COVID-19 Effects on Reward-based Crowdfunding Campaigns

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Abstract

This paper investigates the effects of the COVID-19 pandemic on reward-based crowdfunding campaigns. Using data from the Kickstarter platform, I compare the number and success rates of the reward-based crowdfunding campaigns before and during the pandemic, for 16 different sectors. I find that the number of campaigns generally reduced during the pandemic period, but their success rates increased. I also find that the success rate differences are statistically significant for 6 out of the 16 sectors, and that this difference is positive for all 6 sectors, showing a robust result of better performance in terms of success rates.

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1. Introduction

The COVID-19 pandemic has had important and severe implications in the entire economic, financial and social systems, globally. Academics and researchers have done substantial work at trying to analyze the effects of the pandemic phenomenon in a plethora of economic areas, such as in trade (Baldwin and Tomiura, 2020; Bas et al., 2023), in monetary policy (Bhar and Malliaris, 2021; Cochrane, 2020) and of course in finance (Akhtaruzzaman et al., 2021; Beck; 2020, Mann, 2020; Zhang et al., 2020). On 5 May 2023, the World Health Organization officially declared the end of pandemic, so that academic and research communities can start looking at the pandemic as a past event, to measure its implications in a series of social and economic fields.

One of the areas that is worth looking at what effects the pandemic brought upon, is the crowdfunding area, because it is supposed to be an alternative way of financing, that was mainly developed and flourished in the context of another crisis, mainly the global financial crisis of 2008 (Daskalakis and Karpouzis, 2021). Therefore, it would be interesting to observe how the COVID-19 crisis affected the area of crowdfunding, given its past which shows that it flourishes during crises. Crowdfunding however is a vast area; it spreads from donation-based campaigns where ethical and social considerations are the main drivers for funders, to reward-based projects where funders are mainly attracted by their interest and excitement to fund a project, and to equity- and lending-based crowdfunding where the notion of financial returns is central, but not unique (Daskalakis and Yue, 2018). Researchers have long realized that there are severe differences across these various types of crowdfunding, so that not universal study for all types would make sense.

In this paper, I focus on the effects of the pandemic crisis on reward-based crowdfunding campaigns. Following the rationale of Daskalakis et al. (2023), I choose this particular type of crowdfunding for the three following reasons: i) this is the model that applies in a broader type of entrepreneurial ventures, ii) it is simplest model to be used as it does not impose complicated regulations, and iii) it does not require any financial return to the backer, which makes it unique when compared with the traditional financing methods. To my knowledge, this is the first study to assess the effects of the pandemic crisis on reward-based crowdfunding campaigns. I find that the pandemic has influenced reward-based crowdfunding campaigns, decreasing their number but increasing their success rates. These are important findings that build our understanding of how a major global crisis affects entrepreneurial crowdfunding campaigns, so that we know what to expect in similar future events.

The remainder of the paper is structured as follows. Section 2 briefly describes reward-based crowdfunding as a financing tool and refers to the current literature of COVID-19 and crowdfunding. Section 3 introduces the methodology, the dataset, the variables and the research questions. Section 4 presents the results and Section 5 concludes the paper.

2. Crowdfunding and COVID-19

Raising finance from the crowd is not a new idea. One of the most well-known crowdfunded projects was the funding of the pedestal for the Statue of Liberty in New York. The rapid rise of crowdfunding however took place in the aftermath of the financial crisis of 2008, mainly due to the following two main reasons: (a) the development and commercialization of the Internet and (b) the acute funding shortage that the 2008 financial crisis resulted in (Kirby and Worner, 2014). This second factor was the fuel that triggered enormous growth in this infant industry in its early years. Crowdfunding expanded very quickly and very broadly during 2009-2015, and gradually took its place as an alternative tool of financing. Wardrop et al. (2015) wrote back in 2015 that access to finance remained one of the most pressing challenges facing European SMEs, and crowdfunding was widely seen to play a complementary role to traditional finance. One year later, Zhang et al. (2016) added that "2016 will be the year that so called 'alternative Finance' becomes mainstream". Crowdfunding therefore emerged and flourished in the aftermath of a crisis, took its place as a financing alternative, and grew steadily until the COVID-19 pandemic stroke. It would thus be interesting to explore how it performed during another crisis, that may not have been financial in its origin, but did have tremendous financial consequences, namely the COVID-19 pandemic crisis. Bearing in mind that the pandemic officially ended on 5 May 2023, the academic community can now start looking at this area, as a past event; in this context, not a lot of papers have, to date, explored the effect of the pandemic crisis in crowdfunding.

It is worth looking at these handful academic efforts, to explore the approaches researchers have taken when exploring the link between crowdfunding and the pandemic. For example, Igra et al. (2021) look at charitable crowdfunding, examining the COVID-19 related campaigns in the early months of the pandemic and assess how existing social and health inequities shaped crowdfunding use and outcomes. They mention that during the first seven months of the COVID-19 pandemic, more than 175,000 crowdfunding campaigns were established in the US for coronavirus-related needs (data from the GoFundMe platform). They show that crowdfunding provides substantially higher benefits in wealthier counties with higher levels of education, concluding that there are inequalities of how crowdfunding is used in periods of crisis. Farhoud et al. (2021) also approach the pandemic-crowdfunding link from a social perspective, exploring the challenges for social enterprise crowdfunding during the pandemic (data from the UpEffect platform). They concluded that the government support schemes effectively froze the economy in the short-term, bringing negative effects on the social enterprise crowdfunding field, affecting the campaigns flows to platforms as well.

Focusing on the entrepreneurial crowdfunding area, Battaglia et al. (2022) investigate whether and to what extent the key drivers for equity crowdfunding backers to finance a specific project before COVID-19, are the same during the pandemic, and which type of backers are more prone to finance via equity crowdfunding in the aftermath of the crisis. They use a dataset of 437 Italian equity

crowdfunding campaigns over the period 2014–2020 and focus on a sub-sample of 79 projects posted on the websites during the pandemic. They find that the strength of the effect of their key variables on the campaign's success has changed during the COVID-19 crisis and that backers are more prone to finance companies with a high level of R&D expenditure and technological projects.

The above papers are, to my knowledge, the only ones that link the COVID-19 pandemic and crowdfunding, exploring how the former influenced the latter. Here lies the contribution of this paper; namely to shed light on the effects of the pandemic to crowdfunding, focusing on the rewards-based crowdfunding area.

3. Data, the Model and Results

3.1   The Dataset

The dataset used in this paper comprises of reward-based projects uploaded on the Kickstarter platform, one of the most famous reward-based crowdfunding platforms worldwide. Several studies have already used data from Kickstarter (e.g., Agrawal, et al., 2011; Mollick, 2014), while projects on this platform tend to show the best outcomes (Cox and Nguyen, 2017). In this study I use publicly available data from Kickstarter[2] from December 2018 to March 2021; this period is evenly split between the following two 14-months periods: pre-COVID December 2018 to January 2020, and during-COVID February 2020 to March 2021; this implies that the cut-off date is at 31 January 2020, which is the date when Centers for Disease Control and Prevention (CDC) of United States announced as the first day of quarantine[3]. The final full sample consists of 53,528 campaigns, 28,308 of which are pre-covid, while the remaining 25,220 are during-covid.

Table 1 shows the full sample descriptives of pre- and during- covid campaigns per category (industry). Looking at the relative allocation of the campaigns before and during the pandemic we can observe that the categories/sectors that showed an increase in their percentage during the covid period were the following: comics, design, games, publishing, technology and other, out of which the conics and games sector showed a significant increase. This finding can be considered as an expected outcome of the crisis, since the outputs of these particular two sectors can easily be put in a pandemic context where movement restrictions were introduced.

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[2] https://webrobots.io/kickstarter-datasets/
[3] https://www.cdc.gov/museum/timeline/covid19.html#Early-2020

Table 1: Full sample descriptives

Category	Pre-Covid		Covid	
	Freq.	Percent	Freq.	Percent
Art	2,359	8.33%	2,048	8.12%
Comics	1,684	5.95%	1,769	7.01%
Crafts	514	1.82%	393	1.56%
Dance	135	0.48%	46	0.18%
Design	2,185	7.72%	2,039	8.08%
Fashion	2,136	7.55%	1,711	6.78%
Film & Video	2,590	9.15%	1,651	6.55%
Food	1,478	5.22%	979	3.88%
Games	3,745	13.23%	5,009	19.86%
Journalism	286	1.01%	169	0.67%
Music	1,890	6.68%	1,155	4.58%
Photography	475	1.68%	366	1.45%
Publishing	2,186	7.72%	2,075	8.23%
Technology	2,880	10.17%	2,678	10.62%
Theater	463	1.64%	119	0.47%
Other	3,302	11.66%	3,013	11.95%
Total	**28,308**	**100%**	**25,220**	**100%**

3.2 The effect of Covid

I first test whether Covid had a statistically significant effect on the success rate of the reward-based crowdfunding campaigns. To do so, I follow the rationale of Daskalakis et al. (2023)[4] who run probit and logit regressions to identify the success factors of the reward-based crowdfunding campaigns, using a huge dataset of 179,066 campaigns covering the period of 2009-2021. Specifically, I use their logit and probit regressions, adding a Covid dummy, which takes the value of 0 for campaigns that took place during December 2018 to January 2020 and the value of 1 for campaigns that took place during February 2020 to March 2021. By doing so, I isolate the effect of the covid variable, by controlling for the other success factors. Thus, the model is the following:

$$logit(p(Success)) = f(Words, Backers, Country, LnAvgRaised, Goal, CovidDummy)$$

$$probit(p(Success)) = f(Words, Backers, Country, LnAvgRaised, Goal, CovidDummy)$$

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[4] I use the set of variables used of Daskalakis et al. (2023) since they are the most popular reward-based crowdfunding success factors described in the literature. For a detailed description about the literature behind these variables see Daskalakis et al. (2023).

While the variables description is as follows:

Table 2: The model variables

Variable Name	Description
Success	Equals 1 if the raised amount is higher than the initial "Goal" and 0 otherwise.
Words	The total number of words used to describe a campaign.
Backers	The total number of funders.
Country	Equals 1 if the country is US and 0 otherwise.
LnAvgRaised	The logarithm of the average amount per backer pledged in a project.
GoalPerDays[5]	The funding goal each campaign had set divided by the campaign duration in days.
CovidDummy	Equals 1 for campaigns that took place during February 2020-March 2021 and 0 for campaigns that took place during December 2018-January 2020.

The results are the following:

Table 3: Summary of Logistic and Probit Regression Analysis for Variables Predicting success in crowdfunding projects

VARIABLES	Logit	Probit
Constant	-6.140***	-3.302***
	(0.102)	(0.049)
Words	0.005**	0.003**
	(0.003)	(0.001)
Backers	0.013***	0.004***
	(0.000)	(0.000)
Country	1.011***	0.534***
	(0.030)	(0.015)
LnAvgRaised	0.859***	0.453***
	(0.013)	(0.006)
GoalPerDays	-0.004***	-0.001***
	(0.000)	(0.000)
CovidDummy	**0.162*****	**0.111*****
	(0.030)	**(0.016)**
Model chi-square	29384.518 (<0.001)	34667.002 (<0.001)

Note: Standard errors in parentheses. *** and ** denote statistical significance at 0.01 and 0.05 respectively.

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[5] Daskalakis et al. (2023) use a goal range set of variables in their paper. I use a GoalPerDays ratio as a similar procy to capture the relative size of campaigns, scaled by their duration in days.

The control variables results are consistent with the literature in the sense that they show the expected signs (namely relationships with success) as in Daskalakis et al. (2023). The only difference with their study is that the "Words" variable is statistically significant and positive in our study (it was insignificant in their study), implying that the higher number of words per campaign, the higher the probability of success. Turning our focus on our "covid" variable, this is statistically significant at 1% and positive, showing that success rates during the pandemic where higher, when compared with the pre-covid period. This is an interesting result that deserves further exploring.

Given that the covid dummy variable was found to be positive and significant, I then dig deeper in exploring sector differentiations. Table 4 presents the change rates in the number of campaigns and the success rates pre- and during-covid for all categories/sectors.

Table 4: Successful projects

Category	Numbers of campaigns			Success rates	
	Pre-Covid	**Covid**	**Change rate**	**Pre-Covid**	**Covid**
Art	2.359	2.048	-13,18%	66,55%	75,93%
Comics	1.684	1.769	5,05%	85,87%	88,58%
Crafts	514	393	-23,54%	32,49%	40,71%
Dance	135	46	-65,93%	65,19%	60,87%
Design	2.185	2.039	-6,68%	91,90%	90,73%
Fashion	2.136	1.711	-19,90%	64,09%	65,17%
Film & Video	2.590	1.651	-36,25%	57,57%	57,12%
Food	1.478	979	-33,76%	30,51%	36,36%
Games	3.745	5.009	33,75%	84,99%	90,20%
Journalism	286	169	-40,91%	36,36%	40,24%
Music	1.890	1.155	-38,89%	67,14%	69,35%
Photography	475	366	-22,95%	51,37%	62,57%
Publishing	2.186	2.075	-5,08%	74,34%	80,48%
Technology	2.880	2.678	-7,01%	29,48%	32,26%
Theater	463	119	-74,30%	68,68%	62,18%
Other	3.302	3.013	-8,75%	98,82%	99,00%
Total	28.308	25.220	-10,91%	68,69%	74,47%

For example, 2,359 art campaigns were uploaded to Kickstarter in the 14-month period before Covid, while the number of the art campaigns uploaded to Kickstarter in the 14-month period during Covid dropped to 2,048, or by 13.18%. Also, 66.55% of the overall 2,359 art projects uploaded in the Kickstarter platform before the 31st of January 2020 (pre-Covid period) were successful, while the respective success rate during Covid was 75.93%. Several interesting results can be derived when looking at Table 2. First, there were fewer campaigns overall during the 14-months Covid period of the study (25,220) when compared with the 14-months pre-covid

period (28,308), showing a drop rate of 10.91% respectively, which can be considered a significant drop. However, if we look at the individual numbers of the categories, we observe that there were two specific sectors, those of Comics and Games, where the number of campaigns increased, by 5.05% and 33.75% respectively. This implies that Covid brought an overall drop in the number of campaigns, but favoured specific sectors that are mainly linked with staying home, which is an expected outcome.

Turning to the success rates, an interesting finding is that there are significant differences across categories for both periods. The highest rates are observed for Design, Comics, Games and Other, while the lowest rates are shown in Technology, Crafts and Journalism. This implies that there are inherent characteristics across sectors/categories that determine success. Focusing on the comparison between pre- and during-covid, a striking result is that the success rate for all projects is higher in the during-covid period when compared to the pre-covid period (74.47% vs 68.69% respectively). Looking at the individual categories, there are only four categories that success rates are lower during the covid period (Dance, Design, Film & Video and Theater). Last, I run a mean differences test to explore whether the success rates between pre- and during-Covid differ significantly across (at 95% level) for each category (Table 5).

Table 5: Mean Differences

Category	Mean			t-value	p-value
	Pre-Covid	During	Dif		
Full sample	**0,687**	**0,745**	**-0,058**	**-14,798**	**0,000**
Art	**0,666**	**0,759**	**-0,094**	**-6,869**	**0,000**
Comics	**0,859**	**0,886**	**-0,027**	**-2,392**	**0,008**
Crafts	**0,325**	**0,407**	**-0,082**	**-2,562**	**0,005**
Dance	0,652	0,609	0,043	0,524	0,699
Design	0,919	0,907	0,012	1,349	0,911
Fashion	0,641	0,652	-0,011	-0,693	0,244
Film & Video	0,576	0,571	0,005	0,026	0,614
Food	**0,305**	**0,364**	**-0,059**	**-3,027**	**0,001**
Games	**0,850**	**0,902**	**-0,052**	**-7,428**	**0,000**
Journalism	0,364	0,402	-0,038	-0,822	0,206
Music	0,671	0,694	-0,023	-1,267	0,103
Photography	**0,514**	**0,626**	**-0,112**	**-3,263**	**0,001**
Publishing	**0,743**	**0,804**	**-0,061**	**-4,801**	**0,000**
Technology	**0,295**	**0,323**	**-0,028**	**-2,246**	**0,012**
Theater	0,687	0,622	0,065	1,348	0,911
Other	0,988	0,99	-0,002	-0,708	0,240

A first result is that the overall success rates for the full sub-samples (68.69% vs 74.47%) do differ significantly, leading to the conclusion that, in general, campaigns that were uploaded during the pandemic period had higher chances of success than the ones that were uploaded before Covid. This is an important finding, since it seems that the crowdfunding tool displayed higher levels of performance during the pandemic. Looking at the results for each category, we observe that statistically significant differences in success rates were displayed for 6 out of the total 16 categories and that for all these 6 categories the success rate was (significantly) higher during the pandemic. It should also be noted that for both sectors that showed a significant higher percentage (comics and games), as highlighted in the previous section, their success rate increase was also significant.

4. Conclusions

In this study I investigate whether COVID-19 affected reward-based crowdfunding campaigns. Specifically, I first run a logit and a probit regression, using a set of control variables plus a covid dummy, to test whether there are different success probabilities between campaigns that ran before and during covid, and then I compare a. whether the number of campaigns was higher/lower before and during the pandemic per sector, and b. whether the campaign success rates were different before and during the pandemic per sector. The main findings are that, indeed campaigns that were launched during covid had higher chances of success and that the success rate might have increased, but the number of campaigns reduced during covid. It should also be noted that the success rate is statistically higher for 6 out of the total 16 sectors we analyze, while for the few cases that the performance is lower, the result is not statistically significant. The main conclusion of the study is therefore that the pandemic has influenced reward-based crowdfunding campaigns lowering their numbers but increasing their performance.

These findings have interesting practical implications. First, it is shown that crowdfunding seems to act as a "crisis buffer", as it provides a funding alternative that seems to work better during the crisis, in terms of performance and success rates. Further analysis should be conducted in the reasons why the number of campaigns was decreased; a possible reason could be that the pandemic brought an initial shock to economies and societies, so that the first months of the pandemic could have passed while societies and economies were trying to adapt to the new economic context of doing business.

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