Does the crowd mean business? An analysis of rewards-based crowdfunding as a source of finance for start-ups and small businesses

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Abstract

Purpose – The purpose of this paper is to investigate the extent to which rewards-based crowdfunding really does provide financial support for start-ups and small businesses relative to other types of activity such as creative and cultural projects.
Design/methodology/approach – The paper reports findings from a series of multiple regression on a unique data set covering around 205,000 rewards-based crowdfunding projects across a number of leading platforms in the USA, the UK and Canada.
Findings – The authors report two main findings. First, rewards-based crowdfunding is highly inequitably distributed and that success is concentrated within a relatively small number of platforms and campaigns. Second, crowdfunding campaigns explicitly related to business perform relatively poorly compared with those in other categories; particularly those in creative areas such as music and dance.
Originality/value – These findings call into question the extent to which rewards-based crowdfunding really is a means by which significant numbers of start-ups can bridge gaps in the provision of finance.

Keywords Entrepreneurial finance, Small business, Financial sources, Reward-based crowdfunding
Paper type Research paper

1. Introduction

Start-ups and small businesses represent a hub for innovation and growth in many economies (Beck and Demirgüç-Kunt, 2008; Agénor *et al.*, 2014; Brancati, 2015). One of the most commonly cited obstacles for start-ups and small businesses is raising sufficient funding to finance their business plans and exploit growth and investment opportunities (Kortum and Lerner, 2000; Gompers and Lerner, 2004). Against this backdrop, a consensus has started to emerge among practitioners and academics that reward-based crowdfunding represents a crucial new source of entrepreneurial finance (Bruton *et al.*, 2015; James, 2014; Mollick, 2014; among others).

Given these expectations, it is surprising that little empirical research has been undertaken into the extent to which reward-based crowdfunding provides financial support to start-ups and small businesses relative to other types of activity, such as creative and cultural projects. This study addresses this deficiency in the literature through the analysis of a comprehensive and unique data set covering around 205,000 reward-based crowdfunding projects across a number of leading platforms in the USA, the UK and Canada. This analysis allows us to address the primary research question of our study:

RQ1. How do reward-based crowdfunding campaigns in the "Business" category perform relative to those in other categories?

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Our analysis shows that, while the overall success rate in reward-based crowdfunding is about 23 per cent, the amounts typically raised by each campaign tend to be relatively trivial in the context of funding for start-ups and small businesses. The mean (median) amount of funding raised is just $4,455 ($315) across all campaigns and $15,120 ($4,320) among those that successfully met their targets. However, the main focus of our analysis is the 9,502 campaigns recorded in the "Business" category, which accounts for 4.6 per cent of the total number of campaigns in our sample. The performance of "Business" campaigns is below average, with only 1 in 25 campaigns in this category successfully achieving their funding target. Compounding this relatively low chance of success, the mean (median) amount raised by business campaigns is shown to be only $10,000 ($5,000).

We further our analysis by including a range of relevant factors that could influence crowdfunding outcomes in a series of multiple regressions to evaluate the performance of business campaigns against other types of campaigns. The results of the multivariate analysis are consistent with the above analysis and confirm that business campaigns perform poorly compared to those in almost every other fundraising category. Altogether, our study provides novel and important evidence from a comprehensive and unique crowdfunding data set that challenges the widely-held belief that reward-based crowdfunding could significantly bridge funding gaps for start-ups and entrepreneurs.

The remainder of this paper is organised as follows. Additional background information on reward-based crowdfunding and its potential to support small businesses is provided in Section 2, while Section 3 outlines the relevant theory and literature that supports our investigation. Section 4 provides a brief overview of the data sources used in this study, and Section 5 presents a detailed analysis of this data set, including the results of a series of multiple regressions, which address our primary research question. Section 6 then discusses the managerial and practical implications of our study, as well as its limitations and future research directions. Finally, Section 7 offers concluding remarks and an overall summary of our findings.

2. Background to crowdfunding

Although crowdfunding itself is not a fundamentally new concept, the rapid growth of the internet has been a catalyst for its emergence. Starting as a means of raising funds for artistic and creative projects, crowdfunding now encompasses a much broader range of activities, from small charitable endeavours to businesses seeking hundreds of thousands of dollars in return for equity (Freedman and Nutting, 2015). The notion of crowdfunding is rooted in the broader concept of crowdsourcing, which involves gathering ideas, feedback and solutions from a large volume of contributors ("the crowd"). By extension, crowdfunding is a means by which individuals and organisations can raise funds by aggregating relatively small donations from large numbers of funders. So far, the most widely accepted formal definition has come from Belleflamme *et al.* (2014), who suggest that crowdfunding represents:

> […] an open call, mostly through the Internet, 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.

Mollick (2014) proposes a narrower definition specifically applied in an entrepreneurial context:

> Crowdfunding refers to the efforts by entrepreneurial individuals and groups – cultural, social and for-profit – to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without the standard financial intermediaries.

Crowdfunding typically involves a "founder" initiating a "campaign" to raise funds for their "project", hosted on one of many dedicated internet platforms. These platforms serve as

market intermediates and founders with a means of connecting potential "funders". The campaign webpage is populated with details of the founder's proposed project or activity, often including a combination of images, descriptive text and video. The founder also establishes a funding target or "goal", which represents the amount of money required to operationalise the project. Once a campaign goes live, the founder has a limited period (typically around 30 days) to raise an amount that meets or exceeds their original funding target. Depending on the funding model adopted, failure to meet this target may result in the founder receiving nothing and all funders receiving a refund. If the target is met or exceeded, the founder retains the amount raised, less a combined platform and credit card processing fee of around 10-12 per cent.

There are four main types of crowdfunding: donation-based, reward-based, peer-to-peer lending and equity crowdfunding. Among these, donation-based crowdfunding is more appropriate for community, humanitarian or non-profit projects, while the more formal arrangements associated with peer-to-peer lending and equity crowdfunding carry with them the dual problems of legal complexity (Macht and Weatherston, 2014; Vismara, 2016) and information asymmetry (Ahlers *et al.*, 2015). By contrast, so-called "reward-based" crowdfunding involves the founder offering material incentives to funders based on the value of their contributions, with items such as t-shirts, baseball caps and thank-you notes offered in return for smaller contributions. Larger contributions are rewarded with a wide range of more desirable and prestigious incentives, which might include a walk-on part in a movie or tickets to an exclusive launch party. Often, the reward structure for a crowdfunding campaign also involves some degree of pre-selling; founders may reward some contributions by providing the funder with early access to the product or service being produced using the funds raised by the campaign.

It has been argued that reward-based crowdfunding is particularly well-suited to raising seed capital for small business ventures (Mollick, 2014). At this stage, the firm is typically just a concept or idea and is not undertaking commercial operations. Access to capital is, therefore, extremely important in funding product development, undertaking market research and recruiting business partners (Schwienbacher and Larralde, 2010; Manchanda and Muralidharan, 2014). However, this funding is also typically the most difficult to acquire (Pagliery, 2012), given most entrepreneurs have little to no track record and require loans that are too small to merit the attention of large institutions (Burkett, 2011).

Our present study uniquely investigates the performance of crowdfunding campaigns across a selection of leading reward-based crowdfunding platforms based in the USA, the UK and Canada. We aim to better understand the distribution of performance across our sample of campaigns, as well as establish the degree to which reward-based crowdfunding successfully funds business-related projects compared to those in other categories, such as community projects or the arts. The following section outlines the relevant theory and literature connected to reward-based crowdfunding in the context of small businesses and start-ups.

3. Theory and literature

Start-ups and small businesses resort to different sources of finance to fund their activities and growth opportunities, such as family and friends, bank and government loans and angel and venture capitalists, among others (Berger and Udell, 2006; Beck and Demirgüç-Kunt, 2006). Nevertheless, financial market imperfections, such as information asymmetry, transaction costs and contract enforcement costs, significantly limit entrepreneurs and small businesses accessing finance due to them lacking collateral, credit history, reputation or connections necessary to acquire it (Beck *et al.*, 2007). For instance, large banks and financial institutions may find it prohibitively costly to monitor the activities of small businesses (Korosteleva and Mickiewicz, 2011), while venture capitalists may find the funds required by

start-ups to be too small to justify their involvement. Therefore, constrained access to finance is widely recognised as a key challenge for start-ups and small businesses in both theory and practice (Kortum and Lerner, 2000; Gompers and Lerner, 2004).

Within this theoretical framework, reward-based crowdfunding may offer cost-effective access to capital for small businesses and entrepreneurs for a number of reasons. First, reward-based crowdfunding offers easy access to seed funding (Kim and Hann, 2013) for a relatively small fee, given the low cost of conducting transactions in an online environment (Agrawal *et al.*, 2013). In addition, the risk of a campaign being underfunded is reduced, given that projects on most platforms do not go ahead unless they meet or exceed their original funding targets (Frydrych *et al.*, 2014). Further, small business owners do not need to dilute their ownership or control, contrary to financing methods like venture capitalists or angel investors (Macht and Weatherston, 2014); crowdfunding, therefore, bridges the gap between internal and external funding sources (Collins and Pierrakis, 2012).

In a broader sense, the low barriers to entry for both funders and founders are recognised as a key societal advantage of reward-based crowdfunding, given that practically anyone with an internet connection can use the approach to both raise and contribute funds (Kim and Hann, 2013). Furthermore, the practice democratises access to finance, given that each funder can contribute a relatively small amount of money (Drury and Stott, 2011). Altogether, reward-based crowdfunding is gaining recognition in theoretical and empirical literature as a mainstream option for those seeking funding for their business (Young, 2012; Rossi, 2014).

We are not aware of any studies to date that explicitly investigate the success of business-related projects within the context of reward-based crowdfunding. However, a number of papers have previously sought to establish the general determinants of successful campaigns (Ahlers *et al.*, 2015; Mollick, 2014; Zheng *et al.*, 2014). The most widely cited study among this group is Mollick (2014), in which the author finds that the success of reward-based campaigns on the Kickstarter platform is determined by the size of personal networks, the project's quality and the founder's geographic location. Following this study, Frydrych *et al.* (2014) investigated the link between funding targets, project duration, reward structure, visual pitch and team composition and tested the probability of successfully meeting the campaign's funding target. The authors find evidence of a strong relationship between project success and the size of the funding target; campaigns are significantly more likely to be successful when their funding targets are lower. A more recent study from Allison *et al.* (2015) finds the entrepreneur's narrative has a significant effect on the attractiveness of a crowdfunding campaign, while Pitschner and Pitschner-Finn (2014) also report evidence of higher success rates among non-profit projects than for-profit projects. Altogether, due to the lack of a comprehensive source of data on crowdfunding activities, estimations regarding the rate of success among crowdfunding campaigns have largely been limited to a single platform (Kickstarter). Despite the strong theoretical support, it, therefore, remains unclear whether crowdfunding can be used as an effective source of finance for a significant number of start-ups and small businesses. The following section provides more detailed information on the unique data set used when investigating this issue.

4. Data

Our data sample was obtained from directly accessing the database compiled by the Crowd Data Center (www.thecrowdfundingcenter.com). The Center uses specialist software to automatically extract all publicly available data on a number of leading crowdfunding platforms. We focussed our analysis exclusively on data from reward-based platforms, excluding any data from models such as equity crowdfunding. Our data set contains comprehensive, intra-daily information on a total of 205,659 campaigns listed between

1 January 2014 and 30 June 2015. For each project, a range of data was collected, including the type of project, category, platform, target, the amount raised and the number of backers. When aggregated, this allowed us to analyse broader patterns of demand and supply in reward-based crowdfunding for both North America and the UK, while also allowing us to investigate issues at a micro-level, such as comparing the performance of different types of crowdfunding campaigns and platforms.

Capturing data from six leading crowdfunding platforms across the USA, the UK and Canada sets our study apart from those relying on data from a single platform. These six platforms represent all of the reward-based crowdfunding campaigns captured by the Crowd Data Center during the sample period, which represents all of the projects active on the platforms during this time. The data include project-level observations from the two most prominent and well-known platforms globally, Kickstarter and Indiegogo, as well as Rockethub, Fundrazr, Crowdfunder and Sponsume. The classification of campaigns into different categories strictly follows the system employed by the Crowd Data Center to report campaign activity within a common set of categories, allowing for direct comparison between those used by different platforms. More information on the nature of these platforms, as well as their funding models and indicative financial data from our data set, can be found in Table I.

According to the figures presented in Table I, Kickstarter and Indiegogo clearly dominate other reward-based platforms, with the two being collectively responsible for just under 96 per cent of all campaigns appearing in our sample. Although Kickstarter is clearly the best-performing platform in terms of success rates and amounts raised, it should be noted that Indiegogo hosted more campaigns than Kickstarter during the sample period. Although mean indicators of campaign performance are stronger for Kickstarter, median indicators are similar across platforms. This suggests that while Kickstarter hosts a disproportionately large number of high-performing projects, the performance of projects in the middle of the respective distributions appears similar across the board.

Combining both successful and unsuccessful campaigns, a total of $918 million was raised from around 11 million unique contributions. The aggregate sum of funding goals was $9.4 billion, meaning that campaigns in the sample collectively raised just under 10 per cent of the sum of their targets. It should be noted that although the platforms themselves originate in the specific set of countries outlined above, it is possible that both individual project funders and founders may be based outside of the platform's "home" country. We include data from funders and founders of all nationalities in our data set, with campaigns raising funds in currencies other than the US dollar converted using the

Platform	Country	Funding model(s)	Launched	Number of projects	Proportion successful (%)	Mean (median) amount raised	Mean (median) pledge	Mean (median) no. of funders
Kickstarter	USA	AoN	2009	93,340	33	$6,495 ($435)	$63 ($36)	80 (9)
Indiegogo	USA	AoN; KiA	2007	103,768	14	$2,841 ($260)	$53 ($35)	33 (6)
Crowdfunder.co.uk	UK	AoN; KiA	2012	3,151	25	$3,031 ($405)	$58 ($25)	27 (7)
Fundrazr	Canada	AoN; KiA	2008	830	22	$2,066 ($813)	$96 ($59)	26 (13)
Rockethub	USA	KiA	2010	4,114	6	$831 ($0)	$33 ($0)	9 (0)
Sponsume	UK	KiA	2010	416	10	$1,189 ($448)	$32 ($24)	23 (8)

Notes: Funding models are "All-or-Nothing" (AoN) where the founder is required to achieve their funding target or else receives nothing and "Keep it All" (KiA) which allows founders to retain the amounts raised regardless of whether or not the funding target is met. Reported figures are aggregated across both successful and unsuccessful projects. Wile Sponsume ceased trading in May 2015, it was actively hosting campaigns for a majority of our sample period (January 2014-June 2015)

Table I.
Summary of rewards-based crowdfunding platforms in data set

prevailing monthly exchange rate. The database also reports a range of additional information for each campaign, such as the platform, target, the amount raised and the number of funders, as well as controls for fundraising categories (e.g. art, business, film and technology). Campaigns are posted by their founders to the most relevant category. For instance, campaigns that are overtly related to business and entrepreneurial activity will be featured in the "Business" category. Although the precise range of project categories is somewhat heterogeneous across the various platforms, our study uses the common set of categories reported by the Crowd Data Centre to allow for a consistent comparison between campaigns.

Table II contains an overall summary of statistics on project-level outcomes measured across the platforms in our sample. The data suggest that, on aggregate, 22.75 per cent (46,804 out of 205,659) of campaigns successfully achieved their funding target. While this number might be considered relatively high, it still only represents around half the campaigns recorded by Mollick (2014), based on the analysis of data from Kickstarter alone. Across the entire sample, campaigns were observed to raise an average of $4,500 from 54 individual contributors. It is noteworthy that the median ($315) is much smaller than the mean ($4,455), suggesting that the majority of projects receive a relatively trivial amount of funding. The situation is similar when we limit the analysis to campaigns that successfully met their funding target; we find that the average (median) amount raised by a campaign is just over $15,000 ($4,000).

As an additional illustration of the disparity between the mean and the median amount raised, Figure 1 illustrates the distribution of campaigns in our sample in terms of the percentage of funding targets achieved. The distribution of funding raised relative to the original target is very obviously non-normal and is both long-tailed and bi-modal, indicating that a relatively large number of campaigns raise a disproportionately low percentage of funds relative to their original targets. Indeed, around half of the total number of observations in our data set raised amounts equating to less than 10 per cent of their original funding goal. The proportion of campaigns spikes dramatically within the bracket of 100-109 per cent funding relative to those in the 90-99 per cent or 110 per cent+ brackets, indicating relatively few "near misses"; projects tend to either raise an amount almost exactly equal to their target or else (effectively) raise nothing. Indeed, although not directly

Panel A: sector level statistics

Number of campaigns	% Successful campaigns	Sum of targets ($m)	Sum of amount raised ($m)	Total number of backers	Average pledge per backer ($)
205,659	22.75	9,419	916	11,081,350	57

Panel B: project level statistics

Variable	Mean	Median	Mode	SD	Min	25%	75%	Max
% Funded	43.50	5.75	0	82.20	0	0.04	68.00	995.1
Target ($)	45,815	6,000	5,000	353,085	1	2,000	20,000	19,000,000
Amount raised ($)	4,455	315	0	37,756	0	5	2,194	6,225,354
Number of backers	54	7	0	433	0	1	33	105,857

Notes: Sample includes 205,659 rewards-based crowdfunding campaigns traced and recorded in CrowdDataCentre from 1 January 2014 to 30 June 2015. Campaigns are individual crowdfunding projects launched via crowdfunding platforms to raise funds. Target represents the amount founders of crowdfunding campaigns seek to raise. Successful campaigns are projects which raise at least their funding target. The amount raised is amount of funds that a project collected during its crowdfunding campaign. % funded is calculated as the amount raised by a project divided by its target. Backers are individuals who provide financial support for crowdfunding project. Average pledge per backers is calculated as the amount raised by a project divided by number of backers. Panel A of the table includes the aggregate numbers for all campaigns in the sample while panel B presents the statistics at the project level

Table II.
Summary of statistics of rewards-based crowdfunding activity

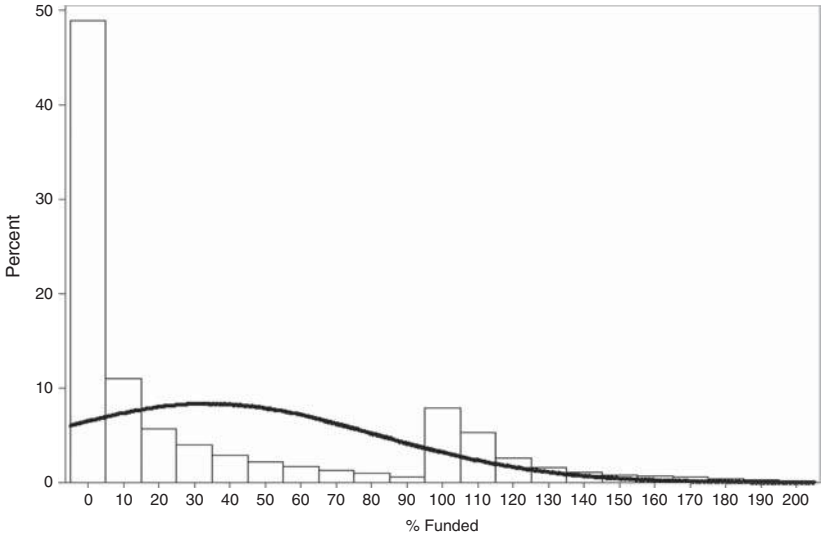

Figure 1.
Proportion of campaigns achieving percentage of funding target

reported in Figure 1, the modal campaign in our sample actually has 0 backers and earns $0. The results illustrate that reward-based crowdfunding is dominated by a small number of disproportionately successful campaigns, whereas most others perform relatively poorly when measured against these reported averages.

5. Analysis

The broad overview of our data set provided in the previous section indicates that the amounts raised by crowdfunding projects are typically relatively small. In order to further explore our primary research question, we now focus on the performance of "Business" campaigns, which explicitly attempt to raise funds in order to support the business functions of start-ups and other small business activities. Table III contains a summary of the distribution of each campaign in our data sample according to their fundraising category. It can be seen that a total of 9,502 campaigns are listed in the "Business" category, accounting for 4.62 per cent of the total number of observations within the sample. The average proportion of campaigns in each category is only 2.5 per cent, suggesting that business-related projects are fairly well-represented in reward-based crowdfunding. Indeed, "Business" campaigns constitute the eighth most represented category behind film (12.59 per cent), music (10.32 per cent), community (8.49 per cent), technology (7.38 per cent), art (6.66 per cent), publishing (5.66 per cent) and food (4.88 per cent). However, the data also show that the success rate for these campaigns is much lower than the average observed across other categories. Only about 4.6 per cent of business-related reward-based crowdfunding campaigns meet or exceed their original targets, compared to the 23 per cent average success rate observed across the whole data set. In aggregate, business-related crowdfunding projects are shown to raise an average of $1,000, with an average of $10,000 observed among projects that successfully achieve their funding goals.

To provide additional evidence on the performance of business projects while controlling for a range of other relevant factors, we present the results of a series of multiple regressions in Table IV. To check for robustness, we perform regressions on three different measures of campaign performance: a binary measure of success/failure, the percentage of funding raised relative to the target and the absolute dollar amount raised. We choose to estimate a

Categories	Number of projects	Percentage in whole sample	Success rate (%)	Amount raised per project (all projects) ($) Mean	Amount raised per project (all projects) ($) Median	Amount raised per project (only successful projects) ($) Mean	Amount raised per project (only successful projects) ($) Median
Animals	2,951	1.44	14.44	1,564.68	190.00	5,781.12	1,700.00
Art	13,694	6.66	26.37	2,125.25	221.00	5,831.92	2,378.00
Business	9,502	4.62	4.43	1,084.49	7.00	10,207.61	5,035.00
Comic	2,589	1.26	45.50	5,346.89	1,081.00	5,485.65	2,043.26
Community	17,448	8.49	15.85	2,021.25	245.00	10,682.86	4,013.00
Crafts	1,121	0.55	19.80	1,144.64	55.00	6,824.55	2,350.00
Dance	2,052	1.00	37.23	2,599.75	1,085.00	4,379.12	1,678.00
Design	8,750	4.26	28.33	11,010.78	830.50	5,037.08	3,169.00
Education	8,788	4.27	14.82	3,201.00	315.00	33,126.61	11,620.00
Environment	2,074	1.01	13.26	2,735.60	308.00	11,079.41	2,602.50
Fashion	7,302	3.55	19.34	3,835.15	105.50	10,032.36	4,015.00
Film (Base)	25,883	12.59	25.80	5,056.05	640.00	552.50	552.50
Food	10,036	4.88	19.31	3,804.79	135.00	3,974.39	1,565.00
Games	1,498	0.73	45.53	15,002.67	1,826.50	17,437.49	4,692.00
Health	5,924	2.88	14.04	2,467.13	200.00	20,670.45	5,525.00
Music	21,224	10.32	35.34	3,158.43	835.00	16,529.25	7,585.00
Other	4,833	2.35	32.07	6,774.76	500.00	14,278.02	4,230.00
Photography	4,346	2.11	20.55	2,238.01	100.00	14,449.86	8,006.50
Politics	1,112	0.54	23.02	2,757.29	500.00	30,970.81	10,232.50
Publishing	11,630	5.66	26.47	3,022.32	146.00	10,083.60	3,265.00
Religion	1,316	0.64	15.05	1,811.60	175.00	4,044.85	1,081.66
Sports	2,886	1.40	15.87	1,694.66	250.00	7,004.27	4,033.00
Technology	15,177	7.38	13.98	11,252.54	115.00	16,869.61	5,010.00
Theatre	5,776	2.81	38.54	3,127.26	1,195.00	1,371.83	607.50
Video/Web	4,114	2.00	14.10	3,737.42	100.00	8,425.59	3,100.00
Video Games	9,058	4.41	23.91	8,296.83	176.00	8,091.47	2,000.00
Writing	2,942	1.43	15.70	1,393.70	195.00	9,477.68	4,052.50

Table III. Descriptive statistics by category

logit model given the binary nature of the "Success" variable, while Tobit regression models are estimated for both the percentage of funding achieved relative to the target and the absolute amount raised, which is appropriate given that both variables are censored at a lower limit of zero. In all cases, OLS coefficient estimates are also presented side-by-side for comparison, although our findings are broadly consistent no matter which modelling approach is used. The general functional form of our regressions can be summarised as follows:

$$Y_i = \alpha + \beta \cdot CAT_i + \gamma \cdot PLAT_i + \delta \cdot TIME_i + \theta \cdot CNTRY_i + \varphi \cdot \ln(DUR_i) + \omega \cdot \ln(TAR_i) + \varepsilon_i \quad (1)$$

where Y_i represents the respective outcome of campaign i, CAT represents a vector of variables controlling for the category of the campaign, $PLAT$ represents a vector of controls for the online platform on which the campaign was hosted, and $CNTRY$ represents a vector of controls for the country in which the campaign was initiated. DUR and TAR are continuous variables representing the duration and funding targets of each campaign, respectively. Given that we previously established that a majority of our continuous variables are highly skewed, we take the natural logs of both of these variables in all model specifications, meaning coefficient estimates can be interpreted in percentage terms. We also take the natural log of the dependent variable "Amount Raised", which is the dependent variable in one of our regression specifications. The values of the estimated β coefficients

	Success				% funded				Ln(amount raised $)			
	Logit		OLS		Tobit		OLS		Tobit		OLS	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Category controls												
Animals	−0.363	***	−0.053	***	−11.108	***	−6.008	***	−0.901	***	−0.774	***
	(0.057)		(0.007)		(1.391)		(0.978)		(0.077)		(0.059)	
Art	−0.372	***	−0.053	***	−6.431	***	−2.744	***	−0.754	***	−0.666	***
	(0.026)		(0.004)		(0.971)		(0.804)		(0.041)		(0.033)	
Business	−1.192	***	−0.086	***	−33.294	***	−10.916	***	−2.838	***	−2.140	***
	(0.053)		(0.003)		(0.909)		(0.515)		(0.056)		(0.039)	
Comic	0.428	***	0.110	***	35.975	***	33.950	***	0.634	***	0.566	***
	(0.043)		(0.010)		(2.473)		(2.348)		(0.066)		(0.057)	
Community	−0.130	***	−0.022	***	−0.772		1.816	***	−0.537	***	−0.474	***
	(0.028)		(0.004)		(0.768)		(0.584)		(0.040)		(0.032)	
Crafts	−1.318	***	−0.222	***	−32.971	***	−22.743	***	−2.312	***	−2.034	***
	(0.078)		(0.012)		(3.528)		(3.065)		(0.114)		(0.090)	
Dance	0.421	***	0.086	***	12.032	***	8.118	***	0.871	***	0.736	***
	(0.050)		(0.010)		(1.387)		(1.187)		(0.069)		(0.059)	
Design	−0.126	***	−0.026	***	24.380	***	22.525	***	0.250	***	0.246	***
	(0.029)		(0.005)		(1.564)		(1.439)		(0.047)		(0.040)	
Education	−0.128	***	−0.025	***	−3.199	***	−0.926		−0.419	***	−0.358	***
	(0.035)		(0.004)		(0.859)		(0.621)		(0.049)		(0.039)	
Environment	−0.118	*	−0.013	*	−1.017		2.652	**	−0.526	***	−0.430	***
	(0.067)		(0.008)		(1.555)		(1.068)		(0.096)		(0.075)	
Fashion	−0.748	***	−0.121	***	−20.992	***	−11.378	***	−1.617	***	−1.306	***
	(0.035)		(0.005)		(1.337)		(1.074)		(0.057)		(0.045)	
Food	−0.759	***	−0.118	***	−22.944	***	−15.400	***	−1.370	***	−1.149	***
	(0.032)		(0.005)		(0.980)		(0.766)		(0.048)		(0.039)	
Games	0.282	***	0.079	***	76.641	***	74.545	***	0.650	***	0.620	***
	(0.057)		(0.013)		(5.116)		(4.969)		(0.096)		(0.087)	
Health	−0.146	***	−0.022	***	−2.566	**	3.139	***	−0.922	***	−0.734	***
	(0.041)		(0.005)		(1.247)		(0.942)		(0.062)		(0.048)	
Music	0.252	***	0.055	***	3.931	***	4.386	***	0.085	**	0.082	***
	(0.021)		(0.004)		(0.672)		(0.546)		(0.034)		(0.029)	
Other	−0.172	***	−0.029	***	−3.793	**	−0.467		−0.509	***	−0.398	***
	(0.037)		(0.007)		(1.553)		(1.359)		(0.062)		(0.052)	
Photography	−0.672	***	−0.110	***	−23.748	***	−14.817	***	−1.516	***	−1.250	***
	(0.043)		(0.007)		(1.458)		(1.117)		(0.068)		(0.053)	
Politics	0.276	***	0.041	***	13.315	***	11.926	***	0.233	**	0.169	*
	(0.076)		(0.012)		(2.170)		(1.740)		(0.112)		(0.092)	
Publishing	−0.622	***	−0.113	***	−22.649	***	−15.074	***	−1.486	***	−1.263	***
	(0.027)		(0.005)		(1.028)		(0.846)		(0.046)		(0.038)	
Religion	−0.441	***	−0.061	***	−18.023	***	−8.342	***	−1.313	***	−1.058	***
	(0.080)		(0.010)		(2.070)		(1.392)		(0.119)		(0.091)	
Sports	−0.126	**	−0.022	***	−4.813	***	−0.612		−0.682	***	−0.570	***
	(0.054)		(0.007)		(1.413)		(1.014)		(0.079)		(0.061)	
Technology	−0.552	***	−0.072	***	−0.601		4.503	***	−1.211	***	−1.021	***
	(0.029)		(0.004)		(1.084)		(0.897)		(0.044)		(0.035)	
Theatre	0.538	***	0.109	***	18.990	***	13.982	***	1.156	***	0.990	***
	(0.032)		(0.007)		(0.904)		(0.785)		(0.043)		(0.037)	
Video/Web	−0.530	***	−0.071	***	−20.593	***	−9.408	***	−1.576	***	−1.249	***
	(0.049)		(0.006)		(1.378)		(0.964)		(0.072)		(0.054)	
Video Games	−0.282	***	−0.049	***	13.732	***	17.817	***	−0.863	***	−0.673	***
	(0.030)		(0.005)		(1.625)		(1.429)		(0.051)		(0.041)	
Writing	−0.151	***	−0.034	***	−8.378	***	−2.913	***	−0.865	***	−0.710	***
	(0.054)		(0.007)		(1.525)		(1.099)		(0.081)		(0.062)	
Platform controls												
Crowdfunder	−0.626	***	−0.121	***	−11.627	***	−17.692	***	0.661	***	0.476	***
	(0.051)		(0.009)		(1.427)		(1.208)		(0.067)		(0.056)	

(*continued*)

Table IV.
Regression results for project outcomes

	Success				% funded				Ln(amount raised $)			
	Logit		OLS		Tobit		OLS		Tobit		OLS	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
Fundrazr	−0.667	***	−0.121	***	16.285	***	−2.410		2.675	***	2.152	***
	(0.099)		(0.013)		(1.743)		(1.667)		(0.060)		(0.052)	
Indiegogo	−1.063	***	−0.178	***	−29.296	***	−23.431	***	−0.747	***	−0.580	***
	(0.015)		(0.002)		(0.537)		(0.436)		(0.024)		(0.019)	
Rockethub	−1.422	***	−0.187	***	−58.243	***	−26.754	***	−2.901	***	−1.849	***
	(0.072)		(0.005)		(1.664)		(0.806)		(0.095)		(0.058)	
Sponsume	−1.937	***	−0.298	***	−38.267	***	−30.520	***	−0.971	***	−0.769	***
	(0.168)		(0.015)		(3.093)		(1.975)		(0.194)		(0.148)	
Time controls												
January	0.339	***	0.056	***	11.122	***	8.175	***	0.582	***	0.502	***
	(0.032)		(0.005)		(1.143)		(0.976)		(0.046)		(0.038)	
February	0.149	***	0.029	***	−1.990	*	1.503	*	−0.446	***	−0.353	***
	(0.030)		(0.004)		(1.087)		(0.904)		(0.045)		(0.036)	
March	0.186	***	0.035	***	−3.461	***	1.898	**	−0.552	***	−0.400	***
	(0.028)		(0.004)		(1.010)		(0.834)		(0.042)		(0.034)	
April	0.216	***	0.039	***	3.290	***	4.308	***	−0.011		0.013	
	(0.029)		(0.004)		(1.007)		(0.845)		(0.041)		(0.034)	
May	0.231	***	0.041	***	6.580	***	5.224	***	0.287	***	0.243	***
	(0.028)		(0.004)		(0.999)		(0.846)		(0.041)		(0.034)	
June	0.271	***	0.047	***	4.702	***	4.870	***	0.146	***	0.152	***
	(0.029)		(0.004)		(1.044)		(0.881)		(0.043)		(0.035)	
July	0.291	***	0.051	***	1.370		4.749	***	−0.235	***	−0.137	***
	(0.033)		(0.005)		(1.192)		(0.984)		(0.050)		(0.040)	
August	−0.150	***	−0.010	**	−12.225	***	−4.507	***	−0.989	***	−0.764	***
	(0.033)		(0.005)		(1.181)		(0.958)		(0.049)		(0.039)	
September	−0.044		0.002		−10.964	***	−3.595	***	−0.889	***	−0.674	***
	(0.034)		(0.005)		(1.197)		(0.966)		(0.051)		(0.040)	
October	0.157	***	0.030	***	−2.349	**	1.083	***	−0.373	***	−0.276	***
	(0.033)		(0.005)		(1.159)		(0.956)		(0.049)		(0.039)	
November	0.204	***	0.037	***	1.994		3.982		−0.155	***	−0.104	***
	(0.033)		(0.005)		(1.218)		(1.023)		(0.049)		(0.040)	
Country controls												
USA	0.447	***	0.054	***	20.817	***	10.781	***	1.355	***	1.056	***
	(0.017)		(0.002)		(0.541)		(0.410)		(0.024)		(0.019)	
UK	0.357	***	0.044	***	13.398	***	6.859	***	0.850	***	0.648	***
	(0.024)		(0.004)		(0.888)		(0.715)		(0.038)		(0.030)	
Canada	0.344	***	0.036	***	16.664	***	7.441	***	1.206	***	0.921	***
	(0.028)		(0.004)		(1.003)		(0.830)		(0.041)		(0.033)	
Project-specific controls												
ln(Target $)	−0.307	***	−0.044	***	−12.052	***	−9.509	***	0.178	***	0.174	***
	(0.004)		(0.000)		(0.162)		(0.125)		(0.006)		(0.005)	
ln(Duration)	−0.095	***	−0.012	***	−2.968	***	−2.221	***	−0.132	***	−0.101	***
	(0.009)		(0.001)		(0.329)		(0.262)		(0.015)		(0.012)	
Intercept	1.916	***	0.718	***	148.605	***	136.532	***	3.805	***	4.085	***
	(0.049)		(0.008)		(1.966)		(1.581)		(0.078)		(0.062)	
F/Wald χ^2	21,752.80	***	667.44	***	430.59	***	457.19	***	488.95	***	549.38	***
(Psuedo) R^2	0.117		0.394		0.013		0.099		0.022		0.101	
n	205,553		205,553		205,553		205,553		205,553		205,553	

Notes: Success is binary variable which takes value of one if campaign meets or exceeds its funding target and zero otherwise. All variables in category, platform, time and country controls are dummy variables which takes value of one if the campaign is listed in this category, platform, time and country. Other variables are defined in Table I. Base cases are: Film (Category); Kickstarter (Platform); December (Time); International (Country). Standard errors are presented in parentheses. *,**,***Indicate significance of parameter estimates at the 10, 5 and 1 per cent levels, respectively

Table IV.

allow us to address our research question relating to the performance of business campaigns relative to those in other categories.

Although not reported, Variance Inflation Factor (VIF) scores for each variable do not indicate a problem of multicollinearity in any of our specifications. The maximum VIF is 2.59, and the average is 1.45, both of which are well below the accepted threshold of 10. We further demonstrate that the level of correlation between the funding goal and the actual amount raised is sufficiently low (correlation coefficient +0.045) that it is appropriate to include the former as an independent variable in a model where the latter features as the dependent variable. Additionally, given that the Kickstarter and Indiegogo platforms outperform other platforms in terms of the number of projects and the amount raised, we further check the robustness of our results by re-estimating the models using campaigns from Kickstarter and Indiegogo alone, as well as campaigns from Indiegogo and the other platforms, excluding Kickstarter. The results are substantively the same regardless of which subset of data we apply to the models. Hence we report the preferred results below using data from the whole sample.

Despite distinguishing between three different measures of campaign performance, our results are largely consistent across all model specifications. The coefficients reported in the logit regressions can be interpreted as log-odds ratios, which can be converted to conventional odds-ratios by taking the exponential of the estimated coefficient. These results indicate that business campaigns are 70 per cent ($1-e^{-1.192}$) less likely to succeed compared to those in the reference category ("Film"). Correspondingly, the Tobit regression results also show that "Business" projects raise 33 per cent less towards their funding target than "Film" projects do, while the estimates relating to the natural log of the amount raised suggest "Business" projects raise 94 per cent fewer dollars in total compared to the base case. Note that in each case, the OLS regression results at least somewhat underestimate the negative performance of projects in the "Business" category. These results demonstrate that, across all measures of campaign performance, those relating to "Business" perform relatively poorly against those from nearly every other category; the one exception being "Crafts". Indeed, campaigns that perform better than the base case are almost exclusively related to the creative sectors, including "Comics", "Dance", "Music" and "Theatre". This suggests that reward-based crowdfunding is much better suited to the support of entrepreneurship as it relates to creative and cultural activities, but does not seem to offer anywhere near the same level of support to overtly-commercial projects in the "Business" category.

Our regression results also demonstrate some degree of heterogeneity of performance across crowdfunding platforms. The uniformly negative platform controls demonstrate that projects on Kickstarter tend to enjoy the best outcomes, with projects on Indiegogo only being 20 per cent as likely to succeed and raising 70 per cent less than those on Kickstarter when controlling for other relevant factors. We also see evidence of seasonality in the performance of crowdfunding campaigns, with campaigns in the late summer and in the base month of December performing less well than other months. This is likely to reflect the diminished availability of funders and/or a reduction in propensity to contribute to crowdfunding campaigns during the summer and Christmas vacation periods. We also observe strong evidence that campaigns based in the USA (and to a lesser extent, Canada and the UK) tend to perform better compared to international projects originating outside of these countries. This is likely to partly be a consequence of the Anglo-American nature of the sampled platforms but may also indicate a degree of "home country" bias in terms of campaign performance.

Our results further demonstrate that longer campaign durations are universally associated with poorer performance, suggesting that founders should ideally organise their campaigns to run over a shorter, more focussed period of fundraising. Finally, although

campaigns with higher funding targets are associated with raising larger absolute dollar amounts, the relationship is shown to be relatively inelastic. This is reinforced by the negative relationship observed between the size of the target and both the likelihood of success and the proportion of the funding target achieved. This finding strongly supports the argument that campaigns with lower funding goals tend to be more successful, which may be at odds with business crowdfunding campaigns that would presumably seek to raise relatively larger sums.

We acknowledge that entrepreneurial activity is obviously not limited merely to campaigns within the "Business" category, as campaigns in many other categories can clearly be regarded as having an entrepreneurial component. However, our decision to focus on campaigns within this category allows us to investigate the performance of projects that are overtly related to business activities and to compare against projects where the commercial and operational aspects are less heavily emphasised. To complement this argument, we also briefly investigate whether reward-based crowdfunding is an effective method of raising funds to support the development and manufacture of new products and services by highlighting the performance of projects in the "Technology" category. This is an area in which reward-based crowdfunding has the potential to support entrepreneurial and small business activities by essentially funding R&D activity through a process of "pre-ordering". There are several well-known examples of highly successful technology start-ups acquiring initial funding through reward-based crowdfunding, including the Pebble Smart Watch and the Oculus Rift virtual reality headset. However, the regression results presented in Table IV show that projects in the "Technology" category are also less likely to successfully achieve their funding targets and raise lower amounts than the base case of projects in "Film" and other more successful categories. Relative to the base case, we show that "Technology" campaigns are 42 per cent ($1-e^{-0.552}$) less likely to succeed and raise approximately 70 per cent ($1-e^{-1.211}$) fewer dollars in total. This further supports our argument that reward-based crowdfunding is currently geared towards the funding of artistic and creative endeavours, as opposed to general business activities or even technology start-ups. This calls into question the suitability of reward-based crowdfunding for providing seed capital.

Altogether, the analysis of these data indicates that business-related campaigns currently represent a fairly significant share of reward-based crowdfunding activity in the USA, Canada and the UK. However, our regression results indicate that the performance of "Business" campaigns on reward-based crowdfunding platforms is generally poor compared to those in other categories.

6. Discussion

Managerial and practical implications

The findings outlined in the previous section suggest that reward-based crowdfunding campaigns in the "Business" category meet with little success compared to other types of campaign, most notably those relating to creative fields such as "Music" and "Dance". Specifically, we show that only 4-5 per cent of business-related reward-based crowdfunding campaigns successfully achieve their funding goals. Indeed, this proportion is broadly comparable to the 3 per cent of entrepreneurs that successfully acquire funding via angel investors (Pope, 2011). In addition to the relatively low rates of success compared to campaigns in other categories, the monetary amounts raised are also comparatively low compared to other funding sources traditionally used by small businesses. The average of $10,000 raised by successful projects is significantly lower than the average sums obtained by entrepreneurs from their own capital ($100,000), family and friends ($250,000) and angel investors ($500,000) (Cumming and Johan, 2009, pp. 8-9).

The most important managerial implication of these findings is that reward-based crowdfunding is dominated by creative projects and can, therefore, not typically be relied

upon to address the funding gap faced by many small businesses. However, while this contradicts many arguments in entrepreneurship literature regarding reward-based crowdfunding, it should be acknowledged that reward-based crowdfunding offers a number of advantages to entrepreneurs that simple access to finance may not provide. For example, an online reward-based crowdfunding campaign can potentially act as an effective marketing and advertising tool to help promote the existence of a small business to a new and potentially global audience. Additionally, reward-based crowdfunding offers an opportunity to test the likely levels of demand for a product or service before going to market (Harrison, 2013) and allows entrepreneurs to build a full order book in advance of production or the commencement of services. Finally, reward-based crowdfunding campaigns allow for faster and easier funding decisions compared to traditional sources of finance, with outcomes often known within a period of 30 days or less (Colombo *et al.*, 2015). Having the potential to "fail faster" offers a low-cost opportunity to receive rapid feedback, enabling the entrepreneur to return for subsequent fundraising attempts with an improved offering. For small business owners in need of seed capital, we, therefore, suggest that reward-based crowdfunding complements other funding sources, rather than acting as a substitute in its own right.

Aside from the findings relating to the heterogeneity of performance across different categories, our results suggest a number of practical implications for potential campaign founders. First, we show that the choice of platform is typically a significant determinant of the campaign outcomes, including the amounts raised and the probability of success. We, therefore, suggest that project founders should be selective in their choice of platform and strongly consider the use of Kickstarter, given that we find strong evidence of positive funding outcomes for campaigns hosted on this site. Second, we find evidence of a degree of seasonality in the pattern of crowdfunding activity. We, therefore, suggest that the Spring and Autumn periods typically represent the best times to launch crowdfunding campaigns rather than during the Summer or Christmas periods. Third, we find that, although campaigns with high funding targets typically raise greater absolute sums, the probability of successfully achieving that goal also declines. The setting of realistic funding goals is shown to be of great importance in determining the outcome of crowdfunding campaigns and should, therefore, be considered carefully by campaign founders. Finally, we show that campaigns with longer durations typically perform less well compared to those with shorter durations. We, therefore, recommend that entrepreneurs set the duration of their campaign to the shortest period of time in which it is practicable to do so. We certainly suggest that the funding duration does not exceed the typical 30-day period set by most campaigns.

The findings from this study also have considerable policy relevance. One reason why reward-based crowdfunding has been widely mooted as a promising source of funding for start-ups is that the more commercially-oriented model of equity crowdfunding has been heavily restricted over this period of analysis, particularly in the USA and Canada. However, in October 2015, the Securities and Exchange Commission approved the final implementation of Title III of the JOBS Act, which enables anyone to invest in securities for start-up companies, regardless of income. From May 2016, issuers have been able to use this exemption to raise up to $1 million through equity crowdfunding within a 12-month period (Securities and Exchange Commission, 2015). These significant regulatory changes create the potential for growth in both the supply and demand of equity crowdfunding in the USA over the coming months and years. However, whether equity-based crowdfunding can serve as a genuine alternative to the reward-based model for businesses looking to raise start-up capital remains to be seen. In the analysis of reward-based projects presented in this study, we find limited evidence of widespread support for overtly business (and even technology) related campaigns, especially when compared to those in the creative and cultural sectors. While it is possible that the changing regulatory environment may help equity

crowdfunding develop into a mainstream source of capital for firms slightly further up the funding escalator, our findings suggest that start-ups looking to reward-based platforms as a source of seed capital are unlikely to enjoy many of the benefits promised elsewhere in the literature.

Limitations

There are a number of limitations that affect our research. First, although we based our study upon a unique data set consisting of observations across multiple crowdfunding platforms and over a significant period of time, our study is limited by the coverage of the data set we use in our analysis. In particular, we were reliant on the process used by the Crowd Data Centre to amalgamate data from a number of platforms and to classify campaigns into a common set of fundraising categories. Additionally, although the range of online platforms captured by the Crowd Data Centre appears to be fairly representative of reward-based crowdfunding in North America and the UK, the coverage is far from exhaustive. Our analysis could have been improved through a more extensive coverage of crowdfunding platforms, as well as observations collected over a longer period of time. Future research may wish to exploit greater volumes of data from a wider variety of crowdfunding platforms and models, which could, for example, be used to investigate the extent to which the introduction of mainstream equity crowdfunding in the USA has affected the conclusions drawn by this study. Other researchers may also want to investigate similar issues through the analysis of data from crowdfunding platforms operating in other parts of the world, including non-English speaking areas in Europe and South-East Asia where different cultural values may impact upon the relative success of business-related activities on reward-based crowdfunding platforms. Finally, given that we show how certain decisions made by founders are important determinants of campaign performance (e.g. funding goal, duration), future studies might look to conduct a more thorough investigation into these particular decisions and attempt to establish their "optimal" levels for campaigns in general, as well as those in specific fundraising categories.

7. Conclusion

This study presents unique evidence on the current state of reward-based crowdfunding activity and has resultantly made a number of unique contributions to the emerging literature on the subject. We are the first study to analyse data on the performance of projects hosted across a sample of reward-based crowdfunding platforms. The data used in our study have been collected on a consistent and systematic basis over the course of an 18-month period between January 2014 and June 2015 in order to establish the nature and pattern of activity across the sector. To our knowledge, no other study to date has attempted to provide such a broad perspective on reward-based crowdfunding activity, instead limiting their enquiries to data obtained from a single platform (usually Kickstarter). We also uniquely focussed our analysis on the relative performance of business projects in order to determine the extent to which reward-based crowdfunding leads to widespread access to seed funding for start-ups and small enterprises.

Our data show that, in general, the outcomes of reward-based crowdfunding projects are typically highly skewed in terms of value, success and type of activity. The distribution of activity is dominated by a disproportionately small number of high-value and/or successful campaigns, whereas a significant majority raise very small amounts and/or are unsuccessful in achieving their funding goals. A multiple regression analysis of reward-based crowdfunding activity, which controls for a comprehensive variety of campaign characteristics, including project category, shows that although business campaigns are one of the most heavily represented, they perform relatively poorly across all outcome measures compared to almost all other types of campaign; most notably those relating to artistic and creative ventures.

Contrary to arguments presented elsewhere in the literature, this calls into question the extent to which reward-based crowdfunding really is a means by which large numbers of start-ups and small businesses are able to access essential seed funding. By contrast, our findings suggest that reward-based crowdfunding is currently far better suited to the support of artistic and creative endeavours.

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