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What Factors are relevant for Success in UK Equity Crowdfunding?

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Abstract

Equity crowdfunding has been gaining more and more relevance as an alternative way for entrepreneurs to raise capital. This paper examines the impact of retained equity, business angel backing, grants and intellectual property rights on the success of equity crowdfunding. Using data from Crowdcube, one of the leading equity crowdfunding platforms in the world, we obtain 473 pitches within the period from March 2017 to February 2020. We apply three empirical methods to analyse our data set: logistic regression, multiple linear regression and negative binomial regression. By running univariate test and several regression analyses, we find that retained equity has a significantly negative impact on funding success; also, the support of business angels helps entrepreneurs to achieve a funding success. While winning grants is more likely to attract investors, there is no direct evidence associated with funding success. Furthermore, it turns out that intellectual property rights are not relevant for funding success. In an extension, we re-examine our analysis in the light of the Corona crisis by analysing 95 pitches from March to November 2020. We find no structural changes in relevance of the success factors.

Keywords Crowdfunding, Success Factors, Entrepreneurs, Business Angels, Corona-crisis, Fintech, Signalling

1. Introduction

In recent years, crowdfunding has become more and more prevalent as an alternative way for entrepreneurs to finance their businesses. This disruptive fintech trend allows smaller businesses, individuals and non-profit organizations to realize their ambitions, to light up their hopes and to make the world a better place. This is reflected in the rapid growth of the global crowdfunding market. The market size has reached \$10.2 billion in 2018 around the world and is expected to rise to \$28.8 billion by 2025 at compound annual growth rate of 16%.¹

Equity crowdfunding² has been considered more complicated than other types of crowdfunding. It is because the platforms need to conduct extensive due diligence, and investors would like to know the entrepreneurs and their businesses better in order to make their investment decision (Cumming & Dai 2010; Vismara 2018a). By taking advantage of web 2.0, equity crowdfunding offers an online marketplace for entrepreneurs to raise money from their personal network such as family and friends as well as a vast number of potential investors. Unlike traditional business angels and venture capital financing, equity crowdfunding provides almost anyone an opportunity to fund the business that they believe to strive. Meanwhile, investors are able to claim financial returns through the investment they made via equity crowdfunding. The whole model is beneficial for thousands of companies, especially start-ups to nurture their businesses. Consequently, equity crowdfunding is becoming more and more popular as an alternative financing method among small businesses and start-ups.

¹ QY Research Group (2019, May) Global Crowdfunding Market Size, Status and Forecast 2019-2025. Retrieved from: <https://www.marketresearch.com/QYResearch-Group-v3531/Global-Crowdfunding-Size-Status-Forecast-12411297/>

² Crowdfunding can be divided into four categories: donation-based crowdfunding, reward-based crowdfunding, lending crowdfunding and equity crowdfunding (Mollick 2014). During the early phases of crowdfunding, donations were the main source where capital came from. Due to the accelerated development of crowdfunding, more forms have shown up. Nowadays, the transaction volume is boosted by lending crowdfunding and equity crowdfunding, which both types are able to bring financial returns to lenders and investors.

Although more and more start-ups have successfully funded their businesses through equity crowdfunding, quite a few entrepreneurs fail to raise their desired amount. For many of them, it is their first time to present their business idea to the public. Instead of being motivated by the public, entrepreneurs may lose faith in their business plans and their reputation is partly damaged. Thus, it is vital for entrepreneurs to launch a successful campaign at the first attempt. This not only helps business owners to collect the desired amount of capital, but also inspires them to fully exploit the full potential. Consequently, it is important to figure out what factors may affect the outcome of online equity crowdfunding pitches.

In this study, we analyse pitches between March 2017 and November 2020 from Crowdcube, one of the largest UK equity crowdfunding platforms. We employ three empirical methods in our research: logistic regression, multiple linear regression and negative binomial regression. The success of pitches is measured in three ways. The first one is uses success dummy variables to represent whether the pitch has raised funds. The second one uses the percentage raised to show how much funds entrepreneurs have raised compared to their target. The last one is measured by the number of investors. We identify four success factors which are retained equity, business angel backing, winning grants and intellectual property rights. Moreover, we set a group of variables to control for the additional effect on the funding success.

The paper is structured as follows. In chapter 2 we briefly review the related literature and propose four hypotheses to be tested. Chapter 3 explains our data sample and empirical methods, followed by the analyses and results of each method in chapter 4. Chapter 5 extends the analysis to the potential impact of the Corona pandemic on our previously derived results. Finally, chapter 6 concludes our analyses and discusses the implications and limitations of our findings.

2. Literature Review and Research Hypotheses

According to the relevant literature, we identify four potential success factors: retained equity, business angel backing, grants, and intellectual property rights.

The theoretical framework of the analysis is signalling theory (Spence 1973; Spence 2002) which suggests that investors act on observable signals. This theory addresses the fundamental problem that there are information asymmetries between the individual transaction partners. On the one side, there is the agent or in this case, the entrepreneur, who knows all characteristics relevant to her business, such as the strength of the competition or the general prospects of success of the business idea. On the other side, there is the principal, or in this case the investor, who does not have this information. In the worst case, such a situation can lead to a market collapse (Akerlof 1970) – in this case no funding of the project. To overcome this problem, the informed side has to send signals to the uninformed side to let them know that they are a worthwhile partner. It is always important that these signals are credible – this is the case, for example, if they can only be sent out at a high cost that cannot be achieved by everyone in the same way (e.g. a high level of education). In this context, crowdfunding represents a special construct: there is one agent who wants to convince many principals (small investors) and therefore has to send out signals that have to be perceived well enough by as many potential investors as possible. For an overview of this issue see also Vismara (2018a). In line with this argument, signals provided by the investor that increase the probability of funding may be considered as success factors.

Previous literature has already analysed several success factors, which we briefly discuss in the following. In the context of crowdfunding, Mollick (2014) conducts an exploratory study collecting data from Kickstarter and examines what impact social capital, projects' quality and geography have on the success of campaigns in reward-based crowdfunding. He comes up with the conclusion that more social capital and better quality increase the probability of projects' success while geography may affect the success.

Ahlers et al. (2015) research signals entrepreneurs convey that affect equity crowdfunding investors. They find that better venture quality, i.e. human capital has a positive impact on the success of projects, whilst intellectual capital and social capital have nearly no influence on fully funded projects. Contrarily, the level of uncertainty significantly affects the outcome of projects in a negative way. The level of uncertainty is operationalized by less retained equity and lack of thorough information.

Vulkan et al. (2016) study equity crowdfunding in the U.K. and find that a few large investments by some investors and more investors at the beginning of equity crowdfunding campaign increase further investors' confidence and in turn increases the probability of funding success. This herding effect can be explained by the high level of uncertainty that induces new investors to follow leading investors' actions in order to lower the risk brought by information asymmetry. Moreover, equity crowdfunding may challenge business angels and venture capital financing in the foreseeable future since it is easier and takes less time in receiving capital.

Lukkarinen et al. (2016) derive four factors that lead to success in equity crowdfunding: campaign characteristics, such as funding target, duration, and minimum investment; networks, which refer to early funding from personal and social media networks; the products' target, i.e. whether it refers to B2B or B2C; and traditional venture capital and angel investment criteria. They find that traditional criteria of venture capital and angel investment have no significant correlation with the success of equity crowdfunding projects. However, networks play a role in achieving target funding and more understandable offerings tend to be more successful.

Ralcheva & Roosenboom (2016) explore the role of signals for facilitating equity crowdfunding success. They observe that business angel backing and receiving grants are convincing signals of quality to investors, which leads to an increased probability of equity crowdfunding success. These findings suggest that offline access to external finance via traditional investors or grants may facilitate online success in the equity crowdfunding market. They also find evidence that

intellectual property protection positively contributes to funding success. Contrary to the findings by Ahlers et al. (2015), retained equity has no influence on the campaigns' success.

While most research focuses on developed equity crowdfunding markets such as the United Kingdom, the United States and Finland, Li et al. (2018) provide evidence on factors contributing to successful crowdfunding in China. They examine investors' willingness, the financing efficiency and the herding effect. The first two models set campaigns' basic characteristics including project stage, team size, and number of evaluations as explanatory variables. They find that there is evidence that target amount, equity offered and the number of inquiries impact the probability of funding success. While higher target amount and more equity offered negatively influence the crowdfunding success, more inquiries increase the likelihood of being financed. Besides, an adequate amount of minimum investment allows more investors to take part in funding the campaign. In addition, the herding effect exists in the equity crowdfunding process.

This result of Li et al. (2018) are in line with Vulkan et al. (2016). In this paper's context, herding effect can be explained as more funding received on the first day of the campaign, more investors can be attracted during the later period. As a result, it is important for entrepreneurs to use their own network generating more effective financing as early as possible in order to achieve success.

Ralcheva & Roosenboom (2020) extend their 2016 research (Ralcheva & Roosenboom, 2016) on the factors related to equity crowdfunding. On the one hand, they attempt to identify factors influencing the success of equity crowdfunding. On the other hand, they aim at discovering how these factors have evolved over time and subsequently develop a forecast model to predict the funding success by taking time trends into consideration. The authors expand the determinants of success by adding former external financing, accelerator participation and the function of platforms. First, they find consistent evidence with previous literature that more retained equity and more human capital on the management team have a positive effect on the success of equity

crowdfunding. Both factors signal to investors that entrepreneurs have much confidence in their business. Second, former external financing and accelerator participation increase the probability of succeeding in equity crowdfunding. In addition, their forecasting model is applicable for both entrepreneurs and platforms.

Based on our literature review but also data availability, we use the drivers of funding success identified in extant literature as the basis for developing hypotheses for our study. As there is a high level of information asymmetry between entrepreneurs (principal) and investors (agents), the key problem is what signals should entrepreneurs convey to investors in order to improve investors' confidence and interest in pitches, which in turn, to increase the probability of succeeding in equity crowdfunding. Thus, we consider four different signals: retained equity, business angel backing, grant, and intellectual property rights.

Retained equity. Ahlers et al. (2015) use retained equity shares as one of the signals to measure whether entrepreneurs have confidence in their businesses. Vismara (2016) also finds empirical evidence that entrepreneurs who offer less equity to investors are more likely to achieve success in equity crowdfunding by attracting more potential backers. However, Ralcheva & Roosenboom (2016) do not support that factor.

The rationale behind retained equity is that it is usually costly to retain a large number of shares. If business owners do not expect substantial future cash flows, they would rather offer more equity to investors to diversify their risks, and also it is less costly, as fewer profits are lost. In contrast, it is very expensive for more profitable companies, so they will have less incentive to send out this signal. As entrepreneurs have superior knowledge and information about their own business than funders, retaining more equity can be observed as a positive signal of the development of companies and attract more investors, enhancing the probability of being succeed via equity crowdfunding. Thus, it is reasonable to assume that more retained equity kept by entrepreneurs have a positive impact on the equity crowdfunding success.

Hypothesis 1 The percentage of retained equity positively affects the likelihood of funding success.

Business angel backing. Business angels have professional knowledge and are experienced in investing in companies at early stage. They usually bear extremely high risks and expect high returns. Therefore, they are believed to be better at identifying high quality projects than small crowd investors. Most investors on equity crowdfunding platforms are unaccredited investors who lack experience. When facing important investment decisions, they tend follow leading investors such as business angels or the investors with large contributions.

As a result, business angel involvement in companies sends the crowd a strong positive signal that they believe these companies have the potential to stand out among other businesses (Elitzur & Gaviious 2003, Vismara 2018b, Ralcheva & Roosenboom 2016, Ralcheva & Roosenboom 2020).

This third party involvement is likely to be recognized by investors and reduces their concerns of the future development of the company, which in turn enhances the probability of equity crowdfunding success. This suggests that business angel involvement has a positive impact on the likelihood of fully funded pitches.

Hypothesis 2 Having support from business angels positively affects the likelihood of funding success.

Grants. External financing may also come from grants (usually offered by the government). Unlike business angel financing, grants are intended to accelerate innovation and foster entrepreneurship of ventures. Winning grants is extremely helpful to start-ups if bank loans or other alternative investments are not available. In addition, grants offer opportunities for conducting further research and development to continue realizing their ideas, especially for companies with advanced technology. Many high-tech companies were lacking early-stage

financing and receiving grants allowed them to continue their business. For example, Apple³, Arcis Biotechnology⁴ and Create Technologies⁵ have received government funding.

As grant applications go through a thorough and structured screening system by an expert jury, being awarded with a grant also certifies the quality of the firm (Lerner 2000). The highly competitive, time consuming and costly screening process discourages low-quality companies from application (Ralcheva & Roosenboom 2016). Consequently, winning a grant sends a clear positive signal to investors and reduces information asymmetry, thus encouraging investors to fund the equity crowdfunding campaign.

Hypothesis 3 Winning grants positively affects the likelihood of funding success.

Intellectual property rights. Patents send a number of signals to investors (Long 2002): The number of patents is considered a measure of the company's innovation ability and productivity (Griliches et al. 1987; Griliches 1990; Lanjouw 1998). Therefore, a company with more patents than industry average seems likely to be highly competitive.

Heeley et al. (2007) suggest that observable signals of innovation such as patents can provide more information about the company's value to reduce information asymmetry in initial public offerings. However, this only holds if there is a clear link between patents and the returns earned by patents. Hsu & Ziedonis (2013) find that a company with filed patents is more likely to attract financing resources to grow business as certified third party enhances its reputation.

Ralcheva & Roosenboom (2016) find solid evidence that the protection of intellectual property right has a positive impact on the equity crowdfunding success due to positive signals. Besides,

³ <https://hbr.org/2013/03/taxpayers-helped-apple-but-app>

⁴ <https://arcisbio.com/arcis-biotechnology-awarded-funding-under-innovate-uks-biocatalyst-programme/>

⁵ <https://gtr.ukri.org/organisation/FE3F9D22-5158-4B73-BA14-6836B8A0CCB2>

they suggest that the protection of intellectual property rights protects entrepreneurs from piracy and show entrepreneurs' determination and confidence in establishing a prosperous business.

Therefore, we consider the protection of intellectual property rights as one of our predictors or another third-party signal to estimate its impact on the equity crowdfunding success.

Hypothesis 4 Protecting intellectual property rights positively affects the likelihood of funding success.

3. Data and Methodology

The data studied in the analysis was gathered from Crowdcube, one of the largest equity crowdfunding platforms in the world. It was founded as the earliest crowdfunder platform in the U.K. in 2011 and has raised more than 725 million pounds to help over 810 pitches to successfully reach their funding target.⁶

Like many crowdfunding websites, Crowdcube chooses to operate the “all or nothing” model. This means that entrepreneurs will only receive the funding if the campaign reaches its funding goal. Otherwise, the investors' money will return to them. For each investment, investors will be charged 1.5% commission, starting from the minimum fee of £0.50 to maximum fee of £250.⁷ The lowest investment amount is £10, which needs to be the exact multiple of the share price. There will be a seven days cooling off period for backers to reconsider their pledge after the campaign is fully funded.

Business pitches will launch privately until entrepreneurs achieve a certain amount of funding. This amount is set by the campaign creators and Crowdcube campaign managers, which allows entrepreneurs to have enough time to guarantee the lead investment and use their own network

⁶ <https://www.crowdcube.com/explore/investing>

⁷ <https://help.crowdcube.com/hc/en-us/articles/360001527460-What-are-the-fees-for-investing-on-the-platform->

to raise capital. Afterwards, the pitch will provide 30 days for the public to make a pledge. During this time, creators are strongly encouraged to promote their campaigns themselves. There is no fee charged to list firms' campaigns. If the campaign is successfully financed, a 7% fee (excluding VAT) of the raised amount is paid to Crowdcube.

In order to be successfully funded on Crowdcube, it is essential for entrepreneurs to create a compelling pitch which contains a detailed business plan, an introduction video and financial documents. As being approved and regulated by the Financial Conduct Authority, Crowdcube is responsible for conducting due diligence on the company and review each pitch to make sure that all the information is authentic before the pitch reveals to the public. Entrepreneurs apply their campaigns with a fixed amount of target fund and percentage of shares. Some businesses not only provide equity but also rewards to investors. These shares can be divided into two types: Class A shares and Class B shares. While Class A shares offer investors votes and pre-emption rights, Class B shares provide no such rights to investors. Companies will also check if their business is eligible for the Enterprise Investment Scheme (EIS) and the Seed Enterprise Investment Scheme (SEIS). Both of them provide tax reliefs to individual investors to help businesses raise money.

For the first part of our study, we use the data of 473 pitches posted on Crowdcube from March 2017 to February 2020 (i.e. before the start of the Corona crisis) as our data sample, of which 92% were successfully funded. In line with Ralcheva & Roosenboom (2016) we consider the past three years. The data include the outcomes, characteristics and business plans of each pitch. Table 1 gives a more comprehensive description to illustrate all the variables used in the research.

Table 1. Variable Description

Variable	Description
<i>Pitch outcomes</i>	
Success	A dummy variable which is equal to 1 if the pitch is a success, and 0 if not.
Percentage raised (%)	The proportion of amount raised at the end of the pitch in funding target.
Amount raised (£)	The total amount of money raised at the end of the pitch.
Number of investors	The total number of investors at the end of the pitch.
Average pledge (£)	The money raised at the end of the pitch divided by total number of investors.
<i>Independent variables</i>	
Retained equity (%)	The amount of equity kept by entrepreneurs which equals to 1 minus equity offered.
Business angel backing	A dummy variable that equals to 1 if the company is financed by business angels or/and venture capitalists while equals to 0 if none of them supports the company.
Grant	A dummy variable that equals to 1 if the company has received a grant, and 0 if not.
Intellectual property right (IPR)	A dummy variable that equals to 1 if the company has already protected its intellectual property right, including copyright, trademarks, patents and so on while it equals to 0 if the company has no IPR.
<i>Control variables</i>	
Target amount (£)	The funding goal set by entrepreneurs for each pitch.
Pure equity	A dummy variable that equals to 1 if the pitch offers only equity without any reward, and 0 if not.
Only B shares	A dummy variable that equals to 1 if the pitch offers only Class B shares while it equals to 0 if it is the opposite.
No tax break	A dummy variable that equals to 1 if the pitch has no EIS or SEIS tax relief on shares, and 0 if not.
Age (in days)	The age of the company until the pitch funding date which is calculated in days.
First sale	A dummy variable that equals to 1 if the company has already closed its first deal, and 0 if not.
Award	A dummy variable that equals to 1 if the company itself and/or one of the founders or directors has won national/international awards, and 0 if none of them received the awards.
Advisors	A dummy variable that equals to 1 if the company has consulted professional advisors, has advisory board and has designated one or more non-executive directors, and 0 if the company does not have any of these.
Technology industry	A dummy variable that equals to 1 if the company is in the technology industry, and 0 if not.
Big city	A dummy variable that equals to 1 if the company is located in the following big cities: London, Edinburgh, Birmingham, Bristol, Leeds, Glasgow, Sheffield, Bradford, Liverpool, Manchester, Coventry, Leicester, Cardiff, Belfast, Nottingham, New York, Paris, Madrid, Barcelona, Los Angeles, San Francisco, Singapore, and 0 if not.

To determine whether the pitch is successful or not, we use success dummy variable as one of the dependent variables. Based on the “all or nothing” model, we consider it a success when funds reach to the target amount, otherwise it is a failure. Percentage raised is chosen to be an alternative dependent variable. It is more straightforward to look at the percentage raised of target amount to decide if the campaign is fully funded. Entrepreneurs are allowed to choose whether they want to continue the campaign after it reaches the goal. Under this circumstance,

overfunded, which the percentage raised value is above 100%, is possible for the pitch outcome. In addition, the goal of equity crowdfunding is not only raising enough money, but also testing the market and attracting more investors. As a result, we use number of investors to measure the pitch success as well. Table 2 indicates that over 92% of campaigns have achieved success in raising funds. The average percentage raised is 457.7% and the average number of investors is 698, which are both considered to be high values. Besides, the average pledge is £1,313 per investor.

Table 2. Descriptive Statistics

Variable	N	Mean	Min	Max	St. Dev.
<i>Pitch outcomes</i>					
Success	473	0.922	0	1	0.269
Percentage raised (%)	473	4.577	0	655	39.295
Amount raised (£)	473	771,216	0	26,200,000	1,553,227
Number of investors	473	697.928	27	35,899	1837.977
Average pledge (£)	473	1,313.550	0	17,128	1,399.134
<i>Independent variables</i>					
Retained equity (%)	473	0.874	0	1	0.085
Business angel backing	473	0.414	0	1	0.493
Grant	473	0.074	0	1	0.262
Intellectual property right (IPR)	473	0.949	0	1	0.220
<i>Control variables</i>					
Target amount (£)	473	516,637	10	22,000,000	1,415,445
Pure equity	473	0.199	0	1	0.399
Only B shares	473	0.059	0	1	0.236
No tax break	473	0.047	0	1	0.211
Age (in days)	473	1,531	8	6,860	1,163
First sale	473	0.996	0	1	0.065
Award	473	0.355	0	1	0.479
Advisors	473	0.421	0	1	0.494
Technology industry	473	0.264	0	1	0.441
Big city	473	0.571	0	1	0.495

The independent variables consist of retained equity, business angel backing dummy variable, grant dummy variable and intellectual property right dummy variable (IPR).

For retained equity variable, we collect equity offered to investors data from each campaign's main page on Crowdcube. From Table 2, we can see that entrepreneurs retain 87% equity to themselves on average, which means that there is 13% equity offered to investors on average. To estimate the impact of business angel backing variable, we examine whether the companies are backed by business angels or venture capitalists based on the contents they posted on

campaign pages or in company documents. Other than that, we also collect data from Crushbase, an American database focusing on providing information about companies to wealthy investors. In our data sample, there are more than 41% of companies that are financially supported by business angels or venture capitalists. For grant variable, we evaluate whether the companies have received grants from governments. For example, the Executive Agency for Small and Medium-size Enterprises (EASME) grant which manages four funding programmes, is set up by the European Commission. Another common grant observed in our data sample is Innovate UK funding. This grant belongs to UK Research and Innovation agency sponsored by Department of Business, Energy and Industrial Strategy. Among our sample, only about 35 (7.4%) companies had won a government grant. The last independent variable is intellectual property rights (IPR) measured by whether the companies have registered trademarks, filed for patents or protected copyright. About 95% of enterprises are aware of the importance of IPR for their businesses and have taken actions to protect it.

As there might be other factors contributing to the success of equity crowdfunding, we set up two groups of control variables to eliminate the omitted variable bias. The first group is campaign characteristics. According to Lukkarinen et al. (2016), campaign characteristics account for the outcome of campaign success. In their study, target amount, minimum investment, campaign duration and provision of financials are what they focus on. Among these variables, a larger amount of funding target might attract more investors, which may lead to the pitch success. Based on our data sample, only target amount is suitable for our study. As we can see from Table 2, our average target amount is £516,637, which is much higher than €88,400 (about £74,000) in Lukkarinen et al. (2016). Therefore, we control for the effect of target amount on the pitch success. Although equity crowdfunding is designed for offering equity to investors, extra reward might be more appealing to them. From Crowdcube pitch page, we can discover some companies provide award besides pure equity. Thus, it is logical that we control for pure equity as well. We then need to pay attention to the difference in the types of

equity. There are two main types of shares: Class A and Class B. As we mentioned above, Class A shares enable investors to vote and buy shares in preference while Class B shares have no such rights. If the pitch only offers Class B shares, investors are more likely to take additional risks without certain rights. As a result, we need to control for pitches that only sell B shares. Nearly 20% of campaigns provide pure equity without any reward and only 6% of campaigns offer B shares only. Another variable that we should control for is whether the pitch is eligible for the tax relief scheme (EIS or SEIS). Investors tend to fund the pitch if they are able to claim tax relief. Only about 23 campaigns (4.7%) do not offer tax relief.

The second group of control variables is company features. The first one to control for is the age of the company. It is likely that investors hold more confidence in companies that have existed for a longer period before the pitch. We measure this variable by calculating the days between founded date and the pitch funding date. Our average age is 1,531 days or 4 years and 2 months. The youngest company was founded 8 days before while the oldest company had existed for more than 18 years before the launch of pitches. The next dummy variable we need to consider is whether the company has closed the first deal before the pitch starts (first sale). It is used to represent for the stage of development in business. In general, companies that have completed their first sale are more likely to enter growth stage or already in the maturity stage, which may be more attractive to investors. Our sample shows that almost all companies (99.6%) had closed deals before raising money on Crowdcube.

Furthermore, investors tend to show more interest if the company or the founders have won national or international awards. Thus, we use the dummy variable “Award” to control for the effect on our outcomes. Almost 36% of companies satisfy our standard of winning awards. Since funders value the further development of the company more than individuals in equity crowdfunding, it may increase the probability if the corporation has hired an advisory board and non-executive directors, or consulted professional advisors. The dummy variable “Advisor” is used to estimate such effect. Less than half (42%) of the companies have appointed

advisors. In addition, industry and location of corporations also have various impact on the pitch outcomes. In our statistics, we control for two dummy variables “Technology industry” and “Big city” to explain the potential growth of business. About 26% of our sample belong to the technology industry while over half (57%) of companies are located in big cities to seek for growth opportunities.

Several previous studies analyse mean differences between successful and unsuccessful pitches to conduct a univariate test. For instance, Ahlers et al. (2015) apply mean differences to test their hypothesis and found out that less information of risk, lack of future prospect and more equity offered tend to lead to failure of equity crowdfunding. Ralcheva & Roosenboom (2016) use the same method to explore the relationship between different factors and the campaigns’ results. Their study shows that successful pitches share similar characteristics, such as being financed by business angel, intellectual property rights and receiving grants. Similarly, we compare the difference between means of fully-funded pitches and not fully-funded pitches to run a univariate test. Besides, we also run a hypothesis test for difference in means in order to determine whether the results are statistically significant. If the variances of fully-funded pitches and not fully-funded pitches are the same, we use two sample t-test, otherwise we run Welch’s t test for both groups.

In a next step, we apply regression analysis to discover the effects of potential causal variables and control variables on the pitch outcome. In line with Ralcheva & Roosenboom (2016), there are three empirical approaches we adopt in our research as well: logistic regression, multiple linear regression and negative binomial regression, which we briefly explain below.

The logistic regression model is used for dichotomous data. To be more specific, when the outcome can only take one of the two values indicating two different meanings, we use logistic regression to classify sample and give us the probability of each value. The model can work with both continuous and discrete variables and assess which independent variable explains the

dependent variable. Since we discuss how entrepreneurs can raise sufficient money via equity crowdfunding, we focus on the pitch success. Therefore, we discuss the probability of whether the pitch is fully-funded and what factor has influence on the success and how much influence it has by using logit model. We take success dummy variable as the response variable along with four independent variables (retained equity, business angel backing, grant and IPR) and control variables in the logistic regression.

Multiple linear regression is a widely used statistical method to discover the linear relationship between the explanatory variables and response variable. It extends the basis of ordinary least squares (OLS) regression by involving more than one independent variable. According to our dataset, percentage raised is appropriate to be the dependent variable in our multiple linear regression. It is another vital criterion to justify whether the pitch reaches its funding goal or not besides success dummy variable. If the value exceeds or equals 100 percent, we consider the campaign itself is a victory. If not, based on “all or nothing” principle, entrepreneurs will not raise any money via equity crowdfunding.

The negative binomial regression is an empirical regression that generalizes Poisson regression. The Poisson model is based on the assumption that the variance equals to the mean. However, in the real world, data may have greater variance or smaller variance than the mean. To avoid such overdispersion or underdispersion (usually it is overdispersion), we consider a more flexible model that is negative binomial regression. It is similar to multiple regression except for the response variable, which is a count variable following the negative binomial distribution. Thus, the variable to be explained needs to be an integer. In our case, it is suitable to use negative binomial regression to estimate the predictors' effect on number of investors. The number of investors is an integer on a given funded date. As we clarify above, a great value of this dependent variable indicates that the campaign attracts a large number of investors and raises a lot of funds, which is an alternative benchmark to measure the outcome of the campaign. As a result, we apply negative binomial regression to further explore the correlation between number

of investors and regressors in order to gain a better understanding of what factors lead to the sufficient funding.

4. Analysis and Results

Table 3 shows us the difference in means between successful and unsuccessful campaigns. The average percentage raised by successful campaigns is 497% of the funding goal while the average percentage raised of unsuccessful campaigns is only 94%. Comparing the average amount raised and number of backers, it seems that not fully-funded pitches raise more money than fully-funded ones and have more investors. However, the hypothesis test shows that this result is not statistically significant. Therefore, there is no solid evidence to support this claim. The mean of pledge per investor of successful pitches is £1,425, which is higher than £1,191 of unsuccessful pitches per investors. Again, the result is also not statistically significant for us to prove that investors tend to pledge more money to fully-funded pitches.

Regarding the independent variables, the entrepreneurs of successful pitches are more likely to offer more equity to funders instead of retaining more equity to themselves. Moreover, there are much fewer unsuccessful (2.7%) corporations having received grants than successful corporations (7.8%).

In respect of control variables, there is statistical evidence in difference in means of the age variable to indicate that companies of pitches, which reached their funding target, tend to be more experienced than those that failed as they are on average one year and 2 months older.

Thus, we can conclude that

- (1) fully-funded pitches raise a much higher percentage of their funding target than not fully-funded pitches,
- (2) there is less equity retained by business owners of fully-funded pitches than those of not fully-funded pitches,
- (3) there are more companies winning grants in the group of successful campaigns, and

(4) Companies with successful campaigns are usually older than those that fail in equity crowdfunding on Crowdcube.

(5) While finding (2) rejects hypothesis 1, finding (3) supports hypothesis 3. Unfortunately, we do not find any significant differences between the two groups with regard to the other two hypotheses. Here, the data rejects hypothesis 2 (business angel backing), as the group of unsuccessful companies experienced more support from business angels, but hypothesis 4 is supported, as successful companies have slightly more intellectual property rights.

Table 3. Difference in Means between Fully-funded Pitches and Not Fully-funded Pitches

Mean	Successful	Unsuccessful	Difference
<i>Pitch outcomes</i>			
Percentage raised (%)	496.489	94.432	-402.056**
Amount raised (£)	836,663	1,056,812	220,149
Number of investors	630.174	1496.324	866.150
Average pledge (£)	1,425.021	1,191.043	-233,979
<i>Independent variables</i>			
Retained equity (%)	87.031	91.702	4.671***
Business angel backing	0.413	0.432	0.020
Grant	0.078	0.027	-0.051*
Intellectual property right (IPR)	0.950	0.946	-0.004
<i>Control variables</i>			
Target amount (£)	468,217	1,087,202	618,985
Pure equity	0.200	0.189	-0.010
Only B shares	0.060	0.054	-0.006
No tax break	0.048	0.027	-0.021
Age (in days)	1564	1138	-426***
First sale	0.998	0.973	-0.025
Award	0.362	0.270	-0.092
Advisors	0.427	0.351	-0.075
Technology industry	0.255	0.378	0.124
Big city	0.569	0.595	0.026

Note: *, ** and *** indicate statistical significance at the level of 10%, 5% and 1%, respectively.

In a next step, we want to get deeper insights by running three regression analyses: Logistic regression, multiple linear regression and negative binomial regression. Each statistical method runs six models respectively. Model 1 in all approaches is used to test for the control variables only. Models 2 to 5 are to test each of our hypotheses separately whilst the last one combines all the independent variables and control variables. To reduce the bias that remains unchanged

over variables but differ across time, we introduce time fixed effects, also known as year effect to our models.

To begin with, we need to examine whether these variables have multicollinearity. As the correlation matrix in the appendix (Table A1) shows, all the values of correlation among explanatory variables are below 0.3, which stands for no problem of multicollinearity. Thus, it is safe for us to run the subsequent tests.

Logistic regression analysis. First, we apply logistic regression to estimate what factors have effect on the success dummy variable. Results are presented in Table 4. For explanatory variables model 2 to model 5, the marginal effect of retained equity is -0.899, which indicates that retained equity significantly decreases the probability of being successfully funded by 89.9% at the 1% significance level. Other than that, the marginal effect of business angel backing, grant and IPR dummy variables are not statistically significant. This means that these three factors have no influence on the success dummy variable. In line with model 2, retained equity in model 6 has a significant negative effect on the dependent variable by reducing the probability of achieve success in equity crowdfunding by 92.8%. This result is also at 1% significance level. For other independent variables, there is no significant evidence to prove that they are correlated with successful campaigns.

As for control variables, judging from the results from model 1 to model 6, pitches with higher target amount tend to be unsuccessful while older companies tend to reach their funding goal on the equity crowdfunding platform. As we can see from Table 4, target amount has a slightly negative effect while age has a slightly positive influence on the success variable. Outcomes of both variables are statistically significant and correspond with what we conclude from univariate tests.

Table 4. Logistic Regression Results

	Model 1: Success		Model 2: Success		Model 3: Success		Model 4: Success		Model 5: Success		Model 6: Success	
	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value	Marginal effect	z-value
<i>Independent variables</i>												
Retained equity (%)			-0.9	-3.21							-0.93	-3.15
Business angel backing Grant					-0.005	-0.18		0.063	0.9		0.061	0.91
IPR									-0.008	-0.15	0.023	0.51
<i>Control variables</i>												
Target amount	-1.35E-08***	-2.9	-9.65E-09**	-2.32	-1.34E-08***	-2.87	-1.33E-08***	-2.88	-1.35E-08***	0.004	-9.03E-09**	-2.18
Pure equity	0.016	0.47	0.03	0.89	0.016	0.47	0.013	0.38	0.016	0.634	0.028	0.83
Only B share	0.019	0.31	0.029	0.52	0.02	0.32	0.024	0.39	0.019	0.754	0.035	0.64
No tax break	0.051	0.71	0.079	1.26	0.052	0.71	0.045	0.62	0.052	0.479	0.082	1.32
Age in days	0.000**	2.41	0.000***	2.87	0.000**	2.35	0.000**	2.28	0.000**	0.016	0.000**	2.53
First sale	0.124	1.29	0.126	1.22	0.127	1.29	0.121	1.27	0.127	0.202	0.124	1.27
Award	0.022	0.75	0.026	0.98	0.022	0.77	0.02	0.67	0.022	0.446	0.026	0.96
Advisor	0.03	1.14	0.012	0.45	0.031	1.14	0.031	1.14	0.03	0.256	0.01	0.39
Tech industry	-0.032	-1.25	-0.033	-1.32	-0.031	-1.14	-0.035	-1.34	-0.032	0.213	-0.031	-1.16
Big city	0.002	0.07	-0.008	-0.31	0.002	0.09	0	0.01	0.002	0.944	-0.007	-0.27
Year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Number of observations	473		473		473		473		473		473	
Wald sq.	17.18		26.09**		17.2		20.08		17.21		28.6**	
Pseudo R ²	0.066		0.1382		0.0659		0.0696		0.0658		0.1436	

Notes: All models apply a logistic regression using robust standard error with the success dummy variable as the dependent variable. *, ** and *** indicate statistical significance at the level of 10%, 5% and 1%, respectively. The outcomes are robust with or without control variables.

Multiple linear regression. In a first step, we use natural logarithm to transform the variables.⁸

The rationale for this proceeding is as follows: First, it turns the unit change between predictors and response variable into percentage change, which fits our percentage raised variable better. Second, such transformation is able to turn the highly skewed variables into normal distributed variables. To eliminate heteroscedasticity, taking a log form is a good option. Thus, it is beneficial for us to use natural logarithm.

Table 5 shows the outcomes of the transformed multiple linear regression. As there are many zeros in the percentage raised variable because those pitches are not successful, we change the whole dataset by adding one to each variable before taking the natural logarithm. We apply natural logarithm to our continuous variables such as percentage raised, retained equity, target amount and age. For all the models in Table 5, the F statistics are statistically significant at 1% level, which demonstrates that we can reject the null hypothesis and the results of our models are significant.

First, we focus on predicted variables. In model 2, we can see that by every 1% increase in equity retained to entrepreneurs, percentage raised will significantly decrease by 1.2% assuming other independent variables remain constant. In model 3, if pitches are backed by business angels, the percentage raised will significantly increase by 25%. Besides, model 4 shows that for companies with grants, it is 20% more likely to reach their funding goal on equity crowdfunding platform (at 10% significance level). Nevertheless, there is no significant correlation between IPR protection and percentage raised. Finally, model 6 indicates that

⁸ Without the transformation, there is no statistically significant linear relationship between independent variables and dependent variables except for a positive correlation between business angel backing and percentage raised at the 10% significance level. This is caused by the nonconformity of our models. The F statistics of all six models are too small to reject the null hypothesis.

Table 5. Multiple Linear Regression Results

	Model 1: Success		Model 2: Success		Model 3: Success		Model 4: Success		Model 5: Success		Model 6: Success	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
<i>Independent variables</i>												
Retained equity (%)			-1.175*	-1.91							-1.132*	-1.79
Business angel backing					0.218***	3.54					0.206***	3.39
Grant							0.186*	1.81			0.150	1.53
IPR									0.090	1.11	0.061	0.87
<i>Control variables</i>												
Target amount	-0.242***	-3.34	-0.244***	-3.33	-0.254***	-3.67	-0.242***	-3.42	-0.242***	-3.35	-0.256***	-3.70
Pure equity	0.061	1.09	0.062	1.14	0.058	1.08	0.044	0.78	0.057	1.03	0.043	0.80
Only B share	0.430**	2.37	0.448**	2.48	0.393**	2.26	0.453**	2.47	0.427**	2.35	0.428**	2.45
No tax break	0.223**	2.56	0.231***	2.71	0.204**	2.38	0.200**	2.34	0.224***	2.58	0.194**	2.40
Age in days	0.138***	3.64	0.144***	3.81	0.119***	3.43	0.133***	3.67	0.139***	3.65	0.122***	3.64
First sale	0.264	0.72	0.250	0.66	0.138	0.38	0.252	0.69	0.227	0.67	0.096	0.27
Award	0.044	0.96	0.044	0.94	0.039	0.85	0.038	0.8	0.041	0.89	0.031	0.66
Advisor	0.065	1.21	0.057	1.08	0.065	1.23	0.063	1.17	0.069	1.27	0.058	1.12
Tech industry	0.038	0.61	0.042	0.67	-0.019	-0.31	0.029	0.48	0.036	0.58	-0.022	-0.37
Big city	0.091**	2.12	0.086**	2.01	0.065	1.59	0.087**	2.05	0.092**	2.13	0.059	1.45
Constant	1.338	1.29	2.058*	1.95	1.721*	1.67	1.255	1.25	1.252	1.27	2.267**	2.24
Year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Number of observations	473		473		473		473		473		473	
F stat	2.59***		2.76***		2.73***		2.51***		2.45***		2.67***	
Adjust R ²	0.277		0.285		0.306		0.282		0.276		0.317	

Notes: All models apply a transformed multiple linear regression using robust standard error with the log (percentage raised+1) variable as the dependent variable. *, ** and *** indicate statistical significance at the level of 10%, 5% and 1%, respectively. The results are robust with or without control variables.

percentage raised declines by 1.1% when 1% less equity offered to investors whilst business owners are able to raise extra 23% of the funding target when the business angels financed their companies. Both results are statistically significant at 1% level.

With respect to control variables, target amount has a negative effect on the percentage raised variable. To be more precise, for 1% increase in target amount, approximately 2.5% less entrepreneurs can raise for their pitches. We further take a look at “only B share” variable. We surprisingly find that if pitches only offer B shares, it is more likely that extra funds can be received regarding the target. Besides, if there is no tax relief, also entrepreneurs are more likely to raise additional money. Older companies more often succeed in equity crowdfunding than younger companies, which in accordance with the result of the univariate test. Investors seem to perceive young companies as riskier and less stable, so they are reluctant to bear the risk. This in turn affects the chance of getting enough funds. Companies located in big cities increase the probability of reaching their target, as there are more opportunities to boost their businesses in cities such as London, Bristol, Birmingham and Madrid.

Negative binomial regression analysis. The last empirical method used in our research is negative binomial regression. We use number of investors as our count dependent variable. The results are displayed in Table 6. As Wald Chi-Square test results are all statistically significant at the 1% level in all six models, we can reject the hypothesis that our explanatory variables need to be removed from the models.

Table 6. Negative Binomial Regression Results

	Model 1: Success		Model 2: Success		Model 3: Success		Model 4: Success		Model 5: Success		Model 6: Success	
	Coefficient	z-value	Coefficient	z-value	Coefficient	z-value	Coefficient	z-value	Coefficient	z-value	Coefficient	z-value
<i>Independent variables</i>												
Retained equity (%)			-0.234	-0.57							-0.198	-0.48
Business angel backing					0.265**	2.48					0.251**	2.35
Grant							0.254**	2.00			0.229*	1.76
IPR									0.304**	2.19	0.285**	2.28
<i>Control variables</i>												
Target amount	6.56E-07	1.62	6.61E-07	1.62	5.94E-07	1.45	6.52E-07	1.62	6.41E-07	1.58	5.84E-07	1.42
Pure equity	-0.188	-1.58	-0.188	-1.57	-0.207*	-1.68	-0.231*	-1.87	-0.202*	-1.66	-0.256**	-2.00
Only B share	0.446**	2.26	0.451**	2.28	0.400**	2.19	0.470**	2.38	0.440**	2.23	0.424**	2.30
No tax break	0.235	1.01	0.245	1.06	0.234	1.01	0.221	0.94	0.236	1.03	0.227	0.99
Age in days	0.000*	1.86	0.000*	1.89	0.000*	1.83	0.000*	1.77	0.000*	1.89	0.000*	1.80
First sale	0.210	0.98	0.203	0.93	0.067	0.32	0.207	0.96	0.116	0.87	-0.022	-0.16
Award	0.060	0.63	0.060	0.64	0.047	0.50	0.050	0.53	0.047	0.48	0.030	0.32
Advisor	0.153*	1.85	0.152*	1.85	0.142*	1.73	0.148*	1.78	0.161*	1.95	0.145*	1.77
Tech industry	0.216*	1.74	0.214*	1.72	0.138	1.28	0.214*	1.71	0.207*	1.70	0.133	1.24
Big city	0.132*	1.78	0.128*	1.73	0.098	1.33	0.125*	1.69	0.135*	1.83	0.091	1.25
Constant	5.339***	21.87	5.541***	14.66	5.430***	22.00	5.353***	21.81	5.163***	33.83	5.445***	15.91
Year fixed effects	Yes		Yes		Yes		Yes		Yes		Yes	
Number of observations	473		473		473		473		473		473	
F stat	122.18***		121.9***		136.57***		134.37***		139.48***		166.94***	
Adjust R ²	0.047		0.047		0.049		0.048		0.048		0.050	

Notes: All models apply a negative binomial regression using robust standard error with the number of investors variable as the dependent variable. *, ** and *** indicate statistical significance at the level of 10%, 5% and 1%, respectively. The results are robust with or without control variables.

First, we start to analyse our independent variables. For the variable “retained equity”, there is a negative impact on the number of investors in model 2. The number of investors significantly decrease by 54%, as there is more equity reserved by entrepreneurs. Thus, investors are less interested in the pitches that offer less equity to them. Campaigns supported by business angels are more likely to attract investors. Given our results, the number of investors rise by 37% when business angels are involved in equity crowdfunding. In addition, if companies have received grants and have protected their intellectual property rights, the number of investors goes up by 32% and 40%, respectively. After including all the explanatory variables in model 6, there is statistically significant evidence to support that business angel backing, grant and IPR are all positively correlated with number of investors. There are 34% more investors attracted to the campaigns if the company is associated with business angels. Likewise, 29% more investors tend to invest money via equity crowdfunding if companies obtained grants and 38% more investors tend to support campaigns if their owners have protected IPR. Concerning retained equity, it is negatively correlated with the number of investors at 10% level of significance, which is the same conclusion as what we derive from logistic regression and multiple linear regression. 52% less investors are willing to support campaigns if more equity retained to companies.

Referring to control variables, only B share, age and advisor variables have impact on the number of investors. In model 6, if pitches only offer B shares without voting rights, 67% more of investors show interest in the pitches. Besides, older companies raise the number of investors almost by 100% than younger companies. Meanwhile, companies consulted by professionals or having an advisory board tend to have 18% more investors’ support for their campaigns.

In summary, according to the results of the regression analyses

- (1) there is consistent evidence that more equity retained lowers the probability of success, less percentage raised and fewer investors,

- (2) both multiple linear regression and negative binomial regression indicate strong evidence that with the help of business angels, campaigns tend to gain more percentage of money and appeal to more investors,
- (3) a higher target amount of pitches is more likely to eliminate the probability of succeeding and raise less money of their target,
- (4) the age and thus the maturity of the companies always has a positive impact on the success of the pitch independently of alternative success criteria,
- (5) there are other minor factors (control variables) consist of “only B shares”, “no tax break”, “advisors” and “big city” which either increase the percentage raised or attract more investors.

Result (3) can possibly be explained by the mechanism of the platform, which only allows the same funding duration of 30 days to all projects and thus makes it more difficult for bigger funding projects to raise money than smaller projects. A generalization of this conclusion is therefore only possible to a limited extent.

5. The Impact of Corona

The year 2020 is shaped by the global Corona pandemic which causes the respiratory disease Covid-19. This has led to significant changes in economic activity, as extensive hygiene regulations have been introduced and, especially at the beginning of the crisis, a curfew was imposed in many countries, in some cases for several months. The economy in particular suffered as a result – in a lot of social and cultural areas, a ban was de facto imposed on practising a profession, which is particularly affecting self-employed individuals and small businesses. For many companies, this meant reorganizing their work processes and, for example, allowing many employees to work from home. Since many sectors were hit hard, the

question arises whether this crisis also had a visible impact on crowdinvesting, since in the crisis other business ideas may be required or even be possible than before the crisis.

As a first indicator, we look at the development of successful pitches over time. Figure 1 shows the monthly number of successful pitches since March 2017. So far, the highest number (22) of successful pitches was reached in June 2019. At the beginning of the corona pandemic, the number decreased from 18 to 7 in February 2020. However, after the small drop in April 2020 – we must note here that April is in general a month of low pitches in our sample –, the number increased to 15 in July 2020. After that, there was a decline until September 2020. The number of successful pitches seems to have some correlation with the pandemic situation. On March 23rd, the U.K. started the first lockdown. The government eased lockdown restrictions in May and lifted most of the restrictions in June. Considering the 12-month moving average, a negative trend since August 2019 is observed – already some months before the start of the Corona crisis.

Figure 1. Successfully funded pitches per month since March 2017

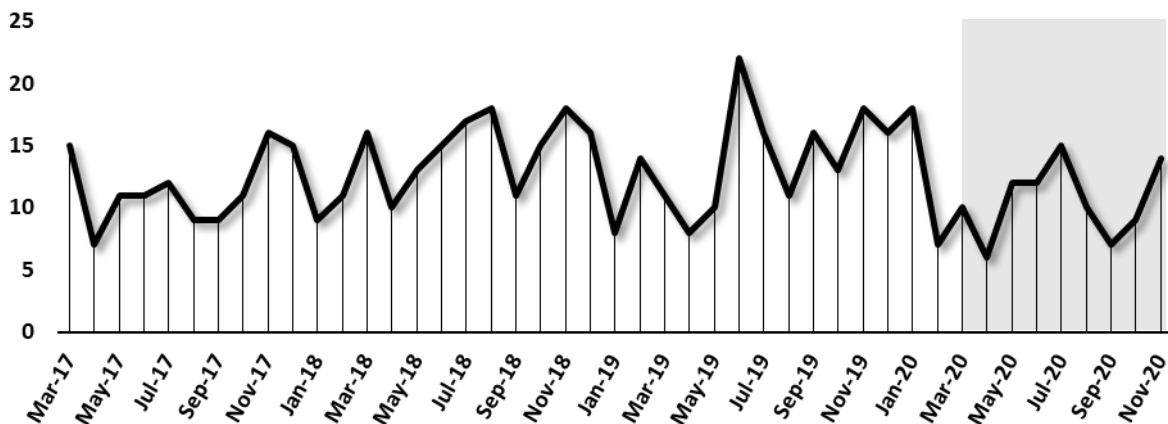


Table 8 compares the means of both, successful and unsuccessful pitches before and during the start of the pandemic. We see some significant differences, e.g. in retained equity. Entrepreneurs tend to retain more equity to themselves instead of offering it to investors.

The analysis of the impact on the Corona pandemic with the most recent data does not show a considerable change in the amount of pitches or a significant change in the relevance of the

success factors. We find that business angel backing has significantly decreased since the beginning of the pandemic, particularly for unsuccessful pitches. In line with that, the target amounts, as well as actual investments have gone down. Yet, the number of investors has increased significantly, meaning that the average individual amounts pledged has decreased drastically. Due to prevailing uncertainty and risk, institutional investors may not have considered new investments, whilst more private investors seem to be taking a speculative approach. This is particularly interesting considering the strong stock market performance during the pandemic (e.g. FTSE Small Cap Index between March 2020 and January 2021). Nevertheless, it may still be too early to tell whether there will be any major structural changes in crowdfunding. However, we are confident that the success factors will hardly be affected. It is possible that this asset class will benefit more in the future, as many countries are pursuing an expansive monetary policy to stabilize their economies and investment opportunities for investors are limited.

Table 7. Differences in means before and after the start of the COVID-19 pandemic

Mean	Successful			Unsuccessful		
	Before	After	Difference	Before	After	Difference
<i>Pitch outcomes</i>						
Percentage raised (%)	496.489	209.586	-286.902	94.432	97.000	2.568*
Amount raised (£)	836,663	795,080	-41,583	1,056,812	189,086	-867,726
Number of investors	630.174	986.322	356.148	1496.324	252.750	-1243.574
Average pledge (£)	1425.021	1346.248	-78.774	1191.043	812.571	-378.472
<i>Independent variables</i>						
Retained equity (%)	87.031	90.835	3.804***	91.702	94.856	3.154**
Business angel backing	0.413	0.322	-0.091	0.432	0.000	-0.432***
Grant	0.078	0.126	0.048	0.027	0.000	-0.027
Intellectual property right (IPR)	0.950	0.977	0.027	0.946	1.000	0.054
<i>Control variables</i>						
Target amount (£)	468,217	354,642	-113,576*	1,087,202	194,120	-893,082
Pure equity	0.200	0.184	-0.016	0.189	0.125	-0.064
Only B shares	0.060	0.046	-0.014	0.054	0.250	0.196
No tax break	0.048	0.230	0.182***	0.027	0.125	0.098
Age (in days)	1564	1627	63	1138	890	-248
First sale	0.998	1.000	0.002	0.973	0.750	-0.223
Award	0.362	0.368	0.005	0.270	0.375	0.105
Advisors	0.427	0.299	-0.128**	0.351	0.250	-0.101
Technology industry	0.255	0.287	0.033	0.378	0.500	0.122
Big city	0.569	0.575	0.006	0.595	0.750	0.155

In order to find whether the crisis so far had significant effects on success factors, we run the multiple linear regression for the 95 pitches since the Corona breakout. Table 8 summarizes the regression results. We use this method as we believe that the percentage raised is the best indicator for a successful campaign. We can see that retained equity has a statistically significant negative impact on the percentage raised, which is consistent with the results obtained before the Corona pandemic. In fact, the impact seems to be much stronger than in the pre-Corona sample. In addition, the backing by business angels remains a relevant significant success factor. Despite the increasing importance of government in the crisis, grants continue to be an insignificant factor for success. Yet, the sign has reversed from positive to negative. Possibly, governments previously used to award grants rather to companies that do not benefit from the pandemic situation. Furthermore, also not significantly, the sign of the impact of intellectual property rights has reversed. As most companies have intellectual property rights like patents and trademarks, they may not be regarded as distinguishing signals and therefore have no importance. Had we considered patents only, which incur much higher costs than trademarks, the signal may be distinctive.

If there is no tax break in the campaign, it would increase the probability of succeeding in equity crowdfunding. Like pre-pandemic samples, older companies and companies that have hired advisors, consultants or non-executive directors tend to be more successful in raising funds than younger companies. However, only offering B shares is no longer a positive factor in post-pandemic sample. Also, the age of the companies has lost relevance.

To summarize, despite some differences in significance, there are no big changes in the relevance of the factors. Thus, at least at this early stage, we do not find structural changes.

Table 8. Post Pandemic Multiple Linear Regression Results

	Model 1: Success		Model 2: Success		Model 3: Success		Model 4: Success		Model 5: Success		Model 6: Success	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
<i>Independent variables</i>												
Retained equity (%)			-3.532***	-2.81							-3.323***	-2.54
Business angel backing					0.206**	2.27					0.206**	1.95
Grant							0.008	0.08			-0.057	-0.42
IPR									-0.021	-0.13	-0.065	-0.47
<i>Control variables</i>												
Target amount	-0.029	-0.57	-0.041	-0.83	-0.043	-0.86	-0.029	-0.55	-0.029	-0.56	-0.056	-1.12
Pure equity	0.048	0.57	0.004	0.06	0.010	0.12	0.046	0.51	0.049	0.57	-0.017	-0.22
Only B share	-0.012	-0.09	-0.020	-0.17	-0.035	-0.3	-0.011	-0.08	-0.012	-0.09	-0.047	-0.47
No tax break	0.153	1.54	0.184*	1.87	0.151	1.59	0.153	1.53	0.154	1.53	0.183**	1.92
Age in days	0.062	1.42	0.095**	2.22	0.045	1.08	0.062	1.37	0.062	1.4	0.078**	1.82
First sale	0.379**	2.23	0.256	1.52	0.335***	2.11	0.379**	2.22	0.379**	2.22	0.223	1.4
Award	0.053	0.65	0.043	0.56	0.042	0.52	0.052	0.63	0.052	0.64	0.035	0.47
Advisor	0.262***	2.81	0.235**	2.4	0.243***	2.95	0.261***	2.77	0.262***	2.8	0.222**	2.52
Tech industry	0.122	1.48	0.155**	2.01	0.078	1	0.122	1.47	0.123	1.47	0.113	1.46
Big city	0.109	1.48	0.117	1.65	0.079	1.18	0.109	1.46	0.110	1.49	0.090	1.41
Constant	-0.784	-1.29	1.677	1.45	-0.458	-0.79	-0.793	-1.28	-0.748	-1.18	2.024*	1.81
Year fixed effects												
	95		95		95		95		95		95	
Number of observations	2.54***		4.69***		2.68***		2.48***		2.28**		4***	
F stat	0.090		0.158		0.145		0.079		0.079		0.189	
Adjust R ²												

Notes: All models apply a transformed multiple linear regression using robust standard error with the log (percentage raised+1) variable as the dependent variable. *, ** and *** indicate statistical significance at the level of 10%, 5% and 1%, respectively. The results are robust with or without control variables.

6. Discussion and Conclusion

Equity crowdfunding represents a novel way for founders to raise capital for a wide variety of projects. Combined with information technology, entrepreneurs have access to present their ideas to a large pool of potential investors. Financing through equity crowdfunding is not only easier and cheaper than traditional forms to gain enough funds to grow their businesses, but also a great opportunity to build the future network of investors. Besides, it can act as a marketing tool to test whether the campaign or the venture has sufficient market validation. Moreover, a successful campaign attracts media attention by incorporating social media and digital marketing, which may further bring upcoming customers.

In our study, we analyse what factors facilitate the success in equity crowdfunding. We build six models to investigate the effects of different set of factors on the funding success. We discover that companies that are backed by business angels tend to raise more funds and attract more investors to achieve success. It suggests that traditional investment criteria or models may have some convoluted connections with equity crowdfunding. The crowd tend to rely on business angels' view of picking the winners.

Besides, obtaining grants does not provide strong evidence with the funding success itself. However, it sends the crowd positive signals to attract more funders. This is in line with existing literature, which suggests that winning grants sends a positive signal to investors that this company is worthwhile to fund. The unaccredited investors would make decision based on what they retrieve from this signal.

In addition, intellectual property rights is not relevant for fully-funded projects. This conclusion is in contrast to previous literature. One of the possible reasons is that a majority of companies (95% in our sample) choose to protect their rights, which include trademarks, copyright and patents. Most existing studies focus just on the role of patents in financing instead of other intellectual property rights. Another possible reason is that we use the newest dataset from Crowdcude compared to other literature. Ralcheva & Roosenboom (2020) collect data from

2012 to 2017 on Crowdcube and Seedrs while we use data collected from the platform from March 2017 to February 2020. We can make a plausible guess that companies are more and more concerned with their intellectual property rights than before. Entrepreneurs have realized the importance of IPR in their business and would like to take advantage of the benefits it generates.

We are surprised that more equity retained reduces the probability of succeeding in equity crowdfunding. According to Ahlers et al. (2015), higher percentage of equity retained sends a positive signal to the public that entrepreneurs hold more confidence in their businesses. Li et al. (2018) also come up with the same conclusion that more equity offered to the investors has negative influence on the probability of funding success. Nevertheless, we obtain the opposite conclusion from our models and analyses. One possible reason could be that the data analysed stems from different platforms in different countries. We retrieve data from Crowdcube based in U.K. equity crowdfunding market while Ahlers et al. (2015) gather the data from an Australian platform ASSOBS and Li et al. (2018) gather the data from a Chinese equity crowdfunding platform. The regulations were very different in Australia at that time. The equity crowdfunding campaign allowed a maximum of 20 unsophisticated investors within 12 months while Crowdcube does not have a limitation of the number of investors. Furthermore, we have a larger sample size and set broader dynamics of funding success in our regressions than the 104 offerings analyses by Ahlers et al. (2015).

By taking a look at the control variables, we find that higher target amount decreases the probability of successfully raising funds. This finding is in line with Li et al. (2018) as a larger goal of equity crowdfunding has a negative effect on the pitch success. Given that every pitch has the same funding duration, higher target amount requires more investors with larger pledge. This is less likely to be obtained than pitches with lower target.

Besides, older companies have advantages over younger companies. For most unaccredited investors, the company's age suggests it has a track record which represents its ability to survive in the future market competition.

The findings indicate a number of important implications for start-up entrepreneurs' decision making. First, entrepreneurs need to consider carefully the quantity of equity shares they offer to investors. There is a trade-off as offering more shares may lead to a loss of control. However, if entrepreneurs keep the majority of shares to themselves, this may lead to the failure in equity crowdfunding. As a result, it is important that entrepreneurs consider the adequate number of shares offered to investors.

Second, a third party signal such as the support by business angels conveys positive messages to potential investors. Companies certified by experienced traditional investors possess more persuasiveness than those solely relying on equity crowdfunding. As most investors on the equity crowdfunding platform are unaccredited investors, herding effect is likely to exist in the behaviour of funders. It is possible for later investors to follow the previous investors' decisions. This suggests that it is important for entrepreneurs to seek for recognition from a third authority in order to attract more investors.

Third, before launching a campaign on equity crowdfunding platform, it is essential for executives to set the appropriate amount of money they want to raise, especially on the platform like Crowdcube which only provides a fixed funding period. If the target amount is too high, investors may be discouraged. However, if the target amount is too low, it may not satisfy the need of business development. The production or project's budget, attractiveness and feasibility are all need to be taken into account.

From the analysis of post-pandemic sample, we can conclude that the pandemic has some negative impact on the equity crowdfunding in the U.K. For instance, pitches raised less funds than pre-pandemic period. In addition, investors, especially institutional investors, seem to be more cautious regarding crowdinvesting. However, there is no major change in success factors.

Companies who offer more equity to investors and get the support from business angels are more likely to succeed in equity crowdfunding. Regarding control variables, older companies and those that have employed advisors have a better chance of raising ideal amount than those that are young and do not hire advisors.

Similar to most studies, there are some limitations in our research. Firstly, we obtain our data from only one platform in the U.K., which make it more difficult to generalize our conclusions. Second, our conclusions are based entirely on campaigns that successfully underwent the platforms' due diligence and our model does not take into account the campaigns that were screened out in the process.

Third, despite extensive factors we examine in our models, it is likely that there are some factors or signals we omit during the process. However, we try to observe as many drivers as we can based on the pitch information posted on the platform in order to simulate how investors make decisions depending on the information they obtain from the equity crowdfunding platform. Due to unavailable data, several interesting factors such as herding effect and human capital are not included in our study.

Fourth, when analysing the situation since March 2020, the Corona pandemic may not be the only factor responsible for changes to crowdfunding behaviour. During the same period, the UK economy has been impacted by uncertainties regarding the final Brexit negotiations.

Outlook We see the following key learnings for start-up companies seeking investors: Companies may take the success factors identified in this research into consideration before applying for crowdfunding. They may actively seek to comply with investors' preferences, such as employing an advisory board, get support from business angels and consciously deciding on retained equity.

Moving forward, further research is needed to assess the development of success factors over time, not only in a pandemic context, but predominantly as crowdfunding may become a

mature financing alternative. Another promising path for research could be the investor perspective, e.g. understanding how both institutional investors and individuals identify investment targets and what factors they perceive to be important.

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Appendix

Table A1. Correlation Matrix

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]
[1] Success	1.000																
[2] Percentage raised (%)	0.034	1.000															
[3] Number of backers	-0.127	-0.021	1.000														
[4] Retained equity (%)	-0.148	0.075	0.084	1.000													
[5] Business angel backing	-0.011	0.093	0.162	-0.033	1.000												
[6] Grant	0.052	0.115	0.007	-0.015	0.123	1.000											
[7] IPR	0.004	0.019	0.042	0.073	0.077	0.029	1.000										
[8] Target amount in £	-0.118	-0.027	0.667	0.101	0.158	0.000	0.031	1.000									
[9] Pure equity	0.007	0.127	0.038	0.033	0.011	0.143	0.067	0.011	1.000								
[10] Only B shares	0.006	0.029	0.100	0.091	0.171	-0.071	0.058	0.201	-0.035	1.000							
[11] No tax break	0.027	-0.011	0.051	0.050	0.059	0.091	0.005	0.014	0.066	0.115	1.000						
[12] Age (in days)	0.099	0.014	0.095	0.112	0.084	0.077	0.013	0.175	0.016	0.100	0.014	1.000					
[13] First sale	0.102	0.007	0.011	0.010	0.055	0.018	0.133	0.002	0.033	0.016	0.014	0.038	1.000				
[14] Awards	0.052	0.025	-0.013	0.017	0.048	0.027	0.071	0.016	-0.170	0.132	-0.122	0.112	0.048	1.000			
[15] Advisors	0.041	-0.041	0.055	-0.096	0.013	0.037	-0.096	-0.022	0.026	-0.087	-0.046	-0.052	0.056	0.003	1.000		
[16] Tech industry	-0.075	0.036	0.138	0.021	0.236	0.087	0.051	0.056	0.158	0.114	0.027	-0.105	-0.035	-0.054	0.043	1.000	
[17] Big city	-0.014	0.066	0.071	-0.042	0.148	0.033	-0.006	0.013	-0.028	0.109	0.070	-0.147	0.009	-0.035	-0.040	0.103	1.000