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**Does Reward-Based Crowdfunding Have An Impact On Your
Performance?**

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Abstract

A new and ambitious topic in the crowdfunding world is understanding whether this phenomenon can generate beneficial outcomes for the companies involved, resulting in an improvement in their performances. This study has the ambition to contribute to this topic by analysing how some outcomes obtained in a campaign are somehow linked to the size of the companies in the future. More in detail, the size components considered in this work are the number of employees and the amount of revenues. In order to test these relationships two regressions have been used. Econometric results have produced two findings. Firstly, the size of a company is linked to the ratio of the amount received to the target capital of the campaign. Secondly, the size of a company is connected to the number of updates made by the proponents during the campaign. Further tests have been conducted to sustain the reliability of our findings. Implications for researchers and entrepreneurs have been discussed.

Keywords: crowdfunding, crowdfunding success, post-crowdfunding performance.

Sommario esteso

Le diverse crisi economiche dell'ultimo ventennio, insieme alla sempre più rigida regolamentazione imposta a banche e governi, hanno ridotto notevolmente la possibilità per le aziende, specialmente per quelle al loro debutto, di accedere alle tradizionali fonti di finanziamento.

In questa realtà, il fenomeno del crowdfunding sta acquisendo un'enorme popolarità, testimoniata dalle ricerche sviluppate dal Global Crowdfunding Industry nel 2015 che attesta un mercato pari a \$34 miliardi. Se inizialmente il mercato si concentrava prevalentemente in America, il crowdfunding si sta espandendo in tutto il mondo, con crescite, al 2015, del 210% e del 98% in Asia ed Europa.

Grazie all'importanza che questo fenomeno sta assumendo, accademici e ricercatori hanno da tempo iniziato a studiarne le diverse forme e caratteristiche. Molti studi si sono concentrati sull'individuare le determinanti di successo di una campagna di crowdfunding o le dinamiche che possono spingere e influenzare i comportamenti dei contribuenti dei progetti di crowdfunding.

Mentre la maggior parte della letteratura si è focalizzata su queste dinamiche, un tema ancora poco affrontato riguarda l'impatto del crowdfunding sulle performance delle aziende negli anni successivi al completamento della campagna.

Ad esempio, degli studi recenti (Kuppuswammy et al., 2016; Roma et al., 2017) si sono concentrati sul capire se una campagna di crowdfunding possa influenzare o meno la possibilità di ricevere ulteriori fondi da investitori di impresa, quali Business Angels e Venture Capitals. Altri studi hanno invece cercato di capire l'impronta che il crowdfunding sia in grado di dare all'innovazione di un'impresa (Stanko et al., 2016). Nonostante la recente attenzione dedicata da numerosi studiosi a queste tematiche, l'impatto del crowdfunding sulle performance di un'azienda rimane ancora un tema decisamente inesplorato.

Con il presente studio, vogliamo dare un aiuto in questo campo per cercare di stimolarne la ricerca tramite l'analisi di un set di dati e una robusta metodologia.

La ricerca è partita dall'analizzare tutte le campagne presenti su Kickstarter nella sezione Technology nel 2012, con l'obiettivo di individuare i nomi delle imprese che le avessero lanciate. Partendo da un campione di 1084 campagne abbiamo individuato 597 possibili aziende. Una volta raccolti tutti i dati necessari per ognuna di queste imprese abbiamo utilizzato il database Orbis¹ per cercarne i dati finanziari. Solamente 159 imprese risultavano correntemente registrate sulla piattaforma di dati e 86 di esse avevano dati sufficienti per svolgere le nostre analisi.

Inoltre, gli unici dati ottenuti su Orbis che ci potessero dare un'idea delle performance dell'azienda riguardavano il fatturato annuo e il numero di impiegati. In aggiunta, la maggioranza delle informazioni ottenute erano riferite esclusivamente all'ultimo anno in cui le aziende avevano riportato su Orbis i loro report finanziari. Purtroppo i dati relativi ai bilanci erano troppo scarsi per poterne estrapolare dei risultati significativi. Abbiamo quindi deciso di misurare quali outcome del crowdfunding fossero collegati alle dimensioni delle aziende dopo aver lanciato la campagna.

Successivamente, abbiamo svolto una ricerca strutturata nella letteratura per capire quali caratteristiche e performance del crowdfunding potessero collegarsi alle dimensioni delle aziende.

Questa ricerca ci ha portati a formulare quattro ipotesi riassunte in seguito: in una campagna di crowdfunding, l'ammontare di fondi raccolti rispetto a quelli chiesti, il numero di donatori, il numero di commenti rilasciati dai donatori e il numero di aggiornamenti fatti dal proponente, avrebbero dovuto mostrare un pattern positivo con le dimensioni delle aziende in seguito al crowdfunding (revenues e impiegati).

Abbiamo deciso di testare queste ipotesi utilizzando dei modelli di regressione. Tutti i test sono stati svolti utilizzando il software per regressioni GRETL.

I risultati econometrici ottenuti basandoci su un campione di 86 imprese di Kickstarter ha prodotto due importanti risultati: 1) i fondi ottenuti in una campagna in relazione a quanto richiesto dal proponente hanno una relazione positiva sia con il fatturato che con il numero di dipendenti e 2) il numero di updates eseguiti durante la campagna ha

¹ Un database contenente informazioni riguardanti imprese in tutto il mondo, per maggiori informazioni visitare: www.orbis.bvdinfo.com

una relazione positiva sia con il fatturato che con il numero di dipendenti di chi la lancia.

Questi risultati possono essere spiegati in diversi modi: nel crowdfunding quanto più un'azienda è in grado di superare il target iniziale richiesto per il proprio progetto, maggiore sarà il segnale dato al mercato e agli investitori esterni sulla bontà del proprio lavoro. Inoltre, gli updates rappresentano la traduzione di uno scambio informativo tra potenziali consumatori del prodotto e l'impresa (i.e. i commenti e i feedback dei donatori), in miglioramenti del prodotto stesso. Così, il prodotto finale avrà già vagliato un test di mercato importante, migliorando il prodotto secondo i bisogni dei consumatori.

Tuttavia non abbiamo trovato una relazione significativa con i commenti effettuati dai donatori durante la campagna. Crediamo che la nostra ricerca non evidenzi questa relazione perché non è in grado di verificare la qualità di questi commenti (cosa che gli updates fanno indirettamente) ma solo il numero. Inoltre troppi commenti potrebbero essere difficili da gestire da parte dell'impresa che lancia il progetto.

Allo stesso modo l'assenza di una relazione con il numero di donatori potrebbe risultare controproducente: più sono i donatori, più sarà difficile interagire con tutti loro e includere tutti i feedback nel prodotto. Questo effetto potrebbe annullare i benefici portati da un effetto marketing che un gran numero di donatori dovrebbe avere sull'impresa che lancia il progetto.

I limiti di questa ricerca sono principalmente legati alla qualità e dimensione del nostro campione e alla conseguente mancanza di un'analisi storica dei dati. Sarebbe inoltre interessante andare a verificare le relazioni che abbiamo ipotizzato sussistere sugli outcomes del crowdfunding e le dimensioni delle imprese. Il nostro lavoro ne determina solo il collegamento ma non è in grado di spiegarne il motivo.

Crediamo che questo lavoro possa essere un buono spunto per studiare più approfonditamente quali siano gli effetti del crowdfunding sulle performance future delle aziende che ne prendono parte.

Table of Contents

Acknowledgements	IV
Abstract.....	VI
Sommario esteso.....	VII
Table of Contents	XII
List of Figures.....	XV
List of Tables	XVII
Introduction	2
1 Crowdfunding: Review of the Literature	5
1.1 Crowdsourcing definition.....	5
1.2 Crowdfunding definition	8
1.3 The players of a crowdfunding campaign	9
1.4 Target of fundraisers	10
1.5 Target of crowdfunders	11
1.6 Crowdfunding classification	14
1.6.1 Donation-Based crowdfunding.....	14
1.6.2 Reward-Based crowdfunding	15
1.6.3 Equity-Based crowdfunding.....	16
1.6.4 Lending-Based crowdfunding	17
1.6.5 Other models	18
1.7 Success factors of a crowdfunding campaign	20
1.7.1 Typology of project content	20
1.7.2 Funding target.....	21
1.7.3 Managing the campaign: the early days	22
1.7.4 Duration of a campaign	24
1.7.5 Reward.....	25
1.7.6 Information provided during the campaign	25
1.8 Target capital.....	26
1.9 Post crowdfunding performance	28

1.9.1	Attracting additional capital.....	29
1.9.2	Innovation and possible non-financing benefits	31
2	Hypotheses	34
2.1	Features of a project and backers.....	35
2.2	A direct impact of crowdfunding on the firm’s performances	37
2.3	External financing and amount pledged	38
2.4	Hypotheses formulation.....	40
3	Data and Methods	42
3.1	Kickstarter database.....	42
3.1.1	Input selection	43
3.1.2	Data collection	44
3.1.3	Results.....	47
3.2	Orbis database.....	48
3.2.1	What is Orbis?.....	48
3.2.2	Data collection	50
3.2.3	Results.....	52
4	Variables Selected to Test the Hypotheses	56
4.1	The dependent variables	56
4.2	The independent variables	56
4.2.1	Amount pledged on target.....	57
4.2.2	Variables on the characteristics of the project	58
4.2.3	Number of backers	59
4.3	The control variables	59
4.3.1	Video of a campaign	59
4.3.2	Target capital.....	60
4.3.3	The geographical distribution of the projects	60
4.3.4	The age of a company	62
4.4	Descriptive statistics	64
5	Models and Results	67

5.1	Hypotheses testing.....	68
5.2	The control variables.....	70
5.3	OLS assumptions.....	71
5.3.1	Collinearity and regressions.....	72
5.3.2	Heteroskedasticity and normality.....	76
5.4	Check on firms' size.....	80
6	Conclusions, Limitations and Research Implications.....	84
6.1	Conclusions and interpretations.....	84
6.2	Limitations and research implications.....	88
	References.....	91
	Appendix A.....	104
	Appendix B.....	116

List of Figures

Figure 1: Main Sectors financed by Donation-Based crowdfunding. Source: The 3rd European Alternative Finance Industry report, 2016.....	15
Figure 2: Main Sectors financed by Reward-Based crowdfunding. Source: The 3rd European Alternative Finance Industry report, 2016.....	16
Figure 3: Main Sectors financed by Equity-Based crowdfunding. Source: The 3rd European Alternative Finance Industry report, 2016.....	17
Figure 4: Main Sectors financed by Lending-Based crowdfunding. Source: The 3rd European Alternative Finance Industry report, 2016.....	18
Figure 5: Main Sectors financed by Invoice Trading. Source: The 3rd European Alternative Finance Industry report, 2016.	19
Figure 6: Logical framework in support of our hypotheses.....	35
Figure 7: Evolution of yearly amount of money backed via Crowdfunding, Venture Capitals and Angel Investors. Source: crowdfunder.....	44
Figure 8: Presentation of a successful Kickstarter project at completion. Source: Kickstarter.....	45
Figure 9: Breakdown per country of the amount pledged via Kickstarter until March 3, 2014. Source: Statista.com.....	47
Figure 10: Snapshot of an Orbis file. Source: Orbis.bvdinfo.com.....	49
Figure 11: Share of total venture capital invested in 2014. Source: World Economic Forum.....	61
Figure 12: Regression residuals graph of model 2.....	77
Figure 13: Regression residuals graph of model 1.....	78
Figure 14: QQ plot of model 1 (to the left) and model 2 (to the right).....	79
Figure 15: Normality histograms for model 1 (to the left) and model 2 (to the right)	79
Figure 16: Crowdfunding Volumes and Growth by continent. Source: 1° Report italiano sul Crowdfunding, 2016.....	105

Figure 17: Number of active crowdfunding platforms worldwide. Source: 1° Report italiano sul Crowdfunding, 2016.	106
Figure 18: Crowdfunding Volume by model in the world. Source: 1° Report italiano sul Crowdfunding, 2016.	107
Figure 19: Crowdfunding Volume by model in Europe. Source: The 3rd European Alternative Finance Industry report, 2016.....	109
Figure 20: Perception towards Existing National Regulation in Italy. Source: The 3rd European Alternative Finance Industry report, 2016.	112
Figure 21: Crowdfunding Volume by model in Europe. Source: The 3rd European Alternative Finance Industry report, 2016.....	113
Figure 22: Key financial & employees section of an Orbis file. Source: Orbis.	116
Figure 23: Balance sheet section of an Orbis file. Source: Orbis.....	116

List of Tables

Table 1: Statistics of companies of our sample.....	47
Table 2: Companies and websites of our sample.	48
Table 3: Geographic origin of the companies and their status.....	52
Table 4: Geographic origin of the companies and their status (percentages).	52
Table 5 : Descriptive statistics on the Revenues.	53
Table 6: Descriptive statistics on the Employees.....	53
Table 7: Enterprises' classification.....	53
Table 8: Share of Micro, Small and Medium enterprises divided per country in 2012. Source: http://ec.europa.eu	54
Table 9: Summary of the variables chosen.	63
Table 10: Descriptive statistics of our variables.	64
Table 11: Results of the two regression models.....	68
Table 12: Results of the Collinearity test.	72
Table 13: Results of regression models 1.1 and 1.2.....	74
Table 14: Results of regression models 2.1 and 2.2.....	75
Table 15: Test of Heteroskedasticity for model 1 and 2.	76
Table 16: Results of regression 1.1.1 and 2.1.1.	82
Table 17: Test of Heteroskedasticity for model 1.1.1 and 2.1.1.	82
Table 18: Description, Volume and Market Share of crowdfunding types in Europe. Source: The 3rd European Alternative Finance Industry report, 2016.	108

Introduction

The phenomenon of crowdfunding is experiencing a fast pace growth and an enormous increase in popularity since its creation (Lambert and Schwiendbacher, 2010).

The term itself can be analysed starting from the two words from which it is composed: crowd and funding (Beaulieu et al., 2014). As a matter of fact, it is an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes.

Stunning results come from the volumes and the growth of crowdfunding. The global crowdfunding industry amounted to \$34.4bn in 2015. The biggest crowdfunding typology (Lending-Based crowdfunding) accounts for as much as \$25bn while all the other crowdfunding models take similar shares in terms of actual volumes. Donation-Based seems to be the strongest among the three followed by Reward-Based and Equity-Based (respectively \$2.85bn \$2.68bn and \$2.56bn as estimates for the end of 2015). The growth rates of crowdfunding are noticeable, since in 2015 they were 82% for North America 210% for Asia and 98% in Europe (the three biggest crowdfunding reality in the world)². Kickstarter – the biggest crowdfunding platform in the world – alone, have raised over \$2bn in pledges from millions of backers (Kickstarter, 2015).

Thanks to the incredible pace at which crowdfunding is growing as stated by these numbers, academic researchers have recently started to investigate the different shapes and characteristics of this phenomenon.

Particularly, many studies have examined the determinants of success of crowdfunding campaigns (Mollick, 2014; Ahlers et al., 2015; Colombo et al., 2015) or the dynamics that push and influence the behaviour of contributors of the projects (Burtch et al., 2013; Agrawal et al., 2014b; Burtch et al., 2015; Kuppusswamy and Bayus, 2013). While the majority of the literature focused on this topics, few studies have been done

² For further data about crowdfunding in the world, in Europe and in Italy please look at Appendix A

in order to understand the impact of crowdfunding on post-campaign outcomes, aiming at understanding if crowdfunding can bring other benefits rather than just the financial contribution of the campaign.

For example, scant literature has been devoted to analyze the intriguing relationship between the crowdfunding phenomenon and traditional forms of new venture financing, such as Angel investors and Venture Capitals. Indeed, some studies have found that crowdfunding can act as a proof of concept for the market, improving professional investors' trust in the companies which participate in it. Another example is the push that crowdfunding is able to give to the innovation of an enterprise. The explanation is strictly linked to the definition of crowdfunding; in synthesis, enterprises can offer an initial version of a product they want to launch on the market, being able to have feedbacks and comments about its features (if the crowdfunding platform they are using let them do that). In this sense they can modify the product and make it more attractive and innovative for their potential future customers.

This present work seeks to understand if any of the outcomes of crowdfunding are linked with the performances of the company in the future.

This paper is organized as follows. The next section presents a wide review of the literature of crowdfunding and the post-campaign crowdfunding performances. Then, there is a section in which we develop our hypotheses, explaining which are the research questions of our work and the motivations that led us to formulate them. Afterwards, we present a section dedicated to explain how the data collection³ was performed and a section dedicated to describe the variables used for our models. After that, we present a section showing the model used⁴ to verify the hypotheses and the results. Finally, there is a section of conclusions, limitations and future research advice.

³ Concerning the data section, we have built two different databases realized thanks to an initial dataset of 1084 crowdfunding campaigns in the section Technology of Kickstarter - the largest Reward-Based crowdfunding provider worldwide (Mollick & Nanda, 2015) - in 2012.

⁴ Different regression models were used either to test our hypotheses either to test the robustness of the model.

Econometric results have evinced and proved some of the hypotheses we formulated. We trust that this work can give researchers a useful and helpful starting point to further analyse this fascinating phenomenon.

1 Crowdfunding: Review of the Literature

This chapter aims at providing a wide and precise review of the literature. For this purpose, a systematic search in google scholar (www.scholar.com) and Scopus (www.scopus.com) has been conducted using the keywords “crowdfunding”, “post-campaign crowdfunding”, “performance crowdfunding” in the title, abstract and keywords of the papers. Since the topic of our interest is new in the literature, this search was limited at 2018, 2017, 2016 and 2015 selecting only the papers that were related to the topic of post-crowdfunding performance. Then, we checked all the references used by the papers found and we looked up if the papers were quoted by other relevant ones in case the databases we used were not provided with some of them. This method helped us to collect other relevant papers for building the crowdfunding literature in wider terms. After reading the abstracts of all the papers collected and selecting only the ones of our interest, the final sample was constituted by 98 relevant articles.

1.1 Crowdsourcing definition

The concept of crowdfunding can be seen as part of the broader concept of crowdsourcing, which uses the “crowd” to obtain ideas, feedback and solutions in order to develop corporate activities (Belleflamme et al. 2010), and microfinance (Harrison, 2013; Robinson, 2001).

The concept of crowdsourcing can be extremely helpful to let us understand some peculiar aspects that would not be so clear otherwise. Hence, before delving into the concept of crowdfunding, we will explore the one of crowdsourcing. Surely, its analysis will pave the way to a better and broader understanding of crowdfunding.

Kleman et al. (2008) provided the following definition:

“Crowdsourcing, as argued in this article, takes place when a profit oriented firm outsources specific tasks essential for the making or sale of its product to the general public (the crowd) in the form of an open call over the internet, with the intention of animating individuals to make a contribution to the firm's production process for free or for significantly less than that contribution is worth to the firm.”

The reason why a firm would use crowdsourcing is to exploit the creative work of sometimes skilled people as a cheap stream to generate value and profit. Tasks that lend themselves to crowdsourcing include product design, advertising, quality monitoring, and the solution of specific technical problems (Kleeman et al., (2008). Ultimately crowdsourcing is the act of outsourcing a task to a “crowd,” rather than to a designated “agent” (an organization, informal or formal team, or individual), such as a contractor, in the form of an open call (Howe, 2006, 2008; Jeppesen & Lakhani, 2010).

When it was first coined by Howe (2006, 2008) the term crowdsourcing was strongly connected with the one of the Internet. Nevertheless, the idea of using customers to do work for a business has been around for a long time (Kleemann et al., 2008), it can be dated back to 1714 when the British government offered a prize in the form of cash (called the Longitude Prize) to anyone who would come up with an elegant way to determine the optimal position of ships in the sea (The Economist, 2008). You can look back to the Wild West movies in which sheriffs used to hang pictures of the “Most Wanted” in public places in order to have feedback from the crowd or to the application of architecture design contests which led to stunning buildings around the world, including the Sydney Opera House or the White House. IKEA used this concept to help its growth through the years. Indeed, researchers refer to the “IKEA effect [as] the increase in valuation of self-made products” (Norton et al., 2012).

As we noticed, crowdsourcing has been around for a long time but it has drastically improved with the advent of the Internet. One of the most famous examples of Web user participation is Wikipedia. It was created thanks to the participation of people who performed tasks that a computer was not able to easily do. At the same time, they came

up with the idea of linking that concept with computer technology to provide a highly successful and effective encyclopaedia that has overtaken and overshadowed cultural icons such as Britannica (Tapscott and Williams, 2006). Any open source software can be seen as the application of crowdsourcing resources by firms who need to. Indeed, it is noteworthy the different definition given by Howe (2006):

“the application of Open Source principles to fields outside of software.”

The fascinating history and examples of crowdsourcing raised some natural questions for scholars of management: when is crowdsourcing a better solution than solving problems internally or using an external but unique contractor?

One of the best ways to answer this question is to use the behavioural and evolutionary theories of organizations. Following these theories, one can state that under certain circumstances crowdsourcing transforms distant search into local search. This would let the firm to benefit from the characteristics of a distant search without occurring in high costs. Therefore, crowdsourcing may be a better mechanism than either internal sourcing or a designated contracting for which solutions require distant search. Obviously, it depends on the kind of problem the firm is dealing with, the type of crowd, the problem that can be crowdsourced or how easily the final solution of the problem can be evaluated.

Like crowdsourcing, crowdfunding is a way to use the online masses to support the development of new projects and products (Agrawal et al., 2014).

1.2 Crowdfunding definition

Like many neologisms of the Internet Age, the definition of “crowdfunding” is a work in progress. The term is sometimes used broadly to describe almost any form of grassroots online fundraising (Burkett, 2011).

Michael Sullivan is credited with coining the term crowdfunding back in 2006 with the launch of fundavlog, a failed attempt at creating an incubator for videoblog-related projects and events including a simple funding functionality. This scheme was based on different features and above all, funding from the crowd. Although the term crowdfunding became a common term just with the advent of the platform Kickstarter, its conceptual origin can be dated far earlier. For instance, Mozart and Beethoven financed concepts and publications of new music manuscripts via advance subscriptions from interested parties, the Statue of Liberty in New York was funded by small donations from the American and the French people, in the 90s the British rock band Marillion collected US \$60,000 from their fans via an internet call to finance their concert tour through the US.

Although the concept can rely on a quite long life, a clear definition of the term has yet to be proposed. Some attempts have been made though. One of the first definitions comes from Belleflamme, Lambert and Schwienbacher (2012), also confirmed by Hemer (2011), who define crowdfunding as an “open call, essentially through the Internet, for the provision of financial resources either in form of donations (without rewards) or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes”.

Another attempt to define crowdfunding has been made by Butticè et al. (2014), who besides than just giving a definition of it highlighted the main aspects that a campaign of crowdfunding should have: the provisions of feedback from crowdfunders, the role of the crowdfunding platform and the existence of crowdfunding models. Accordingly,

this is the definition they offer which considers the above-mentioned aspects and try to include the most recent evolution of crowdfunding:

“Crowdfunding is the act of collecting monetary contributions together with feedback and suggestions from a crowd of contributors (either in form of donation or in exchange for some forms of reward) through an open call on enabling web platforms.”

1.3 The players of a crowdfunding campaign

The nascent literature on crowdfunding has identified three key players: fundraisers, crowdfunders, and crowdfunding platforms (Butticè et al., (2017).

1. The *fundraisers* are those who propose the ideas and/or projects to be funded (Mollick, 2014). They can be an independent individual willing to raise money (e.g. to create a start-up), they can be a manager or in general part of the organizational enterprise for which they are fundraising.
2. The *crowdfunders* are those who support the crowdfunding campaigns by providing financial backing to the projects (Butticè et al., 2017). They are not limited to the financial support of the campaign, but their contribution is often extended to giving feedback and new ideas to the campaign.
3. The *crowdfunding platforms* work as mediators between fundraisers and crowdfunders. The main function of the platform is to create and monitor the search engine which let crowdfunders and fundraisers to meet, provide online payment mechanisms, create a community of users, etc., and in so doing they reduce the search (Agrawal et al., 2014) and coordination costs (Crosetto and Regner, 2014) between fundraisers and crowdfunders. Platforms usually earn a fee or a share on transactions (Burkett, 2011).

1.4 Target of fundraisers

The main purpose of a fundraiser who is using a crowdfunding platform is to collect money. By using a crowdfunding platform, the fundraiser has an additional way of collecting money instead of using conventional means of money collection. For instance, banks typically do not provide huge loans to companies at their beginning stage, differently crowdfunding allows any individual to obtain potentially an indefinite amount to start its business. A great example to explain the above is JustPark, a phone application that raised £3.5m through its first equity crowdfunding campaign in 2015. Although collecting money is the main purpose of a fundraiser, there are other non-monetary benefits as important as the one we mentioned above. Indeed, thanks to crowdfunding a direct impact from backers can be given by adding comments and feedbacks during the crowdfunding campaign. Exchanging information can lead to a better version of the final product, anticipating mistakes and reducing asymmetric information with the market. As stated by Stanko and Henard (2017) backers can prove to be important advocates as well as a valuable source of feedback and ideas as the product progresses to market launch.

In this way a fundraiser can obtain an important relationship with people interested in the product even before creating it. Indeed, thanks to crowdfunding a real community of potential users can be created to discuss about the project.

Moreover, the number of backers indicates how many people were interested in the product and decided to finance it even previously to its realization. This gives an interesting information in terms of potential market size to the creator of the project.

Another important goal that fundraisers aim to achieve is the marketing leverage, by creating interest in a new project in the early stages of its development (Mollick, 2014).

As already mentioned this is an important advantage in terms of money collection: having positive feedback from crowdfunding experience can work as a signal of quality of the projects and lead professional investors to invest more in the company.

Another interesting analysis has been done about the reasons which lead a person to decide not to participate to a crowdfunding campaign.

The first reason happens because fundraisers can be demotivated to create a project on crowdfunding because they do not feel comfortable to ask money to friends and familiar, especially in relation to those people who are in a worse financial condition. Moreover, as we already mentioned, the creation of a crowdfunding campaign requires time and effort to be properly managed in the period before and during the activities. This can imply a significant amount of time to be spent on it and it can turn into a disincentive for fundraisers.

It is also noticeably that activating a crowdfunding campaign means that you are declaring you want to reach a determined target. Sometimes the fear of not reaching this target can scare the fundraiser that see the possible failure as having a huge negative impact on itself. That is why it might happen that fundraisers finance the project themselves to see it being successful.

Finally, especially concerning projects and ideas which are innovative, fundraisers would rather keep the project idea secret than sharing it with everyone else. For example, quite often entrepreneurs consider safer to share their business ideas just with a small group of people and friends. Fundraiser are scared that giving free access to the projects to anyone (people and firms), their idea might be copied.

1.5 Target of crowdfunders

Crowdfunders are the engine behind crowdfunding campaigns; they provide fundraisers with financial contribution and feedback on the quality and possible improvements of their projects. In some cases, backers have been called upon to play an active role in making design choices (Diallo, 2014; Lewis-Kraus, 2015). While usually this interaction has a positive influence on the product development (Spaeth et al., 2010), it is noticeably that the interaction with backers can also be harmful over time (Nahapiet and Ghoshal, 1998). In fact, when the backers happen to be too many and with different opinions, trying to incorporate all the advices can be

counterproductive. From a knowledge creation perspective, increasing the number of backers as direct exchange partners increases the amount of information, resources, and ideas available to innovating entrepreneurs (McFadyen and Cannella, 2004). Beyond feedback, backers also play an important role as product evangelists, spreading word of mouth about the product via both traditional and contemporary (i.e., social media) means (Scholz, 2015). In fact, crowdfunding allows customers to become a part of the plotline. Instead of passively assist to online advertisement or watching a television promotion, crowdfunding as marketing encourages activity of potential customers. Crowdfunders are involved in a community with the same passions and thoughts and they feel like being part of the final realization of a project. This sense of belonging and the experience on the platform itself will lead crowdfunders to promote that project campaign with others via newspapers, social media and so on.

Finally, it is worth observing that many individuals operate both as fundraisers and crowdfunders of different projects (Hardy, 2013) and that there are even self-ruled open calls for successful fundraisers to become active sponsors of other crowdfunders (e.g. the “Kicking it Forward” Initiative).

Most academic studies that focused on crowdfunders investigated the motivations that lead them to make pledges. Buttice et al. (2014) identified five main reasons which stimulate crowdfunders to pledge:

1. *Economic return*: as for any other investor the first reason is the economic return on the capital provided to fundraisers. For instance, we will see how depending on the crowdfunding model backers can obtain a tangible or intangible reward as remuneration for their investment or become shareholder of the funded enterprise (Ordanini et al., 2011).
2. *Community*: the creation of a community is the second driver for crowdfunders. Since crowdfunders contribute to a campaign for the sake of feeling part of a community (Gerber and Hui, 2013), they want to share feeling and thoughts with others, in order to feel connected with someone. In these spaces, members

can contribute to the community growth by performing tasks, such as voting, or coordinating content production, such as managing a forum, (Greenberg and Mollick, 2014) publishing the logos of a project on a Facebook profile (Harms, 2007) or buying gadgets and other apparels (e.g. a t-shirt or hat) for exposure (Colombo et al., 2015b).

3. *Philanthropy*: it is an important driver, in fact according to Ryu and others (2016) philanthropy motivation is positively associated with funding amount; especially for social causes, since it pushes individuals to donate in name of altruism and to feel helpful for others (Agrawal et al., 2014). It's not surprising that more and more charity crowdfunding projects are having a great success on crowdfunding platforms like Razoo or Generosity by Indiegogo.
4. *Social recognition*: crowdfunders may indeed envisage in the campaign a way for obtaining reputational gains (Burtch et al., 2015) and social recognition (Agrawal et al., 2014). It is worth it to add to this argumentation some studies made by Aaker. According to his research an interesting question was raised to scholars: can a general identity be triggered by the community and therefore playing a guiding role in crowdfunders' behaviour? In other words, to what degree does the emotional meaning of becoming part and parcel of a larger identity? Aaker et al. (2009) made an experiment by asking to a group of people questions about working or donating for a certain company. They discovered that when they were adding "joining others" to questions, people were paying more attention to the enterprise. As Aaker et al. (2009) studies reported the added social context (i.e., "joining others") presumably cued social (vs. personal) identities that made people pay more attention on relationships with other givers.

1.6 Crowdfunding classification

A good point of discussion among researchers has been the proposal of a way to classify different kind of crowdfunding. Since 2012 different models have been proposed from different scholars. A popular classification (e.g., Ahlers et al., 2015; Mitra, 2012; Griffin, 2012; Lehner, 2012) revolves around what crowdfunders receive in exchange of their contributions (Butticè et al., 2017). This classification split the crowdfunding models in four types: *Donation-Based*, *Reward-Based*, *Equity-Based* and *Lending-Based*.

1.6.1 Donation-Based crowdfunding

The first model we are going through is the Donation-Based one which entails that there is no remuneration in exchange of the money pledged by the crowdfunders. What pushes the crowdfunders in investing into the project is usually either a good opinion of the project/organization who is asking for money. The funders do not expect anything back from the investment meaning that the degree of uncertainty of the campaign is less important for them. Contributors donate funds mostly for charities and other non-profits and sometimes for-profits as well (Griffin, 2012; Bradford, 2012). Usually represent a small proportion of overall crowdfunding activity and legally speaking is not complex.

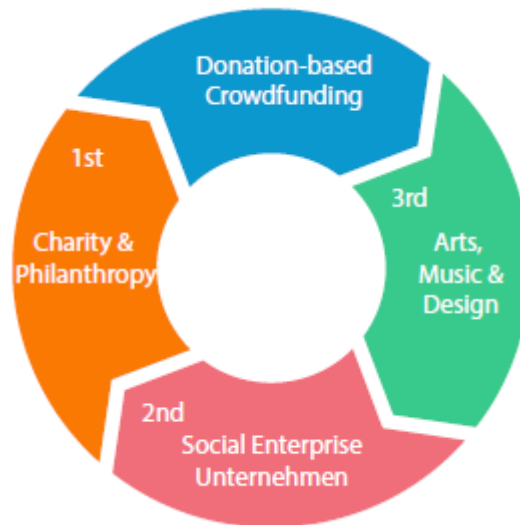


Figure 1: Main Sectors financed by Donation-Based crowdfunding. Source: The 3rd European Alternative Finance Industry report, 2016.

1.6.2 Reward-Based crowdfunding

In the Reward-Based model sites typically do not involve direct revenue sharing arrangements through, for instance, payment of interest or profit-sharing from the business. Entrepreneurs solicit individuals to fund their projects in exchange for rewards commensurate with the level of funding provided. Typical rewards comprise the product that will be commercialized by the entrepreneur if the project is successful. Rewards could range from notes of cheering to small tokens of appreciation, such as key chains, to having the contributor's name on the credits of movies that are sought to be financed through crowdfunding. The business models of crowdfunding platforms are generally based on fees applied for each project that is submitted to the platform. The fees can be charged either if the campaign is successfully funded or if it is not depending on the crowdfunding platform. An example of a site charging fees is Kickstarter (<http://www.kickstarter.com/>). Fees can range from 4 to 9 percent. Obviously reward and donation crowdfunding do not aim only at raising “easy” money from the crowd. There are many other advantages that one can gain through these tools (having feedbacks and comments as an example) and we will talk about them in detail.



Figure 2: Main Sectors financed by Reward-Based crowdfunding. Source: The 3rd European Alternative Finance Industry report, 2016.

1.6.3 Equity-Based crowdfunding

Equity Crowdfunding sites are quite common especially in Europe and to some extent are gaining huge success in Australia and Asia. In this kind of business model entrepreneurs ask individuals to finance their project in exchange for a share of equity securities. Given the different nature of the “reward” asked back from crowdfunders this model do not exist everywhere due to regulatory issues pertaining the sales of securities. For instance, in Canada this kind of websites do not exist (these sites exist mostly outside North America). When compared to other forms of crowdfunding, equity crowdfunding has the potential to raise larger sums of money. On the other side though, also thanks to the US regulatory system that has not fully embraced crowdfunding, there is not a large and “hungry” crowd of investors ready to buy shares through this method.



Figure 3: Main Sectors financed by Equity-Based crowdfunding. Source: The 3rd European Alternative Finance Industry report, 2016.

1.6.4 Lending-Based crowdfunding

In the Lending-Based crowdfunding, also referred to as peer-to-peer lending (individuals receive loans directly from other individuals) or social lending, funders receive fixed periodic income and expect repayment of principal (Ahlers et al., 2015). In general, there are two categories for lending sites; those not offering interest and those that do offer interest. To give some example, one of the most famous crowdfunding site that does not offer interest is Kiva (<http://www.kiva.org/>) which provides money to microfinance lenders in 66 different countries worldwide. Otherwise a good example for a platform offering interest rates are Prosper and LendingClub. Lenders purchase notes issued by the websites which use those funds to lend through WebBank or Paypal to borrowers. In this respect, they function more as investors than lenders because lenders get paid back only if the borrowers will pay back. Moreover, the transaction fees and interest loans are strictly correlated on the borrowers “credit risk”. Loans that charge interest typically are viewed as “securities” and, therefore, for regulatory purposes fall within the domain of securities regulation.



Figure 4: Main Sectors financed by Lending-Based crowdfunding. Source: The 3rd European Alternative Finance Industry report, 2016.

1.6.5 Other models

The literature sometimes reports some other concept of crowdfunding, in the list below we decided to summarize some of them in order to give a more complete vision to the reader:

- *Hybrid Models*: that are a mix of different models of crowdfunding in order to being able to attract a larger amount of crowd;
- *Royalty-Based crowdfunding*: the reward in this case has a monetary nature. It mainly relates to sharing profits and revenues related to the investment made. Although there is no reimbursement of the equity capital or property on the project;
- *Invoice Trading (or Commercial Invoice crowdfunding)*: consist in the disposal of a commercial invoice to an investor through an internet platform that select all the opportunities. Investors will anticipate the amount of the commercial invoice in exchange for an interest. The disposal is carried out through a competitive auction or the so-called *tranching* (dividing the commercial invoice in different parts and selling them out).

Lending-Based crowdfunding and Invoice Trading are less of interest for our purpose since it is less used to finance entrepreneurial projects and more for finance-my-life projects. Moreover, to give a better understanding on the terminology used in this paper it is important to notice that Equity-Based, Lending-Based and Invoice Trading are generally grouped together and called *crowdinvesting*.



Figure 5: Main Sectors financed by Invoice Trading. Source: The 3rd European Alternative Finance Industry report, 2016.

From the several pictures illustrated in this section it is interesting to notice how crowdfunding is **sector-agnostic across models**, although some platforms tend to attract certain specific sectors. This phenomenon supports the possibility for different sectors to benefit from the usage of this forms of alternative finance. To support this statement, we can notice how some models were fairly agnostic, with their highest-ranking sector accounting for only 10-12% of their platform total volume. This was the case for Lending-Based crowdfunding and Invoice Trading. Though Equity-based Crowdfunding did indicate just over 20% of funding to ‘Technology’, the remaining sector splits were fairly even and included Real Estate & Housing, Internet & E-Commerce, Food & Drink, BioTech & E-health, to name a few. In the case of Reward-

based Crowdfunding, 27% of business fundraisers came from Film & Entertainment, and 26% from Arts, Music and Design. For the Profit-sharing model, 53% related to Sports, while 24% came from Food & Drink.

1.7 Success factors of a crowdfunding campaign

We already mentioned some of the most important elements that can distinguish a crowdfunding campaign like the fundraisers' capital target or the type of rewards a crowdfunder can receive. It is worth it to present in a structured way the elements that can lead a company or an individual to a successful crowdfunding campaign. Reviewing the literature, the elements featuring a crowdfunding project are many and according to Buttice et al. (2014) there are five main characteristics, which seem to correlate with campaign success:

1. typology of project content;
2. target capital;
4. managing a campaign: the early days;
3. duration of the campaign;
4. rewards (if any);
5. information made available.

1.7.1 Typology of project content

Many different topics can be covered in a crowdfunding campaign. To give an example Kickstarter has 8 different crowdfunding clusters: Food & Craft, Music, Film, Comics & Illustration, Arts, Games, Design & Tech and Publishing.

There are projects aimed at sponsoring artistic works (Galuszka and Bystro, 2014), like theatre (Beaulieu and Sarker, 2013; Bœuf et al., 2014; Colombo et al., 2015b), dance, design, fashion, and photography, movies (including documentary movies, Sørensen, 2012), and videogames. Other projects are about agriculture (Liao et al., 2015) food,

and journalism (Jian and Shin, 2015; Jian and Usher, 2014). At the same time, there are many Donation-Based crowdfunding projects that aim at covering personal medical expenses (Sisler, 2012), and others that aim at financing scientific research (Marlett, 2015; Marshall, 2013).

Another important classification distinguishes profit and non-profit projects. In the following we present some number to better capture this difference: on a total of 50 crowdfunding initiatives, 23 are connected with a specific project, 18 are created by a for-profit company, 8 from non-profit associations and only 1 is done by an individual (Bellaflamme et al., 2010).

Moreover, it is interesting to notice that performance of a non-profit campaign might be different. Pitschner (2014) used data from approximately 50,000 crowdfunding projects to assess the relative funding performance of for-profit and non-profit campaigns. They found that non-profit projects are significantly more likely to reach their minimum funding goals and that they receive more money from the average funding provider. At the same time, however, they have fewer funding providers and obtain lower total funding amounts.

1.7.2 Funding target

The target capital is another key factor in a crowdfunding project since it is the amount of money that a fundraiser expects to raise in order to run successfully its business. As we already mentioned is part of the business model of the crowdfunding platform as well (see section 1.2 and 1.3). On this concern different scholars (Leboeuf, Schwiembacher, 2015; Cumming et al., 2015) determined two different ways in which crowdfunding platforms works:

- The “All-Or-Nothing” (AON) model involves the entrepreneurial firm setting a fundraising goal and keeping nothing unless the goal is achieved, thereby shifting the risk to the entrepreneur. (Leboeuf, Schwiembacher., 2015)
- The “Keep-It-All” (KIA) model involves the entrepreneurial firm setting a fundraising goal and keeping the entire amount raised, regardless of whether they meet

their goal or not. In this specific situation the risk is allocated to the crowd meaning that even a project which is not able to properly fund itself can keep the money (Leboeuf, Schiwenbacher., 2015). Usually the fees charged to fundraiser are higher when this model is applied. Overall, KIA campaigns are less successful in meeting their fundraising goals, consistent with a risk-return trade-off for entrepreneurs.

As far as this classification is concerned, we are going to focus only on projects extrapolated from Kickstarter, which works with the AON system, where the project developers receive funds only if their funding target is reached when the crowdfunding campaign is over. More in detail, the funding target influences the number of crowdfunders and the amount of money that these would pledge. In fact, if a target capital is set to low, the campaign could not be considered from backers, since crowdfunders feels that their contribution is not vital to the success of the project. On the other side, Colombo et al. (2015b) have noticed that crowdfunders increase with the target capital, but they provide smaller amounts of money. In order to obtain the financing, however, it's really important to set the right funding capital target. In fact, there are several studies that highlight how the higher the funding capital requested on Kickstarter the higher is the possibility to fail (Mollick., 2014).

1.7.3 Managing the campaign: the early days

Scholars have shown that the presence of many early participants attracts even more funders while having few initial participants unequivocally leads to a bad campaign destiny as a consequence of the creation of negative expectation among the crowd that is supposed to finance the project. There have been many examples in the literature suggesting that the amount of money pledged in the first days of the campaign is crucial to largely anticipate its success (e.g., Agrawal, Catalini, & Goldfarb, 2014; Ordanini, Miceli, Pizzetti, & Parasuraman, 2011).

It is noticeably that according to Stricker (2012) 82% of the project that are able to reach 20% of their target will obtain full funding, while projects that reach 60% of their

target have a success rate of 98%. It is quite straightforward that what happens at the early stage of a community has a strong impact on its subsequent evolution. Friends and family funding play a key role in these stages of fundraising, they disproportionately invest early in the funding cycle, generating a signal for later funders through accumulated capital (Agrawal, Catalini, and Goldfarb, 2011).

To this extent, is interesting to review the view of Colombo et al. (2015), according to whom the contributions received in the very first stage of a crowdfunding campaign reduces either the information asymmetries related to adverse selection either those related to moral hazard. This happens thanks to three main mechanisms:

1. *Observational learning*: occurs when the quality of a product is not directly observable, and individuals get influenced by the behaviors of other backers. They will be keener on donating if the others will do so and vice versa. In fact, when individuals see that many people have decided to purchase a certain product, they are induced to believe that the product is good and should be purchased (Banerjee, 1992; Cai, Chen, & Fang, 2009; Markus, 1990).
2. *Word-of-mouth*: is the mechanism that brings early backers to talk about the funded project with their friends, more “early crowdfunders” means more friends and more friends of friends informed. This is the so-called same side effect of a two-sided market. The presence of many early participants attracts even more funders while few initial participants will prevent the entrance of possible other backers, since they will think that the campaign will not be successful. Since it is a fundamental lever of marketing, word-of-mouth has acquired new significance in the context of online communities (Dellarocas, 2003), with the assistance of social network functionalities embedded in websites. For instance, Kickstarter project pages contain “Tweet” and “Facebook” buttons that enable users to circulate information to their friends with no effort. Thanks to all these features, the more there will be attention to the campaign, the more the information asymmetries will be reduced, since people will comment under the campaign project or on blog and websites. In fact, social networks can provide information relevant to lending outcomes. If

someone who knows the borrower personally can attest to his or her creditworthiness, or even better, participate in lending to the borrower, the loan should be relatively less risky. (Lin et al., 2009)

3. *Underdeveloped projects*: The feedbacks that crowdfunders gives during the campaign are vital for the fundraisers. Since, as already mentioned, entrepreneurs can exploit the so-called wisdom of the crowd to better off their actual proposal, reducing in this way the possibility of moral hazard.

1.7.4 Duration of a campaign

It is crucial to carefully study how the duration of a campaign might impact on the performance of the campaign itself.

Some questions come to mind as a consequence: is there an ideal duration of the campaign? Why this would affect the output of the campaign?

An indirect proportionality between the duration and the probability of success has been proved by Namely (2014) and Mollick (2014). Moreover, a crowdfunding campaign lasting between forty and sixty days appears to be optimal (Boeuf et al 2014). Concerning the second question it has been explained that the optimal duration period we mentioned above lasts enough to catch the attention of a larger number of crowdfunders and it is sufficiently short to raise a sense of urgency for which people are encouraged to donate. Nevertheless, the study of Liao et al. (2015) showed how longer campaigns favour the positive result of the target of a crowdfunding campaign. Butticiè et al. (2014) stated that these conflicting results may refer to the different countries in which researches have been developed, that are United States for Frydrych and colleagues (2014) and for Mollick (2014) while China for Liao and colleagues (2015).

1.7.5 Reward

The number and quality of rewards is another relevant factor that could impact on the final success of a reward-based crowdfunding campaign (Bœuf et al., 2014). In fact, according to Gerber and Hui (2013) crowdfunders are willing to fund a project in exchange to an external reward such as an acknowledgment, a tangible artefact or an experience.

To this extent, Bœuf and colleagues (2014) distinguish between two types of reward: symbolic rewards and material rewards. The former consists in an acknowledgment for the support given; for example, from having one's name acknowledged in the movie credits, to receiving a simple "thank you" email from the creators.

The latter consists in a tangible remuneration, like getting the new crowdfunded product or living an experience, as meeting the fundraiser.

1.7.6 Information provided during the campaign

The amount and quality of the information provided on the platform by fundraisers is correlated with the probability of success (Gleasure and Feller, 2014). If the project is more detailed, the information asymmetries between fundraisers and crowdfunders are more limited, therefore the campaign will be more likely to succeed. This phenomenon is quite common in economics and is a natural consequence arising when there are imperfectly informed markets in which one side is better informed than the other. The literature tells us that there are two main problems that may arise: Adverse Selection and Moral Hazard.

In case of adverse selection (ex-ante information asymmetries) crowdfunders suffer a problem of hidden information. As a matter of fact, the backers of the project are assumed to have worse knowledge about the project in comparison with the fundraiser. In other words, the entrepreneur is not likely to perfectly represent all the features of its project resulting in possible mismatch between the real value of the project and the

value perceived from investors. Thus, investors might end up financing the wrong projects in case the necessary information are not well displayed from the fundraiser. This fear of choosing the wrong project will result in backers providing less capital either to the good projects either to the bad ones. This happens because fundraiser are typically new players in the market and - in contrast to well-established firms - have not had the ability to build up a reputation to demonstrate their trustworthiness (Strausz, Roland., 2015). What follows is that good start-ups may not reach the target capital leading to a typical case of adverse selection. To lower the probability of this event Colombo et al. (2015b) suggests inserting on the campaign web page direct links to external webpages and resources, and to provide updates. The above would result in a better understanding of the specificity of the project. According to Schwienbacher (2010) the reasons why an entrepreneur may not disclose information could be linked to a lack of experience and professionalism or because they are scared that their ideas would be stolen. Indeed, during the crowdfunding stage fundraisers must show detailed information about their project with the crowd but at the same time they do not have any insurance that someone else will not copy their ideas (e.g. having an adequate copyright protection).

1.8 Target capital

The first crowdfunding initiatives considered as “funded by the crowd” through internet where generally held directly on the project owner’s websites. Nevertheless, as crowdfunding developed, it naturally moved to dedicated platforms which were able to provide more efficiency by reducing transaction costs with the provisions of payment systems, promotional tools, and other services, and by mitigating information asymmetries between project owners and contributors by publicizing information about the project.

It is straightforward to notice that the business model followed by crowdfunding platforms holds similarities with other technology-based firms which are able to exploit synergies between two different groups of users that generate different network effects with each other. For instance, a console manufacturer has to deal with two different groups of customers: on one hand players who are looking for good gaming experience and on the other hand game developers who aim at attracting as many players as possible to sell their game. In this scenario the utility of one group increases (positive indirect network effect) or decreases (negative indirect network effect) with the number of participants of the other group. Nowadays this economical business model called **two-sided market** is becoming typical for some internet-based companies. Examples of online two-sided market platforms are marketplaces that connect buyers and sellers (e.g., eBay); home sharing services that link homeowners and visitors (e.g., AirBnB); and ridesharing services that connect drivers and passengers (e.g., BlaBlaCar). Going back to crowdfunding platforms, positive cross-group network effects arise from the benefit that project owners extract from a greater number of contributors or investors participating on the same platform, they increase their chances to fund their proposition (Viotto, 2015). Likewise, a greater number of projects on a given platform increases the probability contributors have of finding projects that match their preferences. The positive network effects within a group happen on the contributors' side because more participants increase the probability of projects reaching their goals and consequently of each investor obtaining their payoffs. On the project owner's side, negative within-group network effects arise from the competition for the attention of contributors (Ly and Mason, 2012). In contrast, some projects may attract outstanding financial support and create spillover effects that benefit other project owners (Doshi, 2014). In order to generate the critical mass, the crowdfunding platform has to decide which side to bring first on it. Crowdfunding platforms tend to bring the project owner first with strategies that include fee exemption and partnerships with institutions and associations that encourage their members to join (Viotto, 2015). On the other side the contributors' side comes on board in distinct fashions, depending on the funding model. In Reward-Based crowdfunding, for example, project owners invite their friends and family to join the

platform and to contribute to the project (Mollick, 2014; Agrawal, Catalini and Goldfarb, 2015).

1.9 Post crowdfunding performance

While initially the bulk of attention on crowdfunding has been the identification of the factors that predict campaign success, less focus has been given to investigate the effects of elements of crowdfunding on subsequent firms' outcomes.

One of the first attempt was made by Kuppusswammy and Mollick (2014) who conducted a survey which suggested that crowdfunding provided many potential benefits beyond the crowdfunded money itself, including helping to provide access to customers, press, employees, and external funders. In a following paper, on one hand Kuppusswammy et al. (2016) pointed out how a crowdfunding campaign can facilitate subsequent access to external capital under certain conditions. On the other hand, a good impact on publicity, customer base, partnerships and employees were highlighted as possible outcomes of a successful crowdfunding campaign. In particular the research found that the likelihood of obtaining non-financing benefits results higher than the one of obtaining external financing (except for the probability of finding new employees). Moreover, Stanko and Henard (2017) tried to broadly understand crowdfunding's subsequent effects on both the success of the crowdfunded product as well as on the entrepreneurial organization. Indeed, for the former point they explained how and under which constraints a crowdfunding project can have an impact on the future product market performances, for the latter they analysed the impact on the innovation carried on by the firm launching the project.

We first analyze the literature related to the potential relationship between crowdfunding success and attracting additional capital. In addition, we analyze in detail all the literature attempting to discover a possible relation between a good crowdfunding performance and other subsequent positive performance of the company launching it. Although scant attention has been devoted to these topics, we made an

attempt to summarize everything that has been discovered, highlighting which are the limitations and opportunities to come for scholars.

1.9.1 Attracting additional capital

As we stated our first aim is to present the literature on the relationship between crowdfunding success and the probability of **attracting additional capital**. Kuppuswammy et al. (2016) showed how there is a positive effect of crowdfunding success on the probability that an entrepreneur secures external financing. Professional investors seek high-potential ventures and provide them with either equity or debt capital. Such entities in order to maximize their financial return must accurately value those ventures and the potential market associated with their new ideas or business models. This process is not always straightforward with professional investors trying to reduce the uncertainty of an entrepreneurial project in order to be enough confident about their investments. Any source of information can be useful to reduce these asymmetries and lead professional investor to reach their goal. With the purpose to bridge this gap entrepreneurs can use different means. For instance, the technology involved, the resource availability of the entrepreneurs, their capabilities, entrepreneurial social and human capital, the initial money raised from family and friends as well as the presence of patents can be valid factors in reducing this asymmetrical information. In this regard, a venture's performance on a crowdfunding platform – where thousands of new products and services are competing for attention and resources – can serve as a validation of its market potential. As traditional sources of external capital such as banks, VCs, Angel investors, and other companies seek to filter proposals for the higher quality ideas, crowdfunding performance in some respects can validate the market potential of an idea and reduce the risk associated with the financing request, at least to some extent (Kuppuswammy et al., 2016). As a result, crowdfunding platforms may serve as a “proof-of-concept” to risk-averse investors and lenders.

Kuppuswamy et al. (2016) also wanted to prove with what extent it was beneficial to a startup to raise small amounts in crowdfunding or if more significant amounts had to be raised before the likelihood of obtaining additional financing increased. They highlighted a **concave shape** of the relationship between the amount of money collected through crowdfunding and the amount of money received from professional investors meaning that the amount of money collected during the crowdfunding campaign does have a positive effect on the likelihood of external financing benefits more than proportionally.

Roma et al. (2017) proposed a similar study in which they investigated whether for new technology-based entrepreneurial ventures utilizing Reward-Based crowdfunding, a better performance in such funding channel can increase the likelihood to secure subsequent investments from professionally organized financial resource providers. They added to this research the peculiarity that the above phenomenon is more likely to happen as a result of two determinants: patents and social capital. Specifically, patents on one hand unveil new ventures' technological capability (alleviating the uncertainty about the technological viability of the new product idea) and social capital (defined as "*the sum of the actual and potential resources embedded within, available through, and derived from the social contacts of an individual or an organization*")⁵ on the other hand reduces the uncertainty about the firm's capabilities to access the resources required to successfully implement the business initiative.

The literature has also explored the moderating **role of gender** on the relationship between crowdfunding success and money raised after the campaign. Despite some researchers have shown that women perform better than men in raising funds on crowdfunding platforms (Greenberg & Mollick, 2014), no statistically significant differences have been found between men and women in their ability to secure post-campaign financing (Kuppuswamy et al., 2016). Last but not least they investigated whether prior experience seeking outside capital influences the magnitude of this

⁵ Definition provided by Nahapiet and Ghoshal, 1998, p. 243.

relationship. The results showed how ventures who did not seek external financing prior to the campaign showed higher financing benefits associated with higher performance in crowdfunding projects. However, when the amounts raised were more modest those who had previously attempted to secure external funding experienced greater funding advantages (Kuppuswamy and Roth, 2016)

1.9.2 Innovation and possible non-financing benefits

Stenko & Henard investigated two interesting outcomes of crowdfunding: product market performance and radical innovation. The former refers to the degree of financial success that is reached by the product and the company once the product is launched. The latter is connected to what degree the venture will focus on radical innovation on subsequent efforts.

On one hand, product market performance was connected to a better alignment of the product to the market needs possible thank to backers' feedback. Moreover, thanks to their word of mouth they acted as business "evangelists" helping to spread the word about the product (Mollick, 2014).

On the other hand, radical innovation approach as an outcome to the participation to crowdfunding was connected either to the open innovation - the involvement in the innovation process of entities outside the company (i.e. customers/backers, contractors, universities, professional organizations, competitors) - and to the role of backers throughout the process of innovation of a venture.

As we already said, it is clear that besides a financial support, backers make an important contribution to knowledge creation through their collaboration and this creation of knowledge is a key factor in understanding subsequent innovation (Stanko & Henard, 2017). Finally, while they did not discover a relation among the funding goal obtained and the product market performance, they found it for the radical innovation. In detail, the capability to go beyond the entrepreneurs' funding goal, humpers entrepreneurs' subsequent focus on radical innovation (Stanko & Henard, 2016).

Non-financing benefits have been the subject of study of many scholars who noticed that the advantages of a company that used crowdfunding go beyond the simple collection of money. There are some indirect benefits that can strongly develop and push forward a company and it is noticeable understating whether fundraisers are motivated to launch a project through crowdfunding aiming at these benefits or not. According to Mollick and Kuppuswamy (2014), entrepreneur responses point to the ability of such campaigns to boost the overall awareness of the venture and to build a new customer base for the product, among other benefits. We present the impact of crowdfunding performance along four principal non-financial benefits:

1. *Publicity generated for the venture*: as crowdfunding is spreading all over the world and some platforms are becoming so famous that people would refer to crowdfunding with their name (e.g., Kickstarter) it is crystal clear that the platforms can be a powerful tool of advertisement. During the campaigns, companies are given the opportunity to be linked with a huge amount of different people: backers, other fundraisers, other entrepreneurs. At the same time, they can attract customers on the company official page, on the company social network profiles etc. This is an incredible tool of advertising that a crowdfunding campaign can give;
2. *Increase in customer base*: advertisement plus all the people connected with crowdfunding platform can lead to an increase in customer base;
3. *Ability to find attract and retain employees*: the potential exposure that crowdfunding gives to the firm leads good employees to be more interested in the company in which they might see a potential positive future;
4. *Alliances and partnership*: for the same reasons we mentioned above, crowdfunding lets projects to be known not just by customers and potential employees. The exposure is widened to other companies which might value the good crowdfunding experience and propose alliances and partnerships.

2 Hypotheses

As we have summarized in the literature review, the theory on the impacts of a crowdfunding campaign on a firm is new and still widely unexplored. Some researchers have tried to deal with the benefits that a campaign can bring to a company in terms of additional external financing (Kuppuswamy et al., 2016, Roma et al., 2017). Others have explored the non-financing benefits correlated to crowdfunding (Kuppuswamy et al., 2016) or the drive for innovation that crowdfunding often implies (Stanko and Henard, 2016). The innovation and newness of this topic drove us to wonder what else could have been done to better understand the phenomenon of post-crowdfunding performances. For this reason, we decided to attempt at giving our contribute to this fascinating field of study, by investigating if there is a relationship between the outcomes achieved during crowdfunding and the performances of the proponent after the campaign.

As it is clear from the existing theory, the impact of crowdfunding on the performance of a company can be multisided. In Figure 6 we offer the reader a conceptual overview that we followed to structure our research.

First, we identified the outcomes of a crowdfunding campaign, dividing them into features and performances and highlighting their relations. Then, we explained how the outcomes of crowdfunding are directly linked to the performance of the companies. Moreover, we discussed how the performance of a campaign, (in our case, the amount received) could help in obtaining additional external financing. In conclusion, we demonstrated how, thanks to this post-crowdfunding outcome (i.e. external financing), the crowdfunding performances of a company can be indirectly linked to the firm's performances. As we will explain in chapter 4, we decided to consider the size of the proponents (specifically, the amount of revenues and the number of employees) as firm's performances.

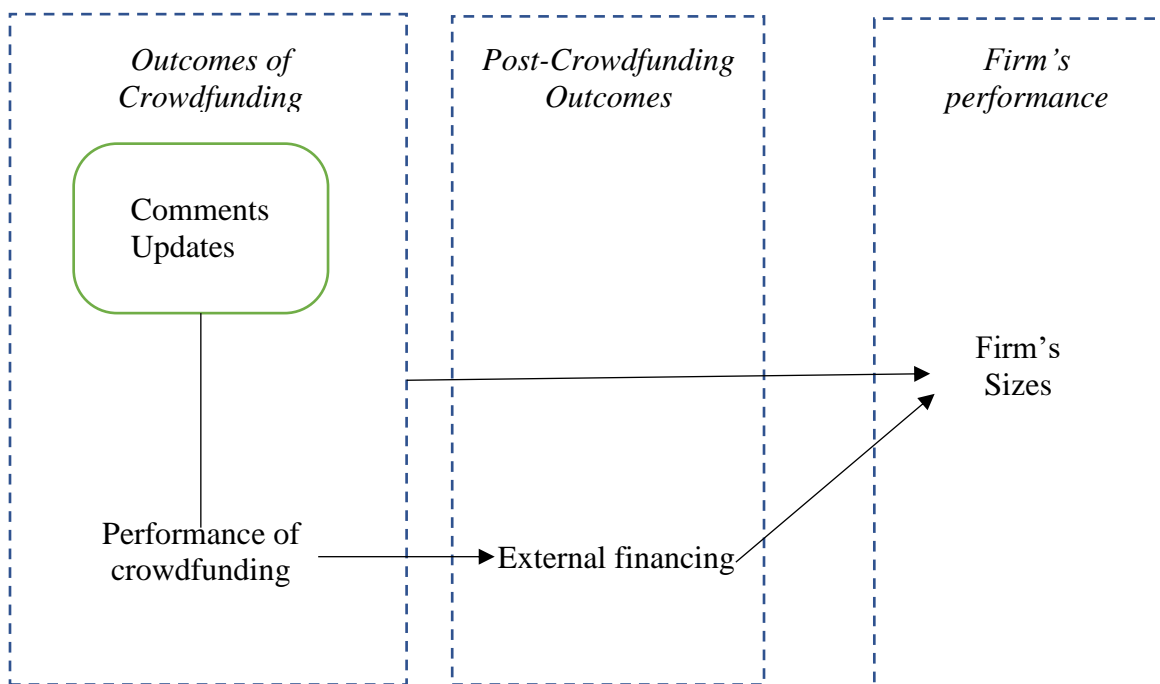


Figure 6: Logical framework in support of our hypotheses.

2.1 Features of a project and backers

The features of a crowdfunding campaign are a necessary element to be successful in crowdfunding, being able to influence the decisions of potential crowdfunders. In fact, it has been discovered that contribution to crowdfunding projects, even in markets where crowdfunding is driven by altruism, appears to be influenced by some features of these projects (Burtch et al., 2011). Mollick (2014) stated that funders respond to signals about the characteristics of the project, regardless of their expectations for financial return.

According to Beier and Wegner (2015), on the crowdfunding platform, project fundraisers generally have two opportunities to manage the features of their projects to their target groups. First, they provide an input to the campaign, by presenting their project on a standardized project page (initial project presentation). Second, project initiators can add updates to this page during the progress of the crowdfunding

campaign (project updates) as an outcome of the interaction with backers' feedbacks (project comments).

For instance, analysing the input of the campaign, the literature noticed that videos and pictures take time and effort to be prepared and can indicate the creator's preparedness, which can lead a project to be successful (Chen et al., 2009).

While analysing the outcomes, the literature noticed that frequent updates by the creator are associated with greater crowdfunding performance (Kunz et al., 2017; Mollick, 2014; Xiao et al., 2014), and the number of posted comments also has a positive effect on a project's funding performances (Kim et al., 2017; Kunz et al., 2017; Li and Jarvenpaa, 2015; Xiao et al., 2014).

Obviously, as stated by Wang (2017), the features of the project can lead to a higher number of backers, which is one of the key performance to measure in a crowdfunding campaign. Indeed, if the project is more detailed, the information asymmetries between fundraisers and crowdfunders are more limited, therefore the campaign will be more likely to succeed. Generally, the higher the number of backers, the higher the number of comments and updates the project will have. The way the fundraiser manages these relations will determine not only the possible success of the project but also some other outputs related to the post-campaign performances of the company.

Summarizing our logical flow, we noticed how different outcomes of a campaign are strongly interconnected with each other. Indeed, the comments and updates are strongly interconnected with the number of backers. It is of high importance to monitor these variables in order to predict the success of a crowdfunding project and other possible benefits.

2.2 A direct impact of crowdfunding on the firm's performances

We strongly believe that the effect of crowdfunding on the performances of a company is not strictly indirect, rather it can be direct. Although the literature has never discussed in depth the direct effects of crowdfunding on the performances of companies, we will try to summarise some of them.

First of all, in a Reward-Based crowdfunding campaign, the amount received would be likely to impact the firms' performances since it is often accounted in the income statement as a revenue. Moreover, crowdfunding is an alternative source of money to other streams of capital financing that can be invested in the product that the company wants to launch. This appears to be extremely important in periods of economic downturns where technological projects are easily turned down by venture capitalists and other forms of capital financing.

Second, the performances of crowdfunding can have a strong impact on the product market performance. Indeed, thanks to crowdfunding, the product launched will have a better alignment to the market needs. This is possible thanks to backers' feedbacks. Obviously, the more the backers, the more will be the feedbacks (comments) and the updates of the projects to align the needs of the market.

A third reason that can explain a direct impact of crowdfunding on the performances of the companies is connected to the publicity and marketing that is spread thanks to it. Indeed, crowdfunding backers can act as business "evangelists" helping to spread the word about the project through their word of mouth (Mollick, 2014). The more people will talk about the project, the more publicity will be created. In this sense crowdfunding can be considered as a powerful tool of advertisement. During the campaigns, companies are given the opportunity to be linked with a huge amount of different people: backers, other fundraisers and other entrepreneurs. At the same time, they can attract customers on the company official page, on the company social network profiles, etc. This is an incredible tool of advertising that a crowdfunding campaign can give. In this sense the advertisement created plus all the people connected

with crowdfunding can lead to an increase in customer base and therefore an increase in performances.

This logical flow explains how the outcomes (e.g. amount received, updates, comments and number of backers) of crowdfunding have a direct relation with the performances of the companies after crowdfunding.

2.3 External financing and amount pledged

As already explained in the literature of post-crowdfunding outcomes, the performances obtained during the campaign could have an impact on the ability of the firm to attract external financing. We will recall this part of the literature to explain why crowdfunding leads to this aftermath and which are the features that can better improve the likelihood of this phenomenon.

It is widely acknowledged and backed by the existing literature that since many qualities in entrepreneurial ventures are hidden, or simply cannot be observed directly, professional investors need to rely on observable attributes in order to understand the general quality of a new venture and reduce the sources of uncertainty (Stuart et al., 1999; Shane and Cable, 2002; Baum and Silverman, 2004; Hsu and Ziedonis, 2013; Ahlers et al., 2015). Obviously, there are many attributes that can be seen as signals by professional investors. For instance, entrepreneur human and social capital, the initial money raised from friends and family, as well as the presence of patents can positively influence the degree of attraction of firms (Stuart et al., 1999; Shane and Venkataraman, 2000; Shane and Cable, 2002; Hsu, 2007; Conti et al., 2013a,b; Helmers and Rogers, 2011; Hsu and Ziedonis, 2013; Haeussler et al., 2014). Even though these aspects are important and have been proved to help firms in attracting external financing, they fail to provide the entrepreneurial venture a potential approval from the market which can be determinant in convincing professional investors (Roma et al., 2017). Some factors have been found to be extremely important in this sense. A company able to show its ability in contacting potential customers or in starting its

selling activities even before the product is realized, will give an enormous signal to investors (Eckhardt et al., 2006).

In this regard, a venture's performance on a crowdfunding platform – where thousands of new products and services are competing for attention and resources – can serve as validation of its market potential. As a result, crowdfunding platforms may serve as a “proof-of-concept” to risk-averse investors and lenders (Kuppuswamy and Roth 2016). In particular, Kuppuswamy et al., (2016) explored the potential shape of the relationship between crowdfunding success and attracting additional capital, besides studying if being successful itself was important or not. They discovered that the more amount is pledged over the amount asked by the proponent, the higher is the likelihood of obtaining an external funding. In addition,, Ryu (2017) found that receiving crowdfunding is positively associated with a chance of receiving corporate venture capital funding (and with the likelihood of getting acquired). As it is clear from literature, what is crucial to attract additional funding is not the amount of money you are demanding to the crowd, but how much the entrepreneur is able to overcome this target. Finally, we expect that companies which are more able to attract external funding will perform better in subsequent years, being able to obtain all the benefits deriving from their financial partners. Obviously, as the wide world of entrepreneurial finance teaches us, the more financial resources a company is able to collect, the higher its performance are likely to be.

Even if the performances of a crowdfunding campaign are satisfying, it can happen that a company does not receive additional external capital from professional investors. That is why we needed to build also some direct relationship, as we have done in the previous paragraph.

2.4 Hypotheses formulation

We have just showed our second logical flow that led us think that there is an indirect connection between crowdfunding performance (e.g. amount received) and firm's performances. Previously we have hypothesized that some outcomes of crowdfunding (e.g. comments and updates) and the performances of the campaigns (e.g. the number of backers and the amount received) can have a direct impact on the performances of the company in subsequent years. It is important to notice that we will translate the firm's performance into the firm's size, using the level of revenues and employees to measure it.

In the following you can find our 1st, 2nd, 3rd and 4th hypotheses:

Hypothesis 1: *“The amount of money received with respect to the target capital to an enterprise in a reward-based crowdfunding has a positive impact on the firm's size after their campaign”.*

Hypothesis 2: *“In the reward-based crowdfunding campaigns launched by technology-based enterprises, the number of campaign updates has a positive impact on the firm's size after their campaign”.*

Hypothesis 3: *“In the reward-based crowdfunding campaigns launched by technology-based enterprises, the number of campaign comments has a positive impact on the firm's size after their campaign”.*

Hypothesis 4: *“In the reward-based crowdfunding campaigns launched by technology-based enterprises, the number of campaign backers has a positive impact on the firm's size after their campaign”.*

3 Data and Methods

All the crowdfunding data gathered through this project and used for our analysis have been collected in two ad hoc databases. The first database that we created (“**Kickstarter Database**”) contains all the crowdfunding campaigns that have been launched in the category Technology on Kickstarter in 2012. It contains detailed information (if available on internet) about the projects mentioned above and the fundraisers who decided to launch them. In this sense we included different elements and we will describe better which information we gathered and the reasons why. This part will partially recall chapter 1.3 in which we delve into those topics with a theoretical aim. The second database we have built (“**Orbis Database**”) was the result of matching our first database with the ORBIS database⁶. The aim of this second database was to collect official financial information about all the companies who launched a technology project in 2012.

3.1 Kickstarter database

As we described already in chapter 1, paragraph 1.3, platforms are an important mean for the existence of crowdfunding. It is the intermediary between crowdfunders and fundraisers, the place where the bid and the offer meet. It is then fundamental to analyse platforms in order to understand which one can provide the right data in order to perform a research study. In our case the key factor to select which platform to analyse was simply the amount of data available about companies in a Reward-Based crowdfunding platform. For this reason, we selected as data provider Kickstarter.com that, as Mollick & Nanda (2015), stated is the largest Reward-Based crowdfunding provider worldwide. To give an example we can notice how between 2009 and March 2018, the platform has been the intermediary of 389,792 projects contributing to raise around \$2.67bn in pledged capital. Moreover, we decided to choose only the

⁶ For further information: <https://orbis.bvdinfo.com/version-201838/home.serv?product=OrbisNeo>

Technology section of Kickstarter because, for definition, it is most likely to contain project launched by enterprises or that potentially will turn into a new venture.

3.1.1 Input selection

The Kickstarter database is made up by 1,084 different campaigns from Kickstarter. We selected the campaigns by focusing only on technology projects and by considering only campaigns run in 2012, without making any distinctions if the campaigns reached the target requested or not. The former decision (i.e. focusing only on technology projects) depends on our aim to take into consideration only initiatives that have higher possibility to become long-lasting enterprises and that were more likely to be launched by an enterprise (or become an enterprise after the campaign). In fact, according to research statistics on Kickstarter projects⁷, the amount pledged by a technology campaign on Kickstarter represents the 23.62% of the total amount pledged on the platform, even if the successful projects are just the 5.05% of the total. The reason is explained considering that crowdfunded technology entrepreneurs have proven to be extremely innovative. Therefore, when a project is worth it fundraiser will be willing to invest a lot in the company. According to experts, many of the most important projects in consumer electronics as of 2013 are funded by crowdfunds, including novel 3-D printers, electronic watches, video game consoles and computer hardware (Jeffries., 2013). Further, some of the most successful crowdfunded projects were turned down by venture capitalists, before successfully raising funds from sites such as Kickstarter (Jeffries., 2013). Indeed, Crowdfunding is evolving at a fast pace and it seems not to stop, that is why crowdfunding is viewed as an important and viable source for raising funds for innovative technology start-ups (Mollick, 2013), in a similar way as angel and venture capital investments. In fact, as it is possible to see from Figure 7, crowdfunding industry is scaling up rapidly, becoming one of the most valid alternative to obtain funds.

⁷ <https://artofthekickstart.com/crowdfunding-demographics-statistics-infographic/>

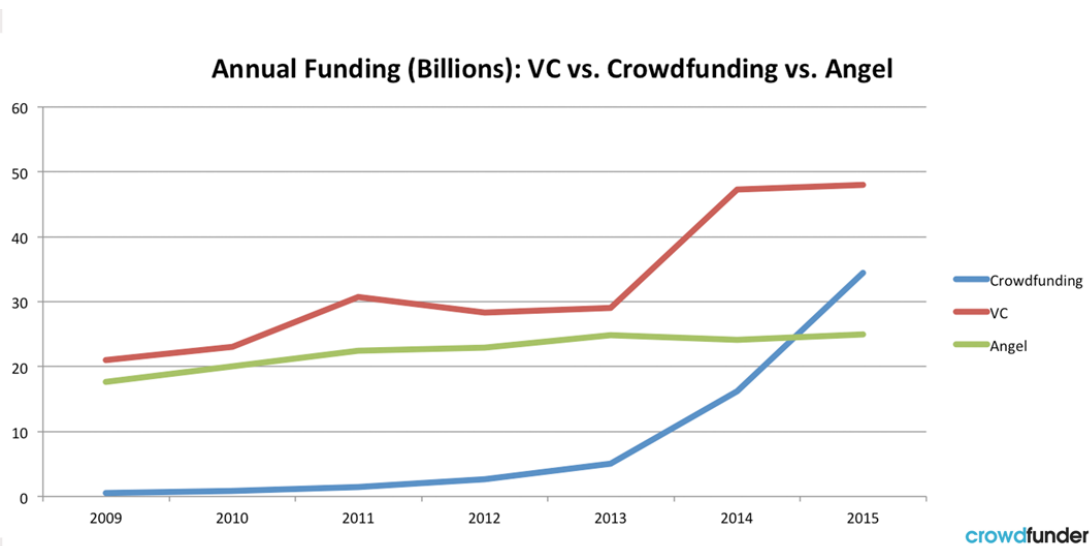


Figure 7: Evolution of yearly amount of money backed via Crowdfunding, Venture Capitals and Angel Investors. Source: crowdfunder.

To conclude, the latter decision (i.e. selecting only projects funded in 2012) was taken in order to consider a consistent time span to gather enough information about the company and to evaluate the effect of a crowdfunding campaign on the future performance of an enterprise.

3.1.2 Data collection

The first goal of our data collection has been to detect all the enterprises – or projects that would turn into a firm – as opposed to projects launched by individuals. Therefore, for each one of the 1,084 campaigns collected as input we carefully looked for basic information about the proponents of the crowdfunding campaign in order to select them. This work was hard and time consuming for two reasons: on one hand firms quite often do not declare to be an enterprise or let the “crowdfunding manager” deal with the campaign; on the other hand, the company could have been created as a consequence of the campaign and therefore not yet be recorded on the page project.

In order to make an accurate data collection we used a systematic research to find the enterprises’ name on each Kickstarter project. It is worth it to present the reader with a

detailed description of how a Kickstarter project is presented in order to better understand how we performed the data collection.

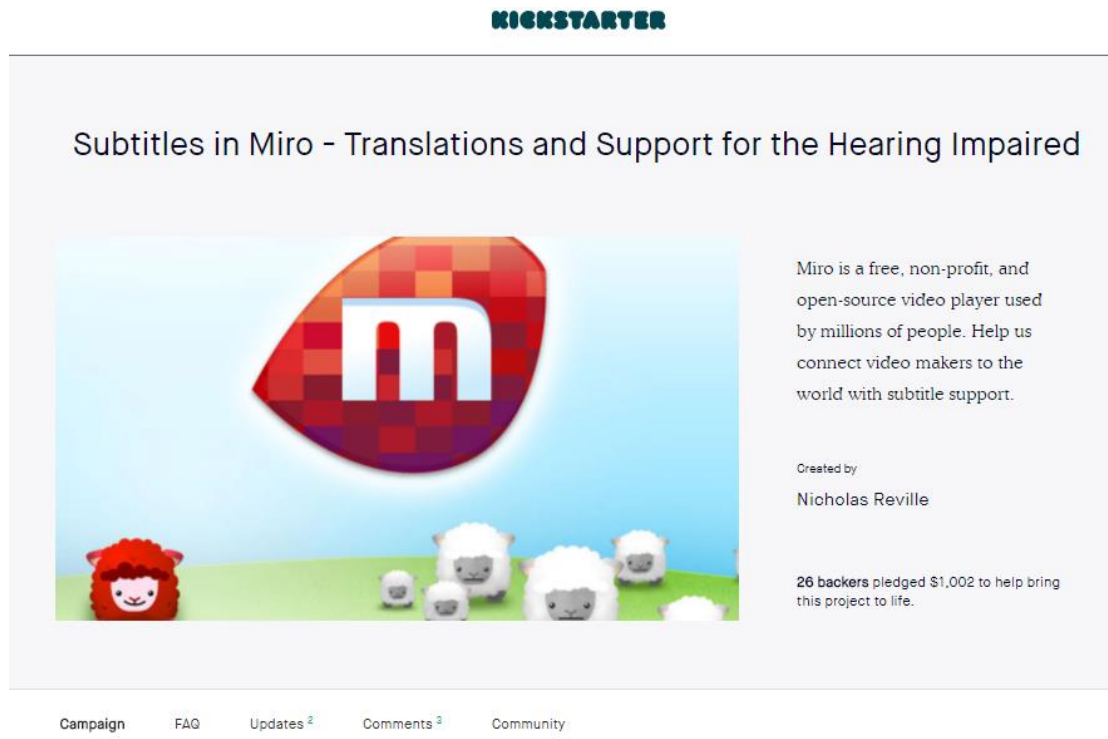


Figure 8: Presentation of a successful Kickstarter project at completion. Source: Kickstarter.

Figure 8 shows a sample of a Kickstarter campaign. On the top there is the title of the campaign and some key words that the fundraiser decides to use to give a caption of the project. As we already mentioned the proponent has the possibility to introduce the project through a picture or a video in this page. This screen does not let us see the project description but scrolling down on the project page it is possible to find it below this image. To the right you can see the name of the proponent, with a simple click is possible to go directly to its description. Still to the right you can notice the number of backers and the amount that was pledged (in this example the campaign is over and was successful). Moreover, at the bottom of our screenshot it is possible to find the description of the project, the number of updates, all the comments made between

crowdfunders and fundraiser and other less relevant features of the campaign (like FAQ).

The first logical step has been to look at the name of the proponent, its description and the pitch of the project. If the proponent was not declared in none of the just mentioned, we looked for possible links to external websites (sometimes it matched with the company's website) or social media pages (still on the crowdfunder's description or in the project one). Social medias were of particular interest for those who funded their company after the campaign (more often Facebook and LinkedIn). In case the links were out of date we used Wayback Machine (<http://archive.org/web/>), a precious website database dedicated solely to storing web pages so that you can look through them at any time even if it does not exist anymore. Finally, in case these researches were not successful we googled key information that we were able to obtain from the project and the proponent description (e.g. the name of the product to be funded, if any) with the hope to find further information on the internet.

Once we were able to find the name of the company which launched the project, different data had to be collected. First of all, the country and the city from which the crowdfunding campaign was launched. Then we extended our research by recording also the legal name and the link to the website of the enterprise (if we already had it, we double-checked to be sure they matched). Thus, we reported if the website was active or not. We thought that keeping track of active websites would have given an indirect hint to understand if the company was still active or not.

The last step of our data collection has been to check and report on our dataset the possible presence of a Bloomberg (www.bloomberg.com) page. Indeed, on Bloomberg (the biggest data provider in the financial environment) we could have been able to find more detailed information about the history of the company, the founders, the current state, etc.

3.1.3 Results

As a result of our first data collection, we identified 597 companies out of the 1,084 campaigns from our initial dataset.

# Campaigns	# Identifies Companies	% Companies on Total
1,084	597	55%

Table 1: Statistics of companies of our sample.

It is interesting to notice how 537 projects have been launched in USA. Noticeably Kickstarter was funded and run in America, reason why it is likely to be more used and known over there than in other parts of the world. This geographical distribution of the projects launched is also backed by the size of crowdfunding in the United States, as it is possible to see from Figure 9, where the amount backed on Kickstarter in the United States is 12 times bigger than UK, the second most active country.

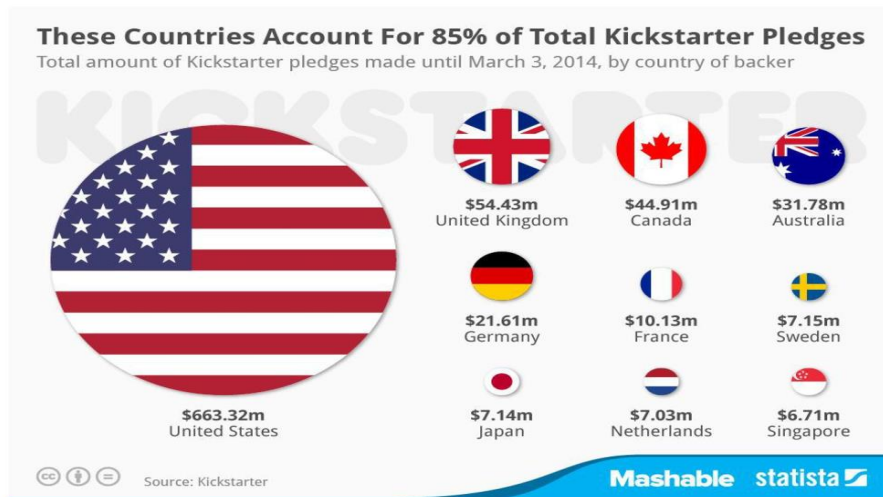


Figure 9: Breakdown per country of the amount pledged via Kickstarter until March 3, 2014. Source: Statista.com.

Then, we decided to check the number of active websites on our Kickstarter database. If we consider the percentage of Active Websites as a hypothetical parameter to distinguish how many companies disappeared and which one are still alive, the results are promising. According to a study by Statistic Brain

(<https://www.statisticbrain.com/>), the failure rate of all U.S. companies after five years was over 50 percent, and over 70 percent after 10 years. This result is not too far from the data shown in Table 2.

# Identifies Companies	# Active Websites	% Active Websites
597	346	58%

Table 2: Companies and websites of our sample.

3.2 Orbis database

The Kickstarter Database had the intent of funding all the firms or potential future ventures that decided to participate to crowdfunding in 2012. However, we were not able to collect any kind of financial information about the companies, besides few official data of those firms which had a Bloomberg page (most of the times even Bloomberg did not have any financial data about the firm but just some information about the history and the founders of the company). In order to run our model and prove our hypotheses we needed some data about at least the size of the companies. That is why we decided to use a data provider offered by our university (Politecnico di Milano) which collects financial information about companies around the world: the Orbis data provider.

3.2.1 What is Orbis?

Orbis (www.orbis.bvdinfo.com) is a data provider of private companies around the world. Orbis has information on over 280 million companies around the globe. Thanks to its work it is possible not only to have valuable resources for company data, but with its standardized interface it makes it simple to compare companies internationally.

As stated on their website: “*Use Orbis to find, analyse and compare companies for better decision making and increased efficiency*”.

Orbis is widely used by companies, governments and public-sector teams, academics, financial institutions and professional service firms across the globe. They use it for many different types of projects, all with a common theme, efficiency. In simple words

Orbis attempts to provide an easy and quick way to access companies' financial data. Moreover, Orbis offers the following tools to its customers: credit risk, compliance and financial crime, supplier risk, transfer pricing analysis, business development, M&A and corporate finance, master data management projects.

In Figure 10 it is possible to find a snapshot of an Orbis file that we were able to find about one of the companies matching the Kickstarter Database. In Appendix B we have showed more in detail how the financial statements of the companies were presented on Orbis.

MAKERBEAM B.V.

3454 PH DE MEERN, Netherlands

BvD ID number NL55935486
Latest account date 31/12/2016

The GUO of this controlled subsidiary is BAET HOLDING B.V.

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Province Utrecht
Municipality Utrecht

NUTS1 NL3 - Western Netherlands
NUTS2 NL31 - Utrecht
NUTS3 NL310 - Utrecht

Legal & account information

Figure 10: Snapshot of an Orbis file. Source: Orbis.bvdinfo.com.

In Figure 10 it is shown the file regarding a Dutch company that we matched with the Orbis database using our first Kickstarter Database. On the top you can see the legal name to identify the company plus the BvD ID number (that is a code to univocally identify a company) and the last account date. In the second section you can find the contact information such as the address, the telephone number and the website address. This information was useful to verify if the companies we found on the Kickstarter

database and the companies found on Orbis actually matched. Lastly, you can see the following section regards accounting and financial information. For further details about the Orbis file we invite the reader to look at Appendix B.

3.2.2 Data collection

In this section we will present a quick overview on how we used the Orbis software to find the companies of interest, as well as an overview on all the other information that we decided to collect.

We structured our data collection on the Orbis software in several steps. The first step consisted in assigning a code to each of the company previously identified in order to make them easily trackable on the Kickstarter Database. Then, using the searching tool on Orbis (which let us make the research by batch), we put as an input in Orbis an array containing all the legal names of the firms (instead of making the research company by company, this function let our research to be easier and quicker). Afterwards, since for each company name, Orbis gave us back different possible matches, we had to use the information we gathered in the previous database to ensure the correspondence. Obviously to run this test we used information such as the name of the owners, the address of the registered office and the website provided that resulted a precious resource of the previous database.

Thenceforth, once the match was identified we downloaded the financial information displayed on the database. We saved each file with the same code that we assigned in the Kickstarter database (as described at the beginning of this section) in order to be able to easily connect the two databases.

To conclude we decided to download the VAT identification number⁸ of each company in order to be able to find further information, if needed.

After having downloaded all the files on Orbis, we were ready to create our second database.

⁸ A value added tax identification number or VAT identification number (VATIN) is an identifier used in many countries, including the countries of the European Union, for value added tax purposes.

The first information that Orbis provides and that we reported is the current state of the company. Indeed, according to Orbis classification a company can be active, active but dormant (in case the company does not provide any information for a significant amount of time but was active at the last accounting update), dissolved or bankruptcy. Afterwards, we did not just point out if any financial statement was available for the company, but we also wrote down which years they were referred to. Subsequently, we reported the BvD Code of each detected proponent, since it allows to trace the selected company quicker on Orbis. Moreover, we added to our database the country of each registered office, the date of incorporation, the number of Employees and the amount of Revenues updated at the last available year.

Moreover, for each identified company we had to collect information about the state of the crowdfunding campaign. A first step was to gather information about the amount requested from the proponent, the level amount pledged by the crowdfunders and the number of backers that decided to invest in the project. Additionally, we wanted to keep track of the duration of the campaign, the number of comments exchanged between crowdfunders and fundraisers, the number of updates done as a consequence of their interaction, the number of external links present on the crowdfunding project and the presence or not of a video. All this information was easily trackable on the Kickstarter page of the project and we thought they could have been important to determining how the crowdfunding performances had an influence on the company's size

We did not collect any additional financial information on our Orbis Database, since the financial data shown on Orbis were very limited, due to the fact that the majority of the enterprises in our cluster were Americans. Indeed, the American regulation does not oblige any private company to give any financial report. Information about the change in financial debts and shareholder loans debts would have been extremely interesting in order to understand the ability of the success of a crowdfunding campaign to serve as a guarantee for banks and third parties investors to concede investments.

Moreover, data about Operating Costs and the Change in Assets of a company would have been useful to understand how a company had exploited the money gathered. Unfortunately, only 8 companies had the proper data to run these tests, so we did not include these information in our database.

3.2.3 Results

As a result of our research, we have matched 159 companies on Orbis out of the 597 identified from the Kickstarter's database. The first outcome that we analysed is that 143 out of 159 companies are registered on Orbis as Active, 13 as Dormant, 3 as Dissolved and 1 as Bankrupted. The result is quite surprising, considering that 72 out of 159 proponents were start-up at the moment of the fundraising.

While, as we already expected from the Kickstarter Database, the majority of our identified proponents are located in USA, more exactly 131 out of 159, whereas 5 in Canada, 5 in Europe and 7 in the UK.

In the chart below, we represented a breakdown per country of the status of the identified proponents:

	US	FR	CN	SE	NL	CA	AE	MX	CZ	DE	HK	NO	AU	GB	KE	RU	TOT
Total	131	1	1	2	3	5	1	1	1	1	1	1	1	7	1	1	159
Active	120	1	1	1	2	5	1	1	1	1	1	1	0	5	1	1	143
Dormant	12													1			13
Dissolved					1								1	1			3
Bankruptcy				1													1

Table 3: Geographic origin of the companies and their status.

	US	FR	CN	SE	NL	CA	AE	MX	CZ	DE	HK	NO	AU	GB	KE	RU	TOT
% Active	91,6%	100,0%	100,0%	50,0%	66,7%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	0,0%	71,4%	100,0%	100,0%	89,9%
% Dormant	9,2%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	14,3%	0,0%	0,0%	8,2%
% Dissolved	0,0%	0,0%	0,0%	0,0%	33,3%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	100,0%	14,3%	0,0%	0,0%	1,9%
% Bankruptcy	0,0%	0,0%	0,0%	50,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,6%

Table 4: Geographic origin of the companies and their status (percentages).

By checking the percentage of active companies, the results are aligned for all the countries except for Swedish and Netherland, but the extremely small number of data that we collected do not allow us to make any considerations about these two countries. The most consistent data are linked to US and UK which as all the other countries have an extremely high survival rate, the former is around 92% and the latter around 71%.

To run the model that we will present in section 5, we had to select only those companies classified as Active, that presented both the values of revenues and employees updated from 2012 (year of the crowdfunding campaign). In conclusion, out of the 159 companies we found on Orbis, 86 satisfied these criteria. Then, we analysed the Revenues and the number of Employees of each identified proponent, in order to have a clear comprehension of the size of the enterprises in our dataset. In the charts below is depicted an overview of the results obtained.

Average Revenues	Max.Revenues (# Companies)	Min.Revenues (# Companies)	# Companies with Revenues >\$1Mln
\$ 2,609,451	\$ 62.250.000 (2)	\$ 113.752 (1)	18

Table 5 : Descriptive statistics on the Revenues.

Average # Employees	Max. # Employees (# Companies)	Min. # Employees (# Companies)	# Companies with Employees >100
13	175 (3)	1 (57)	4

Table 6: Descriptive statistics on the Employees.

To have a clearer idea about the size of our enterprises we decided to classify them as Micro, Small or Medium, following the criteria shown in the chart below:

Classification	Employees		Revenues (€Mln)		Total Assets
Medium	< 250	&	≤ 50	or	≤ 43
Small	< 50	&	≤ 10	or	≤ 10
Micro	< 10	&	≤ 2	or	≤ 2

Table 7: Enterprises' classification.

Thanks to the classification in Table 7, we were able to conclude that the majority of our enterprises are Micro with revenues under \$ 1 million and with only one employee. More in detail, we have found out that 69 enterprises out of 86 detected are Micro, 13 are Small and only 4 are Medium.

Table 8 represents the allocation of Small, Medium and Micro enterprises on the total in some of the major European countries in 2012. By checking our data, the obtained results are significantly aligned with the results of enterprises of most European countries, for instance the German situation in 2012. In our sample in fact, the 80% of the proponents are micro enterprises, 15% small enterprises and 4% medium enterprises. In terms of size of the firms, we can consider our sample as reliable, even if it is extremely small.

Country	Size	%
Germany	Micro	82.6
	Small	14.8
	Medium	2.6
Denmark	Micro	89.6
	Small	8.8
	Medium	1.6
Finland	Micro	91.7
	Small	7.2
	Medium	1.1

Table 8: Share of Micro, Small and Medium enterprises divided per country in 2012. Source: <http://ec.europa.eu>.

4 Variables Selected to Test the Hypotheses

In the following section we will describe all the variables that have been used in order to test the hypotheses in chapter 2.

4.1 The dependent variables

Since our purpose is to understand if there is any relationship between the outcomes of a crowdfunding campaign and the subsequent firm's performances, a choice about which performance to measure had to be taken. This decision was obvious since the available data of the companies we collected were not too many. Therefore, we considered as performance of the company the size that the company would have in that specific moment in time. That could give us a good approximation of the size the company have had after crowdfunding.

On one hand, in order to test our hypotheses, we considered the natural logarithm of the revenues (\ln_REV) as a dependent variable. On the other hand, we selected the natural logarithm of the number of employees (\ln_EMP) as dependent variable. We considered the natural logarithms of the original variables because all their values were positive and bigger than zero.

4.2 The independent variables

In order to link the outcomes of a crowdfunding campaign to the company's size after the project we have decided to select different independent variables.

The first phase of selection was obviously strictly connected to the literature review. We had to find those outcomes that directly or indirectly could explain the size of the firm launching it. We invite the reader to analyse chapter number 2 in which the logical flow is explained.

In the following part of this chapter we analysed each independent variable in detail, the way it is computed, the literature behind our choice, and the sources we used.

4.2.1 Amount pledged on target

In order to compute this independent variable, several steps were taken. First, we created a dummy variable, to define if the campaign was successful or not. The dummy variable (namely `D_SUCCESS`) takes value one if the project was actually financed (remember that Kickstarter is a AON platform meaning that either the project reaches the amount requested - in the time span required – and takes the money pledged otherwise it does not take anything; for further detail see chapter 1, paragraph 1.7.2), zero otherwise. We obviously collected this information from the Kickstarter page of each campaign which clearly showed whether a campaign reached the target amount or not.

The second step to build up this variable has been to create the variable amount pledged on target (`AMBA`), which resulted as the ratio between the amount pledged (`AMRE`) during the campaign and the amount requested at the beginning. The target capital (amount requested by the fundraiser when launching the project) of the campaign has been called `GOAL` and we will recall it in the control variable section. It was important not to just keep track of the total amount received from the campaign but to see how much more than the required amount was obtained. Indeed, as we already said, the higher the amount received is with respect to the target amount, the higher is the likelihood to receive external financing from professional investors (Roma et al., 2017). In other words, crowdfunding works better as a proof of concept when you are able to receive much more than you requested initially. Kuppuswamy (2017) highlighted a concave shape of the relationship between the amount of money collected through crowdfunding and the amount of money received from professional investors, meaning that the amount of money collected during the crowdfunding campaign does have a positive effect on the likelihood of external financing benefits more than proportionally.

Finally, the independent variable we used to test our hypotheses was the product between the variable SUCCESS and the variable AMBA. We called this variable AMBAS and it was important in order not to consider that a company received some money if they did not reach the target amount.

$$AMBAS = \frac{\textit{amount pledged}}{\textit{target capital}} * \textit{SUCCESS}$$

4.2.2 Variables on the characteristics of the project

Other important independent variables to describe the relationship between crowdfunding outcomes and the companies' size were the features of the project launched by the fundraiser. In order to define them, we decided to split the features into three different components that can determine their effect on the success of the campaign. The three variables chosen are: video, comments and updates. The presence of videos will be considered as an independent control variable while the number of comments and updates as independent ones. We already motivated the reasons why we chose them; however, we will summarize them and explain the way we computed them.

The description we made in the literature already told us that the characteristics of a campaign can be split, on one hand as the presentation of the projects on the platform and, on the other hand, as the interaction between crowdfunders and fundraiser. We will talk about the first part in the control variables section. Instead, we defined two variables to describe the features of the interactions between proponent and backers. On one hand, we have the number of comments (namely, COMM) that the backers made on the crowdfunding platform to give advice to the proponent, on the other hand we have the number of updates (namely, UP). The former describes how many interactions the proponent had with the backers and the latter can tell us if changes in the project were made during the time of the campaign. The data were easily available on each crowdfunding project page as it is illustrated in Figure 8 of chapter 3.

4.2.3 Number of backers

As we already stated, the number of backers participating in a crowdfunding campaign can be crucial for its success. Not only because in general more backers bring more financing but also because more crowdfunders involve more comments and updates, implying a higher product market performance of the output of the campaign. Moreover, they can be crucial for their role in spreading the word about the company, meaning that a strong advertisement is delivered thanks to crowdfunding.

The number of backers was accessible on the crowdfunding page project as shown in Figure 8 and we decided to use the logarithm of this number to measure its effect on the revenues and the employees. The variable has been named \ln_NBACK .

4.3 The control variables

With the available data we were able to consider only four different control variables: the number of videos of a crowdfunding campaign (namely D_VID), the target capital asked by the proponent at the start (namely, $GOAL$), the geographical distribution of the companies (namely D_US), and the age of the company who launched the project, (namely \ln_AGE).

4.3.1 Video of a campaign

As we said, for the characteristics of a project the presence of a video in the presentation page is an important variable to flag if the project was well presented or not. Empirical studies have found that the usage of videos and pictures is associated with an increase in quality of a campaign and subsequently with its success (Beier and Wagner, 2015; Frydrych et al., 2014; Mollick, 2014). Kickstarter itself suggests that a key point to prove preparation is to include a video. As they say: *“Rule #1 for Kickstarter videos: make one! There are few things more important to a quality Kickstarter project than video. Skipping this step will do a serious disservice to your project”*. It is considered as a signal of minimum required preparation, so we can definitely say that whether a

pitch has a video or not is an indicator of higher quality projects. We then believe that the absence of videos will necessarily imply that fewer backers will end up supporting the project, meaning lower performances of the campaign.

This variable was called D_VID and it is a dummy that takes value one if the video is present on the description page of the project, zero otherwise. We expect this variable to be positively correlated with the firm's size.

4.3.2 Target capital

As we already mentioned, the target capital has been used to compute the first independent variable called AMBAS. Indeed, we wanted to prove that in crowdfunding it is important to obtain more than the capital target, the more the merrier. On the other hand, we can use it to control the size of the companies before the campaign. We expect that bigger companies would ask for bigger amount of money. That is why we expect a positive relationship among the target capital and the revenues and employees. The variable has been called GOAL.

4.3.3 The geographical distribution of the projects

Another control variable we adopted has been chosen to monitor the origin of the companies that participated in crowdfunding. Our belief was that on average an entrepreneurial company coming from the United States had a bigger size than any other company. To this purpose we introduced a dummy variable (namely, D_US) which has value one if the company was founded in the United States, zero otherwise. Our belief was supported by the higher growth rate that entrepreneurship has in the USA. Indeed, Acs et al. (2016) created a performance index able to measure several components of entrepreneurship in different countries. The Global Entrepreneurship and Development Index 2017 (Acs et al., 2016) is able to determine the health of entrepreneurship in different countries and to show its components. The USA performs

way better than every other country and is ranked as the best country to do entrepreneurship.

If we consider the labour market in the USA the results are not that surprising: according to The Economist, American companies have an unusual freedom to hire and fire workers. They are comfortable with the risk-taking that is at the heart of entrepreneurialism.

Moreover, we know that crowdfunding (in particular Kickstarter) is bigger in the USA than in any other country, attracting more investments there than in ASIA and Europe (second and third in terms of market size). We invite the reader to look at Appendix A for further details. The advantages in entrepreneurship do not come only from crowdfunding, but the USA benefits from several structural advantages when it comes to entrepreneurship. As we can notice in figure 11, it is the world's most mature venture-capital industry.

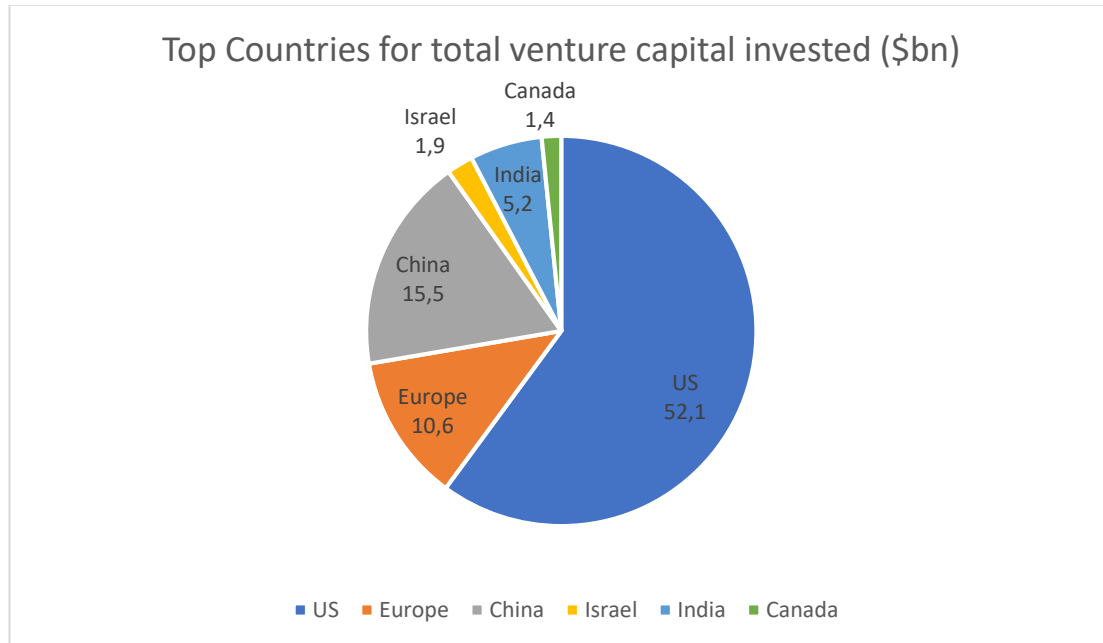


Figure 11: Share of total venture capital invested in 2014. Source: World Economic Forum.⁹

⁹ <https://www.weforum.org/agenda/2015/07/which-countries-have-the-most-venture-capital-investments/>

4.3.4 The age of a company

The last control variable that we chose was the age of the company. Our belief was that the older a company is, the bigger its size will be (in comparison, for example, with start-ups).

The first topic to support our thesis comes from the high number of start-ups in our dataset. A young company, on average, has to build everything from scratch. A start-up does not have as many partnerships, as many investors or simply it is still not known as much as a company that has been operating in the market for years. Furthermore, as time goes by, firms are able to accumulate resources, managerial knowledge and the ability to handle uncertainty (Herriott et al., 1984; Levitt and March, 1988), as well as the ability to accumulate reputation and market position, which together help facilitate relationships and contacts with customers, suppliers and potential collaborators. Indeed, there is evidence on the positive effect of firm age on the likelihood of superior organizational outcomes (Argote, 1999), new product development (Hansen, 1999; Sivadas and Dwyer, 2000) and innovative outcomes (Tripsas and Gavetti, 2000). For these reasons and many others, Coad et al., 2013 discovered that older firms have higher productivity, higher profits, larger size, lower debt and higher equity ratios.

Finally, we created a control variable named `In_AGE`, computed as the natural logarithm of the current year (2018) minus the year of foundation of the firm. Since two data about the year of foundation were missing, we considered the average year of foundation to fill the gaps.

The purpose of the variable was to understand if the bigger companies' size explained by their age. If true, further analysis of our models had to be done in order to exclude that the higher size of the companies was only a consequence of their age (and not a consequence of crowdfunding).

In the following Table 9 it is possible to see a synthesis of all the variables used for our models, their description, source and year of collection.

Table 9: Summary of the variables chosen.

Variable	Name	Description	Source	Year
<i>Dependent variables</i>				
ln_REV	Revenues	Last available financial Revenues	Orbis	Var
ln_EMP	Employees	Number of firm's employees	Orbis	Var
<i>Independent variables</i>				
UP	Number of Updates	# updates released by the fundraiser on the crowdfunding campaign page	Kickstarter	2012
AMBAS	Amount received to the target	Ratio between the amount received from the campaign and the target capital	Kickstarter	2012
AMRES	Amount received	Amount received from the campaign		
ln_NBACK	Number of Backers	Number of backers	Kickstarter	2012
COMM	Number of Comments	Number of comments left on the campaign page	Kickstarter	2012
<i>Control variables</i>				
D_VID	Video	Dummy variable which assumes value equal to 1 when the proponents have published a video, 0 otherwise	Kickstarter	2012
GOAL	Target Capital	Target capital settled by the proponent on his campaign page	Kickstarter	2012
D_US	Geographical distribution	Dummy variable which assumes value equal to 1 when the proponent's based in USA, 0 otherwise.	Orbis	2012
ln_AGE	Age	2018 minus the year of foundation of the company	Orbis	[•]

4.4 Descriptive statistics

In the following table Table 10 we will present some descriptive statistics related to the variables we selected:

Table 10: Descriptive statistics of our variables.

	Obs	Mean	Std. Dev	Min	Max
REV(\$)	86	2,609,451.0	9,707,203.5	113,752	62,500,000
EMP	86	13.2	35.1	1	175
UP	86	16.6	16.9	0	95
AMBAS	86	3.5	8.9	0	73.6
AMRES(\$)	86	103,645.2	352,399.3	0	2,945,885
NBACK	86	594.8	1,213.3	1	6,479
COMM	86	207.6	534.2	0	3,411
D_VID	86	0.9	0.2	0	1
GOAL(\$)	86	30,035.9	40,620.1	500	250,000
D_US	86	0.9	0.3	0	1
AGE	86	16.0	24.5	3	214

As it is possible to notice, our sample is made up by 86 observations. The dependent variables, as reported previously, are Revenues and Employees, which lead to classify the companies as micro, small and medium. As far as the independent variables are concerned, we can notice that the average age of our proponents is 16 years, while the maximum (surprisingly) reaches 214 years. The 90% of the proponents published a video (as we forecasted) and made an average of 17 updates per campaign. Only seven proponents have not released any updates. The average number of comments released is high and it could be influenced by the fact that four campaigns have more than 1,000 comments. The same situation is true for the number of backers, amounting to an average of 594.8 while according to (Mollick, 2014) the average number of backers (computed by considering a timeframe that goes from 2009 to 2012 for the technology cluster on Kickstarter) is 170. As in the previous situation, the high mean value obtained could be influenced by the fact that 14 campaigns have a number of backers higher than 1,000. On the other hand, as we already mentioned in chapter 3, the majority of our proponents are Americans (90% of them). In

conclusion, by analysing the variables GOAL and AMBAS, it is possible to understand, if we consider the standard deviation, that the capital requested varies a lot from a campaign to another. Considering the variable AMBAS only, it is clear that the majority of our dataset has obtained at least their target capital. Indeed, only 22 campaigns out of 86 have not been able to obtain the funding.

5 Models and Results

In order to test the hypotheses formulated in chapter number 2, we adopted a regression model. The model has been applied on the second database described in chapter 3, namely Orbis Database. We have also conducted 4 additional regression models plus other different tests in order to check the assumptions of our models. On the one hand we run a Heteroskedasticity test in order to ensure the presence of homoscedasticity. On the other hand, the additional regressions we made, complementarily to the Collinearity test, were useful to verify that our independent variables were not correlated with each other. Finally, we run two additional regressions on a subset of our database in order to make an additional check on the dimensions of the companies.

In order to verify the four hypotheses that we formulated, we run two regression models including the same regressors but using different dependent variables. In the first regression model we measure the firms' size in terms of revenues, while in the second model in terms of employees.

The two regression models, estimated with the GRETTL software have been reported in the following. The controls that we described in chapter 4 (D_VID, GOAL, ln_AGE and D_US) are included in the vector, which is identical in both models.

$$\ln_{REV} = \alpha + \beta_1 AMBAS + \beta_2 UP + \beta_3 COM + \beta_4 \ln_{NBACK} + \beta_5 C_1 + \varepsilon_i$$

$$\ln_{EMP} = \alpha + \beta_1 AMBAS + \beta_2 UP + \beta_3 COM + \beta_4 \ln_{NBACK} + \beta_5 C_1 + \varepsilon_i$$

5.1 Hypotheses testing

In Table 11 are shown the results of our regressions¹⁰. We can observe how two out of four hypotheses we formulated have been confirmed. Coherently with our line of reasoning formulated from the nascent literature (Kuppuswamy and Roth, 2016, Roma et al., 2017, Stenko and Henard, 2017), the amount backed on the target capital and the number of updates are significantly and positively correlated with the amount of revenues and the number of employees of a company that participated in crowdfunding while the number of comments and the number of backers are not correlated neither with the amount of revenues neither with the number of employees.

Table 11: Results of the two regression models.

	Model 1 (Dep variable: ln_REV)		Model 2 (Dep variable: ln_EMP)	
UP	0.0196 (0.0098)	**	0.0266 (0.0108)	**
AMBAS	0.06255 (0.0188)	***	0.0581 (0.0207)	***
ln_NBACK	-0.0778 (0.0960)		-0,1344 (0.1055)	
COMM	-0.0004 (0.0003)		-0.0003 (0.0003)	
D_VID	-0.5244 (0.6005)		-1.0005 (0.6615)	
GOAL	1.92e-06 (3.45e-06)		-1.93e-07 (3.79e-06)	
D_US	0.3703 (0.4675)		-0,6536 (0.5150)	
ln_AGE	0.8833 (0.1922)	***	1,1242 (0.2117)	***
Constant	11.0191 (0.9182)	***	-0,1403 (1.0113)	
N. of observations	86		86	

***.**. * = statistically significant with 99%, 95%, 90% level of confidence, respectively

¹⁰ Next to the variable name we have the coefficient, while in brackets you can find the standard error

The coefficient of the independent variable AMBAS is positive at 99% confidence level for hypothesis number 1. This result shows that the more the proponent is able to raise from the campaign with respect to the amount requested, the bigger the company will be in terms of revenues. The same relationship applies to the number of employees that the company will have in the future. The hypothesis number 1 has been verified through model 1 and model 2.

Dealing with the variable related to the number of updates the situation happens to be analogue to the previous one. The independent variable UP is positively correlated to both the revenues and the number of employees of the venture in the years after the campaign, with a confidence of 95% for both the models. As we have hypothesized the exchange of information between backers and fundraiser is crucial to obtain better performances in the future and the translation of this exchange in an improvement for the project can be measured thanks to the number of updates.

Finally, we can say that being the relation of the updates with the revenues and the number of employees positive, the hypothesis number 2 is verified

Comments have not presented a relation with the amount of revenues and the number of employees. The same statement is true for the number of backers. This leads us to reject hypotheses 3 and 4. We will discuss the limits of our research and possible explanations of these results in chapter number 6.

5.2 The control variables

In this paragraph we analyse the statistical significance of our control variables. For our four control variables we had significantly different results that we believe are easily explainable through our data sample.

It appears clear that there is a strong relationship between both the level of revenues and the number of employees with the variable that describes the age of a company. Specifically, the variable `ln_AGE` presents a positive and strongly significant relationship with them. The level of confidence of this relation is 99%. This is perfectly in line with what we expected. As we have presented in the description of our control variables we thought that, on average, the younger a company is, the smaller its number of employees and revenues will be. This result, as already highlighted, is particularly true for new entrepreneurial ventures as our sample is composed mostly by them.

The second control variable was related to the country of origin of the company launching the project. Our variable, namely `D_US`, was a dummy variable valuing 1 in case the company was from the United States, zero otherwise. Since Kickstarter is American and over there crowdfunding is way bigger than anywhere else in the world, we expected that a company would be more successful in US and therefore able to benefit better from the outcomes that crowdfunding can lead to.

Our results were discordant with what we expected, since we did not find any positive correlation between `D_US` and the amount of revenues and the number of employees that characterize a company after a crowdfunding project. We believe that these results are strongly driven by the dimension of our sample. Indeed, 79 out of 86 companies in our sample were American.

The control variable related to the presence or not of a video on the presentation page of a crowdfunding project was not correlated with both revenues and employees. This result once again might be the consequence of the dimension of our sample. Almost all

the crowdfunding projects presented a video. Indeed, 4 projects out of 86 did not have a video on their page and only one out of these four was not successful.

The last control variable to be analysed is the one related to the target capital asked by fundraisers to the crowd. We stated that on average before the crowdfunding, bigger companies would ask for a higher amount of money, with the intent to track the size of companies before crowdfunding. This relationship is not significant in our model. Although, as the correlation of the variable AMBAS showed, the more I am able to raise in relation to the target capital the bigger I will become, therefore this result is not an issue. It is possible that companies that were smaller when launching crowdfunding will become bigger than other companies because they were better able to exploit all the benefits of crowdfunding. This control variable strengthens our belief that it is not important how much money you are asking to the crowd (and obviously reaching this amount), but to be able to significantly overcome that request.

5.3 OLS assumptions

In this paragraph we present the tools we used to verify the OLS assumptions. First of all, we will try to understand if the independent variables were correlated or not. This is important because in case they were, they might cover each other's effect and lead to a misleading result and analysis of our models. In order to do this, we used both four regression models and a test of Collinearity.

Moreover, we tested the Heteroskedasticity of our models in order to ensure that our models have residuals with a constant variance - hence that their variances do not vary with the effects being modelled. All these tests are important to verify that some of the OLS assumptions are not violated.

5.3.1 Collinearity and regressions

The results of the collinearity tests can be seen in Table 12. We run this test in order to understand if some of the independent variables were correlated with each other. Indeed, if our test would present collinear predictors it still would indicate how well the entire bundle of predictors predicts the outcome variable, but it may not give valid results about any individual predictor, or about which predictors are redundant with respect to others.

In our test if one of the coefficients was over the value of ten that would represent a problem of collinearity. In our case they are all significantly under 10 with the maximum value being 2.264 for both the employees and revenues tests.

Table 12: Results of the Collinearity test.

Collinearity coefficients	
UP	1.804
AMBAS	1.888
ln_NBACK	1.845
COMM	2.264
D_VID	1.068
GOAL	1.292
D_US	1.091
ln_AGE	1.064

Coefficient minimum value = 1

Moreover, we wanted to deepen our analysis regarding the possible problems of correlation among the independent variables. This is why we decided to run four regression models, two for model number 1 (revenues) and two for model number 2 (employees). The models differentiate in the variables included. Taking for example the two regressions done for the revenues model, in one the independent variable AMBAS was not considered while in the other the independent variable ln_NBACK was not included (all the other variables being equal to the models 1 and 2 described in above). Doing these two models both for the revenues and employees we obtain the four regressions.

Our aim was to see no difference among the first two models described and these four models. An equal outcome would tell us that the variables are not distorting each other's effects.

The four regression models, tested with the GRETLM software have been reported in the following. In brackets you can find the modifications that have been made to the reference model. Once again, the variables of control that we analysed in chapter 4 (D_VID, GOAL, ln_AGE and D_US) are included in the vector C_1 , which is identical for all the models.

Model 1.1 (Model 1, no AMBAS)

$$\ln_{REV} = \alpha + \beta_1 UP + \beta_2 COM + \beta_3 \ln_{NBACK} + \beta_4 C_1 + \varepsilon_i$$

Model 1.2 (Model 1, no ln_NBACK)

$$\ln_{REV} = \alpha + \beta_1 AMBAS + \beta_2 UP + \beta_3 COMM + \beta_4 C_1 + \varepsilon_i$$

Model 2.1 (Model 2, no AMBAS)

$$\ln_{EMP} = \alpha + \beta_1 UP + \beta_2 COM + \beta_3 \ln_{NBACK} + \beta_4 C_1 + \varepsilon_i$$

Model 2.2 (Model 2, no ln_NBACK)

$$\ln_{EMP} = \alpha + \beta_1 AMBAS + \beta_2 UP + \beta_3 COMM + \beta_4 C_1 + \varepsilon_i$$

In Table 13 and Table 14 it is possible to find the results of our regression tests.

Table 13: Results of regression models 1.1 and 1.2.

	Model 1.1 (Dep variable: ln_REV)		Model 1.2 (Dep variable: ln_REV)	
UP	0.0191 (0.0104)	*	0.0162 (0.0088)	*
AMBAS			0.0595 (0.0183)	***
ln_NBACK	-0.0146 (0.0997)			
COMM	0.0002 (0.0003)		-0.0004 (0.0003)	
D_VID	-0.6048 (0.6375)		-0.5742 (0.5961)	
GOAL	-1.55e-06 (3.49e-06)		1.43e-07 (3.38e-07)	
D_US	0.4780 (0.4956)		0.4089 (0.4641)	
ln_AGE	0.8869 (0.2041)	***	0.8957 (0.1911)	***
Cons	10.8671 (0.9743)	***	10.6938 (0.8244)	***
N. of observations	86		86	

***, **, * = statistically significant with 99%, 95%, 90% level of confidence, respectively

Table 14: Results of regression models 2.1 and 2.2.

	2.1 (Dep variable: ln_EMP)		2.2 (Dep variable: ln_EMP)	
UP	0.0261 (0.0112)	**	0.2078 (0.0100)	**
AMBAS			0.0530 (0.0203)	**
ln_NBACK	-0.0756 (0.1079)			
COMM	0.0003 (0.0003)		-0.0003 (0.0003)	
D_VID	-1.0752 (0.6895)		-1,0865 (0.6606)	
GOAL	-3.43e-06 (3.77e-06)		-1.03e-06 (3.76e-06)	
D_US	-0.5533 (0.5359)		-0,5868 (0.5143)	
ln_AGE	1.1275 (0.2208)	***	1.1456 (0.2118)	***
Cons	-0.2817 (1.0537)		-0.7023 (0.9136)	
N.of observations	86		86	

***, **, * = statistically significant with 99%, 95%, 90% level of confidence, respectively

Let's start to compare model 1 with models 1.1 and 1.2. We can notice how almost all the relationships are exactly the same and even the confidence of each relation is unaltered. In fact, the revenues are still dependent on AMBAS and ln_AGE with a confidence of 99% and 99% respectively. Only the variable UP decreased its correlation, moving from a level of confidence of 95% to 90%.

Secondly, we compare model 2 with models 2.1 and 2.2. We can notice some slight changes. Particularly, in model 2.2 the variables AMBAS appear a bit weaker changing from a confidence of 99% to a confidence of 95%. These changes do not compromise the model because all the other variables maintain the same correlations.

5.3.2 Heteroskedasticity and normality

In this section we present our test of Heteroskedasticity as well as some graphs to test the Normality of the sample that we computed with GRET. The graphs we are relating to are the QQ plot, the regression residuals graph and the normality graph. All these graphs help us to prove visually that our regressions respect the OLS assumptions.

5.3.2.1 Heteroskedasticity

Therefore, we run a test of Heteroskedasticity for both model 1 and model 2. Heteroscedasticity means unequal scatter. In regression analysis, we talk about heteroscedasticity in the context of the residuals or error term. Specifically, heteroscedasticity is a systematic change in the spread of the residuals over the range of measured values. Heteroscedasticity is a problem because ordinary least squares (OLS) regression assumes that all residuals are drawn from a population that has a constant variance (homoscedasticity). To satisfy the regression assumptions and be able to trust the results, the residuals should have a constant variance.

As we can see from Table 15 the p-values of Heteroskedasticity for both our graphs assure us that we do not have any problem because they are way above the threshold of 0.05/0.1 with values of 0.7529 and 0.8744 respectively. The following Table 15 shows the White test used to verify the Heteroskedasticity of our models.

Table 15: Test of Heteroskedasticity for model 1 and 2.

<i>Null Hypothesis: Heteroskedasticity not present</i>
Test statistics for model 1: $TR^2 = 30.8228$
p-value = $P(\text{Chi-square}(37) > 30.8228) = \mathbf{0.7529}$
Test statistics for model 2: $TR^2 = 27.4248$
p-value = $P(\text{Chi-square}(37) > 27.4248) = \mathbf{0.8744}$

Another way to see that Heteroskedasticity does not exist in our models can be through the analysis of the graphs of residuals. In particular, we want these plots to display

random residuals (no patterns) that are uncorrelated and uniform. Generally speaking, if you see patterns in the residuals, your model has a problem, and you might not be able to trust the results. Both our graphs (Figure 12 and Figure 13) do not present any issue and can strengthen our belief that the assumptions are respected.

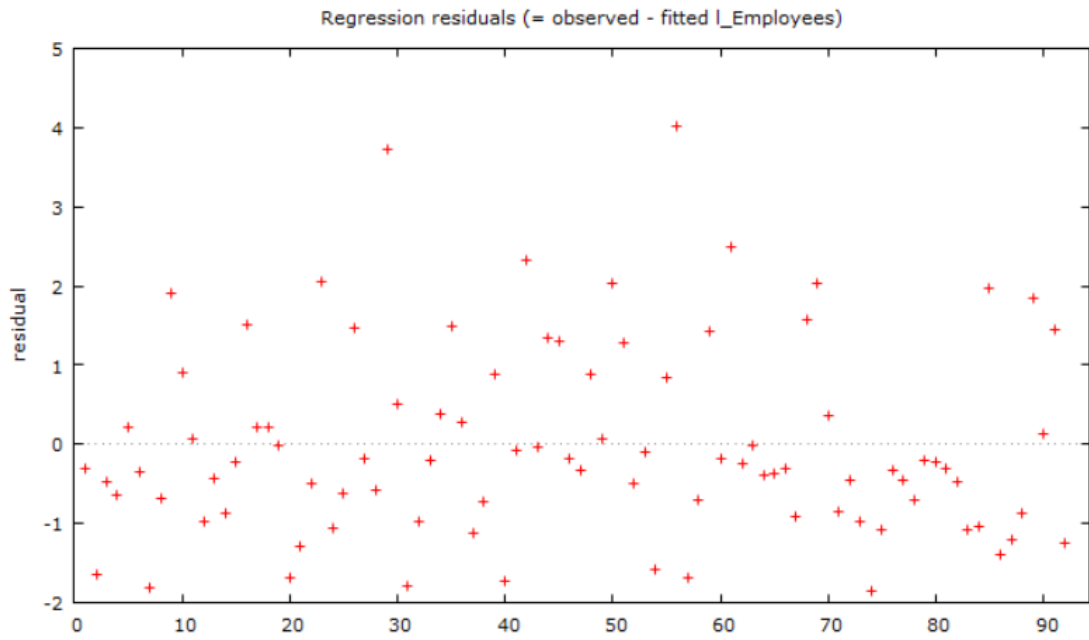


Figure 12: Regression residuals graph of model 2.

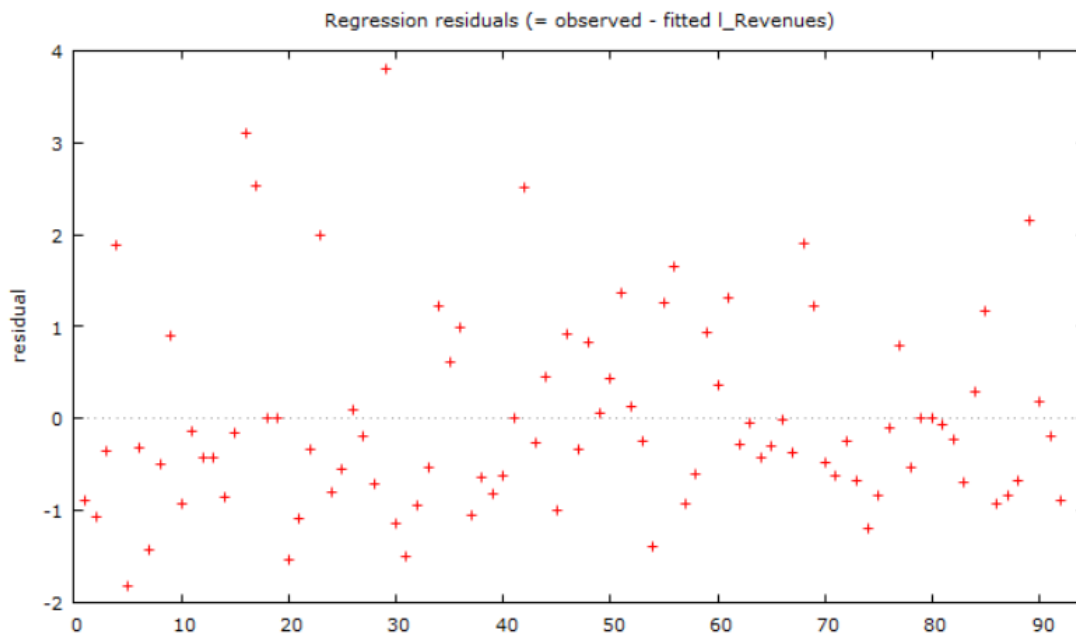


Figure 13: Regression residuals graph of model 1.

5.3.2.2 Normality tests

In last analysis, our multiple linear regressions analysis requires that the errors between observed and predicted values (i.e., the residuals of the regression) should be normally distributed. This assumption may be checked by looking at a histogram or a Q-Q-Plot.¹¹ To verify this assumption the red points in the QQ plot should form a line that's roughly straight. In the case of histograms, the histograms should form a shape similar to the one of the Normal distribution, which is shown in the background of the Figure 14 and 15.

In the following pictures (Figure 14 and Figure 15) you can see how our regressions roughly fit (considering the small dimension of our dataset) this OLS assumption as well.

¹¹ Normality can also be checked with a goodness of fit test (e.g., the Kolmogorov-Smirnov test).

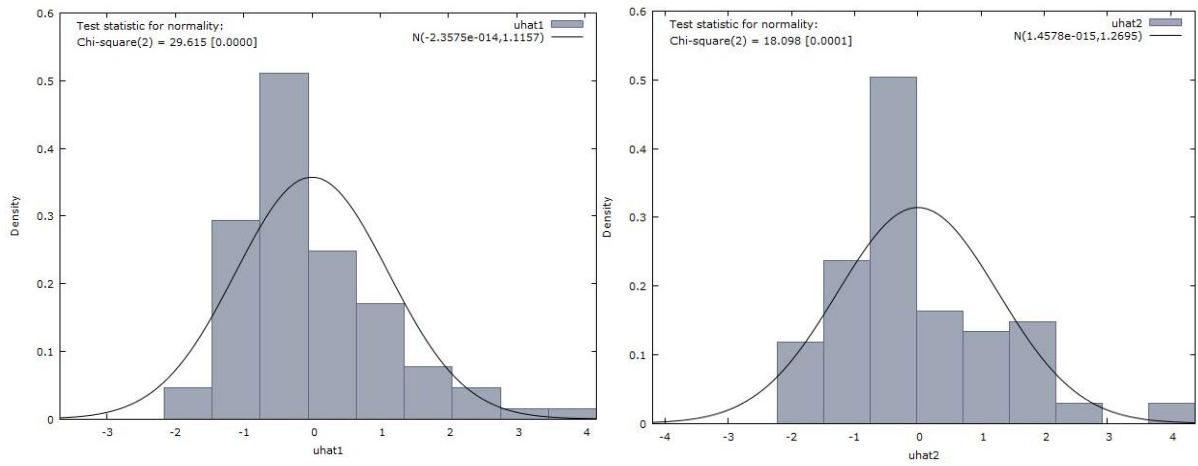


Figure 15: Normality histograms for model 1 (to the left) and model 2 (to the right)

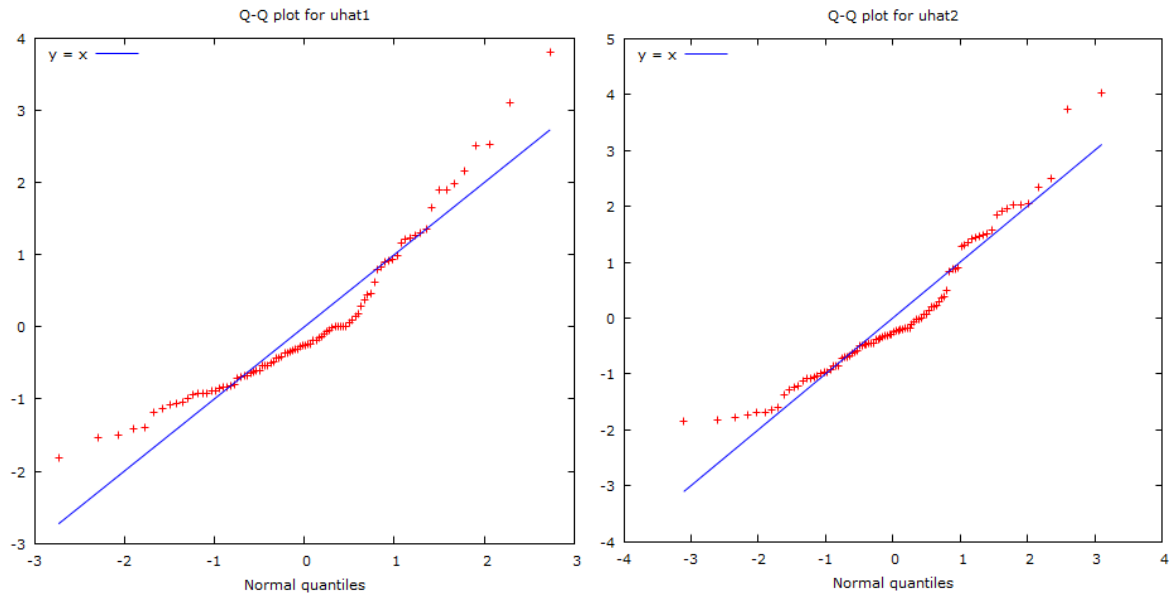


Figure 14: QQ plot of model 1 (to the left) and model 2 (to the right)

5.4 Check on firms' size

A further analysis we decided to conduct is a regression test to strengthen the results obtained, both for model 1 and 2.

The need to run these two models was justified by two main reasons. First, we wanted to understand if altering one of our independent variables would lead us to some issues. We wanted to stress our model to see if our results were kept similar to the initial ones. Secondly, as we already stated, since our models are not time series, we cannot exclude that the companies' size of our sample was already bigger before the crowdfunding campaigns happened. Indeed, since the variable \ln_AGE was positively correlated we know that in our model the older the companies, the bigger their size.

Concerning the first reason we decided to stress the test using the variable $AMRES$ which keep track of the amount received by each proponent (without considering the target capital). To compute this variable, we multiplied the variable $AMRE$ with the dummy variable $SUCCESS$ that we already described in Chapter 4.

As concerns the second reason that led us to run these tests, we decided to include in the two regressions only those companies that were start-ups at the moment of the crowdfunding campaign. We considered only the companies founded after 2009 (excluded).

The two regression models, tested with the GRETl software have been reported in the following. In brackets you can find the description of the models. We considered the same independent (and control) variables of model 1 and 2 except for the variable $AMBAS$ that was replaced by the variable $AMRES$. The variables of control that we analysed in chapter 4 (D_VID , $GOAL$, \ln_AGE and D_US) are included in the vector C_1 , which is identical in both models.

Model 1.1.1 (Model 1, no AMBAS, with AMRES, smaller dataset)

$$\ln_{REV} = \alpha + \beta_1 AMRES + \beta_2 UP + \beta_3 COM + \beta_4 \ln_{NBACK} + \beta_7 C_1 + \varepsilon_i$$

Model 2.1.1 (Model 2, no AMBAS, with AMRES, smaller dataset)

$$\ln_{EMP} = \alpha + \beta_1 AMRES + \beta_2 UP + \beta_3 COM + \beta_4 \ln_{NBACK} + \beta_7 C_1 + \varepsilon_i$$

The results are shown in Table 16 and show us how the variable stressed AMRES is still positively correlated, with confidence of 99% for both models. The variable UP is not correlated anymore in these models. This is not surprising, considering that those relationships were already weak in Model 1 and 2. In conclusion, the variable \ln_{AGE} weaken its level of confidence, since in model 1.1.1 it moved from 99% to 95%, while in model 2.2.2. it is not correlated anymore

These results once again are not too far from our initial model and the changes can be explained through the dimension of our dataset.

	1.1.1 (Dep variable: ln_REV)		2.1.1 (Dep variable: ln_EMP)	
UP	-0.0032 (0.01362)		0.0094 (0.0140)	
AMRES	1.96e-06 (3.49e-07)	***	1.78e-06 (3.60e-07)	***
ln_NBACK	0.0155 (0.1347)		-0.1199 (0.1388)	
COMM	-0.0004 (0.0003)		-0.0002 (0.0002)	
D_VID	-0.3009 (0.6151)		-0.2057 (0.6342)	
GOAL	2.63e-06 (3.71e-06)		-6.67e-08 (3.82e-06)	
D_US	-0.5645 (0.5860)		-0.3838 (0.6041)	***
ln_AGE	1.8389 (0.8558)	**	1.4734 (0.8824)	
Cons	8.7504 (1.7273)	***	-1.5997 (1.7809)	
N. of observations	36		36	

***,**,* = statistically significant with 99%, 95%, 90% level of confidence, respectively

Table 16: Results of regression 1.1.1 and 2.1.1.

As we can see from Table 17, Table 15 the p-values of Heteroskedasticity for both our graphs assure us that we do not have any in these terms. Indeed, they are way above the threshold of 0.05/0.1 with values of 0.3556 and 0.7415 respectively. The following Table 17 shows the White test used to verify the Heteroskedasticity of our models.

Table 17: Test of Heteroskedasticity for model 1.1.1 and 2.1.1.

<i>Null Hypothesis: Heteroskedasticity not present</i>
Test statistics for model 1: $TR^2 = 15.3362$
p-value = $P(\text{Chi-square}(14) > 15.3362) = \mathbf{0.3556}$
Test statistics for model 2: $TR^2 = 10.2794$
p-value = $P(\text{Chi-square}(14) > 10.2794) = \mathbf{0.7415}$

6 Conclusions, Limitations and Research Implications

The purpose of this study was to investigate the relationship between the outcomes of crowdfunding and possible post-campaign enterprise's performances. Most notably, we tried to access the relationship between the outcomes of crowdfunding with the revenues and employees that the company will have after the campaign.

6.1 Conclusions and interpretations

The first result shown by our research is that a crowdfunding outcome is positively related to two different parameters of the firms' size. More specifically, the dollars raised by the campaign exceeding the initial target are positively related to the revenues of the company. The same statement is true for the number of employees that are positively affected by this variable.

As we stated, our explanation to this phenomenon is attributed mainly to two different effects. On one hand, there is a direct impact of crowdfunding on the revenues and employees of a company, thanks to the amount of money received and a better product market performance that crowdfunding can lead to. On the other hand, an important factor to explain this phenomenon is the role of crowdfunding in seeking external capital after the campaign. As Kuppuswammy et al. stated (2017), it appears that crowdfunding serves as a useful "proof-of-concept" arena for entrepreneurs who seek additional financing. As traditional sources of external capital such as banks, VCs, angel investors, and other companies seek to filter proposals for the higher quality ideas, crowdfunding performance can in some way validate the market potential of an idea and reduce the risk associated with the financing request, at least to some extent. These are just some of the explanations that we have given to the phenomenon even though no causal relationship has been found. Indeed, the reason of the relationship we found could not be explained by a higher chance of obtaining more external funding or

by an improved market performance of the product. A further interesting issue would be to understand the causal relationships of our results.

Another interesting result showed that the number of updates had a positive relationship with both the number of employees and the revenues.

Concerning the number of updates, the relationship was in line with what we expected to obtain from our theoretical explanation. Indeed, we found that companies that had a campaign with a higher number of updates are more likely to become bigger. According to our line of reasoning, following the paper of Stanko and Henard (2017), the interaction among backers and fundraisers can significantly align the product with the market needs, boosting the company to better performance. A high number of updates to backers indicates that fundraisers are playing an active role in initiating dialogue with backers.

Again, our research did not explain this causal connection, rather this is our interpretation to explain the phenomena found. A further interesting question for scholars can be to verify if our explanation actually applies to our sample and, if not, which are the other reasons (maybe in addition to ours) to explain the phenomenon.

We did not find a significant relationship for the variable comments. There are different explanations that we gave to this result. For example, it has been shown by the literature (Wang, 2017) that too many comments can imply issues in managing all the feedbacks by the proponents. The proponent will not be able to efficiently understand which the best feedbacks are, and which are not. Moreover, having a lot of comments does not necessarily imply that the comments are valuable feedbacks. A further point of study should be to measure the quality of the comments posted instead of simply measuring the number. This is the reason why in our research it was more important to find a relationship with the number of updates rather than with the number of comments. The number of updates, as we already anticipated, can give a measure of the quality of the comments and how they were able to bring changes in the project itself.

Similarly to the number of comments, a higher number of backers during a crowdfunding campaign does not necessarily mean that there will be a positive exchange of information. Following the same theory, a high number of backers could lead to difficulties in managing all the advice. This effect might be strong enough to cancel the advertising benefits (as a consequence of a high number of backers) that we hypothesized in chapter number 3. This might explain why we did not find any positive correlation with revenues or employees. We think that an interesting additional research for practitioners might be to investigate if there is an ideal number of backers that allowed fundraisers to reasonably manage these relations. At the same time, it can be relevant to understand if there is a threshold for the number of comments after which the efficiency of the exchange of feedbacks becomes counterproductive.

Shifting the focus on the control independent variables, it is interesting to notice how the one related to the age of a campaign was perfectly in line with our beliefs while the one related to the geographical location of the proponents not. On one hand, we confirm that the older a company is, the higher its size is. On the other hand, we did not find any correlations and so we have not been able to prove that a company founded in the USA is more likely to increase its size, as a consequence of crowdfunding, than an enterprise located in the rest of the world.

The former result is in line with our expectations: as Coad et al. (2013) mentioned in one of their studies on the relationship between the age and the size of a firm, on average older firms have higher productivity and profits, larger size, lower debt and higher equity ratios (especially if compared to new ventures).

As far as the latter control variable is concerned, as we said, the results we obtained were discordant with what we expected. We believe that these results are strongly driven by the dimension of our sample. Indeed, 79 out of 86 companies in our dataset are American.

The control variable target capital was initially aimed at verifying that bigger companies would ask for more fundings. Even though the results did not confirm this relation, we believe that the absence of a relationship of this variable with revenues and employees might even strengthen our hypotheses. Indeed, coherently with our findings, it is not important how much money the fundraiser is asking to the crowd (and obviously reaching this amount) but how much more he is able to gather. In last analysis, it is possible that companies that were smaller when launching crowdfunding will become bigger than other companies because they were more able to exploit all the benefits of crowdfunding (e.g. external capital and market performance), hence having bigger size. To this extent, Roma et al. (2017) confirms our theory by saying that it is important not to just keep track of the total amount received from the campaign but to see how much more than the required amount was obtained. Indeed, the higher the amount received is with respect to the target amount, the higher is the likelihood to receive external financing from professional investors.

For the reasons we explained in chapter 5, we decided to run a check on the control variable `ln_AGE`, testing a limited part of our dataset. We wanted to run the same regression model on all the firms that were considered start-ups at the moment of the crowdfunding campaign. We ran these tests in order to check if our models were strongly driven by the size of the company before their participation to crowdfunding. In order to mitigate this risk, we decided to test the models on a dataset of companies that had roughly the same age (start-ups) and therefore roughly the same size. As we said all the variables used were identical with exception for the variable `AMBAS` (amount received on target) that was replaced by the variable `AMRES` (amount received), in order to stress our initial models and see if our results were kept similar. The test strengthens our models since the stressed variable was still statistically and positively correlated with both the number of employees and the number of revenues. On the other hand, the updates do not show any correlation, but this does not invalidate our results since the relations obtained in our first model were not strong. Finally, the

variable \ln_AGE is positively correlated only with the amount of revenues at 95% confidence level. This result once again is not too different from what we had before. It is worth noticing that this was just a check to strengthen our results even though the data sample was so small that it could explain some differences with the initial models.

6.2 Limitations and research implications

To the best of our knowledge, this is the first attempt that tries to link the size of companies with crowdfunding outcomes. Although there are several limitations to our work, it can offer opportunities for future researches.

The first limit is related to the dimension of our dataset. Unfortunately, the companies that we were able to safely find (with the data research explained in chapter 3) were significantly few. The companies that had financial data on an official data provider were even fewer. This is an endogenous issue that is difficult to be solved since most of the companies participating in crowdfunding are start-ups and American (they do not usually publish any financial data because it is not mandatory).

A second important limit of our research is a natural implication of the first one. Since the financial data were few, we could not use any time series analyses to test our hypotheses (notice that only eight companies had proper financial statements taking into account several years). This limitation forced us to do a cross section analysis and not a time series one. The implications were strong (as shown in chapter 3) since we could not know the size of the companies of our sample before the crowdfunding campaigns. These limits implied an impossible analysis on the ownership structure of the companies. For instance, knowing if professional investors were already inside the company launching the project could have been useful to predict its capabilities to attract other investors. We encourage further studies to try to bridge this gap.

Another limit is strictly linked to the time frame of investigation of our research. As we pointed out, the period of observation of the companies that participated in crowdfunding was around two-five years, according to the years of the financial data available. This choice could not capture some longer-term effects of crowdfunding on companies' performances, like revenues and employees. Future work could be built upon the present study in order to validate our findings or to implement them.

Another limit that we had to face in doing this study was the impossibility to check the indirect relations of crowdfunding performance on the firms' size through increased external financing. Obviously, there were researches that already confirmed the relationship between crowdfunding performance and the achievement of more external financing (Kuppuswamy et al., 2016; Roma et al., 2017), but it would be extremely useful to run this mediation model on our sample.

Another crucial point that we tried to explain in this chapter is that our work is not able to validate the causal relationships that we used to support the results found (see hypotheses in chapter 2). The explanations for the phenomenon could be different from the ones we found or simply not the only ones. An interesting study for researchers and scholars could be to investigate these relations in order to understand which are the causes that led all the crowdfunding outcomes (target amount on goal and updates) to be linked with the amount of revenues and the number of employees of a company. Moreover, sometimes our data provider (Orbis) recorded the employees and the revenues of companies in categories without giving the actual values.

In last analysis, our research failed to explain how our results may differ from country to country since the majority of our dataset was made out of American firms.

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Appendix A

Crowdfunding in Italy and in the world

In the following section of this work we present an overview of crowdfunding in the world. This was possible thanks to the “*1° Report italiano sul Crowdfunding*” published in June 2016 from Politecnico di Milano University. The main source used by this report is the “*Crowdfunding Industrial Report*”, which was updated to March 2015 (Massolution, 2015) but is not available to the public yet. Although it is not public, some information and graphs have been released and we suppose that the authors of the former report had full access to it. A second important source we took in account in our data research on crowdfunding was certainly “*The 3rd European Alternative Finance Industry report*”¹² carried out by the University of Cambridge (Judge Business School) with the support of BBVA Compass Bancshares, Inc.¹³ and the CME Group Foundation¹⁴. This report is mainly focused on a description of all the alternative finance practices available in the world until 2016 and therefore it contains important information about crowdfunding as well.

A snapshot of crowdfunding in the world

The first features coming up while analyzing crowdfunding are its dimensions and its distribution around the world: from the Figure 16 we can easily notice as the majority of crowdfunding investments are in the boreal hemisphere (Europe, Asia and North America) while few are left to the austral hemisphere (South America, Africa and Oceania). The total funding volume amounts to with North America (\$17.25bn) being

¹² For full access to the report see the references at the bottom of the paper or the following link: <https://www.jbs.cam.ac.uk/faculty-research/centres/alternative-finance/publications/expanding-horizons/#.WnHPbiOZNZo>

¹³ For further information, please see the following: <https://www.bbvacompass.com/>

¹⁴ For further information please see the following: <http://www.cmegroupfoundation.org/>

equal to the sum of Asia (\$10.54bn) and Europe (\$6.48bn) together but with a lower percentage annual growth rate. Then we have South America (\$85.74bn), Africa (\$24.16bn), and Oceania (\$68.6bn) all together accounting for around 178 million \$.

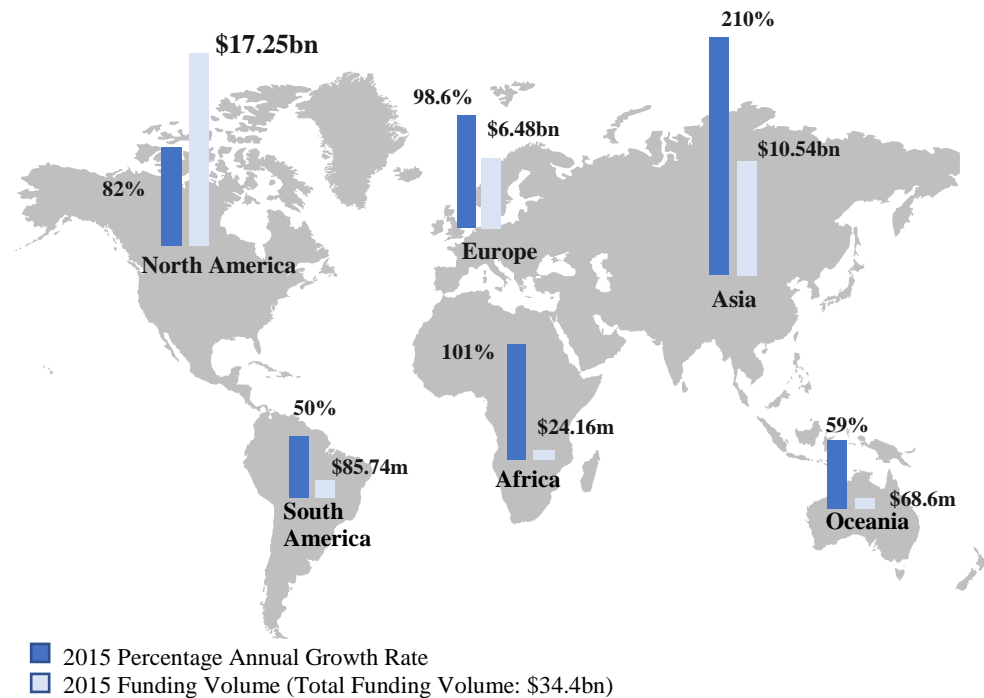


Figure 16: Crowdfunding Volumes and Growth by continent. Source: 1° Report italiano sul Crowdfunding, 2016.

Going back to the classification we carried out in chapter 1.6 (Equity-Based, Reward-Based, Donation-Based, Lending-Based) we can see in the Figure 17 how the Reward-Based crowdfunding is the biggest in terms of number of active platforms worldwide (362 platforms). It is immediately followed by Donation-Based, Equity-Based and Lending Based which have approximately the same number of active platforms (respectively 283, 236, 229 platforms). At the bottom of our ranking we can find the newest crowdfunding models: Hybrid-Based and Royalty-Based. The total amount of platforms active in 2015 equals to 1250, almost three times more than the amount of platform existing in 2012 confirming the incredible growth this phenomenon is experiencing worldwide.

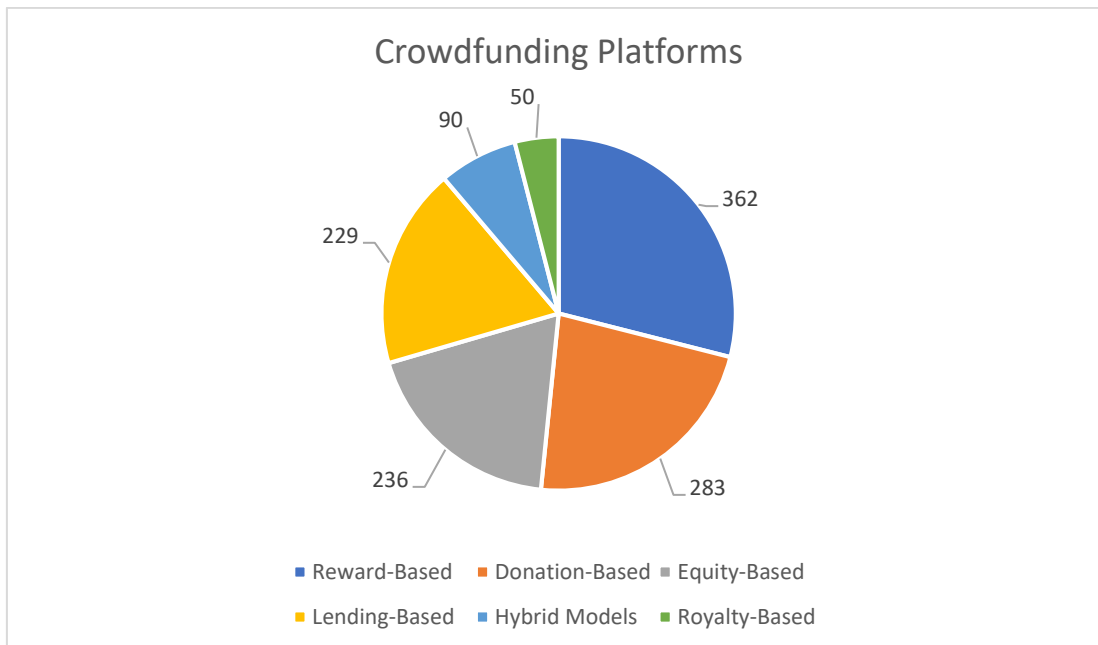


Figure 17: Number of active crowdfunding platforms worldwide. Source: 1° Report italiano sul Crowdfunding, 2016.

The distribution of the volumes of each typology of crowdfunding does not follow the same logic as highlighted from Figure 18. We can notice how Lending-Based crowdfunding leads the world scene either in terms of volumes either in terms of their growth. In 2015 it is estimated to reach the peak of \$25.1bn amounting at roughly 2.5 folds the sum of all the investments made in the rest of the crowdfunding platforms. All the others are quite similar either in terms of actual volumes either in terms of estimates for the end of 2015. Donation-Based seems to be the strongest among the three followed by Reward-Based and Equity-Based (respectively \$2.85bn \$2.68bn and \$2.56bn as estimates for the end of 2015).

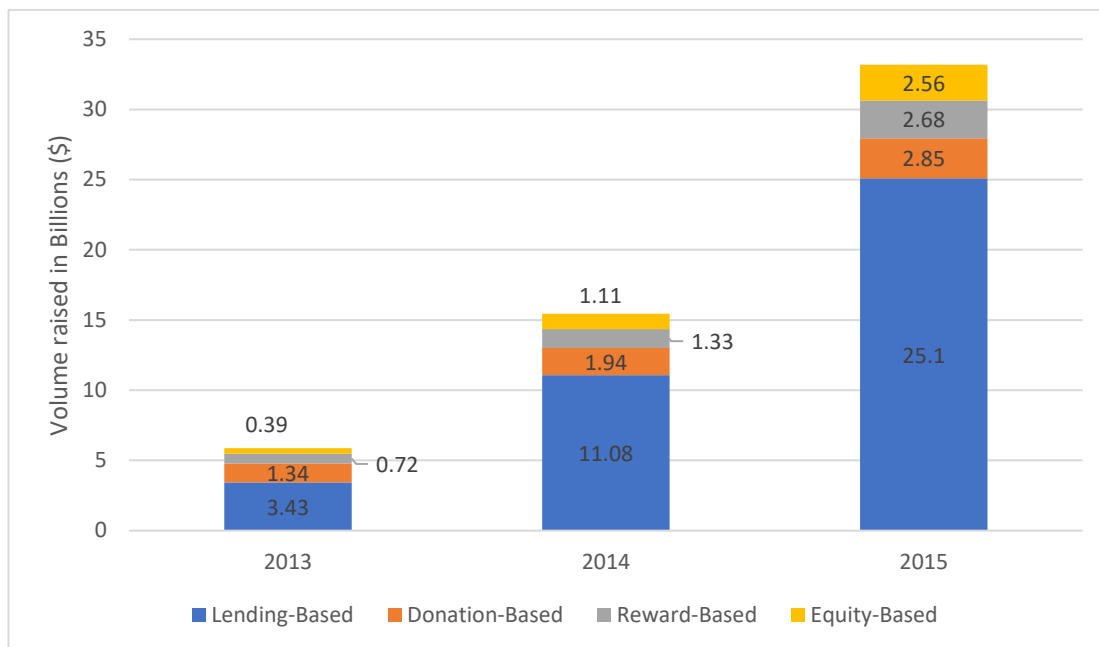


Figure 18: Crowdfunding Volume by model in the world. Source: 1° Report italiano sul Crowdfunding, 2016.

The size & Growth of the Alternative Finance Market Across Europe

European Alternative Finance has grown considerably in the past few years. In order to more accurately track development, our source aggregates 14 different alternative finance models. For sake of simplicity and to be in line with what we have presented in our paper we will not report all the 14 models (which included also Mini-Bonds, Profit Sharing etc.) but we will aggregate them to show the reader only some of the crowdfunding models presented in section 1.6. The following Table 18 does not include the UK data (while the data previously presented about the volumes of crowdfunding worldwide included the UK in Europe):

Alternative Finance Model	Definition	2016	Market Share
Lending-Based crowdfunding ¹⁵	Individuals or institutional funders provide a loan to a consumer or a business borrower.	€ 1.141bn	62.2%
Invoice Trading	Individuals or institutional funders purchase invoices or receivable notes from a business at a discount.	€ 251.87m	13.73%
Equity-Based crowdfunding	Individuals or institutional funders purchase equity issued by a company.	€ 218.64m	11.92%
Reward-Based crowdfunding	Backers provide finance to individuals, projects or companies in exchange for non-monetary rewards or products.	€ 190.76m	10,4%
Donation-Based crowdfunding	Donors provide funding to individuals, projects or companies based on philanthropic or civic motivations with no expectation of monetary or material return.	€32.40m	1.77%

Table 18: Description, Volume and Market Share of crowdfunding types in Europe. Source: The 3rd European Alternative Finance Industry report, 2016.

Lending-Based crowdfunding accounts for 62.2% of European crowdfunding volume, followed by Invoice Trading (13.73%) and Equity-Based crowdfunding (11.92%). In total we can state that crowdfunding is by far the biggest form of alternative finance investment in terms of volume with a total share of 87.85%. At the bottom we find Reward-Based crowdfunding and Donation-Based crowdfunding with a quote of respectively 10.4% and 1.77%. What is even more interesting is to track the growth of these practices among time. In Figure 19 we can observe the change in volumes from 2013 to 2016. In 2016, all models tracked experienced positive annual growth, albeit at a variety of rates. Lending-Based crowdfunding grew by 98% from \$578m to \$1142m. Since the growth was not that great between 2014 and 2015 (with a growth rate of 57%) and actually decreased from 2013-2014 (87%) in the “Sustaining

¹⁵ In the aggregation of the different forms of Lending-Based crowdfunding made by the “The 3rd European Alternative Finance Industry report, 2016” report we decided to include only the ones that are more commonly addressed to be Lending-Based: P2P Consumer Lending, P2P Business Lending and P2P property Lending.

Momentum” report it was speculated that it would drop in terms of market share during the second half of 2016. The research team noted that much of the hastened 2016 growth came from platforms that operated in multiple jurisdictions, with this model driving volumes across multiple countries. Equity-Based crowdfunding grew by only 37% in 2016, from €159m in 2015 to €219m in 2016. Whilst this slow-down is considerable (the 2014-2015 rate was 93%) it is a reflection of the model activity in the United Kingdom and United States. Reward-based Crowdfunding grew by 37%, from €139m to €191m. Though this growth rate is seemingly low compared to other models, it is still far in excess of the 16% growth from the previous year. Similarly, Donation-Based crowdfunding grew by 49%, from €22 to €32m in 2016, a modest increase from the 33% annual growth between 2014 to 2015.

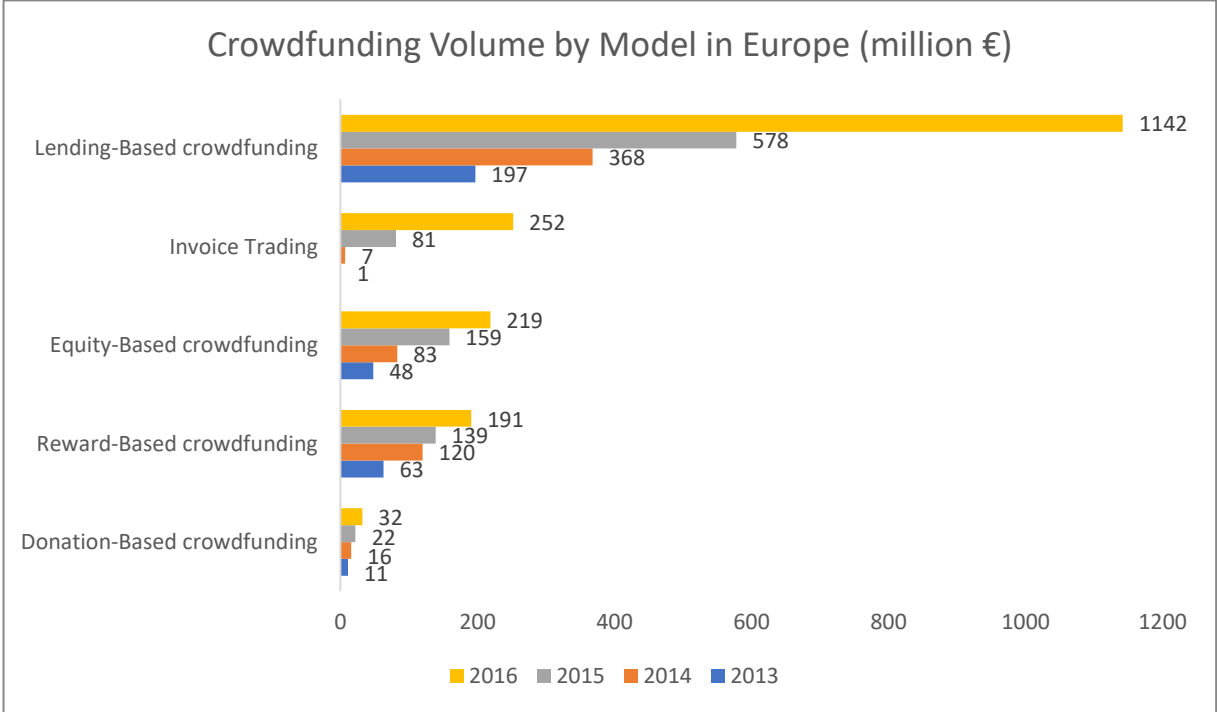


Figure 19: Crowdfunding Volume by model in Europe. Source: *The 3rd European Alternative Finance Industry report, 2016.*

Risks of crowdfunding platforms

When one is dealing with regulation the first topic coming to mind is the risk that is triggering the regulation itself. In Europe there are several types of risks widely perceived as the problem to solve from European platforms across alternative finance models (e.g. crowdfunding). In the following list you can find an accurate list of all the risks perceived from crowdfunding platforms:

- Collapse of one or more well-known platforms due to malpractice;
- Fraud involving one or more high-profile campaigns/deals/loans;
- Concerns are associated with increased levels of defaults on loans or business failures, as well as with cybersecurity breaches;
- Risks associated with regulatory changes at both local and European levels.

The last one mentioned is due to the strictly scrutiny of these platforms by financial authorities. Therefore, these platforms have invested substantial efforts and resources in adjusting their business to the relatively restrictive regulatory frameworks in most countries. There is a two-sided issue regarding the regulatory changes: on the one hand the authorities might tighten the regulation and make the work even harder; on the other hand, the authorities might ease the regulation reducing entry barriers for competitors that could enter the market without incurring in some of the sunk costs incurred by established platforms. Moreover, the regulatory framework makes platforms scared of “crowding out” of individual investors as institutionalization accelerates (the percentage of investments made from institutional investors is growing sharply in the last years). This can be explained by the fact that most recently established, and relatively cash-strapped platforms consider “heavy investors” as more of an opportunity than a threat to stabilize their own operations and securing high transaction volumes and flows.

Regulation in Europe

Regulation remains a core challenge for the development of the alternative finance industry in many European countries. There is still a lack of a common regulatory framework in most national, as well as at cross-national European level. Nevertheless, recently 11 EU member countries have implemented national level regulations for Securities-Based and Lending-Based crowdfunding, which serve as corner stones for local market development as well as initial set of benchmarking standards to be evaluated. Despite this effort regulation among many other countries remain non-existent limiting the development of crowdfunding platforms in these places. Moreover, the existing regulation varies a lot among different countries highlighting a critical need for an European Commission level regulatory initiative that may seek to harmonize, balance interests, and facilitate cross-border transactions within the EU and the European Economic Area (EEA) (The 3rd European Alternative Finance Industry report).

The Italian market and its regulation

Italian platforms had different views in relation to Italian regulation as it strongly effects their business model. There was a first ad hoc Italian regulation introduced the October 18th, 2012 called *Decreto Crescita 2.0* that was specifically created to regulate the phenomenon of equity crowdfunding, which initially allowed this practice only to innovative start-ups. The 24th of January 2015 a second law called *Decreto Investment Impact* has untighten the access to crowdfunding, opening it to those companies qualified as “Innovative SMEs”. Finally, the law no. 50 of April 24th, 2017 (“*Disposizioni urgenti in materia finanziaria, iniziative a favore degli enti territoriali, ulteriori interventi per le zone colpite da eventi sismici e misure per lo sviluppo*”) has definitively extended the possibility of resorting to equity crowdfunding to all SMEs. This new framework might be positive in a country like Italy which is mainly composed

by SMEs. In the following graph you can have the perception of Italian platforms regarding both debt model and equity model regulation as presented in “*The 3rd European Alternative Finance Industry report*”:

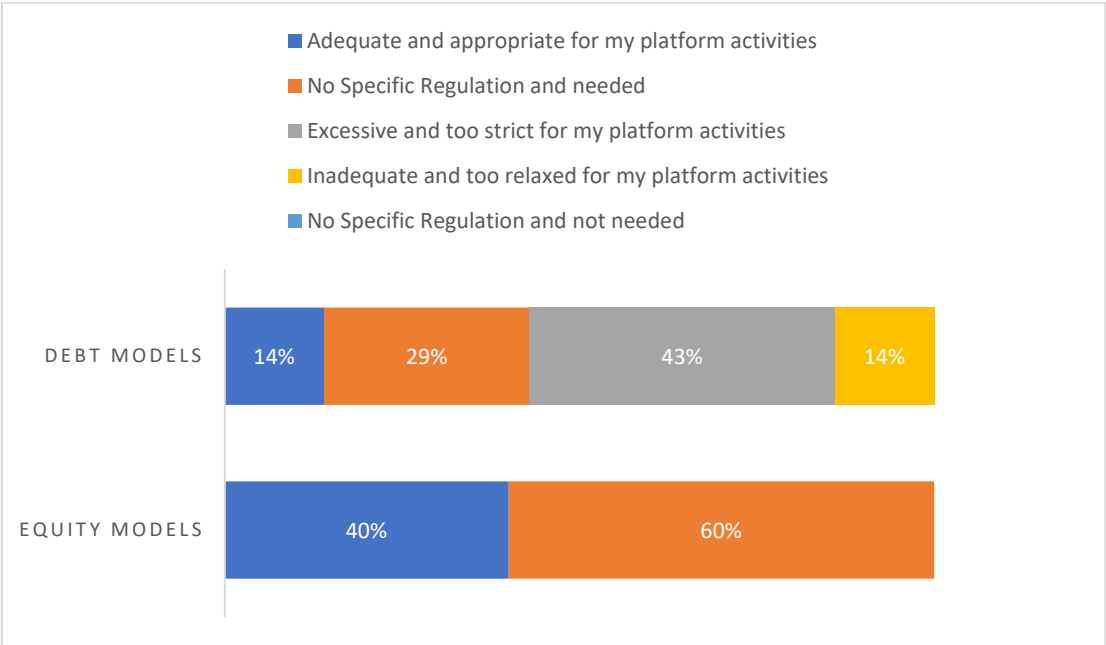


Figure 20: Perception towards Existing National Regulation in Italy. Source: The 3rd European Alternative Finance Industry report, 2016.

It is interesting to notice how there is a huge difference in the responses given from Debt models, with 14% of platforms viewing regulation as adequate and appropriate for their activities and 14% viewing regulation as inadequate and too relaxed. Interestingly, 43% of platforms perceived existing regulation as excessive and too strict, while 29% indicated they do not need a specific regulation with respect to their current activities. Most of the Equity models (60%) indicated that existing regulation was excessive and too strict, while 40% perceived it as adequate and appropriate. This survey is dated 2016 and hopefully with the new regulation we discussed above the perception on Equity models will change toward a positive feedback.

Finally, we present the Volume of crowdfunding in Italy between 2013 and 2016 to show how the market of alternative finance is changing over years.

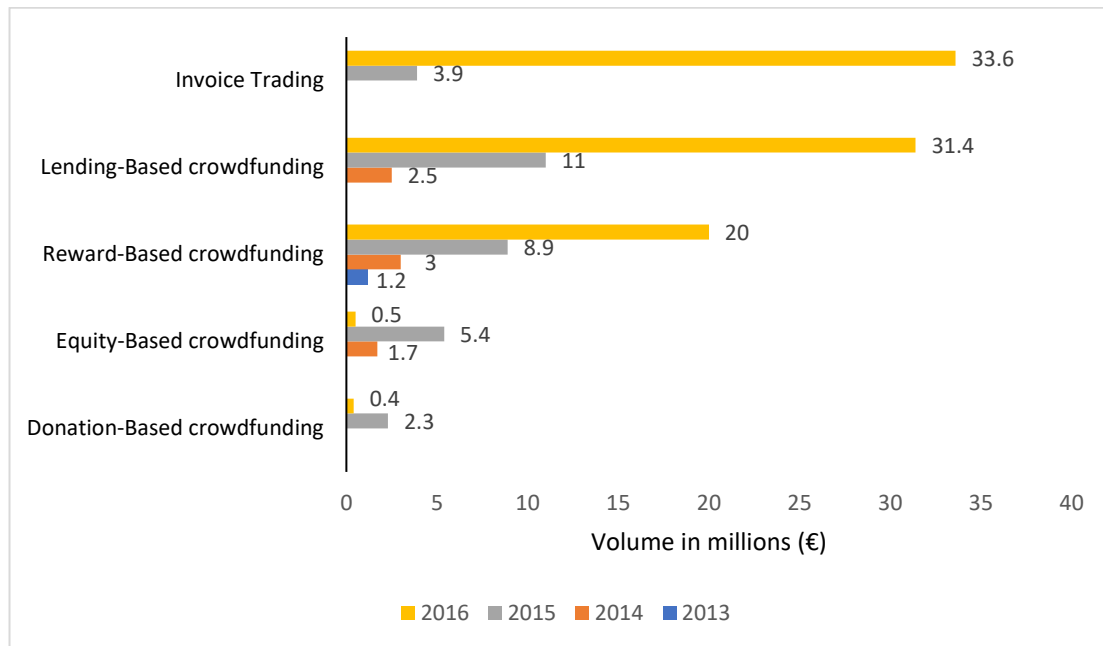


Figure 21: Crowdfunding Volume by model in Europe. Source: *The 3rd European Alternative Finance Industry report, 2016*.

Invoice Trading and Lending-Based crowdfunding are by far the leading alternative finance models by market volume in Italy in 2016. They account respectively for €33.6m and €31.4m which equalis to a rough 75% of market share. According to “*2nd Report Italiano sul Crowdinvesting*” Invoice Trading in June 2017 reached the peak of €88m¹⁶. A combination of factors account for the strong growth in business focused finance, with a struggling SME access to finance environment stemming from continued banking sector constraints (*The 3rd European Alternative Finance Industry report*”). Reward-Based crowdfunding also continued to grow significantly in 2016, from €8.9m in 2015 to €20m in 2016 (125%). Interestingly, around 40% of all Reward-

¹⁶ For further information: <https://www.economyup.it/fintech/che-cose-linvoice-trading-il-crowdfunding-delle-fatture-che-ha-raccolto-88-milioni/>

Based volumes went to start-up and businesses, reflecting the importance of this model as a funding tool for start-up and growing businesses.

Equity-Based crowdfunding generated €1.7m in 2016, a drop from the previous year. However, this is potentially explicable by the fact that one large platform declined the opportunity to participate in the survey and data could not be verified through external sources. As a result, it is likely that the Equity-Based crowdfunding figure reported here is lower than in reality (The 3rd European Alternative Finance Industry report).

Appendix B

In the following figures you can find two sections of an Orbis file: “Key Financial & employees” and “Balance sheet”

Key financials & employees					
Local registry filing/Unconsolidated	31/12/2016	31/12/2015	31/12/2014	31/12/2013	31/12/2012
	USD	USD	USD	USD	USD
	12 months	12 months	12 months	12 months	4 months
	Local GAAP	Local GAAP	Local GAAP	Local GAAP	Local GAAP
Exchange rate: EUR/USD	1.05410	1.08870	1.21410	1.37910	1.31940
Operating revenue (Turnover)	n.a.	n.a.	n.a.	n.a.	n.a.
P/L before tax	n.a.	n.a.	n.a.	n.a.	n.a.
P/L for period [=Net income]	n.a.	n.a.	n.a.	n.a.	n.a.
Cash flow	n.a.	n.a.	n.a.	n.a.	n.a.
Total assets	113.752	53.870	53.820	42.742	32.841
Shareholders funds	86.783	46.694	36.865	34.443	28.634
Current ratio (x)	4,22	7,51	3,17	5,15	7,81
Profit margin (%)	n.a.	n.a.	n.a.	n.a.	n.a.
ROE using P/L before tax (%)	n.a.	n.a.	n.a.	n.a.	n.a.
ROCE using P/L before tax (%)	n.a.	n.a.	n.a.	n.a.	n.a.
Solvency ratio (Asset based) (%)	76,29	86,68	68,50	80,58	87,19
Price earning ratio (x)	n.a.	n.a.	n.a.	n.a.	n.a.
Number of employees	n.a.	n.a.	1	n.a.	1

Figure 22: Key financial & employees section of an Orbis file. Source: Orbis.

Balance sheet					
Assets					
Fixed assets	0	0	0	0	0
Intangible fixed assets	n.a.	n.a.	n.a.	n.a.	n.a.
Tangible fixed assets	n.a.	n.a.	n.a.	n.a.	n.a.
Other fixed assets	n.a.	n.a.	n.a.	n.a.	n.a.
Current assets	113.752	53.870	53.820	42.742	32.841
Stock	0	37.183	36.810	27.961	20.630
Debtors	113.752	455	507	576	86
Other current assets	0	16.231	16.502	14.205	12.125
Cash & cash equivalent	n.a.	16.231	16.502	14.205	12.125
TOTAL ASSETS	113.752	53.870	53.820	42.742	32.841
Liabilities & Equity					
Shareholders funds	86.783	46.694	36.865	34.443	28.634
Capital	n.a.	19.597	21.854	24.824	23.749
Other shareholders funds	n.a.	27.098	15.011	9.619	4.884
Non-current liabilities	0	0	0	0	0
Long term debt	n.a.	n.a.	n.a.	n.a.	n.a.
Other non-current liabilities	n.a.	n.a.	n.a.	n.a.	n.a.
Provisions	n.a.	n.a.	n.a.	n.a.	n.a.
Current liabilities	26.969	7.176	16.955	8.299	4.208
Loans	n.a.	n.a.	n.a.	n.a.	n.a.
Creditors	n.a.	n.a.	n.a.	n.a.	n.a.
Other current liabilities	n.a.	n.a.	n.a.	n.a.	n.a.
TOTAL SHAREH. FUNDS & LIAB.	113.752	53.870	53.820	42.742	32.841

Figure 23: Balance sheet section of an Orbis file. Source: Orbis.