external financing after the campaign. Table 2 below presents the results of the logit model where *External Financing* is modeled as a function of *Dollars Raised* and the other control variables, as described earlier. In Model (1), we include just the linear term for *Dollars Raised*, while in Model (2) we include both its linear and quadratic terms.

**Table 2: Logit Model of External Financing**

	Dependent Variable: External Financing		
	Full Sample		Crowdfunding Critical Sample
	(1)	(2)	(3)
Dollars Raised	0.00313* (0.00170)	0.0169*** (0.00506)	0.0217** (0.00996)
Dollars Raised <sup>2</sup>		-2.69e-05** (1.13e-05)	-3.05e-05* (1.69e-05)
Log (Goal)	-0.0213 (0.188)	-0.165 (0.206)	-0.644** (0.314)
Campaign Duration	-0.00560 (0.0117)	-0.00743 (0.0127)	-0.00697 (0.0223)
Category: Design	-0.0342 (0.370)	-0.256 (0.389)	-0.328 (0.567)
Category: Technology	-0.652 (0.425)	-0.712* (0.421)	-1.374** (0.661)
Project Year: 2011	-0.179 (0.556)	-0.0807 (0.571)	-0.835 (0.691)
Project Year: 2012	-0.556 (0.592)	-0.448 (0.614)	-0.936 (0.673)
Objective: New Product from New Entity	0.390 (0.363)	0.305 (0.375)	0.0312 (0.520)
Objective: New Product from Existing Entity	0.357 (0.489)	0.313 (0.508)	-0.0450 (0.703)
Sought Prior Funds: Creators	0.0372 (0.311)	0.0812 (0.327)	0.0407 (0.480)
Sought Prior Funds: Family/Friends	0.436 (0.421)	0.516 (0.446)	0.594 (0.653)
Sought Prior Funds: External Financing	0.657* (0.379)	0.545 (0.384)	-0.165 (0.741)
Endorsements	0.927*** (0.307)	0.714** (0.321)	1.322*** (0.493)
Female	0.490 (0.446)	0.660 (0.438)	0.521 (0.543)
Constant	-1.183 (1.793)	0.0452 (1.941)	5.209* (2.999)
Observations	284	284	0.145
Pseudo - R Squared	0.122	0.127	0.193

Robust standard errors in parentheses

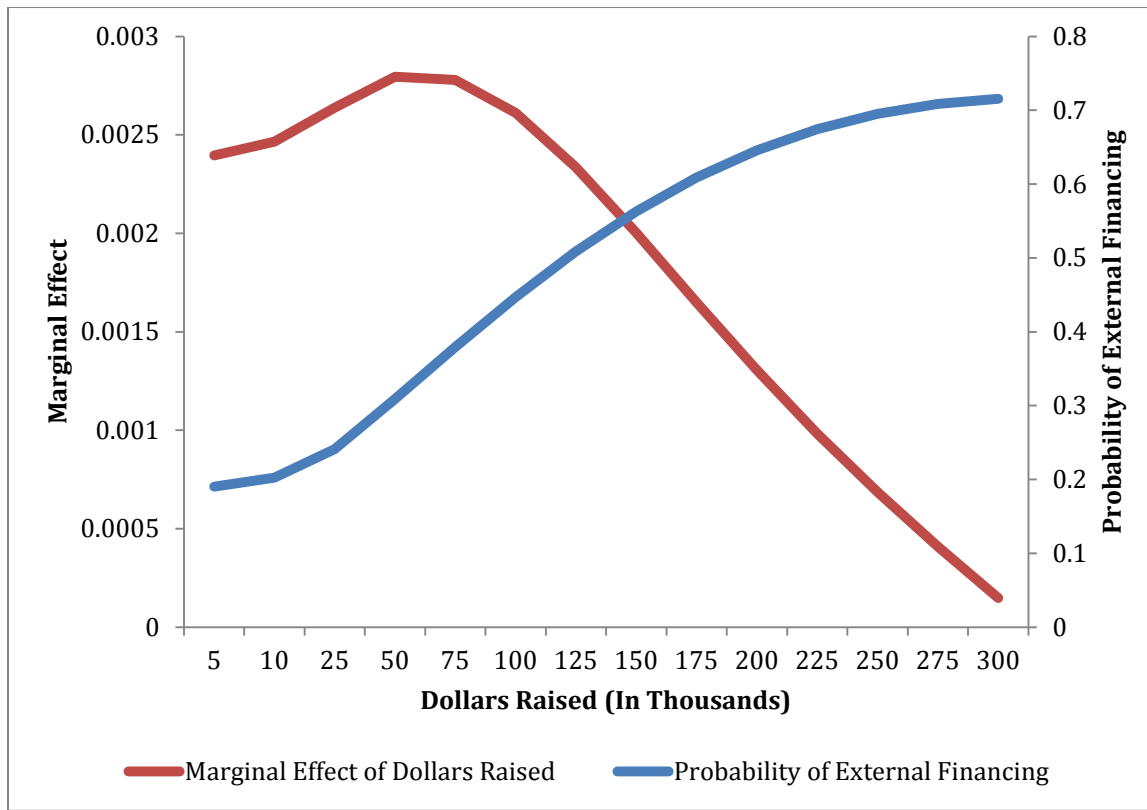
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In Model (1), we observe that when *Dollars Raised* is included without its quadratic term, it has a positive coefficient that is marginally significant at the 10% level. Based on this model, it appears that crowdfunding performance has a weak relationship with the likelihood of external financing. However, this result may be masking a more nuanced relationship, where crowdfunding performance exhibits greater effect across certain values of *Dollars Raised*, and a smaller effect across another range. We explore this in greater detail with Model (2), where both linear and quadratic terms for *Dollars Raised* are included in the model. The linear and quadratic terms of *Dollars Raised* are significant at the 1% and 5% levels respectively. While the linear term is positive, the quadratic term has a negative coefficient. As a result, it appears that there is evidence of a concave relationship between *Dollars Raised* and *External Financing*. However, since this is a (non-linear) logit model, we cannot directly interpret interaction or quadratic terms (Ai & Norton, 2003). To properly test for a non-linear relationship, we compute the marginal effect of *Dollars Raised* at different values of this variable (from the results of Model 2) and test for statistical differences. The results of this marginal effects calculation are displayed below in Table 3 and are depicted in Figure 1.

**Table 3: Marginal Effect of *Dollars Raised***

<i>Dollars Raised</i> (In Thousands)	Marginal Effect of <i>Dollars Raised</i>				Probability of <i>External Financing</i> = 1			
	Marginal Effect	P-Value	95% Confidence Interval		Probability	P-Value	95% Confidence Interval	
5	0.0024	0.000	0.001	0.004	0.190	0.000	0.139	0.242
10	0.0025	0.000	0.001	0.004	0.203	0.000	0.153	0.252
25	0.0026	0.001	0.001	0.004	0.241	0.000	0.191	0.291
50	0.0028	0.002	0.001	0.005	0.309	0.000	0.240	0.379
75	0.0028	0.002	0.001	0.005	0.379	0.000	0.275	0.483
100	0.0026	0.001	0.001	0.004	0.447	0.000	0.307	0.587
125	0.0023	0.000	0.001	0.004	0.509	0.000	0.338	0.680
150	0.0020	0.000	0.001	0.003	0.563	0.000	0.370	0.757
175	0.0016	0.000	0.001	0.002	0.609	0.000	0.401	0.817
200	0.0013	0.000	0.001	0.002	0.646	0.000	0.429	0.863
225	0.0010	0.009	0.000	0.002	0.674	0.000	0.452	0.896
250	0.0007	0.108	0.000	0.002	0.695	0.000	0.470	0.920
275	0.0004	0.403	-0.001	0.001	0.709	0.000	0.481	0.937
300	0.0001	0.794	-0.001	0.001	0.716	0.000	0.482	0.949

**Figure 1: Crowdfunding Performance and the Probability of External Financing**



We see from both Table 3 and Figure 1 that the marginal effect of *Dollars Raised* is positive and significant (at the 5% level or lower) across a range of values for *Dollars Raised*. We find that the marginal effect is largest when approximately \$75,000 has been raised on the platform, but the effect decreases for larger amounts. When at least \$250,000 has been raised through crowdfunding, we find that the marginal effect of performance becomes insignificant. Wald t-tests reveal that the difference in the marginal effects as we move towards larger dollar amounts is statistically significant. Thus, there exists a statistically significant evidence of a positive effect of crowdfunding performance on external financing, and the effect is concave with it decreasing at larger amounts. One rationale for this is that after a certain point, the crowd has validated the project concept/idea, and additional boosts in performance are less beneficial thereafter. This is reflected in the plot of the probability of external financing as a function of *Dollars Raised*. The probability increases substantially from 0.190 when only \$5,000 was raised, to 0.716 when \$300,000 is raised. However, the decreasing marginal effect means that the jump in probability when one moves from \$100,000 to \$200,000 (0.447 to 0.646) is much greater than the jump in probability when one moves from \$200,000 to \$300,000 (0.646 to 0.716).

*Correlation vs. Causation: Addressing Endogeneity Concerns*

A potential critique of our prior analysis is that we have merely established a positive correlation between crowdfunding performance and external financing, but not a causal relationship. One might

argue that projects with successful crowdfunding campaigns would have achieved external financing from traditional capital providers in any case, and that the positive relationship is due to omitted variable bias from unobserved project quality. To address this concern, we rely on a question from our survey where we asked respondents why they launched a crowdfunding campaign. One option that respondents could select was that the project could not be funded without the help of a crowdfunding campaign. We reason that for these projects (where the respondent selected this option), crowdfunding represented a “last resort” and it was clear that traditional financing was unavailable or not foreseeable. Therefore, for robustness, we re-run our prior analysis by limiting the sample of projects to those who indicated that crowdfunding was their last available option. A positive coefficient on crowdfunding performance using this sub-sample of projects would provide strong support of a causal effect of crowdfunding performance on securing external financing. The results of re-running our prior analysis on this restricted sub-sample are presented in Models (3) of Table 2. The results are quite similar to those in Model (2) and we continue to observe a positive effect of crowdfunding performance on the likelihood of external financing. We interpret this as evidence of a causal relationship rather than just correlation between these two constructs.

#### THE MODERATING EFFECT OF PROJECT AND ENTREPRENEUR CHARACTERISTICS

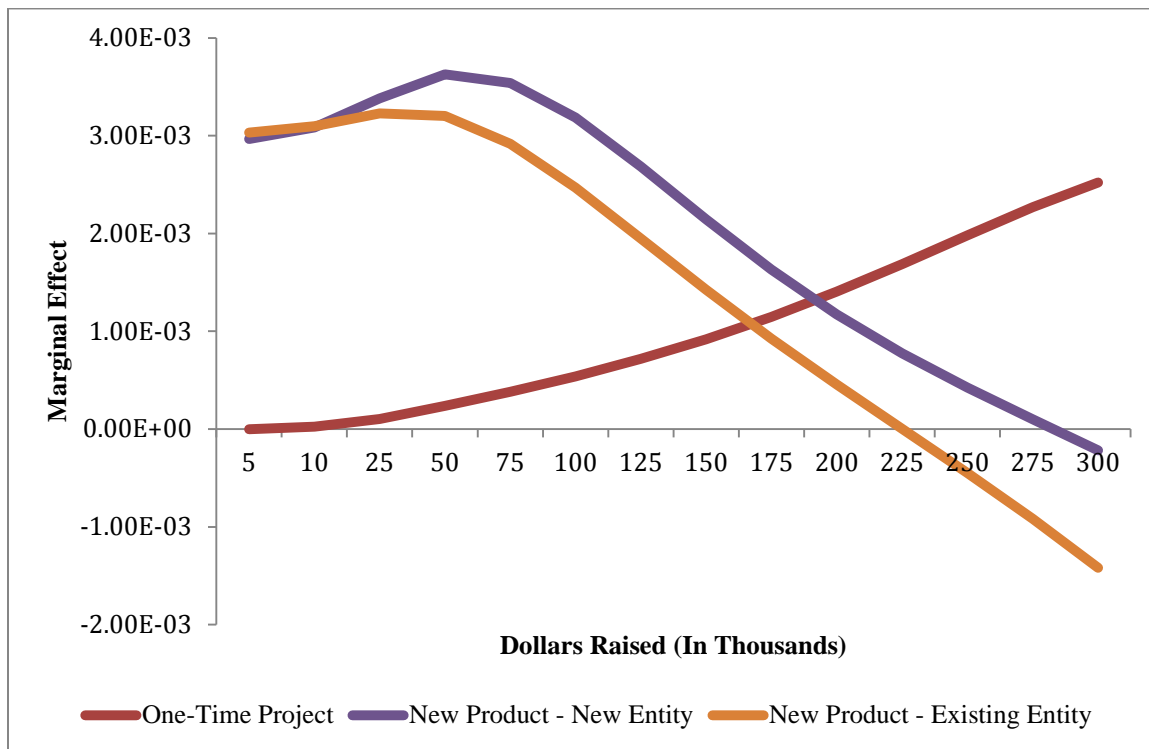
While we have established that a concave relationship exists between crowdfunding performance and attracting external financing, it is possible that this effect is dependent upon several characteristics related to the project. In other words, certain factors may moderate the relationship between crowdfunding success and external financing. These factors may include the objective of the crowdfunding campaign, the gender of the entrepreneur, and whether the entrepreneur made a prior attempt to obtain funding from external capital providers.

In order to explore the presence of moderating effects, we include interaction terms between the linear and quadratic terms of *Dollars Raised* and each of these variables and computed marginal effects as before over the range of *Dollars Raised* as well as over the range of these potentially moderating variables. In the interest of space, we summarize this analysis by discussing the results of the marginal effect computations. Overall, we were unable to find evidence of a significant moderating effect of gender. However, the objective of the project and whether external funding was sought prior to the campaign do appear to influence the effect of crowdfunding performance on external financing, at least to some extent. The marginal effects of *Dollars Raised* on *External Financing* computed for different project objectives are shown first in Table 4.

**Table 4: Marginal Effect of Dollars Raised on External Financing by Entity Objective**

<i>Dollars Raised</i> (In Thousands)	One-Time Project		New Product from New Entity		New Product from Existing Entity	
	Marginal Effect	P-Value	Marginal Effect	P-Value	Marginal Effect	P-Value
5	2.52E-07	1.000	0.0030	0.000	0.0030	0.023
10	0.0000	0.987	0.0031	0.000	0.0031	0.030
25	0.0001	0.945	0.0034	0.000	0.0032	0.053
50	0.0002	0.867	0.0036	0.002	0.0032	0.079
75	0.0004	0.782	0.0035	0.001	0.0029	0.083
100	0.0005	0.695	0.0032	0.000	0.0025	0.074
125	0.0007	0.605	0.0027	0.000	0.0019	0.066
150	0.0009	0.512	0.0021	0.000	0.0014	0.074
175	0.0011	0.411	0.0016	0.000	0.0009	0.141
200	0.0014	0.294	0.0012	0.000	0.0005	0.408
225	0.0017	0.162	0.0008	0.011	3.04E-06	0.995
250	0.0020	0.042	0.0004	0.221	-0.0004	0.430
275	0.0023	0.001	0.0001	0.807	-0.0009	0.144
300	0.0025	0.000	-0.0002	0.663	-0.0014	0.048

**Figure 2: Crowdfunding Performance and the Probability of External Financing by Project Objective**



*Moderating Effect: Project Objective*

In Table 4, we find that for new products from new and existing entities, the marginal effects increase slightly and then begin to decrease significantly at higher levels of crowdfunding performance. However, for one-time projects, it appears that the positive effects of crowdfunding performance are only experienced at the highest levels of amount raised. For the most part, these differences in marginal effects across entity objectives are not statistically significant. However, when the project has raised over \$250,000, we do find that the marginal effect of crowdfunding performance for one-time projects is greater than that for new products from existing entities at a statistically significant level (5% level or lower). It is useful to point out at this stage that that original objective of the project did not have a direct effect on *External Financing* in Table 2. However, it possible that certain factors may fail to have a direct effect on an outcome, but do exhibit indirect effects through their moderating effect on other variables.

*Moderating Effect: Prior Attempt at External Funding*

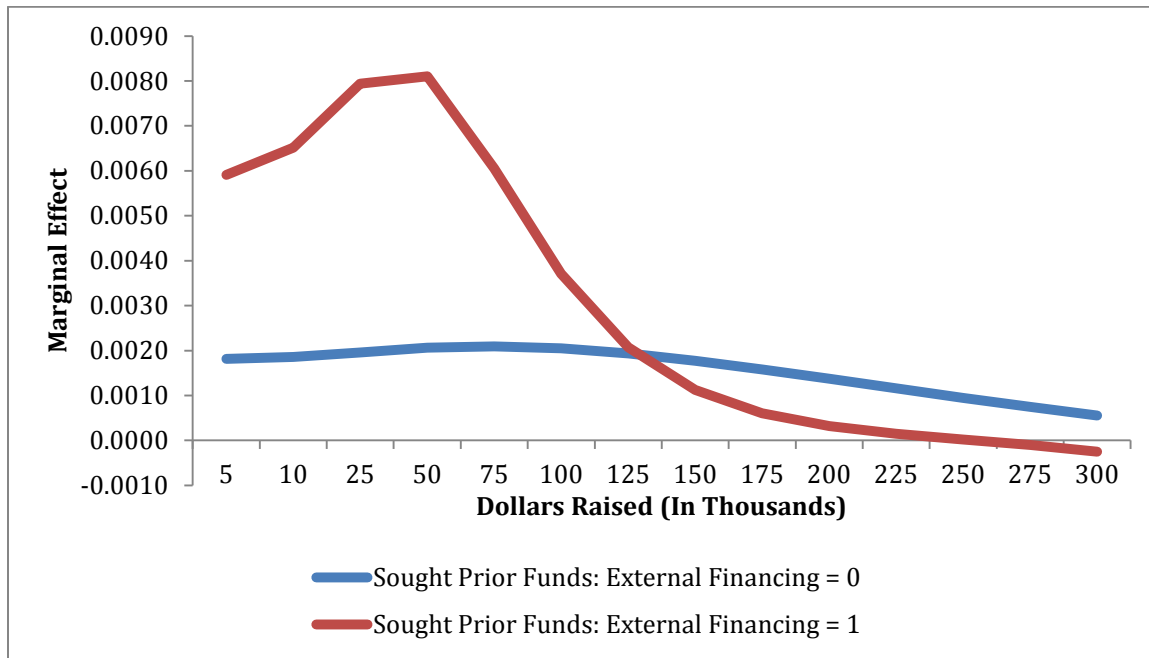
In Table 5, we explore the moderating role of a prior attempt at external funding by examining the marginal effects of *Dollars Raised* for projects where a prior attempt was made, and for those where one was not. We observe that at lower levels of amount raised (< \$125,000), the marginal effect of crowdfunding performance is greater when a prior attempt was made to secure external financing. However, a switch occurs for larger amounts raised. When at least \$150,000 is raised by the project, the marginal effect of success on external financing is greater when no prior attempt at external funding was made compared to when one was made (difference significant at a statistically significant level).

**Table 5: Marginal Effect of Dollars Raised on External Financing by Prior Attempt at External Funding**

<i>Dollars Raised</i> (In Thousands)	Sought Prior Funds: External Financing = 0		Sought Prior Funds: External Financing = 1	
	Marginal Effect	P-Value	Marginal Effect	P-Value
5	0.0018	0.002	0.0059	0.000
10	0.0019	0.003	0.0065	0.000
25	0.0020	0.006	0.0079	0.001
50	0.0021	0.010	0.0081	0.000
75	0.0021	0.012	0.0061	0.000
100	0.0020	0.010	0.0037	0.000
125	0.0019	0.006	0.0021	0.021
150	0.0018	0.003	0.0011	0.101
175	0.0016	0.001	0.0006	0.186
200	0.0014	0.001	0.0003	0.251
225	0.0012	0.001	0.0001	0.320
250	0.0009	0.007	0.0000	0.775
275	0.0007	0.047	-0.0001	0.432
300	0.0006	0.184	-0.0003	0.330



**Figure 3: Crowdfunding Performance and the Probability of External Financing by Prior Attempt at External Funding**



**THE EFFECT OF CROWDFUNDING PERFORMANCE ON NON-FINANCING BENEFITS**

Table 6 (Models 1-4) presents the results of our analysis where we model each of our non-financing benefits — *Business Partnerships*, *Publicity*, *Customer Base*, and *Employees* — as a function of *Dollars Raised* (and the other control variables) using a logit estimator with robust standard errors. The marginal effects of *Dollars Raised* computed using the results of Table 6 are displayed in Table 7. Furthermore, for comparison purposes, Table 7 also includes the marginal effects from Table 3, where the outcome was *External Financing*.

**Table 6: Logit Model of Non-Financing Benefits**

	Business Partnerships	Publicity	Customer Base	Employees
	(1)	(2)	(3)	(4)
Dollars Raised	0.0147*** (0.00426)	0.0521** (0.0229)	0.0521*** (0.0140)	0.00930** (0.00457)
Dollars Raised <sup>2</sup>	-1.58e-05*** (6.00e-06)	-6.22e-05** (2.53e-05)	-5.59e-05*** (1.63e-05)	-7.83e-06 (6.34e-06)
Log (Goal)	-0.401** (0.182)	-0.446** (0.205)	-0.484** (0.217)	0.307 (0.231)
Campaign Duration	0.0151 (0.0110)	0.00532 (0.0114)	-0.0120 (0.0122)	-0.0148 (0.0180)
Category: Design	0.116 (0.353)	0.757** (0.364)	-0.429 (0.355)	-1.116** (0.518)
Category: Technology	-0.00575 (0.384)	0.681* (0.375)	-0.626 (0.394)	-0.795 (0.583)
Project Year: 2011	0.918* (0.535)	0.947* (0.557)	0.724 (0.618)	1.141 (0.971)
Project Year: 2012	-0.0358 (0.585)	0.00434 (0.540)	0.0878 (0.621)	0.621 (1.043)
Objective: New Product from New Entity	0.624* (0.331)	0.396 (0.369)	0.326 (0.380)	0.758 (0.507)
Objective: New Product from Existing Entity	0.536 (0.436)	0.383 (0.477)	0.958** (0.468)	0.353 (0.703)
Sought Prior Funds: Creators	-0.0775 (0.284)	-0.329 (0.311)	0.132 (0.298)	0.146 (0.386)
Sought Prior Funds: Family/Friends	-0.633 (0.436)	0.204 (0.413)	0.0841 (0.423)	-0.757 (0.684)
Sought Prior Funds: External Financing	0.767* (0.401)	0.450 (0.475)	0.0596 (0.398)	-0.184 (0.624)
Endorsements	0.140 (0.310)	1.137*** (0.405)	0.548* (0.326)	0.175 (0.439)
Female	0.0218 (0.416)	0.628 (0.438)	0.417 (0.406)	0.558 (0.488)
Constant	1.315 (1.691)	2.096 (1.795)	3.551* (2.075)	-5.445** (2.489)
Observations	284	284	284	284
Pseudo - R Squared	0.126	0.285	0.247	0.149

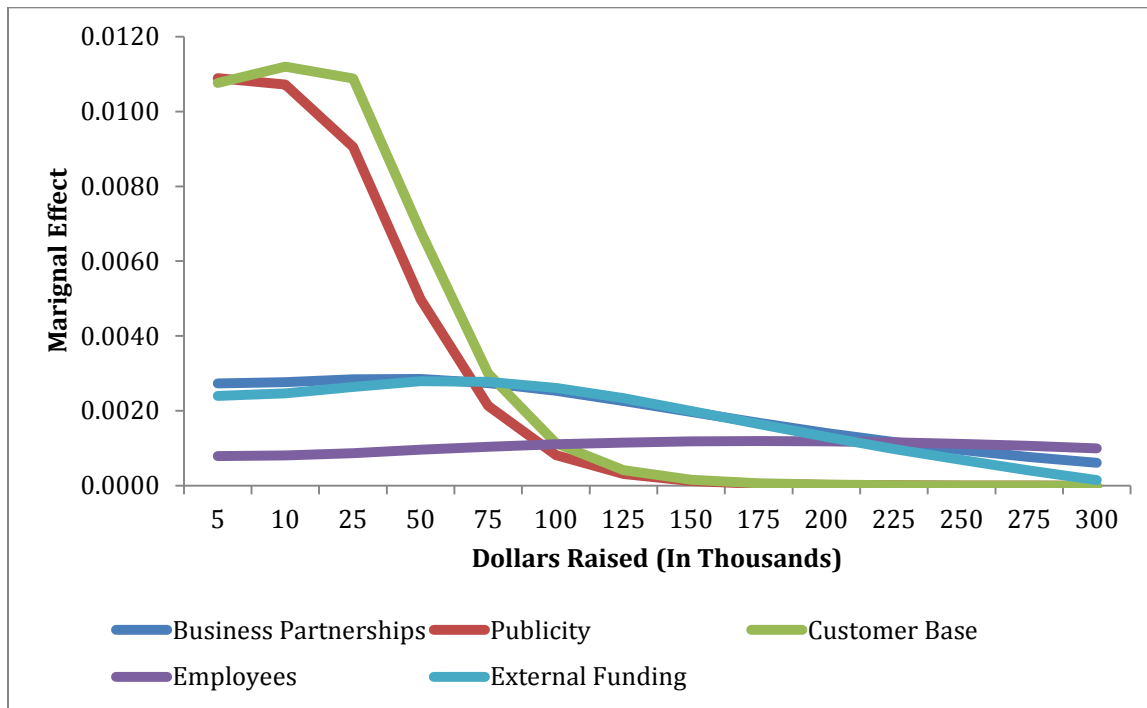
Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 7: Marginal Effect of Dollars Raised on the Probability of Post-Campaign Benefits**

Dollars Raised (In Thousands)	Business Partnerships		Publicity		Customer Base		Employees		External Funding	
	Marginal Effect	P-Value	Marginal Effect	P-Value	Marginal Effect	P-Value	Marginal Effect	P-Value	Marginal Effect	P-Value
5	0.0027	0.000	0.0109	0.031	0.0108	0.000	0.0008	0.015	0.0024	0.000
10	0.0028	0.000	0.0107	0.034	0.0112	0.000	0.0008	0.019	0.0025	0.000
25	0.0028	0.000	0.0091	0.010	0.0109	0.000	0.0009	0.031	0.0026	0.001
50	0.0029	0.001	0.0050	0.000	0.0068	0.000	0.0010	0.051	0.0028	0.002
75	0.0027	0.000	0.0021	0.112	0.0030	0.006	0.0010	0.069	0.0028	0.002
100	0.0025	0.000	0.0008	0.407	0.0011	0.162	0.0011	0.082	0.0026	0.001
125	0.0023	0.000	0.0003	0.560	0.0004	0.326	0.0012	0.088	0.0023	0.000
150	0.0020	0.000	0.0001	0.643	0.0002	0.434	0.0012	0.089	0.0020	0.000
175	0.0017	0.000	0.0001	0.692	0.0001	0.505	0.0012	0.084	0.0016	0.000
200	0.0014	0.000	0.0000	0.719	0.0000	0.548	0.0012	0.076	0.0013	0.000
225	0.0012	0.000	0.0000	0.722	0.0000	0.554	0.0012	0.065	0.0010	0.009
250	0.0010	0.000	5.95E-06	0.753	6.53E-06	0.598	0.0011	0.054	0.0007	0.108
275	0.0008	0.000	2.94E-06	0.775	2.99E-06	0.639	0.0011	0.046	0.0004	0.403
300	0.0006	0.001	1.50E-06	0.795	1.49E-06	0.667	0.0010	0.041	0.0001	0.794

**Figure 4: Crowdfunding Performance and the Probability of Post-Campaign Benefits**



First, we observe that for all the non-financing outcomes in Table 7, *Dollars Raised* has a positive and significant marginal effect across some range of values. As a result, significant non-financing benefits do indeed result from crowdfunding efforts. However, the effect of crowdfunding performance on non-financing benefits varies significantly by the benefit considered. It is clear from Figure 4 that crowdfunding success has a strong effect on publicity and on building a customer base (relative to other benefits) at lower values of *Dollars Raised*. However, publicity and customer base benefits drop to an insignificant level as soon the amount raised crosses \$75,000 to \$100,000. Thereafter, crowdfunding performance has a stronger effect on business partnerships and external financing. The marginal effect of crowdfunding success on finding employees is significant at the 5% level when less than \$25,000 is raised. However, the marginal effect of crowdfunding success on this outcome is largely insignificant when larger amounts are raised. As a result, while crowdfunding performance does influence a number of post-campaign outcomes, the magnitude of this effect depends on the amount raised and the particular benefit considered.

## **V. Limitations of the Study**

An important limitation of this study is that it relied on self-reported assessments of the degree to which crowdfunding helped with obtaining additional financing for the project, as well as the non-financing benefits associated with the campaign. We hope that future work on this topic can obtain independent figures on post-campaign financing to model the relationship between crowdfunding performance and the dollar amount of the additional financing obtained.

Another limitation of our study is that we examined Kickstarter projects from the categories of Technology, Games, and Design since these are more likely to be associated with actual products that may seek venture financing in the future. It is possible that the results do not translate to crowdfunding experiences from other categories including, but not limited to, service organizations such as Publishing, Fashion, and Food projects.

One additional point to note with this study is that it relied on a relatively small sample of responses from failed crowdfunding entrepreneurs. While univariate tests indicated no respondent bias with this limited sample, it would be helpful if future work could obtain data on a larger set of failed projects. Of import is to keep in mind that the gender of the entrepreneur was determined by the gender of the survey respondent. It is possible that the project was actually launched by a team of individuals including those from the opposite gender of the respondent. Therefore, our assumption is that projects where the survey respondent is male are less likely to have women on the team, compared to projects where the respondent was female.

## **VI. Conclusions, Interpretations and Research Implications**

### CONCLUSIONS AND INTERPRETATIONS

The purpose of this study was to investigate the relationship between crowdfunding performance and several post-campaign benefits that entrepreneurs value; most notably, access to additional external financing for their venture. Our study shows that crowdfunding performance, or more specifically, the dollars raised by the campaign does have a positive effect on the likelihood of external financing benefits. Moreover, this effect is concave, where the marginal effect of dollars raised begins to decrease once approximately \$75,000 is raised. The probability of obtaining external financing increases substantially from 19 percent when only \$5,000 was raised, to 71.6 percent when \$300,000 is raised. The median dollars raised by projects in our sample was \$12,676; and at this value, the probability of experiencing at least some benefit for external financing was about 21 percent, i.e., a little more than a 1 in 5 chance. As a result, it appears that crowdfunding serves as a useful “proof-of-concept” arena for entrepreneurs who seek additional financing. As traditional sources of external capital such as banks, VCs, angel investors, and other companies seek to filter proposals for the higher quality ideas, crowdfunding performance in some respects can validate the market potential of an idea and reduce the risk associated with the financing request, at least to some extent.

We found that the financing benefits associated with higher performance crowdfunding projects accrue more to those who did not seek external financing prior to the campaign, compared to those that did. However, when the amounts raised were more modest, those who had previously attempted to secure external funding experienced greater funding advantages. Moreover, in contrast to prior research that has shown significant gender differences in the domain of entrepreneurship and crowdfunding, we find no significant difference between men and women in their ability to leverage crowdfunding success to secure additional funding. However, given the relatively small number of women in our sample, this result must be interpreted with caution. Finally, we also found evidence that the original objective of the project influenced the effect of crowdfunding success. Specifically, we observed that high levels of crowdfunding success was most beneficial in securing external funding when the original expectation was to initiate a one-time project.

In addition to external financing benefits, we found that crowdfunding can also produce several non-financial benefits for entrepreneurs. Crowdfunding success was linked to a higher likelihood of obtaining publicity, finding employees, securing business partnerships, and building a strong customer base. The magnitude of these benefits depended on the amount raised by the campaign. For smaller to intermediate amounts (less than \$100,000), crowdfunding success has a strong effect on the publicity garnered by the project and the ability to build a customer base. For larger successes, publicity and customer base benefits were less salient, but business partnerships and outside funding were more likely to materialize.

## RESEARCH IMPLICATIONS FOR PRACTICE, POLICY AND ECONOMIC GROWTH

### *Implications for Practice and Policy*

This study provides robust evidence that crowdfunding success does, in fact, increase individual ability to obtain outside financing. At the same time, it should be noted that many entrepreneurs may prefer not to pursue crowdfunding if venture capital is made available to them. For purposes of this study, we rely on a question from our survey where we asked respondents why they launched a crowdfunding campaign. One option that respondents could select was that the project could not be funded without the help of a crowdfunding campaign. We reason that for these projects (where the respondent selected this option), crowdfunding represented a “last resort” and it was clear that traditional financing was unavailable or not foreseeable. We re-ran the data limiting the sample of projects to those who indicated that crowdfunding was their last available option. The results support our observation of a positive effect of crowdfunding performance on the likelihood of external financing. We interpret this as evidence of a causal relationship rather than just correlation between these two constructs. This causal relationship can serve as a predictor of success for funding institutions when assessing the entrepreneur’s ability to successfully run their business and effectively use capital.

Crowdfunding may improve market efficiency if it allows some entrepreneurs, who otherwise would have been denied funding, to demonstrate their value in the market. If this demonstrated value results in additional funding, positive market impacts should be realized leading to increases in innovation – a critical element of the economy. Therefore, policies that encourage and embrace entrepreneurial crowdfunding are a logical direction to move toward as policy leaders develop strategies to improve both national and international economic conditions.

### *Implications for Future Economic Growth*

Since economic growth is stimulated, especially in local communities, by the flexibility, innovations, and perseverance contributed by small businesses, entrepreneurs that start their small businesses with successful crowdfunding may demonstrate a significant source of economic stimulation in varied climates. However, it is important to note that we do not have clear indications yet. Part of the ambiguity is that even the most successful crowdfunding campaigns may not be as “attractive” to venture capitalists as more traditional venture capital initiatives.

Small, entrepreneurial businesses are known for their customer-centric operations and these businesses tend to retain their customers – even in economical downfalls. Customer loyalty “often carries a business through and means that small businesses are often able to stay afloat during tough times, which can further strengthen local economies. Small businesses also

accumulate less revenue than larger corporations, meaning they may have less to lose in times of economic crisis.”<sup>1</sup>

If, as this study reflects, greater crowdfunding performance potentially increases the probability of business partnerships, a stronger customer base, and improved ability to attract employees – all attributes of a success small business – it stands to reason that successful crowdfunding entrepreneurs will evolve into successful small business owners and subsequently significant contributors to the U.S. economy.

## **VII. Recommendations for Related Future Research**

The findings of this research contribute to our knowledge of the relationship between crowdfunding performance and an entrepreneur’s ability to secure external funding.

However, as discussed in the limitations of this research, specific data relating to a crowdfunding project lead’s gender and race were not captured in such a way as to make generalizations. In addition, data was not collected relating to specific industries or markets. For example, we were unable to conclusively draw any inferences relating to female entrepreneurs due to the relatively small sample size. Moreover, this research did not investigate whether there is a relationship between entrepreneurs and leaders of established organizations and their ability to secure external funding based on crowdfunding performance. Therefore, it is recommended additional research be conducted to explore crowdfunding performance relationships to gender and race.

Lastly, we believe that this study’s results, demonstrating the “proof-of-concept” effect that entrepreneurs can derive from successful crowdfunding, could extend our ability to identify and more fully understand economic and societal impacts of this new fundraising model. However, we note that any generalization of these results to other types of crowdfunding such as equity-based, could be misleading. For example, entrepreneurs who sell off some equity in their business to the crowd members, may indicate proof of a valuable initiative. Simultaneously, it might result in a negative impact for the entrepreneur because traditional venture capitalists or angels may shy away from providing financial support. For this reason, additional research is recommended to determine whether or not reward-based crowdfunding is less likely to be a direct substitute for venture capital than equity-based crowdfunding.

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<sup>1</sup>How Important Are Small Businesses to Local Economies?, August 1, 2015, Houston Chronicle, <http://smallbusiness.chron.com/important-small-businesses-local-economies-5251.html>

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**Technical Appendix – Instrument (Survey) Questions**

**Survey question measuring ex-post crowdfunding outcomes**

*Question for Successful Project Creators*

Indicate the degree to which your Kickstarter campaign directly helped with the following:

	None	Little	Some	A Lot
Develop a customer base from those who contributed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bring press attention to my project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change my original view on the demand for my project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raise additional funds from outside sources after the campaign	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Find and/or hire employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Find business partners or allies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Question for Unsuccessful Project Creators*

Despite not reaching your goal, please indicate the degree to which your *Kickstarter* campaign directly helped with the following:

	None	Little	Some	A Lot
Develop a customer base from those who contributed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bring press attention to my project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Change my original view on the demand for my project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Raise additional funds from outside sources after the campaign	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Find and/or hire employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Find business partners or allies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Survey question measuring the project objective (same for successful and unsuccessful creators)**

What was your objective for the project?

<input type="checkbox"/>	One time project
<input type="checkbox"/>	The start of new ongoing business or organization
<input type="checkbox"/>	A new product from an existing business or organization

**Survey question measuring the extent to which prior funding was sought from various sources (same for successful and unsuccessful creators)**

Please answer the following questions about your sources of funding, if any, prior to the Kickstarter campaign.

	Did you seek funding from this source prior to the campaign?	How much did you receive before the campaign?
Myself/Other Creators	<input type="checkbox"/>	
Relatives/Friends	<input type="checkbox"/>	
Bank Loans (not including Lines of Credit)	<input type="checkbox"/>	
Other companies	<input type="checkbox"/>	
Angel investors	<input type="checkbox"/>	
VCs	<input type="checkbox"/>	
Others (grants, government, etc.)	<input type="checkbox"/>	

**Survey question measuring the gender of the project creator (same for successful and unsuccessful creators)**

What is your sex?

<input type="checkbox"/>	Male
<input type="checkbox"/>	Female