6-26-2018

Early Winner Takes All: Exploring the Impact of Initial Herd on Overfunding in Crowdfunding Context

Yijing Li
The University of New South Wales, yijing.li@unsw.edu.au

Fei Liu
Copenhagen Business School, afl.digi@cbs.dk

Wenjie Fan
Aalto University, wenjie.fan@aalto.fi

Eric T.K. Lim
The University of New South Wales, e.t.lim@unsw.edu.au

Yong Liu
Aalto University, Yong.Liu@aalto.fi

Early Winner Takes All: Exploring the Impact of Initial Herd on Overfunding in Crowdfunding Context

Research-in-Progress

Yijing Li
School of Information Systems and Technology Management
UNSW Sydney
Australia
yijing.li@unsw.edu.au

Fei Liu
Department of Digitalization
Copenhagen Business School
Denmark
afl.digi@cbs.dk

Wenjie Fan
Department of Information and Service Economy
Aalto University
Finland
wenjie.fan@aalto.fi

Eric T.K. Lim
School of Information Systems and Technology Management
UNSW Sydney
Australia
e.t.lim@unsw.edu.au

Yong Liu
Department of Information and Service Economy
Aalto University
Finland
yong.liu@aalto.fi

Abstract

Crowdfunding endows entrepreneurs with a means of kickstarting their businesses. The amount of investment that can be elicited through crowdfunding campaigns often surpasses fundraisers' expectation, leading to market inefficiencies. Yet, this phenomenon of overfunding has garnered relatively little attention in past studies. Subscribing to signaling theory, we strive to shed light on the causes of overfunding by positing crowdfunding platforms as fertile breeding grounds for herding behavior. Specifically, we attempt to capture the dynamic nature of herding by decomposing herds on crowdfunding platforms into their constituent dimensions of maturity, intensity, and persistency. We further endeavor to explore how these constituent dimensions shape overfunding. This study advances a model to testify to the instrumental role of initial herds in amplifying overfunding on the crowdfunding platforms, which in turn could offer insights into remedying the problem of overfunding.

Keywords: Crowdfunding, herding behavior, overfunding

Introduction

Crowdfunding is rapidly shaping up to be a vital avenue for companies to solicit open capital from online communities (Stanko and Henard 2017). In 2016, equity raised through crowdfunding has surpassed that of venture capital, and if this trend continues, we expect to register USD $90 billion in funding raised via crowdfunding by 2017 (Scott-Briggs 2016). Overfunding is a predominant

phenomenon in crowdfunding where funders continue to invest in 'overly successful' campaigns beyond the funding goals stipulated by fundraisers. Statistics have shown that successful campaigns in leading equity crowdfunding platforms were overfunded by more than 50% on average (Crowdrating 2016). On the flip side, over 30% of campaigns struggled to raise more than 1/3 of the amount they sought, with many receiving little to no investments (CanadaMediaFund 2015).

Overfunding often leads to adverse consequences regardless of the financing outcome (Stanko and Henard 2017). Cash surplus in overfunded campaigns is unlikely to be effectively spent since it has not been budgeted in the original business plans (Gabison 2015). Many overfunded campaigns also became overly ambitious, resulting in unrealistic claims, unfulfilled promises, and disappointed funders (Stanko and Henard 2017). Also, many promising start-ups failed to attract the attention they desperately needed because they were overshadowed by their overly successful counterparts (Lukkarinen et al. 2016). As a consequence of this sub-optimal allocation of scarce financial resources, overfunding stands out as one of the primary causes of market inefficiency not only on equity crowdfunding platforms, but also capital markets at large.

While ample studies have attested to the prevalence of overfunding on crowdfunding platforms, few have scrutinized its root causes (Koch 2016). Unlike conventional fundraising, the prevalence of information asymmetry on crowdfunding platforms compels funders to turn to alternate signals for determining campaign desirability. Enabled by crowdfunding platforms, the digital visibility of the fundraising progress yields quality signals and entices funders to gravitate towards campaigns characterized by a strong start to their fundraising process (Burtch 2011; Zhang and Liu 2012). This type of campaigns is often capable of garnering a herd of investors at early stages of the funding process. Such initial herd is made visible via an early surge in fundraising progress. Crowdfunding platforms hence constitute fertile breeding grounds for the emergence of herds. Consequently, we advance herding as a predominant driver of overfunding. Like Raafat et al. (2009, p. 420), we refer to ***herding*** as *the alignment of the thoughts or behaviors of individuals in a group through local interaction and without centralized coordination.*

Prior research has borne witness to herding behavior on crowdfunding platforms (Burtch 2011; Lee and Lee 2012; Zhang and Liu 2012). However, few have examined the impact of herding, and none has explored the connection between initial herds and overfunding. Herding is an observable clustering phenomenon that embodies formation, growth, and dissolution (Nirei et al. 2012). Consequently, instead of concentrating solely on the magnitude of herding (Bikhchandani and Sharma 2000), we conceive initial herds on crowdfunding platforms as a multifaceted phenomenon denoted by their *maturity*, *intensity*, and *persistency*. As alleged by Banerjee (1992), people benefit from second mover advantage by mimicking early successes. This in turn accentuates the criticality of taking into account the timing when initial herds begin to form, what we label as maturity. Furthermore, herds were found to be volatile in that their population quickly peaks and dissipates (Rao et al. 2001), represented in our study as the intensity and persistency of such volatility on the phenomenon of overfunding.

This study endeavors to disentangle the effects of herding on overfunding by: (1) eliciting the three focal dimensions constituting initial herds on crowdfunding platforms; and (2) explicating the impact of these dimensions of initial herd on overfunding.

Theoretical Foundation and Research Model

Crowdfunding, Digital Visibility, and Overfunding

Crowdfunding has emerged as an alternate avenue for companies, especially for start-ups, to solicit capital from the crowd. Unlike conventional financing activities, crowdfunding allows individuals or entrepreneurs to raise capital directly from a large group of micro-investors through digital platforms (Ahlers et al. 2015). The platformized crowd-based fundraising mechanism facilitates capital exchange for both capital seekers and investors. Crowdfunding platforms serve as a low-cost medium for fund seekers to propose their business ideas in public and overcome geographical constraints that restrict their reach to potential investors (Agrawal et al. 2015; Belleflamme et al. 2014). The micro-investment mechanism also disperses the risk borne by each individual investor (Agrawal et al. 2015). Nevertheless, the highly asymmetric decision-making environment in crowdfunding renders it difficult for funders to

pinpoint promising campaigns (Belleflamme et al. 2014). This asymmetry is exacerbated because crowd-funders are less knowledgeable and sophisticated in comparison to professional investors such as angel investors or venture capitalists (Ahlers et al. 2015). These amateur investors are often not qualified to assess the quality of each campaigned business initiative, especially in online environment, where due diligence cannot be sufficiently conducted (Kim and Viswanathan 2014).

Another key feature of the platformized crowdfunding market is the digital visibility of fundraising progress, which can play a salient role in mobilizing crowd-funders' pledging behaviors. For example, past studies have confirmed the impact of popularity deduced from historical transactions on funders' decision making in online financing markets (Burtch et al. 2013). Specifically, funders can infer both quality and credibility of a campaign from its funding progress (Burtch et al. 2013). Well-funded campaigns become self-fulfilling prophecies that are likely to receive more investments. Therefore, funders prefer well-funded campaigns because their expected returns are more likely to be realized (Zhang and Liu 2012). For this reason, crowdfunding platforms have become fertile breeding grounds for crowd behavior (Zhang and Liu 2012) and observational learning (Freedman and Jin 2011).

Prior research on crowdfunding has largely focused on the determinants of campaign success. For instance, Cordova et al. (2015) discovered that larger fundraising goal hinders funders' willingness to pledge whereas longer campaign duration increases the chance for the campaign to receive support from funders. Besides, social influence, such as contributors' identity hiding tendencies (Burtch et al. 2016), reputation effect (Kim and Viswanathan 2014), and social influence (Agrawal et al. 2015; Zhang and Liu 2012), were found to be salient predictors of funders' contribution behavior, dictating the eventual success of a given campaign.

Yet, despite extensive research into crowdfunding, few studies to-date have examined the phenomenon of overfunding. Koch (2016) uncovered several antecedents of overfunding, including campaign and fundraiser characteristics, funder's philanthropic inclination, and quality indicators endorsed by the platform, which coincide with predictors of crowdfunding success. Likewise, Cordova et al. (2015) compared the predictors of campaign success with those of overfunding and revealed considerable overlaps between the two. Though Cordova et al. (2015) and Koch (2016) work has sparked our awareness of overfunding, the role of social influence, which has been demonstrated to dominate crowd-funders' investment choice, remains untouched. Accordingly, this research endeavors to generate novel insights in campaign overfunding by recognizing the role of initial herding. In the next sections, we first decompose initial herd into a multi-faceted concept and link each dimension of initial herd to its effect on overfunding. Furthermore, we explore the interplay among constituent dimensions of initial herd to capture the dynamic nature of herding behavior. The proposed research model is depicted in Figure 1.

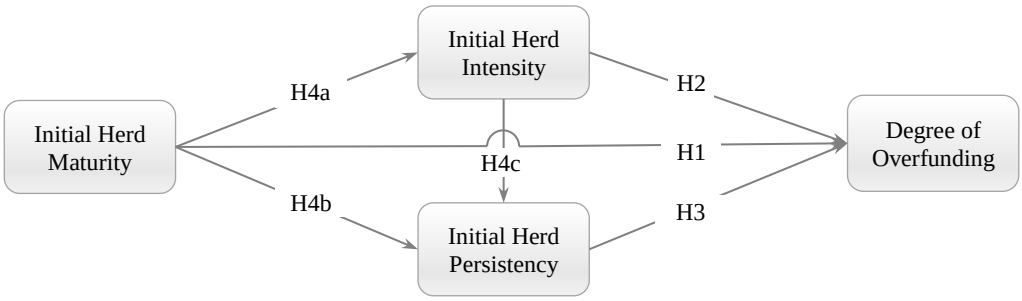

Figure 1. Research Model

Multi-Dimensional View of Initial Herd and Its Impact on Overfunding

Herding describes an observed collective behavior in a group of individuals (Çelen and Kariv 2004). This collective phenomenon can be evoked by multiple factors such as information cascades, shared beliefs, or social ideology (Bikhchandani and Sharma 2000; Kremer and Nautz 2013). For instance, Sun (2013) alleged that information cascades may exist when people imitate others and discount their own information, especially in the situation when limited information is available to the decision maker.

Zhang and Liu (2012) suggest that lenders in microloan markets tend to join a herd from which they can infer the borrowers' credibility. However, Burtch (2011) countered that conforming to herds by discounting private information may not be an optimal strategy and regarded information cascades as a negative network externality. In the same vein, herding can be induced when people share the same information and rely on similar evaluative benchmark to make decisions (Bikhchandani and Sharma 2000). Past studies have attested to the occurrence of such unintentional herding in conventional funding situation, probably due to the similarity of how professional investors' evaluate information in light of their homogeneous education background (Kremer and Nautz 2013).

Extant literature on herding behavior has predominantly focused on the magnitude of herd. Consistent with Crane and Sornette (2008) postulation of herding behavior as a dynamic process embodying formation, growth, and dissolution, we model herds as a multifaceted concept based on its *maturity*, *intensity*, and *persistency*. Given that herd has been found to attract subsequent pledges (Burtch 2011; Kim and Viswanathan 2014; Zhang and Liu 2012), we posit that the first herd formed during a fundraising process of a crowdfunding campaign, referred to the *initial herd* in this study, is a formidable force driving the overfunding of the campaign. We then explore how each dimension of this initial herd contributes to overfunding.

According to Banerjee (1992), people benefit from being late movers, since more information can be sourced from observing early movers' performance. Gul and Lundholm (1995) confirmed that there is a trade-off between strategic delay and immediate decision, a tendency towards the latter gives impetus to herding even in the absence of information cascade. This accentuates the importance of accounting for the timing when an initial herd picks up momentum, what we label as ***maturity***. Specifically, the maturity of the initial herd is an indication of the time it takes for the initial herd to form. According to Vismara (2016), information asymmetry is more severe in the early stage of fundraising, where potential funders have less time to evaluate the campaign and hence, rely more on heuristics from previous funding experience. Conceivably, the earlier the initial herd emerges, the more likely for it to act as a salient desirability signal for potential funders. It has been shown that less mature herds (i.e., formed earlier) are more likely to self-perpetuate, therefore amplifying their impact (Zhang and Liu 2012). Moreover, less mature initial herds allow more time for subsequent funders to pitch in. Taken together, we anticipate that a less mature initial herd, which manifests as a surge in fundraising progress happened shortly after the launch of a campaign, elevates the likelihood of excessive funding to the campaign. We therefore hypothesize that:

Hypothesis 1. *The maturity of an initial herd for a campaign is negatively associated with its degree of overfunding.*

The instability of herding behavior has been contended in prior research (Sun 2013). Bikhchandani and Sharma (2000) pointed out that herds are usually fueled by intuition on limited information and can become less attractive when more information becomes accessible for new comers to deliberate on. Dictated by their lack of sustainability, herds conform to a typical convex pattern that dissipates after reaching a saturation point (Rao et al. 2001). Accordingly, we conceptualize the ***intensity*** of initial herd as the number of funders it galvanizes at its peak. On crowdfunding platforms, a more intense initial herd is likely to lead to the fulfillment of a larger portion of the fundraising progress in the early stage of a campaign. Consistent with previous work, we expect the intensity of initial herd to accelerate subsequent funders' pledging decisions (Colombo et al. 2015), thereby culminating in overfunding. We therefore hypothesize that:

H2. *The intensity of an initial herd for a campaign is positively associated with its degree of overfunding.*

The volatile nature of herds means the number of followers is likely to quickly peak and dissipate (Raafat et al. 2009). While the intensity of the initial herd reflects its magnitude, how long this initial herd can persist is representative of its momentum. For this reason, we employ ***persistency*** as a complementing predictor of the impact of initial herd on overfunding. Persistency of an initial herd can often be gauged by the continuous growth of the fundraising progress since its inception. Persistency of the initial herd helps to validate its robustness, and in turn inflates its bandwagon effect. Due to its

reassuring quality, a more persistent initial herd is more enticing for potential funders to join and perpetuate the target campaign beyond its original fundraising goal. We therefore hypothesize that:

H3. *The persistency of an initial herd for a campaign is positively associated with its degree of overfunding*

Dynamism of Initial Herd

Research has alluded to the decisive role of early funding performance in determining the fundraising outcome (Kim and Viswanathan 2014; Lee and Lee 2012). In light of the reinforcement model, early momentum of herding behaviour compels subsequent funders to make hasty decisions and advance its initial momentum (Cordova et al. 2015; Zhang and Liu 2012). This is because immature initial herd that emerges in earlier stage of a campaign is usually seen as an indicator of superior quality and market acceptance by casual and professional funders alike (Kim and Viswanathan 2014; Lee and Lee 2012). Consequently, it is more likely for funders to pledge their support due to their heightened desire to capitalize the opportunity (Zschocke et al. 2013). Taken together, an earlier burst of collective investment behaviours can mobilize more funders and generate further momentum, hence leading to a more intense and persistent initial herd. We therefore hypothesize that:

H4a. *The maturity of an initial herd for a campaign is negatively associated with its intensity*

H4b. *The maturity of an initial herd for a campaign is negatively associated with its persistency*

According to Zhang and Liu (2012), herds in crowdfunding can self-reinforce due to their own momentum. Past studies have exposed that crowd-funders tend to imitate former funders' decisions (Lee and Lee 2012). This cascade of behavior can be intensified if more of the same type of behavior were observed. In this sense, the intensity of an initial herd may bolster its persistency. Moreover, it has been found that the longevity of herding behaviour in online environment depends on its scale, meaning that a large-scale outburst of herding behaviour tends to decay more gradually (Yang and Leskovec 2011). We anticipate that the intensity of initial herd in crowdfunding context may extend the time period in which it can be sustained. We therefore hypothesize that:

H4c. *The intensity of an initial herd for a campaign is positively associated with its persistency*

Methodology

Measure Development

While herding behavior has been covered extensively within extant literature on crowdfunding, there is a paucity of studies that have attempted to operationalize herds. We subscribe to the measures advocated by Lakonishok et al. (1992) in stock market (hereafter LSV) for capturing initial herds in crowdfunding process. LSV is one of the most recognized measures of herd behavior. The idea behind LSV is to compare the actual behavior of a stock in the real market with its counterpart in an ideal environment where no herding exists such that traders make random and independent trades. Accordingly, we benchmarked the actual investments of a given crowdfunding campaign against an ideal situation in which no herd forms. Assuming the daily transactions for a campaign i in time t is $R_{i,t}$. Poisson distribution is widely adopted for modelling the probability of a given number of independent events occurring in a fixed interval of space with a known average rate. Thereby, if there is no herding and each investor makes decision independently, $R_{i,t}$ should follow a Poisson distribution with the parameter $\lambda_i = E[R_{i,t}] = \frac{1}{T_i}\sum_{t=1}^{T_i} R_{i,t}$, where T_i is the fundraising duration of campaign i. According to Lakonishok et al. (1992), the LSV is computed as the difference between the mean deviation of trades in actual and non-herding situations. The expected mean deviation of Poisson distribution is $\mathrm{E}[R_{i,t} - \lambda_i] = 2\exp(-\lambda_i)\frac{\lambda_i^{\lfloor\lambda_i\rfloor+1}}{\lfloor\lambda_i\rfloor!}$ (Johnson et al. 2005, p. 163). The LSV in the crowdfunding context is thus:

$$LSV_{i,t} = (R_{i,t} - \lambda_i) - E^{NH}\left[R_{i,t} - E\left[R_{i,t}\right]\right]$$
$$= (R_{i,t} - \lambda_i) - 2\exp(-\lambda_i)\frac{\lambda_i^{\lfloor\lambda_i\rfloor+1}}{\lfloor\lambda_i\rfloor!}$$

where the first term is the actual deviation between the daily transaction records and the mean transaction records of campaign i, and the second term is the expected value of the first term under the hypothesis of no herding occurring. Adhering to Lakonishok et al. (1992), the initial herd for campaign i appears in time t when $LSV_{i,t}$ exceeds 0 for the first time and disappears when $LSV_{i,t}$ falls below 0.

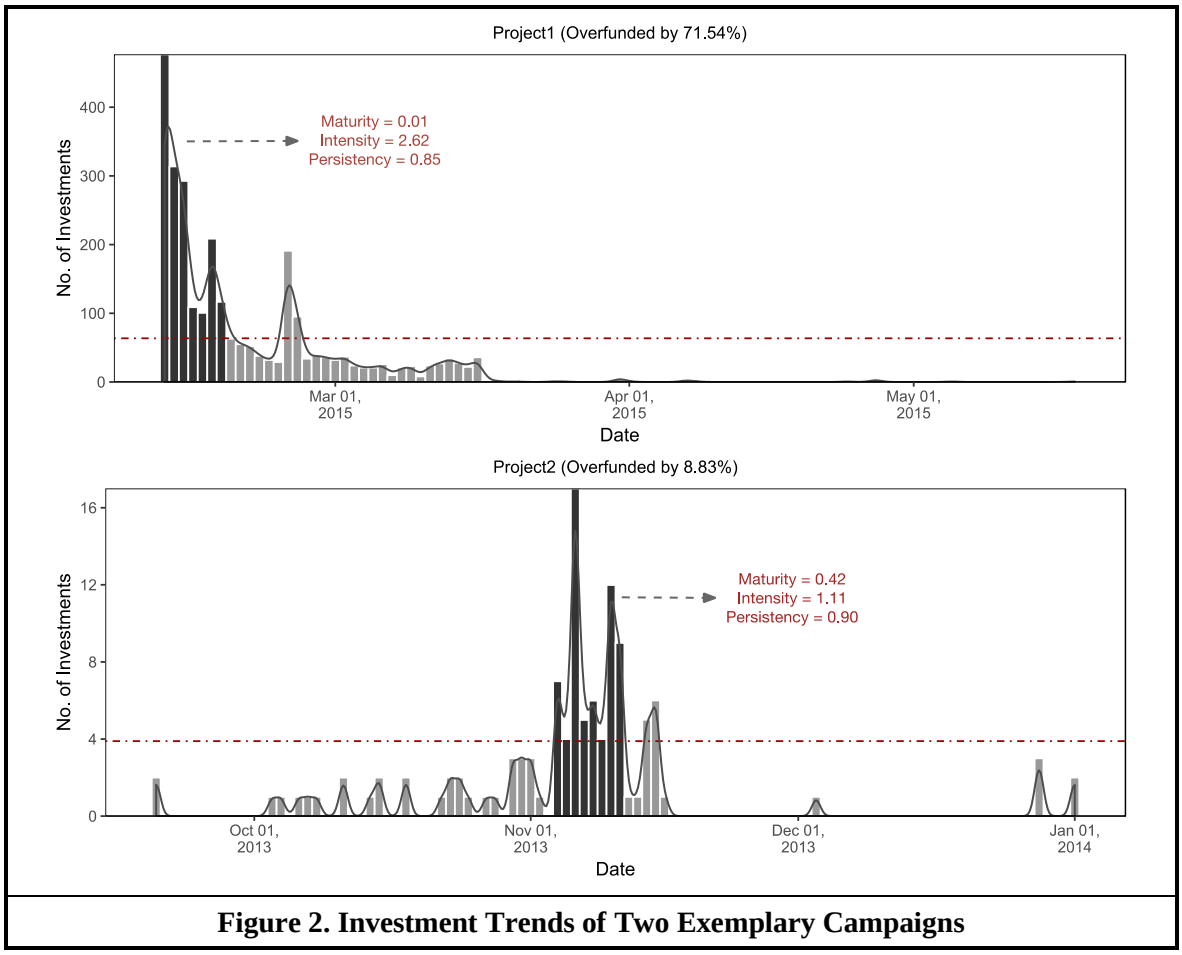

Figure 2. Investment Trends of Two Exemplary Campaigns

Data Collection and Operationalization

The data we plan to draw on for validating our proposed hypotheses is the records of daily investments of 250 campaigns on a leading equity-based crowdfunding sites in the United Kingdom (UK). 192 campaigns managed to reach their fundraising goals between July 2011 and May 2015, with 132 receiving an average overfund of 20.1%. For each campaign, we extract the daily number of investments during the entire fundraising period, which enables us to compute the LSV measure. We then calculate the focal dimensions for each initial herd as described in Table 1.

Table 1. Summary of Variables

Variable	Definition	Min	Max	Mean	Std. dev.
Initial Herd Intensity	Amplitude of initial herd measured by the logarithmic form of LSV	0.000	3.976	0.640	0.557
Initial Herd Maturity	Number of days before the detection of the formation of the initial herd, normalized by the duration of fundraising process	0.000	1.000	0.236	0.288

Initial Herd Persistency	Duration of initial herd in logarithmic form of the number of days	0.000	8.102	1.823	1.268
Degree of Overfunding	Overfunded percentage	0.000	0.720	0.201	0.196

Figure 2 depicts a comparison between two exemplary campaigns that are differentiated on the basis of the three initial herd dimensions to illustrate how distinctions in the intensity, maturity, and persistency of the initial herd impact the subsequent funding patterns, where dark bars indicate the initial herd of each campaign.

Expected Contributions

Our study endeavors to contribute to both theory and practice. First, drawing on signaling theory, we argue for initial herding as a signal of campaign desirability in the fundraising process that is rendered visible via crowdfunding platforms. Although initial herd liberates casual investors from sophisticated value assessment, it also encourages overfunding, thereby causing inefficient resource allocation on crowdfunding platforms. Second, we delineate among three constituent dimensions of initial herds, namely their maturity, intensity, and persistency. Espousing a well-grounded statistical technique, we are able to demonstrate how these focal dimensions can be elicited from the fundraising process on crowdfunding platforms. Our study could assist future studies in exploring distinct configurations or types of herding behaviors in crowdfunding. Third, while affirming the positive connection between dimensions of initial herd and overfunding, this study hopes to provide a starting point for the study and discussion of policy to subdue the negative impact of initial herd in the crowdfunding context. Particularly, delaying the maturation of the initial herd and its inception can not only directly mitigate overfunding, but it can also curb overfunding indirectly via downsizing the group of followers and accelerating the decay of the initial herd. This implication can be especially insightful for managers and police-makers who seek to optimize market efficiency for crowdfunding platforms.

By elucidating the intricate relationship between initial herd and overfunding in crowdfunding, this study lays a cornerstone for us to move further in scrutinizing how the formation of initial herds can be shaped by information cues available on crowdfunding platforms. Perpetuating this line of investigation promises ample implications with respect to the theorization of herding behavior and actionable guidelines for domesticating these initial herds.

References

Agrawal, A., Catalini, C., and Goldfarb, A. 2015. "Crowdfunding: Geography, Social Networks, and the Timing of Investment Decisions," *Journal of Economics & Management Strategy* (24:2), pp. 253-274.

Ahlers, G. K., Cumming, D., Günther, C., and Schweizer, D. 2015. "Signaling in Equity Crowdfunding," *Entrepreneurship Theory and Practice* (39:4), pp. 955-980.

Banerjee, A. V. 1992. "A Simple Model of Herd Behavior," *The Quarterly Journal of Economics* (107:3), pp. 797-817.

Belleflamme, P., Lambert, T., and Schwienbacher, A. 2014. "Crowdfunding: Tapping the Right Crowd," *Journal of business venturing* (29:5), pp. 585-609.

Bikhchandani, S., and Sharma, S. 2000. "Herd Behavior in Financial Markets," *IMF Staff papers*, pp. 279-310.

Burtch, G. 2011. "Herding Behavior as a Network Externality," *Proceedings of the 32th International Conference on Information Systems (ICIS)*.

Burtch, G., Ghose, A., and Wattal, S. 2013. "An Empirical Examination of the Antecedents and Consequences of Contribution Patterns in Crowd-Funded Markets," *Information Systems Research* (24:3), pp. 499-519.

Burtch, G., Ghose, A., and Wattal, S. 2016. "Secret Admirers: An Empirical Examination of Information Hiding and Contribution Dynamics in Online Crowdfunding," *Information Systems Research* (27:3), pp. 478-496.

CanadaMediaFund. 2015. "How Likely Is Your Crowdfunding Campaign to Succeed?"

Çelen, B., and Kariv, S. 2004. "Distinguishing Informational Cascades from Herd Behavior in the Laboratory," *The American Economic Review* (94:3), pp. 484-498.
Colombo, M. G., Franzoni, C., and Rossi-Lamastra, C. 2015. "Internal Social Capital and the Attraction of Early Contributions in Crowdfunding," *Entrepreneurship Theory and Practice* (39:1), pp. 75-100.
Cordova, A., Dolci, J., and Gianfrate, G. 2015. "The Determinants of Crowdfunding Success: Evidence from Technology Projects," *Procedia-Social and Behavioral Sciences* (181, pp. 115-124.
Crane, R., and Sornette, D. 2008. "Robust Dynamic Classes Revealed by Measuring the Response Function of a Social System," *Proceedings of the National Academy of Sciences* (105:41), pp. 15649-15653.
Crowdrating. 2016. "Our Facts & Figures."
Freedman, S. M., and Jin, G. Z. 2011. "Learning by Doing with Asymmetric Information: Evidence from Prosper. Com," National Bureau of Economic Research.
Gabison, G. A. 2015. "Equity Crowdfunding: All Regulated but Not Equal," *DePaul Business and Commercial Law Journal* (13:3), pp. 360-408.
Gul, F., and Lundholm, R. 1995. "Endogenous Timing and the Clustering of Agents' Decisions," *Journal of political Economy* (103:5), pp. 1039-1066.
Johnson, N. L., Kemp, A. W., and Kotz, S. 2005. *Univariate Discrete Distributions*. John Wiley & Sons.
Kim, K., and Viswanathan, S. 2014. "The Experts in the Crowd: The Role of Reputable Investors in a Crowdfunding Market," *The 41st Research Conference on Communication, Information and Internet Policy*.
Koch, J.-A. 2016. "The Phenomeno of Project Overfunding on Online Crowdfunding Platforms—Analyzing the Drivers of Overfunding," *The 24th European Conference on Information Systems (ECIS)*.
Kremer, S., and Nautz, D. 2013. "Causes and Consequences of Short-Term Institutional Herding," *Journal of Banking & Finance* (37:5), pp. 1676-1686.
Lakonishok, J., Shleifer, A., and Vishny, R. W. 1992. "The Impact of Institutional Trading on Stock Prices," *Journal of financial economics* (32:1), pp. 23-43.
Lee, E., and Lee, B. 2012. "Herding Behavior in Online P2p Lending: An Empirical Investigation," *Electronic Commerce Research and Applications* (11:5), pp. 495-503.
Lukkarinen, A., Teich, J. E., Wallenius, H., and Wallenius, J. 2016. "Success Drivers of Online Equity Crowdfunding Campaigns," *Decision Support Systems* (87, pp. 26-38.
Nirei, M., Stamatiou, T. G., and Sushko, V. 2012. "Stochastic Herding in Financial Markets Evidence from Institutional Investor Equity Portfolios," *Working paper*.
Raafat, R. M., Chater, N., and Frith, C. 2009. "Herding in Humans," *Trends in cognitive sciences* (13:10), pp. 420-428.
Rao, H., Greve, H. R., and Davis, G. F. 2001. "Fool's Gold: Social Proof in the Initiation and Abandonment of Coverage by Wall Street Analysts," *Administrative Science Quarterly* (46:3), pp. 502-526.
Scott-Briggs, A. 2016. "What Will Happen to Crowdfunding Industry in the Future?." http://www.techbullion.com/will-happen-crowdfunding-industry-future/.
Stanko, M. A., and Henard, D. H. 2017. "Toward a Better Understanding of Crowdfunding, Openness and the Consequences for Innovation," *Research Policy* (46:4), pp. 784-798.
Sun, H. 2013. "A Longitudinal Study of Herd Behavior in the Adoption and Continued Use of Technology," *Mis Quarterly* (37:4), pp. 1013-1042.
Vismara, S. 2016. "Information Cascades among Investors in Equity Crowdfunding," *Entrepreneurship Theory and Practice*, pp. 11519-11584.
Yang, J., and Leskovec, J. 2011. "Patterns of Temporal Variation in Online Media," *Proceedings of the fourth ACM international conference on Web search and data mining*: ACM, pp. 177-186.
Zhang, J., and Liu, P. 2012. "Rational Herding in Microloan Markets," *Management science* (58:5), pp. 892-912.
Zschocke, M. S., Mantin, B., and Jewkes, E. 2013. "Competitive Market Selection with Timing and Capacity Decisions," *IEEE Transactions on Engineering Management* (60:1), pp. 88-98.