Does Venture Capital Affect Crowdfunding Performance?

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Abstract

This study quantitatively discusses the relationship among venture capitalists, entrepreneurs, and crowdfunders. It considers the effectiveness of venture capital on the performance of crowdfunding campaigns started by entrepreneurs. Specifically, we split 274,220 crowdfunding projects into venture capital- and non-venture capital-funded projects and examined whether this type of financing enhances the performance of crowdfunding campaigns—measured by the number of crowdfunders and the amount of proceeds raised by the crowdfunding campaigns. The results of linear regression models reveal that the venture capital-funded entrepreneurial firms perform better in the crowdfunding market than their non-funded peers. Value-added services of the venture capital firms intensify the visibility of venture capital-financed startups in the crowdfunding market, thereby elevating crowdfunding performance. This study can help venture capital-backed entrepreneurs planning to launch crowdfunding campaigns gain an understanding of the role of venture capital in crowdfunding performance.

Keywords: venture capital, crowdfunding performance, entrepreneurs

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1. Introduction

Crowdfunding is a method of financing new ventures through an Internet crowdfunding platform linking fundraising firms to the general investing public, without standard financial intermediaries. From this viewpoint, entrepreneurs who need to raise capital may contemplate between two-stage financing (venture capital funding and then crowdfunding) and one-stage financing (sole crowdfunding without the injection of venture capital funding). However, little is known about the extent to which venture capitalists as professional financiers affect the outcome of subsequent crowdfunding financing. Theoretically, limited attention has been devoted to the relationship between the crowdfunding channel and venture capital (VC) investment. Drawing on the literature on both entrepreneurial finance and crowdfunding, this study aims to answer the following research question: How does VC influence the course of a crowdfunding campaign?

We specifically examine this impact in the context of rewards-based crowdfunding campaigns by splitting 274,220 crowdfunding campaigns into VC- and non-VC-funded campaigns. Our ordinary linear regression clearly shows that VC enhances crowdfunding performance, which is measured by the number of crowdfunders and amount of proceeds obtained from crowdfunding activities. This implies that the VC firms prepare the entrepreneurial firms well enough for consequent crowdfunding campaign. To the best of our knowledge, this is the first paper to explore both venture capital market and rewards-based crowdfunding market. The findings of our empirical models offer practical implications for entrepreneurs, suggesting that the combination of VC funding and crowdfunding financing is better than crowdfunding financing; it is beneficial for entrepreneurs to attain VC funding prior to pursuing a crowdfunding campaign.

The rest of the paper is organized as follows. Section 2 reviews the related literature, which is followed by the hypothesis and an elaboration of the data and statistics in Section 3. Subsequently, we outline the methodology in Section 4 and

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discuss the results of the regression in Section 5. The final section concludes the study.

2. Literature review

This section introduces the basic crowdfunding concepts and reviews the literature on crowdfunding, followed by the literature on the value-added services offered by venture capitalists.

2.1 Crowdfunding

Crowdfunding refers to the practice of funding a new project, product, service, or business venture by soliciting financial contributions from a large number of people, typically via the Internet. For example, musicians can raise money online from sponsors (namely, crowdfunders), create, and distribute their original albums to sponsors through crowdfunding platforms. Crowdfunding is considered risky because sponsors (also known as backers or donors in the crowdfunding market) finance a crowdfunding venture and pay entrepreneurs (also known as proponents, proposers, creators, or initiators of crowdfunding projects) to invent something that does not exist. With the money pledged by sponsors, entrepreneurs work to bring innovative projects to life, ranging from films, games, and music to art, design, and technology. In addition to getting an inside look at the progression of creative projects, rewards-based sponsors pick a variety of exclusive rewards with which entrepreneurs share the community of their sponsors. Rewards differ from project to project; however, they often include one-of-a-kind experiences, limited editions, or copies of the creative work (CD, DVD, book, etc.) being produced throughout the crowdfunding process. As a form of crowdsourcing, crowdfunding is a financial channel that emerges outside of the traditional financial system. Entrepreneurs view it as a means of gathering capital with a small amount of money from a large number of interested audiences (sponsors or the "crowd"), especially from the online community. Crowdfunding activity has the potential to increase entrepreneurship through dedicated websites that distribute the pledges collected from the sponsors to the entrepreneurs in two ways— "all-or-nothing" and "payout" funding models (Cumming *et al.* 2019). Among the several investor-facing websites, Kickstarter is a well-rounded crowdfunding platform that brings together the crowdfunding entrepreneurs and sponsors. Kickstarter follows the "all-or-nothing" or threshold mechanism in which it releases funds to a campaigner only after the campaign reaches a specific funding goal. In other words, a project on Kickstarter will be considered successful or funded if the pledges achieve funding thresholds. Otherwise, the crowdfunding project will be considered unsuccessful or unfunded, and backers will be refunded their pledged amount.

In this context, given the high failure rate in the crowdfunding market, it is crucial for entrepreneurs to identify the promoting and constraining factors inherent in a crowdfunding project prior to initiating a campaign. Several studies have (Ordanini et al. 2011; Belleflamme et al. 2013) attempted to theorize models of crowdfunding growth; some case studies (Löher et al. 2018; Bessière et al. 2019) have emphasized the empirical dynamics of the crowdfunding process—the financial commitment of entrepreneurs and sequencing of the overall funding trajectory. We divide the determinants of crowdfunding success into four categories—the mastery of market demand, the transparency of project information, and the confidence and experience of the entrepreneurs who propose a crowdfunding project.

Following Mollick (2014), we discuss the role of the mastery of market demand, one of the external issues that cannot be controlled by most of the entrepreneurs. This market demand allows proponents to gauge the demand for the product before its market launch. In this regard, the attributes of reward proposals that incentivize supporters to collect rewards are critical variables for popular crowdfunding projects (Song & Boeschoten 2015; Wei & Lin 2016). The proponents must know their target groups; they may set different price points for different customers by aligning the characteristics of rewards with the appropriate segments of online shoppers.[1] The research suggests that the number of backers and the features of reward proposals correlate with the possibility of a successful crowdfunding.

Backers pre-purchase the crowdfunding products or services. A number of studies on the

advance purchasing of products finds that the transparency of crowdfunding information is related to backers' confidence and willingness to acquire products (Sorescu et al. 2003; Joenssen et al. 2014; Kuppuswamy & Bayus 2017; Lagazio & Querci 2018; Oo et al. 2018; Greenberg et al. 2013). The more frequent the updates (i.e., posting pictures, pitching videos, and detailing text descriptions) on the progress of a crowdfunding campaign, the higher the success rate of a project. In this regard, it must be noted that the amount of the funding goal and the duration of the crowdfunding campaign reflect the strength of the proposers' confidence, signal the quality of a project, and correlate with the probability of the crowdfunding campaign's success. Although a lower funding target renders a higher success rate, the proposer should set the crowdfunding goal at an appropriate level because an extremely low funding target may reflect the proposer's apprehensions and lack of confidence to attract a given number of backers. The longer the duration of crowdfunding campaign, the less confidence founders signal to sponsors in raising enough capital. Backers dislike a prolonged campaign period and prefer projects that deliver products in a reasonably shorter time. Empirical evidence (Beck et al. 2016; Mollick 2014) supports the view that a large duration is negatively associated with the chance of the project's success.

Concerning experience, the learning effect that arises from experience contributes to crowdfunding success (Arrow 1962; Koch & Siering 2015). Learning from previous crowdfunding experience, proposers understand how to compose a story, present reward proposals, and avoid failure. The experience of a proposer can be classified into two categories—the experiences of either succeeding or failing in the project, and the experiences of supporting other crowdfunding projects. On account of the Matthew principle by Merton (1968), proposers who often achieve success in crowdfunding are more likely to continue achieving success in subsequent crowdfunding campaigns, relative to those who often fail. A proposer's experience in supporting the projects of other proposers is called the reciprocity effect[2]. When a proposer connects with and aids other founders, the reciprocal relationship will increase the probability of the project's success. In the spirit of Koch and Siering (2015), if a proponent finances other projects, recipients will return the support to the proponent. Zvilichovsky et al. (2013) has cautioned that while some projects possess the reciprocity effect, some do not.

2.2 Value-added Services of VC

Concerning value-added services, venture capitalists equip startups with the ability to manage and conquer the obstacles by providing professional services and advice, including monitoring, expertise, and network. Since the agency problem exists between the entrepreneurs and venture capitalists, the latter monitor and serve as disciplinary bodies for managers (Fried et al. 1998; Fried & Hisrich 2007; Berger & Udell 1998; Rosenstein 1988; Bottazzi et al. 2008; Gorman & Sahlman 1989). VC firms cultivate a broad network of commercial partners and allies in the financial markets, and this network serves as an external resource for aiding startups (Burt 1992; Saxenian 2013; Hochberg et al. 2007; Baum et al. 2000; Baum & Silverman 2004; Williamson 1979; Davila et al. 2003; Maula & Murray 2002; Diamond 2002; Nahata 2008; Agrawal et al. 2015). In this context, a VC firm can be considered a knowledge-creating business. By conveying knowledge to the portfolio companies, a VC firm enhances both the competitiveness and performance of its portfolio companies (Nonaka 2007; Bosch et al. 1999; Cohen & Levinthal 1990; Katila & Ahuja 2002; Levinthal & March 1993; Zahra & George 2002; Lane & Lubatkin 1998; Grant & Baden-Fuller 2004; Liebeskind et al. 2008; Brander et al. 2002; Norton & Tenenbaum 1993; Ruhnka & Young 1991; De Clercq & Dimov 2008).

3. Hypothesis and data

We propose a visibility hypothesis in which startups that partner with VC firms leverage on the latter's reputation and value-added services, and thereby extend startups' visibility in the financial markets, particularly the crowdfunding market. The visibility hypothesis stipulates that VC support is positively related to crowdfunding performance. In other words, the effect of enhanced visibility amplifies crowdfunding performance, which is proxied by the number of sponsors and the proceeds secured in a crowdfunding campaign. We utilized the data on

crowdfunding and VC investments from both Crunchbase (https://www.crunchbase.com/home) and the FINDIT database (https://findit.org.tw/English/index.aspx).[3] We filtered 522 entrepreneurial firms that had participated in crowdfunding events until October 2017.[4] These 522 entrepreneurial firms registered 274,220 crowdfunded transactions, and 247 out of the 522 entrepreneurial firms had taken funds from angel investors and venture capitalists. Among these 247 VC-backed firms, 84 firms initiated 92 crowdfunding projects following VC investment. Through the aforementioned screening process, we ensured that VC investment preceded crowdfunding campaigns in the 92 VC-endorsed projects. We paired 92 VC-funded projects with 274,128 non-VC-funded projects, leading to a total of 274,220 observations in our sample.

Table 1 lists all the variables under investigation. Moreover, in Table 2, the comparison between venture-supported and non-venture-supported projects shows that the respective average proceeds for each type of crowdfunding project are $1,316,172 and $10,618, indicating that VC-supported entrepreneurs raise about 13 times more crowdfunding proceeds than non-VC-supported counterparts. To investigate whether the average proceeds of VC-supported projects are statistically different from those of non-VC-supported projects, we set up a hypothesis test. The null hypothesis (H_0) stipulates that the estimated average proceeds between the two types of projects are the same and the alternative hypothesis (H_1) asserts that the estimated average proceeds are not equal.

The results of the two-sided *t*-test rejects the null hypothesis (H_0) in favor of the alternative hypothesis (H_1) because the *p*-value associated with the *Proceeds* variable, calculated as the proceeds per crowdfunding project, is almost close to zero. We conclude that, at the 1% significance level, the average proceeds of VC-supported projects are statistically different from those of non-VC-supported projects.

In terms of market demand category measured by backers and reward proposals, VC-supported projects attract about 74 times more backers (9,180 versus 124 backers) and offer 1.5 times more reward proposals (12.05 versus 7.89 reward proposals) than non-VC-supported projects, revealing sharp differences in the market demand for these two types of projects. Looking at the information transparency category proxied by *Pictures*, *Videos*, *Comments*, and *Updates* variables, VC-funded projects have higher estimates of the 4 variables, meaning that VC-funded entrepreneurs receive more comments from crowdfunding sponsors, and post more updates, pictures, and videos. Given that VC-backed entrepreneurs provide more information of their crowdfunding projects, VC-backed projects are deemed more translucent than non-VC-backed projects. As for confidence category, VC-endorsed entrepreneurs appear to be more confident than non-VC- endorsed entrepreneurs due to greater funding goal and longer duration.

Finally, VC-advocated entrepreneurs tend to be seasoned crowdfunding proponents because of their positive crowdfunding experiences, i.e., launching more successful (or few failed) crowdfunding projects and assisting in more crowdfunding projects of other proponents. In general, Table 2 proves that the two types of projects (VC versus non-VC-endorsed projects) are found to be remarkably divergent and statistically different, evidenced by the low *p*-values of all the variables, with the exception of *Goal* variable.

To rigorously and accurately evaluate the influences of VC on crowdfunding campaigns, empirical models are in demand to test the visibility hypothesis along with the sample of entrepreneurial firms. For the purpose of hypothesis testing, we outline the methodology and discuss the regression results in the next section, beginning with linear regression models to control other potential disturbances.

Table 1. *Summary of Variables*

Category	Variable	Symbol	Description
Proceeds	*Proceeds*	*Funding*	Proceeds in the units of U.S. dollars secured by entrepreneurial firms in a crowdfunding campaign
Market demand	*Reward proposals*	$N_{proposals}$	The number of reward proposals in a crowdfunding campaign
	Backers	$N_{backers}$	The number of backers (sponsors) in a crowdfunding campaign
Transparency	*Comments*	$N_{comments}$	The number of comments posted by participants in a crowdfunding campaign
	Updates	$N_{updates}$	The number of updates entered by a proponent
	Pictures	$N_{pictures}$	The number of pictures posted by a proponent
	Videos	N_{videos}	The number of videos uploaded by a proponent
Confidence	*Duration*	*Duration*	The duration of a crowdfunding campaign in the units of days set by a proponent
	Goal	*Lngoal*	The funding goal in the units of U.S. dollars stipulated by a proponent
Experience	*Success*	$N_{success}$	The number of successful experiences (crowdfunding projects) which the proponent has in previous crowdfunding
	Failure	$N_{failure}$	The number of failed experiences (crowdfunding projects) which the proponent has in previous crowdfunding
	Backing	$N_{backing}$	The number of projects with which the proponent helps other proponents in crowdfunding
VC support	*VCmoney*	*VCmoney*	The amount of VC's investment in the units of U.S. dollars before launching a crowdfunding campaign
	VC dummy	VC_d	A dummy variable indicates whether VC supports a startup before launching a crowdfunding campaign

Note: This table reports the categories of crowdfunding success factors, the names and symbols of the accompanying variables, and the detailed description of each variable.
Source: Authors' work

Table 2. *Comparison of Venture-Funded and Non-Venture-Funded Projects*

Variable	Means		*p*-value[a]
	Venture-funded projects	Non-venture-funded projects	
Proceeds ($/project)	$1,316,172	$10,618	0.0000***
Backers	9,180	124	0.0000***
Reward proposals	12.05	7.89	0.0000***
Pictures	31.04	6.74	0.0000***
Videos	1.77	0.80	0.0000***
Comments	3,668	44	0.0000***
Updates	36	4	0.0000***
Goal ($/project)	$120,396	$55,032	0.6312
Duration (days/project)	36	32	0.0001***
Success[d]	1.52	0.98	0.0949*
Failure[e]	0.08	0.88	0.0000***
Backing	18.50	6.23	0.0000***

Note: [a] *p*-values express the probabilities of identical means, based on a two-sided *t*-test. *, **, and *** represent 10%, 5%, and 1% significance levels, respectively.
This table compares the average values across venture-funded projects with those across non-venture-funded projects. The entire sample of 274,220 observations of crowdfunding projects are split into two datasets—92 venture-funded projects and 274,128 non-venture-funded projects.
Source: Authors' work

4. Methodology

To investigate the two indicators of crowdfunding performance, proxied by the number of backers ($N_{backers}$) and the amount of proceeds (*Funding*), we apply 2 different cross-sectional models and regress $N_{backers}$ and *Funding* variables on an array of independent variables in Equations (1) and (2), respectively, as follows:

$$N_{backers} = \beta_0 + \beta_1 N_{proposals} + \beta_2 N_{comments} + \beta_3 N_{updates} + \beta_4 N_{pictures} + \beta_5 N_{videos} + \beta_6 Duration + \beta_7 Lngoal + \beta_8 N_{success} + \beta_9 N_{failure} + \beta_{10} N_{backing} + \beta_{11} VCmoney + \beta_{12} VC_d \quad (1)$$

$$Funding = \beta_0 + \beta_1 N_{proposals} + \beta_2 N_{backers} + \beta_3 N_{comments} + \beta_4 N_{updates} + \beta_5 N_{pictures} + \beta_6 N_{videos} + \beta_7 Duration + \beta_8 Lngoal + \beta_9 N_{success} + \beta_{10} N_{failure} + \beta_{11} N_{backing} + \beta_{12} VCmoney + \beta_{13} VC_d \quad (2)$$

Through the ordinary least squares (OLS) approach, we can compute the estimated values and associated *t*-statistics of those unknown slope coefficients in the linear regression models. It must be noted that the *Lngoal* variable takes the natural logarithm of the amount of funding goal. VC_d is a dummy variable where VC_d =0 indicates that startups have secured funds from crowdfunding without venture seed financing, and VC_d =1 means that startups and VC firms have collaborated before crowdfunding. *VCmoney* indicates the amount of VC investment, if any, before crowdfunding.

5. Results

Tables 3 and 4 summarize the results of the regression model estimation for discussion on the impact of market demand, information transparency, confidence, experience, and VC on the number of backers in Equation 1 and the amount of proceeds in Equation 2, respectively. First, the slope coefficient for reward proposals is statistically significant and positive in Table 3 (negative in Table 4), meaning that the more the reward proposals, the more the backers (the less proceeds). The positive/negative signs of estimated coefficients of $N_{proposals}$ render unclear consequence of reward proposals on crowdfunding performance. Table 4 shows that the estimate of the slope coefficient of $N_{backers}$ is 68.34 and statistically significant, implying that adding one backer expands the crowdfunding proceeds by $68.34. Our results somewhat support the viewpoint of previous literature that crowdfunding performance is positively associated with market demand, in spite of the mixed results of reward proposals.

Second, all of the coefficient estimates concerning information transparency are statistically positive in Tables 3 and 4, except for the coefficient estimate of N_{videos} being negative (that is, −2.55) and statistically insignificant in Table 3. Overall, our results are in support of related studies that crowdfunding performance increases with information transparency. Third, regarding the confidence of crowdfunding proponents, the estimated slope coefficients for duration and funding goal are statistically positive in Tables 3 and 4, except for the statistical insignificance of *Duration* variable in Table 3. Consistent with most of the literature on crowdfunding, our results imply that the more

confident the crowdfunding proponents (i.e., setting a high funding goal), the more the backers and proceeds secured in crowdfunding.
Fourth, regarding the determinants of the experience of crowdfunding proponents, we look at the success ($N_{success}$), failure ($N_{failure}$), and backing ($N_{backing}$) variables.

The statistical significance of the estimated slope coefficients of $N_{success}$ is uncertain owing to the significance in Table 3 and insignificance in Table 4. By contrast, the estimated slope coefficients of $N_{failure}$ are negatively significant in both Tables 3 and 4, implying that the degree of failure, proxied by the number of failed crowdfunding projects, is inversely correlated to crowdfunding performance.

The signs of $N_{backing}$ coefficient estimates, despite being statistically significant, are positive in Table 3 and negative in Table 4, respectively. The fact that the coefficient estimates of $N_{backing}$ have no clear positive/negative signs hints at no evidence of the reciprocity effect presented in the previous literature. Overall, our results regarding $N_{success}$ and $N_{backing}$ coefficient estimates are a little vague, while $N_{failure}$ coefficient estimates are consistently negative. It can be inferred from the negativity of $N_{failure}$ coefficient estimates that the failed experience of a proponent not only discourages potential backers from participating in the crowdfunding campaign, but also dampens the amount of crowdfunding proceeds that the proponent could raise otherwise.

Fifth, we care about whether there exists the impact of VC on crowdfunding performance. For this purpose, we employ the dummy variable (VC_d) as an indicator of whether VC finances the entrepreneurial firms prior to crowdfunding. Our results suggest that VC presence in a crowdfunding campaign helps entrepreneurs attract 6,919 backers and raise $558,263, as presented in the last rows of Tables 3 and Table 4, respectively.

To answer whether VC funding proxied by *VCmoney* prompts the number of backers and the amount of crowdfunding proceeds, we also analyze the effect of the VC investment amount on crowdfunding performance after controlling for crowdfunding success factors, such as market demand, information transparency, confidence, and experience.

The *VCmoney* coefficient estimates are statistically significant and positive in both Tables 3 and 4, revealing that the amount of VC investment improves crowdfunding performance.

The estimation results of the slope coefficients for the dummy (VC_d) and *VCmoney* variables strongly support the visibility hypothesis. This is attributed to the fact that the VC firms' value-added services increase the visibility of startups and help them in attracting backers and attaining crowdfunding proceeds.

In line with the majority of the literature on crowdfunding, a pattern is also noteworthy in Tables 3 and 4: most of the success factors of crowdfunding (the mastery of market demand, information transparency, and the proponents' confidence and crowdfunding experience) enhance crowdfunding performance.

Table 3. *Regression Results on Backers*

Category	Variable	Symbol	Coefficient	*p*-value	Significance[a]
	Constant	-	-254.56	<0.01	***
Market demand	*Reward proposal*	$N_{\text{proposals}}$	2.82	<0.01	***
Transparency	*Comment*	$N_{comments}$	0.35	<0.01	***
	Update	$N_{updates}$	12.13	<0.01	***
	Picture	$N_{pictures}$	6.86	<0.01	***
	Video	N_{videos}	-2.55	0.27	
Confidence	*Duration*	*Duration*	0.07	0.66	
	Goal	*Lngoal*	30.19	<0.01	***
Experience	*Success*	$N_{success}$	6.06	<0.01	***
	Failure	$N_{failure}$	-33.77	<0.01	***
	Backing	$N_{backing}$	1.94	<0.01	***
VC support	*VCmoney*	*VCmoney*	0.00	<0.01	***
	VC dummy	VC_d	6919.39	<0.01	***

Note: [a] *, **, and *** represent 10%, 5%, and 1% significance levels, respectively.
This table summarizes the regression results of explanatory variables on the number of backers who pledge money to a crowdfunding campaign, based on Equation (1) below:

$$N_{backers} = \beta_0 + \beta_1 N_{proposals} + \beta_2 N_{comments} + \beta_3 N_{updates} + \beta_4 N_{pictures} + \beta_5 N_{videos} + \beta_6 Duration + \beta_7 Lngoal + \beta_8 N_{success} + \beta_9 N_{failure} + \beta_{10} N_{backing} + \beta_{11} VCmoney + \beta_{12} VC_d$$

Source: Authors' work

Table 4. *Regression Results on Crowdfunding Proceeds*

Category	Variable	Symbol	Coefficient	*p*-value	Significance[a]
	Constant	-	-16,245.01	<0.01	***
Market demand	*Reward proposal*	$N_{\text{proposals}}$	-155.63	<0.01	***
	Backer	$N_{backers}$	68.34	<0.01	***
Transparency	*Comment*	$N_{comments}$	16.69	<0.01	***
	Update	$N_{updates}$	31.77	<0.1	*
	Picture	$N_{pictures}$	444.33	<0.01	***
	Video	N_{videos}	1,468.46	<0.01	***
Confidence	*Duration*	*Duration*	69.55	<0.01	***
	Goal	*Lngoal*	1,521.24	<0.01	***
Experience	*Success*	$N_{success}$	50.95	0.3015	
	Failure	$N_{failure}$	-762.13	<0.01	***
	Backing	$N_{backing}$	-85.67	<0.01	***
VC support	*VCmoney*	*VCmoney*	0.017	<0.01	***
	VC dummy	VC_d	558,262.80	<0.01	***

Note: [a] *, **, and *** represent 10%, 5%, and 1% significance levels, respectively.
This table summarizes the regression results of explanatory variables on the proceeds secured in a crowdfunding campaign, based on Equation (2) below:

$$Funding = \beta_0 + \beta_1 N_{proposals} + \beta_2 N_{backers} + \beta_3 N_{comments} + \beta_4 N_{updates} + \beta_5 N_{pictures} + \beta_6 N_{videos} + \beta_7 Duration + \beta_8 Lngoal + \beta_9 N_{success} + \beta_{10} N_{failure} + \beta_{11} N_{backing} + \beta_{12} VCmoney + \beta_{13} VC_d$$

Source: Authors' work

6. Conclusion

The results of model estimations support the visibility hypothesis that VC firms prepare their startup partners well for the subsequent crowdfunding campaigns by helping them understand market demand, maintain information transparency, and gain confidence and experience. Even though crowdfunding is more convenient than other types of financing methods, the literature does not investigate the association of VC financing with crowdfunding. By comparing the data set of VC-backed ventures to that of non-VC-backed ventures, we demonstrate that VC financing scales up the performance of crowdfunding campaigns by drawing more backers and raising more crowdfunding proceeds. This can be explained by the fact that VC firms utilize their network and knowledge to assist startups with fundraising activities. Our empirical results suggest that VC investment alongside crowdfunding is better than just crowdfunding.
The above conclusions posit novel insights for entrepreneurs and policymakers. Crowdfunding has become important for entrepreneurs, who sometimes have difficulty in raising their venture funds through traditional financing in the banking industry. As an unconventional financing channel that bridges entrepreneurs and sponsors, crowdfunding provides an easy and quick way to address the funding problem of entrepreneurs. Policymakers are concerned with facilitating entrepreneurship with appropriate fundraising methods (i.e., conventional financing, VC financing, and crowdfunding). If possible, entrepreneurs should seek VC financing prior to crowdfunding because the involvement of VC draws more backers and attains higher proceeds in the crowdfunding campaign that follows. Our finding has implications for policymaking, for both entrepreneurs and regulators, as VC funding in combination with crowdfunding campaigns contributes to entrepreneurial activity and economic productivity.

There are some limitations in this study. We may encounter small sample bias when pairing the 92 VC-examined projects with 274,128 non-VC-examined projects. The effectiveness of our linear regression models may be moderated by the small ratio of 92 to 274,128 observations and the selection and omitted variables biases. We do not consider the substance of the crowdfunding projects; namely, the characteristics of rewards offered by entrepreneurs to sponsors. Several non-quantized variables associated with the features of rewards can impact the decision-making of the sponsors. As our models exclude the non-quantized characteristics, future studies can address the role of rewards as strategic assets in crowdfunding campaigns and provide guidance in adopting a strategic approach to selecting the right rewards, and the most effective combinations.

The related literature indicates that VC endorsement serves as a signal to investors and allows them to differentiate high quality ventures (i.e., VC-supported businesses) from low quality ventures (i.e., non-VC-supported businesses). Whether the signaling effect of VC support is sufficiently and smoothly disseminated to the crowdfunding market is another key issue that decides the success rate of crowdfunding campaigns. How entrepreneurs communicate the benefits of the signaling effect of VC support (i.e., respective announcements and messages of VC endorsement posted on a crowdfunding website and sent to potential crowdfunding participants) may come into play in the crowdfunding success rate. This is beyond the scope of this study and can be the focus of future work.

Apart from linear regression models, some versions of matching methods, i.e., Propensity Score Matching method, may be adopted to identify a set of the non-VC-backed projects that would be directly comparable to a set of VC-backed projects. In doing so, researchers can match crowdfunding projects on the project attributes (i.e., the type of projects, the number of pictures and videos, and the length of duration). Our sample does not deal with the data set of crowdfunding ventures that were eventually acquired by larger companies; for instance, the role-playing video game called Pillars of Eternity that was started on and crowdfunded via Kickstarter, but was ultimately acquired by the video game developer Obsidian Entertainment. It will be interesting to analyze the crowdfunding performance of acquired crowdfunding ventures, relative to that of non-acquired crowdfunding ventures.

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[1] By interviewing the crowdfunding requesters and supporters, Gerber and Hui (2017) examined how the designs of crowdfunding platforms support the engagement of backers.

[2] Gouldner (1960) stipulated that the reciprocal behavior of individuals is regarded as a social norm that individuals must help others if they expect others to return the help.

[3] Researchers at the Taiwan Institute of Economic Research built the proprietary FINDIT database by collecting the crowdfunding variables of the Kickstarter platform, for the period 2015–2017. The FINDIT database is sponsored by the Small and Medium Enterprise Administration, Ministry of Economic Affairs of Taiwan.

[4] We downloaded the dataset of FINDIT database in October 2017.