1042-2587

Information Cascades Among Investors in Equity Crowdfunding

Silvio Vismara

AQ4

Finance studies on information cascades, usually in an initial public offering setting, typically differentiate between institutional and retail investors, as this is the only information available to potential backers. Information available through equity crowdfunding platforms includes details on individual investors as they may disclose information about themselves by linking their profile to social networks or websites. Using a sample of 132 equity offerings on Crowdcube in 2014, we show that information cascades among individual investors play a crucial role in crowdfunding campaigns. Investors with a public profile increase the appeal of the offer among early investors, who in turn attract late investors.

Introduction

New ventures face difficulties in attracting external sources of finance during their initial stage. Recently, as a consequence of the financial crisis, even traditional investors in start-ups, such as business angels and venture capitalists, have moved their investment activity upstream and focus more frequently on later-stage investments. In this context, equity crowdfunding, which has been the subject of recent regulatory changes such as the CROWDFUND Act in the United States,[1] is becoming a valuable alternative source of funding for entrepreneurs (see, e.g., Ahlers, Cumming, Günther, & Schweizer, 2015, for a definition of equity crowdfunding).

It is therefore not surprising that an emerging literature focuses on the determinants of the success of crowdfunding campaigns. With few exceptions, this stream of research has focused mostly on donation- or reward-based crowdfunding. Using a sample of 104 projects on the Australian business matching platform ASSOB, Ahlers et al. (2015) identifies which characteristics of the business (e.g., risk factors or preplanned exit intentions) and of its top management team (e.g., size or level of education) affect the probability of a proposal's success. Vismara (2016) studied 271 projects listed on the UK platforms Crowdcube and Seedrs and found that campaigns launched by entrepreneurs who sold smaller fraction of their companies at listing and had more social capital had higher

Please send correspondence to: Silvio Vismara, tel.: (+39) 035-2052352; e-mail: silvio.vismara@unibg.it

1. The Capital Raising Online While Deterring Fraud and Unethical Non-Disclosures Act (CROWDFUND Act) is one component of the broader Jumpstart Our Business Startups Act, enacted in 2012.

DOI: 10.1111/etap.12261

probabilities of success. Using data from four German crowdinvesting portals, Hornuf and Schwienbacher (2015) show that portal design affects the investment behavior of the crowd. Our article contributes to this nascent literature by extending the study from signals sent by project proponents to encompass signaling dynamics between investors. In a related stream of literature, a growing number of papers investigate—with mixed results—whether and how contributions in the early days of offering affect the success of donation- and reward-based crowdfunding campaigns. However, empirical evidence on the role of early contributors in equity crowdfunding campaigns is missing. Our article fills this gap in the literature.

Information cascades among investors play a crucial role in entrepreneurial finance (Welch, 1992). In initial public offerings (IPOs), for instance, late investors alter their own valuations by observing the behavior of early investors (Aggarwal, Prabhala, & Puri, 2002; Amihud, Hauser, & Kirsh, 2003). IPOs with a high level of institutional demand in the first days of bookbuilding also see high levels of bids from retail investors in the later days (Khurshed, Paleari, Pandè, & Vismara, 2014). This explains why IPOs typically result in either oversubscription or undersubscription, with very few cases in between. In IPOs, however, the information available to the public about the nature of the bids is limited to the distinction between institutional and retail investors. Equity crowdfunding platforms, on the other hand, disclose the (nick)names of investors in each bid online. These markets, hence, allow finance scholars to overcome the lack of detailed individual-level data in financial markets and, for the first time, to investigate information cascades among individual investors.

In crowdfunding platforms, campaigns are presented to websites' visitors in order of popularity. With a single click, prospective investors become aware of the number and the identity of people who have already backed the project. Such easy access to information throughout the bidding process is likely to affect investors' decisions. In a survey among crowdfunding investors (crowdfunders) in the United Kingdom, browsing the equity crowdfunding platform was, indeed, the most common method of discovering investment opportunities (NESTA, 2014). According to the survey, when making investment decisions, most respondents look at who already invested in projects and read comments by other investors. Further, ventures that fail to reach their funding target identify the inability to generate early-stage momentum and insufficient marketing as the primary causes of their failure.

Crowdfunders have the option to make their profile public and link it to social networks or other websites. This, in turn, increases the appeal of the project. Potential investors can evaluate the information on the curriculum vitae of early backers as well as their track record for previous investments on the platform. Under imperfect information about the quality of projects, this may reassure late investors and ingenerate information cascades. We show that investors who make their profile public are more sophisticated and more informed. Compared with the average crowdfunder, investors with a public profile have (1) higher educational capital, (2) higher project-specific industry experience, and (3) a higher track record of investments within the platform. Further, we find that, relative to other investors, the portion of these investors' bids is higher in the first days of the campaigns and decreases over time. A novel contribution of our article is the finding that not only early backers matter to the success of equity crowdfunding campaigns but also the presence of investors with public profiles in particular as they attract other investors.

In this study, we consider 132 projects posted on Crowdcube in 2014. We collect information on the bids at the individual investor level with daily frequency. The results of the econometric estimation support our hypotheses. Controlling for endogeneity, we find that investors with a public profile attract contributions by early investors who, in

turn, attract more late investors. These results are attributable to information cascades, but do not rule out alternative hypotheses not based on the reduction of information asymmetry. For instance, by "tweeting" or posting links on social networks, early investors advertise the project that they pledged to. Thus, the pool of potential investors apprised of the project increases and, consequently, the project has a better chance of success.

The article is organized as follows. In Theory and Hypotheses section, we differentiate equity crowdfunding from other types of crowdfunding and elaborate the research hypotheses. Research Design section presents the data, variables, and methodology used in the study. In Results section, we report the results. Conclusions section concludes and discusses the implications of our findings.

Theory and Hypotheses

Equity Crowdfunding vs. Nonequity Crowdfunding

A number of papers have examined the role of early backers in attracting late bids in nonequity crowdfunding markets. Equity-based crowdfunding is, however, intrinsically different from donation- and reward-based crowdfunding. Early backers in nonequity crowdfunding campaigns are typically people with whom the proponent has social ties, such as close friends and family members, and they are often located in the same geographical area as the proponent (Agrawal, Catalini, & Goldfarb, 2011). Ordanini, Miceli, Pizzetti, and Parasuraman (2011) label this phase "friend-funding phase." By contrast, according to the NESTA (2014) survey, equity crowdfunders rank the support to a family member, a friend, or a local business among the least important motivations to invest. The possibility of attracting unrelated investors is actually crucial to induce entrepreneurs to seek external equity.

Crowdfunding communities differ in the funders' primary motivation for participating—whether they expect a financial return. While the motivations to donate may be philanthropic, a marked characteristic of equity crowdfunding is the possibility to generate financial returns. Research on donation-based crowdfunding communities draws from the extensive literature on charitable giving and public goods (e.g., Burtch, Ghose, & Wattal, 2013; Kuppuswamy & Bayus, 2014), examining principles that are unlikely to apply to investors in financial markets such as equity crowdfunding. Some of these studies predict a positive effect of previous bids on the campaigns' outcome. Reciprocity, a shared identity, the desire to belong to support a cause as well as social image are their main motivations. In contrast, if individuals care mostly about the end result (i.e., the provision of the good), they are less likely to help in the actual or perceived presence of other supporters. Hence, the likelihood of bidding would be negatively related to the number of previous backers. Depending on the perspective and empirical setting, some nonequity crowdfunding studies find a positive linear effect of other community members' funding decisions on individual contributions (Colombo, Franzoni, & Rossi Lamastra, 2015), while others find a negative effect (Burtch et al., 2013) or a nonlinear relationship (Kuppuswamy & Bayus, 2014).[2]

Reward-based crowdfunding yields a private return; hence, the difference between motivations to participate in reward- and equity-based crowdfunding might be less

2. Using a sample of Kickstarter projects, Kuppuswamy and Bayus (2014) found that a project's additional backer support is negatively related to its past backer support, but this effect subsides as the project funding cycle approaches its closing date.

evident. Rewards, however, often have little objective economic value (e.g., a name plaque) and do not reflect a financial motivation. Occasionally, they are experiential rewards with intrinsic, nontradable value such as the chance to act as an extra in a movie.[3] In a multi-platform study of equity crowdfunding campaigns, Vismara (2016) finds that offering rewards to investors does not increase the probability of success. Relatedly, in a direct comparison between reward- and equity-based crowdfunding, Cholakova and Clarysse (2015) find that nonfinancial motives play no significant role in the latter. Schwienbacher and Larralde (2010) also argue that reward-based platforms are more likely to attract individuals who invest because they "enjoy" an initiative, whereas equity-based platforms attract people backing projects for a return on their investment.

An additional key difference between reward- and equity-based crowdfunding is derived by Hornuf and Schwienbacher (2015). While in the former, proponents raise as much as possible, in equity crowdfunding, there is a maximum number of shares that entrepreneurs are willing to sell. This affects the funding dynamics, since waiting entails the risk of not being able to participate in the campaign and, thus, sets a limit to the extent to which undecided investors can wait (i.e., use the information cascade to update their own priors).

Equity crowdfunding differs from other types of crowdfunding also in the nature of its proponents and in the size of the deals. While in equity crowdfunding, the proponent is by definition a company, reward-based campaigns are launched mostly by individuals (see, e.g., Colombo et al., 2015). The governance and organizational implications of the process of raising capital through crowdfunding are arguably different. Further, the monetary value of an equity crowdfunding campaign is typically higher. For instance, the average target funding in our sample is £243,760, while in Kickstarter, the world's largest reward-based platform, it is less than $15,000 (see, e.g., Kim & Viswanathan, 2014).

Early Investors

"A premise of crowdfunding is that investors would rely, at least in part, on the collective wisdom of the crowd to make better informed investment decisions."[4] The underlying assumption of this expectation is that people know more collectively than they do individually. Indeed, as "different people know different things" (Stiglitz, 2002, p. 469), when making decisions with imperfect information, individuals tend to rely on the behavior of others. Psychologists call the influence resulting from processing of information gained by observing others observational or social learning (Bandura, 1977).[5] In the finance literature, the observer is the investor and the observational learning process is labeled "information cascade" (Welch, 1992).

3. Even if the reward is a material product, the bidders evaluate a proponent's ability to deliver the prepurchased product. In equity-based crowdfunding, the information asymmetry concerning the start-up's ability to generate future cash flows governs the crowdfunder's decision to become a shareholder. Further, as equity crowdfunders consider becoming a minority shareholder, governance concerns arise from the separation between ownership and control. The related agency costs impact equity crowdfunding like other financial markets.

4. Quotation from the U.S. Exchange Act Release No. 70741 (October 23, 2013).

5. Opposite to the wisdom of crowds, the "madness of crowds" approach equates the conformity of individuals in large groups with irrationality. While this is an alternative explanation, it does not change the rationale of our hypothesis. As far as late investors consider the behavior of early investors, campaigns attracting a higher number of early investors have a higher probability of success. Therefore, irrational herding behavior still leads to information cascades (Banerjee, 1992; Simonsohn & Ariely, 2008).

There are two key requirements for information cascades to take place: uncertainty and sequentiality (Bikhchandani, Hirshleifer, & Welch, 1992). Uncertainty, intrinsic to all entrepreneurial finance settings, is more severe in crowdfunding markets, where projects are typically proposed by first-time entrepreneurs. Moreover, on the demand side, crowdinvestors are less equipped to overcome information asymmetry than in other contexts such as initial or seasoned public offerings. They often lack the experience and the capability to evaluate different investment opportunities (Ahlers et al., 2015). Due to fixed costs, they have limited opportunity and incentives to perform due diligence (Agrawal, Catalini, & Goldfarb, 2013).[6] This leads to collective-action problems, as a large number of investors each should be able to invest a small amount of money in a company that is, they hope, early in its lifecycle (Ritter, 2013). In addition, crowdfunding investors cannot rely on reports issued by financial analysts or on formal intermediaries such as IPO underwriters.[7] In the absence of certifications from third-party endorsements, the signals delivered by other investors (the "crowd") become essential.[8] Their bids are clearly observable (highly visible to potential investors) and costly (if investors bid for low-quality projects, they earn low or no returns).

The observational learning theory predicts that the importance of others' decisions increases when decision makers have little information about the product (Bikhchandani et al., 1992). In the crowdfunding context, late investors may learn by observing the behavior of previous backers. Backers from the first days of an offering send the signal to potential late investors that they believe in the project and trust its proponent. Early contributions can therefore reassure backers when they face high uncertainty at the outset of crowdfunding campaigns. High levels of previous commitments may represent a rational preliminary screening mechanism to select where to "invest" information seeking efforts. Such a two-step screening process describes a perfect rational investment strategy, in which herding, followed by own information seeking efforts, increases the payoffs of the searching time.

It is not only due to uncertainty and information-based motivations that early participation encourages additional participation. First, positive payoff externalities are one alternative reason. Many crowdfunding platforms operate on an all-or-nothing basis whereby projects are funded only if a publicly declared funding threshold (provision point) is reached. Hence, not to lose the opportunity of a successful campaign, late investors tend to fund campaigns that have received many investments previously and are close to reach their target (Cumming & Johan, 2013). Second, projects with a high number of early backers benefit from the possibility to reach a larger pool of potential investors who

6. A project raised £1.2 million in only 16 seconds after being posted on Crowdcube in July 2014. At such pace, due diligence was clearly not performed. More generally, crowdfunders receive a relatively small stake in a company in return for their investment. As reported in Table 1, the average equity stake offered in Crowdcube is 13.26%, whereas the average number of investors in successful campaigns is 152.5. This means that the average investor acquires less than 0.1% of the company's equity.

7. Based on the sociological evidence that ties to reputable actors enhance the prestige through which one is viewed, third-party endorsements have been studied as signals of a firm's quality to uninformed external investors. The underlying idea is that prestigious players value their reputation highly and will guard carefully against tarnishing it. In the IPO context, the affiliation with prestigious underwriters (Carter & Manaster, 1990; Migliorati & Vismara, 2014), venture capitalists (Brav & Gompers, 1997; Nahata, 2008), rating agencies (Khurshed et al., 2014), or universities (Bonardo, Paleari, & Vismara, 2011) has been shown to be associated with better performing firms.

8. In an exploratory study based on 23 interviews in Germany, Moritz, Block, and Lutz (2015) report that the decision-making process of investors in equity-based crowdfunding is influenced by other market participants. Most new ventures posted in the platform Companisto use the statements of prior investors as external credentials in their presentation videos.

may learn about the project through direct contact (word-of-mouth). Crowdfunding platforms indirectly promote the projects with higher bids (Belleflamme, Lambert, & Schwienbacher, 2014) and make them highly visible to visitors of crowdfunding websites. Higher visibility granted to hot projects even outside the platform extends the basis of potential backers further. For instance, specialized newsletters such as Crowdfunding Centre or CrowdCafe advertise mostly projects with the higher number of early backers. Finally, late bidding may also be due to behavioral causes such as procrastination or conformity (Roth & Ockenfels, 2002).[9]

For these reasons, we expect that information on early investors' bids matters to potential late investors and present hypothesis 1.

Hypothesis 1: Equity crowdfunding campaigns with a higher number of early investors are more likely to succeed.

Investors With a Public Profile

Communication research shows that social networks and web platforms are characterized by asymmetric peer effects, with opinion leaders triggering social contagion (Watts & Dodds, 2007). Studying a marketplace for mobile apps, Kim and Viswanathan (2014) test and validate the "influential hypothesis" derived from consumer research—the idea that influential individuals accelerate the diffusion of products and innovations. A number of studies further demonstrate that the value of recognition drives user contributions in online communities (Zhang & Zhu, 2011). In particular, Burtch, Ghose, and Wattal (2015) discuss how the interests of backers in donation-based crowdfunding to incorporate aspects of their true identity into their user profile ("online persona") are based on social recognition and reputational gains. They argue that disclosing personal identity in these contributions is a socially acceptable way to demonstrate wealth and to signal personal integrity.

When the actions of individuals are sequential, highly informed individuals with less uncertainty in beliefs have fewer incentives to wait and observe the actions of others. Conversely, uninformed individuals tend to delay the decision and imitate the actions of individuals who appear to have more information or expertise (Bikhchandani et al., 1992). This framework is widely adopted in studies of security issuance. In the IPO setting, for instance, Rock (1986) argues that high uncertainty about the value of a firm increases the advantage for informed investors as, to attract uninformed investors that would otherwise leave the market, firms opt for underpricing their shares. Relatedly, Gorton and Pennacchi (1995) model the importance of "skin in the game"; informed investors take enough position to reassure other investors that problems of adverse selection and moral hazard are overcome.

As individuals differ in how much information they possess, some investors often have an advantage over others. Institutional investors or venture capitalists in IPOs are an

9. Deadline effects are found in other online marketplaces such as eBay.com (Simonsohn & Ariely, 2008) or Amazon.com (Chen, Wang, & Xie, 2011), as well as in fields as diverse as college applications and stock trading. Roth and Ockenfels (2002) find that some individuals tend to bid later and avoid leaving the bids "hanging," even when there is no advantage in doing so. In an all-or-nothing scheme, this means that bids from potential investors are unlikely to be revealed in cold campaigns, but when the project is close or above the target capital, potential investors tend to bid more and the project is more likely to be funded.

example of such "superior principals." Informational advantage is likely to occur also in the equity crowdfunding context, where the information available (i.e., observable to prospective investors) is not limited to a specific category of investors, rather, it is at the individual level. Investors can decide whether to make their profile public and associate their legal name, social network presence, and contact information with it, or to remain anonymous and choose a nickname without disclosing further information. Identifiable investors (i.e., investors with a public profile) may play a pivotal role not only in attracting the attention of platform users but also may attract bids from their professional contacts outside the platform. Through profiles linked to professional social networks (e.g., LinkedIn), their investments are visible to contacts who likely share similar interests. The number of potential bidders thus increases.

Investors with a public profile tend to be more informed and more sophisticated than anonymous investors. First, professional investors such as business angels and venture capitalists are more likely to disclose their information and their investment decisions in the setting of entrepreneurial finance.[10] While an increased demand for shares has no negative consequences, the probability to reach the target increases if professional investors' bids are observed and valued by potential late bidders. In a first-come-first-served framework, professional investors are not restricted by rationing in the allocation of shares (as they would be in IPOs, for instance); they may only benefit from their certification capacity to stimulate bids. Therefore, professional investors are likely to disclose information about their investments. In addition, by making their profile public, institutional investors might benefit from advertising themselves or their services. Second, the interaction between entrepreneurs and active, identifiable investors is more satisfactory. Via crowdfunding platforms, investors may contact the proponents directly and the proponents have clear incentives to reply to these requests and interact with investors during, and possibly after, the campaign. The need for easy interaction with the company's founders encourages these investors to disclose their personal information and promotes a mutual connection.

Hence, we argue that investors with a public profile attract other investors in the initial days of equity crowdfunding campaigns for two main reasons. First, as predicted by the information cascade theory, uninformed investors receive a stronger signal from non-anonymous investors who are expected to be better informed and more experienced. Second, investors with a public profile are more likely to generate the word-of-mouth effect around the project in which they invested. Crowdcube, like other platforms, is structured to allow investors with a public profile to easily link and advertise projects on major social networks. Thus, the likelihood that other investors become informed about the offerings increases.

These considerations lead us to hypothesis 2.

Hypothesis 2: A higher percentage of investors with a public profile is positively related to the number of early investors in equity crowdfunding campaigns.

10. NESTA (2014) report that institutional investors embracing alternative finance is becoming a "feature of the UK market." Signori and Vismara (2016) found that none of the companies listed in Crowdcube initially backed by professional investors have subsequently failed. Hornuf and Schwienbacher (2016) argue that equity crowdfunding is a complementary source of funding to angel finance, rather than a substitute.

Research Design

Crowdcube and the Regulatory Setting in the United Kingdom

In contrast to other regulatory environments where only bond-like shares are admitted, on UK crowdfunding platforms, ordinary shares carrying voting rights are traded. Investors need to register as platform members and are required to certify that they are aware of investment risks, or that they seek independent advice. We test our research hypotheses using data on projects posted on Crowdcube, the largest UK platform. As of September 2017, Crowdcube has raised £185 million from 300,000 investors from over 100 countries. Most of the capital raised so far in equity crowdfunding campaigns in the United Kingdom has been transacted in this platform (Signori & Vismara, 2016).

Crowdcube, regulated by the UK Financial Conduct Authority (FCA), offers securities to investors who do not invest more than 10% of their net investable assets (i.e., assets excluding their home, pensions, and life insurance) in unlisted shares or unlisted debt securities (FCA Policy Statement PS14/4). Each project's business plan is vetted before listing (according to Crowdcube statistics, the due diligence team, on average, verifies 28 entrepreneur claims for each admitted project), whereas no ongoing reporting is required from the company to its shareholders. The minimum investment in a project is £10 and there is no maximum limit. Individual commitments are aggregated via the platform and the crowdfunding scheme works in the traditional "all-or-nothing" fashion (Cumming, Leboeuf, & Schwienbacher, 2014). Only if the target amount is reached, the campaign is successful. The pledges, net of a success fee, are transferred in 6 weeks from the escrow account to the project proponent's account. Investors thereby become direct shareholders in the company. Otherwise, if the target is not reached, all pledges are voided—at no monetary cost for bidders.

Once registered, investors can access reports on each project, containing a description of the business, its entrepreneurial team, the offerings, and the bids received. The bids made on the platform by each investor are publicly visible to all crowdfunders registered on Crowdcube. Specific amounts, however, are not publicly displayed on the website. Investors may decide to remain anonymous, thereby disclosing only their nickname, or to make their profile public. In addition to commenting on the platform's forum, investors with a public profile can directly contact the entrepreneur, participate in the forum, and advertise the project through social networks (e.g., LinkedIn, Facebook, and Twitter) or on their website.

Sample and Variables

Our sample comprises 132 equity offerings listed on Crowdcube in the period from January to December 2014. Data on individual bids were automatically collected on a daily basis through the progression of each crowdfunding campaign. Of key importance to our study, the number of investors is available for each project on each day of the campaign. We are particularly interested in the investments taking place in the initial days of the offering. To identify early investors (*Early_Investors*), we use observation windows fixed conventionally between the launch of the campaign and the fifth day. We identify those investors who bid in the period between the end of the 5-day observation window and the end of the campaign as late investors (*Late_Investors*).[11] We use a fixed

11. The results are robust to use other time spans in the regressions. We rerun all regressions, (1) considering those investors who bid in the first 7, 10, 12, or 15 days early investors (late investors are identified as

observation window because the duration of offerings in Crowdcube is automatically set to 60 days. Successful projects may, however, be closed earlier and in some cases, at the platform's discretion, the duration can be extended to reach the target.[12] In the regressions, we control for these *ex-post* changes in the duration of the campaign by introducing a control variable (*Duration*).

The explanatory variables in our study refer to early investors and to investors with a public profile. Like potential investors in the platform, we can access the list of previous bidders and identify investors with public profiles. The (nick)names of crowdfunders are publicly available in Crowdcube, but the decision to make their profile public depends on the individual investor. In our study, we call these investors public profile investors (*Public_Investors*) and represent them as a proportion (percentage) of the total number of investors in a single bid at the end of each day of the offering.

To examine whether information on previous investors matters in the investment decisions of subsequent platform visitors, we include a series of variables concerning the project and its proponents in our model. In Table 1, we include the definitions of the variables and report descriptive statistics, providing some insight into the general features of crowdfunding campaigns on Crowdcube. In the remainder of this subsection, we define our variables. We comment on the descriptive statistics in the next section.

Projects of higher quality attract more of both early and late investors. A selection-bias problem may therefore exist, and unobserved characteristics of successfully funded projects create estimation bias in our models. To isolate the effect of early investors on late investors, we include a number of relevant quality proxies that have been used in the literature before. In addition, we introduce some new quality measures that are specific to the Crowdcube environment. Existing crowdfunding studies proxy for project quality using several measures. Ahlers et al. (2015) employ three dimensions: human capital, social capital, and intellectual capital. They use the number of board members to broadly capture the amount of human capital. We measure the size of the top management team (*TMT_Size*) by counting the number of team members in entrepreneurial ventures as reported on the "Team" page of each project. Social capital is proxied for by the share of nonexecutive team members (*Nonexecutives*), as they are often "respected industry veterans who act as mentors to ventures" (Ahlers et al., 2015). Finally, intellectual capital is captured by a dummy variable (*Patents*), which equals one if a venture possesses, or has applied for a patent, and zero otherwise. In our empirical analysis, we control for all these variables. Additionally, we take advantage of the specific features of the Crowdcube platform, where listed companies must provide a "Financial Snapshot" that summarizes the

those who invest during the remaining period); (2) defining late investors as those investing in the last third of the offering time period and not considering the intermediate (not early and not late) group of investors. The results do not change substantially. We exclude five equity offerings with a duration below 10 days from our sample of 132 offerings in 2014, because the short duration does not allow us to investigate the role of early vs. late investors. The correlation matrix is in the Appendix. The maximum value of the Variance Inflation Factors is substantially below the conventional threshold of 10. We thus conclude that multicollinearity is not likely to affect our estimates.

12. The criteria for extending the period are reported on Crowdcube as follows: "If the Target Amount is not raised within the time period then the Pitch will expire and no money will be taken from Investors' bank accounts. In some circumstances the Pitch may be extended for a further period of time and this is at our discretion." Conversely, "(w)hen a company has raised 100% of its funding target, entrepreneurs have the option 'overfund'. This is where entrepreneurs can raise more money for their business in exchange for releasing more equity. Investors who invest during this period have exactly the same rights as investors who invested before the campaign overfunded." As reported in Table 1, however, the average duration of the campaigns is 58.7 days and the variance is low (standard deviation 14.1). We comment further on this variable and on reverse causality issues in the section Robustness Tests.

Table 1

Variables and Descriptive Statistics

Variable	Mean	Std. dev.	Min	Max	Successful	Unsuccessful	Variable description
Outcomes							
Late_Investors (no.)	70.25	79.77	3	444	134.33	24.48***	Number of investors that funded the project after the first 5 days of offering
Funding_Percentage (%)	78.10	65.61	0	281.68	147.00	28.89***	Amount of capital raised at the end of the campaign over initial target funding
Funding_Amount (in £1,000s)	204.45	568.21	0.10	6,140	392.69	69.99***	Amount of capital raised at the end of the campaign
Success	0.41	0.49	0	1			Dummy = 1 if funding amount is greater than or equal to the target capital; 0 otherwise
Early_Investors (no.)	13.80	10.92	0	73	18.18	10.68***	Number of investors in the first 5 days
Public_Investors (%)	7.72	10.1	0	56	9.08	6.75***	Percentage of investors with public profile in the first 5 days
Quality proxies							
TMT_Size (no.)	4.38	2.21	1	15	4.96	3.96***	Number of the firm's TMT members
Nonexecutives	0.18	0.38	0	1	0.22	0.14	Dummy = 1 if the company has nonexecutives; 0 otherwise
Patents	0.08	0.27	0	1	0.08	0.07	Dummy = 1 if the company owns or is filing patents; 0 otherwise
Positive_Sales	0.58	0.50	0	1	0.82	0.42***	Dummy = 1 if the company had positive sales before listing; 0 otherwise
Control variables							
Competing_Offerings	31.14	13.23	2	51	27.51	33.73***	Number of campaigns active at the opening of the offering
Target_Capital (in £1,000s)	243.76	538.90	20	6,000	305.31	199.87	Target capital to be raised
Equity_Offered (%)	13.26	6.41	4.30	33.33	12.88	13.52	Percentage of equity offered
Tax_Incentives	0.38	0.49	0	1	0.36	0.39	Dummy = 1 if the Seed Enterprise Investment Scheme tax relief is available for investors; 0 otherwise
IPO_Exit	0.17	0.38	0	1	0.20	0.14	Dummy = 1 if the most-likely planned exit is an IPO; 0 otherwise
Dividends	0.11	0.31	0	1	0.11	0.10	Dummy = 1 if there is the intention to distribute dividends; 0 otherwise
Duration (days)	58.67	14.1	11	137	57.39	59.35	Duration of the campaign measured at the end of the campaign
Instruments							
A_Class_Threshold (in £1,000s)	9.57	12.61	0	250	9.84	9.39	Investment threshold to achieve voting rights
Weekday_Offering	0.32	0.45	0	1	0.30	0.33	Dummy = 1 if there is the campaign was launched on Friday, Saturday, or Sunday; 0 otherwise

This table reports the descriptive statistics for the sample of 132 equity offerings. Significance levels for the test on the difference between successful and unsuccessful offerings are based on t-statistics (mean) or Z-tests of equal proportions (dummy variables), as applicable. ***, **, and * represent statistical significance at the 1%, 5%, and 10%, respectively.

key numbers in a clear and consistent format across all pitches. We include the variable *Positive_Sales* in our multi-variate analysis. Bernstein, Korteweg, and Laws (in press) find that bidding decisions by inexperienced investors are, indeed, largely based on traction (i.e., previous sales) and current investor information.

On crowdfunding platforms, multiple projects are competing simultaneously for funding. As modeled by Parker (2014), the number of other investment opportunities affects the occurrence of information cascades. The logic is that when there is a limited number of investors with superior information (here, investors with public profiles) and many good projects, the distribution between them may become thin. In the case of cascades, the (uninformed) crowd follows public investors, hence, many projects, including good ones, may remain unfunded. To control for this effect, we count the number of other campaigns that are active and available at the time the offering is launched (*Competing_Offerings*).

With regard to the structure of the offer, the target amount of capital to be raised (*Target_Capital*) and the relative percentage of equity offered to investors (*Equity_Offered*) in each offering are measured as in Ahlers et al. (2015). Projects can qualify for tax incentives according to the UK Seed Enterprise Investment Scheme (SEIS), which is designed to encourage seed investment in early-stage companies with up to £150,000 capital raised (*Tax_Incentives*). At the moment of listing, proponents declare their intentions with regard to exit and pay-out policies. Similarly to Ahlers et al. (2015), we use the IPO exit channel as our reference category (*IPO_Exit*) and add a dummy variable (*Dividends*) equal to 1 if the firm plans to distribute dividends. Both these projections are mandatorily disclosed on the platform's webpages that describe each project. Finally, we control for industry starting from Crowdcube classification. Projects are classified as pertaining to eight industries: art, music, media, and education; environmental and ethical; fitness, leisure, and sport; food and drink; Internet, IT, and technology; manufacturing; professional business and services; and retail and consumer products.

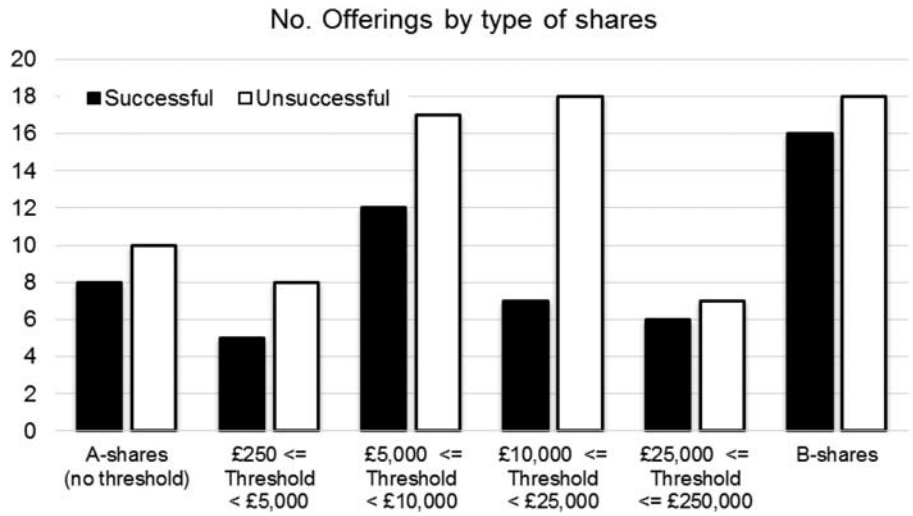
Methodology

We use a system of three equations, where the dependent variable of the first (second) equation is then included as independent variable in the second (third) equation. Specifically, *Public_Investors* is the dependent variable in equation 1 and the explanatory variable in equation 2, providing a test of our hypothesis 2. We indeed expect the presence of sophisticated investors with a public profile to attract early investors.[13] In testing our hypothesis 1, *Early_Investors* is the dependent variable in equation 2 and the explanatory variable in equation 3. The set of control variables is the same in all equations as we assume that the same factors may potentially affect the bidding decisions of all investors. In particular, the idea is that late investors make decisions based not only on the observable characteristics of the projects and their proponents, but they also consider the behavior of previous investors.

13. On the contrary, we do not expect sophisticated investors to base their bidding decisions on the number of early investors. For this reason, the dependent variable in equation 1 is included among the independent variables in equation 2, and not vice versa. For robustness, we estimated an alternative simultaneous model adding *Early_investors* to regressors in equation 1. Confirming our expectations, the number of early investors does not significantly affect the percentage of public investors, while results on other variables are qualitatively unchanged.

Figure 1

Number of Offerings by Type of Shares, Distinguishing Between Successful and Unsuccessful Campaigns



To ensure identification of the first two equations, whose dependent variables appear also as regressors in our system, we need to find valid instruments.[14] First, we need an instrumental variable that has no direct effect on the number of early investors in an offering but does affect the presence of public profile investors. We argue that sophisticated investors pay attention to the possibility to receive shares carrying voting rights (A-shares). Unique to the crowdfunding markets, indeed, companies can set an investment threshold under which no voting rights are granted, making the issuance of A-class vs. B-class shares depending on each investor's decision. Figure 1 shows that such investment thresholds do not directly impact on the offering's success chances and number of investors. If thresholds do not directly matter the "crowd," they should attract sophisticated investors. Indeed, higher thresholds, difficultly reached by small investors, allow sophisticated investors to share the control of the firm only with its founders. As a parallelism, voting shares are traded in traditional stock markets at a 10% to 20% premium over saving or common shares (Horner, 1988). In other words, we argue that sophisticated investors care about the control of the firms in which they invest. Accordingly, we introduce in equation 1 the variable *A_Class_Threshold*, which measures the amount of money required to receive shares delivering voting rights. This instrument is not only positively associated with *Public_Investors*, but also satisfies the exclusion restriction. That is, it

14. Concerns about unobservable heterogeneity are stronger when researchers do not have access to data observed by economic agents. In our study, we have access to all the information that a potential backer sees about a project. Despite most of this information is included in our extensive list of controls, we cannot exclude that unobserved factors affect our estimates. The instrumental variables approach mitigates these concerns. Limitations of this approach and future research directions are discussed in our Conclusions.

does not affect the early success of the offerings through any channel other than the presence of public profile investors.[15]

Second, in equation 2, we need an instrumental variable that is relevant for early investors, but not directly for late investors. Prior research has posited that the limited capabilities of humans to process information prevent them from absorbing the complete set of public information. Damodaran (1989) and Dellavigna and Pollet (2009), among others, document that investors are distracted before the weekend and, as a result, financial news on a Friday receive less attention than similar news on Monday through Thursday. They conclude that investors' inattention is relatively high on Friday, which could be because some investors are distracted from work-related activities by the upcoming weekend. Attention is also important as a micro-foundation of household finance. Lower volumes of trades, google searches and online account logins provide corroborating evidence that small investors are more distracted on Fridays and weekends. One out of three campaigns in our sample was launched in weekends (including Fridays). Untabulated descriptive statistics show that these campaigns attract 26% fewer early investors than weekday campaigns (on average, 11 vs. 15), but have approximately the same number of late investors (68 vs. 71). It is therefore likely that the day of the launch of the campaign affect the number of investors in the short-run, but does not directly concern later investors. We therefore include *Weekday_Offering* dummy in equation 2.

F2 Figure 2 graphically summarizes our model.

Taken together our system of equations is as follows:

$$PublicInvestors = \alpha_1 + \delta_1\ Controls + \gamma_1 A_Class_Threshold + \varepsilon \quad (1)$$

$$EarlyInvestors = \alpha_2 + \beta_1\ PublicInvestors + \delta_2\ Controls + \gamma_2 Weekday + \varepsilon \quad (2)$$

$$LateInvestors = \alpha_3 + \beta_2\ EarlyInvestors + \delta_3\ Controls + \varepsilon \quad (3)$$

For estimation, we use a generalized structural equation model (GSEM). We opt for this model due to the presence of counter variables among our dependent variables, whereas (simple) structural equation modeling (SEM) requires continuous outcomes.[16] Specifically, equation 1 is estimated using OLS as the dependent variable, *Public_Investors*, is continuous. Equations 2 and 3, in which the number of early investors and the number of late investors are the dependent variables, respectively, are estimated with negative binomial regression.[17] We find support for hypothesis 1 if the coefficient β_2 on *Early_Investors* in equation 3 is positive and significant. We find support for hypothesis 2 if the coefficient β_1 on *Public_Investors* in equation 2 is positive and significant.

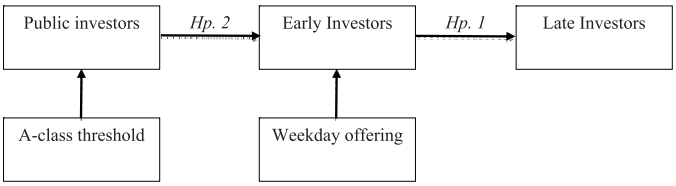
15. To meet the exclusion requirement, a valid instrument cannot capture factors that are likely to *directly* affect the number of early investors. Given that empirically a conclusive proof of excludability is virtually impossible to obtain, we rely on theoretical arguments to motivate the choice of *A_Class_Threshold* as instrument.

16. We use the STATA command *gsem* with the option *covstucture* that allows our estimates to be simultaneous and not simply reiterative. We use the unstructured option to impose unrestricted variances and covariances between the error terms in the three regressions.

17. The distribution properties of our data make the negative binomial preferable to a Poisson regression, which does not require overdispersion. In our case, the mean of the number of investors is 84.05 and the related variance is 7,557 (= 86.932^2), which exceeds the mean about 90 times (see Table 1). The negative binomial regression is more appropriate for modeling variables with this structure.

Figure 2

Theoretical Model



Results

Subscription Patterns

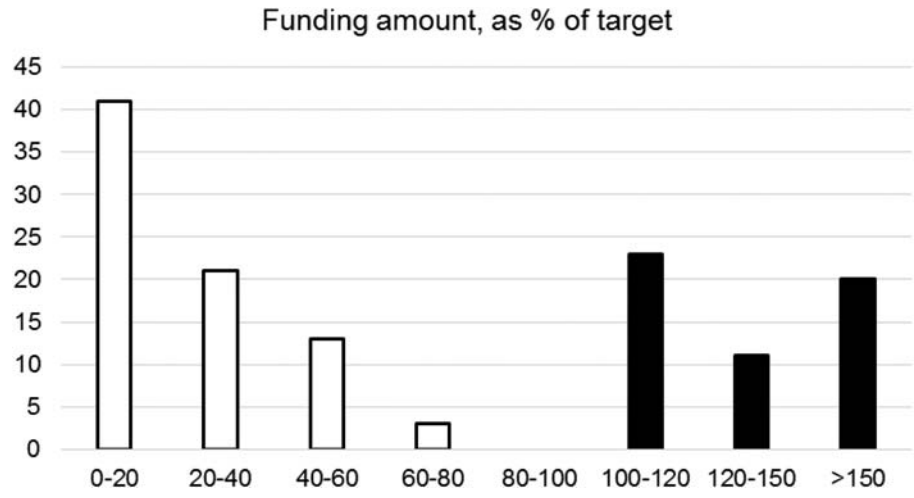
Due to an all-or-nothing financing scheme, most of the campaigns in our sampling period did not reach the target and raised no capital at all. The percentage of successful offerings (*Success*) in our data set is 41% and the average successful campaign raises £392,690 from 153 investors. Figure 3 shows the frequency of outcomes for the funding amount at the end of the campaign, relative to the initial target amount. Typically, if the crowdfunding campaign is unsuccessful (in white in Figure 3), the project raises 20% or less of its target. Indeed, 31% of the projects collect bids for less than 20% of the target amount. As expected, given the incentives of an all-or-nothing framework, no project reaches between 80% and 100% of the target amount. Conversely, a sizable proportion (17%) of projects receive pledges between 100% and 120% of the target capital, another 8% receive pledges between 120% and 150%, and a proportion of projects in the long tail (20 projects, i.e., 15%) reach values above 150%.

As reported in Table 1, the average number of investors per project in our sample is equal to 84 (the sum of *Early_Investors* and *Late_Investors*), higher than the average reported by Ahlers et al. (2015) for ASSOB (seven investors). The presence of unsophisticated investors (crowd) is therefore arguably larger in Crowdcube. Figure 4 shows how the number of investors changes over the time window, distinguishing between successful and unsuccessful projects (54 and 78 projects, respectively). The average number of investors after 5 days in a successful campaign is 18.2, 1.7 times higher than in unsuccessful ones (10.7 early investors). After 10 days from the opening of the offering, the number of investors in successful projects is 29.2, 1.9 times higher than in unsuccessful ones (15.3 investors). At the end of the campaign, the average number of investors in a successful offering is more than 4 times higher than in unsuccessful campaigns (152.5 vs. 35.1).[18] This evidence points to a "success-breeds-success" dynamics, where projects able to collect bids already in the first days are deemed successful. On the contrary, in unsuccessful projects, the small number of investors in the first few days leads to even weaker demand later.

18. To facilitate visualization in Figure 2, the duration of the campaigns is standardized to 60 days. This standardization is not applied in the rest of the article. *t*-tests on the difference in means reveal that the number of investors is significantly higher in successful projects than in unsuccessful campaigns from the fifth day onward ($p < .01$).

Figure 3

Distribution of the Percentage of Amount Raised at the End of the Campaign, Relative to Target

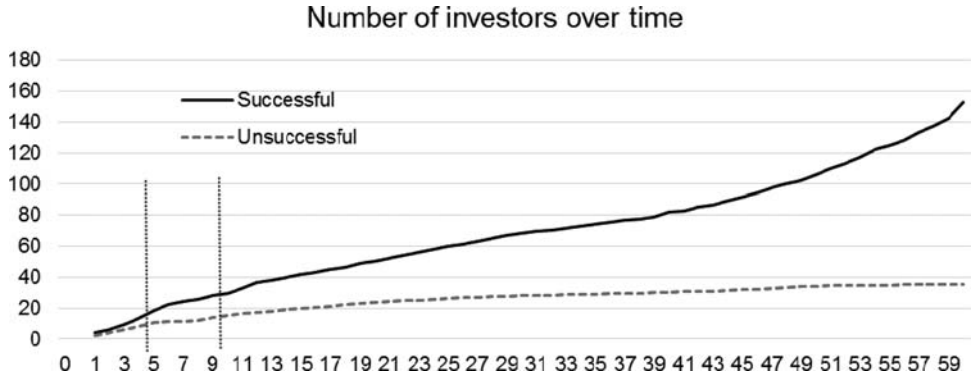


Public Profile Investors

Most investors choose not to make their profile public. The mean value of *Public_Investors* is equal to 7.7% on the fifth day after the launch of the campaign. However, successful campaigns are characterized by a higher fraction of public profile investors, in particular within the first days from launch (9.1% vs. 6.7% of public profile investors over the first 5 days for successful and unsuccessful campaigns, respectively).

Figure 4

Number of Bidding Investors During the Campaign, Distinguishing Between Successful and Unsuccessful Projects [Color figure can be viewed at wileyonlinelibrary.com]

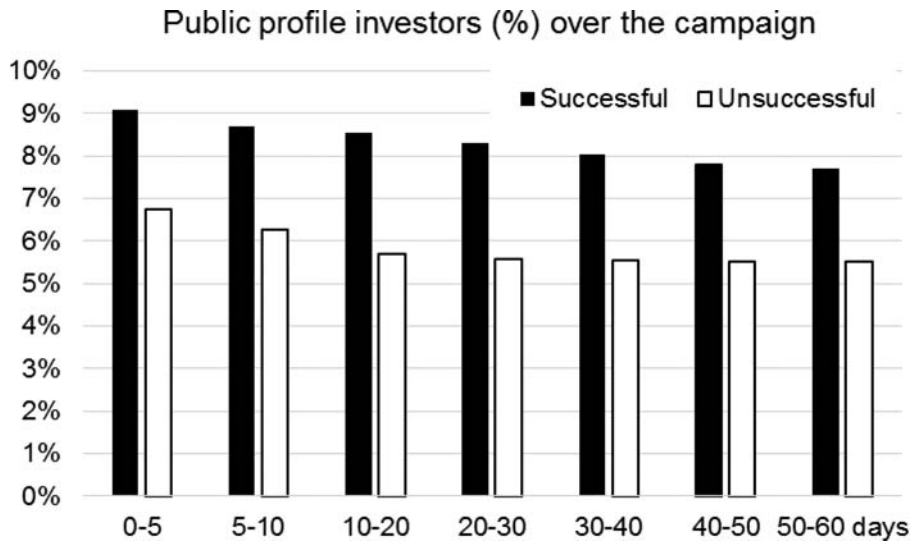


It is difficult to prove that public profile investors are better informed than other investors, as the latter are not identifiable. However, by analysing the curricula published on LinkedIn of a random sample of 200 public profile investors in Crowdcube (we cannot access this information for investors without a public profile), we find two interesting characteristics. First, public profile investors invest more often than the average investor. Their average portfolio consists of 4.8 investments, compared to 2.7 investments as the average declared by Crowdcube for active investors in the platform. Second, we find that the average public profile investor has a high level of entrepreneurial and project-specific expertise. While crowdfunders are typically depicted as amateur investors with limited experience in evaluating investment opportunities (Agrawal et al., 2013; Belleflamme et al., 2014), we find that 88% of the public profile investors in our sample have entrepreneurial and start-up-related skills, and 44% have experience in the funded project's specific industry. This is presumably more experience than the average anonymous crowdfunder may have. In the United Kingdom, in particular, most crowdfunding investors are "retail investor with no previous experience of early stage/venture capital investment" (NESTA, 2014, p. 59). We therefore conclude that, due to their nature of repeat players and their higher educational and experiential capital, public profile investors are able to access and process information at a lower cost, which is the very definition of informed investors (Rock, 1986).

To investigate when they bid, we inspect the subscription pattern of public profile investors. As reported in Table 1, the percentage of public profile investors in the average campaign is 7.7% over the first 5 days, and decreases to 7.3% over a 10-day window. Figure 5 presents the evolution of the fraction of participating public profile investors over the duration of the campaign, distinguishing between successful and unsuccessful projects. In successful offerings, public profile investors represent 9.1% of early bidders in the first 5 days of the campaign. This type of investors is, however, more active during the

Figure 5

Percentage of Public Profile Investors Bidding During the Campaign, Distinguishing Between Successful and Unsuccessful Projects



initial days and tend to bid proportionally less over time. The percentage decreases over time; the fraction of public profile investors at the end of a successful campaign equals 7.6% on average. This means that the average successful campaign attracts 12 investors who decide to make their profile public. In unsuccessful campaigns, the decline in the fraction of bidders with a public profile is steadier over the first half of the subscription period; from 6.8% in the first 5 days, the fraction of public profile investors decreases to 5.9% after a month and then it stabilizes at 5.8%. Unsuccessful projects attract on average only two public profile investors, with virtually none in the second half of the campaign. Hence, we find evidence that public profile investors are relatively more frequent in successful campaigns and that they tend to invest early on.

Finally, as a *post hoc* analysis, we investigate whether professional investors, such as venture capitalists, are included in our sample of public profile investors or not. To do so, we construct an augmented data set by matching Crowdcube data to Crunchbase, which is an increasingly used data source in entrepreneurial finance studies (see, e.g., Cumming, Walz, & Werth, in press). This database, operated by TechCrunch, records information about start-ups and covers [illegible]. We find that eleven venture capitalists invested in Crowdcube in [illegible]on Capital, British Business Bank, DN Capital, Episode1, Forwar[illegible]res, MMC Ventures, Octopus Investments, Passion Capital, and [illegible]ll of them belong to our sample of public profile investors. We [illegible]rofile investors are more frequently sophisticated than other "b[illegible]

please add a references to Audretsch et al. (2016)
Audretsch D., Lehmann E., Paleari S., Vismara S., 2016 "Entrepreneurial finance and technology transfer", Journal of Technology Transfer, 41(1), 1-9.

Top Management Tea[illegible]eristics

The number of TMT m[illegible]each project varies in our sample from 1 to 15, with an average of [illegible]rison, the average start-up on the Australian crowdfunding platf[illegible]T members (Ahlers et al., 2015), while the average high-tech com[illegible]ndon in the period 1995–2003 had 5.11 (Bonardo, Paleari, & Vis[illegible]er of TMT members is significantly higher in companies with s[illegible]hile only a small fraction of companies have nonexecutive directo[illegible](8%), most of them have positive sales in the year before the offe[illegible]no sales find it more difficult to raise funds, as only 42% of thei[illegible]ed successfully (compared to 82% for firms with positive sales). This means that 32 companies with no sales were nevertheless able to raise public equity capital through crowdfunding. As a comparison, 22% of the IPOs in Europe's second markets over the last decade were from zero-revenue firms (Vismara, Paleari, & Ritter, 2012).

The average number of alternative offerings active and available at the time of listing on the platform is 31.1, with a minimum of 2 and a maximum of 51 competing campaigns. The average target capital in our sample of equity offerings is £243,760, with a minimum of £20,000 and a maximum of £6 million. These figures are lower than the average target amount reported by Ahlers et al. (2015) for ASSOB (AUD 1,78m), but higher than on competing platforms in the United Kingdom (e.g., the average successful campaign in Seedrs in 2014 raised £123,106). In other types of crowdfunding, the amount of money raised is significantly smaller, with reward-based campaigns typically smaller than $100,000. In our sample, the average value of *Equity_Offered* is 13.3%. This means that, upon completion of a successful campaign, crowdfunders will hold, on average, 13% of the equity of the firm. Investors are often eligible for the SEIS (*Tax_Incentives*)—38% of the offerings. A minority of the projects is meant to be exited via IPO (*IPO_Exit*; 17%) or

to pay *Dividends* (11%) in the near future. The average duration of the campaigns (*Duration*) in our sample is 58.7 days; the minimum duration is 11 and the maximum 137. For most of them (65%), however, the offering lasts for the standard 60 days.

Last, we comment our instrumental variables. Most equity offerings on Crowdcube deliver voting rights only above certain thresholds. In our sample, the average investment threshold required to receive voting rights is £9,570, with £5,000 and £10,000 being the most common thresholds.[19] The average of the *A_Class_Threshold* variable is not different between successful and unsuccessful offerings. Likewise, no significant difference in means between successful and unsuccessful offerings is observed with regard to the day of the offering. Approximately one out of three campaigns in our sample was launched in weekends, with similar success rates as weekday offerings.

Econometric Analysis

T2 In Table 2, we report the results from our system of regressions. Each model corresponds to the equation with the same number (e.g., Model 1 corresponds to equation 1, etc.) In Model 1, the dependent variable is the proportion of public investors; in Model 2, the dependent variable is the number of early investors; and in Model 3, the dependent variables is the number of late investors. To test whether the chance of the campaigns' success increases with a higher number of early investors (hypothesis 1), we first focus on the results reported for Model 3. As hypothesized, the probability of success of equity crowdfunding campaigns is higher when the number of early investors increases. The number of investors in the first 5 days of the campaign is indeed a positive and significant ($p < .01$) predictor of success. We therefore find strong support for our hypothesis 1. The effect of early investors is of considerable economic significance. Each new investor during the first 5 days of the offering attracts, on average, four additional late investors.

After finding evidence in support of our first hypothesis, we now focus on the factors associated with receiving early support. We therefore refer to the second equation of our dynamic model, where the dependent variable is the number of early investors. As reported in Table 2, the coefficient on *Public_Investors* in Model 2 is positive and significant ($p < .01$), providing support to hypothesis 2. A higher percentage of investors with a public profile is positively related to the number of early investors in equity crowdfunding campaigns. To assess the economic significance of the effect of the number of public profile investors on the number of early investors in the campaign, we set all continuous variables at their mean values and all dummy variables at their median value, and calculate the increase in the estimated value of *Early_Investors*, engendered by a one-standard-deviation increase in *Public_Investors*. We find that a one-standard-deviation increase in the percentage of investors with a public profile is associated with an increase of 1 investor in the first 5 days of the offering, from 13.8 to 14.8. Because of their uncertainty-reducing and demand-stimulating effect, bids from investors that choose to make their profile public attract investors early on and their role fades once early contributions have been attracted.

Concerning quality proxies, our results are mostly in line with evidence provided by Ahlers et al. (2015). The number of TMT members (*TMT_Size*) is positively related to the

19. Voting rights are offered to all shareholders independently from the level of their bids in 41 offerings (i.e., *A_Class_Threshold* equal to zero). For 20 companies that do not offer voting rights, the threshold is assumed equal to the target amount. Not considering these offerings, the threshold ranges from 0 to £150,000. *A_Class_Threshold* is not significantly correlated with the size of the offerings

Table 2

Determinants of the Success of a Campaign

	Public_Investors (1) OLS	*Early_Investors* (2) Negative binomial	*Late_Investors* (3) Negative binomial
Early_Investors			0.043***
			(0.008)
Public_Investors		4.521***	
		(0.848)	
TMT_Size	0.003	0.030	0.124***
	(0.004)	(0.029)	(0.035)
Nonexecutives	−0.024	0.240*	−0.380*
	(0.021)	(0.144)	(0.209)
Patents	0.051**	0.470**	−0.299
	(0.026)	(0.215)	(0.316)
Positive_Sales	0.042***	0.232**	0.609***
	(0.014)	(0.109)	(0.149)
Competing_Offerings	−0.002***	−0.010*	−0.012**
	(0.000)	(0.006)	(0.006)
Target_Capital	0.007	−0.007	0.111
	(0.008)	(0.068)	(0.086)
Equity_Offered	−0.031	−0.027	−1.023
	(0.097)	(0.855)	(1.252)
Tax_Incentives	−0.009	−0.092	0.006
	(0.010)	(0.120)	(0.160)
IPO_Exit	0.007	0.075	−0.057
	(0.016)	(0.143)	(0.187)
Dividends	−0.031	0.090	0.356
	(0.022)	(0.118)	(0.245)
Duration			0.002
			(0.002)
A_Class_Threshold	0.047**		
	(0.022)		
Weekday_Offering		−0.251***	
		(0.094)	
Constant	0.010	2.379**	1.893*
	(0.110)	(0.938)	(1.085)
Ln(alpha)		−1.463***	−0.598***
		(0.163)	(0.118)
No. observations	132	132	132
Adjusted (Pseudo) R^2	.121	.094	.091
Log-likelihood	−1,167.6		

This table reports the results of generalized simultaneous equation models of three equations, using a sample of 132 equity crowdfunding offerings listed on Crowdcube in 2014. The dependent variable in Model 1 is the percentage of public profile investors; in Model 2, the number of early investors over the first 5 days of offerings; in Model 3, the number of investors after the first 5 days. The variable definitions are in Table 1. Each regression controls for industry effects. Robust standard errors are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

outcome of the campaigns ($p < .01$); this suggests that the size of the team is perceived by outside investors as a signal of the firm's ability to cope with the uncertainty of the market. Indeed, according to survey participants in NESTA (2014), when selecting investments, TMT members are a more important consideration than the characteristics of the

project itself. Similar to Ahlers et al., nonexecutives do not impact the success of equity crowdfunding campaigns, although there is a weak statistical significance in Model 2 (positive sign; $p < .10$) and in Model 3 (negative sign; $p < .10$), which calls for further investigation. The coefficients on *Patents* are significant in Models 1 and 2 ($p < .05$), but not significant in Model 3. Intellectual capital seems to play a more important role in differentiating between companies when they raise early-stage funds from sophisticated investors. It is not, however, a significant predictor of a campaign's success. By focusing on the role of early and public profile investors, our findings refine the results by Ahlers et al. (2015) that patents are not relevant for the success of equity crowdfunding offerings. Signori and Vismara (2016) dig further on this specific point. Finally, the variable *Positive_Sales* is highly significant. Like in other entrepreneurial finance settings such as IPOs (Loughran & Ritter, 2004), investors prefer companies that have already generated initial sales.

As predicted by the model in Parker (2014), the attractiveness of each offering is negatively affected by the presence of a larger number of competing offerings. Other control variables do not matter significantly. The number of investors is not affected by the size of the campaigns. In line with the findings of NESTA (2014) that more than half of the investors does not consider tax incentives when investing, the variable *Tax_Incentives* is not significant. Finally, contrary to the findings of Ahlers et al. (2015), the declared intention of proponents to have an IPO exit (*IPO_Exit*) does not significantly impact the outcome of campaigns on Crowdcube. This is surprising if we consider that, without an IPO, firms listed on crowdfunding do not guarantee a secondary market. Although this is expected to be a major concern for external investors, it is difficult to ascertain whether these preplanned exits reveal real intentions. In economic terms, they are "cheap talk," rather than Spence's signals, as there is no cost for cheating. In a related vein, virtually all firms going public state in their offering prospectus that growth and investments are how they intend to use the IPO proceeds, a number of firms, however, actually use these funds to rebalance their capital structure (Paleari, Pellizzoni, & Vismara, 2008). The same line of argument holds for *Dividends*, which, despite their potential to offer yield, do not attract more investors; the duration of the investment is thus reduced.

Robustness Tests

In this section, we discuss the results from a set of robustness tests. In particular, (1) we replicate the system of three equations with a different success measure in the third equation, (2) we test the effect of omitting the variable *Duration*, (3) we measure the variables *Public_Investors* and *Early_Investors* over different periods, (4) we include the quadratic term of *Early_Investors* in the regression on *Late_Investors*, and (5) we test the robustness of our results to different econometric specifications and to the inclusion of additional control variables.

First, we find similar results when, in equation 3, we measure the success of the offerings using alternative dependent variables. The number of investors in the first 5 days of the campaign is indeed a positive and significant predictor of success, independently from how we capture success. Precisely, our results hold using the ratio between the funding at the end of the campaign and the initial target, the logarithm of the funding amount, as well as a dichotomous variable that identifies successful campaigns.

Second, as we explained in the Sample and Variables section, the offering window on Crowdcube is automatically set to 60 days. The duration may, however, be lower, as successful projects can be closed before the 60-day period passes, or it may be extended at the platform's discretion to reach the target. Thus, in our sample, durations differ between campaigns and are observed after the start of the campaigns. For most campaigns in our sample (86 out of 132, i.e., 65%), however, the offering lasts for the standard 60 days. While campaigns closed ahead of the deadline are by definition successful (i.e., 100% success for durations shorter than 60 days), extended campaigns (i.e., duration exceeding 60 days) include both successful and unsuccessful campaigns.[20] As expected, the coefficients on *Duration* in Table 2 are not statistically significant in our regressions. However, the decision to shorten or extend the duration is taken during the campaign. This raises concerns of reverse causality. As both shortened and extended campaigns have a higher probability of success, we replicate our system of regressions on the restricted sample of 115 offerings with a duration between 40 and 80 days and excluding the variable *Duration*. The results, reported in Table 3 under Models 1–3, lend support to our hypotheses. Similarly, in unreported tests, we replicate these results with regressions using only the 86 campaigns with the standard duration of 60 days.

Third, we use the percentage of public profile investors in our analysis as an independent variable in estimating the determinants of early investment decisions. Given that these two variables are measured over the same time window (i.e., 0–5 days of the offering), an endogeneity problem may arise due to simultaneity. To limit such concerns, we run regressions in which the number of early investors (dependent variable) is measured after the percentage of public profile investors. Under Model 4 in Table 3, we report the results from a regression where the dependent variable is the number of investors from the sixth to the tenth day of the campaign, and the independent variable is the percentage of public profile investors from the opening day to the fifth day of the offering. This way, we are able to control for endogeneity, as the percentage of public profile investors is calculated with regard to an observation period that precedes the observation period for the dependent variable. We find that a higher percentage of public profile investors in the first 5 days of the offering attracts more investors in the following 5 days ($p < .01$).

Fourth, a cascade occurs if late investors base their decision to invest on their own information, but also try to infer extra information from other investors' behavior. This leads to an acceleration of investments if early investors committed money; the cumulative distribution in Figure 4 reflects this phenomenon for successful campaigns. To capture the increasing proportion of investors participating in the follow-up period, we include a squared term of *Early_Investors* in our regressions. Results (unreported) from negative binomial regressions, with *Late_Investors* as the dependent variable, confirm that a higher number of investors backing the project in the early days of listing leads to a disproportionally higher number of late backers.

Finally, our results are robust to alternative econometric specifications that we briefly summarize below. Despite the possibility that a campaign attracts no investors, there are no campaigns with zero investors in our sample. As a robustness test, we run zero-truncated negative binomial regressions, used to model count data for which the value zero cannot occur. The results are robust to this specification. Further, we include a

20. While the average success rate in our sample is 41% (Table 1), both shortened and extended campaigns have a higher probability of success. In our sample, there are nine offerings with a duration less than 40 days (min. 11 days)—all of them successful. Further, there are eight campaigns that last longer than 80 days (max. 137 days); five out of these eight extended campaigns are successful (62.5%). The success rate for the remaining 115 campaigns with a duration between 40 and 80 days is 34.8% (40 out of 115).

Table 3

Robustness Tests

	Public_Investors (1) OLS	*Early_Investors* (2) Negative binomial	*Late_Investors* (3) Negative binomial	From days 6 to 10 (4) Negative binomial
Early_Investors			0.041***	
			(0.012)	
Public_Investors		5.486***		3.587***
		(0.933)		(1.030)
TMT_Size	0.003	0.031	0.128***	0.048*
	(0.003)	(0.029)	(0.037)	(0.026)
Nonexecutives	−0.010	0.148	−0.300	0.053
	(0.011)	(0.131)	(0.228)	(0.140)
Patents	0.039**	0.548**	−0.390	0.271
	(0.019)	(0.231)	(0.365)	(0.199)
Positive_Sales	0.033***	0.220***	0.761***	0.469***
	(0.011)	(0.090)	(0.162)	(0.148)
Competing_Offerings	−0.002***	−0.007*	−0.016**	−0.012**
	(0.000)	(0.004)	(0.007)	(0.005)
Target_Capital	0.001	0.016	−0.005	0.134
	(0.002)	(0.071)	(0.090)	(0.084)
Equity_Offered	−0.021	0.180	0.040	−0.835
	(0.043)	(0.642)	(0.629)	(1.022)
Tax_Incentives	−0.020	−0.094	−0.025	−0.020
	(0.016)	(0.118)	(0.174)	(0.148)
IPO_Exit	0.007	0.119	0.007	−0.015
	(0.015)	(0.138)	(0.213)	(0.201)
Dividends	−0.022	0.098	0.145	0.439
	(0.017)	(0.163)	(0.264)	(0.311)
Duration				0.258
				(1.034)
A_Class_Threshold	0.036**			
	(0.017)			
Weekday_Offering		−0.257**		
		(0.109)		
Constant	0.025	2.211***	3.119**	−0.837***
	(0.070)	(0.824)	(1.246)	(0.208)
Ln(alpha)		−1.491***	−0.604***	
		(0.165)	(0.138)	
No. observations	115	115	115	132
Adjusted (pseudo) R^2	.140	.105	.098	.083
Log-likelihood	−956.6			

This table reports in Models 1–3 the results of robustness tests for the omission of *Duration* as control variable. The system of three equations is the same as in Table 2, while the sample considers the 115 offerings with a duration between 40 and 80 days. In Model 4, the number of early investors is measured after the percentage of public profile investors. The dependent variable of the negative binomial model is the number of investors from the sixth to the tenth day of campaign, while for the independent variables, the percentage of public profile investors is measured from the opening to the fifth day. The variable definitions are in Table 1. Each regression controls for industry effects. Robust standard errors are in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

number of additional control variables to our baseline model. First, as additional evidence for the difference in motivation between backers in equity and nonequity crowdfunding, we introduce a dummy for offerings that deliver a reward together with shares, which is the case of 73% of our offerings. Our results are unaffected. Second, we modify the variable *Tax_Incentives* to identify those companies that qualify for the Enterprise Investment Scheme tax relief (80%) (instead of the SEIS) and rerun the regressions with this variable. Third, following Vismara (2016), we include a proxy for the social capital of the proponent, measured by the number of LinkedIn connections, as a new regressor. We also add a dummy variable that equals 1 if the start-up is located in London (45%). Results do not change significantly. Fourth, the IPO is not the only preplanned exit option. Other options include trade sales (72%), management buyouts, or share buy-backs (11%). Again, we find that controlling for different types of preplanned exit does not affect the results. Finally, share prices are not disclosed on Crowdcube, as visitors can only see the target amounts and percentages of equity offered. Although this signal is not immediate, investors are able to derive company valuations (e.g., a campaign aiming to raise £100,000 by offering 10% of shares is valued at £1 million) and make decisions accordingly. Hence, we include *Share_Price* among the regressors and rerun the regressions, but, similarly to Ahlers et al. (2015), we do not find the variable significant.

Conclusions

Summary of the Main Results

Existing papers on information cascades among investors in entrepreneurial settings differentiate between informed and uniformed investors by distinguishing two categories: institutional and retails investors. This is often the only information available in equity offerings in public markets, as the name of the investors is not made available to the public. Recently, a new method to raise money from individuals has emerged for entrepreneurial ventures—equity crowdfunding. These campaigns are an ideal setting to test information cascades among investors for a number of reasons: (1) the projects seeking finance are characterized by high risk and uncertainty; (2) crowdfunders are typically amateur investors with high monitoring costs and limited skills and opportunities to perform due diligence; (3) there are no third-party certification mechanisms (such as IPO underwriters) in crowdfunding marketplaces; (4) the very functioning of these markets relies on the wisdom of the crowd; and (5) the name (or nickname) of the individual investors is publicly available, making it feasible for investors to interpret the signal provided by their behavior. This promptly updated information contributes to the speed and the size of information cascades. Confirming our hypotheses, we demonstrate that (1) contributions in the early days of offering are fundamental in attracting other investors and, thus, increase the probability of success of the campaigns, and (2) public profile investors play a crucial role in attracting other investors in the initial days of the campaign.

Alternative Explanations

While our interpretation of the results is that early backers represent a positive signal to undecided investors, alternative explanations are possible. To check for validity and disentangle, the underlying mechanisms driving the results is, however, a demanding task. First, a complementary explanation is related to positive payoff externalities. Like

on most platforms, campaigns on Crowdcube are financed only if their target amount is reached. Observing that a project has attracted many early contributions reassures potential backers that the project has good chances of reaching its target capital and that the time and resources invested in the pledge will not be wasted. Second, large initial pledges may not only reduce uncertainty, but also contribute to the accumulated capital stock of the campaign. The more early investors participate in a campaign, the more funding the project attains early on, which mechanically increases the probability of success. Third, identifiable early investors can enlarge the basin of potential backers acquainted with the offering, thereby attracting late investors from outside the platform (word-of-mouth). Fourth, investors might be aware of the campaigns before their launch, but they might prefer to wait and see how the campaign evolves before investing. Alternatively, proponents that achieve early success might be those who direct more effort toward finding investors, even before the official start of the campaign. Finally, late bidding may also be due to behavioral causes such as procrastination or conformity. Investors might simply disregard their private information and choose the project with the greatest number of investments. Irrational herding implies the same outcome: early backers condition late investors.

Limitations

The merit of our approach is identifying, in a quantitative way, some of the factors that attract investors in equity-based crowdfunding. However, our study has some limitations. First, the limited number of observations in the sample calls for further investigation in the future to provide more insight into the role of individual investors. In particular, studies on larger samples may benefit from exploiting information at the individual level, as we propose in the section on future research below. Further, exploring the extent to which our results reflect investor behavior as opposed to nuances of a particular context is an interesting question.

Second, unobserved heterogeneity is another concern. Although we cannot completely exclude the possibility that unobserved factors affect our conclusions, our setting mitigates this concern. Typically, the unobservable heterogeneity argument applies when researchers do not have access to data on variables (unobservables) that are observed by the decision makers. We have access to the same information as external investors do. However, we acknowledge that there are a number of factors difficult to measure or operationalize. For instance, most projects (73%) listed on Crowdcube deliver rewards together with shares. Although our results are robust to the inclusion of a dummy controlling for this possibility, the heterogeneity in rewards might influence the propensity to invest. We fail to distinguish substantial rewards from more trivial ones. More generally, the fact that our results capture real-world behaviors enhances their external validity, especially as we observe investment decisions where people invest their own money. On the other hand, it is worthwhile to consider experimental approaches to the problem as a parallel avenue of research, enhancing the internal validity of the data.

Finally, as equity crowdfunding platforms typically work on an all-or-nothing basis, entrepreneurs are under pressure to set an achievable target. The overfunding option, however, provides them with the possibility to raise more funds than the initial target. Although investors who bid during the overfunding phase have exactly the same rights as investors who invested before the campaign became overfunded, they already know at the moment of bidding that the campaign is successful. Hence, the dynamics after the goal is reached might be different and studying it is likely to provide us with fresh

insights. Even though we cannot directly investigate this phase, we can test the robustness of our results. We replicate our analysis considering only the sample of 112 offerings where the amount of capital raised over the initial target (*Funding_Percentage*) does not exceed 150%. Unreported results confirm that our findings are robust to the exclusion of the largely overfunded offerings. In addition, we note that only 20 offerings in our sample are significantly overfunded (*Funding_Percentage* above 150%), which is not enough for drawing robust evidence.

Theoretical Contributions

This article makes several contributions. First, we contribute to the empirical research on the determinants of success of equity crowdfunding campaigns. Crowdfunding is considered the markets of the future; however, our understanding of their functioning is limited. One of the reasons for this is that few platforms have a significant number of projects to investigate. To the best of our knowledge, only Ahlers et al. (2015) have empirically addressed the topic. We extend their research by including the dynamics between investors that may govern the success of the campaigns. In doing so, we contribute to the literature on signaling theory in entrepreneurship, explaining, at least in part, how crowdfunders make choices and why entrepreneurs' strategies for seeking finance through crowdfunding should involve sophisticated investors early on to enhance their chances of successful funding.

Second, we extend the emergent entrepreneurship literature on observational learning. In reward-based crowdfunding, due to the perceived obligation of specific or generalized reciprocity or the desire to receive constructive feedback in the product market, entrepreneurs have incentives to build social capital internal to the platforms. We find that observational learning matters also in an equity-based setting, where nonfinancial motives play no significant role (Cholakova & Clarysse, 2015; Vismara, 2016). Focusing on the signaling dynamics between investors, we show that investors alter their own evaluations upon observing the behavior of previous investors.

Third, we contribute to the finance research on information cascades in financial markets. Compared to traditional markets that extensively rely on formal intermediaries, information cascades among investors are crucial in crowdfunding, as they will probably be in other future financial innovations. The Internet promises to democratize entrepreneurial finance. Online IPO auctions, widely considered an efficient market mechanism to lower the costs of going public (Ritter, 2013), are one example. Technology is expected to simplify the interaction between those who want to invest money and those who need it (Cumming & Vismara, in press). We show that such disintermediation increases the reliance on observational learning or information cascades.

Implications

Our study has interesting implications for entrepreneurs, investors, and managers of crowdfunding platforms, as well as for regulators. We find that project proponents should devote particular effort to stimulate bids in the initial stages of the campaigns, as this is likely to generate an informational cascade dynamics and trigger further investments. Since in the crowdfunding context it is impossible to establish interpersonal relationships with every investor (Moritz et al., 2015), proponents should invest in pseudopersonal forms of communication such as social networks. The early involvement of investors with a public profile is a key ingredient of a successful campaign. Platform managers

should facilitate connections with social networks to increase the popularity of the projects (including word-of-mouth) and attract more investors. Finally, our study of information cascades in equity crowdfunding carries relevant policy implications. Regulators and policy makers worry that learning/herding behavior of retail investors might increase the chances for fraud, as their investments are not protected by the oversight of financial authorities. Sophisticated investors may, indeed, take advantage of their influential position.

Future Research Agenda

Exploring crowdfunding markets is a promising strand of research. With few exceptions, these studies have mainly focused on other forms of crowdfunding than equity. Though this is partly due to the paucity of data, the crowdfunding literature should not neglect to investigate whether and how these platforms can provide means of financing to firms. The results of this study offer avenues for further research along these lines. We identify four promising research areas for further research: (1) the heterogeneity of crowdfunders and the reputational effects of individual investors and superior principals; (2) the value-protection vs. value-creation role of upper echelons and how they interact with investors; (3) the cross-sectional differences between campaigns after their launch, which could be relevant for the funding success; and (4) the potential of successful campaigns to be successful investments also for external investors.

First, future studies would benefit from more information about individual investors than the indication about their profile (public or not). This could shed light on the potential role for investor reputation, since it is not only the proponents' reputation that matters. In this article, this level of information is used to show that public profile investors are (better) informed and more sophisticated investors than the typical amateur crowdfunder. Information about investors' bidding history is relevant only for projects at the end of the sampling period, as in the first projects, investors have no bidding history. More time and observations (projects) are needed to effectively test for reputation effects from individual investors. In particular, it is still not clear how heterogeneous investors in equity-based crowdfunding are. Trusting the behavior of one type of investors (e.g., public profile investors) may lead to insufficient analysis of the business plan by other investors. Are sophisticated investors taking advantage of unsophisticated investors? In a related vein, as business angels invest alongside crowdfunding, it would be interesting to investigate their behavior in this context and gain insight into the complementary or substitute role of angel investors in relation to crowdfunding.

Second, the signal provided by the proponent and by TMT members is treated only as a control variable in our study. These aspects, clearly, could be investigated more deeply and, potentially, play a more important role. For instance, the role of upper echelons could be investigated in the context of their value-protection vs. value-creation roles. Team profiles include both executive and nonexecutive members. This aspect has been thoroughly examined in traditional financial markets, but so far largely neglected in crowdfunding (actually, it applies only to equity- or debt-based crowdfunding markets). Despite the amount of money raised in equity crowdfunding markets, their regulation and the behavior of involved agents remain an issue of concern. As discussed above, investors may misbehave and proponents may engage in moral hazard behavior; hence, it is important to understand and improve the interaction between them. One of the leading motivations for investors to make their profile public is, indeed, to interact with proponents. Platform forums and comments exchanged between investors and proponents as well as among

investors provide a wealth of information that, if properly analyzed, could shed light on how this interaction works. Similarly, it would be of interest to investigate the role of returning, "experienced" investors (Kim & Viswanathan, 2014) as well as the role of family and friends (Ordanini et al., 2011) in the context of equity crowdfunding.

Third, a peculiar aspect of crowdfunding is the possibility to interact with investors during the campaign. Based on 23 semistructured interviews to market participants in equity-based crowdfunding, Moritz et al. (2015) find that pseudopersonal communication over the Internet (e.g., videos, investor relations channels, and social media) is important to reduce perceived information asymmetries among investors in equity-based crowdfunding. This is in line with a number of studies showing that firms' media presence reduces information asymmetries and lowers their cost of capital (see Merton's, 1987, investor recognition hypothesis and related empirical papers). More recently, finance researchers started investigating the effects of the behavior of entrepreneurs in social networks. Executives and entrepreneurs are increasingly active on social networks (e.g., Facebook, Twitter, or LinkedIn), with increasing levels of disclosure and less information asymmetries (Blankespoor, Miller, & White, 2013). Crowdfunding platforms offer a privileged avenue to investigate the effects of different types of information and two-sided interactions such as videos, business plan updates, and forums. A structured analysis of the different contents and different tools employed to communicate in equity-based crowdfunding could help in understanding and differentiating their impact on funding success. Identifying the impact of "community engagement" activities on funding success, however, poses econometric challenges. A critical issue is reverse causality between these activities after the campaign starts and after it succeeds. Proponents who get more attention initially may devote more resources to updating information or delivering interviews. For instance, Kuppuswamy and Bayus (2014) found that project's updates on Kickstarter increase in the last week of funding for projects that are close to succeed. To some extent, proxies of engagement could serve as measures of success, rather than determinants of it.

Finally, this study, like other studies, focuses on the success of crowdfunding campaigns. Whether successful campaigns are also successful investments for external investors is an issue to be investigated. In addition, a successful crowdfunding campaign could serve as signal that consumers are likely to desire a product or service. We would therefore welcome studies with a long-term perspective, which consider successful campaigns not as positive outcomes for entrepreneurs seeking finance, but, rather, the initial investment of investors looking for returns. This is clearly a challenging task for researchers, given the absence of a secondary market. Signori and Vismara (2016) is a first attempt in this direction. We believe that the success of successfully funded projects is central to the future of these markets.

Appendix : Correlation Matrix

This table reports correlation coefficients for the variables used in the regression analysis. *, **, *** represent statistical significance at the 1%, 5%, and 10%, respectively. VIF stands for Variance Inflation Factor.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	VIF
(1)	*Early_Investors*	1												1.65
(2)	*Public_Investors*	−0.0602	1											1.78
(3)	*TMT_Size*	0.0184	0.1324*	1										1.31
(4)	*Nonexecutives*	−0.0196	0.0434	0.2501***	1									1.30
(5)	*Patents*	0.0736	0.0557	0.0261	−0.0455	1								1.48
(6)	*Positive_Sales*	0.0883	0.0839	0.0387	0.1159*	−0.0857	1							1.19
(7)	*Competing_Off*	−0.0282	−0.1856***	0.0619	0.0539	−0.1468**	−0.0992	1						1.39
(8)	*Target_Capital*	0.2755***	0.0877	0.1930***	0.1020	0.1584**	0.1689**	−0.1302*	1					1.40
(9)	*Equity_Offered*	−0.1210*	0.0862	−0.1990***	0.0404	0.006	0.0257	−0.0503	0.0064	1				1.25
(10)	*Tax_Incentives*	−0.0824	−0.1178*	−0.2548***	−0.1651**	−0.0027	−0.1652**	0.1139	−0.4259***	0.0679	1			1.33
(11)	*IPO_Exit*	0.1628**	−0.0046	−0.0573	−0.007	0.0289	0.0359	−0.0558	0.1832***	−0.0798	−0.0033	1		1.06
(12)	*Dividends*	−0.0263	0.0589	−0.0551	−0.0545	−0.0298	−0.1006	−0.0874	−0.0599	0.1667**	0.0168	0.0916	1	1.15
(13)	*Duration*	−0.1107	0.0191	0.0873	0.0882	−0.0452	0.1065	−0.0103	−0.0893	−0.1333*	−0.0104	−0.0605	−0.0936	1.12

REFERENCES

Aggarwal, R., Prabhala, N.R., & Puri, M. (2002). Institutional allocation in initial public offerings: Empirical evidence. *Journal of Finance*, *57*(3), 1421–1442.

Agrawal, A.K., Catalini, C., & Goldfarb, A. (2011). *The geography of crowdfunding*. Working paper. National Bureau of Economic Research.

Agrawal, A.K., Catalini, C., & Goldfarb, A. (2013). *Some simple economics of crowdfunding*. Working paper. National Bureau of Economic Research.

Ahlers, G.K., Cumming, D., Günther, C., & Schweizer, D. (2015). Signaling in equity crowdfunding. *Entrepreneurship: Theory and Practice*, *39*(4),955–980.

Amihud, Y., Hauser, S., & Kirsh, A. (2003). Allocations, adverse selection, and cascades in IPOs: Evidence from the Tel Aviv Stock Exchange. *Journal of Financial Economics*, *68*(1), 137–158.

Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.

Banerjee, A. (1992). A simple model of herd behavior. *Quarterly Journal of Economics*, *107*(3), 797–817.

Belleflamme, P., Lambert, T., & Schwienbacher, A. (2014). Crowdfunding: Tapping the right crowd. *Journal of Business Venturing*, *29*(5), 585–609.

Bernstein, S., Korteweg, A., & Laws, K. (in press). Attracting early stage investors: Evidence from a randomized field experiment. *Journal of Finance*.

Bikhchandani, S., Hirshleifer, D., & Welch, I. (1992). A theory of fads, fashion, custom, and cultural change as informational cascades. *Journal of Political Economy*, *100*(5), 992–1026.

Blankespoor, E., Miller, G.S., & White, H.D. (2013). The role of dissemination in market liquidity: Evidence from firms' use of Twitter™. *Accounting Review*, *89*(1), 79–112.

Bonardo, D., Paleari, S., & Vismara, S. (2010). The M&A dynamics of European science-based entrepreneurial firms. *Journal of Technology Transfer*, *35*(1), 141–180.

Bonardo, D., Paleari, S., & Vismara, S. (2011). Valuing university-based firms: The effects of academic affiliation on IPO Performance. *Entrepreneurship Theory and Practice*, *35*, 755–776.

Brav, A., & Gompers, P.A. (1997). Myth or reality? The long-run underperformance of initial public offerings: Evidence from venture and nonventure capital-backed companies. *Journal of Finance*, *52*(5), 1791–1821.

Burtch, G., Ghose, A., & Wattal, S. (2013). An empirical examination of the antecedents and consequences of contribution patterns in crowd-funded markets. *Information Systems Research*, *24*(3), 499–519.

Burtch, G., Ghose, A., & Wattal, S. (2015). The hidden cost of accommodating crowdfunder privacy preferences: A randomized field experiment. *Management Science*, *61*, 949–962.

Carter, R., & Manaster, S. (1990). Initial public offerings and underwriter reputation. *Journal of Finance*, *45*, 1045–1067.

Chen, Y., Wang, Q., & Xie, J. (2011). Online social interactions: A natural experiment on word of mouth versus observational learning. *Journal of Marketing Research*, *48*(2), 238–254.

Cholakova, M., & Clarysse, B. (2015). Does the possibility to make equity investments in crowdfunding projects crowd out reward-based investments?. *Entrepreneurship Theory and Practice*, *39*(1), 145–172.

Colombo, M.G., Franzoni, C., & Rossi Lamastra, C. (2015). Internal social capital and the attraction of early contributions in crowdfunding. *Entrepreneurship Theory and Practice*, *39*(1), 75–102.

Cumming, D.J., & Johan, S. (2013). Demand driven securities regulation: Evidence from crowdfunding. *Venture Capital: An International Journal of Entrepreneurial Finance*, *15*, 361–379.

Cumming, D.J., Leboeuf, G., & Schwienbacher, A. (2014). *Crowdfunding models: Keep-it-all vs. all-or-nothing*. Working paper. SSRN.

Cumming, D.J., & Vismara, S. (in press). De-segmenting research in entrepreneurial finance. Venture Capital.

Cumming, D., Walz, U., & Werth, J. (in press). The dynamics of entrepreneurial careers in HighTech ventures: Entry, experience, education, and exit. *Financial Review*.

Damodaran, A. (1989). The weekend effect in information releases: A study of earnings and dividend announcements. *Review of Financial Studies*, *2*(4), 607–623.

Dellavigna, S., & Pollet, J. (2009). Investor inattention and Friday earnings announcements. *Journal of Finance*, *64*(2), 709–749.

Gorton, G.B., & Pennacchi, G.G. (1995). Banks and loan sales: Marketing nonmarketable assets. *Journal of Monetary Economics*, *35*(3), 389–411.

Horner, M. (1988). The value of the corporate voting right. *Journal of Banking and Finance*, *3*, 69–83.

Hornuf, L., & Schwienbacher, A. (2015). *Funding dynamics in crowdinvesting*. Working paper. SSRN.

Hornuf, L., & Schwienbacher, A. (2016). Crowdinvesting—Angel investing for the masses? In H. Landström and C. Mason (Eds.), *Handbook of research on venture capital: Vol. 3. Business angels*. Cheltenham, UK: Edward Elgar.

Khurshed, A., Paleari, S., Pandè, A., & Vismara, S. (2014). Transparent bookbuilding, certification, and initial public offerings. *Journal of Financial Markets*, *19*, 154–169.

Kim, K., & Viswanathan, S. (2014). *The experts in the crowd: The role of reputable investors in a crowdfunding market*. Working paper. SSRN.

Kuppuswamy, V., & Bayus, B.L. (2014). *Crowdfunding creative ideas: The dynamics of project backers in Kickstarter*. Working paper. SSRN.

Loughran, T., & Ritter, J.R. (2004). Why has IPO underpricing changed over time? *Financial Management*, *33*(3), 5–37.

Merton, R.C. (1987). A simple model of capital market equilibrium with incomplete information. *Journal of Finance*, *42*(3), 483–510.

Migliorati, K., & Vismara, S. (2014). Ranking underwriters of European IPOs. *European Financial Management*, *20*(5), 891–925.

Moritz, A., Block, J., & Lutz, E. (2015). Investor communication in equity-based crowdfunding: A qualitative-empirical study. *Qualitative Research in Financial Markets*, *7*, 309–342.

Nahata, R. (2008). Venture capital reputation and investment performance. *Journal of Financial Economics*, *90*, 127–151.

NESTA (2014). *Understanding alternative finance: The UK alternative finance industry report 2014*. London, UK: Nesta.

Ordanini, A., Miceli, L., Pizzetti, M., & Parasuraman, A. (2011). Crowd-funding: Transforming customers into investors through innovative service platforms. *Journal of Service Management*, *22*(4), 443–470.

Paleari, S., Pellizzoni, E., & Vismara, S. (2008). The going public decision: Evidence from the IPOs in Italy and in the UK. *International Journal of Applied Decision Sciences*, *1*(2), 131–152.

Parker, S. (2014). Crowdfunding, cascades and informed investors. *Economics Letters*, *125*, 432–435.

Ritter, J.R. (2013). Re-energizing the IPO market. In M. N. Bailey, R. J. Herring, & Y. Seki (Eds.), *Restructuring to speed economic recovery*. Brookings Press.

Rock, K. (1986). Why new issues are underpriced. *Journal of Financial Economics*, *15*(1), 187–212.

Roth, A.E., & Ockenfels, A. (2002). Last-minute bidding and the rules for ending second-price auctions: Evidence from eBay and Amazon auctions on the Internet. *American Economic Review*, *92*(4), 1093–1103.

Schwienbacher, A., & Larralde, B. (2010). *Crowdfunding of small entrepreneurial ventures*. Working paper, SSRN.

Signori, A., & Vismara, S. (2016). *Returns on Investments in Equity Crowdfunding*. Working paper. SSRN.

Simonsohn, U., & Ariely, D. (2008). When rational sellers face nonrational buyers: Evidence from herding on eBay. *Management Science*, *54*(9), 1624–1637.

Stiglitz, J.E. (2002). Information and the change in the paradigm in economics. *American Economic Review*, *92*, 460–501.

Vismara, S. (2016). Equity retention and social network theory in equity crowdfunding. *Small Business Economics*, *46*(4), 579–590.

Vismara, S., Paleari, S., & Ritter, J.R. (2012). Europe's second markets for small companies. *European Financial Management*, *18*(3), 352–388.

Watts, D., & Dodds, P. (2007). Influentials, networks, and public opinion formation. *Journal of Consumer Research*, *34*(4), 441–458.

Welch, I. (1992). Sequential sales, learning, and cascades. *Journal of Finance*, *47*, 695–732.

Zhang, X., & Zhu, F. (2011). Group size and incentives to contribute: A natural experiment at Chinese Wikipedia. *American Economic Review*, *101*, 1601–1615.

Silvio Vismara is a • • • at the Department of Economics and Technology Management, University of Bergamo, Italy.

The author thanks Joern Block, Thomas Chemmanur, Massimo Colombo, Douglas Cumming, Michael Cummings, Marcel Huelsbeck, Sophie Manigart, Ambra Mazzelli, Gordon Murray, Biljana Nikolic, Jay Ritter, Darren Westlake (CEO and founder of Crowdcube), and seminar and conference participants at the University of Augsburg, University of Trier, ZEW, 2014 AiIG conference in Bologna, 2014 NSE conference in Mannheim, 2015 SBE workshop in Trier, 2015 European Conference of FMA in Venice, and 2015 AoM Conference in Vancouver, for helpful comments. Nicola Berera provided superb research assistance. The author is especially indebted to his friends and colleagues Michele Meoli and Andrea Signori.

AUTHOR QUERY FORM

Dear Author,
During the preparation of your manuscript for publication, the questions listed below have arisen. Please attend to these matters and return this form with your proof.
Many thanks for your assistance.

Please see note at page 17. Thanks.

Query References	Query	Remarks
AQ1	Please specify the role of the author.	
AQ2	Please provide place of publication for Agrawal et al. (2011, 2013), Cumming et al. (2014), Cumming et al. (2014), Hornuf and Schwienbacher (2015), Kim (2014), Kuppuswamy and Bayus (2014), Ritter (2013), Larralde (2010), and Signori and Vismara (2016).	
AQ	stein et al. (in press), Cumming and Vismara (in press), and press).	
AQ	given names mes (green) have ectly.	

AQ1: Professor of Entrepreneurial Finance

AQ2:
Agrawal et al. (2011): National Bureau of Economic Research: Boston (USA).
Agrawal et al. (2013): National Bureau of Economic Research: Boston (USA).
Cumming et al. (2014): SSRN: New York (USA).
Hornuf and Schwienbacher (2015): SSRN: New York (USA).
Kim and Viswanathan (2014): SRN: New York (USA).
Kuppuswamy and Bayus (2014): SSRN: New York (USA).
Ritter (2013): Brookings Press: Washington (USA).
Schwienbacher and Larralde (2010): SSRN: New York (USA).
Signori and Vismara (2016): SSRN: New York (USA).

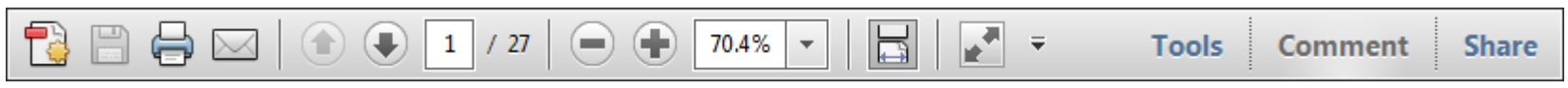
AQ3: These three papers are still forthcoming, so their references are correct as they are.
The correct title of the journal of the Cumming and Vismara's paper is "Venture Capital. An International Journal of Entrepreneurial Finance ". Please amend the second reference as follows: Cumming, D.J., & Vismara, S. (in press). De-segmenting research in entrepreneurial finance. Venture Capital. An International Journal of Entrepreneurial Finance

AQ4: correct, thanks.

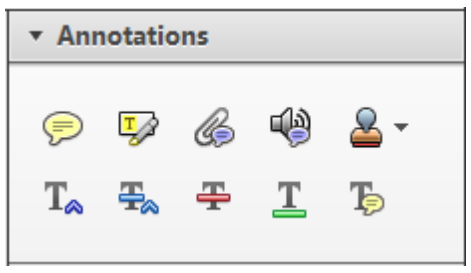
USING e-ANNOTATION TOOLS FOR ELECTRONIC PROOF CORRECTION

Required software to e-Annotate PDFs: Adobe Acrobat Professional or Adobe Reader (version 8.0 or above). (Note that this document uses screenshots from Adobe Reader X)
The latest version of Acrobat Reader can be downloaded for free at: http://get.adobe.com/reader/

Once you have Acrobat Reader open on your computer, click on the Comment tab at the right of the toolbar:



This will open up a panel down the right side of the document. The majority of tools you will use for annotating your proof will be in the Annotations section, pictured opposite. We've picked out some of these tools below:

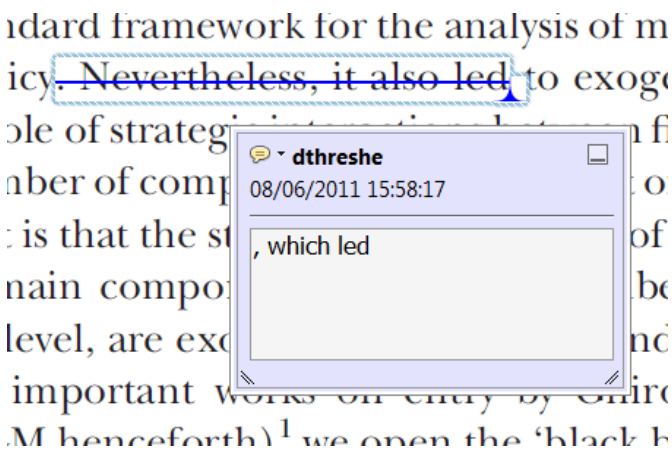


1. Replace (Ins) Tool – for replacing text.

Strikes a line through text and opens up a text box where replacement text can be entered.

How to use it

- Highlight a word or sentence.
- Click on the Replace (Ins) icon in the Annotations section.
- Type the replacement text into the blue box that appears.

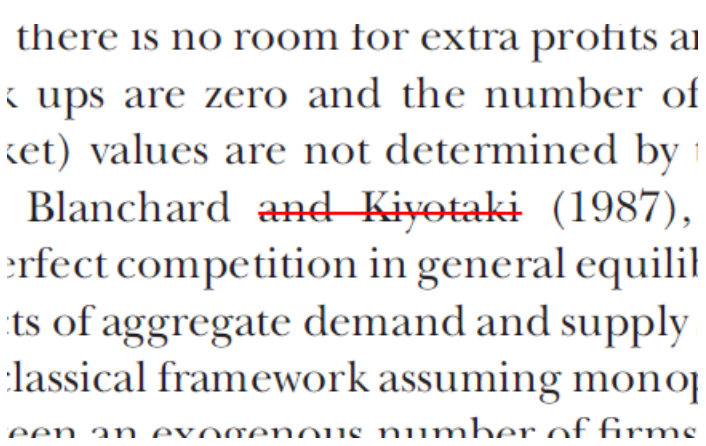


2. Strikethrough (Del) Tool – for deleting text.

Strikes a red line through text that is to be deleted.

How to use it

- Highlight a word or sentence.
- Click on the Strikethrough (Del) icon in the Annotations section.

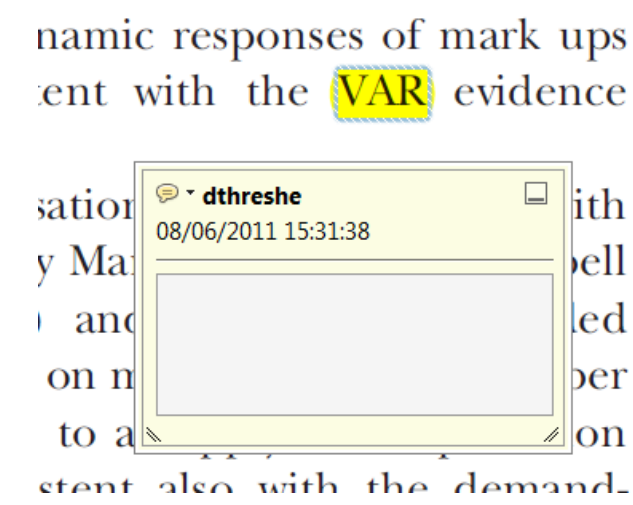


3. Add note to text Tool – for highlighting a section to be changed to bold or italic.

Highlights text in yellow and opens up a text box where comments can be entered.

How to use it

- Highlight the relevant section of text.
- Click on the Add note to text icon in the Annotations section.
- Type instruction on what should be changed regarding the text into the yellow box that appears.

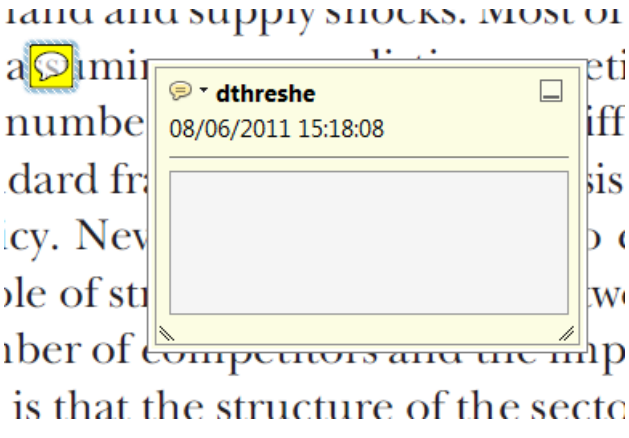


4. Add sticky note Tool – for making notes at specific points in the text.

Marks a point in the proof where a comment needs to be highlighted.

How to use it

- Click on the Add sticky note icon in the Annotations section.
- Click at the point in the proof where the comment should be inserted.
- Type the comment into the yellow box that appears.



WILEY-BLACKWELL

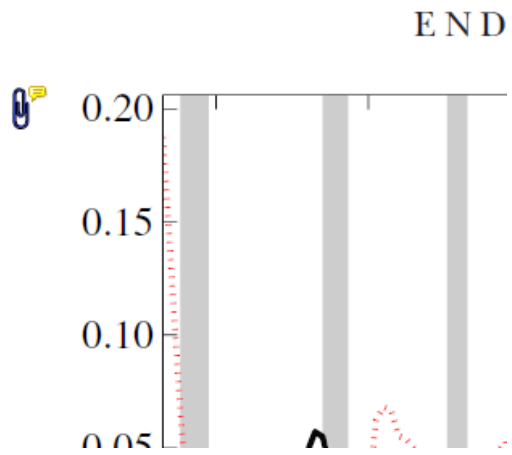
USING e-ANNOTATION TOOLS FOR ELECTRONIC PROOF CORRECTION

5. Attach File Tool – for inserting large amounts of text or replacement figures.

Inserts an icon linking to the attached file in the appropriate pace in the text.

How to use it

- Click on the Attach File icon in the Annotations section.
- Click on the proof to where you'd like the attached file to be linked.
- Select the file to be attached from your computer or network.
- Select the colour and type of icon that will appear in the proof. Click OK.

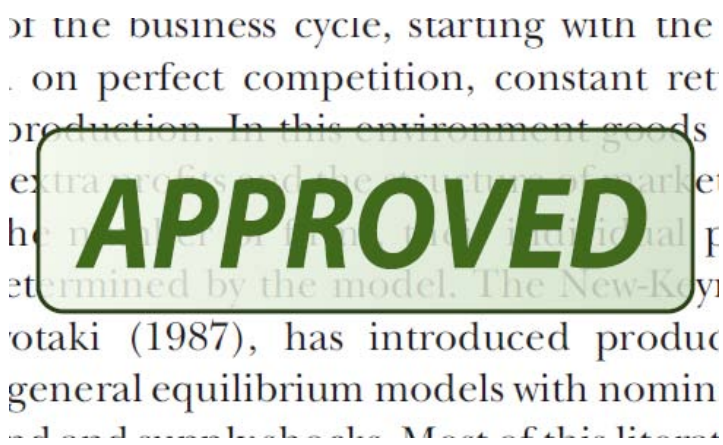


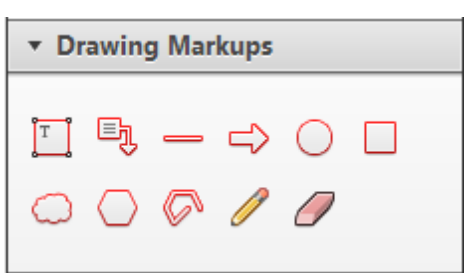
6. Add stamp Tool – for approving a proof if no corrections are required.

Inserts a selected stamp onto an appropriate place in the proof.

How to use it

- Click on the Add stamp icon in the Annotations section.
- Select the stamp you want to use. (The Approved stamp is usually available directly in the menu that appears).
- Click on the proof where you'd like the stamp to appear. (Where a proof is to be approved as it is, this would normally be on the first page).



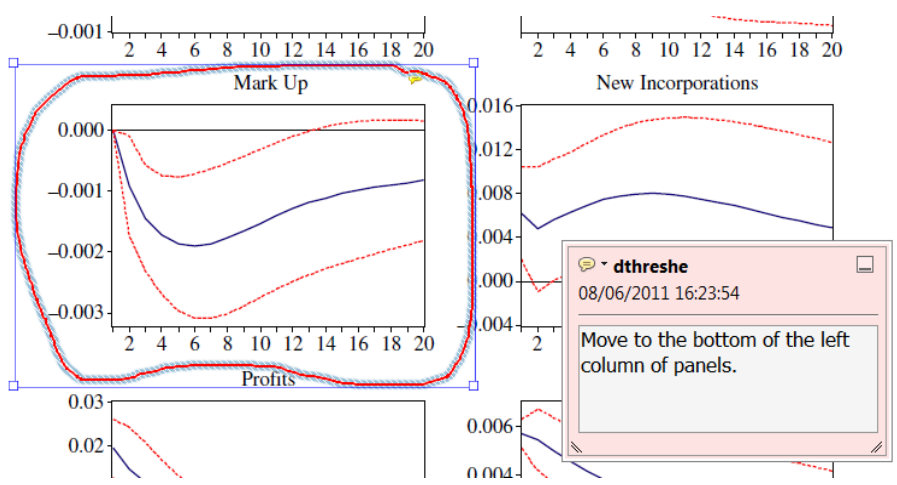


7. Drawing Markups Tools – for drawing shapes, lines and freeform annotations on proofs and commenting on these marks.

Allows shapes, lines and freeform annotations to be drawn on proofs and for comment to be made on these marks..

How to use it

- Click on one of the shapes in the Drawing Markups section.
- Click on the proof at the relevant point and draw the selected shape with the cursor.
- To add a comment to the drawn shape, move the cursor over the shape until an arrowhead appears.
- Double click on the shape and type any text in the red box that appears.



For further information on how to annotate proofs, click on the Help menu to reveal a list of further options: