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Seasoned equity crowdfunded offerings☆

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ABSTRACT

This paper conjectures that, just as SEO (seasoned equity offering) firms are likely to face fewer information asymmetry problems relative to IPO firms, the same applies to SECO relative to initial ECF (equity crowdfunding) campaign firms. This is mainly due to new information at a SECO - such as pre-money valuation gains – that reduces adverse selection problems. Using a sample of 709 UK ECF firms conducting a first SECO campaign over the 2011–2018 period, the probit results suggest that annualised valuation gains between the initial and SECO campaigns increases the probability of having a successful first SECO campaign but the equity offered lowers this probability. First SECO success is also related to different platform shareholder structures. The results show that the nominee model and coinvestment model dominate the direct model in terms of the probability of conducting a successful first SECO campaign. This is likely linked to reduced adverse selection and moral hazard problems stemming from no separation between ownership and control and enhanced due diligence and monitoring capabilities.

1. Introduction

The UK equity crowdfunding (hereafter, ECF) market is probably the most developed in the world. In 2011, the year when Crowdcube was launched, ECF was but a blip in the UK entrepreneurial finance market. Since then, the ECF market growth has exceeded all expectations and by 2019 it was second only to private equity (PE) – Venture Capital (VC) in terms of the number of equity deals (British Business Bank, 2019). ECF campaigns involve both initial and seasoned equity crowdfunded offerings (hereafter, SECOs) where the latter are the equivalent of seasoned equity offerings on the stock market. The term SECO is preferred to a follow-on offering as the latter can include a second initial ECF campaign after an unsuccessful first one whereas a SECO presupposes a successful initial ECF campaign. Initial campaigns have historically predominated in ECF market compared to SECO offerings. This is reflected in the ECF literature in that most studies to date have focused on aspects of initial campaigns (see for example, Ahlers et al., 2015; Estrin et al., 2018; Vismara, 2016; Vulkan et al., 2016).

SECOs provide a unique lens through which to examine both the continued funding of the ECF firm against a background of

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information asymmetries and their progress towards a successful exit via trade sale or an IPO. But how important are they? The British Business Bank (2019) reports that some 40% of companies initially funded by crowdfunding platforms went on to raise further funds via a SECO by 2019. Moreover, there were more SECO than initial ECF campaigns in 2019.[1] These findings underline the growing importance of SECOs within the ECF market and these are the subject of this paper. In recent years, traditional entrepreneurial finance funds like business angels (hereafter BA) or VC are increasingly coinvesting in both initial ECF and SECO campaigns in the UK. Zhang et al. (2018) report that these funders accounted for 49% of total ECF funding in 2017. In this respect, both ECF platforms and institutional investors are helping to reduce the second equity gap problem identified by Wilson et al. (2018) for later stage, growth intensive ventures.

This paper builds on the Chemmanur et al. (2010) view that SEO firms are likely to suffer from fewer information asymmetry problems relative to IPO firms as investors have more information on SEO relative to IPO firms, not least because the post-IPO firms are listed on a stock exchange. There is evidence that findings in IPO studies may help explain ECF phenomena (Vismara, 2018). Even though ECF firms remain private, SECO campaigns should still be characterised by lower information asymmetries. One important reason for lower SECO information asymmetries is the availability of new information on the startup's performance since the initial ECF campaign.

The first contribution of this paper is that it provides a novel investigation into what factors prompt firms to conduct a first SECO and the drivers of its success for a sample of 709 firms that enjoyed successful initial campaigns on the top three UK platforms – Crowdcube, Seedrs, and SyndicateRoom – over the 2011–2018 period. It conjectures that startups are likely to face fewer information asymmetry problems in their first SECO relative to their initial campaign because important pieces of new information are available for a first SECO firm. The most important of these relates to its pre-money valuation (i.e. the pre-campaign valuation) gains between the initial and SECO campaign. This paper exploits the pre-money valuations of both initial and first SECO campaigns to construct a novel financial performance metric capturing the valuation gains earned by the ECF firm over this period. A valuation gain between the initial campaign and first SECO can create a certification effect, which in turns mitigates the lemon and other adverse selection problems faced by potential SECO investors. This is one of the key insights of the paper.

Our sample includes 709 firms that conducted a successful initial ECF campaign. Of these, 105 (14.81%) conducted a first SECO campaign of which 88 were successful. Our probit results reveal that initial campaign characteristics increase the probability of conducting a first SECO campaign. This is in line with the findings of Signori and Vismara (2018) for a sample of Crowdcube follow-on campaigns. Our most novel results relate to the probability of a successful first SECO. They indicate that this probability is increased by valuation gains between the initial and first SECO campaigns as well as by initial investor numbers. In this sense, both the firm's valuation gains and the wisdom of the crowd can be seen as mitigating potential adverse selection problems in the process of achieving a successful SECO. By contrast, the probability of a successful first SECO is lowered by the share of equity offered in the initial campaign. The latter can be seen as an anchor or reference point (Baker et al., 2012) in the sense that a high share of equity offered in the initial campaign proxies for potential opportunistic behaviour by the owners. These results complement the findings of Hornuf et al. (2018) on follow-on private investment for a sample of UK and German startups. They also add to the literature on follow-on funding by ECF firms and in this respect complement the work of Signori and Vismara (2018), Hornuf et al. (2018) and Kleinert et al. (2019).

The paper's second contribution is that it adds to an emerging literature on cross-platform characteristics and the impact of different platform shareholder structures on initial ECF campaigns (Rossi et al. (2019), Vismara (2018), Cumming et al. (2019b,c)). This literature has focused mainly on adverse selection problems. By contrast, the current paper also investigates how the variation in monitoring the ECF firm across the three different types of shareholder structures might shed light on moral hazard issues over the period between the initial and SECO campaigns. In this regard, we conjecture that cross-platform effects will impact both on the decision to conduct a SECO campaign and on its probability of success. We follow Cumming and Johan (2020) and identify three distinct shareholder structures (based on their post-campaign monitoring efforts) employed by the three leading ECF platforms in our study: direct model (Crowdcube), nominee model (Seedrs), and coinvestment model (SyndicateRoom).

Our probit findings on a successful first SECO campaign indicate that both nominee and coinvestment models have a higher probability of conducting a successful SECO campaign compared to campaigns employing the direct model on Crowdcube. They suggest that potential moral hazard problems are mitigated by the monitoring capabilities of these platforms and the latter contributes towards their success. These findings are also consistent with the findings of Cumming et al. (2019b) who establish that the separation between ownership and control on Crowdcube has a negative impact on follow-on funding.

We also study how shareholder structures may affect the impact of our key variables of interest on the probability of conducting a successful first SECO campaign. The conclusion is that the nominee model dominates the direct and coinvestment model in terms of the probability of first SECO success as each of our variables of interest varies, with the exception of initial campaigns with large investor numbers. The implication is that Seedrs' lack of separation between ownership and control and its continuous monitoring and regular valuations of startups mitigates both adverse selection and potential moral hazard problems relating to a successful first SECO. Overall, the results underline the importance of cross-platform shareholder structures in the study of the factors affecting the probability of conducting a successful first SECO campaign. This is consistent with studies such as Cumming et al. (2019b), Rossi and Vismara (2018) and Rossi et al. (2019) that stress the importance of ECF platform differences for initial campaigns.

The paper is organised as follows. Section 2 discusses the UK ECF setting for our study, the follow on funding literature, and the

[1] Our sample finishing in 2018 does not reflect this trend as it excludes private or pre-emption SECOs where additional shares are offered to existing shareholders only. These are the SECO equivalent of rights issue SEOs.

hypotheses to be tested. Section 3 presents our data and research design and Section 4 discusses the empirical results. Section 5 concludes.

2. Equity crowdfunding literature and hypotheses

Given the analogy between SECOs and SEOs, the first subsection discusses equity crowdfunding and London's Alternative Investment Market (AIM) market. The second discusses the role of the different ECF platforms in the UK ECF market. Startups that successfully embark on an initial ECF campaign remain private or unlisted firms. However, recent literature stresses that they morph into a new type of firm – the ECF firm - with its own special characteristics. This is followed by a discussion of post-initial campaign funding and our testable hypotheses.

2.1. Equity crowdfunding and AIM markets

The UK SECO (ECF) market needs to be viewed in the context of UK enjoying the most developed equity market for small businesses in the world. This has two main components. On one hand, London's Alternative Investment Market (AIM) or growth market for SMEs was established in 1995 and has become a runaway success as Vismara et al. (2012) highlights. AIM allows private SMEs to go public for the first time via an IPO without the need to produce a costly prospectus. Once they are public limited liability companies (enjoy PLC status), they can return to AIM for additional equity via a seasoned equity offering (SEO). Both IPOs and SEOs on AIM have thrived and now easily outnumber their corresponding number on the Main Market. Moreover, Stamou et al. (2020) highlight the rise of serial (repeat) SEOs particularly on AIM where each AIM firm enjoys an average of 5 SEOs over the course of the 1995–2015 period.

On the other hand, the ECF market has developed extremely rapidly in the UK as a novel source of pre-IPO outside equity for startups since 2011. It is interesting to outline the major similarities and contrasts between both markets. The similarities include the following. First, both offer small firms the possibility of their first outside equity offerings which are accomplished via an IPO on AIM or via an initial ECF offering on a crowdfunding platform such as Crowdcube. Second, both offer small firms the possibility of follow-on or seasoned outside equity offerings. These are accomplished via an SEO on AIM or via a SECO on crowdfunding platforms. Third, both are lightly regulated by the Financial Conduct Authority (FCA) in conjunction with Nomads on AIM and the platforms in the ECF market. This typically includes being exempted from the cost of producing a prospectus for all but the largest campaigns. Finally, both are world leaders in their respective markets.

There are also some important differences between the two markets. First, a private firm going public via an IPO becomes a public firm or PLC immediately thereafter. By contrast, a private firm raising crowdfunded equity continues to remain a private ECF firm. Second, there is a sharp contrast between the limited number of institutional investors in an AIM IPO (SEO) and the typically large numbers of investors in an initial or SECO campaign. However, BA, VC and other institutional investors are increasingly participating through coinvesting in ECF campaigns. Third, the offer mechanism differs sharply in both cases. Ironically, this involves an open offer to the public or crowd in ECF campaigns while the current dominant private placement mechanism on AIM involves shares being privately placed among institutional investors. Fourth, the UK authorities permitted the maximum EU prospectus exemption limit of €5 m for firms in initial and SECO campaigns and AIM IPOs (where relevant) over the sample period. By contrast, the SEO exemption threshold was specified as 10% of the issuer's equity capital at the time of the SEO up to July 2018 when it increased to 20%.[2]

Finally, it is important to stress that both markets are linked in one very important respect. A successful startup will typically go through several funding rounds before it exits via a trade sale (takeover) or an AIM IPO. Exits earn a carried interest fee of around 7.5% on any profit made.[3] These rounds can include one or more SECOs or equity injections from a VC or BA. Signori and Vismara (2018) found that, for their sample of 212 crowdfunded firms on Crowdcube, 54 had at least one SECO (which they call a public SEO) and some 20 enjoyed a BA or VC investment.

2.2. UK ECF platforms

The UK ECF market exhibits a high degree of cross-platform differences and diversity in their shareholder structures. It is dominated by the Big 3 platforms - Crowdcube, Seedrs and SyndicateRoom – that accounted for around 80% of the total ECF funding and successful ECF campaigns in 2018. They share many similarities. They all adopt the All-or-nothing (AON) approach to funding (Cumming et al., 2019a) where the strartup receives nothing unless the goal is reached, they employ a posted (fixed) pricing rather than an auction mechanism (Einav et al., 2018), they permit overfunding beyond the target capital, they specify lower bounds for investors, and they all permit the involvement of institutional investors. However, the platforms also exhibit significant differences mainly related to their shareholder governance structures that have implications for both initial ECF campaigns and SECO offerings.

ECF platforms play an increasingly important role in screening applicant firms for their investors through their due diligence processes. Recent cross-platform studies, such as Rossi and Vismara (2018), Rossi et al. (2019), and Cumming et al. (2019) investigate the due diligence and other services performed by different ECF platforms. The upshot is that the majority of ECF applicants are rejected by the platforms. Zhang et al. (2018) report that the onboarding or qualification rate in the UK ECF market steadily increased

[2] The new EU Prospectus Regulation in June 2017 that came into effect in July 2018 continues with separate exemption limits 20% of equity capital for IPOs and SEOs and €8 m for ECF campaigns. See Hornuf and Schwienbacher (2017) for an interesting study of ECF regulation.

[3] See https://help.seedrs.com/en/articles/1782437-what-fees-does-seedrs-charge-investors

from 20.6% in 2015 to 32.6% in 2017. Thus in 2017, more than two thirds (67.4%) of ECF applicants were rejected or filtered out following platform due diligence.

Rossi et al. (2019) were the first to study the impact of cross-platform effects on voting rights in initial ECF campaigns. Their analysis reveals a large variety in ECF corporate governance mechanisms generally and in voting rights delivery more particularly. From a study of 185 platforms across 10 countries, they highlight the contrast between the individual voting rights on platform such as Crowdcube and pooled voting rights on Seedrs. They also identify syndicate-like platforms like SyndicateRoom in the UK and ASSOB in Australia that are open to accredited investors only and that attract fewer campaigns. This paper follows Cumming and Johan (2020) in linking each three broad shareholder governance structures for ECF firms to one of the Big 3 UK platforms. The first is what Cumming et al. (2019b) call the direct ownership model (Crowdcube). Here the investors are the direct owners of the equity offered but, but as Cumming et al. (2019b) point there is a separation between ownership and control caused by the dual class shares offered – A- and B-shares.

The second is the nominee model (Seedrs) where the nominee (platform) is the legal owner of the ECF shares and the investors are the beneficial owners. In this case, the platform as legal owner has strong incentives to monitor the ECF firm to maintain its reputational capital as it is a repeat player in the ECF market (Rossi et al., 2019). Moreover, the platform implicitly monitors financial performance by determining the fair value of ECF firm shares that can be bought and sold on it emerging secondary market in ECF shares. The final shareholder structure is the so-called coinvestment model (SyndicateRoom) which adopts a similar approach in some respects to BA or VC syndicates by requiring a professional investor as part of the funders. The lead investor – an angel who does due diligence and contributes 25–40% of the target capital - has a very strong inventive not only to monitor the ECF firm but also to mentor with her advice and experience to enhance ECF firm performance. Note that SyndicateRoom also adopted the nominee structure in November 2015. But the active mentoring role of the lead investor distinguishes it from Seedrs.

2.3. *The ECF firm and post-campaign funding*

The academic research on ECF is rapidly growing as evidenced by several recent review papers: Mochkabadi and Volkmann (2018) and Coakley and Lazos (2020) focusing on equity crowdfunding, Wallmeroth and Wirtz (2018) covering publications on venture capital, business angels and equity crowdfunding, and Herve and Schwienbacher (2018) covering ECF and innovation. Vanacker et al. (2019) point out that there is only limited research on what happens after an initial ECF campaign. They provide an overview of what happens after a crowdfunding campaign, where the latter is broadly defined to include both reward-based and equity crowdfunding, with a special focus on firm failure, follow-on fundraising and firm performance.

Several recent studies broadly share our focus on the post-initial campaign lives of firms. First, Signori and Vismara (2018) study 212 firms that had a successful initial ECF on the Crowdcube platform in the 2011–2015 period and then investigate their subsequent life cycle until August 2017. The sample distribution of the study was as follows: 54 firms had a SECO campaigns (dubbed public SEO), 20 had VC or BA investments (private SEO), 3 were involved in an M&A, 38 firms failed while 97 remained active (i.e. no additional capital was raised). Using a Heckman 2-stage competing risk regression approach, the authors study the factors affecting the hazard of various post-initial campaign scenarios versus competing events that include firm failure. Their results indicate that positive sales, non-executive directors, patents, and quick success were significantly positive determinants of raising additional public and private capital (being acquired).

Cumming et al. (2019b) study separation between ownership and control rights on the Crowdcube platform. They find that a higher separation lowers the probability of success of an ECF offering, the likelihood of attracting professional investors, and the long-run prospects of the ECF firm. The long-run prospects of the ECF firm are related to the probability of follow-on funding like a SECO, of going public via an IPO or being targeted in an M&A. This paper also considers the endogenous nature of ownership and governance characteristics in the initial ECF offerings and in SECOs.

Hornuf et al. (2018) broaden the scope of follow-on financing. They investigate the determinants of successful follow-up VC/BA campaigns and firm failure where the number of successful follow-on campaigns is used as an explanatory variable. Their dataset includes 14 different ECF platforms and 426 firms that ran at least one successful campaign in Germany or the UK (using either Crowdcube or Seedrs platforms). First, they conclude that German firms which received ECF funding are more likely to fail compared to those in the UK. Second, the number of senior managers, successful follow-on ECF campaigns and the number of VC investors increase the probability of success for a private follow-up campaign, while firm age decreases the probability of success. Finally, they find that a successful private follow-up campaign decreases the probability of firm failure.

Kleinert et al. (2019) provide an interesting discussion of the role of prior financing (including ECF) as a certification effect on firm quality using a sample of 221 business plans and project descriptions for startups with ECF campaigns over April 2017–April 2018 on Crowdcube. They find that almost half their sample firms had previously succeeded in raising external funds from a variety of sources including ECF platforms. Their results indicate that prior financing positively impacts seasoned ECF campaign success. They find a stronger effect on crowdfunding success for larger firms that raised external funds from multiple sources and for seed firms with a prior successful crowdfunding ECF campaign.[4]

[4] All the papers discussed adopt a quantitative approach to post-campaign funding. By contrast, Bessière, Stéphany, and Wirtz (2019) adopt a detailed case study approach that highlights the complex trajectory of follow-on funding at a technology startup and its interaction with emerging governance structure dynamics.

2.4. Hypothesis development

Since startups and ventures remain private after their initial ECF campaign, they continue to be beset by severe information asymmetries. Drawing on signalling theory (Spence, 1973; Connelly et al., 2011), we posit that SECO success will be related to signals from the initial ECF campaigns following Ahlers et al. (2015) and Vismara (2016) and also to signals from the ECF firm based on new information available at the start of the SECO campaign. An example of the later is the venture seeking follow-on outside equity sends signals to potential investors about for example its pre-money valuation gains in an effort to reduce information asymmetries.

2.4.1. Initial and first SECO campaign signals

The total number of investors is a signal of crowd interest in the initial campaign. One can view it as an indicator of the wisdom of the crowd (Mollick and Nanda, 2015). The wider the crowd participation, the more likely a campaign can avail of its wisdom leading to a lowering of adverse selection problems. Second, the wisdom of the crowd may also be linked to social or other networks. Brown et al. (2018) study the impact that personal and business networks and network changes during the crowdfunding process have on the outcome of ECF campaigns. Their findings reveal that networks play an important role for campaign success. Thus, widespread crowd participation in the initial campaign could also proxy for a well-developed network between the startup and the crowd and this is likely to lead to campaign success (see Vismara, 2018).

In the presence of herding however, the number of investors may not be a good signal for networks. Recent ECF studies suggest that naïve herding is absent and the crowd may be wise after all. Asterbo et al. (2019) focus on herding in ECF employing data from Seedrs. Their results are inconsistent with naïve herding, thus lending support to the wisdom of the crowd. Wang et al. (2019) focus on the UK ECF market and find that there is an exchange of information between both qualified investors (angels) and between angels and retail investors (crowd). They conjecture that these complementarities in information flows improves the overall efficiency of the market. This leads to the following crowd participation hypothesis:

H1. Crowd participation in the initial ECF campaign increases the firm's probability of conducting a (successful) first SECO.

The proportion of equity raised in the initial campaign matters to potential investors as it gives an indication of the founders' skin in the game measured by their equity retention. The higher the equity retention, the lower the proportion of equity offered in a campaign and so the lower the likelihood of moral hazard problems. This proportion offered sends a signal to potential outside investors about the entrepreneur's commitment to her venture. A high percentage of equity offered may send a negative signal about possible opportunistic behaviour whilst a low percentage sends a positive signal. Ahlers et al. (2015) and Vismara (2016) document a negative relation between the equity offered and initial campaign success. This leads to the following hypothesis:

H2. The initial campaign proportion of equity offered has a negative effect on conducting a (successful) first SECO.

We conjecture that a first SECO success may also be affected by new information available to investors just before the first SECO. In this context, the most important is the pre-money firm valuation between the initial and follow-on campaigns and this is likely to matter for the success of a first SECO (Vanacker et al., 2019).[5] Prior to each ECF campaign (both initial and SECO), the platform conducts a fair value exercise for the ECF firm that is published in the campaign documents. These data can be used to calculate the pre-money valuation gain for the startup. This gain is annualised for comparability between startups that conduct a first SECO at different (time) intervals after the initial campaign. This leads to the following hypothesis for the probability of a successful first SECO campaign.

H3. A pre-money valuation gain between the initial campaign and first SECO increases the probability of a successful first SECO.

2.4.2. Platform shareholder structures

As discussed in Section 2.2, the big 3 ECF platforms operating in the UK market can be linked to the three different shareholder structures that Cumming and Johan (2020) identify. These dictate how the relationship between the shareholders (investors) and ECF firms are structured. They involve a contrast between the direct ownership model on Crowdcube and the other two models. Cumming et al. (2019b) identify a separation between ownership and control on this platform as the crowd of retail investors typically hold non-voting B-shares. By contrast the other two large platforms both enjoy features that enhance monitoring capabilities and so mitigate moral hazard issues. Seedrs is best known for pioneering the nominee account approach in the UK under which there is no separation between and control and where the platform monitors performance. Finally, SyndicateRoom operates the coinvestment or lead investor model. Here a business angel with skin in the game via a 25–40% stake is involved in both due diligence and in mentoring the ECF firm. We thus hypothesize that the monitoring possibilities on the nominee and coinvestment models will have both a direct and indirect impact on conducting a (successful) first SECO campaigns.

H4a. ECF campaigns using nominee and coinvestment models have a higher probability of conducting a (successful) first SECO compared to direct models.

H4b. Shareholder structure has an indirect impact on the probability of conducting a (successful) first SECO through interactions with our key variables of interest.

[5] We are grateful to our discussant Gianfranco Gianfrate for this helpful suggestion.

3. Data and research design

This section outlines the data sources, discusses the variables, and describes the methodology employed in this study.

3.1. Sample and data

Our sample is based on a novel dataset covering the 3 biggest ECF platforms in the UK with three different shareholder structures: direct model (Crowdcube), nominee model (Seedrs) and coinvestment model (SyndicateRoom). The crowdfunding data are sourced directly from TAB that was formerly known as Crowdsurfer. TAB Dashboard is described as the most comprehensive source of intelligence regarding the alternative finance market.[6] These data are augmented by firm-specific data sourced from Companies House that is a government agency website that makes available further information about all UK firms. Our study spans the period from April 2011 (date of Crowdcube's first successful campaign) to December 2018. The dataset consists of 709 firms with a successful initial campaign which were monitored to identify those that conducted at least one SECO.

The details are given in Table 1. Panel A shows that 105 firms conducted a first SECO campaign and that 59 of these employed the direct model, with the remaining 29 and 17 employing the nominee and coinvestment model, respectively.[7] Panel B shows that 88 SECOs were successful with most of the unsuccessful campaigns (11) occurring on campaigns employing the direct model. Interestingly, campaigns employing the direct and coinvestment models have very similar first SECO failure rates of around 18%. The nominee model's low failure rate of 10% could be related to the superior monitoring facilities associated with this shareholder structure.

3.2. Variables

The study most closely related to ours is that of Signori and Vismara (2018) which focuses on the UK ECF market and studies the post-initial campaign life of 212 Crowdcube startups. We extend their study in two important directions. First, we focus not only on the determinants of SECOs (as theirs do) but also on the factors that impact on their success. Second our data covers the three major ECF platforms operating in the UK. This leads to a larger sample which requires additional variables to reflect the heterogeneity relating to platform ownership structures on which the campaigns take place. This enables us to study platform effects on the likelihood of a firm conducting a first SECO and of a first a successful SECO.

Our first variable of interest – number of investors - overlaps with that employed by Signori and Vismara (2018). The (natural logarithm of the) number of investors in a campaign is a proxy for investor participation and gives an indication of the size of the crowd. It has been employed in other studies of initial ECF campaigns such as Ahlers et al. (2015), Vismara (2018), and Signori and Vismara (2018) in their study of follow on campaigns. Our second variable of interest is equity offered, which is the fraction of equity offered for sale by the startup. Since a publicly quoted firm's SEO is affected by the percentage of equity offered in its IPO, it seems logical to postulate that an ECF firm's SECO will be impacted by the percentage of equity offered in the initial ECF campaign. Ahlers et al. (2015) established that this has a negative impact on the probability of success of initial ECF campaigns. We conjecture that it exerts a similar effect on conducting a first SECO and its probability of success.

Our remaining variable of interest that we call valuation gains is novel and has not been previously used in the ECF context to the best of our knowledge. It is one of the very few variables that quantifies an ECF firm's financial performance and is also very timely as it is evaluated just prior to the SECO campaign going public. As such, it contributes substantially to lowering information asymmetries in the absence of any other up to date financial data for startups and ventures. As such, we would expect a positive impact of valuation gains on SECO success. This variable is measured by the annualised increase of the pre-money valuation amount (£m) of the startup over the period between of the start of the initial and first SECO campaigns.[8] Note that stock price appreciation accounts for most (over 80%) of the median gains. Valuation gains provide a superior measure of ECF firm financial performance than the firm's audited company accounts. This is because startups' annual accounts are typically subject to a light audit only, they are typically filed with a delay, and the accounting year will usually not coincide with the initial or SECO campaign start dates.

We include a variety of control variables and two of these warrant a mention. The first is quick success which is a dummy variable for initial campaigns that reach their target in 20 days or less, which was also used by Signori and Vismara (2018) to predict the likelihood of a successful SEOs or M&As. The ratio of the SECO goal to initial campaign goal proxies for potential moral hazard problems. The remaining controls are the startup Age, (natural logarithm of) initial campaign target capital, and a technology firm dummy. Finally, we use platform-level dummy variables to control for shareholder structures. Full details and definitions are given in Table A1 in the Appendix.

3.3. Methodology

Since successful SECOs are only observed for those startups which have conducted a first SECO, estimating both events

[6] It was added on Thomson Reuters Eikon App studio in August 2017.

[7] It should be noted that 12 ECF firms in our sample have conducted follow-on SECOs (See Figure A1 in the Appendix). In particular, seven firms conducted one further SECO (i.e. post first SECO campaign), three firms conducted 2 further SECOs and two firms conducted 3 further SECOs.

[8] The variable is annualised for comparability purposes as the interval between initial and SECO campaigns vary considerably.

Table 1
Sample ECF campaigns by platform.

Panel A: First SECO campaigns

		First SECO campaign	
	Full sample	Not conducted	Conducted
Direct model (Crowdcube)	473 (100%)	414 (87.53%)	59 (12.47%)
Nominee model (Seedrs)	154 (100%)	125 (81.17%)	29 (18.83%)
Coinvestment model (SyndicateRoom)	82 (100%)	65 (79.27%)	17 (20.73%)
Total	709 (100%)	604 (85.19%)	105 (14.81%)

Panel B: Outcomes for first SECO campaigns

		First SECO campaign outcomes	
	First SECO campaigns	Unsuccessful	Successful
Direct model (Crowdcube)	59 (100%)	11 (18.64%)	48 (81.36%)
Nominee model (Seedrs)	29 (100%)	3 (10.34%)	26 (89.66%)
Coinvestment model (SyndicateRoom)	17 (100%)	3 (17.65%)	14 (82.35%)
Total	105 (100%)	17 (16.19%)	88 (83.81%)

Notes: Panel A shows the number and distribution (percentages over the total reported in parenthesis) of first SECO campaigns across shareholder structures (platforms).
Panel B shows the number and distribution (percentages over the total reported in parenthesis) of the outcomes for first SECO campaigns across shareholder structures (platforms).

independently could lead to sample selection problems. The problem is that the unobserved variables that determine the success of first SECO may be correlated with the likelihood of the decision on conducting a first SECO and so lead to biased coefficient estimates. Therefore, in an alternative specification which complements our main results, we tested for selection bias by estimating maximum-likelihood probit models with sample selection.

Table A2 in the Appendix presents the results from a probit model with sample selection (Van de Ven and Van Praag, 1981) which is estimated using the Stata "Heckprobit" routine (StataCorp, 2019). This model assumes that there is an underlying relationship (latent equation) $y_j^* = X_j\beta + \mu_{1j}$ such that we observe only the binary outcome (outcome equation: conducting a successful first SECO) $y_j^{probit} = (y_j^* > 0)$. The dependent variable, however, is not always observed. Rather, the dependent variable for observation j is observed if (selection equation: conducting a first SECO) $y_j^{select} = (Z_j\gamma + \mu_{2j} > 0)$ where $\mu_1 \sim N(0,1)$; $\mu_2 \sim N(0,1)$; $corr(\mu_1,\mu_2) = \rho$ (rho). When $\rho = 0$, there is no evidence of selection bias; the outcome and selection equations are independent, making estimation of the selection model unnecessary.

However, since the model is estimated by maximum likelihood (ML), ρ is not directly estimated. Instead, the Heckprobit routine directly estimates a nonlinear transformation of ρ (athrho) defined as: $athrho = \frac{1}{2}ln\left(\frac{1+\rho}{1-\rho}\right)$. A significant athrho indicates the presence of selection bias in the model. The estimated athrho in all four models in Table A2 is statistically insignificant which implies that $\rho = 0$. In addition, the Wald test at the foot of the table compares the log likelihood of the full model with sample selection with the sum of the log likelihoods of running simple probits. If the test is insignificant, there is no statistical difference between both models, suggesting that selection bias is not present and providing further support that $\rho = 0$. Results for the Wald test for independence of equations (i.e., under the null that $\rho = 0$) show that the $\chi 2$ statistic was not significant (p-value>0.5) across all models, thus confirming no evidence of selection bias.[9]

We therefore did not account for selection bias in our main analysis and instead use the standard probit as our preferred estimation approach as this delivers consistent and unbiased estimates. A probit model is used to investigate two aspects of first SECOs: *(i)* the determinants of conducting a first SECO (where $C = 1$ if a firm conducts a first SECO campaign and $C = 0$ otherwise) and (ii) the determinants of a successful first SECO ($S = 1$ if a firm conducts a successful first SECO campaign and $S = 0$ otherwise) based on the following specifications:

$$Pr(C = 1|X) = \Phi(\alpha_c + X_c'\beta_c) \quad (1)$$

$$Pr(S = 1|X) = \Phi(\alpha_s + X_s'\beta_s) \quad (2)$$

where $\Phi(\cdot)$ is the Gaussian distribution function, and X_c, X_s are the vectors summarizing the variables of interest and control variables discussed in the previous section for Eq. (1) and (2) respectively.

All our models also include dummy variables to account for the year of the campaign. The empirical results are reported in terms of average marginal effects of the explanatory variables on the probabilities of the occurrence of $C = 1$ and $S = 1$. The average marginal

[9] See Table A2 in the Appendix for more details.

effects indicate the change in probability when the independent variable switches from the reference category to the category in question. The models in Eqs. (1) and (2) are estimated via maximum-likelihood and standard errors are clustered at the platform-level to account for potential correlation of errors within clusters (Petersen, 2009).

4. Empirical results

This section presents and discusses our probit results for a sample of 709 successful initial ECF campaigns and 105 first SECOs on the Big 3 UK platforms: Crowdcube, Seedrs, and SyndicateRoom. The data span the sample period from April 2011 to December 2018. It also includes a detailed analysis of the direct and indirect impact of platform shareholder structures on the probability of conducting (a successful) first SECO.

4.1. Descriptive statistics

Table 2 gives descriptive statistics for the variables used in our empirical analysis. Around 15% of the startups in our sample conducted a first SECO and, among those firms, 84% were successful. Signori and Vismara (2018) found that 25% of their Crowdcube sample of 212 campaigns have conducted a SECO (public SEO). While 15% may seem low by comparison, one should note that our sample include two additional platforms - Seedrs and SyndicateRoom - which were launched several years later than Crowdcube. Moreover, around half of our sample of initial ECF campaigns were launched in the period 2016–2018, and this is a relatively short time window for these startups to contemplate a first SECO. The average number of the (natural logarithm) number of investors participating in the initial campaign was 158 ($e^{5.06}$) while the median was 161 ($e^{5.08}$). The average equity offered was 14.51% and the median was 13.05%.

The mean annualised valuation gains between the start of the initial and first SECO campaign was £2.17 m while the median was £0.85 m.[10] Note that stock price appreciation accounts for over 80% of the median gains. These data could imply that some of these startups may be potentially overvalued, and therefore could take advantage of windows of opportunity by using SECOs to issue overvalued equity like in the case of overvalued public firms do in SEOs.[11] Table 2 also shows that 21% of our sample enjoyed quick success in the initial campaign where the target was reached in 20 days or less. Our sample is formed of mainly young firms between 0 and 3 years old (68% of the sample) and half of them operate in the technology sector (51%). The mean (natural logarithm) target capital was £192.9 k ($e^{12.17}$) while the median was £176.3 k ($e^{12.06}$). Almost two thirds (64%) of the sample campaigns have a SECO goal that exceeds the initial campaign goal.

Tables 3a and 3b show the correlation coefficients between the variables employed in our probit regressions for conducting a first SECO and conducting a successful first SECO, respectively. The highest unconditional correlations of −0.846 between firm age 0–3 and firm age 4–9 is not an issue, given that the former is not included in our regression analysis. Examination of the correlation matrix more generally suggests that multicollinearity among the variables is unlikely to present problems.

4.2. The probability of a first SECO and a successful first SECO campaign

4.2.1. Factors affecting the probability of conducting a first SECO

We use probit regressions to examine which variables impact on the probability of an ECF firm conducting a first SECO. The binary dependent variable takes the value of 1 if an ECF firm conducts a first SECO – whether successful or unsuccessful – and 0 otherwise. The results for probit Models 1–3 are presented in Table 4. Models 1 and 2 successively but separately introduce one variable of interest (Ln (Investors) and Equity offered) with a common set of control variables, while Model 3 employs both variables of interest simultaneously along with the full set of control variables.

The Model 1 and 2 results separately show that our two variables of interest – Ln(Investors) and Equity offered – have mixed effects on the probability of conducting a first SECO with the former being significant at the 5% level while the latter is insignificant. Our Model 3 results confirms the Ln(Investors) result at the 5% level. The Ln(Investors) positive coefficient provides evidence that the wisdom of the crowd (Mollick and Nanda, 2015) could reduce potential adverse selection problems and increase the likelihood of ECF firms conducting a first SECO campaign. This result supports our Hypotheses 1, suggesting that 1% increase in the (natural logarithm of) number of investors, increases the probability of conducting a first SECO by 4.9%. Signori and Vismara (2018) find a negative sign for the number of investors in their study of the post-initial campaign life of Crowdcube startups. The difference in sign may be explained by the broader scope of their study and our larger sample of initial and SECO campaigns across the Big three ECF platforms in the UK.

The Model 3 results confirm the insignificance of equity offered and this rejects our Hypothesis 2. The control variable results reveal that there is a positive marginal effect for quick success that is significant at the 1% level. Having a quick success in the early weeks of the initial campaign increases the likelihood of conducting a first SECO campaign by 7.9% on average in Model 3. The results also

[10] These pre-money Valuation gains are calculated simply as $Val_1 - Val_0$ where Val_1 and Val_0 are the pre-money valuations of the firm just prior to the start date of the first SECO and initial ECF campaigns, respectively. Only 4 of our sample of 105 ECF firms conducting a SEO have suffered losses (valuation gains<0) between campaigns.

[11] See Hertzel and Li (2010) for a study of overvalued firms engaging in SEOs.

Table 2
Summary statistics.

Variables	N	Mean	SD	P25	Median	P75
Conducting first SECO	709	0.15	0.36	0	0	0
First SECO success	105	0.84	0.37	1	1	1
Ln (Investors)	709	5.06	1.06	4.41	5.08	5.7
Equity offered (%)	665	14.51	8.1	9.09	13.05	19.05
Valuation gains (£m)	105	2.17	4.91	0.28	0.85	1.88
Quick success	709	0.21	0.41	0	0	0
Firm age 0–3	709	0.68	0.47	0	1	1
Firm age 4–9	709	0.25	0.43	0	0	0
Firm age $\geq$ 10	709	0.07	0.25	0	0	0
Technology firm	709	0.51	0.5	0	1	1
Ln (Target capital (£m))	709	12.17	1.05	11.51	12.06	12.9
SECO goal to Initial campaign goal	105	0.64	0.48	0	1	1

Note: This table presents summary statistics for the variables employed in our empirical analysis. See Table A1 for full variable definitions.

reveal that older firms ($\geq$10 years old) are less likely to conduct a first SECO campaign compared to younger firms (0–3 years old) and the coefficients are always significant at the 1% level. Both results are consistent with Signori and Vismara (2018) albeit they use quick success as a variable of interest. Finally, the Table 4 findings reveal that platform shareholder structures also matter in explaining the decision of ECF firms to conduct a first SECO campaign. The nominee (Seedrs) and coinvestment model (SyndicateRoom) dummies are both positive and significant at the 1% level across all three models and these results support Hypothesis 4a.

Table 5 shows the contrast estimates (i.e. differences in predicted probabilities between the various shareholder structures) based on the marginal effects related to shareholder structures reported on Table 4 (Model 3).[12]. The results suggest that ECF firms employing the nominee model and coinvestment model in their initial campaign on average are 10.9% and 25% more likely to conduct a first SECO campaign than those ECF firms employing a direct model (Crowdcube). These results can be interpreted as reflecting a significant a role for monitoring and also perhaps for crowd shareholder rights on both shareholder structures (platforms) which would mitigate moral hazard problems. This is consistent with the Signori and Vismara (2018) significant finding for their qualified investor variable in the context of follow-on campaigns for Crowdcube. Our results are also broadly consistent with Rossi et al. (2019). They employ data from 185 ECF platforms across different countries and find that the direct ownership model lowers the likelihood of success in contrast with nominee model for initial ECF campaigns.

4.2.2. Factors affecting the probability of conducting a successful first SECO campaign

We employ probit regressions to examine the factors contributing towards achieving a successful first SECO campaign, based on a sample of firms which conducted a first SECO campaign. The binary dependent variable takes the value of 1 for an ECF firm that conducts a successful first SECO and 0 for unsuccessful campaigns. The results are presented in Table 6.

Table 6 includes one new variable that utilises information from the SECO campaign. This is the pre-money (annualised) Valuation gains between the start of the initial and first SECO campaigns. It also includes a dummy variable equal to one if the ratio between the target capital of the first SECO and the target capital of the initial campaign is higher than one in all models. Models 4–6 successively but separately introduce one of the variables of interest (Ln(Investors), Equity offered, and Valuations gains) with a common set of control variables while Model 7 employs all variables of interest simultaneously. The Model 4, 5 and 6 results separately show that all the three variables of interest - Ln(Investors), Equity offered, and Valuations gains – are all significant at the 1% level.

The variables of interest are all jointly included in our Model 7 and each now remains significant at the 5% level or better. One highly novel result from Model 7 is that (annualised) Valuation gains positively affect the outcome of a successful first SECO at the 1% level and this supports Hypothesis 3. These gains in the period between campaign starts are interpreted by investors as a certification effect of good financial performance and so they reduce adverse selection problems. The results imply that an additional £1 m valuation gain between campaign starts increases the probability of conducting a successful first SECO campaign by 1.7%. The significant economic role of Valuation gains – which an important piece of new financial information about the ECF firm - supports our conjecture that information asymmetries are mitigated in SECO relative to initial ECF campaigns.

The wisdom of the crowd matters also for a successful first SECO as the coefficient of 0.230 on Ln(Investors) provides strong support for Hypothesis 1 in line with the corresponding result in Table 4. The AME show that a 1% increase in the Ln(Investors) increases the probability of conducting a successful first SECO campaign by 4.7%. Equity offered is significantly negative and this supports H2. Results also suggest that Equity offered in the initial campaign significantly decreases the probability of a successful first SECO campaign at the 5% level which supports our Hypothesis 2. This contrasts with the insignificant effect observed in Table 4. The economic impact given by the AME show that an increase of 1% in Equity offered lowers the probability of first SECO success by 0.6%. A lower amount of equity offered suggests greater commitment by the entrepreneur to the startup and so a lower probability of moral hazard issues as established for initial campaigns in Ahlers et al. (2015) and Vismara (2016).

The findings for control variables are also interesting. The dummy for SECO to initial campaign goal is significantly negative at the

[12] We conduct multiple comparison tests across platform shareholder structures on the probability of a firm conducting a (successful) first SECO. It employs the delta method and evaluates confidence intervals using the Bonferroni method that is likely to avoid type I errors (Miller 1966).

Table 3a
Correlation coefficients (Conducting first SECO).

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Ln (Investors (number))	(1)	1.000										
Equity offered (%)	(2)	−.058	1.000									
Quick success	(3)	−.256*	.015	1.000								
Firm age 0–3	(4)	−.141*	.063	.019	1.000							
Firm age 4–9	(5)	.134*	−.051	−.012	−.846*	1.000						
Firm age $\geq$ 10	(6)	.030	−.030	−.016	−.395*	−.155*	1.000					
Technology firm	(7)	−.040	−.073	−.058	.046	−.007	−.072	1.000				
Ln (Target capital (£m))	(8)	.416*	.132*	−.144*	−.371*	.323*	.130*	.052	1.000			
Direct model (Crowdcube)	(9)	.332*	.140*	.205*	−.012	.062	−.084	−.047	.041	1.000		
Nominee model (Seedrs)	(10)	−.009	−.241*	−.214*	.168*	−.177*	−.006	.025	−.270*	−.746*	1.000	
Coinvestment model (SyndicateRoom)	(11)	−.478*	.103*	−.025	−.199*	.138*	.131*	.037	.288*	−.512*	−.190*	1.000

Note: Correlation matrix among all variables employed in this study. *Indicates significance at the 1% level for the difference from zero of the correlation coefficients.

Table 3b
Correlation coefficients (First SECO Success).

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ln (Investors (number))	(1)	1.000											
Equity offered (%)	(2)	−.058	1.000										
Valuation gains (£m)	(3)	.461*	−.099	1.000									
Quick success	(4)	−.256*	.015	.184	1.000								
Firm age 0–3	(5)	−.141*	.063	−.266*	.019	1.000							
Firm age 4–9	(6)	.134*	−.051	.222	−.012	−.846*	1.000						
Firm age $\geq$ 10	(7)	.030	−.030	.138	−.016	−.395*	−.155*	1.000					
Technology firm	(8)	−.040	−.073	.049	−.058	.046	−.007	−.072	1.000				
SECO Goal to Initial Campaign goal	(9)	−.039	−.162	.116	.156	.073	−.080	.010	−.160	1.000			
Direct model (Crowdcube)	(10)	.332*	.140*	.207	.205*	−.012	.062	−.084	−.047	.054	1.000		
Nominee model (Seedrs)	(11)	−.009	−.241*	−.181	−.214*	.168*	−.177*	−.006	.025	−.111	−.746*	1.000	
Coinvestment model (SyndicateRoom)	(12)	−.478*	.103*	−.059	−.025	−.199*	.138*	.131*	.037	.062	−.512*	−.190*	1.000

Note: Correlation matrix among all variables employed in this study. *Indicates significance at the 1% level for the difference from zero of the correlation coefficients.

Table 4
The determinants of conducting a first SECO campaign.

	Model 1		Model 2		Model 3	
	Coef.	AMEs	Coef.	AMEs	Coef.	AMEs
Ln (Investors (number))	0.218**	0.046**			0.217**	0.049**
	(2.00)	(2.07)			(2.07)	(2.15)
Equity offered (%)			−0.002	−0.001	0.000	0.000
			(−0.44)	(−0.44)	(0.01)	(0.01)
Quick success	0.341***	0.073***	0.292**	0.067**	0.349***	0.079***
	(3.24)	(3.44)	(2.19)	(2.25)	(2.91)	(3.05)
Firm age 4–9	−0.084	−0.018	−0.041	−0.009	−0.068	−0.016
	(−0.75)	(−0.76)	(−0.38)	(−0.38)	(−0.64)	(−0.65)
Firm age ≥ 10	−0.654***	−0.109***	−0.550***	−0.102***	−0.626***	−0.112***
	(−3.99)	(−4.73)	(−2.86)	(−3.40)	(−3.90)	(−4.53)
Technology firm	0.156	0.033	0.115	0.026	0.149	0.034
	(0.86)	(0.88)	(0.67)	(0.68)	(0.77)	(0.79)
Ln (Target capital (£m))	−0.062	−0.013	0.073	0.017	−0.034	−0.008
	(−0.73)	(−0.72)	(0.96)	(0.98)	(−0.43)	(−0.43)
Shareholder structures						
Nominee model (Seedrs)	0.476***	0.103***	0.480***	0.115***	0.474***	0.109***
	(5.06)	(5.09)	(3.79)	(3.55)	(4.11)	(3.92)
Coinvestment model (SyndicateRoom)	1.044***	0.273***	0.505***	0.123***	0.943***	0.250***
	(6.02)	(5.46)	(5.53)	(4.18)	(5.63)	(5.01)
N	628		584		584	
Log pseudolikelihood	−242.356		−239.790		−237.619	
Pseudo R^2	0.145		0.128		0.136	

Note: This table reports the results of probit estimation. All regressions include a constant term and year fixed effects. AMEs refers to average marginal effects. Omitted categories are those with firm age 0–3 years old and the direct shareholder model dummy. *Z*-statistics adjusted for clustering by crowdfunding platform are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, ** and ***.

Table 5
Shareholder structure (cross-platform) comparisons of predictive margins of conducting a first SECO campaign.

	Contrast	Delta-method	Bonferroni	
		Std. Err.	[95% Conf. Interval]	
Nominee model vs Direct	0.109***	0.028	0.042	0.175
Coinvestment model vs Direct	0.250***	0.050	0.131	0.370
Coinvestment model vs Nominee	0.142	0.071	−0.028	0.311

Notes: This table shows cross-platforms comparisons of marginal effects from results reported in Model 3 (Table 4). Confidence intervals are computed using Bonferroni's method to account for making multiple comparisons. Significance at the 10%, 5%, and 1% level is indicated by *, ** and ***.

5% level or lower in Model 7 suggesting that a low initial campaign goal acts as a negative anchor for future campaigns and an indicator of potential moral hazard problems. Technology firms are more likely to be successful which is consistent with the British Business Bank (2018) report in which technology firms are the focus of angel investments in the UK. Finally, older firms are less likely to conduct successful first SECOs at the 1% level, although the effect is not statistically significant for all models. The negative relationship is documented in previous initial ECF campaign studies such as Ralcheva and Roosenboom (2016). Finally, both the Nominee and Coinvestment model dummies directly increase the probability of conducting a successful first SECO at the 1% level in all models (except for Coinvestment in Model 5). These findings generally support Hypothesis 4a.

Table 7 shows the contrast estimates (i.e. differences in predicted probabilities between shareholder structures) based on the marginal effects related to shareholder structures reported in Table 6 (Model 7). Results suggest that ECF firms employing the Nominee and Coinvestment models in their initial campaigns on average are 7.2% and 10.7% more likely to conduct a successful first SECO campaign than those ECF firms employing a Direct model (Crowdcube). These results for both platforms are consistent with lower potential moral hazard problems. The positive effect of Nominee can be associated with both the lack of separation between ownership and control on Seedrs and the monitoring role played by the platform.[13] The positive effect of Coinvestment compared to the direct model is likely related to the double due diligence and monitoring on SyndicateRoom by both the platform as nominee and the active monitoring and mentoring role of the lead investor with skin in the game. Active monitoring and mentoring by professional investors have been shown to act as certification for startup quality in the initial campaign and increase the likelihood of success (Ralcheva and Roosenboom, 2016).

[13] Existing findings as in La Porta et al. (1997) and Demirguc-Kunt and Maksimovic (1998) reveal that firms find it more difficult to raise equity capital in countries where legal protections for minority shareholders are not strong and the ECF crowd is an example of the latter on some platforms.

Table 6
The determinants of conducting a successful first SECO campaign.

	Model 4		Model 5		Model 6		Model 7	
	Coef.	AMEs	Coef.	AMEs	Coef.	AMEs	Coef.	AMEs
Ln (Investors (number))	0.361***	0.078***					0.230**	0.047**
	(3.63)	(4.21)					(2.21)	(2.19)
Equity offered (%)			−0.025***	−0.005***			−0.027**	−0.006***
			(−2.83)	(−3.32)			(−2.54)	(−3.06)
Valuation gains (£m)					0.085***	0.018***	0.084***	0.017***
					(3.16)	(3.09)	(2.66)	(2.75)
Quick success	0.224**	0.048**	−0.059	−0.013	−0.038	−0.008	−0.104	−0.021
	(2.27)	(2.20)	(−0.53)	(−0.55)	(−0.35)	(−0.36)	(−0.60)	(−0.62)
Firm age 4–9	−0.056	−0.012	0.114	0.024	0.024	0.005	−0.249	−0.053
	(−0.72)	(−0.67)	(0.93)	(1.03)	(0.12)	(0.12)	(−0.94)	(−0.84)
Firm age ≥ 10	−0.670	−0.179	−0.313	−0.078	−0.677***	−0.181**	−1.178***	−0.320***
	(−1.18)	(−1.07)	(−0.46)	(−0.42)	(−2.66)	(−2.51)	(−3.91)	(−4.23)
Technology firm	0.405**	0.087***	0.147**	0.032**	0.274*	0.059*	0.183*	0.038*
	(2.44)	(2.65)	(2.33)	(2.24)	(1.65)	(1.71)	(1.82)	(1.77)
SECO Goal to Initial Campaign goal	−0.492	−0.097*	−0.640**	−0.126***	−0.564*	−0.110**	−0.698**	−0.129***
	(−1.64)	(−1.81)	(−2.42)	(−2.82)	(−1.95)	(−2.19)	(−2.21)	(−2.63)
Shareholder structures								
Nominee model (Seedrs)	0.602***	0.126***	0.283***	0.058***	0.526***	0.104***	0.343***	0.072***
	(4.62)	(5.35)	(4.01)	(3.75)	(5.35)	(6.97)	(3.27)	(3.04)
Coinvestment model (SyndicateRoom)	0.590***	0.124***	−0.010	−0.002	0.155***	0.036***	0.556***	0.107***
	(2.72)	(3.53)	(−0.09)	(−0.09)	(3.28)	(3.53)	(4.26)	(3.90)
N	103		103		103		103	
Log pseudolikelihood	−40.391		−41.093		−40.155		−38.812	
Pseudo R^2	0.125		0.109		0.130		0.159	

Note: This table reports the results of probit estimation. All regressions include a constant term and year fixed effects. AMEs refers to average marginal effects. Omitted categories are those with firm age 0–3 years old and the direct shareholder model dummy. *Z*-statistics adjusted for clustering by crowdfunding platform are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, ** and ***.

Table 7
Shareholder structure (cross-platform) comparisons of predictive margins of a successful first SECO campaign.

	Contrast	Delta-method	Bonferroni	
		Std. Err.	[95% Conf. Interval]	
Nominee vs Direct model	0.072***	0.024	0.015	0.128
Coinvestment vs Direct model	0.107***	0.027	0.041	0.172
Coinvestment vs Nominee model	0.035***	0.006	0.019	0.050

Notes: This table shows cross-platforms comparisons of marginal effects from results reported in Model 7 (Table 6). Confidence intervals are computed using Bonferroni's method to account for making multiple comparisons. Significance at the 10%, 5%, and 1% level is indicated by *, ** and ***.

4.3. The moderating effect of platform shareholder structures

This subsection investigates the impact of changes in our key variables of interest on the probability of conducting a successful first SECO campaign across different shareholder structures.[14] One can think of these as the partial derivative effects of probability of success with respect to a variable of interest for each platform structure. Table 8 reports the estimated coefficients for the interaction terms between our continuous variables of interest and the discrete variable capturing the type of platform shareholder structure.

Interactions between continuous and discrete variables are changes in the continuous variable evaluated at the different values of the discrete covariate relative to the base level. The interaction effects in Table 8 suggests that the strength of the impact of the number of investors, equity offered and valuation gains on the probability of conducting a successful first SECO vary with platform's shareholder structures. However, computing the magnitude of the interaction effect in nonlinear models such as a probit is non-trivial as it

[14] Given the novelty of the results, we only report in this section our findings of the moderating effect of shareholder structures on the probability of conducting a successful SECO campaign, but results for conducting a SECO campaign are available in Table A3 and Figures A2, A3 in the Appendix. Interpretation of the results is similar to the one offered in this subsection.

does not equal the marginal effect of the interaction term (Ai and Norton, 2003). Thus, to provide a meaningful interpretation of the interaction terms, we compute the difference between the predicted probabilities for the interaction terms reported in Table 8, while keeping constant a specific type of shareholder structure (Williams, 2012).

The results of this difference with its statistical significance are reported in Table 9. The results show that the impact of the key variables of interest varies considerably with the shareholder structure employed for the campaign.[15] Panel A shows that the average marginal effect of Ln(Investors) is 0.34 and 0.09 higher when the campaign employs a Direct model instead of the Nominee or Coinvestment model, respectively. These results probably reflect the leading role of Crowdcube as the UK's first and largest ECF platform. Finally, the Coinvestment model's average marginal effect is 0.25 higher than the Nominee model.

Fig. 1 plots the relationship for platform shareholder structures between the probability of a first SECO success as the Ln(Investors) variable increases.This shows that the marginal ($\partial y/\partial x$) or cet. par. effects of Ln(Investors) vary in a sometimes complex manner. The Nominee (and, to a lesser extent, the Coinvestment) model dominates the Direct with virtually sure success ($p = 1$) for low investor numbers up to approximately 55 (e^4) investors. Thereafter, it exhibits a piecewise linear downward slope and the other platform models dominate in terms of higher probabilities of a first SECO success with convergent probabilities of success. These contrasting patterns are consistent with existing studies in which investment behaviour varies among crowd members (Wallmeroth, 2019; Vismara, 2019) in initial ECF campaigns, but previous studies did not distinguish separate platform shareholder structures in this context.

Panel B of Table 9 show that the average marginal effect of equity offered is 0.006 and 0.014 higher when the Nominee model is employed instead of the Direct and Coinvestment models, respectively. Fig. 2 complement graphically these findings and shows the relation between the probability of success in the first SECO and Equity offered across shareholder structures.

Apart from extremely low values of Equity offered (<10%), the Nominee model increasingly dominates the other two model in terms of the probability of a successful first SECO. This reflects the fact that the Seedrs platform as nominee plays an active role in monitoring its ECF firms (including its fair value valuation) and this reduces the probability of moral hazard issues. Moreover, in the case of potentially opportunistic behaviour on the part of the startup, the platform can readily act as a blockholder for all ECF investors through electronic voting to resolve such issues. This is likely to be the case as most initial and SECO campaigns offer more than 10% of equity, the threshold at or above which shareholders can demand a special meeting with the startup. The probability of conducting a successful first SECO Campaigns employing the Coinvestment and Direct models decreases as equity offered increases in line with the aggregate results. However, the Coinvestment model has a steeper downward slope for Equity offered higher than 15%.

Panel C of Table 9 shows the average marginal effect of Valuation gains is 0.035 and 0.064 lower when a Coinvestment model is employed instead of a Direct or Nominee model respectively. Fig. 3 plots the relationship between probability of conducting a successful first SECO campaign and Valuation gains across shareholder structures.

All platform models exhibit a positive slope implying that the higher the Valuation gains, the greater the probability of success. However, the overwhelming conclusion is that the Nominee model dominates the other two models (for all but tiny gains) as Valuation gains increase with success probabilities very close to 1. This may well reflect the fact the Nominee model (Seedrs) is more focused on valuation as a normal part of its evolving secondary market operations. The probability of success increases with Valuation gains for the other two platform model albeit with quite different slopes. While the Coinvestment model exhibits a gently increasing success probability, the Direct model starts lower but then exhibits a steadily increasing success probability that gradually gets closer to the Nominee model as Valuation gains increase.

The overwhelming conclusion from Table 9 and Figs. 1 to 3 is that the Nominee model dominates the Direct and Coinvestment model in terms of the probability of a first SECO success as each of our variables of interest vary (with the exception of large investor numbers). The implication is that Seedrs' lack of ownership and control separation and regular monitoring and valuations of startups mitigates both adverse selection and potential moral hazard problems relating to a successful first SECO. Overall, the results underline the importance of platform shareholder structures in affecting the probability of conducting a successful first SECO campaign through our variables of interest, providing support for Hypothesis 4b.[16] This is consistent with studies such as Cumming et al. (2019b), Rossi and Vismara (2018) and Rossi et al. (2019) that stress the importance of ECF platform differences for initial campaigns.

5. Conclusions

Seasoned equity crowdfunded offerings (SECOs) are the crowdfunding equivalent of SEOs on the stock market. The central underlying idea of this paper is that, just as SEO (seasoned equity offering) firms are likely to face fewer information asymmetry problems relative to IPO firms as Chemmanur et al. (2010) argue, the same applies to SECO relative to initial ECF campaign firms. This first contribution of this paper is that it provides a first investigation into what factors prompt firms to conduct a first SECO and the drivers of its success for an initial sample of 709 firms that enjoyed successful initial campaigns on the top three UK platforms – Crowdcube, Seedrs, and SyndicateRoom – over the 2011–2018 period. The probit results establish that new information available at a SECO such as

[15] The importance of analysing platform-level effects for initial ECF campaigns is stressed by Rossi and Vismara (2018).

[16] Additional results on the determinants of firms conducting multiple SECOs suggest that shareholder structures based on the Coinvestment and Nominee models increases the probability of conducting multiple SECOs. Results are available in Table A4 in the Appendix.

Table 8
The determinants of a successful first SECO campaign: interactions with shareholder structures.

	Model 4a	Model 5a	Model 6a
	Coef.	Coef.	Coef.
Ln (Investors (number))	0.441***		
	(3.57)		
Ln (Investors (number)) * Nominee model (Seedrs)	−2.324***		
	(−9.84)		
Ln (Investors (number)) * Coinvestment model (SyndicateRoom)	−0.295		
	(−1.13)		
Equity offered (%)		−0.020**	
		(−2.45)	
Equity offered (%) * Nominee model (Seedrs)		0.030***	
		(9.06)	
Equity offered (%) * Coinvestment model (SyndicateRoom)		−0.034***	
		(−5.51)	
Valuation gains (£m)			0.164***
			(3.67)
Valuation gains (£m) * Nominee model (Seedrs)			0.367*
			(1.82)
Valuation gains (£m) * Coinvestment model (SyndicateRoom)			−0.141***
			(−6.36)
Shareholder structures			
Nominee model (Seedrs)	11.997***	−0.037	0.345**
	(9.75)	(−0.31)	(2.29)
Coinvestment model (SyndicateRoom)	1.839**	0.557***	0.469***
	(2.53)	(4.80)	(5.34)
N	103	103	103
Log pseudolikelihood	−38.371	−40.478	−39.149
Pseudo R^2	0.168	0.123	0.151
Full set of controls	YES	YES	YES

Notes: This table reports the results of a probit estimation. All regressions include a constant term, year fixed effects and a full set of control variables as reported in Models 4,5 and 6 (Table 7). Omitted categories are those with firm age 0–3 years old and the direct shareholder model dummy. Z-statistics adjusted for clustering by crowdfunding platform are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, ** and ***.

Table 9
Shareholder structure (cross-platform) comparisons of predictive margins of a successful first SECO campaign.

	Contrast	Delta-method	Bonferroni		Bonferroni	
		Std. Err.	z	P > |z|	[95% Conf. Interval]	
PANEL A: ∂y/∂x with respect to ln(Investors)						
Nominee vs Direct model	−0.340***	0.020	−17.260	0.000	−0.388	−0.293
Coinvestment vs Direct model	−0.089***	0.030	−2.960	0.009	−0.161	−0.017
Coinvestment vs Nominee model	0.251***	0.033	7.620	0.000	0.172	0.330
PANEL B: ∂y/∂x with respect to Equity offered						
Nominee vs Direct model	0.006***	0.000	15.270	0.000	0.005	0.007
Coinvestment vs Direct model	−0.007***	0.002	−3.440	0.002	−0.012	−0.002
Coinvestment vs Nominee model	−0.014***	0.002	−6.190	0.000	−0.019	−0.008
PANEL C: ∂y/∂x with respect to Valuation gains						
Nominee vs Direct model	0.029	0.020	1.470	0.429	−0.019	0.077
Coinvestment vs Direct model	−0.035***	0.004	−9.090	0.000	−0.044	−0.026
Coinvestment vs Nominee model	−0.064**	0.023	−2.760	0.017	−0.120	−0.008

Notes: This table shows cross-platforms comparisons of average marginal effects from results reported in Table 8. Confidence intervals and z-statistics are computed using Bonferroni's method to account for making multiple comparisons. Significance at the 10%, 5%, and 1% level is indicated by *, ** and ***.

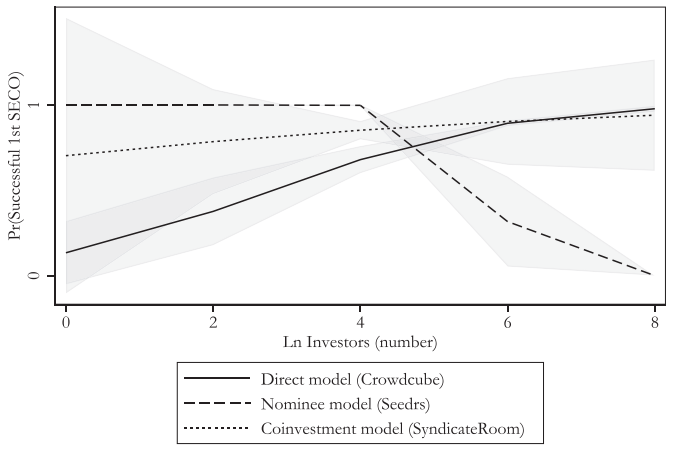

Fig. 1. Predictive marginal effects for the probability of a successful first SECO by number of investors and shareholder structures. Predictive margins are presented with their 95% confidence intervals.

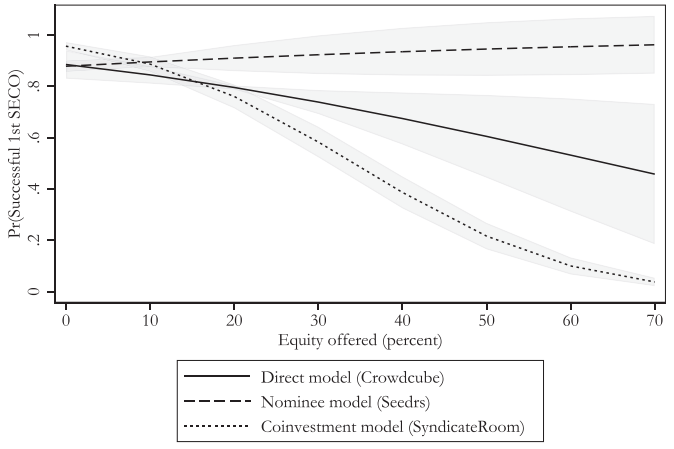

Fig. 2. Predictive marginal effects for the probability of a successful first SECO by equity offered and shareholder structures. Predictive margins are presented with their 95% confidence intervals.

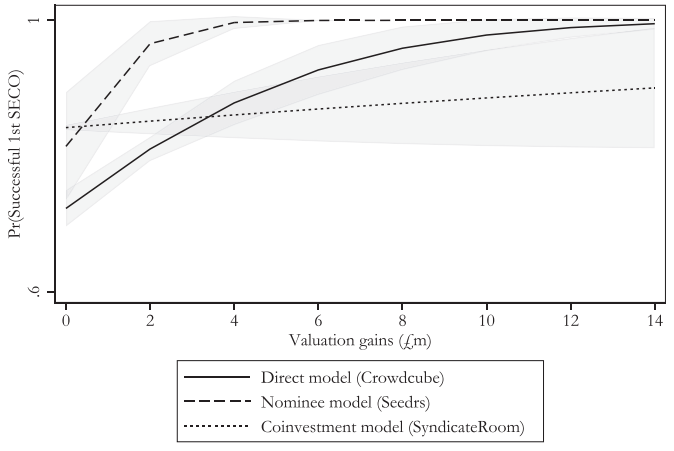

Fig. 3. Predictive marginal effects for the probability of a successful first SECO by valuation gains and shareholder structures. Predictive margins are presented with their 95% confidence intervals.

pre-money valuation gains reduces adverse selection problems for a first SECO success. Annualised valuation gains between the initial and SECO campaigns increase the probability of having a successful first SECO campaign. The probability of a first SECO success also increases with investor numbers or the wisdom of the crowd but it falls with the amount of equity offered. These findings complement and extend the findings of Signori and Vismara (2018) on SECOs on the Crowdcube platform.

The second contribution is that the paper sheds light on how platform shareholder structures impact on the probability of SECO success. The average marginal effects for a successful first SECO show that campaigns employing the nominee (Seedrs) and coinvestment (SyndicateRoom) models directly increase the probability of a successful first SECO by 7.2% and 10.7%, respectively, relative to employing a direct model (Crowdcube). This is likely due to reduced moral hazard problems due to the enhanced monitoring effects by the platforms. Our results complement and extend those of Hornuf et al. (2018) and Signori and Vismara (2018) - who focus on follow-up private (VC and BA) funding in ECF firms - by accounting for the effects of platform shareholder structures on the likelihood of a firm conducting a (successful) first SECO.

We also study the moderating effect of ECF platforms as our three variables of interest are allowed to vary across different shareholder structures. The conclusion from this is that the nominee model dominates the direct and coinvestment models in terms of the probability of conducting a successful first SECO campaign (SECOs with large investor numbers are an exception). The implication is that Seedrs' lack of separation between ownership and control and its monitoring and regular valuations of startups mitigate both adverse selection and potential moral hazard problems relating to a successful first SECO. Overall, the results underline the importance of platform shareholder structures in exerting both direct and indirect effects on the probability of conducting a successful first SECO campaign.[17]

Our paper has a number of limitations and these may provide opportunities for future research. Even though this study employs the largest SECO sample to date, one limitation is that our sample is still rather small, and this may have influenced the results. Future studies may benefit from having access to larger samples as SECO numbers seem to be on the rise in the UK (British Business Bank, 2019). Moreover, it would also be worthwhile to investigate whether serial SECOs become a feature of the ECF landscape just as serial SEOs have come to predominate on London's Alternative Investment Market (Stamou et al., 2020). In this context, our current serial SECO sample is very small. Another limitation is that lack of data prevents us from studying investment motivation. The latter may vary regarding involvement in SECOs as existing studies argue that ECF investment behaviour is heterogeneous (Wallmeroth, 2019; Vismara, 2019). It would be interesting to extend our sample, but the study of cross platform effects would be more complex as the Crowdcube platform is now allowing nominee account campaigns whilst the Seedrs platform is permitting direct ownership campaigns. This is further supported by heterogeneity in local bias for venture capitalists (Cumming and Dai, 2010). We leave the effect of these developments for future research.

Appendix A. Tables and Figures

Table A1
Variable definition.

Variables	Definition
Dependent Variables	
Conducting first SECO	Dummy = 1 if firm conducts a first SECO.
First SECO Success	Dummy = 1 if firm has a successful first SECO.
Variables of interest	
Ln (Investors (number))	Natural logarithm of the number of investors participating in campaign.
Equity offered (%)	Fraction of equity offered (%).
Valuation gains (£m)	Annualised pre-SECO equity valuation less pre- initial campaign equity valuation.
Control variables	
Quick Success	Dummy = 1 if the target (amount of capital to be raised in initial offering) was reached within 20 days.
Firm age 0–3	Firm age 0–3.
Firm age 4–9	Firm age 4–9.
Firm age $\geq$ 10	Firm age $\geq$ 10.
Technology firm	Dummy = 1 if firm operates in the Technology Hardware & Equipment sector.
Ln (Target capital (£m))	Natural logarithm of the amount of capital to be raised in initial offering (£k).
SECO Goal to Initial Campaign goal	Dummy = 1 if (SECO goal / Initial Campaign goal) >1
Direct Model	Dummy = 1 if campaign was conducted on Crowdcube (UK).
Nominee model	Dummy = 1 if campaign was conducted on Seedrs (UK).
Coinvestment model	Dummy = 1 if campaign was conducted on SyndicateRoom (UK).

Note: This table presents the definitions of the variables employed in this paper.

[17] Table A4 results in the Appendix look at the determinants of firms conducting multiple SECOs suggest that shareholder structures based on the Coinvestment model and Nominee model increases the probability of conducting multiple SECOs. These are outside the scope of the present study however.

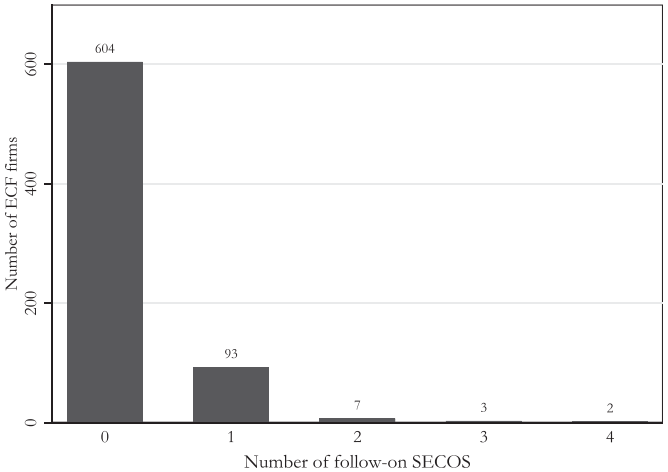

Fig. A1. Number of follow-on SECOs.

Table A2
Heckman probit results. The determinants of a first SECO (Selection equation) and a successful first SECO campaign (Outcome equation).

	Model 1		Model 2		Model 3		Model 4	
	Selection	Outcome	Selection	Outcome	Selection	Outcome	Selection	Outcome
Ln (Investors (number))	0.217**	0.352***					0.213**	0.161
	(2.03)	(3.12)					(2.10)	(1.54)
Equity offered (%)			−0.003	−0.025***			−0.000	−0.028***
			(−0.52)	(−3.26)			(−0.04)	(−3.08)
Valuation gains (£m)						0.084***		0.084***
						(2.89)		(2.63)
Quick success	0.346***	0.200*	0.298**	−0.177	0.299***	−0.121	0.348***	−0.256***
	(3.38)	(1.88)	(2.27)	(−1.30)	(2.64)	(−1.00)	(3.09)	(−3.12)
Firm age 4–9	−0.082	−0.053	−0.046	0.106	−0.048	0.028	−0.068	−0.223
	(−0.73)	(−0.85)	(−0.45)	(0.75)	(−0.44)	(0.16)	(−0.67)	(−0.97)
Firm age ≥ 10	−0.649***	−0.636	−0.550***	−0.157	−0.559***	−0.558	−0.624***	−0.973*
	(−4.00)	(−0.90)	(−3.03)	(−0.19)	(−2.95)	(−1.03)	(−4.06)	(−1.71)
Technology firm	0.156	0.401**	0.112	0.115	0.126	0.256	0.146	0.150*
	(0.88)	(2.54)	(0.69)	(1.24)	(0.81)	(1.43)	(0.77)	(1.86)
Ln (Target capital (£m))	−0.062		0.078		0.044		−0.033	
	(−0.73)		(0.90)		(0.52)		(−0.42)	
Ln (Competing offerings)	0.082		0.041		0.054		0.019	
	(0.96)		(0.23)		(0.37)		(0.13)	
SECO Goal to Initial Campaign goal		−0.495*		−0.613*		−0.556*		−0.687**
		(−1.71)		(−1.94)		(−1.85)		(−2.05)
Shareholder structures								
Nominee model (Seedrs)	0.567***	0.583***	0.526***	0.175	0.556***	0.451*	0.493***	0.228
	(4.07)	(3.38)	(2.75)	(1.07)	(4.98)	(1.83)	(2.59)	(1.45)
Coinvestment model (SyndicateRoom)	1.178***	0.551	0.566	−0.133	0.688**	0.059	0.963***	0.318
	(37.41)	(1.50)	(1.45)	(−0.50)	(2.13)	(0.23)	(8.29)	(1.25)
Athrho	−0.063		−0.382		−0.260		−0.364	
	(−0.15)		(−0.54)		(−0.39)		(−0.66)	
ρ	−0.063		−0.364		−0.254		−0.349	
N	709		665		709		665	
Selected	105		105		105		105	
Nonselected	604		560		604		560	
Log pseudolikelihood	−282.711		−280.704		−284.753		−276.267	
Wald test of indep. Eqns (ρ = 0)	0.021		0.289		0.153		0.430	
chi-squared	0.884		0.591		0.696		0.512	

Notes: This table present the results from a Heckman probit model with sample selection (Van de Ven and Van Praag, 1981) which is estimated using the Stata "Heckprobit" routine (StataCorp, 2019). The selection equation relates to the probability of conducting a first seasoned equity crowdfunded offering (SECO) after a successful initial campaign. The outcome equation relates to the probability of a successful first SECO. All regressions include a constant term and year fixed effects. We use (Competing offerings) as exclusion restriction, defined as the natural logarithm of the number of other offerings active and available on the same platform in the same year to allow identification of the model (Signori and Vismara, 2018). Omitted categories are those with firm age 0–3 years old and the Direct model (Crowdcube) dummy. *Z*-statistics adjusted for clustering by crowdfunding platform are reported in parentheses. Significance at the 10%, 5%, and 1% levels is indicated by *, ** and ***.

Table A3
The determinants of conducting a first SECO campaign: interactions with shareholder structures.

	Model 1a	Model 2a
	Coef.	Coef.
Ln (Investors (number))	0.230***	
	(4.21)	
Ln (Investors (number)) * Nominee model (Seedrs)	−0.237***	
	(−6.37)	
Ln (Investors (number)) * Coinvestment model (SyndicateRoom)	0.599***	
	(21.23)	
Equity offered (%)		0.002
		(0.46)
Equity offered (%) * Nominee model (Seedrs)		0.005
		(0.96)
Equity offered (%) * Coinvestment model (SyndicateRoom)		−0.022***
		(−4.04)
Shareholder structures		
Nominee model (Seedrs)	1.636***	0.442**
	(6.14)	(2.16)
Coinvestment model (SyndicateRoom)	−1.166***	0.855***
	(−26.26)	(32.61)
N	628	584
Log pseudolikelihood	−240.040	−239.004
Pseudo R^2	0.153	0.131
Full set of controls	YES	YES

Notes: This table reports the results of a probit estimation. All regressions include a constant term, year fixed effects and a full set of control variables as reported in Models 1 and 2 (Table 4). Omitted categories are those with firm age 0–3 years old and the direct shareholder model dummy. *Z*-statistics adjusted for clustering by crowdfunding platform are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, ** and ***.

Table A4
Count model for determinants of conducting multiple SECOs.

Dependent variable: Number of follow-on campaigns	Zero-inflated negative binomial regression		Poisson regression	
	Coef.	AMEs	Coef.	AMEs
Ln (Investors (number))	0.254*	0.047*	0.248*	0.046*
	(1.83)	(1.82)	(1.77)	(1.77)
Equity offered (%)	0.000	0.000	−0.001	−0.000
	(0.03)	(0.03)	(−0.06)	(−0.06)
Quick success	0.563***	0.105***	0.556***	0.104***
	(5.32)	(5.20)	(5.37)	(5.37)
Firm age 4–9	0.110	0.022	0.130	0.026
	(0.92)	(0.90)	(1.21)	(1.18)
Firm age ≥ 10	−0.989***	−0.119***	−0.979***	−0.117***
	(−3.49)	(−5.05)	(−3.39)	(−4.85)
Technology firm	0.234	0.044	0.249	0.046
	(0.92)	(0.91)	(1.01)	(1.01)
Ln (Target capital (£m))	0.069	0.001	0.003	0.000
	(0.61)	(0.05)	(0.02)	(0.02)
Shareholder structures				
Nominee model (Seedrs)	0.548***	0.107**	0.512***	0.099**
	(2.93)	(2.40)	(3.09)	(2.55)
Coinvestment model (SyndicateRoom)	1.109***	0.299***	1.093***	0.294***
	(5.06)	(3.01)	(4.41)	(2.67)
Inflate				
Ln (Target capital (£m))	1.092***			
	(2.84)			
Constant	−16.377***			
	(−3.30)			
Lnalpha	−2.965			
	(−0.41)			
N	665		665	
Number of zero observations	560		560	
Log pseudolikelihood	−288.774		−289.119	

Note: AMEs refers to average marginal effects. Omitted categories are firms age 0–3 years old and the direct model dummy. The model includes year Fixed Effects. *lnalpha* is the natural log of alpha (the dispersion parameter). The inflated portion of the output refers to the logistic model predicting the probability that the count is zero (i.e. the number of additional SECOs = 0). If the dispersion parameter is zero, then a Poisson model would be appropriate. Z-statistics adjusted for clustering by crowdfunding platform are reported in parentheses. Significance at the 10%, 5%, and 1% level is indicated by *, ** and ***.

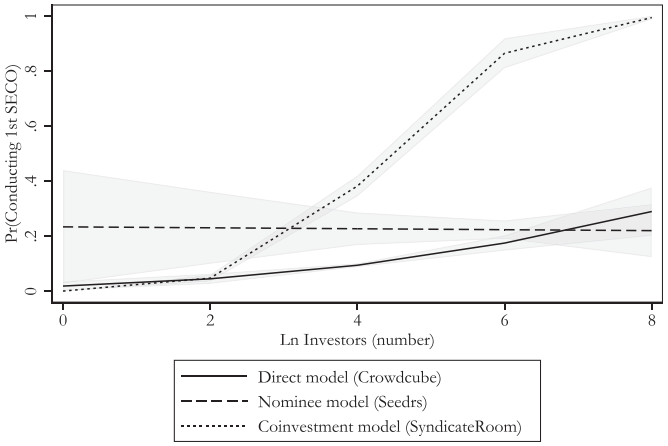

Fig. A2. Predictive marginal effects for the probability of conducting a first SECO by number of investors and shareholder structures.
Notes: Predictive margins are presented with their 95% confidence intervals.

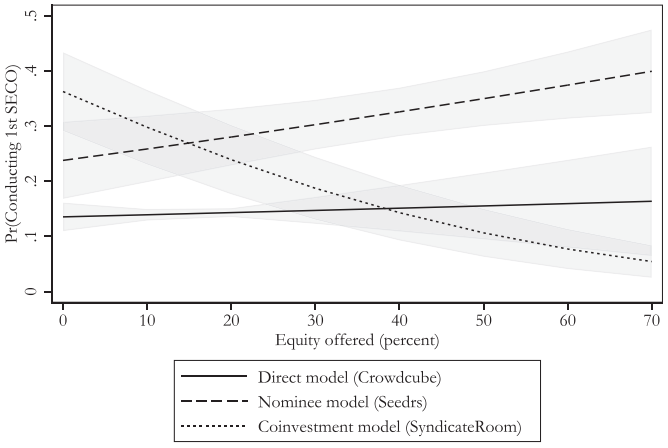

Fig. A3. Predictive marginal effects for the probability of conducting a first SECO by equity offered and shareholder structures.
Notes: Predictive margins are presented with their 95% confidence intervals.

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