Angels in the Crowd:
Exploring Business Angels' Impact on Ventures Invested via Equity Crowdfunding

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Abstract. This paper investigates the investments of Business Angels (BAs) made through equity crowdfunding (ECF) platforms. Using a dataset of 242 successful crowdfunding campaigns launched by Italian ventures between 2015 and 2020, we identify the effect of individual BAs, defined as former entrepreneurs that successfully exited their companies with proceedings to reinvest, and BAs affiliated to BA networks or groups on the post-campaign performances of ECF ventures. We find that companies invested by BAs during their first ECF campaign are more likely to realize a second external equity round compared to companies invested by regular crowd investors only. This positive effect is mainly driven by active BAs, i.e. BAs that participate in shareholders' meetings in the post campaign phase. Results remain robust when using instrumental variables (IVs) to account for the likelihood of BA participation in ECF. Tax shocks affecting BA investments in startups serves as the IVs in this analysis.

Keywords: Business Angels, BA, Equity Crowdfunding, Post-campaign performances, Business Angel Networks.

1. Introduction

According to a well-established funding framework within the startup ecosystem, entrepreneurs have depended on venture capitalists and business angels to obtain essential equity capital. However, in the past decade, crowdfunding has gained traction as a new method to funding entrepreneurial ventures (Ahlers et al., 2015; Mollick and Rob, 2016; Bonini and Capizzi, 2019a). The growth in investments through equity crowdfunding (ECF) platforms has also attracted professional investors towards this new channel, including business angels (BAs, hereafter) (Wang et al., 2019).

ECF offers a wide range of early-stage investment opportunities with the potential for attractive returns (Signori and Vismara, 2018)[1]. ECF provides the opportunity of spreading risk across multiple ventures, while minimizing administrative burdens and benefit from tax incentives (Landström and Mason, 2016). The growing involvement of BAs in digital channels raises a key question about their investment approach in ECF and their impact on invested ventures. BAs acting via ECF can tap into a substantial stream of pre-screened investment opportunities (Bonini et al., 2018); however, the absence of a direct personal contact with entrepreneurs before investing, the relatively smaller pledges contributed compared to their traditional channels and the large shareholder base associated to ECF ventures raise the question on the extent to which BAs actively and effectively contribute post-investment to ECF ventures. To the best of our knowledge, prior research has not explicitly examined the treatment effect of BAs in the context of ECF, i.e., whether BAs enhance post-campaign performance of ECF ventures. Two studies have explored the involvement of angel-like investors in ECF, defined as investors pledging high contributions relatively to regular crowd investors. Wang and colleagues (2019) focus on the signaling effect of angel-like pledges, demonstrating that high-contribution pledges–pledges contributing a high percentage to a campaign's funding goal–serve as an effective signal to attract subsequent amounts pledged by other angel-like investors and regular crowd investors in the same campaign. Hornuf and colleagues (2022b) investigate the local bias in

[1] An early investigation based on actual exists and insolvencies by Hornuf and Schmitt (2016) is less optimistic about the profitability of ECF.

ECF investments analyzing, among other types of crowd investors, the behavior of angel-like investors. However, relying on the pledge amount to identify BAs can be misleading. The investment size might be inflated by ventures' associates (e.g., family & friends) making their own investments to push the venture over the funding threshold. For instance, Hornuf and Schwienbacher (2018) show that large early investments significantly increase the subsequent participation of further investors. When an investment of at least 10,000€ is added, the average number of new investments on the subsequent day increases by 31.6%. Also, platform members have been found to artificially increase the initial bids to improve the chances of a successful offering (Meoli and Vismara, 2021). Thus, it is important to identify "genuine" BAs within the ECF context and to understand the investment approach they adopt after the campaign. We address this gap by asking the following research questions: Does the participation of BAs in ECF campaigns affect the post-campaign performances of ECF ventures? Do BAs bring value to ECF ventures through their active engagement in the venture after the ECF campaign?

We rely on an original identification strategy of BAs among the population of crowd investors. We distinguish BAs from the general crowd by identifying individuals who either formally belong to an angel investment organization (group or network), or are former entrepreneurs that have achieved a successful exit within the five-year period[2] preceding the ECF campaign in which they invested (Lodefalk and Andersson, 2023). Including this latter group of investors allows us to significantly expand the sample of BAs by identifying individuals who possess a combination of entrepreneurial or managerial skills alongside the financial means to invest in entrepreneurial ventures, being professionals with a considerable wealth and no personal connections with the entrepreneur (Mason, 2006). To causally identify BA treatment effect, we rely on the activism of BAs in the post-investment phase of successful ECF campaigns. BAs typically take an active role in the ventures they invest in through monitoring, sharing of relationship networks, advisory and coaching activities (Politis, 2008;

[2] In robustness checks, we take into consideration different timeframes, i.e., 3- and 7-year periods.

Bonini et al., 2018; Croce et al., 2021; Bonnet et al., 2022; Botelho et al., 2023). However, BAs operating through ECF may adopt a more hands-off approach, which is influenced by the unique aspects of the ECF context, such as smaller contribution amounts, possibility of free-riding within larger crowd-monitoring frameworks and reduced face-to-face interactions with the entrepreneur (Block et al., 2018; Blaseg et al., 2021). Additionally, varying motivations for investing through ECF can result in differing levels of engagement by BAs; for example, they may view ECF as a secondary investment channel compared to traditional channels or base their investing decisions on emotional motives that are not associated with subsequent professional active involvement (Garaus et al., 2023; Civardi et al., 2024). We anticipate that some BAs will be active while others will not, enabling us to assess whether BAs activism positively influences the post-campaign performance of ECF ventures. We test our predictions on a sample of 242 ECF successful campaigns launched by Italian ventures between 2015 and 2020. We focus on Italy since all Italian firms are required to disclose their shareholders and the share of the equity capital they own. The number and identity of investors participating to the focal campaign is obtained by comparing the ownership structure before and after the campaign. Our final sample is composed of about 14,172 unique crowd investors, of which 2.33% are BAs. We find that, on average, ventures invested by BAs during their first ECF campaign are more likely to raise a successful follow-on round of equity, specifically a second successful ECF campaign over a second VC-BA round or successful exit, compared to companies invested by regular crowd investors only. Our results also suggest that this effect is mainly driven by active BAs compared to inactive ones.

Our work contributes to several areas of prior research. First, our study contributes to the literature on post-campaign performance of ECF ventures. We know that successfully raising capital through ECF has a positive impact on ventures' subsequent rounds of financing (e.g., Butticè et al., 2020; Butticè et al., 2021) and their survival (Hornuf et al., 2022a, 2022b). However, the existing literature on CF has thus far neglected to thoroughly examine the participation of professional, though informal, investors who operate within the realm of ECF platforms. This oversight has led to an exclusive

attribution of all potential benefits arising from a successful ECF financing round solely to the crowd, leaving unexplored the valuable contribution that professional investors such as BAs might bring to ventures utilizing this investment channel. We also find that BAs are actively involved in the post-campaign phase, contrary to prior evidence that has highlighted a mainly hands-off approach of regular crowd investors (Block et al., 2018; Blaseg et al., 2021; Hornuf et al. 2022a), but consistent with the intrinsic nature of angel investors.

Second, we contribute to the literature that addresses the interaction of different investor types in the entrepreneurial finance ecosystem, adding to the limited research on BA investments through ECF (e.g., Wang et al., 2019; Hornuf et al., 2022b). In this way, the paper highlights the role of professional investors operating though ECF platforms and the effect they have on venture post-campaign performances.

Third, despite their increasing diffusion and relevance, professional angel investment through digital platforms remains a relatively recent subject in research, characterized by a dearth of information. The limited understanding of this phenomenon is attributed to the absence of databases that comprehensively record the investments made by members of these platforms and the focus of studies on single platforms (Mason et al., 2016). Our strategy for identifying BAs in the overall Italian ECF crowd investor base allows us to shed light on an otherwise opaque phenomenon. Not only do our fine-grained data enable us to add to the knowledge on BAs' contributions via ECF platforms, but they also allow us to investigate how this contribution differs depending on their level of activism after the investment. All in all, this paper allows to expand the limited literature on the role of digital channels for angel investment (Antretter et al., 2020) highlighting their active role in the post-investment phase.

Our study offers valuable managerial and practical insights into the role of BAs in enhancing the performance of ventures funded through ECF platforms. First, our finding of a positive treatment effect of BAs on venture post-campaign performance is particularly useful for entrepreneurs and ECF platform managers, as it highlights the value of attracting professional investors who can potentially

contribute expertise, advice, and industry and financial connections—resources critical for long-term success. Moreover, our findings reveal that BAs often go beyond passive financial support, providing active post-campaign involvement that can positively impact a venture's performance. By recognizing BAs' active role, entrepreneurs can strategically seek out investors who bring both capital and hands-on support, while platform managers might develop tools or services to foster these beneficial post-campaign relationships. Our insights suggest that platform managers can position ECF as a unique investment tool for professional investors, potentially increasing their engagement and repeat investment.

The structure of this article is as follows: Section 2 discusses past literature and presents our research hypotheses. Section 3 describes the data and methodology used. Section 4 outlines the empirical results, and Section 5 discusses the implications of our results for theory and practice and suggests future research directions.

2. Literature review and hypotheses

2.1 BAs and crowdfunding

BAs are private individuals, who invest their own money in young promising entrepreneurial ventures in which they have no family connections, to gain a financial return (Mason and Harrison, 2002; Mason, 2006). They are experienced investors possessing prior entrepreneurial or managerial expertise, and an extensive personal network of professional contacts (Cumming and Zhang, 2019). They are a diverse group of investors (Drover et al., 2017a) that varies on demographical and behavioral dimensions (Sørheim and Botelho, 2016). While most angels make individual investments, others invest via online (e.g., Angels Den, Syndicate Room) and offline networks (e.g., BANs, angel groups). ECF investing involves significant uncertainty arising from information asymmetry between entrepreneurs and investors, early-stage development of ventures, and limited face-to-face interactions with entrepreneurs, thus, the involvement of professional investors among the crowd, such as BAs, has been identified as a signal of venture quality. Two papers have

investigated how high-contribution pledges by angel-like investors influence the behavior of crowd investors. Hornuf and Schwienbacher (2018) find that single large investments of 5000€ or more during the past seven days have a positive and significant impact on the number of investments on the following day, as these high contributions may signal the participation of more sophisticated investors (e.g., business angels), triggering the participation of other investors in subsequent days. Wang et al. (2019) find that high-contribution pledges from angel-like investors, classified as the top 1% of investors based on the total amount pledged across all campaigns they participated in, significantly influence subsequent pledges by the crowd within the same campaign, resulting in a 6% increase. Moreover, these pledges have a higher significant positive impact on angel-like investors than on regular crowd investors, indicating that angels respond more favorably to signals from their peers than from regular crowd investors. This effect, however, is observed only in larger campaigns. In contrast, angel-like pledges in small campaigns do not change subsequent pledge behavior, suggesting that lower valued pledges are not perceived as effective signals of campaign quality. These studies examine the impact of angel-like investors on campaign dynamics, while in our work, we ask whether BAs are crucial for enhancing ECF ventures post campaign performance, exerting a positive treatment effect.

2.1. The effect of BAs' participation on venture post-campaign performance

One key challenge for BAs is to find a large deal flow of proposals, as they mainly use their personal network of contacts and direct referrals to source investment opportunities (Mason and Botelho, 2014; Sørheim and Botelho, 2016). Only recently, the growth of ECF platforms, which nowadays provide a wide range of early-stage investment opportunities, have attracted BAs (Wang et al., 2019; Wright et al., 2015).

Previous literature has shown the relevance of the value-added contribution provided by BAs for the success of invested ventures, such as survival, increase in revenues or profitability margins, and follow-on equity financing rounds (Kerr et al., 2014; Lerner et al., 2018; Levratto et al., 2018; Bonini

et al., 2019b; Cumming and Zhang, 2019). It is well documented the post-investment contribution provided by BAs alongside their monetary injection, including coaching, mentoring, sharing technical and financial knowledge as well as relationships with relevant stakeholders, among which suppliers, clients, and investors (e.g., Politis, 2008; Bonini et al., 2018; Croce et al., 2021; Bonnet et al., 2022; Botelho et al., 2023). Due to the greater expertise of BAs, stemming from their background as former entrepreneurs as well as their industry knowledge, one can reasonably anticipate a higher contribution by BAs to the performance of ECF ventures compared to ventures invested only by inexperienced crowd investors.

Thanks to their proved investing and technical expertise and, thus, superior screening capabilities, BAs' presence in the shareholder base may also serve as an endorsement of venture quality, providing trust among stakeholders, including potential customers, suppliers, and follow-on investors (Wallmeroth et al., 2018; Capizzi et al., 2022; Blaseg and Hornuf, 2023). This increased legitimacy attributed to the ECF venture can open doors to additional resources, partnerships, and opportunities that positively contribute to the post-campaign success. In fact, BAs have been found to foster subsequent investments from professional investors, such as VCs (Capizzi et al., 2022; Butticè et al., 2020). Therefore, the certification effect attributed to BAs may extend beyond the focal ECF campaign like prior work suggested (Wang et al., 2020), providing a form of validation also for subsequent equity rounds and contribute to post-campaign venture performance.

These considerations suggest the following hypothesis:

H1 Ventures that include BAs among their crowd investors are more likely to achieve higher post-campaign performance than those that include regular crowd investors only.

2.2. The effect of active BAs on venture post-campaign performance

The supposed value-adding contribution of BAs after the crowdfunding campaign relies on the fact that BAs are, at some extent, actively involved in ECF ventures after the investment, alternatively, if

BAs remained passive investors, any observed post-funding positive treatment effect should be attributed to their certification effect.

Similar to VCs, BAs are concerned with agency risks inherent in investing in ventures with limited information and high uncertainty. Consequently, BAs establish monitoring mechanisms tailored to these challenges, which, albeit less elaborate and formal compared to those of VCs, serve the same need of mitigating incentives for entrepreneurs and management teams to engage in opportunistic behavior (Bruton et al., 2010; Van Osnabrugge, 2000). To address agency issues, BAs predominantly employ active monitoring techniques, commonly referred to as "soft monitoring" (Bonini et al., 2019b; Croce et al., 2018). This approach relies less on complex contractual arrangements and more on direct engagement in ventures through frequent interactions with entrepreneurs, attendance at board meetings, offering of value-adding services and other control methods based on trust (Van Osnabrugge, 2000; Wiltbank and Boecker, 2007; Goldfarb et al., 2012). In this way, BAs support investees adopting various active behaviours, such as offering business insights, assuming advisory roles, fostering relationships or mentoring (Politis, 2008).

In the context of ECF, the fact that BAs invest systematically higher amounts than crowd investors (Wang et al., 2019; Hornuf et al., 2022b) provides them with strong incentives to exert active monitoring and support after the ECF investment. BAs, thanks to their relatively higher investment amount, typically assume voting rights which give them the possibility to participate to shareholders meetings – a privilege that is generally unavailable to regular crowd investors due to the lower capital invested resulting in the acquisition of non-voting shares. If exercised, these rights can foster a dynamic and trustworthy relationship with entrepreneurs, supporting strategic guidance in crucial corporate decisions that ultimately boost ventures future performance. In support of this view, Hornuf et al. (2022b) find that angel-like investors, i.e., crowd investors that contribute higher amounts than regular crowd investors, exhibit a larger local bias in their investments enabling them to monitor ECF ventures more effectively at a lower cost (Chen et al., 2010; Cumming & Dai, 2010), ultimately reducing ventures' likelihood of failure.

We expect that active BAs through their monitoring and, consequently, engagement in value-added support behaviours are more likely to positively impact the post-campaign performance of ECF ventures compared to BAs that assume a passive investment approach. Accordingly, we formulate our second hypothesis:

H2 Ventures that include active BAs among their crowd investors are more likely to achieve better post-campaign performance than those that include passive BAs only.

3. Methodology

3.1 Sample

We test our hypotheses in the context of equity crowdfunding in Italy. To perform our empirical analysis, we identified and collected data on 401 first successful ECF campaigns[3] launched on all the active Italian platforms (excluding real estate projects) from 2014 to 2020. These represent the entire population of Italian successful ECF campaigns. A campaign is considered successful if the capital pledged meets or exceeds the target amount set by the entrepreneur(s). We collected data on the equity offering from Telemaco, the telematic helpdesk service that the Italian Chambers of Commerce discloses to the public. We then gathered accounting information from Aida by Bureau van Dijk and information on entrepreneurial teams from LinkedIn and the crowdfunding campaign page. We discarded 55 campaigns for which Telemaco did not provide information on crowd investors, 6 campaigns without any physical people as investors, 29 campaigns with missing accounting data, 57 with missing information on the entrepreneurial teams, and 13 for which we could not retrieve the shareholder meetings data[4]. We obtained in this way a final sample of 242 campaigns (i.e., firms, as we focused on the first ECF campaign) with complete information about investors, financial statements and post-campaigns shareholders meetings participation, observed from foundation to the end of 2023.

[3] In case two or more campaigns were performed by the same company, we focused on the first one.
[4] We use shareholder meeting information to calculate our BA activism variable.

3.2 Variables

Dependent variables. To address our hypotheses, we resorted to several measures of ventures' post-campaign performance. *Second round* is a dummy variable equal to 1 in case the venture underwent a follow-on investment round after the first ECF campaign, 0 otherwise. We considered follow-on external equity rounds as VC rounds, BA rounds, and exit events (via acquisition or IPO) that happened after the closure of the first ECF campaign. 86 out of 242 companies did a successful follow-on round (52 through ECF, 25 through a VC or BA round, 9 through M&A). Second, to measure ventures' growth after the ECF campaign, we used three additional variables. *Mean total assets post ECF* is computed as the average value of total assets that the company had in the three-year period after the first ECF campaign; *Total assets post ECF* is equal to the value of total assets that the company had three years after the first ECF campaign; *Total assets growth post ECF* is equal to the difference between the natural logarithm of the value of total assets that the company had three years after the first ECF campaign and the natural logarithm of the value of total assets that the company had one year before the first ECF campaign.

Independent variables. Our main independent variable is *BA*, is a dummy variable equal to 1 if at least one crowd investor participating in a focal campaign is a BA, and 0 otherwise. Following Lodefalk & Andersson (2023), we identified BAs among crowd investors as former entrepreneurs with a successful exit in the five-year period preceding each ECF campaign. To do so, we downloaded from Orbis and Zephyr by Bureau van Dijk the information on the (co-)founders of companies owned by people resident in Italy or Italians resident abroad that did a successful exit (IPO, M&A) between 2009 and 2020. We then matched these individuals with the crowd investors in our sample through fiscal codes. We also identified crowd investors as BAs if they were listed as members of the main Italian BA networks or groups (i.e., Angels4Impact, Angels for Women, Club degli Investitori, Doorway, Italian Angels for Growth, and Italian Business Angel Network). We draw this information

from angel networks' and groups' websites. To achieve this, we matched the names and surnames of our crowd investors with those of the BA networks/groups' members, followed by a manual verification using additional information (e.g., gender, age, city of residence) retrieved from the investors' short biographies on the BA networks/groups' websites and their LinkedIn profiles. To control for BA activism after the campaigns, we resorted to two mutually exclusive dummy variables: *BA active* and *BA passive*, both computed at the campaign level. First, we examined the distribution of BA participation in shareholder meetings post-campaign. A BA was classified as active if her participation in shareholder meetings exceeded the median of the distribution of the percentage of meetings attended by BAs across all campaigns (i.e., if they attended at least one shareholder meetings). Second, we assessed the distribution of active BAs for each campaign and defined a campaign as having active BAs if the number of active BAs exceeded the median of the distribution of active BAs across campaigns. Based on these criteria, *BA active* was assigned a value of 1 if at least one BA in the campaign met the activity criteria, and 0 otherwise. Conversely, *BA passive* was assigned a value of 1 if, although the campaign has BAs among crowd investors, no BA in the campaign met the activism criteria, and 0 otherwise[5].

Control variables. We included in our empirical models a diverse set of variables to control for possible confounders. First, we considered company-level variables including the size of the venture in the year before the campaign, measured with the natural logarithm of the total assets (*Total assets*), the natural logarithm of the company's age (*Age),* the ratio between tangible and total assets (*Tangibility Ratio*) and the ratio between total debt and total assets in the year before the campaign

[5] As robustness checks, in unreported estimates we computed alternative measures of BA activism. First, we reran our estimates classifying a BA as active if their participation in shareholder meetings exceeded the third quartile of the distribution of the percentage of meetings attended by BAs across all campaigns. We then assigned a value of 1 to the dummy *BA active* if at least one BA in the campaign met this revised activity criterion, and 0 otherwise. Second, we reran our estimates using the initial classification of BA activism but redefining *BA active* as 1 if the number of active BAs in a campaign exceeded the median of the distribution of active BAs across campaigns, and 0 otherwise. In both cases, *BA passive* was assigned a value of 1 if, although the campaign has BAs among crowd investors, no BA in the campaign met the activism criterion, and 0 otherwise. Results are similar to those reported in our main estimates.

(*Leverage Ratio*), where total debt is measured as the sum of current and noncurrent liabilities[6]. We also controlled if the firm was in Milan (main financial hub in Italy), with the dummy *Milan* (30% of the sample). All accounting variables are time-varying in panel models, while refer to the year before the ECF campaign in cross-sectional models. We also controlled for the pre-money valuation (in natural logarithm) obtained by each company at the first ECF campaign (*Pre-money valuation at ECF*)[7] to account for the company perceived value after the campaign. We then added a dummy (*Dummy Prior VC-BA rounds*) to control for the receipt of VC or BA financing before the launch of the crowdfunding campaign. This information has been obtained by integrating our dataset with VICO 6.0, a proprietary database developed at Politecnico di Milano containing the population of VC investments received by companies located in EU, UK and Israel between 1998 and 2021, and the Zephyr database by Bureau van Dijk. We also included in our analysis some controls regarding crowd investors. We measured the percentage of women participating in the campaign (*Percentage women investors*), the average age of crowd investors in the year of the campaign (*Average investors age*), and the average investment experience of the crowd investors, measured as the number of previous ECF campaigns where the investors participated up to the year of the focal campaign (*Average investors experience*). Regarding the entrepreneurial team, we controlled for the total number of founders (*Founders Number*), the working experience of the entrepreneurs, measured as the natural logarithm of the average number of years a focal company's entrepreneurs worked before the launch of the campaign (*Average founders experience*), and the presence of at least one serial entrepreneur among the team members, with the *Dummy Founders serial entrepreneurs*. Finally, we created a set of dummies controlling for the companies' industry, the campaigns' platform and the year in which each equity crowdfunding campaign was performed.

[6] Accounting variables and company age have been measured at the year before the campaigns in models based on cross section data, while they are time variant in models based on panel data. More information on the empirics are reported in Section 4.

[7] In unreported estimated, we controlled for total amount collected in the ECF campaign instead of the pre-money valuation, which provides similar results for our models.

3.3 Descriptive statistics

Table 1 reports the descriptive statistics of the dependent, independent and control variables, and the correlation matrix. The correlations are generally low, so multi-collinearity is unlikely to be an issue. BAs account for the 2.33% of the total number of individual crowd investors participating to the campaigns in our sample (14172 individuals), but invest in 53% of the campaigns. Among all the BAs in our sample, 46.2% are affiliated to at least one BAN, while the remaining 53.8% are individual BAs being former entrepreneurs with at least one successful exit in the five-year period preceding the focal ECF campaign. On average there are 1.2 BAs per campaign. Table 2 presents additional descriptive statistics on crowd investors. On average, BAs invest €10,018 per campaign (with a median investment of approximately €5,000), which is €6,744.11 more than the regular crowd. BAs are also older by an average of 7.51 years and participate in 2.43 more campaigns compared to regular crowd investors. All these differences are statistically significant ($p<0.01$). By comparing active BAs versus passive ones, our data show that active BAs (i.e., BAs that participated to at least one post campaign shareholders meetings for a given company) invest on average €13,489.17 more but participated in 4.09 fewer campaigns compared to passive BAs. These differences are again statistically significant compared to passive BAs (respectively, $p<0.01$ and $p<0.05$). Table 3 reports some statistics on campaigns distribution by region and year. Table 4a and 4b report descriptive statistics at the campaign level, while Table 4c shows comparisons between companies not invested by BAs and invested by BAs during the first ECF campaign. Specifically, companies invested by BAs during the first ECF campaign have on average a higher target capital ($p<0.1$), higher collected capital ($p<0.01$), higher pre-money valuation ($p<0.05$) and perform a higher number of second successful equity financing rounds ($p<0.01$) than companies not invested by BAs. Among the companies invested by BAs during the first ECF campaign, the ones invested by active BAs have on average a higher target capital ($p<0.01$), higher collected capital ($p<0.01$), similar pre-money valuation and again more second successful equity financing rounds ($p<0.01$) than companies invested by passive BAs.

[Insert Tables 1, 2, 3, 4a, 4b, and 4c about here]

4. Results

4.1 Effect of BAs, active BAs, passive BAs, individual BAs and BAN members on second successful external equity round

To test our hypotheses, we implemented the models presented in Tables 5. Table 5 reports four models whose dependent variable is the dummy *Second Round*. The results of a cross-section probit regression (Model I, Table 5) suggest that companies invested by BAs during their first ECF campaign are more likely to do a follow-on successful equity financing round compared to companies only invested by non-BA crowd investors. Hence, H1 is confirmed. We also implemented a panel semi-parametric Cox model (Cox, 1972) to estimate the effect of BAs on companies' probability of realizing a second round. The Cox model uses the timing of an event, i.e., the number of days passing from the ending of the first ECF investment until the date of the second round, to estimate a hazard risk function which gives for, any t, the probability of the second round happening at time t conditional to not being yet realized up to time t. Results are confirmed (Model III, Table 5). When we distinguish between active and passive BAs, the probit estimates show a positive and significant effect for both *BA active* and *BA passive*, although the size of the marginal effect of *BA active* is significantly bigger than the one of *BA passive* (Model II, Table 5) (chi2(1) = 6.97; p = 0.0083). Hence, H2 is confirmed. The Cox model shows similar results (Model IV, Table 5).

[Insert Tables 5 here]

4.3 Effect of BAs, active BAs, passive BAs on venture's growth

In Table 6a, we perform two OLS models on the average value of companies' total assets in the three-year period after the first ECF campaign (Table 6a, Models I and II), and the value of companies'

total assets exactly three years after the first ECF campaign (Table 6a, Models III and IV). These estimates show that *BA dummy* is positive and significantly related to post-campaign company's assets. When we disentangle active from passive BAs, we find a positive and significant effect for both *BA active* and *BA passive*, in line with our previous results. However, a F test (weakly) rejects the null hypotheses that the difference of the coefficients of *BA active* and *BA passive* is equal to 0, hence the two coefficients are statistically different from each other (F test results respectively for Model II, Table 6a and Model IV, Table 6a: $F(1,4) = 4.81$, $Prob > F = 0.0935$; $F(1,4) = 15.31$, $Prob > F = 0.0174$). In Table 6b, we perform a panel regression model on the total assets growth rate in the three-year period after the first ECF campaign. Results show that *BA* is positive and significantly related to post-campaign company's assets growth. Moreover, when we disentangle active from passive BAs, we find a positive and significant effect only for *BA active*, in line with our hypothesis and our previous results.

The evidence presented so far suggest a positive effect of the presence of BAs among crowd investors on companies' post campaign performances (measured alternatively as second successful equity round or assets' growth), confirming H1. Furthermore, effects in all our models are significant only or significantly bigger for companies characterized by the presence of active BAs compared to passive BAs only, thus providing support also for H2.

[Insert Tables 6a and 6b here]

4.4 Further evidence on BA activism

4.5 Robustness tests

4.5.1 Different types of follow-on rounds

In Table 7 we dug deeper into the type of follow-on successful equity financing round characterizing the companies in our sample. In particular, we implemented a cross-section multinomial logit distinguishing between three different company outcomes: remaining active without doing any

second round after the first ECF campaign (base outcome, 156 companies), doing another successful ECF campaign as second round (52 companies), receiving capital from VC/BA as second round or doing a successful exit (34 companies). The results suggest that being initially backed by BAs during the ECF campaign is positively and significantly associated with conducting a second successful ECF campaign. However, this involvement does not show a significant relationship with securing VC/BA rounds or achieving an exit through acquisition or IPO. When distinguishing between companies supported by active versus passive BAs, the positive effect of BA involvement is significant only for those with active BAs. Additionally, while the presence of active BAs is positively associated with securing VC/BA rounds, the effect is smaller in magnitude compared to its impact on the likelihood of a second ECF round. In additional analyses, available upon request, we ran a multinomial logit model based on the best outcome achieved by each firm, rather than focusing solely on the type of second round. For example, if a firm conducted a second ECF campaign but subsequently secured VC funding, we classified its outcome as receiving capital from VC/BA. The results align with those reported above, confirming the robustness of our findings.

[Insert Table 7 here]

4.6.2 Endogeneity

To control for the endogeneity of the *BA* dummy, we resorted to the instrumental variable approach. We used as instrumental variable the yearly level of the gross tax deduction for individuals investing in innovative Italian SMEs[8]. Tax incentives on private investments in startups are significantly correlated with BA investments, but they are unlikely to be correlated with companies' post-campaign ECF performances. Results of a two-step probit models on the second successful round provide qualitative similar results to our main models and are presented in the appendix in Table 8.

[8] The level of the gross tax deduction for individuals investing in innovative Italian SMEs was impacted by two policy shock, respectively in the end of 2017 (from 19% to 30%) and in the end of 2018 (from 30% to 40%). The deduction went back to 30% from 2020.

5. Discussion and conclusions

The emergence of ECF platforms presents an opportunity to address the early-stage funding gap, by catering to entrepreneurial ventures financial resources that institutional investors may be hesitant to support. These digital channels have increasingly attracted professional investors, such as BAs, alongside smaller unsophisticated ones. Prior literature on ECF post-campaign performance has shown that crowd investors exert, under some conditions, a positive impact on ECF ventures' post-campaign performance (e.g., Butticè et al., 2020; Hornuf et al., 2022a), yet there is a lack of evidence on the consequences of BAs' participation among the crowd on ECF ventures post-campaign performances. With our research we shed light on this gap. Consistent with extant literature, we identified BAs among crowd investors as former entrepreneurs with a successful exit in the five-year period preceding each ECF campaign, or as formally affiliated members to angel groups and networks. Employing a sample of 242 ECF successful campaigns, we find that ventures invested by BAs during their first ECF campaign are generally more likely to do a follow-on successful equity financing round (more specifically, a second ECF campaign) compared to companies invested by only non-BA crowd investors. Our results suggest that this effect is mainly driven by active BAs, i.e., BAs that actively engage with the company in the post-campaign phase. This suggests a treatment effect of BAs on companies invested via ECF. One could alternatively argue that BAs generate a certification effect, where their involvement signals the quality of the company, thus attracting subsequent investors. However, within the ECF context, the argument for a certification effect is weak. The visibility of the BA signal to regular crowd investors may be limited, as in crowdfunding the profile of investors often anonymous (Vismara, 2018). This limitation in visibility weakens the potential for a certification effect. Instead, certification effect in ECF is often inferred from high-contribution amounts (e.g., Wang et al., 2019), which are not exclusively provided by BAs[9]. Further

[9] In unreported estimates, we verify whether crowd investors that invest large equity amounts (i.e., top 75th, 90th, 95th percentile of campaign pledges) have a sizable effect on ventures post-investment performance. Our findings indicate that this is not the case.

evidence against the certification effect comes from comparing the results in the subsequent ECF versus subsequent VC-BA financing rounds. While we find a positive and significant correlation between BA presence and follow-on ECF rounds, the coefficient for BA presence in second VC-BA financing rounds is insignificant. This contrast is particularly meaningful because, in VC rounds, professional investors have more opportunities to conduct due diligence compared to crowd investors (e.g., of second ECF campaigns) and can access detailed information about the shareholder base. If BAs were indeed providing a certification effect, we would expect to observe this more clearly in VC rounds, where such signals are more visible. This further reinforces the argument that the effect observed in ECF is due to the active treatment effect of BAs rather than their role as certifiers. Another alternative explanation could be attributed to a networking or information flow effect, where BAs with central positions in investors' networks might leverage their connections to bring in additional investors for follow-on equity rounds. While centrality in a network does not directly correlate with involvement in shareholder meetings or engagement with companies in the post-campaign phase, BAs with more extensive networks can more easily access valuable market insights, which can enhance their likelihood to participate in shareholder meetings, as their influence and access to key information encourage greater involvement in decision-making processes. In the Appendix (Table 9), we include *BA centrality* as a control variable in our main model on the likelihood of performing a second external equity round. For each BA, we classified them as central if their eigenvector centrality (in the ECF network, computed up to the date of the focal campaign) normalized by year exceeded the median of the normalized centrality distribution in the sample; otherwise, they were classified as non-central. For each campaign, BA centrality was assigned a value of 1 if the number of central BAs in the focal campaign exceeded the median number of central BAs across the entire sample. The results show that adding *BA centrality* as a control variable does not lead to any significant changes in the model, further supporting our main hypothesized mechanism, i.e., BA involvement, rather than networking, is the key factor driving the observed effects.

Despite our further analysis and robustness checks, this study is not without limitations. Indeed, even if our main results remain valid after controlling for endogeneity of BA investment and using instrumental variables, we are not completely able to exclude a selection effect of BAs for ECF ventures, as we do not have a direct comparable counterfactual. In fact, the investor base exists by design only for successful ECF campaigns and not for unsuccessful ones. Nevertheless, the fact that active BAs have a stronger positive effect on subsequent equity rounds than passive BAs lend support to a more likely BA treatment effect rather than a selection mechanism. Moreover, we lack information regarding the specific motivations that drive BAs to participate in ECF campaigns. A research design based on a mix-method methodology that investigates the different motives of BAs to invest through ECF (that could be linked to different types of active engagement with ventures, e.g., strategic support, networking, sounding board, mentoring, etc.) could contribute to understand why BAs adopt specific investment practices after investment in ECF and their effect on post-campaign performance.

Despite these limitations, our study represents the first attempt in identifying BAs operating via ECF platforms and evaluating their effect on ventures post-campaign performance. First, our contribution lies in expanding the scarce research on BA investments conducted via ECF (e.g., Wang et al., 2019; Hornuf et al., 2022b), underscoring the role of professional investors operating within ECF channels. Additionally, our research adds to the existing body of literature concerning the post-campaign performance of ECF ventures. While prior work acknowledges the positive influence of successfully raising capital via ECF (e.g., Butticè et al., 2020; Butticè et al., 2021; Hornuf et al., 2022a, 2022b), this literature has, so far, disregarded the participation and impact of professional investors engaged on ECF platforms, attributing all potential advantages of a successful ECF campaign to the crowd, with only limited differentiation among types of crowd investors. Last, our BA identification strategy serves to gain insights in an otherwise opaque phenomenon due to limitations in data availability (Mason et al., 2016; Bonini and Capizzi, 2018). The detailed nature of our sample of crowd investors

improves our understanding of BAs' involvement in the ECF channel. This contributes to the sparse literature on the broader role of digital channels in angel investments (Antretter et al., 2020).

Our findings have important implications for practice, in particular for entrepreneurs and crowdfunding platforms. The positive role of BAs on venture performance emphasizes the value of attracting professional investors who bring crucial resources such as expertise, advice, and connections—factors essential for a venture's long-term success. Notably, BAs often go beyond simply providing financial support in ECF, actively engaging after the campaign to positively influence a venture's performance. Recognizing this active involvement, entrepreneurs can focus on securing investors who offer both capital and hands-on assistance. Platform managers, in turn, might develop tools or services to foster these beneficial post-campaign relationships. These insights also suggest that platform managers could promote ECF as a relevant investment channel for professional investors like BAs, potentially enhancing their participation and encouraging repeat investments.

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Table 1. Summary statistics and correlation matrix

Variables	Mean	St.D.	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Second round	0.364	0.482	0	1	1.000									
(2) Mean total assets post ECF (log)	6.565	1.167	3.483	9.882	0.274*	1.000								
(3) Total assets post ECF (log)	6.716	1.257	2.67	10.098	0.296*	0.937*	1.000							
(4) Total assets growth post ECF (log)	1.565	1.458	-2.577	8.152	0.191*	0.156*	0.329*	1.000						
(5) BA	0.533	0.5	0	1	0.198*	0.163*	0.154*	0.117	1.000					
(6) BA active	0.136	0.344	0	1	0.184*	0.195*	0.204*	0.116	0.380*	1.000				
(7) BA passive	0.397	0.49	0	1	0.071	0.025	0.007	0.034	0.748*	-0.330*	1.000			
(8) Pre-money valuation at ECF (log)	14.483	0.998	6.909	17.256	0.055	0.206*	0.089	-0.203*	-0.018	-0.030	0.003	1.000		
(9) Total crowd investors	69.719	78.418	1	697	0.123*	0.230*	0.238*	0.149*	0.469*	0.154*	0.368*	-0.036	1.000	
(10) Total asset (log)	5.448	1.385	0.984	9.402	0.134*	0.660*	0.469*	-0.683*	0.078*	0.093*	0.013	0.488*	0.115*	1.000
(11) Leverage ratio	0.094	0.189	0	0.921	0.000	0.144*	0.102	-0.096	-0.018	0.031	-0.040	0.063	-0.033	0.214*
(12) Tangibility ratio	0.671	0.245	0.002	1	0.068	0.003	0.020	0.087	0.074	0.090*	0.011	-0.093*	0.106*	-0.064
(13) Age (log)	1.252	0.637	0	3.466	0.010	0.330*	0.235*	-0.412*	-0.026	-0.011	-0.019	0.540*	-0.016	0.595*
(14) Dummy prior VC-BA rounds	0.045	0.209	0	1	0.167*	0.121*	0.120*	0.031	0.115*	0.207*	-0.031	-0.087*	0.140*	0.069
(15) Percentage women investors	0.1	0.08	0	0.462	-0.019	0.105*	0.034	-0.170*	-0.078*	0.021	-0.094*	0.594*	-0.113*	0.276*
(16) Average investors experience	2.945	2.913	0	21.333	-0.005	0.012	-0.045	-0.160*	0.028	-0.001	0.030	0.508*	-0.108*	0.166*
(17) Average investors age (log)	3.822	0.090	3.514	4.138	0.032	0.166*	0.064	-0.206*	-0.057	-0.034	-0.034	0.981*	-0.102*	0.451*
(18) Founders Number	1.744	0.773	1	5	0.081*	0.139*	0.056	-0.147*	-0.032	0.055	-0.072	0.797*	-0.035	0.348*
(19) Average founders experience	2.801	0.736	0	6.924	0.076*	0.234*	0.125*	-0.184*	-0.023	-0.026	-0.005	0.910*	-0.041	0.479*
(20) Dummy founders are serial entreprenerus	0.529	0.5	0	1	0.101*	0.117*	0.052	-0.129*	0.099*	0.088*	0.038	0.541*	0.035	0.250*
(21) Milan	0.31	0.463	0	1	-0.004	0.117*	0.133*	0.081	0.001	-0.029	0.021	0.021	0.025	0.057

Variables	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(11) Leverage ratio	1.000										
(12) Tangibility ratio	-0.068	1.000									
(13) Age (log)	0.163*	-0.092*	1.000								
(14) Dummy prior VC-BA rounds	0.031	-0.023	0.008	1.000							
(15) Percentage women investors	0.084*	-0.115*	0.327*	-0.066	1.000						
(16) Average investors experience	-0.030	-0.109*	0.270*	-0.037	0.267*	1.000					
(17) Average investors age	0.059	-0.089*	0.526*	-0.102*	0.623*	0.520*	1.000				
(18) Founders Number	-0.004	-0.043	0.392*	-0.068	0.505*	0.390*	0.789*	1.000			
(19) Average founders experience	0.073	-0.096*	0.514*	-0.072	0.568*	0.472*	0.916*	0.732*	1.000		
(20) Dummy founders are serial entreprenerus	0.014	-0.013	0.235*	-0.006	0.282*	0.278*	0.524*	0.528*	0.552*	1.000	
(21) Milan	0.032	-0.129*	-0.033	0.017	0.057	-0.023	0.015	-0.007	0.039	0.007	1.000

* *p<0.01*

Table 2. Descriptive statistics on crowd investors, statistical difference between means

	BA=1	BA=0	t-test on mean diff (p-value)	BA active=1	BA passive=1	t-test on mean diff (p-value)
Invested amount in ECF (EUR)	10,018.08	3,267.315	6,744.11***	21,201.75	7,712.575	13,489.17***
Total number of campaigns	8.02	5.59	2.43***	5.10	9.19	-4.09***
Age	51.17	43.66	7.51***	52.52	50.81	1.70
Gender (1=woman)	0.08	0.11	-0.03	0.13	0.07	0.07**

Table 3. Campaigns Distribution by Region and Year

Region	Freq.		Percent
	Non BA-backed	BA-backed	
Lombardia	46	48	38,84%
Emilia Romagna	7	15	9,09%
Piemonte	5	14	7,85%
Lazio	7	9	6,61%
Sicilia	0	6	2,48%
Toscana	5	6	4,55%
Veneto	5	6	4,55%
Friuli VG	1	5	2,48%
Puglia	6	5	4,55%
Liguria	1	4	2,07%
Trentino AA	5	4	3,72%
Calabria	1	2	1,24%
Abruzzo	1	1	0,83%
Basilicata	0	1	0,41%
Marche	9	1	4,13%
Molise	1	1	0,83%
Sardegna	7	1	3,31%
Campania	4	0	1,65%
Valle d'Aosta	1	0	0,41%
Umbria	1	0	0,41%
Total	**113**	**129**	**242**

Year	Freq.		Percent
	Non BA-backed	BA-backed	
2015	5	0	2,07%
2016	5	0	2,07%
2017	15	13	11,57%
2018	20	39	24,38%
2019	33	39	29,75%
2020	35	38	30,17%
Total	**113**	**129**	**242**

Table 4a. Descriptive statistics, subsample of companies *not* invested by BAs during the first ECF campaign.

	Obs	Mean	Std. Dev.	Min	Max
Target capital at ECF (EUR)	113	136870.17	172076.33	30000	1100000
Amount raised at ECF (EUR)	113	191798.75	165853.96	42000	1040085
Pre-money valuation at ECF (EUR)	113	2541223.7	3802429.5	124999.95	31194240
Company age at ECF	113	3.319	3.967	0	31
Second round dummy	113	.265	.444	0	1

Table 4b. Descriptive statistics, subsample of companies invested by BAs during the first ECF campaign.

	Obs	Mean	Std. Dev.	Min	Max
Target capital at ECF (EUR)	129	164326.05	140535.89	50000	750000
Amount raised at ECF (EUR)	129	380941.03	363998.87	72000	2660645
Pre-money valuation at ECF (EUR)	129	3454142.6	3669339	1000	23500000
Company age at ECF	129	3.225	2.392	0	17
Second round dummy	129	.45	.499	0	1

Table 4c. Descriptive statistics, statistical difference between means, companies invested by BAs during the first ECF campaign versus non BA-backed companies.

	BA=1	BA=0	t-test on mean diff (p-value)	BA active=1	BA passive=1	t-test on mean diff (p-value)
Target capital at ECF (EUR)	164,326	136,870.2	27,455.88*	239,225.2	138,579.5	100,645.7***
Amount raised at ECF (EUR	191,798.7	380,941	189,622.5***	543,882.6	324,929.9	218,952.7***
Pre-money valuation at ECF (EUR)	3,454,143	2,541,224	912,918.9**	4,149,052	3,215,268	933,784.2
Company age at ECF	3.225	3.319	-0.094	3.424	3.157	0.268
Second round dummy	0.450	0.266	0.184***	0.576	0.406	0.170**

Table 5. Results: Models on companies' post-campaign performances after the receipt of the first ECF round. Focus on second external equity round.

	Probit				Cox			
	Model I		**Model II**		**Model III**		**Model IV**	
BA	0.557***	(0.078)			0.841***	(0.214)		
BA active			1.000***	(0.100)			1.363***	(0.092)
BA passive			0.413***	(0.131)			0.716***	(0.218)
Pre-money valuation at ECF (log)	0.129	(0.125)	0.141	(0.116)	-0.086	(0.238)	-0.057	(0.214)
Total crowd investors	0.001	(0.002)	0.001	(0.002)	-0.001	(0.001)	-0.001	(0.001)
Total asset (log)	-0.093***	(0.021)	-0.111***	(0.024)	0.306*	(0.156)	0.269*	(0.157)
Leverage ratio	0.047	(0.292)	0.018	(0.278)	0.380	(0.395)	0.334	(0.433)
Tangibility ratio	0.161	(0.382)	0.058	(0.364)	0.492	(0.398)	0.407	(0.406)
Age (log)	-0.282*	(0.158)	-0.303**	(0.143)	-1.017***	(0.187)	-1.067***	(0.182)
Dummy prior VC-BA rounds	0.596	(0.401)	0.552	(0.407)	0.231	(0.592)	0.170	(0.597)
Percentage women investors	-0.888	(1.609)	-1.083	(1.652)	-1.848	(1.460)	-1.795	(1.426)
Average investors experience	-0.039	(0.029)	-0.041	(0.034)	0.015	(0.043)	0.011	(0.047)
Average investors age	-0.046***	(0.013)	-0.052***	(0.013)	-0.048**	(0.021)	-0.062**	(0.025)
Founders Number	0.049	(0.064)	0.003	(0.080)	-0.016	(0.119)	-0.078	(0.096)
Average founders experience	0.340**	(0.157)	0.361**	(0.172)	0.584**	(0.253)	0.642**	(0.295)
Dummy founders are serial entrepreneurs	0.019	(0.216)	-0.027	(0.186)	-0.094	(0.234)	-0.168	(0.200)
Milan	-0.033	(0.166)	-0.047	(0.165)	-0.059	(0.204)	-0.063	(0.206)
Year ECF dummies	YES		YES		YES		YES	
Industry dummies	YES		YES		YES		YES	
Platform dummies	YES		YES		YES		YES	
cons	-0.070	(1.897)	0.300	(1.926)				
Num. observations	242		242		981		981	
Pseudo R^2	0.119		0.132		0.061		0.065	
Log pseudolikelihood	-139.73		-137.66		-417.43		-415.67	

*** *p<0.01,* ** *p<0.05,* * *p<0.1*. Robust standard errors appear in parentheses.

Table 6a. Results: Models on companies' post-campaign performances after the receipt of the first ECF round. Focus on total assets' growth* – OLS

	OLS – Mean total assets post ECF				OLS – Total assets post ECF			
	Model I		**Model II**		**Model III**		**Model IV**	
BA	0.301***	(0.005)			0.312***	(0.039)		
BA active			0.503***	(0.080)			0.622***	(0.077)
BA passive			0.227***	(0.047)			0.199***	(0.037)
Pre-money valuation at ECF (log)	0.202***	(0.017)	0.210***	(0.017)	0.240***	(0.011)	0.252***	(0.023)
Total crowd investors	0.002	(0.002)	0.002	(0.002)	0.001	(0.002)	0.001	(0.002)
Total asset (log)	0.204*	(0.076)	0.201*	(0.073)	0.134	(0.070)	0.130	(0.064)
Leverage ratio	0.981	(0.486)	0.994*	(0.427)	1.136*	(0.530)	1.155*	(0.453)
Tangibility ratio	-0.073	(0.306)	-0.101	(0.272)	-0.020	(0.300)	-0.063	(0.253)
Age (log)	0.215	(0.122)	0.201	(0.123)	0.241	(0.148)	0.219	(0.151)
Dummy prior VC-BA rounds	0.303	(0.287)	0.304	(0.307)	0.160	(0.288)	0.162	(0.318)
Percentage women investors	-1.006	(1.038)	-1.139	(0.906)	-1.941	(1.026)	-2.145*	(0.858)
Average investors experience	-0.086***	(0.017)	-0.086***	(0.012)	-0.111***	(0.014)	-0.111***	(0.012)
Average investors age	-0.002	(0.037)	-0.004	(0.036)	-0.026	(0.044)	-0.030	(0.042)
Founders Number	0.135	(0.126)	0.107	(0.144)	0.168	(0.169)	0.124	(0.189)
Average founders experience	0.227	(0.129)	0.240	(0.139)	0.288	(0.183)	0.308	(0.198)
Dummy founders serial entrepreneurs	-0.032	(0.273)	-0.062	(0.286)	-0.084	(0.254)	-0.131	(0.264)
Milan	0.158	(0.164)	0.140	(0.169)	0.176	(0.222)	0.148	(0.221)
Year ECF dummies	YES		YES		YES		YES	
Industry dummies	YES		YES		YES		YES	
Platform dummies	YES		YES		YES		YES	
cons	2.193*	(0.556)	2.261*	(0.858)	3.387*	(1.430)	3.492*	(1.295)
Num. observations	142		142		142		142	
R-squared	0.486		0.490		0.405		0.413	

*** *p<0.01,* ** *p<0.05,* * *p<0.1*. Robust standard errors appear in parentheses.

Table 6b. Results: Models on companies' post-campaign performances after the receipt of the first ECF round. Focus on total assets' growth* – Panel

	Panel – Total assets Growth post ECF			
	Model I		**Model II**	
BA	0.271***	(0.061)		
BA active			0.708**	(0.294)
BA passive			0.097	(0.080)
Pre-money valuation at ECF (log)	0.019	(0.023)	0.023	(0.023)
Total crowd investors	0.003***	(0.001)	0.003***	(0.001)
Total asset (log)	-0.947***	(0.022)	-0.947***	(0.019)
Leverage ratio	0.183	(0.178)	0.173	(0.187)
Tangibility ratio	0.018	(0.133)	0.015	(0.130)
Age (log)	0.409***	(0.113)	0.408***	(0.105)
Dummy prior VC-BA rounds	0.047	(0.121)	0.002	(0.137)
Percentage women investors	-1.229***	(0.346)	-1.289***	(0.340)
Average investors experience	-0.044*	(0.022)	-0.044*	(0.023)
Average investors age	-0.009	(0.009)	-0.011	(0.009)
Founders Number	0.036	(0.124)	0.029	(0.127)
Average founders experience	0.156	(0.097)	0.163	(0.104)
Dummy founders serial entrepreneurs	-0.156*	(0.083)	-0.167*	(0.086)
Milan	0.385***	(0.129)	0.376***	(0.132)
Year ECF dummies	YES		YES	
Industry dummies	YES		YES	
Platform dummies	YES		YES	
cons	6.428***	(0.259)	6.007***	(0.183)
Num. observations	651		651	
Overall R-squared	0.530		0.544	

Table 7. Results: Models on companies' post-campaign performances after the receipt of the first ECF round. Multinomial logit focusing on second external equity round and distinguishing as second round among remaining active without doing any second round after ECF (base outcome), doing another ECF, receiving capital from VC/BA or doing a successful exit.

	Second ECF		VC/BA as second round, or Exit		Second ECF		VC/BA as second round, or Exit	
	Model I		Model II		Model III		Model IV	
BA	1.275***	(0.400)	0.463	(0.339)				
BA active					2.180***	(0.085)	1.216***	(0.368)
BA passive					0.955*	(0.505)	0.232	(0.351)
Pre-money valuation at ECF (log)	0.235	(0.229)	0.307	(0.448)	0.280	(0.239)	0.304	(0.415)
Total crowd investors	0.001	(0.003)	-0.000	(0.003)	0.000	(0.003)	-0.000	(0.004)
Total asset (log)	-0.359***	(0.121)	-0.071	(0.159)	-0.425***	(0.142)	-0.092	(0.152)
Leverage ratio	0.194	(0.943)	0.826	(1.298)	0.264	(0.950)	0.768	(1.220)
Tangibility ratio	2.372***	(0.476)	-0.842	(0.585)	2.240***	(0.521)	-1.072**	(0.495)
Age (log)	-0.706***	(0.213)	-0.198	(0.193)	-0.730***	(0.183)	-0.246	(0.196)
Dummy prior VC-BA rounds	-13.226***	(0.640)	1.483*	(0.877)	-13.352***	(0.727)	1.417	(0.876)
Percentage women investors	-1.144	(2.179)	-1.834	(5.731)	-1.667	(1.818)	-2.085	(5.495)
Average investors experience	-0.042	(0.064)	-0.042	(0.044)	-0.051	(0.064)	-0.042	(0.051)
Average investors age	-0.055	(0.051)	-0.128**	(0.055)	-0.072	(0.054)	-0.136**	(0.053)
Founders Number	-0.139	(0.234)	0.048	(0.174)	-0.270	(0.246)	-0.031	(0.194)
Average founders experience	0.921***	(0.309)	0.326	(0.456)	1.000***	(0.341)	0.354	(0.488)
Dummy founders serial entrepreneurs	-0.504	(0.405)	0.689	(0.649)	-0.618	(0.427)	0.610	(0.634)
Milan	-0.050	(0.352)	-0.069	(0.459)	-0.107	(0.338)	-0.062	(0.463)
Year ECF dummies	YES		YES		YES		YES	
Industry dummies	YES		YES		YES		YES	
Platform dummies	YES		YES		YES		YES	
cons	-3.536	(2.213)	-1.279	(6.144)	-2.815	(2.153)	-0.398	(5.696)
Num. observations	242				242			
R-squared	0.216				0.227			

**** p<0.01, ** p<0.05, * p<0.1.*

APPENDIX

Table 8. Endogeneity Robustness Check.

	First Stage (BA dummy as DV)		Probit on Second Round	
	Model I		**Model II**	
BA			1.533**	(0.716)
Tax Benefit	2.140**	(1.018)		
Pre-money valuation at ECF (log)	-0.033	(0.174)	0.111	(0.124)
Total crowd investors	0.890***	(0.199)	-0.058	(0.262)
Total asset (log)	0.090	(0.090)	-0.102	(0.149)
Leverage ratio	-0.460	(0.516)	0.192	(0.282)
Tangibility ratio	0.022	(0.398)	0.026	(0.217)
Age (log)	0.031	(0.131)	-0.279**	(0.138)
Dummy prior VC-BA rounds	0.538	(0.635)	0.446	(0.707)
Percentage women investors	0.246	(0.995)	-0.880	(0.913)
Average investors experience	0.058	(0.043)	-0.040	(0.028)
Average investors age	0.022	(0.028)	-0.043	(0.033)
Founders Number	-0.299**	(0.135)	0.109	(0.107)
Average founders experience	-0.134	(0.225)	0.315*	(0.164)
Dummy founders are serial entrepreneurs	0.487***	(0.139)	-0.109	(0.149)
Milan	0.203	(0.188)	-0.073	(0.100)
Year ECF dummies	YES		YES	
Industry dummies	YES		YES	
Platform dummies	YES		YES	
cons	-4.066**	(1.645)	-0.693	(1.284)
Num. observations	242			
Log pseudolikelihood	-240.24			

**** p<0.01, ** p<0.05, * p<0.1.*

Table 9. BA Centrality Robustness Check.

	Probit on Second Round			
	Model I		**Model II**	
BA	0.697***	(0.209)		
BA active			1.082***	
BA passive			0.516*	
BA central	-0.225	(0.247)	-0.157	(0.263)
Pre-money valuation at ECF (log)	0.130	(0.120)	0.141	(0.113)
Total crowd investors	0.001	(0.001)	0.001	(0.002)
Total asset (log)	-0.094***	(0.017)	-0.111***	(0.021)
Leverage ratio	0.057	(0.306)	0.024	(0.287)
Tangibility ratio	0.179	(0.418)	0.072	(0.398)
Age (log)	-0.281*	(0.154)	-0.302**	(0.140)
Dummy prior VC-BA rounds	0.616	(0.429)	0.566	(0.431)
Percentage women investors	-1.011	(1.530)	-1.163	(1.560)
Average investors experience	-0.035	(0.027)	-0.039	(0.031)
Average investors age	-0.046***	(0.012)	-0.052***	(0.013)
Founders Number	0.039	(0.070)	-0.002	(0.083)
Average founders experience	0.361**	(0.166)	0.375**	(0.177)
Dummy founders are serial entrepreneurs	0.023	(0.216)	-0.023	(0.183)
Milan	-0.020	(0.157)	-0.038	(0.154)
Year ECF dummies	YES		YES	
Industry dummies	YES		YES	
Platform dummies	YES		YES	
cons	-0.078	(1.876)	0.282	(1.942)
Num. observations	242		242	
Pseudo R^2	0.121		0.133	
Log pseudolikelihood	-139.40		-137.50	

**** p<0.01, ** p<0.05, * p<0.1.*