

For love or money? The effect of deadline proximity on completion contributions in online crowdfunding

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Structured Abstract

Purpose: We investigate whether the individual ‘completion contributions’ that enable online crowdfunding campaigns to meet or exceed their targets tend to be larger in relative terms when made nearer to the funding deadline. As these contributions are likely to have a disproportionate impact upon the campaign outcomes, we assess whether the investment patterns we observe are consistent with the theory of impact philanthropy.

Design/Methodology/Approach: We use campaign-level data incorporating observations on campaigns from reward (both all-or-nothing and keep-it-all), donation, and equity-based platforms. To our knowledge, the coverage of our data is unparalleled elsewhere in the crowdfunding literature. Using these data, we analyze whether completion contributions tend to vary contingent upon both the proximity of the deadline and form of crowdfunding.

Findings: We find that completion contributions tend to vary significantly and positively with proximity to funding deadlines. We also find that this relationship tends to be more pronounced among all-or-nothing than for keep-it-all campaigns, as well as for donations-based platforms compared with equity-based platforms. Altogether, the patterns of behavior we observe are consistent with the theory of impact philanthropy.

Originality / Value: Our findings help develop a better understanding of the behaviors of contributors to online crowdfunding campaigns and whether those behaviors are consistent with altruistic motivations. Our study also has considerable value in understanding the non-financial factors associated with the informal financing of business startups.

Keywords: Crowdfunding; Psychology; Motivation

No potential competing interest was reported by the authors.

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1. Introduction

Online crowdfunding is a relatively new form of collective fundraising initiative. The practice has been defined as “*an open call...for the provision of financial resources either in form of donation or in exchange for the future product or some form of reward to support initiatives for specific purposes*” (Belleflamme, Lambert and Schwienbacher, 2014, p. 588). Crowdfunding also lowers the transaction costs associated with collecting small sums from dispersed sets of informal investors (Polzin, 2018) and offers many additional benefits to entrepreneurs in areas such as strategy, marketing and operations (De Luca *et al.*, 2019). Our study investigates the behaviors of investors making pivotal contributions towards online crowdfunding campaigns; namely the specific individual ‘completion contributions’ which enable entrepreneurs to meet or exceed their funding targets. Completion contributions can be thought of as the single most important contributions received in crowdfunding, since their presence (or absence) separates successful from unsuccessful campaigns by definition. Despite their importance, completion contributions have received very limited attention in the research literature. We investigate the phenomenon by addressing the following research question: *how does proximity to the deadline affect the size of completion contributions in different forms of crowdfunding?*

To our knowledge, only two previous studies by Wash (2013) and Argo *et al.* (2020) have formally acknowledged the existence of completion contributions, noting that they tend to be several times larger in magnitude than others. However, both of these studies limit their analysis exclusively to the context of donation-based crowdfunding and are also somewhat speculative in terms of explanations for the behavior. Our study contributes to this line of research by investigating the role played by altruism and the extent to which completion contributions tend to be larger among crowdfunding models that place a greater emphasis on philanthropy. More specifically, we focus on a theory of altruism known as impact

philanthropy which suggests that individuals tend to be motivated to behave altruistically in order to personally make a difference to recipients (Duncan, 2004). Impact philanthropists would therefore generally prefer to help a smaller number of beneficiaries to a significant extent rather than larger numbers to a smaller extent.

Our empirical analysis makes use of a unique multi-platform dataset consisting of longitudinal (daily) observations for crowdfunding campaigns launched and completed on the Kickstarter, Indiegogo, Donors Choose and Crowdcube platforms between January 2014 and May 2015 inclusive. The data we use as part of our study are unique in that they cover a range of fundraising models, the size and scope of which is largely unparalleled within the crowdfunding literature. Adopting this approach allows us to investigate distinctions between the ‘All-or-Nothing’ (AoN) and ‘Keep-it-All’ (KiA) models of reward-based crowdfunding, where there are contrasting consequences associated with failure to reach the nominated monetary target within a specified timespan. Our dataset further allows for a comparison of our findings from the rewards-based model with campaigns hosted on both donations and equity-based platforms, which we believe emphasize altruistic motivations to a greater and lesser extent respectively. Finally, we undertake a robustness check to determine whether the patterns of funding we observe are consistent with ‘self-funding’, whereby the entrepreneur contribute the amount required to achieve the target themselves in order to retain the other contributions which may otherwise be returned to the funders if the campaign fails. Taken together, the unique aspects of our research address the limitations of many other crowdfunding studies, which typically rely on (small) convenience samples (McKenny *et al.*, 2017) and/or are obtained from a single online platform.

Our study makes several other unique and important contributions to the crowdfunding literature. First, we make an important contribution to understanding the factors that explain how and why campaigns achieve their funding targets, thereby responding to calls for research

into the funder-level determinants of campaign outcomes across different crowdfunding platforms (Chan *et al.*, 2018). Additionally, our work extends and develops the contribution made by Kuppuswamy and Bayus (2017) in terms of better understanding the behaviors of contributors that make pivotal contributions to crowdfunding campaigns. In particular, our study responds to a call by those authors for research into whether the monetary value of contributions (as opposed to their volume or timing) varies in accordance with the extent to which they ‘matter’ in determining campaign outcomes.

2. Theory and Literature

Completion contributions are vitally important to crowdfunding campaigns, given the pivotal role they play in determining success or failure. While these contributions might follow different patterns to others, although the extent to which they differ is unknown and represents an underexplored area in the literature. To our knowledge, only two previous studies have formally investigated the phenomenon of completion contributions, with both focusing exclusively on the donations-based model. The first such study by Wash (2013) shows that completion contributions tend to be more than twice as large as others in the context of donation-based crowdfunding. The author speculates on three possible explanations for the phenomenon: either individuals who would naturally make larger monetary contributions are more willing to contribute if they can complete a campaign; large donors delay their contributions until they are sure the campaign will be fully funded; and/or individuals that have already chosen to fund are willing to increase the size of their contribution in order for a campaign to reach its target. The author is unable to determine which, if any, of these explanations hold using their data, but suspects the behavior results from a perception on the

part of contributors that the amount required to meet the target is small enough to be achieved at an individual rather than collective level.

A more recent study by Argo *et al.* (2020) reports similar evidence, also in the context of donation-based crowdfunding. The authors argue that the upward bias they observe among completion contributions may be driven either by a desire either to resolve uncertainty regarding the campaign outcome, or to personally make a difference to the recipient. The empirical results from their study suggest that the latter explanation is more likely than the former. However, the authors find that mention of crises or difficult circumstances in campaign descriptions does not typically associate with variations in contribution size or speed, somewhat calling into question whether any desire to ‘make a difference’ is entirely based around the need of the recipient.

We contribute towards resolving these ambiguities in the literature by investigating the observed behavior of funders making completion contributions (i.e ‘completion funders’) through a different theoretical lens. The literature on crowdfunding suggests that funders are generally motivated by a combination of intrinsic factors such as altruism; social factors such as a desire for reputational enhancement; and/or extrinsic factors such as material rewards (Gerber and Hui, 2013; Hu *et al.*, 2015; Cox *et al.* 2018). However, of these three possible motivations, completion contributions seem less likely to be driven by extrinsic factors or a desire for reputational enhancement. We make this contention on the basis that no crowdfunding platforms (to our knowledge) publicly acknowledge completion funders, nor do they receive any additional material benefit over and above other contributions of similar magnitudes. Additionally, contributions made later in the funding cycle are seemingly less likely to originate from within the immediate social circle of the entrepreneur, given that friends and family have been found to be disproportionately likely to contribute during the early stages of a campaign (Agrawal *et al.*, 2015; Jian and Shin, 2015). As such, it does not seem likely

that completion contributions can be adequately explained using theories of social capital in the same way as initial contributions (Colombo *et al.*, 2015).

We focus instead on an alternative and relatively understudied economic model of altruistic behavior known as impact philanthropy, which was first proposed by Duncan (2004). This model assumes that individuals behave philanthropically due to a desire to personally make a difference to the recipient, which involves a subjective assessment as to whether the behavior will be impactful. Impact philanthropists will tend to experience so-called ‘compassion fade’ (Butts *et al.*, 2019), whereby helping a smaller number of recipients to a greater extent is preferred to helping a larger number to a lesser extent. Thus, the opportunity to feed a single hungry child with 1,000 grains of rice would be considered preferable to providing a single grain of rice to 1,000 hungry children (Duncan, 2009, p.166). Funders motivated by impact philanthropy also want their donation to have a noticeable effect (Bekkers and Wiepking, 2007) and will therefore target particular recipients in order to increase their perceived impact on the individual or the cause (Sargeant and Woodliffe, 2007).

Although impact philanthropy has been relatively understudied in empirical settings compared with alternative theories of philanthropy, a small number of studies have attempted to research the phenomenon in the context of giving to charitable organizations. For example, Amos *et al.* (2015) also finds that impact philanthropy represents the most substantial motivation among contributors to an animal sanctuary, whereas egoistic motives were found to be the least substantial. Along similar lines, contributors to charities have been found to exhibit a preference to support relatively smaller organizations with lower revenues, which implies a desire for contributions to have relatively higher impact (Borgloh *et al.*, 2013). A study by Bradley *et al.* (2019) further demonstrates that a sizeable proportion of contributions to charitable fundraising initiatives come from ‘impact donors’ who choose to support campaigns which are nearer to achieving their targets than those which are further away.

Some authors have also investigated the theory of impact philanthropy in the specific context of online crowdfunding, with mixed results. For example, Steigenberger (2017) finds that the motivation of contributors to rewards-based campaigns is partly consistent with the theory of impact philanthropy, although the desire to positively impact a particular entrepreneur is shown to be a more important driver of behavior than the desire to affect a greater goal. By contrast, Zvilichovsky *et al.* (2018) show that individual funders tend to increase their participation in rewards-based crowdfunding where their contribution is pivotal, although such contributions tend to be driven by a desire to ‘make the product happen’ rather than helping a particular entrepreneur.

3. Hypothesis Development

Based on the theory and literature outlined in the previous section, we contend that impact philanthropists are likely to perceive the act of making a single larger contribution that allows a crowdfunding campaign to reach its target to be more impactful than making a larger number of smaller contributions that do not allow campaigns to reach their targets. In addition, many online crowdfunding platforms employ an AoN approach to fundraising in order to increase the extent to which campaign deadlines are meaningful. According to this approach, campaign founders are required to raise an amount that meets or exceeds a nominated funding target prior to the expiration of a set deadline, otherwise their project is cancelled and all contributions are returned. As a result of overcoming psychological barriers such as procrastination and diffusion of responsibility, the AoN approach has been shown to result in a significant upturn in contributions as crowdfunding campaigns approach their deadlines (Kuppuswamy and Bayus, 2018).

Prior research into late contributions to online crowdfunding campaigns have arrived at mixed results regarding the extent to which they are consistent with philanthropic motives. On the one hand, several studies have suggested that such contributions are disproportionately likely to be driven by philanthropy. For example, the findings of Deb *et al.* (2019) suggest that campaigns that reach their target closer to their deadlines tend to attract a much higher proportion of support from donors rather than buyers, compared with those that reach the target earlier in during the campaign lifecycle. Li and Wang (2019) further demonstrate that the increase in funding activity observed towards the end of the campaign period tends to be more pronounced among campaigns listed in ‘public good’ rather than ‘private good’ categories, implying that late contributions tend to be affected by the degree of project prosociality. The findings of both of these studies are consistent with those of Kuppuswamy and Bayus (2017), who show that ‘donations’ to reward-based crowdfunding campaigns cease almost entirely once the target has been achieved, whereas contributions from ‘buyers’ continue.

Specifically in relation to impact philanthropy, goal-gradient theory suggests that late-stage contributions to fundraising campaigns are likely be perceived as having greater value than equivalent early-stage events, as the ratio of benefit to (remaining) cost increases with proximity to the goal (Cryder *et al.*, 2013). Thus, the perceived impact of contributions to crowdfunding campaigns is likely to vary in relation to the point in the funding cycle at which they are made (Belleflamme *et al.*, 2019). This perspective has recently found support from Van Teunenbroek and Bekkers (2020), who argue that funders making pivotal contributions in crowdfunding tend to find campaigns less attractive if more donors have already contributed. As a result, campaigns that raise large amounts of support during the early stages will not be particularly attractive to impact philanthropists compared with campaigns that enter their later stages having raised relatively little.

Following this line of reasoning, we argue that completion contributions made later in the funding cycle will be perceived as having relatively higher impact, as campaigns that approach their deadlines in an unfunded state reflect a ‘dire situation’ and prompt a sense of urgency among potential funders (Chan *et al.*, 2020). Conversely, contributions made at an earlier stage will be perceived as having comparatively lower impact, as there is more time remaining for the required amount to be contributed by other funders. As such, impact philanthropists will prefer to help support campaigns when they are closer to their funding deadlines. We therefore hypothesize that, while funders may be willing to pay a premium in order to make a completion contribution towards *any* crowdfunding campaign at *any* point in the fundraising cycle, the relative size of the premium will be higher in situations where the impact of the contribution is likely to be greater. We therefore expect to observe a stronger ‘completion bias’ (i.e., a higher premium paid above the average of previous contributions) in cases where such contributions are made closer to the deadline. This contention leads us to outline the following research hypothesis:

H1: The relative magnitude of completion contributions will increase with proximity to the funding deadline.

Additionally, we test whether the relationship between completion contributions and proximity to the funding deadline varies compared with the AoN model in cases where the alternative KiA fundraising model is adopted. KiA campaigns allow the founder to retain any and all amounts raised, regardless of whether the stated monetary target is achieved before the expiration of the funding deadline. For AoN campaigns, the perceived impact of a completion contribution made nearer to the deadline is likely to be greater than an equivalent contribution made towards a KiA campaign. In the former case, the absence of a completion contribution would result in the entrepreneur raising nothing, while in the latter case, the entrepreneur would still be able to retain all of the other funds raised up to that point. This key distinction leads us

to outline our second research hypothesis, which we test in the context of KiA and AoN campaigns hosted on the Indiegogo platform.

H2: The extent to which completion contributions respond to the proximity of campaign deadlines will tend to be less pronounced among KiA campaigns compared with AoN campaigns.

We further extend our analysis of these behaviors and the extent to which they are consistent with impact philanthropy by investigating whether the relationship between completion contributions and proximity to the funding deadline is more pronounced among crowdfunding platforms that place a greater emphasis on philanthropy. It is appropriate to investigate this issue given that the motivations of investors will typically differ according to the fundraising model employed (Pierrakis; 2019). At one extreme of the spectrum are donation-based platforms. This funding model adopts a patronage-type approach (Bernardino and Santos, 2016), whereby investors are essentially philanthropists who expect no direct return for their contribution (Wuillaume *et al.*, 2018). Funder behavior in donations-based campaigns has been shown to be consistent with a number of theories of philanthropic motivation; namely intrinsic motivations (Jian and Shin, 2015); psychological gains and intrinsic rewards (Allison *et al.*, 2015); social and non-financial motivations (Bagheri *et al.*, 2019) and personal satisfaction coupled with a desire to support the greater good (Gleasure and Feller, 2016).

At the other end of the spectrum, equity crowdfunding involves entrepreneurs selling a specified amount of equity or bond-like shares in a company (Ahlers *et al.*, 2015, p. 958). Investors in campaigns hosted on equity-based crowdfunding platforms have been shown to be motivated by a desire to minimize risk and maximize financial return (Nitani *et al.*, 2019). As such, nonfinancial motives have been argued to have no association with funding decisions made in relation to equity crowdfunding (Cholakova and Clarysse, 2015). Thus, a broad

distinction can be made between donation-based crowdfunding which is driven by philanthropic motives and equity-based crowdfunding which is driven by profit-seeking (Mamonov and Malaga, 2019).

Campaigns hosted on reward-based platforms offer investors material rewards in line with the value of their contributions. A number of authors have arrived at somewhat mixed conclusions regarding the motivations of contributors to reward-based crowdfunding campaigns. Several studies have concluded that the behavior of rewards-based funders is consistent with a mix of predominantly social and other-oriented motivations (Giudici *et al.*, 2018; Mastrangelo *et al.*, 2019; Martínez-Climent *et al.*, 2020). By contrast, others find evidence that self-oriented motivations are more likely to dominate (Zhang and Chen, 2019; Prędkiewicz and Kalinowska-Beszczynska, 2020). As such, it is likely that contributions to rewards-based crowdfunding campaigns are motivated by a combination of intrinsic and extrinsic factors.

Overall, the literature indicates that donations-based platforms tend to be more reliant on intrinsic motivations, whereas equity-based crowdfunding platforms tend to be more reliant on extrinsic motivations (Efrat *et al.*, 2020). By contrast, rewards-based crowdfunding platforms are likely to sit somewhere between these two extremes (Steigenberger, 2017). Based on these arguments, we summarize the extent to which philanthropic motives are likely to be prevalent among contributors to different types of crowdfunding campaigns in Figure 1, which itself is based on the typology of funding models outlined by Hossain and Oparaocha (2017).

[Figure 1 about here]

Our first hypothesis contended that completion contributions will tend to vary in magnitude with proximity to the funding deadline. We also propose that the relationship predicted by hypothesis H1 is likely to be stronger in more philanthropic settings (i.e., donation-based) and

weaker in less philanthropic settings (i.e., equity-based) relative to reward-based platforms. This point leads to the development of our third research hypothesis, namely:

H3: The extent to which completion contributions respond to the proximity of campaign deadlines will tend to be more pronounced among crowdfunding models associated with stronger philanthropic motivations (i.e., Donation > Reward > Equity).

4. Data and Method

4.1. Data

Our dataset consists of campaign-level observations from a number of online crowdfunding platforms. Data relating to the rewards-based platforms Kickstarter and Indiegogo, as well as the equity-based platform Crowdcube, are derived from the daily aggregation of funding activity recorded at the campaign-level by the Crowdfunding Center¹. Data from the donation-based platform Donors Choose are extracted using their own API². In each and every case, our dataset contains observations on all campaigns hosted on each platform that started and completed during the period between January 2014 and May 2015 (inclusive). We eliminate from our dataset any campaigns which fail to achieve their funding targets, since these campaigns have no completion contribution by definition. In addition, given our focus on the period immediately leading up to campaign completion, we do not include data on funding received after the target has been met, even though we acknowledge a number of successful campaigns will subsequently raise amounts in excess of their funding targets.

For each of these campaigns appearing in our dataset, we then calculate the average contribution from other funders received up to the day of completion, and divide the average

¹ <https://www.thecrowdfundingcenter.com/>

² Application Programming Interface – a type of software interface for connecting and communicating between computer applications.

contribution on the completion day by this amount to determine a ‘completion contribution ratio’ (CCR). This measure reflects the relative magnitude of the contributions received on the completion day compared with the average received on all previous days of the campaign. The CCR therefore serves as a consistent means by which to compare the phenomenon across the wide variety of campaigns and platforms included in our study.

In order to address Hypothesis H2, we compare our results from the Kickstarter platform with 9,007 successful KiA and 947 successful AoN campaigns hosted on the rewards-based platform Indiegogo. While we expect that results from the AoN campaigns hosted on Indiegogo will be similar to the results from Kickstarter, we further expect that the results from KiA campaigns will vary significantly, given the vastly differing consequences of failure to meet the fundraising target within the allotted timeframe. As a result of the reduced impact of completion contributions made to KiA campaigns hosted on Indiegogo, we expect that the any relationship between the CCR and proximity to the funding deadline will be weaker than for AoN campaigns hosted on either platform.

With respect to Hypothesis H3, we compare our results across crowdfunding models by undertaking an equivalent analysis using data from equity and donations-based crowdfunding platforms. Our sample relating to the equity-based model contains observations on the full 128 successful equity crowdfunding campaigns hosted on the Crowdcube platform during the sample period. Our analysis of the donations-based model incorporates data from 9,562 successful campaigns hosted on the Donors Choose platform. The API provided by this platform allows us to capture a complete, itemized list of each and every individual contribution towards campaigns during the sample period. Thus, we are able to calculate the exact magnitude of the completion contribution for all Donors Choose campaigns with absolute certainty, regardless of the number of other contributions made on the completion day.

4.2. Measures

Our primary variable of interest is the ‘Completion Contribution Ratio’ (CCR), which is the ratio of average contribution received by a campaign on the completion day to average contribution on all other days. To our knowledge, the use of such a measure is unique within the crowdfunding literature, as other studies of completion contributions by Wash (2013) and Argo *et al.* (2020), both identify the magnitude of completion contributions relative to others using a dummy variable. While it is not possible to precisely identify specific completion contributions among the aggregated daily data for these additional campaigns, we calculate a CCR on the basis of the average contribution on the completion day relative to the average contribution from all prior days. Although this issue could be seen as a limitation affecting our data, we explore the effect that it is likely to have on our results as part of the robustness checks conducted in Section 5.5. Our research hypotheses are addressed through analyzing the relationship between the CCR and the ‘Days Remaining’, which represents the number of days remaining before the funding deadline at the point at which the target is met. When using daily data, accounting for the number of days remaining before the expiration of the deadline is consistent with the approach used in a range of other studies including Chan *et al.* (2020); Kuppuswamy and Bayus (2018) and Nguyen *et al.* (2019).

The other key control variables included in our model are ‘Prior Funders’, ‘Campaign Target’ and ‘Campaign Duration’. Respectively, Prior Funders represents the number of funders aggregated across all days prior to the completion day. The use of this variable is consistent with a number of other studies in crowdfunding, including Argo *et al.* (2020); Burtch *et al.* (2013); and Mollick (2014). We include this variable to control for the possibility that the impact of a contribution may be affected by the number of other parties contributing, as per the findings of Van Teunenbroek and Bekkers (2020). The prior funding decisions of other contributors may also affect subsequent contributions in other ways, for example as a result of

herding behaviors (Kuppuswamy and Bayus, 2017, p. 78). Consistent with several other studies, including Argo *et al.* (2020); Barbi and Bigelli (2017); and Kuppuswamy and Bayus (2017), we also control for the absolute value of the Campaign Target, which is the target amount (in USD) set by the campaign. Finally, we control for the absolute Campaign Duration, which is the absolute duration (in days) of each campaign. The use of this variable as a control is consistent with the approach taken in studies such as Barbi and Bigelli (2017); Chan *et al.* (2020); and Mollick (2014).

Descriptive statistics for our sample of campaigns from each crowdfunding platform are presented in Table 1. All monetary values are reported in US Dollars, with values originally recorded in other currencies converted to USD using the daily exchange rate on the day that the campaign was launched. Within the sample from Kickstarter, we compute an average CCR of 3.01, meaning that completion contributions tend to be around 3 times higher than the average of other contributions. However, the lower median CCR of 1.19 indicates the presence of a small number of relatively large completion contributions in the dataset. The overall profile of campaigns hosted on Indiegogo is similar to the AoN campaigns hosted on Kickstarter. However, KiA Indiegogo campaigns tend to have slightly lower targets and numbers of funders compared with AoN Kickstarter campaigns, although the targets are met on average with slightly more days remaining before the deadline.

The data from Donors Choose are more obviously different compared to the rewards-based platforms, where campaigns are observed to have much lower targets and numbers of funders on average, but tend to achieve completion with more days remaining before the deadline. The mean CCR of 4.82 suggests a slightly stronger upward bias among completion contributions compared with campaigns hosted on Kickstarter and Indiegogo, although the much lower median CCR indicates that the upward bias among completion contributions tends to be concentrated among an even smaller number of campaigns. By comparison, the equity-based

campaigns from Crowdcube tend to be larger in size than any others included in our study, with much higher targets and numbers of funders typically observed compared with other crowdfunding models. Perhaps somewhat surprisingly, Crowdcube campaigns also have a higher average CCR than those hosted on other platforms.

[Table 1 about here]

4.3. Analysis

Our research investigates the interrelationship between the CCR and proximity to the fundraising deadline using the regression model outlined below in Equation (1). Initially, we perform the regression specified in Equation (1) separately using data from each crowdfunding platform. We take natural logs of all non-binary variables for the purposes of estimating our model, which has the effect of reducing skewness in our original data and allowing consistent interpretation of coefficient estimates in terms of percentage changes. In Equation (1), CCR_i represents the Completion Contribution Ratio for the i th campaign. The natural log of this measure is used as our dependent variable. $Days\ Remaining_i$, $Prior\ Funders_i$, $Target_i$ and $Campaign\ Duration_i$ are the key control variables outlined above, each measured with respect to the i th campaign. In this basic regression, the sign and statistical significance of the β_1 parameter is used to test the validity of Hypothesis H1.

$$\begin{aligned} Ln(CCR_i) = & \alpha + \beta_1 Ln(Days\ Remaining_i) + \beta_2 Ln(Prior\ Funders_i) \\ & + \beta_3 Ln(Target_i) + \beta_4 Ln(Campaign\ Duration_i) + \beta_5(X_i) + \mu_i \end{aligned} \quad (1)$$

We subsequently estimate the regression specifications outlined below in Equation (2), which involves combining data from multiple platforms in the same regression and adding both a Platform Dummy variable for observations from the j th platform, as well as an interaction term between this platform dummy and the natural log of the Days Remaining variable. In this

extended regression, the sign and statistical significance of the β_7 parameter is used to test the validity of both hypotheses H2 and H3.

$$\begin{aligned}
 \ln(CCR_i) = & \alpha + \beta_1 \ln(Days\ Remaining_i) + \beta_2 \ln(Prior\ Funders_i) \\
 & + \beta_3 \ln(Target_i) + \beta_4 \ln(Campaign\ Duration_i) \\
 & + \beta_5(X_i) + \beta_6 Platform\ Dummy_j \\
 & + \beta_7 \left(Platform\ Dummy_j \times \ln(Days\ Remaining_i) \right) + \mu_i
 \end{aligned} \tag{2}$$

In both Equations (1) and (2), X_i represents a vector of other controls for the i th campaign. These controls differ somewhat according to the information available made available on each platform. In all cases, we include time dummies reflecting the month and day of the week in which the campaign completed, which is an approach consistent with Kuppuswamy and Bayus (2018); and Hornuf and Schwenbacher (2018); and Patel *et al.* (2021). In the case of rewards-based campaigns hosted on Kickstarter and Indiegogo, we also control for geographic location of the entrepreneur through the inclusion of a dummy variable indicating non-US campaigns, as well as category controls organizing campaigns into community, commercial and cultural groupings³. The inclusion of controls for (non) US-based campaigns and funding categories is consistent with the approach used by Barbi and Bigelli (2017). A majority of reward-based campaigns are listed in ‘Cultural’ categories such as Music and Film, which is consistent with the distribution of Kickstarter campaigns outlined by Mollick (2014). In all cases, the α parameter represents a constant term, while μ_i represents a conventional error-term.

Table 2 presents correlation coefficients for key variables appearing in Equation (1), with panels A-E reflecting pairwise correlations for each crowdfunding model. The correlation

³ Specifically, the ‘Cultural’ grouping includes campaigns listed under ‘Art’, ‘Comics’, ‘Crafts’, ‘Dance’, ‘Experimental’, ‘Fantasy’, ‘Film’, ‘Games’, ‘Music’, ‘Photography’, ‘Publishing’, ‘Radio and Podcast’, ‘Theatre’, ‘Transmedia’, ‘Video/Web’, ‘Video Games’ or ‘Writing’ categories. The ‘Commercial’ grouping includes campaigns listed under ‘Business’, ‘Design’, ‘Fashion’, ‘Food’, ‘Science’, ‘Small Business’ or ‘Technology’ categories. The ‘Community’ grouping includes campaigns listed under ‘Animals’, ‘Charity’, ‘Community’, ‘Education’, ‘Environment’, ‘Event’, ‘Family’, ‘Health’, ‘Legal’, ‘Other’, ‘Personal’, ‘Politics’, ‘Religion’ or ‘Sports’ categories.

coefficients in Table 2 are generally low and a majority are below 0.10 in absolute terms. The exceptions are relatively higher correlations between the Campaign Target and the number of Prior Funders in the case of the data from both rewards and equity-based campaigns, which take values in the range of approximately +0.60 to +0.80 dependent on the platform. These correlation coefficients indicate that campaigns with higher targets tend to attract correspondingly larger numbers of funders. Relatively high correlation also tends to be observed between Days Remaining and Campaign Duration, with correlation coefficients ranging between around +0.25 to +0.40 dependent on the platform. These correlation coefficients indicate that campaigns with longer durations tend to complete with more days remaining in the funding period compared with those campaigns with shorter durations. However, across our regressions, the largest VIF scores for any variable range from 3.04 – 3.38 depending on the specification, with an overwhelming majority of scores below a threshold of 3. Against the commonly regarded upper-limit of 10, these VIF scores suggest no significant problems of multicollinearity across our regression analysis.

[Table 2 about here]

5. Results

5.1 Completion contributions and proximity to the funding deadline (H1)

Table 3 contains regression results covering each of the platforms included in our study. In each specification, the Ln Days Remaining coefficient estimates the relationship between the relative magnitude of completion contributions and proximity to the funding deadline. A negative coefficient estimate suggests that completion contributions tend to become larger when made nearer to the funding deadline, when the number of days before the deadline is lower. The results presented in Specifications I-IV all show negative and statistically

significant coefficient estimates for the Days Remaining variable. This finding indicates that the magnitude of the completion contribution tends to increase significantly as crowdfunding campaigns approach their deadlines for all of the reward and donations-based platforms included in our study⁴.

[Table 3 about here]

More specifically, our coefficient estimates indicates that a 10% reduction in the amount of time remaining before the deadline associates with around a 1.2% and 1.4% increase in the magnitude of the CCR for AoN campaigns hosted on Kickstarter and Indiegogo respectively. By comparison, the same proportional reduction in the time remaining before the deadline is found to associate with an increase of around 0.3% and 4.9% increase in the magnitude of the CCR for Indiegogo KiA campaigns and Donors Choose respectively. These results imply the presence of the funding deadline seems to associate with lower variation in completion contributions for KiA rewards-based campaigns compared with the AoN model and associate with greater variation for donations-based campaigns.

By comparison, the results presented in Specification V for campaigns hosted on Crowdcube do not suggest that completion contributions tend to significantly vary with proximity to the funding deadline on this particular platform. It is worth noting that equity crowdfunding campaigns typically end fundraising once the target has been achieved, even if there is still time remaining before the deadline. As a consequence of this feature, it may be that the absolute level of upward bias we observe among completion contributions in Table 1 is a

⁴ It should be noted that we also conduct equivalent analysis excluding outlying observations where the CCR value is below the 1st or above the 99th percentile. Although we do not report these results to conserve space, in all cases our parameter estimates in these regressions remain highly consistent with the equivalent results presented in Table 3, leading us to conclude that our primary findings are not significantly influenced by the presence of significant outliers.

consequence of higher quality campaigns taking less time to achieve their funding targets (and vice versa). It may also be that funders that invest larger sums strategically time their contributions to allow sufficient time to undertake due diligence, while not investing so late as to miss out on the investment opportunity (as per Nguyen *et al.*, 2019). We further explore whether the insignificant coefficient estimate we observe in the case of equity-based crowdfunding might be consistent with expected variations in philanthropic motivations across platforms in Section 5.3.

In summary, a clear majority of the specifications demonstrate a negative and statistically significant coefficient estimate for the Ln Days Remaining variable. We therefore accept Hypothesis H1 on the basis that completion contributions are found to increase in magnitude with proximity to the funding deadline, where the perceived impact of the contribution is likely to be greater. Overall, the results presented in this section appear entirely consistent with the theory of impact philanthropy.

5.2 KiA and AoN Campaigns (H2)

In this section, we directly compare our estimations from Kickstarter with samples of rewards-based campaigns hosted on the Indiegogo platform. Undertaking this analysis allows us to explore the effect of a ‘softer’ deadline for KiA campaigns, where we expect completion contributions made later in the funding cycle to have reduced impact compared with AoN campaigns. Specifications I-II in Table 4 respectively involve a combination of data from Kickstarter with those of Indiegogo KiA and AoN campaigns. In each case, we include a Platform Dummy variable taking a value of 1 for all observations from the non-Kickstarter platform, as well as a term capturing the interaction between this Platform Dummy and the

natural log of the Days Remaining variable. The F test undertaken for the exclusion of the Interaction term allows us to test hypothesis H2.

[Table 4 about here]

The results presented in Specification I relating to data from Kickstarter AoN and Indiegogo KiA campaigns suggest that the interaction between the Dummy and Days Remaining variable is statistically significant, while the F-test results for exclusion strongly reject the hypothesis that the parameter is equal to zero. These results imply that statistically significant differences exist in the relationships between the CCR and Days Remaining variables across the two funding models. By contrast in Specification II, the equivalent estimates and exclusion tests suggest no significant difference in the relationship between these variables for AoN campaigns hosted on the Kickstarter and Indiegogo platforms. Overall, these findings support our contention that deadlines for AoN campaigns are more meaningful than those of KiA campaigns, hence later contributions are likely to be perceived as having more impact in the case of the former. These findings are further consistent with expectations relating to the theory of impact philanthropy. As the Interaction term cannot be excluded from Specification I and can be excluded from Specification II, we therefore accept Hypothesis H2.

5.3 Donation and Equity-Based Platforms (H3)

In this section, we further test whether the behaviors we observe in Section 4.1 are consistent with expectations relating to theories of philanthropic motivations. Specifications III and IV in Table 4 respectively contain results from regression analysis where our data from rewards-based campaigns hosted on Kickstarter are combined with those from the donation-based model of Donors Choose and the equity-based model of Crowdcube. These results provide a comparison with platforms that respectively emphasize philanthropy to greater and lesser

extents compared with the rewards-based model. We determine whether there are statistically significant differences in the relationship between the CCR and Days Remaining variables using the Platform Dummy and Interaction terms, as per the approach adopted in Section 4.2. In Specification III relating to data from the Kickstarter and Donors Choose platforms, we find the Interaction term to be statistically significant and the F test for exclusion to be strongly rejected. This result suggests that there is a significant difference in the relationship between the CCR and Days Remaining across both funding models. Thus, it appears that completion contributions respond more strongly to the impending presence of the deadline (and therefore the need of the entrepreneur) in the case of pure-donations crowdfunding compared with the reward-based model.

Specification IV relates to a combination of data from Kickstarter and Crowdcube platforms. In common with Specification III, we again find evidence of a significant difference in the relationship between the CCR and Days Remaining across these funding models. Bearing in mind that the results of Specification V in Table 3 suggest no significant relationship between these two variables in the case of equity crowdfunding, we conclude that completion contributions these kinds of campaigns platform are not likely to be driven by philanthropic motives and do not appear to respond to the perceived need of the entrepreneur. The statistically significant results in Table 4 imply that our ‘ranking’ of coefficient estimates across the platforms included in our study is consistent with the expectations previously outlined in Figure 1. Overall, the pattern we observe suggests that the approach of a fundraising deadline associates with a greater variation in completion contributions for campaigns hosted on platforms that place a greater emphasis on philanthropy. As the Interaction term is found to be statistically significant and cannot be excluded from Specifications III and IV, we therefore accept Hypothesis H3.

5.4 Robustness Check - Entrepreneur Self-Funding

It is possible that any variations in completion contributions we observe over the campaign life-cycle may be driven by strategic self-funding on the part of campaign founders, whereby they themselves contribute the monetary amount required to reach the target. Doing so allows the founder of an AoN campaign to retain the full amount raised even if the target is not met before the fundraising deadline. We argue that entrepreneurs making self-funded completion contributions (either themselves or via close family/friends) are likely to wait until near to the campaign deadline before doing so, in hope that the funding target will otherwise be achieved as a result of authentic contributions from third parties. A study by Crosetto and Regner (2018) supports this contention, demonstrating that self-funded completion contributions are disproportionately likely to occur during the final 10% of the fundraising period (Fig 4, p. 1471). For a typical 30-day campaign this would mean that self-funded completion contributions would be most likely to occur within the window up to and including 3 days before the campaign deadline.

With these findings in mind, we adopt an approach similar to that of Kappuswamy and Bayus (2017) by incrementally excluding from our sample any campaigns that achieve their targets between one three days prior to the campaign deadline. The results from this secondary analysis are presented in Table 5. In this set of results, we re-estimate the regressions from Table 3, whereby Panels A-E contain results corresponding to one of the platforms included in our study. In each case, we incrementally exclude campaigns that achieve their funding targets up to thresholds of between 1 to 3 days of their deadlines (Specifications I-III respectively). Although there are some slight variations in the magnitude of coefficients between specifications, their signs and statistical significance are consistent with their full sample equivalents presented in Table 3. Specifically, we find consistent evidence of a negative and statistically significant relationship between the CCR and proximity to the fundraising

deadline. We therefore conclude that the interrelationship we observe between these two variables is unlikely to be significantly influenced by strategic self-funding behaviors.

[Table 5 about here]

5.5 Robustness Check – Restricted Numbers of Completion Day Funders

While it is not possible to precisely identify specific completion contributions among the aggregated daily data, our main analysis involves the calculation of a CCR on the basis of the average contribution on the completion day relative to the average contribution from all prior days. It is expected that the value of the CCR will in cases where there are more funders recorded on the completion day, as any smaller ‘non-completion’ contributions also made on the same day will dilute the effect of the completion contribution in the derivation of the average. However, the presence of a larger completion contribution should still result in a higher average contribution compared with all other days, but by a smaller margin in cases where there are larger numbers of additional investors on the completion day.

In order to investigate whether this limitation has a significant effect on our results, we conduct a robustness check whereby we analyze reduced sub-samples of data from the Kickstarter platform. These reduced sub-samples are restricted to include campaigns with a maximum number of individual funders recorded on the completion day. The results of this robustness check can be found in Table 6. Specifications I-IV report results when we incrementally vary the size of the sample to exclude campaigns where the number of funders recorded on the completion day exceeds a particular threshold. In Specification I, we are able to precisely identify the specific completion contribution by virtue of there being only a single funder recorded on the completion day. We incrementally expand the maximum number of funders on completion day in our other sub-samples ranging from two or fewer (Specification II) to eight or fewer funders (Specification IV).

[Table 6 about here]

The results from each of these specifications are consistent with those presented in Table 3, supporting the contention that proximity to the fundraising deadline tends to associate with a statistically significant increase in the CCR. Further, the monotonic decrease in the absolute value of the coefficient estimates for the Days Remaining variable observed between Specifications I-IV is consistent with the presence of a single, larger completion contribution among the others received on the completion day. Put differently, if all funders on that day contributed the same (larger) amounts compared with previous days, the magnitude of these coefficient estimates would be very similar or identical across all specifications. We therefore conclude that the findings presented in Sections 5.1 - 5.3 are unlikely to have been significantly affected by the aggregation of funding activity to a daily level.

6. Discussion

Overall, our results support the contention that certain investors in online crowdfunding are willing to pay a premium in cases where their contribution allows a campaign to reach its funding target, which has a number of important implications for crowdfunding theory and literature. First, we uniquely demonstrate that ‘completion bias’ is not a static phenomenon and responds dynamically to the proximity of the fundraising deadline. By implication, our results therefore suggest that any altruistic benefits derived from making completion contributions are enhanced if the funder is more likely to have ‘saved’ a campaign otherwise at risk of imminent failure. Thus, we contend that the observed behaviors of completion funders are consistent with the theory of impact philanthropy. Our findings therefore complement those of Deb *et al.* (2019); Li and Wang (2019); and Kuppuswamy and Bayus (2017) in that the behavior of contributions made near to the expiration of the fundraising

deadline is shown to be consistent with theories of philanthropy. We also find evidence of funder behavior that is consistent with the findings of Belleflamme *et al.* (2019); and Van Teunenbroek and Bekkers (2020), in that contributions made nearer to the expiration of the deadline may be perceived as more impactful on the campaign outcome compared with those made earlier in the funding cycle.

Second, our results allow us to comment on the validity of various explanations for completion bias proposed by other authors. More specifically, Wash (2013) contends that completion funders might typically elect to delay their contributions until they are sure the campaign will reach its funding target. This is a similar argument to that made by Argo *et al.* (2020), who state that completion bias may be driven by a desire to resolve high levels of uncertainty regarding campaign outcomes. If this argument was true, the magnitude of completion bias and its response to the proximity of the funding deadline would vary in accordance with the risk of campaign failure. However, the success rate of campaigns hosted on the platforms included in our study reported in Table 1 imply that the risk of campaign failure (in effect an inversion of campaign success rates) follows the ordering Rewards > Equity > Donations. Such an ordering is not consistent with our ranking of the strength of relationship between completion bias and the campaign deadline, casting significant doubt over as to whether the pattern we observe is related to the risk of campaign failure. In addition, if the arguments relating to risk were valid, the relationship between CCR and proximity to the deadline should be consistent no matter the number of other funders contributing on the completion day. However, the evidence we find from our robustness check in Section 5.5 demonstrates that this relationship monotonically diminishes with larger numbers of funders. This finding implies that not all contributions made on the completion day are significantly larger than average. This same set of results also casts doubt over whether funders pledging larger sums also tend to wait until the approach of the deadline before making their contributions.

Wash (2013) further speculates that an alternative explanation for completion bias is that funders who naturally make larger contributions are more willing to contribute if they can complete a campaign. However, if this were indeed the case, it does not fully explain why the CCR differs to such an extent across platforms and funding models, nor why it varies with proximity to the deadline. Further, we would expect the absolute monetary amount required for a campaign to reach its target to diminish *ceteris paribus* with the approach of the deadline, given that funds are typically raised incrementally from other contributors over time. If completion funders strategically timed their contributions to complete campaigns later in their funding cycles at the lowest possible cost, the relationship between the CCR and number of days remaining should be positive rather than negative.

Compared with the alternative explanations outlined above, our results seem more consistent with arguments that individuals who have already chosen to contribute are willing to increase the amount they give in order for a campaign to reach its target. Our results show that the amount by which the investor is willing to increase the size of their contribution varies consistently with the level of need and, hence, the extent to which it makes a difference to the recipient. Thus, a relevant implication of our study is that the theory of impact philanthropy offers the most convincing explanation for the behavior of completion funders and should be more widely considered as part of the ‘other’ motivations that underpin informal investments to crowdfunding campaigns.

7. Conclusion

This study investigates a specific subset of informal investors who contribute towards online crowdfunding campaigns. We test whether the monetary contributions of these investors tend to vary in accordance with proximity to the fundraising deadline when the need of the

entrepreneur is arguably greatest. In doing so, we assess whether altruism and the theory of impact philanthropy represents a plausible motivation for completion contributions. Our analysis of a large sample of campaigns drawn from the Kickstarter, Indiegogo, Donors Choose and Crowdcube platforms broadly shows that completion contributions tend to increase in magnitude with proximity to the fundraising deadline. Our findings contribute to knowledge on crowdfunding by demonstrating that the behavior of completion funders is consistent with the theory of impact philanthropy, given the way in which they are observed to respond to both the ‘need’ of the entrepreneur and the degree to which the crowdfunding model emphasizes philanthropy.

Our study has several practical implications for crowdfunding platforms and entrepreneurs. We suggest that campaign founders may wish to pay particular attention to the individual completion funders whose contributions allow their campaigns to achieve their funding targets. Given the relevance of impact philanthropy in explaining the behaviors of these funders, they may also particularly appreciate follow-up communications to thank them personally for their contribution and for the impact they have made on the campaign. By extension, given their behavior is consistent with the desire to ‘make a difference’, completion funders may also be among the most emotionally invested in the campaign and hence have considerable potential to become ‘passionate evangelists, dedicated contributors and loyal return customers’ (Pallister, 2012).

Our findings also have practical relevance for crowdfunding platforms. For example, it may be possible to encourage a greater volume and value of completion contributions by publicly acknowledging completion funders in some way. Such acknowledgement may be achieved by awarding a prominent signal on the profile pages of completion funders, such as a badge, star or medal. As per Harbaugh (1998), increased visibility of completion contributions would potentially appeal to a desire for status or reputational enhancement, which could further

enhance the willingness-to-pay among such investors. A related recommendation is that platforms could generally make more of an effort to highlight campaigns that would especially benefit from completion contributions, especially those close to their deadline and/or relatively close to achieving their targets.

A limitation of our study relates to our use of daily aggregated measures of funding activity for campaigns hosted on the Kickstarter, Indiegogo and Crowdcube platforms. As a consequence, the only completion contributions we can identify with absolute precision on these platforms are those where there is a single funder recorded on the completion day. The robustness check we undertake in Section 5.5 based on subsets of data mostly consist of smaller campaigns, which are also more susceptible to the influence of extreme (outlying) funding behaviors. We partly address these two limitations by demonstrating the robustness of our results to the exclusion of campaigns that are most likely to be affected by self-funding. However, it remains that case that a future study with access to more granular data might be able to precisely identify completion contributions among a larger number of campaigns, which may allow further insights into the phenomenon.

Further, although our robustness check implies that self-funding is unlikely, it does not entirely rule out the possibility that completion contributions come from the entrepreneurs themselves or their close networks. For example, it could be that momentum is particularly important among donation-based campaigns compared with rewards-based crowdfunding, such that the need for self-funding is greater in that context, for example if entrepreneurs want to pose stretch goals. Even if the entrepreneurs themselves are not responsible for completion contributions, we do not have access to any concrete information regarding the precise motivations of completion funders. Instead, their motivations can only be inferred based on observed patterns of behavior, meaning that we do not know definitively whether completion contributions are driven by philanthropy or alternatives such as a desire to ‘make the product happen’.

Qualitative and/or experimental studies into the motivations and behaviors of completion funders may shed a greater light on the way in which they view their relationship to the campaign and founder, as well as with other funders. Future work of this nature would offer insights of both theoretical and practical value in developing our understanding of the motivations of contributors to crowdfunding campaigns.

Overall, our study makes a unique contribution to the literature on crowdfunding and develops our understanding of investment patterns and trends among contributors to collective fundraising initiatives, especially in circumstances where their actions are more likely to have a significant impact upon the recipient. Future research may extend this work by seeking to develop a deeper understanding of these unique and potentially pivotal contributions, as well as the extent to which the theory of impact philanthropy is a prevalent motivation among other types of informal investors.

8. References

- Agrawal, A., Catalini, C., and Goldfarb, A. (2015). Crowdfunding: Geography, social networks, and the timing of investment decisions. *Journal of Economics & Management Strategy*, Vol. 24 No. 2, pp. 253-274.
- Ahlers, G. K., Cumming, D., Günther, C., and Schweizer, D. (2015). Signaling in equity crowdfunding. *Entrepreneurship Theory and Practice*, Vol. 39 No. 4, pp. 955-980.
- Allison, T. H., Davis, B. C., Short, J. C. and Webb, J. W. (2015). Crowdfunding in a prosocial microlending environment: Examining the role of intrinsic versus extrinsic cues. *Entrepreneurship Theory and Practice*, Vol. 39 No. 1, pp. 53-73.
- Amos, C., Holmes, G. R., and Allred, A. (2015). Exploring impact philanthropy, altruistic, hedonic, and egoistic motivations to support animal causes. *Journal of Nonprofit & Public Sector Marketing*, Vol. 27 No. 4, pp. 351-372.
- Argo, N., Klinowski, D., Krishnamurti, T. and Smith, S. (2020). The completion effect in charitable crowdfunding. *Journal of Economic Behavior & Organization*, Vol. 172, pp. 17-32.
- Bagheri, A., Chitsazan, H. and Ebrahimi, A. (2019). Crowdfunding motivations: A focus on donors' perspectives. *Technological Forecasting and Social Change*, Vol. 146, pp. 218-232.
- Barbi, M., and Bigelli, M. (2017). Crowdfunding practices in and outside the US. *Research in International Business and Finance*, Vol. 42, pp. 208-223.
- Bekkers, R., and Wiepking, P. (2007). *Generosity and philanthropy: A literature review*. Available at SSRN 1015507.
- Belleflamme, P., Lambert, T. and Schwienbacher, A. (2014), Crowdfunding: Tapping the Right Crowd, *Journal of Business Venturing*, Vol. 29 No.5, pp. 585-609.
- Belleflamme, P., Lambert, T. and Schwienbacher, A. (2019). Crowdfunding dynamics. CESifo Working Paper No. 7797, Available at SSRN: <https://ssrn.com/abstract=3468029>
- Bernardino, S. and Santos, J. F. (2016). Financing social ventures by crowdfunding: The influence of entrepreneurs' personality traits. *International Journal of Entrepreneurship and Innovation*, Vol. 17 No. 3, pp. 173-183.
- Borgloh, S., Dannenberg, A., and Aretz, B. (2013). Small is beautiful—Experimental evidence of donors' preferences for charities. *Economics Letters*, Vol. 120 No. 2, pp. 242-244.

- Bradley, A., Lawrence, C., and Ferguson, E. (2019). When the relatively poor prosper: the underdog effect on charitable donations. *Nonprofit and Voluntary Sector Quarterly*, Vol. 48 No. 1, pp. 108-127.
- 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*, Vol. 24 No. 3, pp. 499-519.
- Butts, M. M., Lunt, D. C., Freling, T. L., and Gabriel, A. S. (2019). Helping one or helping many? A theoretical integration and meta-analytic review of the compassion fade literature. *Organizational Behavior and Human Decision Processes*, Vol. 151, pp. 16-33.
- Chan, C. R., Park, H. D., Patel, P. and Gomulya, D. (2018). Reward-based crowdfunding success: Decomposition of the project, product category, entrepreneur, and location effects. *Venture Capital*, Vol. 20 No. 3, pp. 285-307.
- Chan, C. R., Parhankangas, A., Sahaym, A. and Oo, P. (2020). Bellwether and the herd? Unpacking the u-shaped relationship between prior funding and subsequent contributions in reward-based crowdfunding. *Journal of Business Venturing*, Vol. 35 No. 2, p. 105934.
- Cholakova, M. and Clarysse, B. (2015). Does the possibility to make equity investments in crowdfunding projects crowd out reward-based investments? *Entrepreneurship Theory and Practice*, Vol. 39 No. 1, pp. 145-172.
- 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*, Vol. 39 No. 1, pp. 75-100.
- Cox, J., Nguyen, T., and Kang, S. M. (2018). The kindness of strangers? An investigation into the interaction of funder motivations in online crowdfunding campaigns. *Kyklos*, Vol. 71 No. 2, pp. 187-212.
- Crosetto, P. and Regner, T. (2018). It's never too late: funding dynamics and self pledges in reward-based crowdfunding. *Research Policy*, Vol. 47 No. 8, pp. 1463-1477.
- Cryder, C. E., Loewenstein, G., and Seltman, H. (2013). Goal gradient in helping behavior. *Journal of Experimental Social Psychology*, Vol. 49 No. 6, pp. 1078-1083.
- Deb, J., Oery, A., and Williams, K. R. (2019). Aiming for the goal: Contribution dynamics of crowdfunding. *National Bureau of Economic Research*, No. w25881.
- De Luca, V. V., Margherita, A. and Passiante, G. (2019). Crowdfunding: a systemic framework of benefits. *International Journal of Entrepreneurial Behavior & Research*, Vol. 25 No. 6, pp. 1321-1339.

- Duncan, B. (2004). A theory of impact philanthropy. *Journal of Public Economics*, Vol. 88 No. 9-10, pp. 2159-2180.
- Duncan, B. (2009). Secret Santa reveals the secret side of giving. *Economic Inquiry*, Vol. 47 No. 1, pp. 165-181.
- Efrat, K., Gilboa, S. and Wald, A. (2020). The emergence of well-being in crowdfunding: a study of entrepreneurs and backers of reward and donation campaigns. *International Journal of Entrepreneurial Behavior & Research*, Vol. 27 No. 2, pp. 397-415.
- Gerber, E. M., and Hui, J. (2013). Crowdfunding: Motivations and deterrents for participation. *ACM Transactions on Computer-Human Interaction*, Vol. 20 No. 6, pp. 34.
- Giudici, G., Guerini, M. and Rossi-Lamastra, C. (2018). Reward-based crowdfunding of entrepreneurial projects: The effect of local altruism and localized social capital on proponents' success. *Small Business Economics*, Vol. 50 No. 2, pp. 307-324.
- Gleasure, R. and Feller, J. (2016). Does heart or head rule donor behaviors in charitable crowdfunding markets? *International Journal of Electronic Commerce*, Vol. 20 No. 4, pp. 499-524.
- Harbaugh, W. T. (1998). What do donations buy? A model of philanthropy based on prestige and warm glow. *Journal of Public Economics*, Vol. 67 No. 2, pp. 269-284.
- Hornuf, L., and Schwienbacher, A. (2018). Market mechanisms and funding dynamics in equity crowdfunding. *Journal of Corporate Finance*, Vol. 50, pp. 556-574.
- Hu, M., Li, X., and Shi, M. (2015). Product and pricing decisions in crowdfunding. *Marketing Science*, Vol. 34 No. 3, pp. 331-345.
- Jian, L. and Shin, J. (2015). Motivations behind donors' contributions to crowdfunded journalism. *Mass Communication and Society*, Vol. 18 No. 2, pp. 165-185.
- Kuppuswamy, V. and Bayus, B. L. (2017). Does my contribution to your crowdfunding project matter? *Journal of Business Venturing*, Vol. 32 No. 1, pp. 72-89.
- Kuppuswamy, V., and Bayus, B. L. (2018). Crowdfunding creative ideas: The dynamics of project backers. In *The Economics of Crowdfunding* (pp. 151-182). Palgrave Macmillan, Cham.
- Li, G., and Wang, J. (2019). Threshold effects on backer motivations in reward-based crowdfunding. *Journal of Management Information Systems*, Vol. 36 No. 2, pp. 546-573.
- Mamonov, S. and Malaga, R. (2019). Success factors in Title II equity crowdfunding in the United States. *Venture Capital*, Vol. 21 No. 2-3, pp. 223-241.

- Martínez-Climent, C., Guijarro-García, M. and Carrilero-Castillo, A. (2020). The motivations of crowdlending investors in Spain. *International Journal of Entrepreneurial Behavior & Research*, Vol. 27 No. 2, pp. 452-469.
- Mastrangelo, L., Cruz-Ros, S. and Miquel-Romero, M. J. (2019). Crowdfunding success: the role of co-creation, feedback, and corporate social responsibility. *International Journal of Entrepreneurial Behavior & Research*, Vol. 26 No. 3, pp. 449-466.
- McKenny, A. F., Allison, T. H., Ketchen Jr, D. J., Short, J. C. and Ireland, R. D. (2017). How should crowdfunding research evolve? A survey of the entrepreneurship theory and practice editorial board. *Entrepreneurship Theory and Practice*, Vol. 41 No. 2, pp. 291-304.
- Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing*, Vol. 29 No. 1, pp. 1-16.
- Nguyen, T., Cox, J. and Rich, J. (2019). Invest or regret? An empirical investigation into funding dynamics during the final days of equity crowdfunding campaigns. *Journal of Corporate Finance*, Vol. 58, pp. 784-803.
- Nitani, M., Riding, A. and He, B. (2019). On equity crowdfunding: investor rationality and success factors. *Venture Capital*, Vol. 21 No. 2-3, pp. 243-272.
- Pallister, K. (2012). Crowdfunding and emotional equity. *Game Developer*, Vol. 19 No. 10, p. 49.
- Patel, P. C., Wolfe, M. T., and Manikas, A. S. (2021). Talk is cheap?! The value of a ban on product simulations and renderings on a crowdfunding platform. *Applied Economics*, Forthcoming.
- Pierrakis, Y. (2019). Peer-to-peer lending to businesses: Investors' characteristics, investment criteria and motivation. *International Journal of Entrepreneurship and Innovation*, Vol. 20 No. 4, pp. 239-251.
- Polzin, F., Toxopeus, H. and Stam, E. (2018). The wisdom of the crowd in funding: information heterogeneity and social networks of crowdfunders. *Small Business Economics*, Vol. 50 No. 2, pp. 251-273.
- Prędkiewicz, K. and Kalinowska-Beszczynska, O. (2020). Financing eco-projects: analysis of factors influencing the success of crowdfunding campaigns. *International Journal of Entrepreneurial Behavior & Research*, Vol. 27 No. 2, pp. 547-566.
- Ryu, S. and Kim, Y. G. (2016). A typology of crowdfunding sponsors: Birds of a feather flock together? *Electronic Commerce Research and Applications*, Vol. 16, pp. 43-54.

- Sargeant, A., and Woodliffe, L. (2007). Gift giving: An interdisciplinary review. *International Journal of Nonprofit and Voluntary Sector Marketing*, Vol. 12 No. 4, pp. 275-307.
- Steigenberger, N. (2017). Why supporters contribute to reward-based crowdfunding. *International Journal of Entrepreneurial Behavior & Research*, Vol. 23 No. 2, pp. 336-353.
- Sullivan, M. K. and Miller, A. (1996). Segmenting the informal venture capital market: Economic, hedonistic, and altruistic investors. *Journal of Business Research*, Vol. 36 No. 1, pp. 25-35.
- Van Teunenbroek, C., and Bekkers, R. (2020). Follow the crowd: Social information and crowdfunding donations in a large field experiment. *Journal of Behavioral Public Administration*, Vol. 3 No. 1, pp. 1-17.
- Wash, R. (2013). The value of completing crowdfunding projects, paper presented at the Seventh International AAAI Conference on Weblogs and Social Media, July 8-11, Cambridge, Massachusetts, available at:
<https://ojs.aaai.org/index.php/ICWSM/article/download/14388/14237>
- Wuillaume, A., Jacquemin, A. and Janssen, F. (2019). The right word for the right crowd: an attempt to recognize the influence of emotions. *International Journal of Entrepreneurial Behavior & Research*, Vol. 25 No. 2, pp. 243-258.
- Zhang, H. and Chen, W. (2019). Backer motivation in crowdfunding new product ideas: Is it about you or is it about me? *Journal of Product Innovation Management*, Vol. 36 No. 2, pp. 241-262.
- Zvilichovsky, D., Danziger, S. and Steinhart, Y. (2018). Making-the-product-happen: A driver of crowdfunding participation, *Journal of Interactive Marketing*, Vol. 41, pp. 81-93.

Tables and Figures

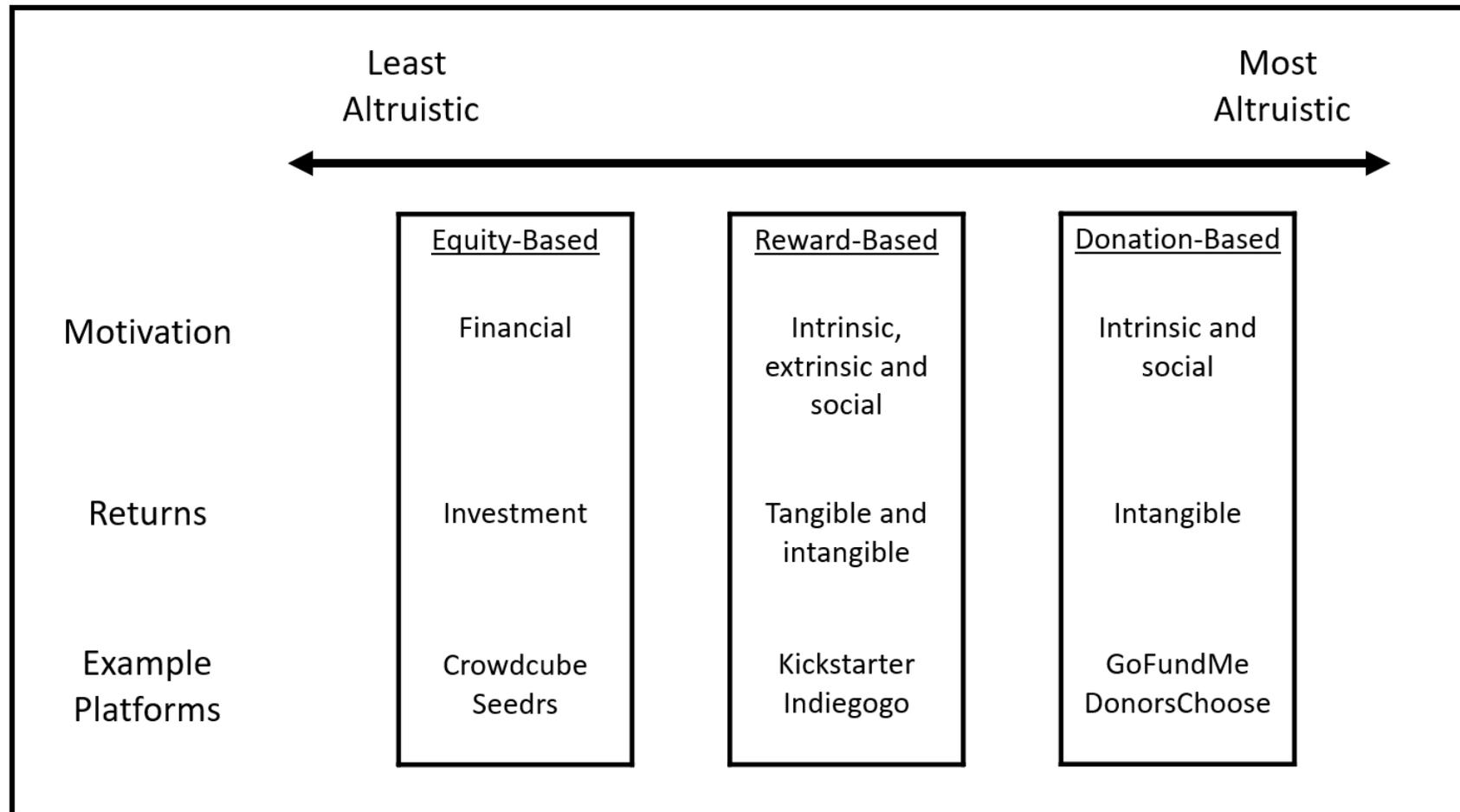


Figure 1: Altruism Among Crowdfunding Models (adapted from Hossain and Oparaocha, 2017)

Table 1: Descriptive Statistics

KICKSTARTER - REWARDS AoN 32.9% Campaign Success Rate 24,397 Successful Campaigns					
Variable	Mean	Median	Std Dev	Min	Max
Completion Contribution Ratio (CCR)	3.01	1.19	8.59	0.01	375.75
Days Remaining	12	7	11	1	60
Prior Funders	109	48	306	0	18,674
Campaign Target (USD)	10,238	4,000	33,131	0.87	2,970,000
Campaign Duration	30	30	10	1	60
INDIEGOGO - REWARDS KiA 13.5% Campaign Success Rate 9,007 Successful Campaigns					
Variable	Mean	Median	Std Dev	Min	Max
Completion Contribution Ratio (CCR)	3.11	1.23	9.70	0.001	303.50
Days Remaining	13	8	14	1	60
Prior Funders	70	29	298	0	14,360
Campaign Target (USD)	6,441	2,083	31,731	384	2,000,000
Campaign Duration	35	31	15	1	60
INDIEGOGO - REWARDS AoN 21.7% Campaign Success Rate 947 Successful Campaigns					
Variable	Mean	Median	Std Dev	Min	Max
Completion Contribution Ratio (CCR)	3.03	1.21	7.55	0.12	97.05
Days Remaining	14	8	15	1	60
Prior Funders	111	43	336	0	8,879
Campaign Target (USD)	10,443	3,500	23,893	412	472,421
Campaign Duration	37	34	15	1	60
DONORS CHOOSE- DONATIONS 74.5% Campaign Success Rate 9,562 Successful Campaigns					
Variable	Mean	Median	Std Dev	Min	Max
Completion Contribution Ratio (CCR)	4.82	0.95	18.82	0.001	992.40
Days Remaining	82	97	38	1	149
Prior Funders	4	3	4	1	70
Campaign Target (USD)	468.18	345	557	65	12,838
Campaign Duration	116	119	15	2	161
CROWDCUBE – EQUITY 41.0% Campaign Success Rate 128 Successful Campaigns					
Variable	Mean	Median	Std Dev	Min	Max
Completion Contribution Ratio (CCR)	7.68	3.42	24.46	0.23	248.29
Days Remaining	16	14	12	1	54
Prior Funders	295	219	431	19	3,712
Campaign Target (USD)	406,999	246,473	510,664	32,786	3,369,300
Campaign Duration	48	50	23	1	124

Completion Contribution Ratio is the ratio of the (average) contribution made on the completion day relative to the average contribution from all other days.

Campaign Target is the funding target/goal set by the founder at the start of the campaign, expressed in USD.

Days Remaining is the number of days remaining before the campaign deadline on the day that the campaign target is met (completion day).

Prior Funders is number of funders aggregated across all days for each campaign prior to the completion day.

Campaign Duration is the maximum number of days that the campaign is set to run.

Table 2: Correlation Coefficients

PANEL A: KICKSTARTER (REWARDS AoN)						
Variable	[1]	[2]	[3]	[4]	[5]	
Completion Contribution Ratio (CCR)	[1]	1				
Days Remaining	[2]	-0.053	1			
Prior Funders	[3]	-0.040	-0.014	1		
Campaign Target (USD)	[4]	-0.023	0.001	0.599	1	
Campaign Duration	[5]	0.045	0.296	0.066	0.085	1
PANEL B: INDIEGOGO (REWARDS KiA)						
Variable	[1]	[2]	[3]	[4]	[5]	
Completion Contribution Ratio (CCR)	[1]	1				
Days Remaining	[2]	0.027	1			
Prior Funders	[3]	-0.013	0.009	1		
Campaign Target (USD)	[4]	0.006	0.012	0.809	1	
Campaign Duration	[5]	0.066	0.388	0.073	0.069	1
PANEL C: INDIEGOGO (REWARDS AoN)						
Variable	[1]	[2]	[3]	[4]	[5]	
Completion Contribution Ratio (CCR)	[1]	1				
Days Remaining	[2]	-0.079	1			
Prior Funders	[3]	-0.044	-0.009	1		
Campaign Target (USD)	[4]	-0.044	0.025	0.818	1	
Campaign Duration	[5]	0.086	0.392	0.059	0.132	1
PANEL D: DONORS CHOOSE (DONATIONS)						
Variable	[1]	[2]	[3]	[4]	[5]	
Completion Contribution Ratio (CCR)	[1]	1				
Days Remaining	[2]	-0.074	1			
Prior Funders	[3]	-0.093	-0.069	1		
Campaign Target (USD)	[4]	0.221	-0.003	0.156	1	
Campaign Duration	[5]	0.010	0.277	-0.011	-0.006	1
PANEL E: CROWDCUBE (EQUITY)						
Variable	[1]	[2]	[3]	[4]	[5]	
Completion Contribution Ratio (CCR)	[1]	1				
Days Remaining	[2]	0.010	1			
Prior Funders	[3]	-0.025	0.242	1		
Campaign Target (USD)	[4]	0.030	0.115	0.501	1	
Campaign Duration	[5]	0.063	0.356	0.064	0.032	1

Table 3: Analysis of Crowdfunding Platforms and Funding Models

Specification	I		II		III		IV		V	
Platform	Kickstarter AoN (Reward Based)		Indiegogo KiA (Reward Based)		Indiegogo AoN (Reward Based)		Donors Choose (Donation-Based)		Crowdcube (Equity-Based)	
	Coeff.	Std. Error.	Coeff.	Std. Error.	Coeff.	Std. Error.	Coeff.	Std. Error.	Coeff.	Std. Error.
Ln Days Remaining	-0.118	(0.006)***	-0.032	(0.009)***	-0.137	(0.027)***	-0.485	(0.018)***	0.081	(0.087)
Ln Prior Funders	-0.180	(0.009)***	-0.240	(0.021)***	-0.215	(0.048)***	-0.261	(0.024)***	0.005	(0.201)
Ln Campaign Target	0.063	(0.007)***	0.175	(0.018)***	0.080	(0.043)*	0.022	(0.036)	-0.288	(0.177)
Ln Campaign Duration	0.226	(0.017)***	0.191	(0.019)***	0.409	(0.063)***	0.430	(0.081)***	0.187	(0.126)
Non US-Based	-0.026	(0.014)*	0.005	(0.022)	-0.061	(0.063)	-	-	-	-
Commercial Category	-0.039	(0.015)***	-0.097	(0.039)**	0.080	(0.085)	-	-	-	-
Community Category	0.001	(0.026)	-0.004	(0.023)	0.180	(0.095)*	-	-	-	-
Month/Year Dummies	YES		YES		YES		YES		YES	
Day-of-Week Dummies	YES		YES		YES		YES		YES	
Constant	0.020	(0.065)	-0.799	(0.109)***	-0.568	(0.298)*	0.230	(0.430)	4.421	(2.007)**
F	37.40***		8.89***		3.29***		34.83***		2.37***	
R ²	0.05		0.03		0.10		0.07		0.20	
N	24,397		9,007		947		9,562		128	

For all specifications, the dependent variable is Ln Completion Contribution Ratio.

Robust standard errors in parentheses. ***, **, and * indicate significance of parameter estimates at the 1%, 5% and 10% level respectively.

Table 4: Tests for Differences in Coefficient Estimates

Specification	I		II		III		IV	
Platforms	Kickstarter / Indiegogo KiA		Kickstarter / Indiegogo AoN		Kickstarter / Donors Choose		Kickstarter / Crowdcube	
	Coeff.	Std. Error.	Coeff.	Std. Error.	Coeff.	Std. Error.	Coeff.	Std. Error.
Ln Days Remaining	-0.118	(0.005)***	-0.121	(0.005)***	-0.125	(0.005)***	-0.121	(0.005)***
Ln Prior Funders	-0.190	(0.008)***	-0.180	(0.008)***	-0.197	(0.010)***	-0.178	(0.009)***
Ln Campaign Target	0.080	(0.007)***	0.061	(0.007)***	0.067	(0.009)***	0.060	(0.007)***
Ln Campaign Duration	0.218	(0.012)***	0.235	(0.016)***	0.253	(0.018)***	0.224	(0.016)***
Month/Year Dummies	YES		YES		YES		YES	
Day-of-Week Dummies	YES		YES		YES		YES	
Platform Dummy	-0.214	(0.023)***	-0.052	(0.063)	0.365	(0.079)***	0.457	(0.159)***
Interaction	0.077	(0.010)***	0.012	(0.025)	-0.312	(0.018)***	0.140	(0.068)**
Constant	-0.074	(0.054)	-0.002	(0.063)	0.020	(0.070)	0.034	(0.064)
F	44.27***		40.17***		90.21***		40.83***	
R ²	0.041		0.048		0.078		0.050	
N	33,404		25,344		33,959		24,525	
F (Platform Dummy = 0)	88.47***		0.68		21.30***		8.30***	
F (Interaction = 0)	61.51***		0.24		313.23***		4.23***	
F (Platform Dummy = 0 & Interaction = 0)	44.25***		0.47		489.99***		29.76***	

For all specifications, the dependent variable is Ln Completion Contribution Ratio.

Robust standard errors in parentheses. ***, **, and * indicate significance of parameter estimates at the 1%, 5% and 10% level respectively.

Table 5: Robustness Check - Excluding Most Likely Self-Funding

Specification	I		II		III	
Restriction	Exclude Days Remaining = 1		Exclude Days Remaining = 1-2		Exclude Days Remaining = 1-3	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
PANEL A: KICKSTARTER REWARD-BASED CAMPAIGNS						
Ln Days Remaining	-0.117	(0.007)***	-0.149	(0.009)***	-0.178	(0.011)***
Ln Prior Funders	-0.153	(0.009)***	-0.139	(0.009)***	-0.127	(0.009)***
Ln Campaign Target	0.055	(0.008)***	0.051	(0.008)***	0.046	(0.008)***
Ln Campaign Duration	0.244	(0.019)***	0.282	(0.021)***	0.291	(0.024)***
Constant	-0.075	(0.071)	-0.129	(0.076)*	-0.083	(0.082)
R ²	0.04		0.04		0.04	
n	20,652		18,298		16,411	
PANEL B: INDIEGOGO (AoN) REWARD-BASED CAMPAIGNS						
Ln Days Remaining	-0.185	(0.037)***	-0.163	(0.049)***	-0.145	(0.050)***
Ln Prior Funders	-0.221	(0.051)***	-0.190	(0.053)***	-0.182	(0.048)***
Ln Campaign Target	0.110	(0.046)**	0.089	(0.049)*	0.088	(0.045)**
Ln Campaign Duration	0.335	(0.068)***	0.320	(0.078)***	0.299	(0.082)***
Constant	-0.437	(0.311)	-0.366	(0.337)	-0.355	(0.365)
R ²	0.09		0.08		0.08	
n	819		715		649	
PANEL C: INDIEGOGO (KIA) REWARD-BASED CAMPAIGNS						
Ln Days Remaining	-0.030	(0.013)**	-0.042	(0.016)***	-0.055	(0.019)***
Ln Prior Funders	-0.235	(0.022)***	-0.238	(0.024)***	-0.241	(0.024)***
Ln Campaign Target	0.176	(0.020)***	0.179	(0.021)***	0.179	(0.022)***
Ln Campaign Duration	0.199	(0.023)***	0.211	(0.026)***	0.210	(0.028)***
Constant	-0.843	(0.122)***	-0.834	(0.130)***	-0.823	(0.138)***
R ²	0.03		0.04		0.03	
n	7,603		6,735		6,145	
PANEL D: DONORS CHOOSE DONATION-BASED CAMPAIGNS						
Ln Days Remaining	-0.520	(0.021)***	-0.533	(0.025)***	-0.557	(0.026)***
Ln Prior Funders	-0.262	(0.024)***	-0.258	(0.025)***	-0.256	(0.025)***
Ln Campaign Target	0.015	(0.036)	0.012	(0.037)	0.013	(0.037)
Ln Campaign Duration	0.477	(0.083)***	0.483	(0.088)***	0.491	(0.088)***
Constant	0.202	(0.433)	0.250	(0.455)	0.309	(0.458)
R ²	0.06		0.05		0.05	
n	9,430		9,340		9,279	
PANEL E: CROWDCUBE EQUITY-BASED CAMPAIGNS						
Ln Days Remaining	-0.053	(0.160)	-0.036	(0.194)	-0.027	(0.193)
Ln Prior Funders	0.121	(0.282)	0.131	(0.284)	0.124	(0.288)
Ln Campaign Target	-0.348	(0.198)	-0.359	(0.201)*	-0.346	(0.206)*
Ln Campaign Duration	0.269	(0.215)	0.255	(0.218)	0.252	(0.269)
Constant	4.757	(2.374)**	4.884	(2.459)**	4.781	(2.724)*
R ²	0.20		0.20		0.20	
n	113		110		107	

For all specifications, the dependent variable is Ln Completion Contribution Ratio.

Robust standard errors in parentheses. ***, **, and * indicate significance of parameter estimates at the 1%, 5% and 10% level respectively.

All regressions include controls for Time (Month and Day of the Week). Kickstarter and Indiegogo regressions also include controls for Category and Country.

Table 6: Robustness Check - Reduced Sub-Samples of Kickstarter AoN Campaigns

Specification	I		II		III		IV	
	Kickstarter AoN Reduced Sample Single Contributor		Kickstarter AoN Reduced Sample ≤ 2 Contributors		Kickstarter AoN Reduced Sample ≤ 4 Contributors		Kickstarter AoN Reduced Sample ≤ 8 Contributors	
	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error	Coeff.	Std. Error
Ln Days Remaining	-0.247	(0.024)***	-0.221	(0.016)***	-0.186	(0.012)***	-0.147	(0.009)***
Ln Prior Funders	-0.474	(0.040)***	-0.439	(0.030)***	-0.388	(0.023)***	-0.345	(0.017)***
Ln Campaign Target	0.414	(0.028)***	0.365	(0.022)***	0.301	(0.017)***	0.233	(0.013)***
Ln Campaign Duration	0.335	(0.058)***	0.288	(0.042)***	0.273	(0.031)***	0.254	(0.024)***
Non US-Based	-0.046	(0.051)	-0.090	(0.035)***	-0.071	(0.026)***	-0.050	(0.020)**
Commercial Category	-0.061	(0.061)	-0.027	(0.042)	-0.022	(0.030)	-0.015	(0.023)
Community Category	0.028	(0.095)	0.047	(0.065)	0.022	(0.048)	0.003	(0.037)
Month/Year Dummies	YES		YES		YES		YES	
Day-of-Week Dummies	YES		YES		YES		YES	
Constant	-0.876	(0.228)***	-0.798	(0.163)***	-0.772	(0.122)***	-0.573	(0.095)***
R ²	0.16		0.12		0.09		0.07	
N	3,070		5,852		9,966		14,691	

For all specifications, the dependent variable is Ln Completion Contribution Ratio.

Robust standard errors in parentheses. ***, **, and * indicate significance of parameter estimates at the 1%, 5% and 10% level respectively.