Signalling experience & reciprocity to temper asymmetric information in crowdfunding evidence from 10,000 projects

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A B S T R A C T

Crowdfunding is a diffused project finance practice for funding early-stage projects by directly involving a large number of people by means of remote interaction through ICT-enabled platforms. Based on the original collection of empirical evidence from 10,000 Kickstarter crowdfunding projects, this paper develops a conceptual framework to understand and estimate the key predictors of success or failure for these funding campaigns. The main focus is on developing and testing specific hypotheses about the role that crowdfunding platforms play in facilitating the activity of signalling to mitigate the negative consequences of asymmetric information both in terms of moral hazard and adverse selection. The developed hypotheses were separated into two main categories, depending on whether signalling originated from the creator of the crowdfunding campaign, or the network supporting the crowdfunding project. Moreover, by providing an original longitudinal database, this paper emphasises the path-dependent nature of crowdfunding processes that together with additional proxies capturing social capital, reputation, patience and ambition, allows a significantly improved understanding and predictability of success or failure of these projects.

1. Introduction

Online Crowdfunding, the alternative finance practice of funding an innovation idea by directly involving a large number of people through an internet-mediated electronic platform and bypassing the traditional innovation funding institutions, has become a cornerstone of the early finance market, providing over 16.2 billion dollars of funding in 2014. As the crowdfunding market has grown, it has also diversified with an estimated 1250 crowdfunding platforms being considered active in 2014. By comparison in 2009, there were only an estimated 53 crowdfunding platforms and an estimated 530 million dollars of funding (Massolution, 2015), the amount of funds raised having increased by > 3000% in six years. These funds provide key resources to the development of new technology and innovation usually supplying finance at a very early innovation stage, when traditional channels of innovation financing are often unachievable. This is often the case as many of the innovation projects benefiting from crowdfunding are from creators lacking a background of financial history and are often the victims of credit rationing due to asymmetric information (Stiglitz and Weiss, 1981). This paper will assess the main question of whether crowdfunding serves to bridge these information asymmetries by providing opportunities to develop signalling strategies (Ross, 1977;

Spence, 1974) through newly organized forms of credit exchanges taking place over ICT-enabled platforms (Lehr and Sharafat, 2017). In this paper, we choose to focus on the adoption of signalling strategies to temper the adverse consequences of asymmetric information on access to innovation finance (OECD, 2011) as this approach based on the theory of strategic signalling and further detailed in the conceptual framework (Section 2.2) below and again in the literature review (Section 2.3). This approach is particularly suited in providing a clear intuition for the metrics derived and built from the large database of primary data collected for this paper. In particular, this data can be interpreted as the different signals sent by the project creators and there supporting networks, as the evidence of a separating equilibrium (Cho and Kreps, 1987; Riley, 1979) in a strategic interaction environment characterized by a high degree of asymmetric information.

Within the data collected for this paper, many projects were funded to support innovations related to new technologies such as, for example, 3D printing, holographic lenses and the development of home robotics.[1] The crowdfunding data analysed in this paper will be used to build a predictive tool, based on the role of the signalling opportunities provided to innovators and funders by the crowdfunding platforms, and aimed at better understanding the key factors for forecasting the sources of success and failure of different projects. The approach

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[1] See Kickstarter specific project webpages for each of the following, holograms (Kickstarter, 2017a), home cooking (Kickstarter, 2017b) and robotics (Kickstarter, 2017c).
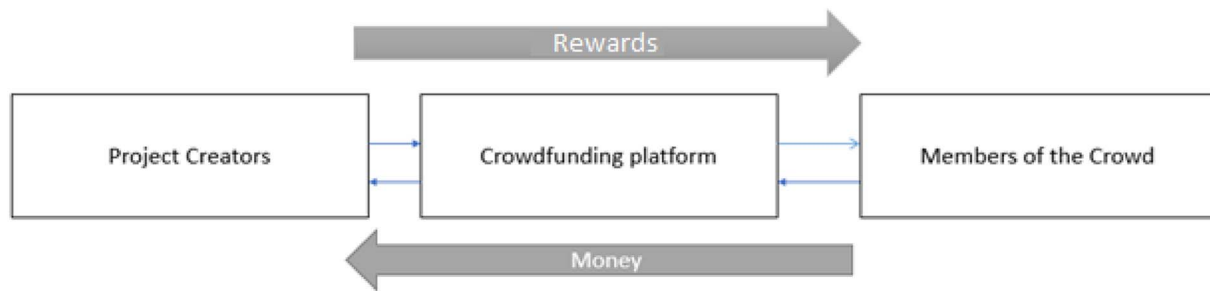
Fig. 1. Summary of reward-based crowdfunding activity.

followed in this paper, should be of particular interest for innovation and entrepreneurship scholars as it also collects, explores and analyses data on failed innovation projects, which are of key relevance as often crowdfunding and entrepreneurship studies only focus on visible success stories.

This paper builds upon existing literature on the determinants of success and, critically, failure in online crowdfunding, extending current results by collecting and analysing a very rich longitudinal data set on crowdfunding that allows considering some key inter-temporal factors in determining the potential success or failure of crowdfunding projects. The analysis is based on an extensive and up-to-date database of more than ten thousand projects, innovation ideas that have been seeking funding support through Kickstarter, a reward based crowdfunding ICT-platform, between the 14th of November 2015 and 6th of March 2016. (See Fig. 1.)

The longitudinal nature of our primary data allows us to study the role of early stage project backing and the roles of impatience and ambition in predicting the probability of success or failure of these projects. Related research by Schaer et al. (2016), focusing on the key early stages of the innovation process in the context of video games sales, modelled the early impact of Google Trends on market success. This contribution fits within the definition of innovation-related activities based on a lean development approach (Cantamessa, 2016) in which a new product or service emerges out of a lengthy, iterative and interactive experimentation, in this paper's framework, with the pre-product launch's financing process.

The proposed model includes key proxies to capture the effects of social capital, reciprocity and experience, all considered as key signalling strategies aiming at reducing the usual barriers of access to credit for innovators posed by the pervasive presence of asymmetric information. These variables allow the paper to test different hypotheses about the effectiveness of these signalling strategies, while also helping to predict with increased accuracy whether a campaign would have failed or succeeded. In summary, this paper provides, not only relevant insights about the crucial area of innovation financing but also, useful tools for early-stage innovators in developing their own crowdfunding strategies.

After this introduction, in Section 2, the paper discusses some of the relevant literature on crowdfunding and, based on this, it develops the conceptual framework and the main hypotheses to be tested. Section 3, on methodology, describes the data collection and introduces the econometric model utilized in the paper. Next, Section 4 discusses the results obtained in relation to the research hypotheses. Finally, Section 5 contains the conclusions.

2. Literature review, conceptual framework and hypotheses development

Early work on crowdfunding defined it as "a novel method for funding a variety of new ventures, allowing individual founders of for-profit, cultural, or social projects to request funding from many individuals, often in return for future products or equity." (Mollick, 2014, page 1).

Crowdfunding was classified into multiple sub-categories based on the backer (those funding the projects) participation rights (Giudici et al., 2012Griffin, 2012). Following Colombo et al. (2015) this paper will focus on the key factors leading to the success or failure of crowdfunding campaigns (see also Kromidha and Robson, 2016, Zheng et al., 2014 and Hsiao and Chiou, 2012). This paper builds on, and extends, the findings developed in this literature, and others, outlined further in our literature review, to test a set of specific hypotheses, mainly derived from conjectures about the role of different signalling strategies, in a context of high information asymmetry between potential backers and innovators.

2.1. Reward-based crowdfunding

In this paper, the focus is on reward-based crowdfunding, a category of crowdfunding platforms, in which the backer is given a reward, based on the size of his donation which can be a product, artwork, or any reward they decide to give. (Giudici et al., 2012). One additional key feature distinguishing different reward-based crowdfunding platforms is whether the platform is of an "all or nothing" or of a "keep it all" type. In the first case, the funding goal must be reached or no funds are received by the innovator, while in the second one, the keep-it-all, all the money raised is kept by the creators of the project regardless of whether the funding goal is reached or not (Cumming et al., 2014). Kickstarter, the crowdfunding platform considered in this paper, uses an all-or-nothing approach.

The focus of this study is on Kickstarter, a reward-based crowdfunding ICT-enabled based platform that has raised over 2.35 billion dollars and funded over 106.000 projects since its founding in 2008 (Kickstarter Stats — Kickstarter, 2016). As such, Kickstarter has already become the focus of different research papers on reward-based crowdfunding (Mollick, 2014, Kromidha and Robson, 2016, Kuppuswamy and Bayus, 2015, Lu et al., 2014 and Colombo et al., 2015). This research identified key areas of interest in understanding the drivers of success or failure for crowdfunding campaigns launched on Kickstarter. Among these factors, the number and, more interestingly, the distribution of backers[2] have been identified as crucial factors in predicting the success of a campaign (Kuppuswamy and Bayus, 2015).

2.2. Conceptual framework

In this section, we discuss the conceptual framework required to develop a predictive tool that can be used to test different hypotheses about the key factors affecting the relative probabilities of success and failure of crowdfunding projects. In detail, we will focus on projects seeking financial resources through an ICT-enabled two-sided platform (Lehr and Sharafat, 2017) facilitating linkages and signalling between

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[2] Defined as the final internet based funders who support the campaign throughout its duration, by contributing financial amounts through the electronic platform provided by Kickstarter.