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Does equity crowdfunding democratize entrepreneurial finance?

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Abstract

This paper investigates whether gender, age, ethnicity, and geography affect the choice of equity crowdfunding offerings vs initial public offerings (IPO) on traditional stock markets and whether these characteristics increase the likelihood of a successful offering. Using 167 equity offerings in Crowdcube and 99 equity offerings on London's Alternative Investment Market raising between £300,000 and £5m, we find that companies with younger top management team (TMT) members are both more likely to launch equity crowdfunding offerings than IPOs, and have higher chances to successfully complete an equity crowdfunding offering. Remotely located companies are more likely to launch equity crowdfunding offerings than IPOs and have higher chances to successfully complete an equity crowdfunding offering. On the contrary, female entrepreneurs do not have higher chances to raise funds in equity crowdfunding. Minority entrepreneurs do not have higher chances of successfully raising capital but do attract a higher number of investors. Overall, our evidence provides empirical guidance for the first time to the oft-repeated policy claim that equity crowdfunding democratizes entrepreneurial finance by providing access to funding to underrepresented groups of potential entrepreneurs.

Small Business Economics, forthcoming

1. Introduction

A growing interest in crowdfunding is shared by practitioners, policymakers, the media, and scholars alike. As a new and powerful tool for entrepreneurs, crowdfunding can help push the boundaries of existing theories and help develop new ones. In fact, new digital and information communication technologies (ICT) have transformed the nature of uncertainty inherent in entrepreneurial processes and outcomes as well as the ways of dealing with such uncertainty (Nambisan et al., 2017). ICT can indeed alleviate some of the problems of traditional entrepreneurial finance markets and solve market failure.

As a parallelism, we look at the impact of ICT on urban bike-sharing programs. Already in 1965, Provos released the White Bike Plan in Amsterdam. With no record of who checked out which bike, the plan failed a few weeks after as bikes were often stolen or damaged. After many other attempts, in 1995, a coin-deposit system was established in Copenhagen (Bycyken), with 2,000 distinguishable bicycles with docking stations. Nevertheless, the program was terminated due to frequent thefts and damages attributed customer anonymity. More recently, Shaheen et al. (2010) report that in 2009 bike-sharing programs were operating with 150,000 bikes in 125 (mostly European) cities. The estimates grow to over 1m bikes in 800 bike-sharing programs in 2014 (Campbell et al., 2016). In 2017, Beijing banned new shared bikes as riders can already access 2.5m. Currently, urban bike-sharing programs run station-less scan&ride systems with real-time monitoring of occupancy, credit scores, and penalties, that ultimately allows for selection of users. This parallelism shows that ICT has the potential to lower information asymmetries and alleviate market failure problems.

Similarly, ICT can reduce adverse selection and moral hazard problems in entrepreneurial finance. As far as the availability of finance is a critical element to entrepreneurship, understanding why some categories of individuals are underrepresented in entrepreneurship is a question of both academic and social interest. For instance, the paucity of ethnic entrepreneurs or the unequal access

between genders to the necessary resources to establish sustainable new ventures has received increasing media attention. To add to this debate, this paper investigates whether crowdfunding is as inclusive as often portrayed. The expectation is indeed that by replacing a small set of homogeneous experts with a diverse crowd, the significance of a founder's gender or race will decline. In particular, existing studies have found a more pronounced diversity in sophistication and experience among investors in equity crowdfunding relative to traditional equity offerings (Cumming et al., 2018).[1] While professional investors follow a market logic also when investing in crowdfunding, small, unsophisticated investors are found to consider community logic (Vismara, 2018b).

Clear associations between gender, ethnic or geographic disadvantage and funding are difficult to isolate given that exogenous variables intrude into the process of finance and performance in general. There is, in general, conflicting or scarce evidence regarding whether fundraising via crowdfunding platforms is actually easier for traditionally underrepresented groups. In particular, most of the existing studies focus on a specific aspect, such as gender or geography, in the context of reward-based crowdfunding. Equity-based crowdfunding is, however, intrinsically different from reward-based crowdfunding. While in equity crowdfunding, the proponent is by definition a company, reward-based campaigns are launched mostly by individuals. The motivations to bid for a reward are also likely to be different from those to invest in a company's equity. Coherently, Vismara (2016) finds that offering rewards to investors does not increase the probability of success of equity crowdfunding campaigns. The governance and organizational implications of the process of raising equity capital through crowdfunding are arguably different from those of pre-selling a product or a service in reward-based crowdfunding (Cumming et al., 2018). Consistently, prior

[1] While the majority of recent IPOs have been offered exclusively to institutional investors, crowdfunding investors are likely to be much more diverse. Over the last two decades, three quarters of the IPOs in Europe took place in secondary markets, such as London's Alternative Investment Market (AIM). Most of these IPOs were offered exclusively to institutional investors (Vismara, Paleari, & Ritter, 2012). Although institutional investors are being allocated the largest fraction of IPO shares (Aggarwal, Prabhala, & Puri, 2002), equity crowdfunding is likely to attract a much more diverse set of investors.

studies on minorities in crowdfunding are mainly based on consumer theory (e.g., Younkin and Kuppuswamy, 2017).

Crowdfunding platforms allow anyone to view projects posted online, allowing for a more heterogeneous population of backers. This results in a promising path to funding categories that typically find it difficult to deal with business angels or venture capitalists (VCs). Recent research has indeed shown that these private investors bid in equity crowdfunding (Signori and Vismara, 2018). The complementarity between crowdfunding and early-stage private equity makes it more appealing for entrepreneurs to launch a crowdfunding campaign, as the availability of professional investors will help in case low participation by small investors (Schwienbacher, 2018). In private equity, the deal is between the entrepreneur and a restricted number of providers of capital. Entrepreneurs can choose who they deal with and are able to negotiate the terms of the contract, including the price and amount of shares. In equity crowdfunding, instead, offerings are open to the public. Once the offering is listed on the crowdfunding platform, the price is fixed and the ownership structure is solely defined by investors' demand for shares. For this reason, we believe that traditional initial public offerings (IPOs) represent a more appropriate term of comparison for equity crowdfunding offerings than private equity deals. Interviews with practitioners support this contention. For instance, Marcus Stuttard, Head of AIM and UK Primary Markets at London Stock Exchange Group, has recently declared that both IPos and equity crowdfunding offerings "democratise how equity investments are made and make it easier for people to invest. Equity crowdfunding was the first step – and, after all, the stock market was one of the original forms of crowdfunding".[2]

While traditional private deals are limited to a relatively small group of private investors, equity crowdfunding allows issuers to broadly solicit and advertise their securities to the general public, thereby increasing the diversification of potential investors. Two decades ago, online auction IPOs

[2] https://www.syndicateroom.com/learn/investor-tools-reports/why-aim-needs-crowdfunding-an-interview-with-marcus-stuttard

were viewed as alternatives to the traditional book-building method of IPO underwriting (Ritter, 2013). However, despite being considered an efficient market mechanism to lower the costs of going public, the expectations of online auction IPOs were never realized. Only one investment bank, W.R. Hambrecht, has developed a platform for online public offerings, and only 20 companies in the US, most notably Google, have gone public this way, with the last occurring in 2007 (Ritter, 2013). Despite the unmatched expectations of democratization and disintermediation, IPOs in traditional stock markets are the closest term of comparison for equity crowdfunding offerings.

The present paper is among the first to empirically assess the potential of equity crowdfunding to finance underrepresented categories of entrepreneurs. Specifically, we believe that democratization in entrepreneurial finance should be investigated along four dimensions, namely geography, age, gender, and ethnicity biases. If equity crowdfunding is effectively democratizing access to funding, it should provide means of financing to these four categories which are typically referred to as financially constrained. This paper, therefore, investigates the democratization potential of equity crowdfunding from a broader perspective then previous studies. Most importantly, this paper integrates the analysis of the determinants of success of the offerings with a first-stage investigation of the self-selection into equity crowdfunding. We compare a sample of 167 equity offerings in Crowdcube, the world largest equity crowdfunding platform, with 99 IPOs on the loosely regulated London's Alternative Investment Market (AIM). These two samples were identified by including only offerings in Crowdcube or on the AIM between 2013 and 2016, raising more than £300,000 and less than £5 million.

The paper is organized as follows. Section 2 reviews previous studies and present our hypotheses. Section 3 illustrates the research design. Econometric results are reported in Section 4, and conclusions are provided in Section 5.

2. Literature review and hypotheses

This paper is not the first to question whether crowdfunding democratizes access to finance, by investigating whether individuals discriminated by traditional financial institutions have more opportunities when targeting crowdfunding. Some previous studies have looked at specific individual characteristics of entrepreneurs such as gender and race (Catalini et al., 2016; Pope and Sydnor, 2011; Marom et al., 2016; Greenberg and Mollick, 2017; Younkin and Kuppuswamy, 2017). In this Section, we review the entrepreneurial finance literature with regard to four dimensions, namely gender, age, ethnicity, and geography.

2.1. Gender

Gender differences in capital markets do exist. Although there is no evidence of discrimination in terms of approval/turndown rates, few women apply for debt capital (Cavalluzzo et al. 2002) and they are charged a higher interest rate on their loans or have greater collateral requirements compared to men (Coleman 2000; Fabowale et al. 1995; Riding & Swift 1990). Gender skewness is more evident in accessing external equity, women receive a substantially smaller proportion of VC financing than men do. Part of the motivations points to gender differences in human capital, social capital or growth aspirations, or differences between men's and women's ventures (Carter & Rosa 1998). Women are less likely to have prior entrepreneurial or/and managerial experience and to participate in networks with high net worth individuals (Verheul & Thurik 2001). Stereotypically, masculine characteristics associated with leader emergence (Fagenson 1993) may attract VCs, as they expect a funded venture to grow rapidly in term of sales and profits. Additionally, male dominance among VCs and traditions related to investment in male-dominated industries (Greene et al. 2001) impact the gender bias in entrepreneurial finance. [3]

[3] Brush et al. (2004) document that although women own more than 30 percent of US businesses, they receive less than 5 percent of venture capital funds distributed annually. The angel market is predominantly comprised of male investors. Only about 10 percent of VCs and less than 15 percent of business angels are women. In addition, only 15% of women-led companies were successful in raising capital, as compared with 22% for male-led companies (Stengel, 2015).

Gender studies in crowdfunding see it as more democratic, at least relative to traditional seed investors such as business angels. In reward crowdfunding, females are more likely to successful raise capital than male founders, all else being equal. Marom et al. (2016) find that women make up about 35 percent of the project leaders and 44 percent of the investors on the Kickstarter platform. Using data from a laboratory experiment, Greenberg and Mollick (2017) document that women are more likely to succeed at a reward-based crowdfunding campaign and this effect primarily holds for female founders proposing technological projects. Radford (2016) uses data from DonorsChoose, a US-based crowdfunding website for public school teachers, to document that inequality only emerges after educators' identities were published. Deanonymization (teachers' identities were hidden until 2008) caused inequality to emerge across all types of gender difference. Using data from a Swedish crowdfunding platform, Mohammadi and Shafi (2018) find that female investors are more likely to invest in projects in which the proportion of male investors is higher.

Some of the arguments to support the above mentioned studies, however, apply more to reward-based crowdfunding than to equity crowdfunding. While men are guided by agentic goals, and therefore, focus more on the pursuit of personal achievement, women are guided by communal goals and put more emphasis on the development of interpersonal relationships (Carlson 1972). They also have stronger feelings than men about ethical issues concerning disclosure (Roxas & Stoneback 2004). The social role theory of leadership (Eagly et al. 1995) contends that female leaders are more likely to show concern for people, whereas male leaders are more likely to possess traits that reinforce competition. This line of thought is in line with the decision to donate or to bid small amounts of money to pledge rewards. The motivations to become costumers in reward-based crowdfunding are indeed likely more linked to ethical motivation than in entrepreneurial financial markets (Vismara, 2018a).

For this reason, the equity crowdfunding market offers a complementary perspective, at the crossroad between entrepreneurial and consumer finance. So far, the evidence is rather mixed. In a

study of the UK platform Crowdcube, Vismara et al. (2016) find that female investors in female-led businesses are twice those in male-led businesses. Using projects listed on German platforms, Prokop and Wang (2018) find that equity crowdfunding campaigns initiated by women attract fewer investors, as well as lower funding amounts than those initiated by men. In this study, we test whether female-led companies are more likely to launch equity crowdfunding offerings than IPOs and whether they have higher chances to successfully complete an equity crowdfunding offering.

Hypothesis 1a. Female-led companies are more likely to launch equity crowdfunding offerings than IPOs.

Hypothesis 1b. Female-led companies have higher chances to successfully complete an equity crowdfunding offering.

2.2. Age

Bill Gates founded Microsoft in 1975 at age nineteen. Just four years after the relevant state passed legislation lowering the age of contractual capacity from 21 to 18 (Manes and Andrews, 1993). More recently, Mark Zuckerberg co-founded Facebook at age nineteen. These two examples offer an idea of the importance of the young entrepreneurship, which has been so far underinvestigated. On one hand, entrepreneurial intention decrease with age, due to the increasing opportunity cost of time with age (Lévesque and Minniti 2006). On the other, entrepreneurial opportunities increase with age because of higher accumulated physical, social, and human capital (Lee and Vouchilas 2016). Coherently, entrepreneurial propensity is found to increase with age in some studies (Fairlie et al. 2016) but declining in others (Parker 2009). Zhang and Acs (2018) argue that the relationship between age and entrepreneurship depends on the type of entrepreneurship, as non-novice and novice entrepreneurs have significantly different skills, competencies, and information. They find

that entrepreneurial propensity of novice (versus non-novice) entrepreneurs has a U-shaped age trend dipping around age 60, while the propensity of full-time (versus part-time) declines since age 30s.

Studies on equity crowdfunding have so far neglected the role of the age of the proponents. On one hand, the experience of the founders might be perceived positively by external investors. In a quasi-equity crowdfunding context, Piva and Rossi-Lamastra (2017) find that entrepreneurs' entrepreneurial experience significantly contribute to entrepreneurs' success in equity crowdfunding. Nevertheless, crowdfunding has the potential to broaden the categories of individuals raising external equity also with regard to age. Schwartz (2015) argues that teens are well positioned to exploit this new opportunity, with the upshot being that securities crowdfunding may become an important way for youthful entrepreneurs. For these reasons, we hypothesize:

Hypothesis 2a. Companies with younger TMT members are more likely to launch equity crowdfunding offerings than IPOs.

Hypothesis 2b. Companies with younger TMT members have higher chances to successfully complete an equity crowdfunding offering.

2.3. Ethnicity

The role of ethnicity in entrepreneurship and the underrepresentation of minorities among the population of funded ventures (Aldrich and Waldinger, 1990) is the subject of increasing attention. Fairlie and Robb (2007) show that the availability of startup capital is conditioned by race. Similarly, the argument for gender bias, an explanation for this underrepresentation is that resource providers are biased against minority founders, thereby ascribing the bias also to pre-entry constraints. The theory of statistical discrimination (Arrow 1998) suggests that prospective

supporters use race as a proxy for unobserved traits that indicate the investment is more likely to fail (Morse, 2017). Alternately, taste-based discrimination (Becker 1957) implies that prospective supporters reject minority founders, irrespective of their qualifications, out of their own distaste for minorities more broadly.

Crowdfunding moves the locus of funding decisions away from a small pool of experts and spreads them out across a much broader population of potential contributors. While crowdfunding platforms presumably remove one of the primary causes of racial disparities in entrepreneurship (access to capital), recent studies indicate that minority founders continue to face significant bias even on these platforms. If, indeed, Herzenstein et al. (2008) find that P2P lenders are less influenced by racial stereotypes than are banks, racial bias is found by Pope and Sydnor (2011) in Prosper.com. Duarte et al. (2012) show that P2P lenders rely on impressionistic short-hand information such as prospects' appearance. Crowdfunding is indeed a context in which the race of the founder is readily apparent and easily identified by potential backers, making it more plausible that founder race influences backer behaviour. Younkin and Kuppuswamy (2017) find that minority founders face price discounts, rooted in an assumption that minority founders invest less time and have lesser aspirations. Using experimental data, Younkin and Kuppuswamy (2018) find that despite the promise of crowdfunding, prospective funders remain biased against African American founders. They explain these results using Becker's (1957) theory of consumer discrimination.

In this paper, we move from consumer theory to finance, to text for the first time the effect of ethnicity in equity crowdfunding.

Hypothesis 3. Companies with TMT members belonging to minorities have higher chances to successfully complete an equity crowdfunding offering.

2.4. Geography

The VC literature has frequently noted that the likelihood of investing in a venture decreases with geographic distance, because of, e.g., due diligence costs and ongoing monitoring efforts (see Sorenson and Stuart 2001). More broadly, finance literature shows that investors tend to prefer geographically close investment opportunities (see, e.g., French and Poterba 1991; Sulaeman (2014). The arguments for such preference, and related "home bias" are related to lower information asymmetries, better monitoring capabilities and lower associated costs (Coval and Moskowitz 2001). In crowdfunding, equal and close to zero cost access to portals should facilitate exposure, increase familiarity, and improve access to information about entrepreneurial projects for investors. Thus, geographic distance should largely cease to matter to investors. Coherently, policymakers have identified crowdfunding as a promising means to cost-effectively bridge geographic boundaries. They hope to at least partially eliminate distance-related economic frictions that are apparent in the early-stage VC market through these types of internet-based funding platforms (Lin and Viswanathan 2016). As asserted by Agrawal et al. (2011), the online platform seems indeed to reduce some distance-related economic frictions such as monitoring progress, providing input, and gathering information.

Equity crowdfunding is therefore expected to increase the opportunity of financing for remotely located and less connected individuals. Nevertheless, social connections tend to exist locally not just in physical space but also in social space. Afonso et al. (2014) demonstrate that personal interaction is a desirable ingredient in relationship banking. Social network connections between investors and entrepreneurs are found to valuable also in reward-based (Colombo et al., 2014; Polzin et al., 2018) and in equity crowdfunding (Vismara, 2016). Hence, needing real-world connections limits the scope of information advantages in the crowd. Moreover, challenges of investment protection might become an impediment when investing outside of the home country. Despite equity crowdfunding should overcome geographical barriers, the first evidence is that geographical proximity matters. Ordadini et al. (2011) find that investors in reward-based

crowdfunding are often located in the same geographical area as the proponent. Guenther et al. (2018) find that very few investors and companies are located in rural areas. Burtch et al. (2014) confirm that P2P lenders prefer culturally similar and geographically proximate borrowers.

There are therefore conflicting arguments about the geographical aspects of crowdfunding. However, if distance is not as important as before, as its online, this means that traditionally constraints business should "tap" this new opportunity. This means that, relative to traditional finance markets, equity crowdfunding should be more attractive for remotely located companies. For this reason, we hypothesize that:

Hypothesis 4a. Remotely located companies are more likely to launch equity crowdfunding offerings than IPOs.

Hypothesis 4b. Remotely located companies have higher chances to successfully complete an equity crowdfunding offering.

3. Research design

3.1. Sample

Given that our analysis aims, first, to compare the access to alternative sources of financing for young entrepreneurial ventures, namely crowdfunding and initial public offerings (IPOs), we need to set up a dataset comprising both types of offerings. In this respect, the UK market is a natural testing bed, given the presence of one of the most popular second markets for IPOs in the world, the AIM (Alternative Investment Market), as well as that of a well-developed platform for crowdfunding platform such as Crowdcube. Indeed, extant literature has largely discussed how the AIM is preferred by firms that do not meet the listing requirements of the prime market (Baker et al., 2002; Ritter et al., 2013; Vismara et al., 2012), and its popularity is largely due to flexible listing requirements. Crowdcube, on the other hand, is by far the largest equity crowdfunding platform in

the UK, which, is the largest equity crowdfunding market (Estrin et al., 2018)[4]. Established in 2011, Crowdcube is, as of February 2017, the world's largest platform, with £215 million successfully raised from more than 350,000 investors from over 100 countries. Extant literature has discussed how the regulation of equity crowdfunding in the UK is often put forward as an important ingredient of its development, so that it serves as a model for other legislations (Steinhoff, 2015), and how the specific regulatory framework provided by Crowdcube has allowed a lively participation of crowd as well as professional investors (Cumming et al., 2018). Moreover, the emergence and the optimal regulation of equity crowdfunding can be achieved only in the presence of developed alternative entrepreneurial finance markets (Hornuf and Schwienbacher, 2017). In summary, the contemporaneous existence of AIM and Crowdcube allows an analysis of the choice of sources of entrepreneurial financing.

Indeed, we have to take into consideration the fact that Crowdcube has been recently launched and that an IPO, even on an exchange-regulated market, provides costs that require a minimum investment scale. Therefore, in order to identify only those issues that were potentially the object of an offering on the AIM or on Crowdcube, we selected Crowdcube's and AIM's offerings that were placed between 2013 and 2016, raising more than £300,000 and less than £5 million. This procedure has lead us to identify a list of 167 equity offerings offered on Crowdcube and 99 IPOs on the AIM[5].

3.2. Model

[4] Crowdcube has raised more capital than all other competing platforms (AltFi.com, 2015). Different sources agree on the leading role of Crowdcube. Beauhurst names Crowdcube as the leading equity investor in 2015 and the most prolific investor in the e-commerce sector. Crowdsurfer estimates Crowdcube's share in the UK investment crowdfunding market in 2015 at 52%.

[5] The £300,000 lower boundary has been chosen in order to drop out a 1% share of extremely small IPOs on the AIM. The £5,000,000 upper boundary has been chosen in order to drop out a less than 1% share of extremely large crowdfunding campaigns. In between, we have a sample of 167 equity crowdfunding campaigns (out of our full sample of, 643 campaigns) and 99 IPOs on the AIM (out of the population of 224 IPOs), comparable in size. While we are aware that the two subsamples may not perfectly poolable, and this is why we try to control for as many variable as possible, when trying to collect such an amount of money, a venture has had the possibility to opt either for a crowdfunding campaign or for an IPO on the AIM, conditional on several variables. The goal of our first stage is indeed to try and identify how such contextual variables are correlated with the choice of financing mechanism.

Our analysis comes in two stages. In a first stage, we aim to disentangle whether the features traditionally linked to the limited availability of funding (gender, age, and regional remoteness), drive the choice of financing source towards crowdfunding, vis-à-vis IPOs on the AIM. This analysis aims to provide empirical support for hypotheses 1a, 2a, and 4a. In a second stage, we analyse whether the same determinants are correlated with the success of crowdfunding offerings (in terms of probability to reach the target, or in terms of number of investors). This stage aims to validate hypotheses 1b, 2b, 3 and 4b.

Indeed, the features increasing the likelihood to choose a crowdfunding offering versus an IPO on the AIM may be at the same time determinants of success. Therefore, we need to deal with a potential sample selection bias (Heckman, 1979), by estimating the two following system of equations[6]:

$$\begin{cases} Crowdfunding_i = Z_i'\gamma_1 + u_{1i} & [1] \\ Success_i = X_i'\beta_1 + \lambda_1 IMR + \varepsilon_{1i} & [2] \end{cases}$$

And:

$$\begin{cases} Crowdfunding_i = Z_i'\gamma_2 + u_{2i} & [3] \\ No.of\ investors_i = X_i'\beta_2 + \lambda_2 IMR + \varepsilon_{2i} & [4] \end{cases}$$

Where $Crowdfunding_i$ is a dummy variable equal to 1 for firms choosing a crowdfunding offering; $Success_i$ and $No.of\ investors_i$ are the dependent variables in the second stages; Z_i' and X_i' contain the observable determinants of the latent propensity to prefer a crowdfunding offering over a listing on the AIM, and of the dependent variables in the second stages, respectively; IMR is the inverse Mill's ratio proposed by Heckman, estimated out of the first stage and included in the second stage in order to account for the potential bias caused by the sample selection described

[6] Each system is a pair of equation, where the former is the selection equation and the latter the outcome equation. Following Heckman (1979) the two equations are estimated sequentially (first and second stage), in order to grant the correct estimation of the IMR's standard errors.

above. Given that this IMR accounts for the unobservable component in the decision to choose a crowdfunding initiative over a listing in the AIM, we are identifying this parameter as *Prone-to-Crowdfunding* in our regression setting[7].

The second stage measures the success of equity crowdfunding offerings. Therefore, we compare both successful and failed crowdfunding campaigns against only successful IPOs. This is done for two reasons. First, differently from what happens in the United States, IPOs are infrequently withdrawn in Europe (Ritter, 2003). In our sample period, less than 5% of the IPOs on the AIM have been withdrawn during the process. Second, while failing to reach the target capital in an equity crowdfunding offerings is due to an insufficient demand for shares, an IPO withdrawal can be a positive event, as IPOs are often withdrawn due to superior option for cashing out options for entrepreneurs (Boeh and Dunbar, 2013).

Given that the dependent variable in equation 2 is a dummy variable, the system composed by equation 1 and 2 is a probit model[8] with sample selection, and can be estimated according to Van de Ven and Van Pragg (1988). By contrast, the dependent variable in equation 4 is a count variable, such that the system composed by equation 3 and 4 is a count model, namely a negative binomial regression model, with sample selection, which can be estimated according to Terza (1998).

3.3. Variables

In the first stage of our analysis, the dependent variable is a dummy identifying crowdfunding initiatives in a sample comprising crowdfunding offerings and IPOs on the AIM. In the second

[7] Please consider that, following Heckman (1979), Z_i' should grant identification by an exclusion restriction, i.e. there should be at least one parameter excluded from X_i'. In our setting, the exclusion restriction is given by the presence in the first stage of industry dummies.

[8] In the case of binary dependent variable, it is common practice to use either Logit or Probit models, with preference for the one or the other often based on empirical issues. In our case, given that we need to implement a model with sample selection, we need to rely on the Heckman (1979) assumption that both error terms (in the selection and in the outcome equation) are normally distributed, in order to calculated and use the Inverse Mill's Ratio. This is why, in line with previous literature, we opt for a Probit, rather than a Logit model, for both our equations. This choice grants estimation feasibility according to Ven and Van Pragg (1988).

stage, limited to crowdfunding offerings, our analyses are performed with reference to two alternative measures of performance.

First, we investigate the determinants of *Success*, a dummy variable equal to 1 for successful offerings. Second, we look at investor participation in crowdfunding offerings. Our variable here is the *Number of investors* participating in the offering as an alternative dependent variable assessing the success in terms of investor participation.

In both stages, our goal is that of identifying the effects of characteristics typically associated with financial constraints. In order to test hypotheses 1a and 1b, we use *Female leadership*, a dummy variable equal to one when the majority of the members in the TMT are women[9]. We took several steps to code genders based on first names. We first algorithmically used the API of genderize.io. The algorithm returns the gender and a probability that a specific name-gender attribution (male or female) was correct. In a second step, a research assistant double-checked the accuracy of the codes and completed the missing variables, with additional help from the pictures displayed on the platform website. Hypotheses 2a and 2b are tested by including *Age* in our model, namely the average age of all members of the TMT, calculated at the end of 2016, the latest point in our sample. Hypothesis 3 is tested by using *Ethnical minority*, a dummy variable, equal to 1 if at least one member of the TMT is non-Caucasian[10]. To obtain such information, we had at least two separate raters visit the project webpage and examine the photo associated with the entrepreneurial team. *Ethnical minority* take the value 1 only if all raters agreed that one of the team members is non-Caucasian, as in Herzenstein et al. (2008). This approach captures the perceived identity of the founder irrespective of self-identification. We used a conservative measure, which requires full agreement. In cases of disagreement, the offerings were removed from the study. Last, Hypotheses

[9] The simple presence of women in the TMT is also tested in the robustness analysis, by replacing *Female leadership* with *Female presence*, a dummy variable equal to 1 for all offerings when at least one woman belongs to the TMT of the focal firm.

[10] This variable is not available for our sample of IPOs, and is therefore used only in the second stage analysis.

4a and 4b are tested by using *Metropolitan area*[11], a dummy variable, equal to 1 if the firm belongs to a metropolitan area, according to the Census 2011 classification (i.e. metropolitan areas of London, Birmingham, Manchester, Leeds-Bradford, Liverpool-Birkenhead, Newcastle, Sheffield, South Hampshire, Nottingham-Derby, and Glasgow).

To control for potential variation in the quality of the projects, we include in all our analyses a series of variables concerning the project and its proponents, collected through the presentation pages for each project made available by Crowdcube, and through the prospectus in the case of IPOs: *Equity offered* is the share of equity made available for the crowdfunding campaign, or for the offering on the AIM; *Target* is the amount bid for crowdfunding initiatives, and total proceeds for IPO offerings; *Firm Age* is the difference, in years, between the beginning of the crowdfunding campaign, or the offering on the AIM, and the foundation date; *TMT size* is the number of people in the top management team (TMT members are identified in the "team" section of each offering, as reported on the platform's portal); *Positive sales* is a dummy variable equal to 1 if the company has already reported positive sales at the campaign/IPO; *Patents* is a dummy variable equal to 1 if the company owns or is filing patents at the campaign/IPO; and *Population* refers to inhabitants in the NUTS-3[12] area where the firm is located. In order to grant the identification conditions required by Heckman (1979), the set of controls in the first stage is increased by the inclusion of industry dummies[13].

[11] In the robustness analysis, this variable is replaced with *GDP per capita* and *Unemployment rate*, both measured at the NUTS-3 level.

[12] The Classification of Territorial Units for Statistics (NUTS; French: Nomenclature des unités territoriales statistiques) is a geocode standard for referencing the subdivisions of countries for statistical purposes, developed and regulated by the European Union. For each EU member country, a hierarchy of three NUTS levels is established by Eurostat in agreement with each member state. In the UK, the NUTS-3 level refers to upper tier authorities and groups of unitary authorities and districts: there are 93 NUT-3 areas in England, 12 in Wales, 23 in Scotland and 5 in Northern Ireland.

[13] We make use of 9 dummies, according to the first digit (industry) of the ICB, the Industry Classification Benchmark, a taxonomy launched by Dow Jones and FTSE in 2005 and now owned solely by FTSE International. Notice that ICB is available from prospectuses for IPOs, while it has been manually identified for Crowdcube's campaign, based on the industry description available on the platform. We are aware that the set of industry dummies is likely to potentially affect the outcome of a crowdfunding campaign. Empirically, in our setting we tested for the excludability condition through the Hansen's J test. The joint null hypothesis of this test is that the instruments are valid instruments, i.e., excludable from the outcome equation, and the p value states the probability that the test statistic is zero, which would imply acceptance of the null hypothesis. Given that p is much greater than 10% in our case, we have evidence supporting our choice.

In Table 1, a summary of variable description is provided.

[INSERT SOMEWHERE HERE TABLE 1]

Table 2 provides descriptive statistics for all the variables employed in our analyses. Our sample is composed of 167 equity offerings on Crowdcube and 99 IPOs on the AIM, each of them raising more than £300,000 and less than £5 million, between 2013 and 2016. 48.5 of crowdfunding campaigns have been successful, with an average of 237.9 investors involved.

Descriptive statistics on the explanatory variables provide univariate evidence on the different attractiveness of crowdfunding and IPOs for financially constrained categories. No statistically significant difference is found for *Female leadership*, though when looking at *Female presence* one can notice how the vast majority of IPOs provides for at least one female member in the TMT (81.3%), differently from crowdfunding offering, where a woman is present in 52.1% of the campaigns. Crowdfunding offerings are preferred by younger teams, with an average age of 42, with respect to 46.2 average years of an IPO's TMT. Further, a large majority of IPOs are performed by firms located in metropolitan areas (57.2%), with respect to a limited 50.4% of crowdfunding campaigns. This corresponds to areas promoting crowdfunding offerings characterized by a smaller population, lower GDP per capita and lower unemployment rates, with respect to the average NUTS-3 are promoting an IPO. Last, crowdfunding offerings campaigns involve ethnical minorities in 16% of cases.

Indeed, crowdfunding and IPOs differ also under several perspectives which are controlled in our analysis. Crowdfunding offerings, on average, offer a smaller percentage of equity (15.7 vs. 33.3), are much smaller in size (£925,000 vs £2,312.1) and TMT size (3.5 vs. 5 members). Firms are similar in age and have reported positive sales in half of the cases both in crowdfunding (49.2%)

and IPOs (50.4), although crowdfunding firms have patented less often (19.7% of cases) than IPO counterparts (36.8%).

Correlations among all variables employed in this study are provided in Table A1 in the Appendix.

[INSERT SOMEWHERE HERE TABLE 2]

4. Results

Our analyses provide validation for our hypotheses with the two-stage models presented in equation 1-2 and 3-4. Hypotheses 1a, 2a, and 4a are tested in the first stage, while Hypotheses 1b, 2b, 3 and 4b in the second stages.

First-stage results are reported in the first column of Table 3[14]. We find evidence that crowdfunding initiatives are preferred by younger TMTs (the coefficient for *Age* is equal to -0.033, and statistically significant at a 5% level), and by firms out of metropolitan areas (the coefficient for *Metropolitan area* is equal to -0.874, significant at a 1% level, implies lower probability of crowdfunding for firms located in urban areas, with respect to rural/remote areas, and vice versa). No statistical significance is found with respect to *Female leadership*. Our results, therefore, provide support for Hypotheses 2a and 4a, while we do not have statistical evidence in support of Hypothesis 1a.

As far as control variables are concerned, we find confirmation of differences highlighted by descriptive statistics, in that crowdfunding initiatives are more likely in the case of smaller equity offered, smaller target, smaller TMT size, and smaller population for the NUTS-3 area of origin.

[14] A first stage is estimated for all second-stage equation presented. Given that results are qualitatively identical, and numerically extremely close, the first-stage equation is reported only once.

Models (2) to (6) in Table 3 reports our result on the determinants of success for the crowdfunding initiatives in our sample. Model (1) reports a baseline specification with all control variables. Models from (2) to (5) include a variable testing for the role of gender, age, ethnical minority and regional features, respectively, while Model (6) jointly test for the presence of all these characteristics. Our results show that female leadership and presence of ethnical minorities do not statistically impact on the success of crowdfunding offerings, while younger TMTs and campaigns from non-metropolitan areas are more likely to succeed (as provided by the negative sign of the *Metropolitan area* dummy). Results are confirmed both when separately assessed and when jointly tested, and provide support for Hypotheses 2b and 4b, while we do not have enough statistical evidence to confirm Hypotheses 1b, and 3.

As far as the control variables are concerned, we find confirmation of findings in previous literature in that both the share of equity offered and the target size reduce the probability of success. Interestingly, the coefficient for the inverse Mill's ratio, i.e. our measure of how *Prone to crowdfunding* is any offering, is negative and statistically significant in all models (either at 5 or 10%). In practise, those features increasing the likelihood to choose a crowdfunding offering over an IPO are negatively correlated to the probability of success.

[INSERT SOMEWHERE HERE TABLE 3]

In Table 4, we replicate the former analysis, after replacing *Success* with the *Number of investors* as an outcome dependent variable. Again, model (1) reports a baseline specification with all control variables, Models from (2) to (5) include a variable testing for the role of gender, age, ethnical minority and regional features, respectively, while Model (6) jointly test for the presence of all these characteristics. Results from the last Model show that *Age* is weakly significant in determining the number of participating investors, such that younger TMTs typically attract more

the crowd (coefficient=-0.007, significant at less than 10%). Also offerings with a presence of an *Ethnical minority* (coefficient=0.158, significant at less than 5%) and originated in non-metropolitan areas (coefficient of *Metropolitan area*=-0.216, significant at less than 5%) have higher likelihood to attract a high number of investors, while no statistically significant effect is found with respect to a *Female leadership*. These results are in support of Hypotheses 2b, 3 and 4b, while again we do not have enough statistical significance in support of Hypothesis 1b.

As far as controls are concerned, we find evidence that higher targets typically attract a larger number of investors, while we have weak evidence that a large TMT size reduces the number of investors. Our results also show how Positive Sales and Patents are interesting features in the eyes of investors. Interestingly, the coefficient of the IMR is positive and significant, such that features increasing the likelihood of a crowdfunding offering, over an IPO, are correlated to a larger number of participating investors. This result, interestingly, differs from what has been observed in the former table, highlighting that unobserved determinants of preference for crowdfunding over IPOs positively affect the attraction of investors, but have a (weak) negative impact on the probability to succeed. This may be due to a capability to attract a large number of small investors, i.e. by hype creation, while not necessarily attracting enough funds for the success of the campaign.

[INSERT SOMEWHERE HERE TABLE 4]

4.1. Robustness analysis

In this section, we provide robustness analysis with respect to the variables employed for testing our hypothesis. First, we test whether the presence of a woman (*Female presence*), rather than the leadership in the team, might have an impact in the choice of a crowdfunding initiative, and in the following success. Second, we replace our *Metropolitan area* dummy with variables measuring

specific features of the local area, such as the *GDP per capita* and the *Unemployment rate*. Last, our findings with regard to geography might indeed depend on some specificities of the United Kingdom. While we cannot rule out this possibility, we acknowledge that (1) distance might matters less in the UK than in other countries, and (2) the leading role of London as financial centre might condition our results. Third, we take into account the specificity of the UK geographical context, repeating our analysis either including dummy variables for the 9 NUT-2 regions in the UK[15] or dropping all observations for firms located in London.

All our robustness checks are reported in Table 5. Models A1-5 repeat our first stage when replacing *Female leadership* with *Female presence* (Model A1), *Metropolitan area* with *GDP per capita* (Model A2), *Metropolitan area* with *Unemployment rate* (Model A3), when including regional dummies (Model A4) and when dropping London offerings (Model A5). Results show that *Female presence* is negatively correlated to the probability to choose a crowdfunding initiative over an IPO. This is likely to be due to the larger TMT size of IPO firms, as well as to the greater attention to gender equality in official listing. *GDP per capita* and *Unemployment*, vice versa, are not correlated to the likelihood to prefer a crowdfunding offering, although the signs (negative for *GDP per capita* and positive for *Unemployment*) are coherent with the intuition that disadvantaged areas are more likely to give raise to crowdfunding initiatives.

Models B1-5 and C1-5 report the results of our second stages. Again, we replace *Female leadership* with *Female presence* (Models B1 and C1), *Metropolitan area* with *GDP per capita* (Models B2 and C2), and *Metropolitan area* with *Unemployment rate* (Models B3 and C3), when including regional dummies (Models B4 and C4) and when dropping London offerings (Models B5 and C5). Our results show that *Female presence* does not significantly impact on the success of a crowdfunding campaign, nor on the number of investors. As far as *GDP per capita* and

[15] There are 12 NUTS-1 statistical regions in the UK: Northern Ireland, Scotland, Wales, and 9 regions for England (North East; North West; Yorkshire and the Humber; East Midlands; West Midlands; East of England; Greater London; South East and South West). Greater London is the reference case. See footnote 10 for details on the NUTS classifications.

Unemployment rate are concerned, coefficients are weakly significant when analysing the *Number of investors*. Again, the signs support that disadvantaged areas (with lower *GDP per capita* and higher *Unemployment rate*) are more likely to generate a large participation of investors. Signs are coherent, but no statistical significance is found, with respect to the probability of success. Finally, when including regional dummies our results are qualitatively unchanged, while when removing London offerings, our findings are confirmed, with lower significance in a few cases, probably because of the smaller sample size.

[INSERT SOMEWHERE HERE TABLE 5]

5. Conclusions

Although a growing number of studies are exploring the nuances of crowdfunding and its various online platforms, research in this field is rapidly expanding (Block et al., 2018). The general expectation is that crowdfunding "democratizes" entrepreneurial finance, thereby increasing the possibility of underrepresented categories to raise finance. Gender, age, ethnicity, and geography are among the most important aspects that affect the capacity to gain access to external capital. This problem holds true for both debt and equity financing, where female, minorities and rural entrepreneurs may face discrimination from external funding sources. Despite such premises, our understanding of whether and how such characteristics of prospective entrepreneurs play in raising funds in equity crowdfunding is still missing.

This study offers a timely contribution to the growing stream of research seeking to unveil the possibilities of equity crowdfunding in facilitating entrepreneurship for those most vulnerable. First, we find that age matters in equity crowdfunding, as companies with younger TMT members are both more likely to launch equity crowdfunding offerings than IPOs, and have higher chances to

successfully complete an equity crowdfunding offering. This is a novel result in the crowdfunding literature. Second, we find evidence that equity crowdfunding alleviates some of the distance-related economic frictions between entrepreneurs and investors. Indeed, remotely located companies are more likely to launch equity crowdfunding offerings than IPOs and have higher chances to successfully complete an equity crowdfunding offering. On the contrary, female entrepreneurs, typically considered financially constrained in traditional entrepreneurial markets, do not have higher chances to raise funds in equity crowdfunding. Similarly, minority entrepreneurs do not have higher chances of successfully raising capital. Nevertheless, this type of entrepreneurs is associated with a higher number of investors. We interpret this evidence as a higher sensitivity to ethnicity from small investors, relative to professional investors. Equity crowdfunding offerings, indeed, attract small and professional investors alike. As these two types of investors have been found to have different investment preferences (Signori and Vismara, 2018), their attitude towards ethnicity is likely to be different. Future research might dig deeper in this direction, also leveraging the insights from institutional logics (Friedland and Alford, 1991). While professional investors might follow a market logic, small investors might also consider a community logic (Vismara, 2018b). This would explain why ethnic entrepreneurs attract a higher number of investors but are at the end not more likely to secure their target funding.

Future research might expand the assessment of the democratization potential of equity crowdfunding from the demand side (entrepreneurs) to the supply side (investors), thereby delivering a better understanding of the financial inclusion offered by disintermediated entrepreneurial finance. Relatedly, studies are needed with regard to the matching between entrepreneurs and investors. Research in entrepreneurship indicates that investors are attracted to entrepreneurs with whom they share similarities. For instance, co-ethnicity increases the likelihood that a VC firm invests in a company (Bengtsson and Hsu, 2015). The diverse backgrounds of participants in equity crowdfunding markets permit researchers greater nuance in studying the

influence of similarity attraction in funding decisions. While we have investigated democratization along four dimensions of constraints, other aspects are of interest. For instance, the socio-economic status or the religion of proponents have not been investigated yet. In a preliminary analysis of the videos used to present the offerings in our sample, we could not find any religious symbol. Beautiful people seem to attract more favorable peer-to-peer loans (Ravina, 2012). Given crowdfunding applications gain less publicity (and may be less face-to-face than other means of negotiating to obtain financing), could it democratize for less beautiful people?

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Table 1. Variable description

Dependent variables	
Success	Dummy variable equal to 1 for successfully funded offerings, 0 otherwise.
Number of investors	Number of investors in the offering.
Explanatory variables	
Female leadership	Dummy variable equal to 1 for firms with the CEO of the firms is a woman, 0 otherwise.
Age	Average age of TMT members.
Ethnical minority	Dummy variable equal to 1 if at least one TMT member if at least one member of the TMT is non-Caucasian
Metropolitan area	Dummy variable, equal to 1 if the firm belongs to a metropolitan area, according to the Census 2001 classification (i.e. metropolitan areas of London, Birmingham, Manchester, Leeds-Bradford, Liverpool-Birkenhead, Newcastle, Sheffield, South Hampshire, Nottingham-Derby and Glasgow)
Controls	
Equity offered	Percentage of equity offered.
Target	Amount bid for crowdfunding initiatives, and total proceeds for IPO offerings (natural logarithms are used in regression analyses).
Firm age	Difference, in years, between the beginning of the crowdfunding campaign, or the offering on the AIM, and the foundation date.
TMT size	Number of people in the top management team.
Positive sales	Dummy variable equal to 1 if the company has already reported positive sales at the campaign/IPO, 0 otherwise.
Patents	Dummy variable equal to 1 if the company owns or is filing patents at the campaign/IPO, 0 otherwise.
Population	Population in the NUTS-3 area where the firm is located (natural logarithms are used in regression analyses).
Additional controls in the selection process	
Industry dummies	Set of dummy variables controlling for industries according to the Industry Classification Benchmark (ICB).
Variables included in the robustness analysis	
Female presence	Dummy variable equal to 1 for firms with at least one woman in the TMT.
GDP per capita	GDP per capita in the NUTS-3 area where the firm is located (natural logarithms are used in regression analyses).
Unemployment rate	Unemployment rate in the NUTS-3 area where the firm is located.
NUTS-1 dummies	Set of dummy variables controlling for the 12 NUTS-1 statistical regions in the UK.

Table 2. Descriptive statistics. Mean, standard deviation, maximum and minimum values for all variables employed in the analysis, refereed to the sample of 167 equity offerings on Crowdcube and to the sample of 99 IPOs on the AIM raising more than £300,000 and less than £5 million between 2013 and 2016. The last column reports tests for difference in means (or proportions) between equity offerings on Crowdcube and AIM. ***, ** and * represent statistical significance, at 1%, 5% or 10%, respectively.

	Crowdcube				AIM				Difference in Means
	Mean	Std	Max	Min	Mean	Std	Max	Min	
Depedent variables									
Success (dummy, %)	48.5	50.1	1	0	-	-	-	-	-
Number of investors (No.)	237.9	325.8	2,209	3	-	-	-	-	-
Explanatory variables									
Female leadership (dummy, %)	31.2	46.4	1	0	36.8	48.2	1	0	5.6
Age (years)	42.0	9.8	72	20	46.2	9.0	79	25	4.2***
Ethnical minority (dummy, %)	16.0	36.9	1	0	-	-	-	-	-
Metropolitan area (dummy, %)	50.4	50.1	1	0	57.2	49.5	1	0	6.8*
Controls									
Equity offered (%)	15.7	8.30	54.3	2.3	33.3	23.3	89.1	9.0	17.6***
Target (000£)	925.0	530.5	3,990.0	300.0	2,312.1	1,392.8	5,000	300.0	1,387.1***
Firm age (years)	3.1	3.3	20	0	3.4	3.9	22	0	0.8
TMT size (No.)	3.5	1.4	7	1	5.0	1.5	12	2	1.5***
Positive sales (dummy, %)	49.2	45.6	1	0	50.4	50.1	1	0	0.8
Patents (dummy, %)	19.7	39.9	1	0	36.8	48.2	1	0	17.1***
Population (millions)	4.1	3.9	8.8	0.1	4.9	3.8	8.8	0.1	0.8**
Variables included in the robustness analysis									
Female presence (dummy, %)	52.1	50.1	1	0	81.3	39.0	1	0	29.2***
GDP per capita (000£)	58.0	24.5	86.4	24.9	61.7	24.8	86.4	24.9	3.7*
Unemployment rate (%)	4.8	1.1	7.2	2.7	5.1	10.9	7.2	2.7	0.3*

Table 3. Probability of success. The table reports the results of Probit models with a selection equation, i.e. a two-stage model. The first stage (selection equation) is a probit model on the likelihood to propose a crowdfunding offerings, vis-à-vis a public offering on the AIM, estimated on a sample of 167 offerings offered on Crowdcube and 99 IPOs on the AIM between 2013 and 2016. The identification condition is granted by the inclusion of Industry dummies in the regression specification. The first stage is reported only for the selection equation of Model (1). Results for all the other selection equations are qualitatively the same. The second stage is a probit model on the success of crowdfunding offerings, estimated on a sample of 167 equity offerings offered on Crowdcube, and including the Inverse Mills Ratio esatimated from the first model. Model (1) is our baseline specification. Model (2) adds Female leadership. Model (3) adds Age. Model (4) adds Ethnical minority. Model (5) adds Metropolitan area. Model (6) adds all variables included in Models (2-5). Robust standard errors in parentheses. ***, ** and * identify significance levels at less than 1, 5 and 10%, respectively.

	Crowdfunding	(1)	(2)	(3)	(4)	(5)	(6)
Female leadership	-0.416	-	0.602	-	-	-	0.572
	(0.269)		(0.498)				(0.462)
Age	-0.033**	-	-	-0.047***	-	-	-0.045***
	(0.013)			(0.017)			(0.016)
Ethnical minority	-	-	-	-	0.137	-	0.077
					(0.377)		(0.354)
Metropolitan area	0.874***	-	-	-	-	-0.532*	-0.480*
	(0.235)					(0.312)	(0.286)
Equity offered	-5.089***	-2.502	-2.857	-3.607**	-2.636	-3.011*	-4.230**
	(1.183)	(1.723)	(1.798)	(1.691)	(1.767)	(1.746)	(1.789)
Target	-0.498***	-1.133***	-1.180***	-1.246***	-1.141***	-1.177***	-1.300***
	(0.151)	(0.157)	(0.168)	(0.164)	(0.154)	(0.155)	(0.161)
Firm age	0.035	0.003	0.002	-0.003	0.005	-0.003	-0.009
	(0.046)	(0.042)	(0.041)	(0.042)	(0.042)	(0.042)	(0.042)
TMT size	-0.584***	-0.072	-0.010	-0.035	-0.067	-0.043	0.048
	(0.109)	(0.160)	(0.173)	(0.178)	(0.163)	(0.158)	(0.188)
Positive sales	0.266	0.093	0.044	0.051	0.095	0.037	0.031
	(0.275)	(0.299)	(0.302)	(0.309)	(0.300)	(0.299)	(0.312)
Patents	0.350	0.529	0.518	0.433	0.537	0.450	0.367
	(0.280)	(0.356)	(0.349)	(0.365)	(0.357)	(0.372)	(0.374)
Population	-0.335***	0.029	0.022	-0.027	0.023	0.182	0.113
	(0.092)	(0.098)	(0.098)	(0.101)	(0.100)	(0.167)	(0.168)
Prone to crowdfunding (IMR)	-	0.134	-0.975**	-0.985**	-0.991**	-0.906*	-0.993**
		(0.689)	(0.444)	(0.447)	(0.424)	(0.503)	(0.421)
Industry dummies	YES***	NO	NO	NO	NO	NO	NO
Constant	-13.553***	-14.209***	-12.410***	-13.617***	-16.150***	-15.231***	-13.553***
	(2.348)	(2.632)	(2.436)	(2.304)	(3.134)	(3.177)	(2.348)
Observations	266	167	167	167	167	167	167
Pseudo R-squared	0.73	0.32	0.34	0.43	0.39	0.42	0.48

Table 4. Number of investors. The table reports the results of Negative binomial regressions with a selection equation, i.e. a two-stage model. The first stage (selection equation) is a probit model on the likelihood to propose a crowdfunding offering, vis-à-vis a public offering on the AIM, estimated on a sample of 167 offerings offered on Crowdcube and 99 IPOs on the AIM between 2013 and 2016. The identification condition is granted by the inclusion of Size and Industry dummies in the regression specification. The first stage is not reported, as coefficients are in all cases qualitatively the same as in the model reported in Table 3, Model 1. The second stage is a negative binomial regression on the number of investors, estimated on a sample of 167 equity offerings offered on Crowdcube, and including the Inverse Mills Ratio estimated from the first model. Model (1) is our baseline specification. Model (2) adds Female leadership. Model (3) adds Age. Model (4) adds Ethnical minority. Model (5) adds Metropolitan area. Model (6) adds all variables included in Models (2-5). Robust standard errors in parentheses. ***, ** and * identify significance levels at less than 1, 5 and 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Female leadership	-	0.038	-	-	-	0.035
		(0.156)				(0.146)
Age	-	-	-0.008*	-	-	-0.007*
			(0.004)			(0.004)
Ethnical minority	-	-	-	0.149**	-	0.158**
				(0.068)		(0.076)
Metropolitan area	-	-	-	-	-0.273**	-0.216**
					(0.115)	(0.103)
Equity offered	-0.835*	-0.819	-0.836*	-0.684	-0.703	-0.519
	(0.492)	(0.507)	(0.492)	(0.501)	(0.473)	(0.488)
Target	0.546***	0.547***	0.546***	0.549***	0.553***	0.556***
	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)	(0.026)
Firm age	0.010	0.010	0.010	0.011	0.010	0.011
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
TMT size	-0.104**	-0.101*	-0.105**	-0.104**	-0.094*	-0.089*
	(0.051)	(0.055)	(0.050)	(0.051)	(0.049)	(0.052)
Positive sales	0.273***	0.270***	0.273***	0.281***	0.257***	0.262***
	(0.090)	(0.094)	(0.090)	(0.092)	(0.088)	(0.093)
Patents	0.229**	0.231**	0.229**	0.263***	0.205**	0.241***
	(0.098)	(0.098)	(0.097)	(0.092)	(0.097)	(0.093)
Population	-0.067**	-0.066**	-0.067**	-0.073***	-0.009	-0.011
	(0.026)	(0.026)	(0.027)	(0.026)	(0.038)	(0.036)
Prone to Crowdfunding (IMR)	0.457***	0.449***	0.457***	0.429***	0.432***	0.390***
	(0.150)	(0.155)	(0.150)	(0.144)	(0.154)	(0.151)
Constant	-0.014	-0.043	-0.025	0.001	-0.878	-0.943
	(0.491)	(0.501)	(0.549)	(0.485)	(0.640)	(0.648)
Observations	167	167	167	167	167	167
Pseudo R-squared	0.47	0.49	0.48	0.51	0.52	0.57

Table 5. Robustness analysis. The table reports the results of robustness analysis on the selection equation reported in the first column of Table 3 – Crowdfunding (Models A1-4), on the success equation reported in Table 3, Model 6 (Models B1-4) and on the investor equation reported in Table 4, Model 6 (Models C1-4). Models A1-4 are probit models on the likelihood to propose a crowdfunding offering, vis-à-vis a public offering on the AIM. The identification condition is granted by the inclusion of Industry dummies in the regression specification. Models B1-4 are probit models on the success of crowdfunding offerings, including the Inverse Mills Ratio estimated from the first model (Models A1-3, respectively). Models C1-4 are negative binomial regressions on the number of investors, and including the Inverse Mills Ratio estimated from the first model (not reported, but qualitatively equivalent to Models A1-3). In Models A1, B1 and C1, Female presence replaces Female leadership. In Models A2, B2 and C2, GDP per capita replaces Metropolitan area. In Models A3, B3 and C3, Unemployment replaces Metropolitan area. In Models A4, B4 and C4, we include also a set of dummy variables for the 12 NUTS-1 statistical regions. In Models A5, B5 and C5, offerings from London are dropped. The sample size is therefore given by 167 Crowdcube offerings and 99 AIM offerings between 2013 and 2016 in Models A1-A4; 100 offerings on Crowdcube and 59 offerings on the AIM in Model A5; 167 offerings on Crowdcube in Models B1-B4 and C1-C4; 100 offerings on Crowdcube in Models B5 and C5. Robust standard errors in parentheses. ***, ** and * identify significance levels at less than 1, 5 and 10%, respectively.

	(A1)	(A2)	(A3)	(A4)	(A5)	(B1)	(B2)	(B3)	(B4)	(B5)	(C1)	(C2)	(C3)	(C4)	(C5)
Female leadership	-	-0.331	-0.339	-0.384	-0.362	-	0.581	0.569	0.670	0.352	-	0.034	0.031	0.221	0.165
		(0.222)	(0.222)	(0.270)	(0.298)		(0.475)	(0.491)	(0.604)	(0.297)		(0.149)	(0.150)	(0.202)	(0.200)
Femaly presence	-0.969***	-	-	-	-	0.093	-	-	-	-	0.048	-	-	-	-
	(0.227)					(0.308)					(0.083)				
Age	-0.029**	-0.026**	-0.025**	-0.026**	-0.019*	-0.045***	-0.046***	-0.045***	-0.068***	-0.057***	-0.008**	0.009**	0.009**	-0.009**	-0.007*
	(0.012)	(0.012)	(0.012)	(0.013)	(0.012)	(0.016)	(0.017)	(0.017)	(0.023)	(0.022)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
Ethnical minority	-	-	-	-	-	0.084	0.061	0.068	0.051	0.058	0.157*	0.153*	0.144*	0.188*	0.133*
						(0.353)	(0.353)	(0.378)	(0.521)	(0.523)	(0.086)	(0.087)	(0.089)	(0.106)	(0.076)
Metropolitan area	-0.732***	-	-	-1.331***	-0.393*	-0.446*	-	-	-0.911*	-0.529*	-0.215*	-	-	-0.215*	-0.269**
	(0.231)			(0.390)	(0.218)	(0.243)			(0.490)	(0.294)	(0.113)			(0.118)	(0.105)
GDP per capita	-	-0.208	-	-	-	-	-0.107	-	-	-	-	-0.163*	-	-	-
		(0.398)					(0.581)					(0.068)			
Unemployment	-	-	-1.436	-	-	-	-	1.685	-	-	-	-	-3.615*	-	-
			(1.564)					(1.899)					(2.175)		
Equity offered	-5.361***	-4.513***	-4.423***	-5.721***	-3.644**	-4.031**	-3.897**	-3.978**	-8.612***	-9.127***	-0.503	-0.689	-0.671	-0.235	-0.352
	(1.126)	(1.113)	(1.099)	(1.144)	(1.601)	(1.753)	(1.766)	(1.797)	(3.341)	(2.900)	(0.488)	(0.527)	(0.509)	(0.624)	(0.582)
Target	-0.549***	-0.444***	-0.457***	-0.463***	-0.525**	-1.282***	-1.280***	-1.284***	-1.515***	-1.409***	0.559***	0.551***	0.548***	0.568***	0.546***
	(0.135)	(0.137)	(0.135)	(0.145)	(0.214)	(0.163)	(0.165)	(0.166)	(0.240)	(0.201)	(0.025)	(0.027)	(0.026)	(0.032)	(0.032)
Firm age	0.050	0.051	0.048	0.047	-0.001	-0.007	-0.005	-0.004	-0.013	-0.001	0.011	0.012	0.012	-0.001	-0.001
	(0.042)	(0.047)	(0.047)	(0.046)	(0.058)	(0.043)	(0.042)	(0.041)	(0.058)	(0.052)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)
TMT size	-0.424***	-0.585***	-0.583***	-0.629***	-0.565***	-0.013	0.026	0.019	0.196	0.044	-0.096**	-0.102*	-0.104*	-0.030	-0.092

	(0.101)	(0.103)	(0.104)	(0.108)	(0.151)	(0.170)	(0.191)	(0.191)	(0.206)	(0.199)	(0.049)	(0.053)	(0.055)	(0.077)	(0.070)
Positive sales	-0.027	-0.351	-0.351	-0.198	-0.288	0.016	0.002	0.004	0.561	0.290	0.268***	0.270***	0.281***	0.337***	0.317**
	(0.256)	(0.273)	(0.273)	(0.291)	(0.297)	(0.303)	(0.315)	(0.311)	(0.477)	(0.439)	(0.089)	(0.090)	(0.095)	(0.128)	(0.125)
Patents	-0.234	-0.330	-0.326	-0.497	-0.207	0.364	0.437	0.454	0.463	0.431	0.237***	-0.272***	0.261***	0.300**	0.266**
	(0.280)	(0.263)	(0.261)	(0.305)	(0.320)	(0.386)	(0.363)	(0.357)	(0.636)	(0.507)	(0.092)	(0.095)	(0.092)	(0.153)	(0.125)
Population	-0.345***	-0.265**	-0.111	-0.312***	-0.717***	0.104	0.001	-0.144	-0.392	-0.086	-0.009	-0.052	-0.049	0.015	-0.054
	(0.092)	(0.133)	(0.124)	(0.098)	(0.131)	(0.163)	(0.196)	(0.176)	(0.342)	(0.299)	(0.037)	(0.048)	(0.036)	(0.069)	(0.064)
Prone to Crowdfunding (IMR)	-	-	-	-	-	-0.796*	-0.790*	-0.782*	-1.100*	-0.945	0.390***	0.415***	0.428***	0.466**	0.397***
						(0.401)	(0.403)	(0.420)	(0.575)	(0.651)	(0.145)	(0.149)	(0.153)	(0.193)	(0.136)
Industry dummies	YES***	YES***	YES***	YES***	YES***	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
NUTS-1 dummies	NO	NO	NO	YES***	NO	NO	NO	NO	YES***	NO	NO	NO	NO	YES***	NO
Constant	14.896***	11.180***	12.015***	13.432***	20.724***	-14.710***	-12.304***	-12.255***	-10.134**	-13.836***	-1.003	0.416	-0.194	-1.521	-0.207
	(2.424)	(3.656)	(2.472)	(2.512)	(3.618)	(3.055)	(4.460)	(2.652)	(4.966)	(4.966)	(0.653)	(1.365)	(0.552)	(1.022)	(0.958)
Observations	266	266	266	266	159	167	167	167	167	100	167	167	167	167	100
Pseudo R-squared	0.74	0.70	0.71	0.79	0.77	0.49	0.47	0.47	0.58	0.56	0.56	0.52	0.54	0.64	0.63

Table A1. Correlation matrix. Correlation coefficients calculated on the sample of 167 equity offerings on Crowdcube, and 99 IPOs on the AIM raising more than £300,000 and less than £5 million between 2013 and 2016. Values for Success, Number of investors and Ethnical minorities refer only to crowdfunding offerings. * represents statistical significance at 5%.

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Success	1.000														
2	N. of investors	0.345*	1.000													
3	Female leadership	0.006	-0.058	1.000												
4	Age	-0.118*	-0.157*	0.017	1.000											
5	Ehnical minority	0.073	0.135*	0.082	-0.071	1.000										
6	Metropolitan area	-0.107*	-0.098*	0.062	-0.052	0.140*	1.000									
7	Equity offered	-0.084*	-0.057	0.075*	0.037	-0.146*	0.028	1.000								
8	Target	-0.278*	0.392*	0.107*	0.148*	0.097*	0.084	0.102*	1.000							
9	Firm Age	-0.058	-0.084*	-0.014	-0.019	-0.075*	-0.006	0.052	0.018	1.000						
10	TMT Size	0.274*	0.249*	-0.043	0.135*	0.079	-0.014	0.004	0.580*	-0.063	1.000					
11	Positive Sales	0.083*	0.131*	0.006	0.038	-0.029	0.048	0.020	0.047	0.161*	0.047	1.000				

12	Patents	0.051	0.080*	-0.012	0.004	0.113*	0.061	-0.027	0.008	-0.043	0.067	0.068	1.000			
13	Population	0.109*	-0.052	0.054	-0.028	0.145*	0.199*	-0.033	0.073	-0.036	0.082	-0.032	-0.024	1.000		
14	Female presence	-0.056	0.053	0.343	0.064	0.095	-0.004	0.029	0.026	-0.034	0.309	-0.035	0.047	0.022	1.000	
15	GDP per capita	-0.117*	-0.029	0.043	-0.002	0.144	0.121*	-0.020	0.068	-0.040	0.042	-0.029	-0.026	0.596*	0.043	1.000
16	Unemployment	0.113*	-0.033	0.031	-0.029	0.053	0.177*	-0.056	0.062	-0.021	0.059	-0.032	-0.012	0.632*	-0.013	0.461*