SHE'S BACK(ED) IN BUSINESS

A STUDY ABOUT GENDER DIFFERENCES IN CROWDFUNDING OUTCOMES

EBBA NORDAHL

MICHELLE TRAN

Bachelor Thesis

Stockholm School of Economics

2019

She's Back(ed) in Business: A Study About Gender Differences in Crowdfunding Outcomes

Abstract:

Lack of accessible financing has been a main challenge faced by entrepreneurs worldwide, which particularly has inferred barriers for female entrepreneurs in their pursuit for pre-seed capital. In recent years, a disruptive and rapidly growing funding method for start-ups using the Internet to gather a crowd of amateur investors has developed - Crowdfunding. This paper finds evidence of gender differences in reward-based crowdfunding by analysing a sample of Kickstarter projects launched by entrepreneurs in the Nordics. The empirical results show an average funding advantage for women regarding both average pledged funds and the ability of reaching the project goal, while men set higher goals on average and experience a higher frequency of zero pledged funds. Among the projects that have reached at least the funding goal, men tend to be more successful in raising capital. Further, men obtain a larger share of total funds, as a consequence of their higher presence on crowdfunding platforms. With gender playing a significant role in explaining differences in crowdfunding outcomes, this paper suggests that these differences might be derived to gender stereotypes and behaviours, such as male overconfidence and female risk aversion.

Keywords:

Authors:

Ebba Nordahl (23842)
Michelle Tran (24022)

Tutor:

Anastasia Girshina, Postdoctoral Fellow, Swedish House of Finance

Examiner:

Adrien d´Avernas, Assistant Professor, Department of Finance, SSE

Contents

1. Introduction

1.1. Introduction

Lack of accessible financing has been a main challenge faced by entrepreneurs worldwide. Traditional early stage fundraising methods have evolved around bank loans, venture capital, business angels and public grants. (Verksamt.se, 2019) In 2019, less than 1% out of 13.6 billion USD invested in Swedish start-ups in tech was allocated to teams comprising of entirely female founders (Jeffery, 2019a) and only 1 out of 189 investments exceeding 20 million SEK was allocated to a female-led business (Jeffery, 2019b). Concerning other funding sources, female entrepreneurs are disadvantaged in obtaining funds from private equity, as well as in receiving institutional capital and bank financing (Johnson, Letwin, and Stevenson, 2018). These barriers hinder women in achieving their full entrepreneurial potential, and dealing with them can result in a major societal impact, enabling economies to receive considerable gains in return (PwC, 2017).

In recent years, an alternative funding method for start-ups using the Internet has developed - Crowdfunding. This could be seen as a new form of venture fundraising, as it concerns early stage and high-risk investments as well as decision making and prediction of future outcomes without a history of financials, but rather judgement based on digital business pitches and limited information of the entrepreneur. Unlike the venture capital industry, crowdfunding allows individuals, mainly as amateur investors, to contribute through small investments. In most types of crowdfunding, including reward-based, entrepreneurs are also allowed to retain control of the company, while investors in venture capital seek to acquire a controlling stake in the target company. Crowdfunding infers less opportunities to conduct proper due diligence because of lack of background information and resources of the individual investor, further increasing the riskiness of the investment. (Kickstarter, n.d. a)

A decade ago, the usage of Internet to raise capital through assembling a crowd of investors was a non-existing phenomenon. Crowdfunding emerged post the financial crisis 2008 as a result of early-stage businesses facing severe difficulties in raising capital, driving entrepreneurs to seek alternative forms of fundraising (The World Bank, 2013). Today, crowdfunding has rapidly developed into one of the most popular financing options for early stage ventures. Illustratively, crowdfunding platforms in Sweden had a

turnover of 870 million SEK in 2016, an increase of 548% in comparison to the previous year (Karlsson, 2018). As crowdfunding has entered and taken a seat at the front row of fundraising with both reduced costs and greater liquidity than venture capital, venture capital firms are no longer the primary source of funding for entrepreneurs. This new form of financing enables more companies to obtain capital and increases participation rates among investors, further improving the overall economy. (Marks, 2018) Crowdfunding enables entrepreneurs of any gender to directly access the market - where the investment decision is made by the market itself instead of the stereotypical middle-aged male venture capitalist (PwC, 2017). How is this disruptive method of raising capital affecting the market of fundraising? Does it contribute to reduce the barriers for female entrepreneurs seeking pre-seed funding?

Due to crowdfunding being a new and relatively unexplored phenomenon, previous research within the topic is limited. Some past research, mainly from the U.S. have been conducted on a general basis, and a few of those have explored the area of gender dynamics in crowdfunding. As for the Nordics, no previous research has targeted gender differences within reward-based crowdfunding from the perspective of entrepreneurs, implying a gap in the existing literature and a unique field of research. This research will focus on the crowdfunding platform Kickstarter and the geographical area of Sweden, Norway and Denmark, henceforth referred to as the Nordics. Consequently, this study aims to fill a gap in a modern and exceedingly relevant field of research by addressing two questions:

1) *Do gender differences in fundraising outcomes on crowdfunding platforms exist?*

2) *What can explain differences in fundraising outcomes, in particular, what is the role of gender?*

1.2. Brief Results

This research presents evidence of significant gender differences in a previously unexplored area of reward-based crowdfunding outcomes in the Nordics. Female entrepreneurs experience a higher average number of backers and are generally more successful in raising capital in comparison to men - both considering average amounts pledged and the ability of reaching the funding goal. Men tend to set higher goals and have a higher frequency of both zero pledged and failed projects, which might be explained by male overconfidence. However, the lower project goals among female entrepreneurs is not the main driver of their higher ability to reach the funding goal and average amounts pledged. Instead, gender plays a significant role in explaining differences in fundraising outcomes, of which might be attributed to gender stereotypes and behaviours. Further, being highlighted by the Kickstarter team significantly increases the probability of raising capital, which might be understood by the social proof theory.

For successful projects alone, contradictory results are found - men tend to be more successful in raising capital and possess the positions as project leaders of most of the highest pledged projects. Further, a majority of the entrepreneurs are men, resulting in male-led projects receiving a higher share of total funds pledged.

1.3. Contribution to Existing Research

This paper investigates an unexplored field of gender differences within reward-based crowdfunding in the Nordics, whereby it is unique in its area of research. Additionally, the paper discusses potential factors playing an important role in explaining the gender differences in successful fundraising, which further provides guidance and acts as an initial base for future research within the topic.

2. Background

2.1. Definitions

In order to provide clarity, the definitions below will be used throughout the paper from now on.

Active project: Project that has not yet passed the final date for backing.

Backer: The investor investing in (backing) a project on a crowdfunding platform.

Crowdfunding and crowdfunding platform: Refer to Kickstarter, and thus, reward-based crowdfunding.

Failed project: Project that obtained less than 100% of the funding goal. Hence, receiving no funds at all due to the all-or-nothing funding model of Kickstarter.

Inactive project: Project that has passed the final date for backing and cannot obtain more funding.

Launched project: A project uploaded on a crowdfunding platform.

Overconfidence: Refers to relative overconfidence of men in comparison to women.

Pledged amount, and similar variations of the term, such as pledged and amount pledged: The absolute amount pledged by investors. If the project outcome is failed, the entrepreneur does not obtain the pledged amount.

Project goal and funding goal: The amount of money (USD) that the creator aims to raise for a project. A project can raise more funds than its initial project goal.

Successful or fully funded project: Project that obtained at least 100% of the funding goal. Hence, receiving funding corresponding to the pledged amount.

Success ratio: Refers to Pledged/Goal, otherwise $\ln(1+\text{Pledged/Goal})$ is stated.

The Nordics: Refers to Sweden, Denmark and Norway. Finland is not included in the definition due to lack of data.

Zero pledged project: Project that obtained 0% of the funding goal.

2.2. Crowdfunding

Crowdfunding is a recently developed financial vehicle for early stage fundraising by the usage of social networks in order to raise capital directly from a large number of individuals, rather than corporate, institutional and private investors. The first crowdfunding platform, ArtistShare, was launched in 2003 as a fan funding website for music (Artistshare, n.d.). AriststShare's success contributed to the launch of additional crowdfunding platforms, leading towards the term "*crowdfunding*" being used for the first time in 2006 (WordSpy, 2008). The crowdfunding industry has grown rapidly. In 2018, the number of crowdfunding projects worldwide amounted to 6.5 million, with a transaction value of 5.3 billion USD. Forecasts indicate crowdfunding to continue being an important funding source for entrepreneurs, with an expected global annual growth rate of 14.7% from 2019 to 2023. (Statista, n.d.)

Crowdfunding has four main categories (Buysere, Gajda, Kleverlaan, and Marom, 2012):

1) *Reward-based crowdfunding:* Investors contribute financially in return for a non-financial benefit, often in the form of a presale of the product at a discount. The price of the product is predetermined by the entrepreneur. Reward-based is the largest of the four crowdfunding types in terms of project volume (PwC, 2017).

2) *Donation-based crowdfunding*: Individuals donate money without obtaining any forms of compensation in return.

3) *Debt-based crowdfunding*: Investors fund projects in return for financial interest on the investment.

4) *Equity-based crowdfunding*: Allows investors to become part-owners of the company by trading capital in exchange for equity shares.

2.3. Kickstarter

Kickstarter is a reward-based crowdfunding platform based in Brooklyn, New York. The platform was launched in 2009, by Perry Chen, Charles Adler and Yancey Strickler. Since its launch, approximately 438,000 projects have been created on Kickstarter, of which more than 160,000 projects have successfully collected funding that corresponds to at least the project goal amount, and 4.2 billion USD have been pledged by 16 million

backers. (Kickstarter, n.d. c). In the context of crowdfunding, a backer is an investor investing in (backing) a project on a crowdfunding platform and the pledged amount refers to the absolute amount pledged by backers.

Entrepreneurs work independently without involvement of the platform on each project, and the platform does not take responsibility in ensuring the outcome of the projects after the deadline set by the entrepreneur. Projects are allowed be active for a maximum period of 60 days, in which an active project refers to a project that has not yet passed the final date for backing. Practically, the entrepreneur must create a user to launch (i.e. upload) a project on the crowdfunding platform. Thereafter, the project is created by the entrepreneur on the platform by adding a project description, project related pictures, a potential video and determining the category that the individual project belongs to. Fundraising on Kickstarter is conducted on an all-or-nothing basis, meaning that backers are charged only if the project goal, in absolute amounts, is reached at the expiration day. If the goal is not reached, the project does not obtain any funding, the backers will not be charged, and the outcome of the project changes to failed. If a project is successful in raising the funding amount, meaning that the project obtains at least 100% of its funding goal, Kickstarter applies a fee of 5% of the collected funds. Thereafter, another 3-5% fee is applied in order to ensure secure payment processing by a third-party partner specialized in payments. (Kickstarter, n.d. a)

From the perspective of the backer, one logs into a crowdfunding platform, browses project profiles and potentially the "*Staff Pick Section*" containing hand-picked projects by Kickstarter staff, and makes a decision on whether to back one or several projects or not. Backers typically contributes relatively small amounts in comparison to the venture capital industry (Johnson, Letwin, and Stevenson, 2018). Visible information for the backer includes the name of the project creator, the self-chosen profile picture, number of backers for each individual project, and the total amount pledged as of the visit date and other information uploaded by the entrepreneur, such as the project description and pictures. In opposition to the venture capital industry, investors do not have information regarding the entrepreneur's background, such as education and previous experiences, personality and other personal traits and attributes through the crowdfunding platform, unless the entrepreneur itself reveals additional background information that is not required by the platform.

3.   Literature Overview

Research about gender dynamics within fundraising in the Nordics has previously focused on the areas of venture capital and private equity. There are a few papers about gender differences in crowdfunding, but these have focused on the U.S. market, leaving a gap in research regarding other regions. By building on existing studies focusing on the U.S., in combination with research of gender dynamics in venture capital due to lack of existing research within crowdfunding in the Nordics, this paper aims to find empirical evidence and evaluations of potential explanations of gender differences regarding fundraising outcomes in the Nordics.

3.1.   Previous Research Venture Capital

Alsos, Isaksen, and Ljunggren (2006) studied gender differences in venture capital based on new businesses in Norway. The study found growth restrictions of women's new businesses due to a funding gap, which was present even when controlling for industry and variations in capital requirements. The authors, with reference to previously conducted studies, suggest that female entrepreneurs might be more careful when starting new businesses, by starting on a small scale and then slowly and continuously build from there. Other potential explanations of gender differences include a lower maximum business size threshold established by women and women being more focused on the present than the future because of certain feminine perspectives on the entrepreneurial process, which includes interactions being more emotional and focused on relationships. Therefore, women might have a harder time in creating long term business plans and negotiating term loans if female entrepreneurs more regularly take a feminine approach than men. The paper further concludes that gender, as a social construction, unquestionably has a considerable impact on fundraising success. Yet, gender discrimination is challenging to prove.

Nykvist (2008) base the research on the geographical area of Sweden and found that an essential constraint that hinders people in becoming entrepreneurs is the lack of liquid assets. This constraint will more notably affect women than men, due to financial wealth being unequally distributed among genders.

3.2.   Previous Research Reward-Based Crowdfunding

Lin and Pursiainen (2018) base their research on approximately 146,000 Kickstarter projects launched by individuals from the U.S. and is one of the most comprehensive studies within crowdfunding. Their findings suggest that men set higher goals and independent of the funding goal, they receive less funding, fail more frequently and are more likely to receive no funding at all. They also found women to achieve higher success ratios than men. The success ratio refers to the ratio of the amount pledged to the funding goal. Identified gender differences in reward-based crowdfunding are further argued to be most seemingly due to the relative overconfidence of male entrepreneurs. By studying successive projects initiated by the same entrepreneur, they found empirical results supporting the view of relative overconfidence being the driver of male underperformance as the entrepreneur, in the case of multiple projects, is given the opportunity to learn from previous experience. When the same entrepreneur launched several projects over time, men's funding goals were adjusted towards those set by women. Simultaneously, projects success ratios converged towards those of female founders. By using matched samples, women's lower goals were shown to not be derived to a project selection process, but rather systematic differences in the estimation of product demand. Other explanations of differences in success ratios can be a result of variations in risk taking by gender. However, when controlling for culture-based risk aversion, Lin and Pursiainen found that women still significantly outperformed men.

Marom, Robb, and Sade (2016) found, in opposition to Lin and Pursiainen (2018), that men in the U.S. raise more capital on average. In line with Lin and Pursiainen (2018), a larger share of women is successful in obtaining their project goal. Women do also generally seek less funding than men, which might be due to a variety of reasons. These reasons include the facts that women may underestimate the potential demand for their product to a greater extent, be more risk averse and have lower confidence than men. Further, the data indicates that the higher the goal, the less likelihood of reaching the goal. The paper also presents evidence of lower goals not being the driver of the higher share of successful projects among women. In the dataset used, the share of female investors exceeded the share of female entrepreneurs. Female investors tend to invest in female-led projects, while male investors tend to invest in male-led projects. For successful projects, men have higher success ratios. When pairing projects in matched samples, with the only

difference being the entrepreneur's gender, women and men achieved similar success ratios. The authors also argue that women might feel more comfortable in launching projects on the Internet due to less gatekeepers, and hence, less biased gender perceptions, and the possibility of higher levels of anonymity.

Gilbert and Mitra (2014) suggests that a project's success is heavily influenced by the language used when pitching the business idea on a crowdfunding platform, as it accounts for nearly 59% of the variance around success. Traces of social proofing in the language of successful projects were found, essentially signalling the attention already received by the project. In addition, a paper by Gorbatai and Nelson (2015) emphasizes the importance of language for a successful crowdfunding project as well. In particular, they find pitches and business descriptions with an inclusive language to be more commonly used by female entrepreneurs and to be positively correlated with crowdfunding success. Contrastingly, business language, which is preferred by men, has a negative correlation with fundraising success.

Johnson, Letwin, and Stevenson (2018) propose female entrepreneurs to be more likely to receive funding than men on crowdfunding platforms, implying a funding advantage for women. Their study, focusing on the U.S., found women to be stereotypically regarded as more trustworthy than men. When amateur investors examine the trustworthy judgment of backers, this female stereotype perception tend to increase. In turn, increasing backers' willingness to invest in early-stage ventures lead by women.

As reported by PwC (2017), the venture capital industry is characterized by male decision-makers by cause of only 7% of all partners at the top 100 venture capital firms globally being women. Venture capital firms with male partners are more likely to invest in male led businesses. Further, women are underrepresented in both traditional fundraising as well as crowdfunding. Yet, women are on average more successful in raising capital through crowdfunding than men. A potential explanation of the higher levels of female success is the tendency to use a more emotional and inclusive language in pitches and materials presented to backers by women. Women have been proven to outperform men with regards to success ratios, but in total, men still raise substantially more due to the higher presence of male entrepreneurs on crowdfunding platforms. Similar to the venture capital industry, male entrepreneurs seem to possess the positions as leaders of the most funded projects by the crowd. (PWC, 2017)

4.   Theories

4.1.   Behavioural Finance

The area of behavioural finance is a rapidly expanding area of research. In contrast to traditional finance theories, investors do not act consistently, but commutes between making rational decisions and jumping to impulsive conclusions and are influenced by biases and individual preferences. Behavioural finance relaxes the assumptions of individuals behaving rationally by incorporating frequent and observable deviations from rational decision-making (Barber and Odean, 2001). The agency theory, including risk aversion and moral hazard, as well as theories about overconfidence and social proofing are examples of such deviations, which this study aims to use in order to understand differences in fundraising outcomes.

4.2.   Agency Theory

Adam Smith, the author of "*The Wealth of Nations*", might have been the first to suspect the existence of agency problems. According to Smith's forecasts, there is a risk of the leader not working for the benefit of the owners when ownership is separated from control, meaning a situation in which one party (the agent) acts on behalf for another (the principal). Separation of ownership from control, variations in risk preferences, information asymmetry and moral hazard might lead to agency costs and conflicts of interest. (Panda and Leepsa, 2017)

There is an existing moral hazard problem on crowdfunding platforms due to the uncertainty in receiving the predetermined product at all, and if so, whether the product will meet the expectations or not. The system of all-or-nothing somehow reduces the uncertainty, but the fact that the entrepreneur receives funds before actually investing in the production in order to deliver according to the agreement remains. (Strausz, 2015) Given the presence of information asymmetry on crowdfunding platforms between investors (principals) and project leaders (agents) in combination with existing moral hazard problems and different risk preferences among investors, the agency theory should be applicable within the area of crowdfunding. Moreover, backers have no ownership

control and it is not certain that the entrepreneur indeed will pursue the project if the goal is reached.

Throughout the years, female risk aversion has been frequently and well documented. For instance, Jianakoplos and Bernasek (1998) show that when wealth increases, the proportion of wealth being held as risky assets is expected to increase by less for women than for men, providing evidence of a higher risk aversion in financial decision making among women. By reason of investors on crowdfunding platforms not being able to obtain more than the predetermined reward, the incentives to take on risk should be reduced. This infers that if an investor has the opportunity to choose between two identical projects, there should be a preference of investing in a project led by a female project leader, due to theories about women being more risk averse than men and thereby carry less risk. Thus, the agency theory could be helpful in understanding potential differences in fundraising outcomes between women and men.

4.3. Overconfidence

Several studies show that men are typically more overconfident than women. Barber and Odean (2001) support the presence of gender differences in overconfidence by demonstrating significantly higher levels of trading and lower returns generated by the portfolios of men. These findings are in line with the central prediction in theoretical models of overconfidence: overconfident investors will trade more than rational investors, because overconfident investors overestimate the precision of their information and their returns (Glaser and Weber, 2007).

Huang and Kisgen (2013) provide evidence of firms with male executives being more likely to make acquisitions, of which a larger share is more likely to result in negative announcement returns in comparison to those made by firms with female executives. This is consistent with theories of men being relatively overconfident, given that overconfident executives should undertake more transactions due to overestimating net present values. Moreover, the same study found that male executives are replaced to a greater extent than female executives, further indicating the overconfidence of men, since overconfident decisions lead to non-shareholder enhancing outcomes. Similarly, Levi, Li and Zhang (2014) present results of female directors being less likely to make acquisitions, and to normally pay a lower bid premium.

By means of the all-or-nothing model, the entrepreneur experiences reduced incentives to set a too high or too low goal. On one hand, a too high goal might result in not reaching the goal, and thereby, not obtaining any funds at all. On the other hand, a too low goal might result in not reaching the minimum level of capital required to actually pursue the project.

Overconfidence within crowdfunding could be shown in at least two ways (Lin and Pursiainen, 2018):

1) Entrepreneurs pursuing lower quality projects experience reduced likelihood of achieving success.

2) Systematically overestimating the demand for products will cause entrepreneurs to set more ambitious goals, which in turn implies a lower share of successful projects and lower success ratios as higher goals commonly are harder to reach.

This paper aims to use overconfidence theories in order to study gender differences in successful fundraising, project goal amounts and projects that obtained 0% of the funding goal (defined as zero pledged projects).

4.4. Social Proof Theory

According to the social proof theory, one is highly influenced by others decision making. The social proof theory was initially popularized by Robert Cialdini and describes a psychological and social phenomenon wherein people mirror the actions and opinions of others in an attempt to make decisions in uncertain situations. (Cialdini, 2009) Social proofing is occasionally referred to as herd behaviour, meaning that people feel the most comfortable when following the crowd, and tend to assume the group's view to be the correct one (Hirshleifer and Teoh, 2003). This behaviour may cause an informational cascade effect in which investors ignores their own information, while anticipating to profit from the information of others (Berk and DeMarzo, 2013).

There are four principles that might intensify the impulse to follow others, and thereby enhance the usage of social proof (Psychology Notes HQ, 2015):

1) *Uncertainty* - In situations involving high uncertainty, people are particularly likely to turn to people around them for guidance.

2) *Similarity* - Social proof is the most powerful when observing the decisions of people who are similar to us.

3) *Expertise* - We trust more in people who are familiar with the situation.

4) *Number* - The greater the number of people acting in a certain way, the more correct and valid the observer finds the certain way of acting.

In contrast to established firms, entrepreneurs in crowdfunding are normally rather new players in the market. As such, they have not yet proved their trustworthiness by building up a good reputation prior to launching the project. (Strausz, 2015) The existing problem of moral hazard increases the uncertainty among backers, due to the risk of entrepreneurs not acting in the interest of backers in combination with difficulties to conduct proper due diligence. Highlighting projects is a way for Kickstarter to reduce this uncertainty, and to help some entrepreneurs to gain trustworthiness. Consequently, this could lead to social proofing, where investors rely substantially on the judgement of Kickstarter when investing in projects, in a field where the Kickstarter staff can be considered as experts. Being selected by Kickstarter as a Staff pick should accordingly have great importance on fundraising outcomes, and based on the agency theory and theories about overconfidence, female project creators should get hand-picked more regularly than male creators. The effect of staff pick should therefore prevail to a higher extent for women, potentially resulting in higher success ratios, more backers, and a higher share of successful projects among female-led projects. Although staff pick might have a positive impact on project outcomes, only a few projects are selected, wherefore staff pick cannot be the only explanatory factor of fundraising success.

5. Data and Methodology

5.1. Data

The data is obtained by a web scraping of Kickstarter (WebRobots, 2019). Out of a total of 440,536 projects on Kickstarter as of 17/01/2019, a web scraping per the same date enabled an obtained selection of 219,281 projects between 20/10/2014 to 16/01/2019, corresponding to approximately 50% of all projects launched since Kickstarter was introduced. (Kickstarter, n.d. a) In order to ensure reliability of the scraped information, 200 observations have been controlled manually against Kickstarter's website. Cleaning the selection from active, suspended and cancelled projects and projects outside of the Nordics, generated a total of 2,616 observations. Active projects are still to obtain potential funding, while the amount pledged for inactive projects is definite because the final date for backing has passed. Considering project statuses, active and inactive projects are not comparable. Therefore, only inactive projects have been included.

The dataset contains information regarding for instance project categories, project goals, amounts pledged, countries, launch and end dates, currencies, name of the project creator, number of backers, and outcome (failed, successful, cancelled, suspended). Determination of the entrepreneurs' genders was conducted based on a gender determination tool named Gender API (Gender API, n.d.). The final chosen observations have a probability of at least 80%, given by Gender API, of determining the correct gender of the entrepreneur. The dataset excludes companies, unisex names and projects with multiple leaders in which genders are mixed. To increase the robustness of the data, a sample of approximately 500 observations have been controlled manually. The final sample consist of 1,237 observations, with a gender distribution of 29% women and 71% men. The dataset comprises of 615 projects launched by Swedish entrepreneurs, corresponding to 50% of total observations, 383 (31%) projects from Denmark and 239 (19%) from Norway.

Goals and pledged amounts have been converted from local currencies (SEK, DKK, NOK) to USD using the same conversion rates per 04/04/2019. Additionally, several categories have been merged due to a shortage of observations. The same reasoning supports the merger of project launch dates, resulting in three categories, as follows: 2014/2015, 2016/2017, and 2018/2019.

Table 1: Data Sorting for the Nordics

The table below shows the process of collecting and sorting the data, as well as the final output.

	# Projects
Total number of projects available on Kickstarter	440,536
Projects available through web scraping	219,281
Coverage	*~50%*
Of which inactive and based in the Nordics	2,625
Of which completed (not Cancelled or Suspended)	2,616
Of which individual whose gender can be determined, with 80% likelihood to be correct	1,237

In addition to the Nordic dataset, a dataset for the U.S. has been collected following the same procedure, including the number of manually controlled observations. The final selection comprises of 3,721 randomly chosen observations. U.S. data is intended to be used to evaluate whether results of gender differences on crowdfunding platforms are in line with previous research focusing on the same geographical area, in order to increase the robustness of the findings in this study. Mergers of categories and launch dates for U.S. projects are therefore not necessary.

There is a large spread of goal amounts and amounts pledged in both datasets, with several extreme values and many observations concentrated around zero pledged amounts (Table 2).

Table 2: Summary Statistics of Goal and Pledged Amount for the Nordics

The table below shows summary statistics of the Nordic raw data, regarding goals and pledged amounts in USD.

	Female				Male			
	Max	Mean	Min	n	Max	Mean	Min	n
Pledged	39,268	2,490	0	361	86,457	2,280	0	876
Goal	1,509,093	15,840	15	361	10,779,235	45,580	1	876

5.2. Data Limitation

The dataset does not contain information about backers. Such information is currently only available for the individual entrepreneur of each project and not publicly published, indicating difficulties of obtaining such data without the involvement of the crowdfunding platform itself. As mentioned in the introduction, one drawback of the obtained data is the lack of observations from Finland.

A lager sample is desired to further increase the robustness of the statistical analysis and would have enabled measurement of projects by the same entrepreneur. However, Kickstarter is the largest reward-based crowdfunding platform, and given that the initial data obtained covers approximately 50% of all projects on the platform, the sample is considered large enough to identify effects. The observations from Kickstarter could have been complemented by observations from other crowdfunding platforms, but one need to take into consideration that such observations could imply comparison difficulties due to variations of conditions across platforms.

5.3. Statistical Method

T-tests and OLS regressions have been conducted in order to answer and analyse the research questions. The regression models are defined as:

1) $\ln(1 + Pledged)_i = \alpha + \beta_1 \times Male_i + \beta_2 \times Staff\_Pick_i + \beta_3 \times \ln(Goal)_i + \beta_4 \times X_i + \varepsilon_i$

2) $\ln(1 + Pledged/Goal)_i = \alpha + \beta_1 \times Male_i + \beta_2 \times Staff\_Pick_i + \beta_3 \times X_i + \varepsilon_i$

3) $Successful_i = \alpha + \beta_1 \times Male_i + \beta_2 \times Staff\_Pick_i + \beta_3 \times \ln(Goal)_i + \beta_4 \times X_i + \varepsilon_i$

4) $Zero\_Pledged_i = \alpha + \beta_1 \times Male_i + \beta_2 \times Staff\_Pick_i + \beta_3 \times \ln(Goal)_i + \beta_4 \times X_i + \varepsilon_i$

5) $\ln(Goal)_i = \alpha + \beta_1 \times Male_i + \beta_2 \times X_i + \varepsilon_i$

The dependent variables *Successful_i* and *Zero_Pledged_i* are dummy variables, the first variable taking value 1 if the project reached its goal and 0 otherwise, and the second variable taking value 1 if the project ended up with zero pledged and value 0 otherwise. The dummy variable *Male_i* is an independent variable taking the value 1 if the project is led by a man and 0 if the project is led by a woman. *Staff_Pick_i* is a dummy variable taking the value 1 if the project is selected as a "*Project We Love*" by the Kickstarter staff, and 0 otherwise, and has been included as an independent variable in the regressions 1 to 4. *X_i* is a variable including category fixed effects, country fixed effects, and year fixed

effects, which aims to control for within group variations that could be correlated with the independent variables *(see 5.2.3 Fixed Effects)*. The regressions have been conducted both including and excluding fixed effects. ε_i is the error term.

The natural logarithm is used to reduce the spread in the data and to achieve more normalized distributions, reducing the effect of outliers. The purpose of using ln(1+X) is to keep observations taking the value of zero.

The chosen variables are explained in greater detail below (see *5.2 Variables*). However, there are some unobserved characteristics that can neither be captured by the dataset nor the regressions, such as quality of the project and background of the entrepreneur. Hence, the model is not able to take all factors affecting the level of fundraising success into consideration (see *6.4 Limitations of the Model*).

5.4. Variables

5.4.1. Dependent Variables

1) *ln(1+Pledged):* Pledged amount, in log transformation
2) *Zero Pledged:* A dummy variable describing whether projects obtained zero pledged amount or not
3) *Success:* A dummy variable describing whether projects reached their goal by at least 100% or not
4) *ln(1+Pledged/Goal)*: Projects' success ratios, in log transformation
5) *ln(Goal):* The project goal amount set by the entrepreneur, in log transformation

The dependent variables 1 to 4 represent a variety of possible outcomes showing differences in the levels of fundraising. Regressions of dependent variable 5 are conducted in order to understand what may affect differences in project goals.

5.4.2. Independent Variables

The independent variables aim to help explain and understand differences in the dependent variables, such as why some projects raise more capital than others, and why some projects succeed in raising the goal amount while others do not obtain backing at all.

1) *Staff Pick:* Some projects get hand-picked by the Kickstarter staff, in order to highlight projects that they find well-planned and noteworthy. These projects fall

under a specific category named "*Projects We Love*". For the platform itself, handpicking projects is a way of helping investors to find compelling and creative ideas that are thoughtfully presented, with a detailed and carefully prepared execution plan. (Kickstarter, n.d. b) Investors within crowdfunding do not have the same possibility to conduct due diligence as in other funding methods, such as in venture capital, leading them to be likely to rely heavily on the judgement of the Kickstarter team. Hence, the level of pledged amount and the success ratio should be influenced by the Staff Pick variable. The widespread and documented problem with moral hazard on crowdfunding platforms is imaginable to further contribute to investors' trust in projects falling under the category of Staff Pick.

2) *Male*: Male is a dummy variable taking the value 1 for men and 0 for women. Previous research within crowdfunding in the U.S. and venture capital in the Nordics have found empirical evidence of gender differences in the area of fundraising (Lin and Pursiainen, 2018; Marom, Robb, and Sade, 2016; Johnson, Letwin and Stevenson, 2018).

3) *Ln(Goal)*: Previous research within crowdfunding in the U.S. has shown that a higher goal set by the entrepreneur tend to decrease the probability of reaching that goal, even when controlling for industry and capital requirements (Marom, Robb, and Sade, 2016). This implies that the goal set by the entrepreneur probably has implications for the outcome of the project. With reference to the all-or-nothing model, there are no incentives for the entrepreneur to set a too high or a too low goal.

5.4.3. Fixed Effects

1) *Category Fixed Effects*: Research have previously shown that pledged amounts and success ratios differs across categories as well as differences in capital requirements depending on the project category (Marom, Robb, and Sade, 2016). Some categories have been merged due to a shortage of observations. In order to exclude in-group variations, category is included as a fixed effect in the regression.

2) *Launch Year Fixed Effects:* Included in order to take macroeconomic factors into account and to enable comparisons of projects across time periods.

3) *Country Fixed Effects*: Included to eliminate potential differences that have arisen due to variations of conditions in geographical areas.

5.5. Additional Issues

There are certain assumptions that needs to be met in OLS regressions. The tests below have been conducted to check that the results from the regressions and T-tests are valid. (UCLA, n.d.)

5.5.1. Checking for Normality

The dependent variables should follow a normal distribution. Histograms have been plotted, of which clearly showed a non-normal distribution. Therefore, no additional normality tests have been performed and a log transformation has been used to reduce the issue.

5.5.2. Checking for Normality of Residuals

Normality of residuals is required for valid hypothesis testing in order to assure validity of p-values. (UCLA, n.d.) Shapiro Wilk tests will be used to check the normality of residuals. The residuals were shown to not be normally distributed.

5.5.3. Checking for Heteroscedasticity

Variance in the error terms should be constant. Due to the residuals not following a normal distribution, White's general test for heteroskedasticity will be performed because it relaxes the assumption of normality of the residuals. The variance of the error term was shown to not be constant, and thus, heteroscedasticity is present. To solve the issues of heteroscedasticity, Robust Standard Errors have been included in all regressions, including and excluding fixed effects.

5.5.4. Checking for Multicollinearity

Independent variables should not be correlated with each other. This will be checked by studying the Variance Inflation Factor (VIF). The results showed no multicollinearity.
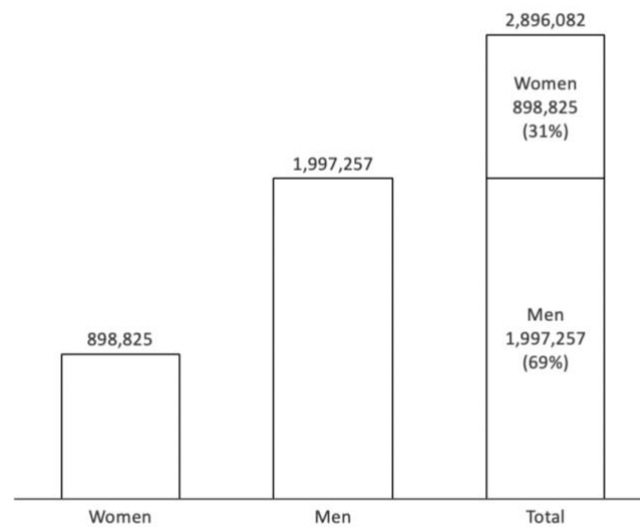
6.   Results

6.1.   Results Research Question 1

Do gender differences in fundraising outcomes on crowdfunding platforms exist?

Figure 1: Distribution of Total Funds for the Nordics

The figure below shows the distribution of total funds in USD by gender.

Table 3: Summary of T-tests for the Nordics

The table below shows a summary of multiple T-tests. The gender distribution is the same as in Table 2, with 361 women and 876 men. Monetary measures are in USD.

	All		Female		Male		Gender Diff
	μ	σ	μ	σ	μ	σ	Δ μ
ln(1+Pledged/Goal)	0.33	0.48	0.43	0.47	0.29	0.48	0.13***
ln(Goal)	8.19	1.87	7.95	1.63	8.29	1.95	-0.34***
ln(1+Pledged)	4.69	3.16	5.46	2.91	4.37	3.20	1.09***
Project Time Days	33.44	12.61	32.18	12.29	33.97	12.71	-1.79**
ln(1+ # Backers)	2.12	1.63	2.51	1.56	1.97	1.63	0.54***
ln(1+Pledged/Backer)	2.78	1.70	3.14	1.50	2.63	1.75	0.51***

*Significance levels: * p<0.1, ** p<0.05, ***p<0.01*

23

Figure 2: Distribution of Successful and Failed Projects for the Nordics

The figure below shows differences in outcome by gender, with number of failed and successful projects in absolute numbers and percentages.
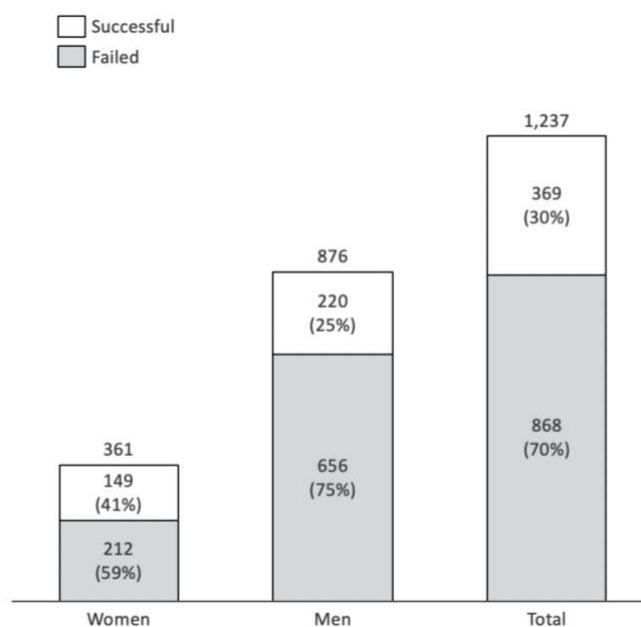
Figure 3: Distribution of Zero Pledged Projects for the Nordics

The figure below shows differences in absolute numbers and shares of projects receiving zero pledged, by gender.
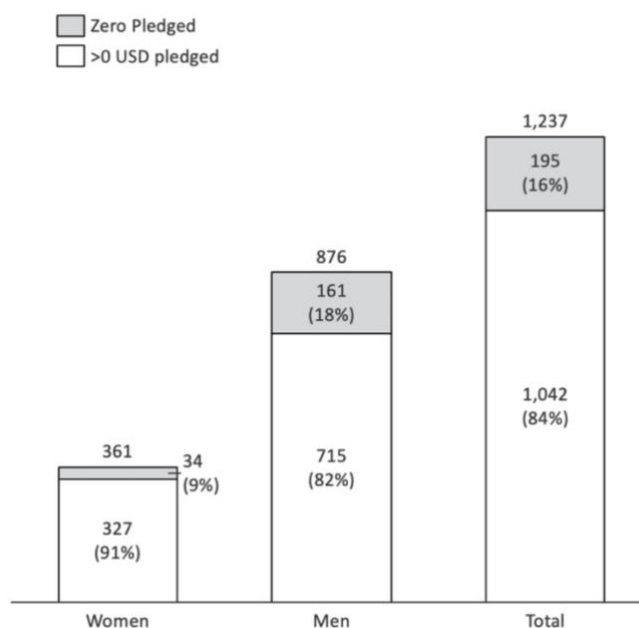
In the results presented above, 29% of the total number of entrepreneurs are women and 71% are men, which reflects the general crowdfunding industry (PwC, 2017). Therefore, the results in this paper are influenced by observations with male project creators. Female entrepreneurs receive 31% of total funds raised. The results are highly influenced by Swedish data, since 50% of all projects in the data originates from Sweden.

Table 3 describes findings of significant differences in mean goal amounts, revealing that men set higher goals. However, on average, female-led projects are more successful in raising capital. This finding remains consistent for both the average amount pledged and the success ratio, which takes the goal amount into consideration. Women commonly experience more backers and more money pledged per backer than men. Additionally, Figure 2 presents results of female-led projects being more likely to receive full funding, with reference to the goal amount, due to its higher share of successful projects (41% successful projects among women, compared to 25% among men). Simultaneously, as presented in Figure 3, men have a higher share of zero pledged projects, meaning that men obtain no funding more regularly than women.

Gender differences in success ratios prevail when looking into separate categories, in which the category *Film and Theater* is prominent with an ln(Success Ratio) of 61% for women, compared to the corresponding rate of 26% for men (Appendix Table 3). The proportion of female and male entrepreneurs varies between different categories (Appendix Table 1), where *Games, Tech* and *Food* are categories highly dominated by men. None of the categories are dominated by women.

Table 4: Summary of T-tests for Successful Projects for the Nordics

The table below shows differences among successful projects by gender in USD.

	Female			Male			Gender Diff
	μ	σ	n	μ	σ	n	Δ μ
ln(1+Pledged/Goal)	0.91	0.33	149	0.99	0.47	220	-0.07
ln(Goal)	7.32	1.39	149	7.30	1.76	220	0.02
ln(1+Pledged)	7.69	1.28	149	7.76	1.66	220	-0.07
ln(1+ # Backers)	3.77	0.98	149	3.86	1.24	220	-0.10
ln(1+Pledged per Backer)	3.98	0.69	149	3.97	0.84	220	0.01

*Significance levels: * p<0.1, ** p<0.05, ***p<0.01*

When considering successful projects alone, male led projects receive more backing, enjoy a higher success ratio and more backers than female-led projects (Table 4). In contrast to the results including both successful and failed projects, in which women possess more backing, higher number of backers and higher success ratios. However, these findings are not statistically significant, which may be a consequence of a small sample of successful projects. Interestingly, the mean goal amount among successful projects for men is lower than the corresponding average goal in the total sample, while the effect of lower goals among successful projects is much lower for women. Additionally, the 1% highest pledged projects are largely dominated by male entrepreneurs (83%).

Summarizing the results of the first research question, empirical findings show significant evidence of gender differences in fundraising outcomes on crowdfunding platforms. Unlike the prevailing situation in the venture capital industry, those results show an average funding advantage for women. Nevertheless, men receive a substantially larger share of total funds invested and are more successful among projects that have reached the funding goal.

6.2. Comparison of U.S. data

Figure 2 (Appendix) presents data regarding gender effects in crowdfunding in the U.S., showing that women on average are more successful in raising capital compared to men, both with reference to average pledged amounts, the likelihood of achieving success and success ratios. The empirical results also show that men set higher goal amounts. These findings are in line with the most comprehensive study conducted within reward-based crowdfunding up to this date, Lin and Pursiainen (2018), increasing the robustness of the Nordic results presented in this paper. Lower goal amounts and a higher share of successful projects among female-led projects are in line with another U.S. focused research by Marom, Robb, and Saade (2016). Similar to their research, the U.S. dataset used in this study is weighted towards successful projects, which could be a consequence of a sample selection bias.

6.3.   Results Research Question 2

What can explain differences in fundraising outcomes, in particular, what is the role of gender?

Table 5: OLS Regressions for the Nordics

The table below shows OLS regressions of ln(1+Pledged), including and excluding ln(Goal) as an independent variable, and ln(1+Pledged/Goal). In some regressions, fixed effects for year, category and country have been included. Monetary measures in USD.

	ln(1+Pledged)		ln(1+Pledged)		ln(1+Pledged/Goal)	
	Excl. FE	*Incl. FE*	*Excl. FE*	*Incl. FE*	*Excl. FE*	*Incl. FE*
Male	-0.98***	-0.74***	-1.00***	-0.75***	-0.12***	-0.08***
	(0.18)	(0.19)	(0.18)	(0.19)	(0.03)	(0.03)
Staff Pick	3.51***	3.70***	3.50***	3.68***	0.47***	0.48***
	(0.21)	(0.35)	(0.20)	(0.35)	(0.07)	(0.05)
ln(Goal)			0.05	0.06		
			(0.04)	(0.05)		
Cons	5.17***	4.99***	4.75***	4.47***	0.39***	0.36***
	(0.15)	(0.16)	(0.36)	(0.41)	(0.02)	(0.02)
Category Fixed Effects	No	Yes	No	Yes	No	Yes
Country Fixed Effects	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes
Avg. of Dep. Variable	4.69	4.69	4.69	4.69	0.33	0.33
	(0.09)	(0.09)	(0.09)	(0.09)	(0.01)	(0.01)
R-squared	0.09	0.14	0.09	0.14	0.07	0.11

*Significance levels: * p<0.1, ** p<0.05, ***p<0.01*
Standard errors in parentheses

Table 6: OLS Regressions for the Nordics

The table below shows OLS regressions of Success including and excluding ln(Goal) as an independent variable and fixed effects for year, category and country. Monetary measures in USD.

	Success		Success	
	Excl. FE	*Incl. FE*	*Excl. FE*	*Incl. FE*
Male	-0.15***	-0.11***	-0.12***	-0.09***
	(0.03)	(0.03)	(0.03)	(0.03)
Staff Pick	0.46***	0.47***	0.48***	0.50***
	(0.05)	(0.05)	(0.05)	(0.05)
ln(Goal)			-0.07***	-0.07***
			(0.01)	(0.01)
Cons	0.37***	0.35***	0.97***	0.93***
	(0.03)	(0.02)	(0.05)	(0.06)
Category Fixed Effects	No	Yes	No	Yes
Country Fixed Effects	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes
Avg. of Dep. Variable	0.30	0.30	0.30	0.30
	(0.01)	(0.01)	(0.01)	(0.01)
R-squared	0.08	0.12	0.18	0.20

*Significance levels: * p<0.1, ** p<0.05, ***p<0.01*
Standard errors in parentheses

Table 7: OLS Regressions for the Nordics

The table below shows OLS Regressions of Zero Pledged, including and excluding ln(Goal) as an independent variable, and ln(Goal), both including and excluding fixed effects for year, category and country. Monetary measures in USD.

	Zero Pledged		Zero Pledged		ln(Goal)	
	Excl. FE	*Incl. FE*	*Excl. FE*	*Incl. FE*	*Excl. FE*	*Incl. FE*
Male	0.08***	0.07***	0.08***	0.07***	0.34***	0.19*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.11)	(0.12)
Staff Pick	-0.16***	-0.18***	-0.16***	-0.18***		
	(0.01)	(0.04)	(0.01)	(0.04)		
ln(Goal)			0.02***	0.02***		
			(0.01)	(0.01)		
Cons	0.11***	0.12***	-0.02	-0.03	7.95***	8.06***
	(0.02)	(0.02)	(0.05)	(0.05)	(0.09)	(0.10)
Category Fixed Effects	No	Yes	No	Yes	No	Yes
Country Fixed Effects	No	Yes	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes	No	Yes
Avg. of Dep. Variable	0.16	0.16	0.16	0.16	8.19	8.19
	(0.01)	(0.01)	(0.01)	(0.01)	(0.05)	(0.05)
R-Squared	0.02	0.06	0.03	0.07	0.01	0.08

Significance levels: * p<0.1, ** p<0.05, ***p<0.01
Standard errors in parentheses

The regressions of ln(1+Pledged), ln(1+Pledged/Goal) and Success (Table 5, Table 6) show a significant impact of Staff Pick on successful fundraising, inferring that being chosen by the Kickstarter team on the crowdfunding platform highly increases the probability of raising capital. In the sample, 75 projects are staff picked, wherein 8% of all female-led projects are staff picked, compared to the corresponding share of 5% among the male-led projects. Furthermore, Table 6 shows that the Male variable has a negative impact on successful fundraising, explaining that male-led projects decreases

the probability of success. However, according to the regressions of ln(Goal) and Zero Pledged, the Male variable has a positive coefficient, suggesting higher goals and a higher probability of receiving zero pledged amount for male entrepreneurs (Table 7).

The independent variable ln(Goal) has a positive and statistically significant effect on Zero Pledged and a negative effect on Success (Table 6, Table 7), meaning that a higher goal amount implies a higher probability of receiving zero pledged and a lower probability of reaching the goal amount. However, relatively low coefficient values do not indicate a great impact of goal on Zero Pledged and Success, although the results are enough to provide guidance on the presented effects. Despite a small effect of goal on crowdfunding outcomes, the Gender variable remains relatively high, implying that goal is not the main driver of women's crowdfunding success, but rather by other gender related factors.

The inclusion of fixed effects for year, country, and category, results in marginal differences in the coefficient values, where Male is the variable carrying the highest relative change in the regressions of ln(Goal) and ln(1+Pledged). The explanatory values are higher in the regressions excluding fixed effects compared to the regressions including fixed effects. The models are not able to capture unobservable factors, such as quality of the project and the entrepreneur's previous experiences, yet the R-Squared values can be considered as relatively high considering high levels of unobservables.

6.4.   Results of Tests for Additional Issues

The results from the histograms indicated non-normalized distribution of the data. Therefore, log transformations for the dependent variables and the variables in the T-tests have been used to achieve a more normalized distribution. (Figure 4 to 9 Appendix) Although the log transformation reduces this issue, the variables do not fully follow a normal distribution.

By using Shapiro Wilk tests, all residuals were shown to not follow a normal distribution. (Table 8 Appendix) Because the residuals were shown to not follow a normalized distribution, White's general test for heteroscedasticity have been performed. All residuals except for one regression of success showed signs of heteroscedasticity. By cause of this, robust standard errors have been included in all regressions, both including and excluding fixed effects, to solve the problem.

The Variation Inflation Factors shows low VIF values for all independent variables, meaning that multicollinearity does not exist. Hence, no corrections for multicollinearity needs to be made.

Finally, by tackling the problems of a non-normalized distribution of the data and heteroscedasticity by using log transformation and Robust Standard Errors, the findings can be said to have gained robustness. The non-normalized distributions of residuals have an impact of the results above. The prediction is still present, and the interpretation of the results remain the same although significant values cannot be fully assured and there is a higher level of risk to incorrectly reject the null hypothesis. However, normality of the residuals has been assumed when performing the regressions because the sample of observations is considered rather large and the regression outputs show high significance levels.

7. Analysis

7.1. Analysis

This study finds women to be more successful in crowdfunding on average - an encouraging finding for both female entrepreneurs and the society as a whole, enabling the society to unleash the full potential in the economy. This finding might be understood by the agency theory, including risk aversion and moral hazard, and theories about overconfidence, which are essentially built upon the stereotypes of typically female and male behaviours.

Since investors cannot receive more than the predetermined reward, meaning that a higher risk does not necessarily imply a higher return as compensation for the risk, the preference of investing in a project led by a risk averse rather than an overconfident entrepreneur should prevail. The uncertainty is amplified by the problems surrounding moral hazard, because the entrepreneur is given the full amount of money before ensuring that the project will be pursued, and no actions are taken if the project creator does not fulfil the commitments in the agreement. Moreover, women are stereotypically seen as both more trustworthy and risk averse (Jansson, Letwin, and Stevenson, 2018). Thus, implying increased attractiveness of investing in trustworthy and risk averse female entrepreneurs - a view supported empirically by both more backers and higher pledged amounts per backer for women in comparison to men.

Empirical results of higher project goals, a relatively higher rate of zero pledged projects as well as lower share of successful projects among male entrepreneurs, and thus higher frequency of project failures, can be interpreted as a sign of overconfidence. Consequently, as reported by Lin and Pursiainen (2018), men tend to overestimate the demand for their products due to male overconfidence, leading them to set higher goals. The all-or-nothing policy reduces the incentives of entrepreneurs to set a goal that is too high. Yet, men generally set relatively higher goals while also experiencing less fundraising success on average and a higher frequency of zero pledged, which is a consequence of unrealistic perceptions of the demand resulting in low or no financial support. Interestingly, the goals of only successful projects among men are substantially lower than their average ones, while the corresponding difference for women is much lower. For this reason, in combination with the all-or-nothing mechanics, men set

unreasonably high goals, which is a sign of overconfidence. Male overconfidence could be connected to female risk aversion. Are women underconfident when evaluating product demand, leading them to set too low goals in relation to what is actually required to further develop the business after the crowdfunding campaign? Following the discussion about project goal differences, a question arises: Is the larger share of successful projects among women explained by relatively lower goal amounts? Empirical results show that the higher the goal, the less likelihood of reaching the goal, which is intuitive as a high goal theoretically should be harder to reach. Moreover, a higher goal also implies a higher risk of obtaining zero pledged amount. Despite this, the effects of goal are comparably small, implying that goal is certainly not the main driver of women's higher average success. Rather, other gender-related factors play a larger role in explaining differences in fundraising outcomes. In line with these findings, previous research has provided evidence that lower funding goals of female entrepreneurs are not the driver in higher share of successful projects among women (Marom, Robb, and Sade, 2016).

Staff pick is a factor explaining differences in crowdfunding outcomes, which might be understood by the theory of social proofing. In contrast to traditional fundraising, the structure of crowdfunding imposes great difficulties in conducting due diligence. Moreover, crowdfunding in its nature is based upon the idea of gathering a crowd of investors rather than a single or a few investors, leading backers to contribute with relatively small amounts. Thus, it is uncertain whether the benefits exceed the costs when performing comprehensive due diligence prior to backing projects. An option apart from due diligence is to take on the same actions as other backers or follow the recommendation of Kickstarter staff, given that they can be seen as crowdfunding experts and thereby facing an advantage in comparison to the regular backers. With this said, investors seem to rely heavily on the judgement of the Kickstarter team when making investment decisions. The probability of achieving success is substantially higher when being highlighted, regardless of the gender of the project creator. Very few projects get selected, and a slightly higher share among women compared to men become selected, inferring that gender differences might exist in the process of selecting staff picked projects. This follows the same reasoning as for backers concerning risk aversion,

overconfidence and trustworthiness. Based on this, the share of women enjoying the positive effects of being selected as a *"Project We Love"* is slightly larger than for men.

Gender biases against women in venture capital have been presented by previous research. On crowdfunding platforms, wherein amateur investors invest relatively small amounts, an average funding advantage for women has been found. (Johnson, Stevenson, and Letwin, 2018) This might indicate investors to trust women to a higher extent for mainly small amounts, which plays a role in understanding why men receive more pledged and higher success ratios for successful projects and why most of the highest pledged projects have a male project leader.

Concerning total capital raised, men obtain more funds in comparison to women. This is a natural consequence of the higher share of male entrepreneurs on crowdfunding platforms - if the gender distribution was equal and the relation of average pledged between women and men remained the same, women would obtain more total funding than men. The higher number of male entrepreneurs on crowdfunding platforms may be derived to unequally distributed financial wealth between genders. In fact, the lack of assets has been shown to hinder people in becoming entrepreneurs. (Nykvist, 2008) A higher presence of liquid asset constraints for women increases the barriers to become an entrepreneur. Additionally, being an entrepreneur is often synonymous with high risks due to financial uncertainty of the individual. Considering women to be more risk averse in general, the uncertainty itself might become a hindering barrier. As already mentioned, men tend to be overconfident, which might lead to men being too optimistic when judging the quality of their projects, while women are more risk averse and cautious in their choices of projects to launch. This could be one of the explanations to the smaller share of female entrepreneurs in crowdfunding and why women who enter the market actually obtain more funding than men on average. Considering women's higher likelihood to achieve fundraising success, why is the number of female entrepreneurs asking for capital within crowdfunding not higher? Since there are no practical barriers to upload a project, would the funding barriers constitute of female behaviour and thereby women themselves?

Finally, one should also consider the possibility of additional factors affecting fundraising outcomes. For instance, there is a possibility of women and men pursuing projects of different qualities, which is not captured by the dataset nor the regressions in

this paper. Additionally, the possibility of a larger share of female backers than entrepreneurs might also play a role in fundraising outcomes. Previous research shows a larger share of female backers than entrepreneurs and suggests that female investors have a tendency to give more to female entrepreneurs in comparison to male investors (Marom, Robb, and Sade, 2016). The language used in the business pitches might also affect fundraising outcomes. For instance, it could be used to signal the attention already received by the project, leading to social proofing (Gilbert and Mitra, 2014). Besides this, men tend to use a communication style associated with business language when pitching their projects, which, in opposition to the more emotional and inclusive language of women, is negatively correlated with crowdfunding success (Gorbatai and Nelson, 2015). Could this mean that what previously have been regarded as stereotypically masculine and successful must now give way to stereotypically feminine characteristics? Other factors probably affecting fundraising outcomes include the network of entrepreneurs, women's worse access to other forms of venture financing, and pricing dynamics. There is no comprehensive research covering reward-based crowdfunding in the Nordics, because this type of financing is such a new phenomenon, Therefore, the above-mentioned aspects need to be further studied in order to provide a more comprehensive picture of crowdfunding in the Nordics.

To conclude, this paper finds significant gender differences in crowdfunding outcomes, where female entrepreneurs on average are more successful in raising capital. Although, due to the violation of the assumption of normally distributed residuals, the significant levels in the presented results cannot be entirely assured. However, high significance levels and a relatively large sample implies that the identified effects remain and can be analysed. Gender has been found to play a significant role in explaining fundraising outcomes, which can be an effect of overconfidence and behaviours related to the agency theory. Further, the probability of achieving success increases substantially, regardless of gender, when a project becomes staff picked. Despite positive findings for female entrepreneurs regarding average success, men are still more successful among fully funded projects, obtain a higher share of the highest pledged projects, and raise more funds in total due to their higher presence on crowdfunding platforms. However, disparities in funds raised by successful projects have decreased during recent years (PwC, 2017). Additionally, women obtain a larger share of total funds invested within

crowdfunding in comparison to the corresponding share obtained through, for instance, venture capital (Jeffery, 2019a). Does this imply that the inequalities in total capital raised eventually will be removed? Will the distribution of female and male entrepreneurs ever be equal? Due to crowdfunding being a new phenomenon, it will be highly interesting to follow the development of this disruptive and rapidly developing funding method.

7.2. Limitations of the Model

The model used in this thesis has some shortcomings. Although log transformation has been used to achieve a more normalized distribution, the data does not entirely follow a normal distribution and residuals have been shown to not be normally distributed. However, the sample of observations is considered rather large and the results show high significance levels, whereby normality of residuals has been assumed when performing the regressions.

Unobservable factors that the model does not take into account might also play a role in explaining differences between female and male entrepreneurs' success in fundraising. These include the quality of the project, individual preferences of backers and information regarding the entrepreneur's background, which includes previous experience, education, ethnicity, and social network. As for the quality of the project, the limitation lies in working out a standardized and reliable measurement. Practically, there are great difficulties in controlling each project manually in order to classify its quality, in which it is important to highlight that individual preferences of the evaluator plays an important role in determining the classification. One can imagine that other proxies, for instance word detection could act as an indicator of quality.

8. Conclusion

8.1. Conclusion

This paper finds evidence of female entrepreneurs on average being more successful in raising capital on crowdfunding platforms, both considering average pledged funds and the ability of reaching the funding goal - an empowering finding for female entrepreneurs considering that the venture capital industry is unquestionably dominated by men. Several potential explanations of female's relative higher fundraising success in crowdfunding have been discussed, of which a majority have been proven in previous studies from the U.S. Higher frequency of zero pledged projects as well as project failures and higher project goals among male entrepreneurs could be derived to men being relatively more overconfident. However, lower goals of female entrepreneurs have been shown to not be the main driver of their higher likelihood of successful fundraising and higher pledged amounts. Instead, success and average amounts pledged might be attributed to male overconfidence and women being more risk averse. Further, empirical results show a large impact of Staff Pick on project outcomes, hence the investment decisions of investors, and might be a result of social proofing.

The industry of crowdfunding is still highly dominated by male entrepreneurs. Approximately 71% of all entrepreneurs in the sample are men, resulting in male led projects receiving a higher share of the total funded amount. Men do also enjoy higher success ratios and higher amounts pledged when looking at solely successful projects and the 1% highest pledged projects are largely dominated by male entrepreneurs (83%). At the expense of society, these findings demonstrate that crowdfunding certainly cannot be considered equal across genders.

Female entrepreneurs repeatedly being undermined their male counterpart within traditional fundraising, for instance in the venture capital industry, has long been commonly acknowledged. Inequalities within traditional fundraising and other business-related inequalities, such as gender leadership gap and gender pay gap, have also received widespread media attention, while the barriers faced by women in crowdfunding surprisingly have been much less visibly reported and investigated (PwC, 2017). This study presents evidence showing that gender differences are likewise present for Nordic entrepreneurs on crowdfunding platforms, which has never been studied before.

8.2. Future Research

This study has examined gender differences on crowdfunding platforms and potential factors affecting the level of obtained capital. This paper is not the first to evaluate gender differences in reward-based crowdfunding. Though, to our knowledge, this is the first study focusing specifically on the Nordic region, making it highly relevant to continue building future studies with regards to the results found - such as the existence of a higher male success ratio amongst successfully funded projects and the finding of a relatively low share of female entrepreneurs on crowdfunding platforms despite women being more successful in raising capital on average.

Due to the main focus on entrepreneurs in this paper, future areas of research that would act as a complement in understanding gender dynamics in crowdfunding include taking the perspective of backers, although such data is difficult to obtain. Additionally, an in-depth comparison of gender differences within crowdfunding and traditional forms of fundraising, such as venture capital, in the Nordics would be interesting because crowdfunding has been found to act as an alternative source of funding apart from traditional fundraising. Thereby, enabling further investigation of both the higher share of female entrepreneurs and investors on crowdfunding platforms in contrast to the venture capital industry. Further investigation of performance after the deadline of successfully funded projects is likewise highly interesting. Do significant differences between women and men regarding business growth and successful business implementation exist? Will women's lower project goals hinder their business growth?

Conducting similar research based on other crowdfunding platforms would increase the understanding of whether differences between platforms and its project creators and backers could be a factor affecting the results or not.

Crowdfunding is, as mentioned, a new phenomenon and the market has emerged and developed rapidly. While we have started to see certain patterns in fundraising statistics, further research measuring and capturing gender differences over time will be valuable in gaining a comprehensive understanding of this recently developed area of financing.

9.   References

Alsos, A. G, Isaksen, J. E., & Ljunggren, E. (2006). New Venture Financing and Subsequent Business Growth in Men- and Women-Led Businesses. *Entrepreneurship Theory and Practice, 30* (5), 667-686. Doi: https://doi.org/10.1111/j.1540-6520.2006.00141.x

Barber, M.B., & Odean, T. (2001). Boys will be Boys: Gender, Overconfidence, and Common Stock Investment. *The Quarterly Journal of Economics, 116* (1), 261-292. Doi: https://doi.org/10.1162/003355301556400

Gilbert, E., & Mitra, T. (2014). The Language that Gets People to Give: Phrases that Predicts Success on Kickstarter. *ACM, 17* (1), 49- 61. 10.1145/2531602.2531656

Glaser, M., & Weber, M. (2007). Overconfidence and trading volume. *The Geneva Risk and Insurance Review, 32* (1) 1-36. Doi: https://doi.org/10.1007/s10713-007-0003-3

Gorbatai. D. A, & Nelson, L. (2015). Gender and the Language of Crowdfunding. *Academy of Management Journal, 2015* (1). Doi: https://doi.org/10.5465/ambpp.2015.15785abstract

Hirshleifer, D., & Teoh, S. H. (2003). Herd Behaviour and Cascading in Capital Markets: A Review and Synthesis. *European Financial Management, 9* (1), 25-66. Doi: https://doi.org/10.1111/1468-036X.00207

Huang, K., & Kisgen, J. D. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics, 108* (3), 822-839. Doi: https://doi.org/10.1016/j.jfineco.2012.12.005

Jianakoplos, A. N., & Bernasek, A. (1998). Are Women More Risk Averse? *Economic Inquiry, 36* (4), 620-630. Doi: https://doi.org/10.1111/j.1465-7295.1998.tb01740.x

Johnson, A. M., Stevenson, M. R., Letwin, R. C. (2018). A woman's place is in the… startup! Crowdfunder judgements, implicit bias, and the stereotype content model. *Journal of Business Venturing, 33* (6), 813-831. Doi: https://doi.org/10.1016/j.jbusvent.2018.04.003

Levi, M., Li, K., & Zhang, F. (2014). Director gender and mergers and acquisitions. *Journal of Corporate Finance, 28* (1), 185-200. Doi: https://doi.org/10.1016/j.jcorpfin.2013.11.005

Nykvist, J. (2008). Entrepreneurship and Liquidity Constraints: Evidence from Sweden. *The Scandinavian Journal of Economics, 110* (1), 23-43. Doi: https://doi.org/10.1111/j.1467-9442.2008.00523.x

Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of Theory and Evidence on Problems and Perspectives. *Indian Journal of Corporate Governance, 10* (1), 74-95. Doi: 10.1177/0974686217701467

Lin, C. T., & Pursiainen, V. (2018). Gender Differences in Reward-Based Crowdfunding, Working paper, University of Hong Kong, http://dx.doi.org/10.2139/ssrn.3045050.

Marom, D., Robb, A., & Sade, O. (2016). Gender Dynamics in Crowdfunding (Kickstarter): Evidence on Entrepreneurs, Investors, Deals, and Taste-Based Discrimination, Working paper, version April 2016, http://dx.doi.org/10.2139/ssrn.2442954

Strausz, R. (2015). Crowdfunding, demand uncertainty, and moral hazard: A mechanism design approach, Discussion paper no. 2015-036, SFB 649, Economic Risk, Berlin, https://www.econstor.eu/bitstream/10419/122017/1/833530151.pdf

Berk, J and DeMarzo, P. (2013). *Corporate Finance* (3. ed). London: Pearson.

Cialdini, R. (2009). *Influence: Science and Practice* (5. ed). London: Pearson.

Buysere, K., Gajda, O., Kleverlaan, R., & Marom, D. (2012). *A Framework for European Crowdfunding*. Retreived 2019 March 21 from https://www.fundraisingschool.it/wp-content/uploads/2013/02/European-Crowdfunding-Framework-Oct-2012.pdf

PwC. (2017). *Women unbound: Unleashing female entrepreneurial potential*. Retrieved 2019 February 3 from https://www.pwc.com/gx/en/diversity-inclusion/assets/women-unbound.pdf

The World Bank. (2013). *Crowdfunding's potential for the Developing World*. Retrieved 2019 February 21 from http://www.infodev.org/infodev-files/wb_crowdfundingreport-v12.pdf

Jeffery, O. M. (2019a, March 31). Bolag grundade av kvinnor får 1 procent av riskkapitalet. *Dagens Industri Digital*. Retrieved 2019 April 12 from https://digital.di.se/artikel/mannens-techbolag-far-99-procent-av-allt-riskkapital

Jeffery, O. M. (2019b, May 4). En halv procent av tvåsiffriga miljoninvesteringar gick till kvinnliga grundare. *Dagens Industri Digital*. Retrieved 2019 May 5 from https://digital.di.se/artikel/en-halv-procent-av-tvasiffriga-miljoninvesteringar-gick-till-kvinnliga-grundare

Karlsson, J. (2018, March 19). Branschen jublar efter nytt lagförslag om crowdfunding. *Dagens Industri Digital*. Retrieved 2019 February 3 from https://digital.di.se/artikel/forslag-ger-krangligare-grasrotsfinansiering

Marks, H. (2018, June 10). How Crowdfunding Is Disrupting VCs. *Forbes*. Retrieved 2019 February 5 from https://www.forbes.com/sites/howardmarks/2018/06/10/how-crowdfunding-is-disrupting-vcs/#628fb2294823

WebRobots. (2019). Kickstarter Datasets [Data set]. Version 2019-01-17, CSV. Retrieved 2019 February 17 from https://webrobots.io/kickstarter-datasets/

ArtistShare. (n.d.). Our History. Retrieved 2019 February 3 from https://launchpad.artistshare.com/home/history

Gender API. (n.d.). Gender API. Retrieved 2019 February 15 from https://gender-api.com/

Kickstarter. (n.d. a). About Us. Retrieved 2019 January 17 from https://www.kickstarter.com/about?ref=global-footer

Kickstarter. (n.d. b). How does my project become a Project We Love? Retrieved 2019 February 15 from https://help.kickstarter.com/hc/en-us/articles/115005135214-How-does-my-project-become-a-Project-We-Love-

Kickstarter. (n.d. c). Stats. Retrieved 2019 February 3 from https://www.kickstarter.com/help/stats?ref=hello

Psychology Notes HQ. (2015). What is the Social Proof Theory? Retrieved 2019 March 21 from https://www.psychologynoteshq.com/social-proof/

Statista. (n.d.). Crowdfunding. Retrieved 2019 March 15 from https://www.statista.com/outlook/335/100/crowdfunding/worldwide

UCLA. (n.a.). Regression With STATA Chapter 2 – Regression Diagnostics. Retrieved 2019 May 5 from https://stats.idre.ucla.edu/stata/webbooks/reg/chapter2/stata-webbooksregressionwith-statachapter-2-regression-diagnostics/

Verksamt.se. (2019). Finansiera starten. Retrieved 2019 April 12 from https://www.verksamt.se/starta/finansiera-starten

WordSpy. (2008). Crowdfunding. Retrieved 2019 April 11 from https://wordspy.com/index.php?word=crowdfunding

10. Appendix

Figure 1: Gender Distribution of Staff Picked Projects for the Nordics

The figure below shows the gender distribution of staff picked projects.
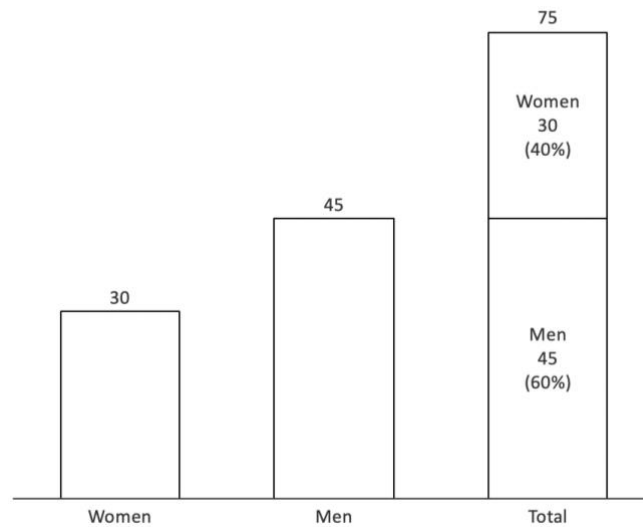
Table 1: Gender Distribution Across Categories for the Nordics

The table below shows the gender distribution across categories.

	Female		Male		Total
	n	% of tot.	n	% of tot.	n
Art, Dance & Photography	69	38%	112	62%	181
Comics, Journalism & Publ.	78	37%	135	63%	213
Crafts & Design	35	37%	60	63%	95
Fashion	37	50%	37	50%	74
Film & Theater	62	30%	144	70%	206
Food	15	14%	89	86%	104
Games	8	10%	72	90%	80
Music	41	31%	93	69%	134
Technology	16	11%	134	89%	150
Total	**361**	**29%**	**876**	**71%**	**1,237**

Table 2: Gender Differences in Pledged Amounts Across Categories for the Nordics

The table below shows differences in pledged amount, defined as: ln(1+Pledged), by gender and across categories in USD.

	Female			Male			Gender Diff
	μ	σ	n	μ	σ	n	Δ μ
Art, Dance & Photography	4.89	2.86	69	4.38	3.02	112	0.51
Comics, Journalism & Publ.	5.81	2.98	78	4.63	3.64	135	1.18**
Crafts & Design	5.00	3.22	35	5.12	3.15	60	-0.12
Fashion	5.89	2.88	37	4.73	3.79	37	1.16
Film & Theater	6.39	2.39	62	4.27	2.96	144	2.12***
Food	5.02	3.01	15	3.62	2.97	89	1.40*
Games	5.47	4.00	8	4.18	3.20	72	1.29
Music	5.03	2.74	41	4.93	3.10	93	0.10
Technology	4.24	3.01	16	3.99	3.10	134	0.25
Total	**5.46**	**2.91**	**361**	**4.37**	**3.20**	**876**	**1.09***

*Significance levels: * p<0.1, ** p<0.05, ***p<0.01*

Table 3: Gender Differences in Success Ratios Across Categories for the Nordics

The table below shows differences in Success Ratio, defined as: ln(1+Pledged/Goal), by gender and across categories in USD.

	Female			Male			Gender Diff
	μ	σ	n	μ	σ	n	Δ μ
Art, Dance & Photography	0.40	0.51	69	0.32	0.46	112	0.08
Comics, Journalism & Publishing	0.47	0.45	78	0.34	0.47	135	0.13*
Crafts & Design	0.43	0.48	35	0.52	0.76	60	-0.09
Fashion	0.39	0.55	37	0.27	0.36	37	0.12
Film & Theater	0.61	0.39	62	0.26	0.38	144	0.35***
Food	0.18	0.39	15	0.19	0.43	89	-0.01
Games	0.45	0.70	8	0.33	0.53	72	0.13
Music	0.34	0.44	41	0.39	0.54	93	-0.05
Technology	0.13	0.27	16	0.13	0.32	134	-0.01
Total	**0.43**	**0.47**	**361**	**0.29**	**0.48**	**876**	**0.13***

*Significance levels: * p<0.1, ** p<0.05, ***p<0.01*

Table 4: Summary of T-tests for the U.S.

The table below shows a summary of multiple T-tests in USD.

	Female			Male			Gender Diff
	μ	σ	n	μ	σ	n	Δ μ
ln(1+Pledged/Goal)	0.60	0.51	1,004	0.55	0.54	2,717	0.05***
ln(Goal)	8.21	1.59	1,004	8.52	1.66	2,717	-0.31***
ln(1 +Pledged)	6.73	2.97	1,004	6.42	3.32	2,717	0.31***

*Significance levels: * p<0.1, ** p<0.05, ***p<0.01*

Figure 2: Distribution of Successful and Failed Projects for the U.S.

The figure below shows differences in outcome by gender, with number of failed and successful projects, in absolute numbers and percentages.
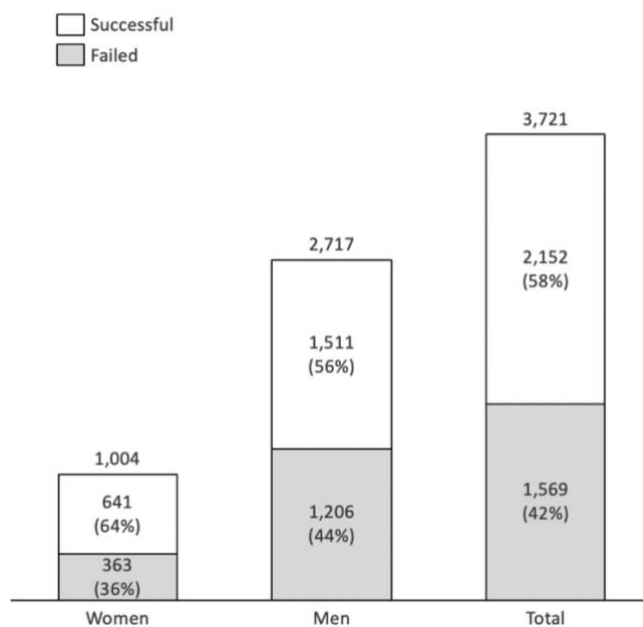
Figure 3: Distribution of Zero Pledged Projects for the U.S.

The figure below shows differences of projects receiving zero pledged by gender, in absolute numbers and percentages.
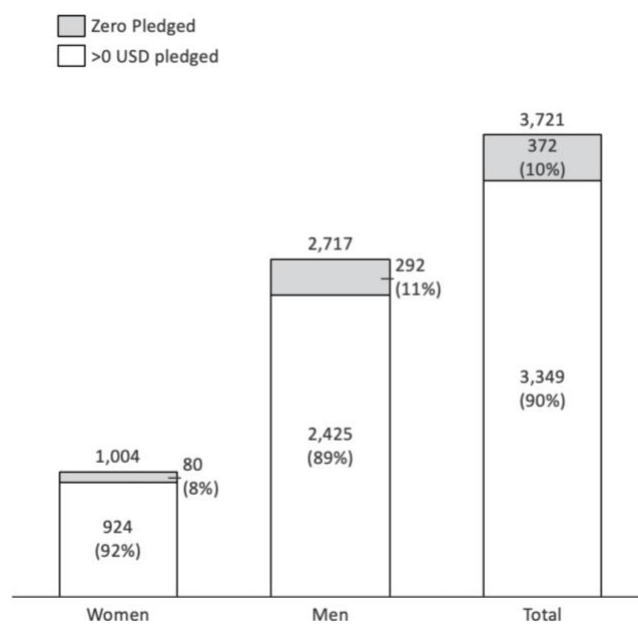
Table 5 and 6: VIF-tests

The table below shows VIF values for the independent variables. All values are low, implying no multicollinearity within the data. Thus, no corrections for multicollinearity have been made.

Table 5	VIF	1/VIF		Table 6	VIF	1/VIF
Male Dummy	1.01	0.99		Male Dummy	1.00	1.00
Staff Pick	1.00	1.00		Staff Pick	1.00	1.00
ln(Goal)	1.01	0.99				
Mean VIF	**1.01**			**Mean VIF**	**1.00**	

Table 7: Test for Heteroscedasticity

The table below shows values from the White tests, which test the null hypothesis that the variance of the residuals is constant (H_0: Constant). A majority of the results showed heteroscedasticity. Therefore, robust standard errors have been included in all regressions, both including and excluding fixed effects.

Heteroscedasticity	ln(1+Pledged)	ln(1+Pledged/ Goal)	Success	Zero Pledged	ln(Goal)
chi2	129.37	2.87	146.40	49.83	9.08
p-value	0.00	0.41	0.00	0.00	0.00

Table 8: Test for Normality of Residuals

The table below shows values from the Shapiro Wilk tests, which test the null hypothesis that the residuals are normally distributed (H_0: The residuals follow a normal distribution). The results show low p-values, thereby the null hypothesis is rejected.

	ln(1+pledged	ln(1+pledged /goal)	Success	Zero Pledged	ln(Goal)
W	0.96	0.77	0.88	0.59	0.99
V	31.85	177.47	91.54	312.02	7.08
z	8.64	12.94	11.28	14.34	4.89
Prob > z	0.00	0.00	0.00	0.00	0.00

Figure 4-9: Distributions of Dependent Variables

The figures below show histograms for the dependent variables. Histograms of the non-log transformed variables clearly shows non-normally distributed data. Monetary measures in USD.
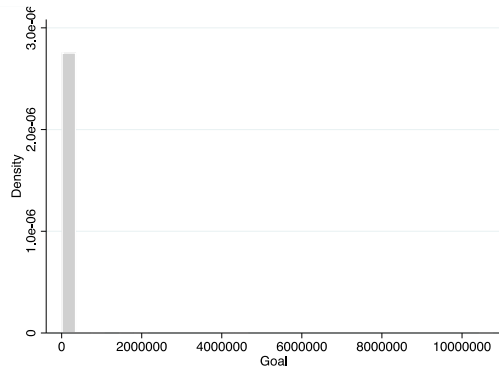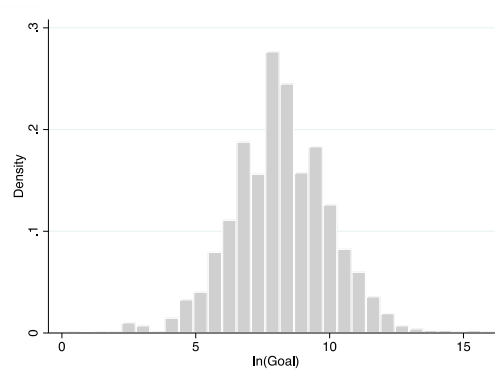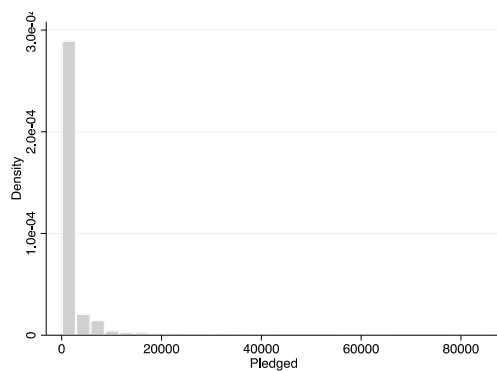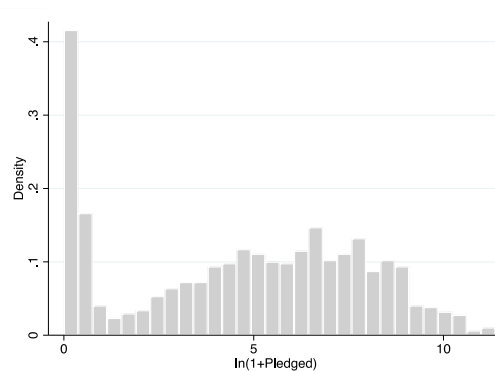

Figure 4

Figure 5

Figure 6

Figure 7

Figure 8

Figure 9