Successful Crowdfunding Campaigns: The Role of Project Specifics, Competition and Founders' Experience*

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Abstract

We focus on reward-based crowdfunding and identify the basic determinants of successful crowdfunding campaigns including new determinants not analyzed in previous studies. Using a rich database of Kickstarter projects launched during the period from April 2009 to April 2017, we employ an empirical logit model to test the causalities and statistical significance of the selected factors. Our new empirical findings suggest that launching a project campaign during the weekend and during the month with the stronger competition in the form of other launched projects decreases the success rate of the campaign. On the other hand, a longer preparation period on Kickstarter and a higher projects' density in the given state can increase the chances to succeed. We also conclude that the competition plays the most prominent role in the category of the smallest projects. Conversely, a negative effect of projects launched at weekends and a positive effect of a founder's experience is the strongest in the group of the largest projects.

1. Introduction

Crowdfunding represents one of the alternative ways of funding new projects compared to traditional borrowing using banks as financial intermediators. It offers a possibility to invest or gain money quickly, with relatively low transaction costs and without bank or traditional financial institution intermediation using the website interface. The popularity of this relatively new funding mechanism has risen considerably in the past few years; researchers indicate two main reasons. First, the financial crisis of 2007 and 2008 led to difficulties faced by entrepreneurs, start-ups and innovators in raising funds. Traditional banks were less willing to lend because they strongly tightened their credit underwriting practices and entrepreneurs were forced to find new sources of capital (Harrison, 2013 or Bruton et al., 2015). Second, the development of Web 2.0[1] has enabled the existence of platforms for initiating and

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[1] Web 2.0 is a designation of the stage of web development where the solid content of the website has been replaced by a space for sharing and collaborative creation of web content.

investing projects. It is considered to be a key component enabling the dynamic expansion of crowdfunding by many authors (Brabham, 2008; Kleemann et al., 2008 or Cumming, 2012).

Usually, these activities take place on a crowdfunding platform where investors are interconnected with borrowers or entrepreneurs. There are four basic types of crowdfunding platforms or business models of crowdfunding: (i) the donation-based model (a donor contract without an existential reward or monetary compensation in order to support a specific project), (ii) the reward-based model (a purchase contract for some type of product or service), (iii) the lending-based model (a peer-to-peer lending contract for a fixed period including interest payment sometimes also called micro lending or social lending) and (iv) the equity-based model (a shareholding contract, equity-like instruments or revenue sharing in the project).

Unlike the banking loans and investing in financial markets, crowdfunding is accessible and open to everyone (Bouncken et al., 2015). Moreover, bank lending activities are severely influenced by institutional factors (see Kapounek, 2017). Crowdfunding is the practice of funding a project or venture and it is based on small contributions from a large number of investors (i.e. from the crowd). It can cause a revolution in small business or start-up financing, inasmuch as smaller entrepreneurs who traditionally have had great difficulty obtaining capital can have access to new sources of financing (Bradford, 2012). Crowdfunding developed primarily in the arts and other creativity-based industries like film, music or video games (Agrawal et al., 2014). Later on, it began to promote itself even in the area of larger technology projects. Many web contributions, blogs and specialized sites offer ways how to launch and accomplish startup goals via crowdfunding financing; some of them sound vague and idealistic (e.g. "tell your story" or "provide value for value"), some of them are rather technical. With the increasing number of new projects and the competition in this field, the key determinants of successful crowdfunding campaign are gaining even scientific attention.

In our paper, we identify the basic determinants of successful crowdfunding projects and offer evidence on the main determinants of reward-based crowdfunding using a rich set of data from one of the most dominant and very popular crowdfunding platforms in the US, Kickstarter, using a long-time series (4/2009 to 4/2017). Kickstarter is a good example of a reward-based crowdfunding platform and at this moment probably the most successful case. Since the launch of the Kickstarter platform, in April 2009, 14 million people have backed the project, the amount of 3.5 billion USD has been pledged, and around 140,000 projects have been successfully funded. Globally, in 2015, crowdfunding industry estimated fundraising volume was 34 billion USD (of which 17 billion in North America) with reward and donation-based CF of 5.5 billion (Massolution, 2015).

Our paper has four main contributions to the existing literature on the successful financing of crowdfunding projects. First, we propose several new basic determinants of successful crowdfunding projects; they are the length of the preparation of the project in days (the project specific) and three factors of competition (the number of launched projects in a specific month or in a specific federal state and a variable capturing whether the project was launched at the weekend or not). According to our results, launching a project campaign during the weekend and during the month with the stronger competition decreases the success rate of the campaign. On the other hand,

a longer preparation period on Kickstarter and a higher projects' density in the given state can increase the chances to succeed. Second, we test separated groups of projects according to the goal size and estimate the impact of selected determinants in these categories. We identify certain trends which emerged with the varying sizes of the projects goals. Third, we take the category of the project into account and find that projects in the "design" and "games" category are among the most successful types of projects. Fourth, we use a substantially extended dataset of consistent US projects and the results of the previous empirical studies on CF success determinants are substantially updated. We confirm that another factor influencing a success of crowdfunding campaign is a goal size of the project, a duration of the campaign and a previous experience of the founder.

The remainder of the paper is organized as follows. Section 2 defines the phenomenon of crowdfunding and contains a related literature review. The empirical model used in our analysis and an overview of the data and variables is provided in Section 3. In Section 4, the results of the model are presented. Section 5 brings concluding remarks.

2. Literature Review

In our paper, we examine reward-based crowdfunding, which is one of the most popular types of crowdfunding. Reward-based crowdfunding is a source of funding mainly for small businesses. This type of financing is focused on startups that do not qualify for traditional small business loans but have interesting and vital projects or are just testing the market. The founders of the businesses post their projects on a crowdfunding portal, targeting a certain amount of capital to raise. In return for a donation (contribution) from the backers of the project (contributors), businesses provide rewards (tangible items or services) or other types of incentives for participating. Very often, this type of crowdfunding has the form of pre-selling or pre-ordering when the backers are consumers (or "prosumers", see e.g. Belleflamme et al., 2015) who contribute to a specific project in exchange for a more favorable price of the product or service or a possibility to purchase it sooner than other non-contributing consumers.

There are few survey studies which can help us to organize the contemporary scientific crowdfunding literature and systematically focus our literature review. Guan (2016) divides them into three groups – conceptual research, empirical research and modeling research. We are interested in the empirical research. Feller et al. (2013) classify literature on crowdfunding according to the four different forms of crowdfunding. These forms are similar to those we mentioned in the introduction. Let us repeat that we are interested in reward-based crowdfunding (or the systems of collective patronage, see Feller et al., 2013).

Another point of view is chosen by Moritz and Block (2016), who focus on the main crowdfunding actors (capital seekers, capital providers, and intermediaries). Many studies distinguish between investors (funders) and entrepreneurs (founders). In our paper, we are interested mainly in the investigation of the founders (i.e. capital seekers). Therefore, we try to identify the key determinants of the success of crowdfunding campaigns.

Moritz and Block (2016) note that the literature on capital seekers is predominately focused on the determinants of success, motivation for crowdfunding, and the legal restrictions of crowdfunding. Let us mention that there are only a few studies identifying the determinants of successful crowdfunding projects using data from the Kickstarter and the other crowdfunding platforms.

Etter et al. (2013) focus on two groups of determinants that can potentially predict the success of a crowdfunding project: (1) time-series determinants (such as the funding goal, project duration, number of funders, and the sum of the pledged money) and (2) social determinants (information from Twitter and information from Kickstarter projects or funders' webpages). The authors conclude that time-series determinants can predict the success of the project with a higher accuracy than social determinants. We focus solely on the time-series determinants but those interested rather in social determinants may find the following studies to be beneficial (Agrawal et al. (2015), Kraus et al. (2016), Yuan et al. (2016) or Skirnevskiy et al. (2017)).

The size of the funding goal as an important determinant of the project campaign success is examined by many previous studies. Studies predominantly claim that the higher project goals lead to the lower probability of the successful financing. Mollick (2014) notes that smaller projects have a higher probability to obtain full funding because they can be more easily self-funded by the project founders. Since Kickstarter offers funding on an all-or-nothing basis, it may encourage individuals to make up the difference between the amount desired and the amount raised out of their own pocket (i.e. to self-fund their own projects). It is very likely that smaller projects can be more easily self-funded and it can partly explain why smaller projects succeed more often. Belleflamme et al. (2014) offer another reason why small projects can be more successful; they argue that investors prefer reward-based investments in the case of projects with smaller initial capital requirements and profit-sharing in the case of projects with a higher required investment. In addition to the aforementioned studies, Cordova et al. (2015), Crossetto and Regner (2015) or Marelli and Ordanini (2016) also confirm that a higher target amount leads to a lower probability of project campaign success. In our empirical model, besides the project goal as an explanatory variable, we also set up the separate models for the different goal sizes of the projects.

Duration of the financing period of the individual project is investigated by Mollick (2014), Colombo et al. (2015), Koch and Siering (2015) or Skirnevskiy et al. (2017). Koch and Siering (2015) argue that the length of the funding period should have a direct positive impact on the money that is pledged to a project. It is because the longer the project is presented at the crowdfunding platform, the higher the probability that a potential backer gets aware of it is. On the other hand, Mollick (2014) states that the longer duration should lead to the lower probability of the success because possibly longer durations are signs of lack of confidence. The empirical evidence on the influence of the duration of the project financing period is mixed. Mollick (2014) or Skirnevskiy et al. (2017), who study Kickstarter projects, and Crosetto and Regner (2015), who study German projects from the Startnext platform, find a negative impact of the project duration. Cordova et al. (2015) who study technological projects from several CF platforms, find a positive effect and Koch and Siering (2015) or Colombo et al. (2015) find no effect of the project duration. As a complement to project duration, we examine project preparation period on Kickstarter in our empirical model.

Some of the empirical studies investigate geographical aspects of the project campaign success, but their approach varies considerably. Agrawal et al. (2015) examine a crowdfunding platform Sellaband that connects artists with funders. They find out that investment patterns over time are not strongly related to the geographic distance between artist and funder. Authors add that online mechanisms which crowdfunding platforms use can reduce economic frictions associated with such investments over long distances. Mollick (2014) chooses a different approach as he investigates the effect of the proportion of creative individuals in a founder's city on the success of a crowdfunding effort. According to him, a proportionally greater creative population is associated with a greater chance of success for founders. In our paper, we propose a variable which captures such geographical differences among crowdfunding projects. More specifically, we suppose that a denser concentration of crowdfunding projects in the given US state can raise the number of local oriented backers and thus the chances for success.

Butticè et al. (2017) who investigate serial crowdfounders, that is, entrepreneurs who repeatedly turn to crowdfunding to finance their projects, suggest that these experienced founders could be more successful in the crowdfunding campaigns. They claim that the internal social capital developed within the crowdfunding platform during campaign makes serial crowdfounders' campaigns more successful than those launched by novice crowdfounders. Econometric results on a sample of 31,389 Kickstarter campaigns confirm their contentions. Similarly, Kuppuswamy and Bayus (2018) find that an additional backer support to the individual project is positively related to the history and the previous experience of the project founder. We can probably suppose that the higher backer support eventually leads to the higher probability of success. On the contrary, Marelli and Ordanini (2016) conclude that their variables related to the presence of previous projects (i.e. the founders' experience), both successful and unsuccessful, are not significant. Koch and Siering (2015) also confirm that there is no significant influence of the number of projects founders have previously created. Both studies investigate Kickstarter platform as well and the mixed evidence is, therefore, even more surprising. We investigate the previous crowdfunders' experience in the empirical part of our paper.

3. Data and Empirical Specification

3.1 Basic Determinants of Successful Crowdfunding

We examine a variety of factors of successful crowdfunding in our analysis. We focus on projects specifics which describe rather internal aspects of the individual project, then we describe factors of competition between individual projects and finally we examine the basic characteristic of the projects founders - their experience on Kickstater. We especially focus on the newly used determinants of the project campaign success (the length of the preparation period, the number of launched projects in a specific month or in a specific federal state and variable capturing whether the project was launched at the weekend or not) and we built the hypotheses on descriptive findings from our dataset.

Project Specifics

Project specifics are summarized in Table A2 in *Appendix* (in columns), the different categories of crowdfunding projects from Kickstarter are in rows.[2] The table provides the mean and standard deviation for each variable and category. Moreover, the second column shows the ratio of the projects successful in each category and third column describes the percentage of project goals that were actually covered by backers.

Our first variable is $goal$ which measures the target amount of the project. A higher pledging goal is usually associated with projects of a greater size. Larger projects are very often associated with complex technological projects. The potential funders evaluate the projects also according to the probability of achieving the pledging goals, and larger projects with higher goals can be treated as riskier. Moreover, small projects can be easily self-funded and it should increase their chances to succeed. The mean goal of all projects is 16,725 USD and the mean goal of successful projects is 9,220 USD in our dataset. Thus, we think that the size of the pledging goal probably has a negative impact on the success of funding.

The variable $duration$ denotes the number of days for which a project accepts pledges. A funding period can last anywhere from one to 60 days.[3] Shorter periods set a semblance of confidence and help motivate people to invest. More time does not create more urgency and it is easier for backers to procrastinate. The funding period seems to be very similar for different categories of projects and successful projects have, on average, a shorter funding period than all the projects in the sample (see the last two rows of Table A2). Therefore, the shorter the duration of the funding period, the higher the probability of the success of funding.

Kickstarter allows founders to create a project and finally launch it after some time, so they have the flexibility to launch their projects whenever they are ready. We can approximate the preparation period by the time which elapsed between the day when the founder started working on the project on Kickstarter and the day when the funding campaign was launched. This time horizon in days is captured by the variable $preparation$. The amount of time it takes may vary depending on the project´s scope and size. As we can see, longer preparation time is often associated with larger projects. A longer preparation period can also indicate a higher quality of preparedness. Let us note that the variable $preparation$ cannot capture the whole preparation period of the individual project since the substantial part of work could be done outside the Kickstarter platform. We however believe that our variable is acceptable approximation. Thus, we suppose that the length of the preparation period on Kickstarter has a positive impact on the success of funding.

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[2] Kickstarter distinguishes between 15 basic categories of crowdfunding projects, but we have merged some for the sake of clarity. The art category includes the former categories art, craft, dance, photography and theatre, the publishing category now includes comics, journals and publishing. See Table A1 for details. In the subsequent regression analysis we will control all 15 basic categories.

[3] Kickstarter lowered the maximum amount of time a creator can choose for their project from 90 days to 60 days in the past and strongly encourages setting up projects lasting 30 days of fewer, because those projects have the highest success rates. Another change that is worth mentioning is the possibility to launch campaign without the preparation period. It was introduced in July 2014. It gives creators a choice: launch the project whenever they are ready or get feedback from one of the Community Managers first.

Competition Among Projects

In addition to these basic determinants, we can also mention the additional variables that can explain the success of the CF projects. First of all, we consider some factors of competition between individual projects.

Our sample includes the period from April 2009 to April 2017 and we can measure the number of launched projects (in thousands) in every month, the variable $nprojects(month)$. We can expect that if the project was launched in a period with many other projects, the battle for backers should be more demanding. i.e. the competition among projects rises. Let us emphasize here that the first few days after launching the project are crucial for the project's success (see e.g. Crosetto and Regner, 2015). The number of launched projects in every month is shown in the left part of *Figure 1* together with the success rate in the month (i.e. what proportion of the launched projects finished as successful). We suppose that a higher number of other launched projects in a given month can limit the success of funding and as such it can increase the competition among projects. For comparison, we include a total amount of funds received in the given month as well (a right part of *Figure 1*).

Figure 1 Success Rate, Number of Projects and Funds Received in a Given Month[4]
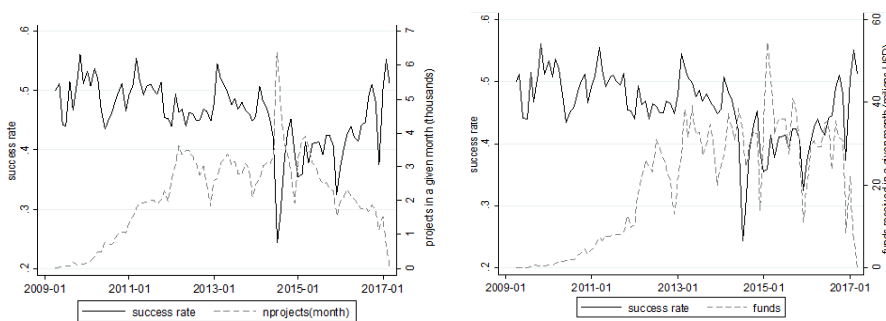
Source: Own calculations.

To examine the concentration of crowdfunding and the popularity of crowdfunding projects in federal states, we define the variable $nprojects(state)$ and compute how many projects (in thousands) were launched in every of the 50 states of the USA in the observed period. Such concentration of crowdfunding projects is obviously closely linked to the size of the population in the given state. We suppose that a proportionally greater population and a proportionally greater number of individuals interested in the crowdfunding financing are associated with a greater chance of success for founders in the given state. We suppose that a concentration of crowdfunding projects can raise the number of potential backers in the given state and

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[4]Since we capped our dataset only to finished projects, we can observe a sharp decline in the launched projects at the end of the examined period (some of the launched projects have not finished yet and they are not included). Let us recall that the maximum duration of the CF projects is 60 days, thus the distortion referred to above relates in principle only to the last two months. Most of the decline since 2015 should be, therefore, explained by the decreasing interest in the financing throughout Kickstarter.

thus the chances of success. Many studies on this topic report that the success of entrepreneurial ventures is frequently geographically conditioned (Chen et al., 2009 or Shane and Cable, 2002). On the other hand, Agrawal et al. (2015) note that crowdfunding can mitigate many of the distance effects, which can be found in traditional fundraising. The empirical results from Mollick (2014), however, suggest that geography (the distance or population in a given city) may play an important role in the success of crowdfunding efforts. Therefore, we suppose that backers are (at least partly) more willing to support local products and the probability of the project success can raise with the projects' density in a given state.

Timing of the launch of the project is important. As we have already mentioned above, the first few days and hours are crucial for the project campaign success. Generally, a founder should launch the project during a time when potential backers are the most interested in the crowdfunding financing. The internet activities at weekends generally differ from those on weekdays. Kuppuswamy and Bayus (2018), who investigate the role of information in the dynamic behavior of project backers on Kickstarter, mention that backers are more willing to contribute on weekdays compared to weekends with activity increasing from Sunday to a peak on Wednesday. Similarly, Howard et al. (2001) mention that there is a heavier use of the Internet during a typical weekday than during a weekend. Moreover, participation in some of the most serious Web activities also falls. According to their investigation, getting financial information drops by 50 percent during the weekend and seeking information about products drops by 36 percent. King (2001), who investigates online culture by constructing an affective portrait of the Internet users, adds that the traffic on internet search engines is lower during weekends.

Therefore, we define the variable $weekend$ which measures if the project was launched at the weekend (dummy = 1). To support our hypothesis, we use the tools of Google Trends and follow the days when the expressions "crowdfunding" and "Kickstarter" were most popular and searched during the analyzed period.[5] To sketch the economic intuition for this claim, we illustrate the results of such searches only for the last 90 days of the analyzed period (due to the limited chart size) in *Figure 2* where we can observe that the interest in crowdfunding was falling particularly at weekends.[6]

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[5]Google Trends provide a time series index of the volume of internet search queries of phrases searched by users based on location and time. It is an index number from 0 to 100. 100 stands for a time period when the number of searches was relatively the highest.

[6] Let us note that these differences between weekend and workweek are also statistically significant. We employ two-sample t-tests for a difference in mean of independent (unpaired) samples. For the expression „crowdfunding" is $t(87) = 4.099, p = 0.000$ with F-test of equality of variances $F(24,65) = 1.67, p = 0.086$. For the expression „kickstarter" is $t(87) = 3.375, p = 0.001$ with F-test of equality of variences $F(24,65) = 0.93, p = 0.401$. Data from Google Trends are used only for this quick overview and serve as a hypothesis support; they are not anyway included in our estimated regression models.

Figure 2 Searching for the Words "Crowdfunding" and "Kickstarter" (gray bars – weekends)
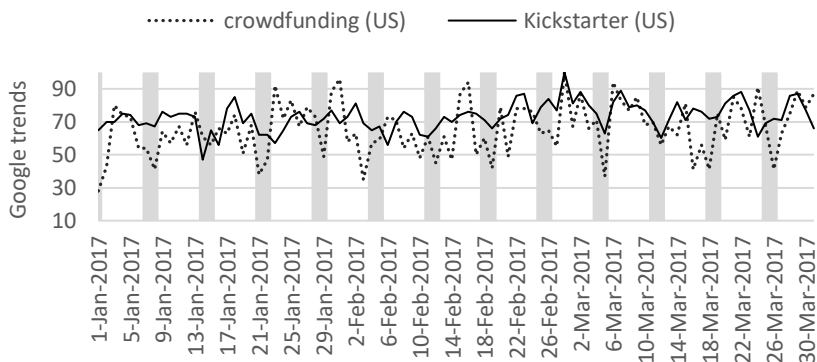
Another reason for starting a successful project during the week is the possibility to get press coverage on the launch day. Lurig (2012) notes that Kickstarter promotes projects every Monday through Friday on their social networks and most news sites usually cover Kickstarter projects during the workweek. As a result, launching the project during the weekend is expected to negatively influence the success of funding.

Experience of Founders

The founders on Kickstarter are not limited to creating only one project so we can suppose that the founders can gain experience and skills via a repeated funding process. Through this process, they can learn how to make and to present potentially successful projects and so their chances of success increase. It should be noted that an individual founder can create dozens of projects (and some of them do it); however, it is more of an exception. We create the dummy variable *experience*, which takes value 1 for projects that have an experienced founder (a founder with more than one earlier project on Kickstarter) and 0 otherwise. We suppose that an experienced founder probably has a positive impact on the success of funding. In addition to this variable, we measure an alternative specification where the variable *experience*2 takes value of the number of previous projects which were financed in the past (e.g. 2 if it is the third project of the individual founder).

The correlation matrix of the above-mentioned variables is presented in the *Appendix* in Table A3. There, we can observe other basic and relatively intuitive relationships between the explanatory variables. For example, larger projects require a longer duration, preparation and experienced founders prefer to launch smaller projects.

3.2 Econometric Model

In order to explain the basic factors behind successful reward-based crowdfunding projects, we define the following empirical model which is set up as follows:

$$P(s_i = 1) =$$

$$\alpha + \sum_{p=1}^{P} \beta_p \, pro_{pi} + \sum_{c=1}^{C} \gamma_c \, comp_{ci} + \delta experience_i + \sum_{j=1}^{J} \theta_j \, cat_{ji} + \varepsilon_i, \tag{1}$$

where the dependent variable is the conditional probability s that an individual project i was successfully financed (s_i takes value 1 if the individual project was successfully financed and 0 otherwise). First set of variables, denoted as pro, represents specifics for each project, p, second set of variables, denoted as $comp$, represents factors of competition, c, among individual projects, the variable $experience_i$ captures founders previous experience on Kickstarter and the last set of variables, denoted as cat, includes control variables for every category j as described in Table A1 in *Appendix* (left side of the panel).

3.3 Estimation Technique

In the subsequent empirical analysis, we use the logistic regression model and Maximum Likelihood (ML) estimation. There are two main reasons for using this method. First, this is because the outcome (s_i) is measured with a dichotomous variable. Second, we suppose that the dependent variable is explained by the nonlinear form of function F. Given the nonlinear form of function F, we should not use the common Ordinary Least Squares (OLS) method, but rather the Maximum Likelihood estimation.

For our sample of n cases ($i = 1, \dots, n$), we estimate logit model for dependent variable y_i ($success_i$) and a column vector of explanatory variables $\boldsymbol{x_i}$ (all our explanatory variables including the intercept term). We suppose that the probability $y_i = 1$ is given by P_i and the probability $y_i = 0$ is given by $1 - P_i$:

$$y_i = \begin{cases} 1 \; with \; probability \; P_i \\ 0 \; with \; probability \; 1 - P_i \end{cases} \tag{2}$$

and we model the probability $y_i = 1$ through the simple model:

$$P_i(y_i = 1 | x_i) = F(\beta' \boldsymbol{x_i}), \tag{3}$$

where F is a cumulative distribution function of the logistic distribution, $\boldsymbol{x_i}$ is a vector of exogenous variables and β' is a row vector of coefficients (parameter vector).

In order to find the basic determinants of a successful crowdfunding project and to measure their importance, we compute the average marginal effects in the regression analysis (Section 4). The marginal effects reflect the change in the probability of $y_i = 1$ given a 1 unit change in the independent variable x, when the other covariates

are kept fixed. In the case of the average marginal effect it is the average change in probability when x changes by 1 unit:

$$\frac{\partial \rho}{\partial x_i} = \frac{\sum f(\beta' x_i)}{n} \beta_i, \qquad (4)$$

where f is the density function that corresponds to the cumulative function F. The marginal effects are thus nonlinear functions of the parameter estimates and levels of the explanatory variables.

3.4 Dataset

Our initial dataset contained 205,686 projects (i.e. 205,686 observations) from Kickstarter. The dataset covers the period from April 2009 to April 2017. The data are extracted through Web Robots, which is a specialized platform for web data extraction. For better clarity and comparability, we focus exclusively on projects in the United States and only on projects that have been completed (whether successfully or not).

We decided to eliminate the most extreme values of fundraising goals, because they predominantly represent non-serious efforts to raise funds (see Mollick, 2014 or Skirnevskiy et al., 2017). We excluded projects with goals above a million dollars (533 projects) and projects below $100 (2,881 projects). The exclusion of these projects can provide a better statistical inference of estimates and allows comparing our results to the leading studies in this field. Our new dataset contains 202,272 observations (over 98% of the former sample).

4. Regression Analysis of Successful Crowdfunding

The dependent variable is the conditional probability s that an individual project i was successfully financed and the independent variables are described in the previous part of the paper. The first set of variables is related to the project specifics (pro) and includes variables $loggoal$, $duration$ and $preparation$.[7] The second set of variables captures competition among projects ($comp$) and includes $nprojects(month), nprojects(state)$ and the variable $weekend$. The last explanatory variable is a dummy variable $experience$ and its alternative $experience2$. There are basic descriptive statistics of the dependent variable and these explanatory variables in Table 1.

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[7] We use logarithm of goal because the variable goal is highly positively skewed.

Table 1 Descriptive Statistics of the Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
success	202.272	0.444	0.497	0	1
log_goal	202.272	8.595	1.444	4.615	13.814
duration	202.272	34.350	13.014	1	92
preparation	202.272	43.046	104.178	0	2233
nprojects(month)	202.272	2.804	1.044	10	6.391
nprojects(state)	202.272	14.147	14.093	215	39.453
weekend	202.272	0.140	0.347	0	1
experience	202.272	0.236	0.425	0	1
experience2	202.272	0.349	2.118	0	99

Source: Own calculations.

The empirical model, equation (1), is estimated using the logistic regression and maximum likelihood (ML) estimation in the econometric software Stata/IC 14.0. We present the results of the full sample of 202,272 observations (Table 2 below), the restricted samples divided according to goal size (Table 3 below) and restricted samples divided according to different CF categories (Table A4 in *Appendix*).

The average marginal effects are depicted in the Table 2. In all regressions we control for different CF categories.[8] First of all, we draw conclusions about the expected relationships between the independent variables and the dependent variable. As expected, increasing goal size has a negative impact on success. Negative relationships also exist in the case of the longer duration of the projects, the higher number of projects launched in a given month and for projects launched during the weekend. On the other hand, the results show that a longer preparation, the concentration of CF projects in the given state (as a result of regional preferences) and the experience of the founders are positively associated with success.

The average marginal effects, however, allow us to conclude about the marginal effects of the explanatory variables on the probability of success as well. Model (M1) describes quantitative effects of the project specifics. For example, if the goal amount of the project is twice as large (higher by 100 %), the probability of success will be lower by about 6.6 percentage points. If the duration of the project is 10 days longer, the probability of success will be lower by about 3.6 percentage points. The effect of preparation is positive and quite weak.

Model (M2) includes indicators of competition among projects, model (M3) includes the founder' experience on Kickstarter and model (M4) includes all explanatory variables. Factors of competition have rather weak effect on projects success. For example, if the number of launched projects is higher by 1000 projects (in a given month), chances for success drop by 3.3 percentage points. At the same time, the higher the number of projects in a specific state, the higher the chances for success. On the other hand, the effect of the experienced founder is relatively large, i.e. if the founder of a particular project has previous experience with the foundation of other

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[8] We have already mentioned above that complex technological projects are usually connected with large project goals, whereas e.g. music projects with rather smaller goals. It shows certain heterogeneity among different project categories. Table A4 in *Appendix* describes the results of regressions in different CF categories separately.

projects, the chance for success will increase by 14.1 percentage points). Model (M5) shows the results with the alternative specification of the experienced founder, *experience*2. It is in line with our previous conclusions, although the effect is relatively weaker. Generally, we can conclude that regression coefficients are quite stable across all four model specifications.

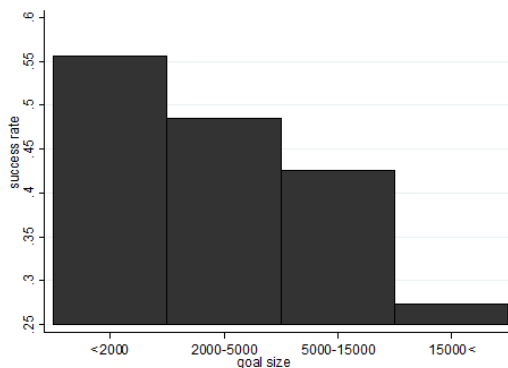**Table 2 Determinants of the Project Campaign Success**

	(M1)	*(M2)*	*(M3)*	*(M4)*	*(M5)*
	all projects	*all projects*	*all projects*	*all projects*	*all projects*
dependent: success	*dy/dx*	*dy/dx*	*dy/dx*	*dy/dx*	*dy/dx*
log_goal	-0.0665***	-0.0672***	-0.0623***	-0.0630***	-0.0642***
	(-87.44)	(-88.36)	(-81.54)	(-82.46)	(-84.13)
duration	-0.0036***	-0.0040***	-0.0034***	-0.0038***	-0.0038***
	(-43.42)	(-48.20)	(-41.34)	(-46.21)	(-45.57)
preparation	0.0002***	0.0002***	0.0002***	0.0002***	0.0002***
	(21.57)	(22.22)	(21.57)	(22.24)	(22.54)
nprojects(month)		-0.0337***		-0.0338***	-0.0326***
		(-32.51)		(-32.81)	(-31.61)
nprojects(state)		0.0026***		0.0026***	0.0026***
		(34.82)		(35.00)	(35.41)
weekend		-0.0368***		-0.0359***	-0.0358***
		(-12.22)		(-11.98)	(-11.95)
experience			0.1410***	0.1411***	
			(47.43)	(47.44)	
experience2					0.0423***
					(34.01)
Category dummies	YES	YES	YES	YES	YES
Number of obs	202,272	202,272	202,272	202,272	202,272

Notes: Category effects not reported. *** denote significance at 1% level, ** denote significance at 5% level. z-statistics are in parentheses.
Source: Own calculations.

The comparatively higher goals of crowdfunding projects are obviously closely connected with project failure. It is clear if we divide our sample according to the size of the projects' goals. We divide the ranked set of data into four equal groups, with each group comprising a quarter of the data (quartiles), see *Figure 3*.

Figure 3 Success Rate of Crowdfunding Projects According to Goal Size (quartiles)

To investigate the determinants of success in the above-mentioned categories, Table 3 reports the estimates of models (M6), (M7), (M8) and (M9). The second column of the table shows the results of the sample of projects with goals up to the 2,000 USD (first quartile) etc. Again, we can observe that the relationships between the dependent and independent variables are consistent with our expectations. The same applies to the other three models. Some of the average marginal effects of the explanatory variables seem to be roughly the same across our models, some of them change with the different size of projects and show certain trends - this applies in particular to factors of competition.

Table 3 Determinants of Project Campaign Success According to Goal Size

goal size (USD):	(M6) <=2000	(M7) (2000-5000]	(M8) (5000-15000]	(M9) 15000<
dependent: success	dy/dx	dy/dx	dy/dx	dy/dx
log_goal	-0.0362***	-0.1187***	-0.0619***	-0.1143***
	(-11.12)	(-15.80)	(-9.05)	(-36.47)
duration	-0.0037***	-0.0041***	-0.0041***	-0.0036***
	(-23.79)	(-25.59)	(-24.06)	(-19.91)
preparation	0.0002***	0.0002***	0.0002***	0.0002***
	(7.21)	(10.41)	(13.08)	(11.48)
nprojects(month)	-0.0452***	-0.0335***	-0.0259***	-0.0202***
	(-23.58)	(-16.41)	(-12.20)	(-9.36)
nprojects(state)	0.0012***	0.0024***	0.0030***	0.0034***
	(7.28)	(15.98)	(21.27)	(25.54)
weekend	-0.0177***	-0.0201***	-0.0474***	-0.0687***
	(-3.04)	(-3.42)	(-7.94)	(-10.66)
experience	0.0969***	0.1261***	0.1825***	0.1946***
	(18.24)	(20.72)	(29.88)	(33.09)
Category dummies	YES	YES	YES	YES
Number of obs	52,792	53,373	52,988	43,119

Notes: Category effects not reported. *** denote significance at 1% level, ** denote significance at 5% level. z-statistics are in parentheses.
Source: Own calculations.

Table 3 shows that the number of launched projects in a given month, $nprojects(month)$, plays the most prominent role in the category of the smallest projects up to 2,000 USD. If the number of projects in the given month is higher by 1,000 projects, the probability of success will be lower by about 4.5 percentage points. On the other hand, it will be lower only by about 2.0 percentage points in the case of the largest projects above 15,000 USD. Clearly, this effect of a higher number of launched projects in a given month has a decreasing tendency with the higher goal size of the projects. One possible explanation is that the projects with a higher goal size are probably more specialized and distinguishable and offer more heterogeneous products than projects with lower goal sizes and the competition among them is therefore lower.

Certain trend can be found even in the case of variable $nprojects(state)$. It indicates that concentration of crowdfunding projects in a given state is mostly important in the group of largest projects. It is probably due to the fact that large (mostly technological) projects require many backers, therefore their variability can be a relatively important factor in crowdfunding financing. Let us, however, note that we are still talking about relatively small effects of the variable $nprojects(month)$ and

especially of the variable $nprojects(state)$, regardless of the size categories of projects.

More of an opposite pattern can be observed in the case of the variable $weekend$. The negative effect of projects launched at weekends on the success rate has an increasing tendency with the higher goal size of the projects. The greatest negative impact appears to be in the category of the largest projects above 15,000 USD. If the individual project in this category is launched at the weekend, the project campaign success will be (by 6.8 percentage points) less likely than when it is launched during the working week. It is clear that this factor can be quite important in this category of projects, considering that the success rate of these projects is only 0.27 (see *Figure 3*, above).

The variable $experience$ shows certain pattern as well. The positive effect of the founder's experience has an increasing tendency with the higher goal size of the projects. In the case of the largest projects, the probability of success will be higher by about 19.4 percentage points if the campaign was launched by an experienced founder (and only by 9.6 percentage points higher in the case of the projects up to 2000 USD).

In the last step, we focus on the differences in individual project categories (see Table A4 in *Appendix*). According to our results, we can conclude that projects in the "design" and "games" category are among the most successful types of projects with the highest share of funded projects and with a relatively high successful rate (see Table A2 in *Appendix*). The success of projects in both categories is influenced positively by a longer preparation and the experience of the founders. An experienced founder can raise the probability of the successful campaign by 33.4 percentage points in the "game" category and by 22.4 percentage points in the "design" category. On the other hand, the success of these projects can decrease strongly if the project campaign is launched at the weekend.

5. Conclusions

In our paper, we investigated which fundamental factors determine the probability whether a given crowdfunding project is successful or not. For this purpose, we investigated a rich dataset containing more than 200,000 US crowdfunding projects from the crowdfunding platform Kickstarter from April 2009 to April 2017.

Many empirical papers focus on the variables of successful financing related to social networks such as information from Facebook or Twitter, the use of pictures or videos in projects' profiles, etc. In our paper, we used "hard" information from the Kickstarter platform. Some of our explanatory variables have not been examined in previous empirical studies yet, although they seem to be important determinants of successful projects. We used an empirical logit model for testing the causalities and statistical significance of the explanatory variables.

First of all, our new empirical findings suggest that launching the project at the weekend and during the month with the stronger competition in the form of other launched projects decreases the success rate of the project. On the other hand, a longer preparation period on Kickstarter and a higher projects' density in the given state can increase the chances to succeed. It is interesting that the individual founder of the crowdfunding project can benefit from the proportionally greater population and a greater number of individuals interested in the crowdfunding financing in the state of

origin. At the same time, the founder should be aware of the fact that the higher concentration of the campaigns in the given month can decrease the chances to succeed. The founder should also avoid starting projects at the weekend, as the backers are more willing to contribute on weekdays compared to weekends. It is based on the fact that the people's interest in more serious Web activities (including crowdfunding contributions) falls during weekends. These findings are rather new as they have not been mentioned in any studies so far.

Second, we have confirmed some of the results of the previous studies on the largest sample of observations so far; particularly, the number of observations seems to be an important factor. In line with prior research (Mollick, 2014; Butticè et al., 2017 or Skirnevskiy et al., 2017), we found that the variables describing the goal of the crowdfunding campaign, the duration of the campaign and the previous experience of the founder, were significant factors of a successful campaign. What is interesting, we confirmed a negative effect of the longer campaign duration on the project success, which was in line with the above-mentioned studies but with contrast with Koch and Siering (2015) or Colombo et al. (2015). We presume that it is caused by the fact that these studies investigate a limited sample of crowdfunding projects (669 in the case of Colombo et al. (2015) and 1000 in the case of Koch and Siering (2015)).

The same holds for the variable describing the previous experience of the founder. Studies with larger samples, Mollick (2014) with 48,500 observations, Butticè et al (2017) with 31,389 observations and Skirnevskiy et al. (2017) with 19,351 observations, record similar results compared to our study (a positive effect) but studies with smaller samples, Koch and Siering (2015) and Marelli and Ordanini (2016) with 500 observations, do not find any statistically significant relationship.

Finally, as part of the robustness analysis, we tested separated groups of projects according to the goal size and estimated the impact of selected determinants in individual project categories. The results appear to be consistent with our previous assertions made on unrestricted sample. Moreover, we identified certain trends which emerged with the varying sizes of the projects goals. Interestingly, the negative "weekend effect" has an increasing tendency with the higher goal sizes of the projects. Similarly, the experience of the individual founder matters most in the case of the largest projects. The founder's previous experience on Kickstater increases the probability of success by 19.4 percentage points in that category. On the contrary, the negative effect of higher number of launched projects in a given month has a decreasing tendency with the increasing goal size of the projects. One possible explanation is that the projects with a higher goal size are probably more specialized and distinguishable and offer more heterogeneous products than projects with lower goal sizes and the competition among them is therefore lower.

Table A1 Former and New Categories of Projects

type	Freq.	Percent	Cum.
art	15,227	7.53	7.53
comics	6,393	3.16	10.69
craft	4,185	2.07	12.76
dance	2,589	1.28	14.04
design	10,302	5.09	19.13
fashion	11,337	5.6	24.74
film & video	37,732	18.65	43.39
food	13,430	6.64	50.03
games	13,933	6.89	56.92
journals	2,339	1.16	58.07
music	35,885	17.74	75.81
photography	5,564	2.75	78.57
publishing	23,041	11.39	89.96
technology	13,158	6.51	96.46
theater	7,157	3.54	100
total	202,272	100	

type	Freq.	Percent	Cum.
art	34,722	17.17	17.17
design	10,302	5.09	22.26
fashion	11,337	5.6	27.86
film & video	37,732	18.65	46.52
food	13,430	6.64	53.16
games	13,933	6.89	60.05
music	35,885	17.74	77.79
publishing	31,773	15.71	93.49
technology	13,158	6.51	100
total	202,272	100	

Source: Own calculations.

Table A2 Summary of the Basic Characteristics of Crowdfunding Categories

category	successful (share)	funded (share)	goal (USD)	duration (days)	preparation (days)
art	0.472	0.787	9,384	33.055	32.407
		(1.632)	(32,820)	(13.523)	(86.689)
design	0.532	2.158	22,758	34.236	62.065
		(5.729)	(50,188)	(10.838)	(112.709)
fashion	0.284	0.694	13,609	32.963	48.128
		(2.513)	(31,182)	(10.949)	(105.607)
film & video	0.450	0.612	21,745	35.490	36.576
		(0.757)	(54,888)	(14.656)	(94.819)
food	0.322	0.578	26,138	34.047	49.594
		(1.867)	(58,841)	(11.823)	(111.465)
games	0.499	2.084	24,895	32.674	56.298
		(5.339)	(69,055)	(10.741)	(118.370)
music	0.567	0.765	7,860	35.452	40.644
		(0.754)	(20,943)	(13.860)	(104.696)
publishing	0.388	0.734	9,708	34.189	44.108
		(1.690)	(24,535)	(12.352)	(112.071)
technology	0.268	1.099	42,533	35.222	53.675
		(4.123)	(79,167)	(11.639)	(113.366)
All	0.444	0.903	16,725	34.348	43.046
		(2.579)	(46,474)	(13.014)	(104.178)
successful	-	1.916	9,220	32.606	45.885
		(3.623)	(22,460)	(11.917)	(105.684)

Source: Own calculations.

Table A3 Correlation Matrix of Dependent and Explanatory Variables

	success	log_goal	duration	prepar.	nprojects (month)	nprojects (state)	weekend	experience	experience2
success	1								
log_goal	-0.214	1							
duration	-0.120	0.168	1						
preparation	0.024	0.113	-0.001	1					
nprojects(month)	-0.078	0.043	-0.160	0.028	1				
nprojects(state)	0.067	0.085	0.015	0.009	-0.048	1			
weekend	-0.019	-0.022	0.028	-0.002	-0.039	-0.002	1		
experience	0.129	-0.108	-0.041	-0.019	-0.021	-0.011	-0.004	1	
experience2	0.139	-0.115	-0.070	-0.003	0.003	0.012	-0.006	0.736	1

Source: Own calculations.

Table A4 Determinants of Project Campaign Success According to Categories

dependent: success	(M9) art	(M10) design	(M11) fashion	(M12) film&video	(M13) food	(M14) games	(M15) music	(M16) publishing	(M17) technology
	dy/dx	dy/dx	dy/dx	dy/dx	dy/dx	dy/dx	dy/dx	dy/dx	dy/dx
log_goal	-0.0666***	-0.0486***	-0.0229***	-0.0723***	-0.0680***	-0.0637***	-0.0557***	-0.0755***	-0.0469***
	(-34.26)	(-14.43)	(-7.33)	(-43.27)	(-24.85)	(-25.66)	(-24.71)	(-37.22)	(-19.50)
duration	-0.0035***	-0.0013***	-0.0023***	-0.0048***	-0.0039***	-0.0042***	-0.0042***	-0.0036***	-0.0008**
	(-17.62)	(-2.90)	(-5.84)	(-26.97)	(-11.22)	(-11.46)	(-22.13)	(-16.25)	(-2.35)
preparation	0.0001***	0.0003***	0.0003***	0.0001***	0.0003***	0.0004***	0.0002***	0.0002***	0.0002***
	(4.69)	(7.46)	(7.48)	(5.66)	(9.05)	(10.07)	(7.90)	(8.89)	(7.65)
nprojects(month)	-0.0493***	-0.0811***	-0.0164***	-0.0231***	-0.0523***	-0.0399***	-0.0262***	-0.0341***	-0.0188***
	(-20.68)	(-17.69)	(-3.88)	(-9.06)	(-15.22)	(-9.99)	(-9.75)	(-12.69)	(-5.46)
nprojects(state)	0.0036***	0.0032***	0.0019***	0.0034***	0.0023***	0.0009***	0.0014***	0.0026***	0.0042***
	(19.44)	(10.30)	(6.83)	(21.44)	(7.72)	(3.50)	(7.35)	(13.73)	(17.29)
weekend	-0.0260***	-0.0716***	-0.0420***	-0.0382***	-0.0026	-0.0633***	-0.0285***	-0.0329***	-0.0518***
	(-3.52)	(-4.82)	(-3.18)	(-5.44)	(-0.23)	(-5.84)	(-4.05)	(-4.47)	(-4.15)
experience	0.1233***	0.2204***	0.1302***	0.0407***	0.0359	0.3349***	0.0877***	0.1889***	0.1857***
	(16.82)	(18.15)	(10.50)	(5.52)	(2.61)	(47.34)	(10.17)	(29.08)	(18.65)
Category dummies	NO	NO	NO	NO	NO	NO	NO	NO	NO
Number of obs.	34,722	10,302	11,337	37,732	13,430	13,933	35,885	31,773	13,158

Notes: Category effects not reported. *** denote significance at 1% level, ** denote significance at 5% level. z-statistics are in parentheses.
Source: Own calculations.

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