Uncovering the Outcomes of Equity Crowdfunding

- Post-funding outcomes of equity crowdfunded firms in Europe

Maxence Décarre[♦] and Emelie Wetterhag[♣]

ABSTRACT

The aim of this study is to explore the previously unresearched outcomes of firms funded through equity crowdfunding, a novel type of entrepreneurial finance. We study the outcomes of a sample of 337 firms funded on equity crowdfunding platforms in Europe between 2009 and 2014. By incorporating a descriptive statistics analysis, we discover the post-funding outcomes of the firms and complement this by a regression analysis in order to assess whether those outcomes can be attributed to equity crowdfunding campaign-related factors. A main finding is that the firms experience on average a peak in both sales and sales growth the year after the campaign and that this tends to be positively impacted by a larger number of investors through the campaign. Profit is on average found to decrease the years following the campaign, but with a less negative growth rate. The latter is positively impacted from having business angels investing through the campaign and a higher equity share offered. A similar pattern to those growth outcomes has been found when comparing the equity crowdfunded firms to firms funded by business angels, supporting the idea that business angel investing can be seen as an analogue to equity crowdfunding. We find that another common outcome is a PR effect, which is also positively impacted by the number of investors, and supports previous findings on crowdfunding showing that campaigns act as a marketing and promotional tool for firms.

Keywords: Equity crowdfunding, Outcomes, Europe, Entrepreneurial finance, Start-ups

STOCKHOLM SCHOOL OF ECONOMICS

MSc Thesis in Finance

December 2014

Tutor: Ramin Baghai

♦ 40506@student.hhs.se – MSc in Management
♣ 21909@student.hhs.se – MSc in Finance

Acknowledgements

We would like to thank our tutor Ramin Baghai for guidance and feedback throughout the writing of this thesis. We also thank Jesper Blomberg, Claire Ingram and Robin Teigland for valuable inputs as well as Emma, Andreas, Hanna and David for their support. We would also like to express our greatest appreciation to all of the entrepreneurs who took the time to contribute to this research by answering our survey, without you our study would not have been possible.

Table of contents

1 Introduction

Equity crowdfunding is a novel type of entrepreneurial finance that has been rapidly growing in the past few years. It has emerged as an alternative to traditional funding actors such as banks and angel investors, from which it has become increasingly difficult for new ventures to receive funds (De Buysere et al., 2012). The fundamental idea of this method of funding is that it allows for entrepreneurs of primarily start-up and early-stage businesses to seek financing from many individuals – a *crowd* of investors – in exchange for shares in the firm. The funding campaigns are carried out on online equity crowdfunding platforms, which commonly provide the legal base and the ability to process the financial transactions. Equity crowdfunding stems from reward-based crowdfunding – in which entrepreneurs raise funds from the masses in a similar manner – in the way that shares are being exchange for money instead of non-financial rewards (Agrawal et al., 2013).

The novelty of the equity crowdfunding industry is a major contributor to the fact that not much research has yet been conducted within the field. Some studies have been made, primarily aiming at describing this new type of financing and its dynamics, and a common focus in these studies has been to explore what characterizes firms that are successful in getting funded through an equity crowdfunding campaign (Belleflamme et al., 2013a; Ahlers et al., 2012). In the research on equity crowdfunding, parallels to business angel investing are often used in order to get an idea of the potential performance of equity crowdfunded firms – as angel investing is seen as the closest analogue to equity crowdfunding (Dorff, 2013). A fact that remains is that equity crowdfunding in general is still a much unknown research area within entrepreneurial finance and a lot has yet to be studied (Hornuf & Schwienbacher 2014b). In particular, a currently unresearched area is the outcomes of firms after an equity crowdfunding campaign, and this area is therefore surrounded with uncertainties.

In this thesis, we explore the outcomes of European equity crowdfunded firms after the campaign, and in addition we aim to assess how the occurrence of these outcomes is attributable to the campaign. This leads us to the following research question:

- *What are the post-funding outcomes of equity crowdfunded firms in Europe?*

Through our study, we wish to contribute to the existing literature firstly by researching a topic that has not yet been covered by previous researches on equity crowdfunding. Secondly, by conducting a research within equity crowdfunding, we are also contributing to the knowledge of a growing field of entrepreneurial finance that is currently vastly under-researched, given the rapid emergence of this new type of financing.

We use a sample of 337 firms funded on European equity crowdfunding platforms between 2009 and 2014, from which we collect campaign-related data and financials. Through a survey, we get a sub-sample of 46 responding firms, from which we collect additional qualitative data of various post-funding outcomes. We use statistical analysis, combining descriptive statistics and regressions analyses, to investigate both quantitative and qualitative outcomes of our studied firms and to assess whether these outcomes can be ascribed to certain equity crowdfunding campaign-related factors. In the regressions analyses, the quantitative outcomes are represented by the dependent variables *growth* in sales, assets, profit and employees respectively. The qualitative outcomes assessed as dependent variables are whether the campaign ultimately resulted in outcomes such as the firm receiving additional funding, experiencing an increase in the customer base or in the products/services portfolio or received press attention. As explanatory variables, we use the campaign-related factors, such as for example the equity offered, the raised funds, the number of investors and the proportion of angel investors among them, but also whether the firm had raised funds from angel investors or from the founders *prior* to the campaign.

Our main findings from the descriptive statistics and the regressions analyses combined are, first of all in terms of *financial* measures, that the firms on average experience a peak on both sales and sales growth the year after the campaign and that this tend to be positively impacted by a larger number of investors through the campaign. We find a similar peak on assets and asset growth, but which tend to occur right after the campaign. Profit is on average decreasing the years after the campaign, but with a less negative growth rate than before the campaign. Profit growth is found to be positively impacted by offering a larger equity share and having business angels investing through the campaign respectively, and likewise by having the founders investing in their own firm before the campaign. A similar pattern on financial growth outcomes has been found when comparing the equity crowdfunded firms to firms funded by business angels (EBAN, 2014a), supporting the idea that angel investing can be seen to some extent as an analogue

to equity crowdfunding. In terms of *qualitative* outcomes, the main findings are first that the campaign on average helped the firms to gain press attention and publicity. This is also positively impacted by the number of investors and supports both our survey answer and our previous findings showing that equity crowdfunding campaigns act as a marketing tool for firms (Mollick & Kuppuswamy, 2014). Furthermore, we find less support on whether the campaign helped the firm to find or hire new employees or increase its customer base. Slightly more support was found of an increase in the firm's portfolio of products or services resulting from the campaign, and in those cases the major contributing factors were if any of the investors through the campaign belong to the same industry as the firm – indicating that industry expertise contributes to the firms' development. Overall, the factor that seems to have a positive impact on most outcomes is the founders' investment in their own firm before the campaign, as it has a positive impact on both profit growth and on the degree to which the campaign helped the firm gain press attention, increase the customer base and its portfolio. Perhaps surprisingly, having business angels on board before the campaign is the factor with most negative impacts, on both the financial measures of growth in sales and profit as well as on the effect on portfolio and press attention from the campaign. With regards to the negative impact on growth, our findings can be explained by other studies showing that the arrival of experienced people such as business angels in the firm usually contributes to control and then optimize growth (Abetti, 2001).

Our results reveal that 60% of the firms were able to find additional funding after the campaign and two thirds of these said the campaign helped them to raise additional funds. Half of the firms had not been able to raise external funds before the campaign but, out of those, the majority was able to find additional funding after the campaign, mostly through bank loans and angel investment. This indicates that another outcome of equity crowdfunding is that it helps firms getting access to capital even after the campaign.

Based on our study, we are able to present a set of post-funding outcomes experienced by our equity crowdfunded firms studied. We are also able to assess how different equity crowdfunding factors impact these outcomes.

This paper is structured as follows. Section 2 provides an introduction to equity crowdfunding and a review of the existing literature. Section 3 describes our data and the sources used to obtain it. In Section 4, we provide explanations of the methodologies and models used in our study. Section 5 summarizes our empirical findings, and finally Section 6 concludes our findings and provides ideas for further research.

2 Previous literature

2.1 Evolution of crowdfunding

When it comes to define what crowdfunding is, it is useful to start by describing where crowdfunding comes from, and therefore to define first the notion of *crowdsourcing*. The latter term originates from two editors of the Wired Magazine, Jeff Howe and Mark Robinson, who created this word in 2006 as a way to shorten the notion of *outsourcing to the crowd* – that is a large audience. The word "crowdsourcing" has thus been published for the first time in Jeff Howe's blog in June 2006 and was defined as an open call of a firm to a large network of undefined people to perform functions that were until now performed by employees of the firm (Howe, 2006).

If examples of crowdsourcing have been found throughout many different cases along the past centuries, it only gained wide attention with the rise of the Internet age, bringing people and ideas closer to each other and facilitating the expansion of one's network. Consequently, the first study on crowdsourcing was conducted in 2008 by Daren Brabham (Brabham, 2008) and most definitions that can be found today about crowdsourcing are emphasizing the role of the Internet and the mutual benefits obtained from using crowdsourcing. Indeed, as shown on the integrated definition developed by Estellés-Arolas and González-Ladrón-de-Guevara (2012) out of 40 different definitions of the term *crowdsourcing*, the "crowdsourcer" benefits from the collective output designed by the crowd mainly through combined knowledge and expertise, and the crowd benefits from the satisfaction of having contributed to the development of this output.

One of the most popular examples of crowdsourcing is the platform Wikipedia.org, where everyone is free to contribute on a voluntary basis to the creation of content that will then be shared to the rest of the world. By adding up the contribution of each single user since its creation in 2001, it is more than 4.5 million articles that have now been created through nearly 741 million edits for the English Wikipedia only[1].

It is not surprising then that it didn't take long for some individuals to understand that the *crowd* could not only contribute with knowledge, but also with money. This is when crowdfunding comes into place. Following the same reasoning than with the crowdsourcing

[1] http://en.wikipedia.org/wiki/Wikipedia:Statistics (Accessed 31 October 2014)

of knowledge, collecting small individual amounts of money from a large amount of people could potentially finance a project the same way as if one unique large investor would decide to invest in this project. Thomas Lambert and Armin Schwienbacher were among the first researchers to study crowdfunding and, in a publication of 2010, they adapted the definition of crowdsourcing to fit into the crowdfunding business model:

> *Crowdfunding 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 (Lambert & Schwienbacher, 2010).*

The differences between crowdfunding and other sources of financing lies mainly in the number of investors involved, the size of the firms seeking funds as well as the returns that can be expected by investors. However, those differences can be more or less important depending on the crowdfunding model chosen by the entrepreneur – which will be described further down in this thesis. As of 2012, Massolution (2013) estimated the crowdfunding market being worth $2.7 billion, with a growth or more than 80% compared to 2011, which was already 64% higher than in 2010. Considering the fact that, by the end of 2013, the market was estimated to be worth more than $5 billion, we can therefore observe an exponential growth over the years. The two main markets for crowdfunding are by far North America ($1'606 million) and Europe ($945 million) (Massolution, 2013). Those two markets are also the leading ones in terms of successfully completed crowdfunding campaigns, with North America leading with 625 thousands campaign and Europe being the runner-up with 470 thousands campaigns for an overall total of 1.1 million successful campaigns worldwide. In May 2013, there were more than 800 crowdfunding platforms worldwide (Ingram & Teigland, 2013). As of today, crowdfunding can be categorized into four main types (De Buysere et al., 2012; Mitra, 2012).

The first type is the loan-based crowdfunding in which investors are acting similarly to a bank in the way that they will lend money to the entrepreneur, that they will get back after a pre-defined amount of time – including an interest. This is the largest type of crowdfunding, reaching $1'170 million worldwide in 2012 with a growth of 111% compared to the year before. Loan-based crowdfunding campaigns also benefit from a very high

funding probability, with about 90% of them being successfully completed against 50% or less for the other types of crowdfunding (Massolution, 2013).

The second type is the donation-based crowdfunding that is usually being used by NGOs in order to raise funds about a specific project launched by the entity. In 2012, this market was worth $979 million with a 45% growth rate compared to 2011 (Massolution, 2013). According to the Massolution 2013 report, donation-based crowdfunding accounts for 62% of the overall successfully completed crowdfunding campaigns, making it the largest crowdfunding type in terms of number of campaigns. In comparison, the second largest type is the loan-based crowdfunding, accounting for 22% of completed campaigns only.

The third type is the reward-based crowdfunding in which the investors receive a non-financial reward in exchange for their money. Usually, the reward is of low value and is directly related to the entrepreneur's project. In this situation, the term of *entrepreneur* relates not only to business owners, but also commonly to artists seeking funds to create or promote their art as well as to social activities (Hornuf & Schwienbacher, 2014). This is the fastest growing type of crowdfunding with a 232% growth between 2011 and 2012 – reaching $383 million – and is expected to outdistance donation-based crowdfunding by the end of 2013 (Massolution, 2013). This is also the most researched type, and those studies commonly cover the U.S. market.

The last type, which will be the main focus of our thesis, is the equity-based crowdfunding. In this model, a firm is seeking equity in exchange for shares of the firm itself, and investors therefore become shareholders of the firm they fund. Belleflamme et al. (2013a) have found that entrepreneurs usually prefer to raise funds through reward-based crowdfunding when the capital sought is small, and through equity-based crowdfunding otherwise. This financing model draws closer to business angels and venture capitalists models, the main differences being that equity crowdfunding usually involves a relatively large group of investors and that those investors are usually small investors. The main difference between equity crowdfunding and the stock exchange market relates to the size of the firms being funded, with equity crowdfunding usually applying to seed- or early-stage ventures as opposed to IPOs applying to more large and mature firms instead. According to Massolution (2013), this model accounts for about a percent only of the overall number of successfully completed crowdfunding campaigns worldwide, and reaches a $116 million market for a 30% growth rate, which is mostly due to the regulations in many countries

limiting or prohibiting equity-based crowdfunding to unaccredited investors. However, the average amount of money collected per equity crowdfunding campaign is also much higher than any other type of crowdfunding model, with an average of $190 thousands per campaign followed by loan-based campaigns ($4.7 thousands), reward-based ($2.3 thousands) and finally donation-based ($1.4 thousands) (Massolution, 2013). Statistics from Knowledge Peers (2013) show that 57% of the firms resorting to equity crowdfunding are young SMEs generating revenues since 1 to 3 years, 15% are start-ups with no revenue yet, and 28% are established SMEs with revenue generation since 4 to 8 years. In the frame of this report, no established SMEs of more than 8 years of activity used equity crowdfunding.

2.2 Equity crowdfunding

One of the key challenges for entrepreneurs is access to capital, resulting in most new business ideas going unfunded (Dawson & Bynghall, 2012, p.127). This phenomenon has considerably increased in the wake of the financial crisis of 2008, with financial institutions reducing their investments and consequently entrepreneurs and business owners struggling ever more to find access to capital such as loans or other forms of credits (Giudici et al., 2013; Lehner, 2013; Pierrakis & Collins, 2013). Taking into account the fact that 90% of firms worldwide are SMEs (IFC, 2014) – this number goes up to 99% for Europe[2] – and that the latter are responsible for the majority of the new job creation, finding an alternative way of financing entrepreneurs became a necessity in order to foster – among others – employment, innovation, consumption, and thus economic growth (Bradford, 2012; Ingram & Teigland, 2013). As shown by the World Bank, the financial crisis engendered a drop in savings rates[3], making unattractive for small investors to keep their money in their savings accounts. In such crises, an alternative is consequently to invest that money instead with the hope to get a higher yield than the current low savings rates (Taylor, 2009). Considering the small proportion of firms seeking capital being funded through professional investors such as venture capitalists and business angels, the growth and the success of crowdfunding could therefore be partially correlated to the increased investment from individual investors – which now had the opportunity to reach young business ventures that were not accessible to them until now. Additionally, the development of the

[2] http://ec.europa.eu/enterprise/policies/sme/index_en.htm (Accessed 3 November 2014)
[3] http://data.worldbank.org/indicator/NY.GNS.ICTR.ZS/countries?display=graph (Accessed 3 November 2014)

Internet decreased considerably the transaction costs of selling equity to the general public by eliminating the middlemen (Friedman, 2005; Schwienbacher, 2014b), and thus made it possible for entrepreneurs to offer small amounts of equity through online platforms.

Those equity crowdfunding platforms therefore act as an online intermediary between an *entrepreneur* looking for financing, and the *crowd* willing to invest into a specific project. In return for this service, the platform receive a percentage of the total amount of money raised by the project, commonly ranging between 3 and 10%. While some platforms chose to specialize in equity crowdfunding only, many platforms often provide several models of crowdfunding under the same roof. In most cases, an equity-based campaign page launched by an entrepreneur shows the minimum and maximum amounts of money sought, the equity of the entrepreneur's firm given in return, the current amount of money raised, the current number of investors as well as the number of remaining days before the end of the campaign. A typical campaign page also includes a description of the project and/or the firm, with generally a business plan and financial forecasts in order to attract and convince potential investors.

Traditional investors such as business angels and venture capitalists tend to be located closely to the firm they fund (Sohl, 1999; Wong, 2002), notably because it reduces the cost of collecting data about the entrepreneur and then monitor and provide guidance to the newly funded firm (Zook, 2002; Mason, 2007; Agrawal et al., 2011). For instance, Sorenson and Stuart (2005) have found in their study that there are on average 110 kilometers between a firm and its venture capitalist. However, the Internet proven its capacity to break boundaries at the global scale and to reduce geographical distance – which applies to market transactions as well (Brynjolfsson et al., 2009; Goldfarb & Tucker, 2010). Consequently, besides opening financing to unsophisticated investors, equity crowdfunding platforms have also the potential to open financing to potential investors from other regions than those that would typically be concerned by an equity investment for a given firm. This is especially important, according to Nanda and Khanna (2010), for firms having difficulties to access capital since they can potentially reach a larger audience.

One major exception remains however for American citizens that are not yet allowed to invest in equity crowdfunding unless they are accredited investors. Indeed, the signature of the JOBS Act[4] in April 2012 by Barack Obama launched the beginning of changes in the

[4] https://www.sec.gov/spotlight/jobs-act.shtml (Accessed 3 November 2014)

American legislation aiming to eventually authorize equity crowdfunding in order to boost the financing of start-ups and thus the economy. But as of today, the Title III of this Act allowing unaccredited investors to take part in equity crowdfunding campaign is still under approval, and therefore only accredited investors can invest on such platform so far.

Consequently, Europe is the main player on the equity crowdfunding market so far, and is actually pioneering this domain, with some of the world's oldest equity crowdfunding platforms being – among others – the French WiSEED (launched in May 2008), the British Crowdcube (February 2011) and the Dutch Symbid (April 2011). Besides France, the U.K. and the Netherlands, other important countries in Europe when it comes to equity crowdfunding (allowing unsophisticated and unaccredited investors) are Germany, Finland, Sweden and Austria (Gajda & Mason, 2013). This is therefore the reason why we decided to set up our scope on the European Union in the frame of this thesis.

2.3 Theories behind equity crowdfunding

Although equity crowdfunding is a very new field of research that has not yet been subject to new established theories, there are existing theories in both the finance and management fields that relate to equity crowdfunding and are used in the research context. Some of the most common theories which can be connected to equity crowdfunding are described in this section.

2.3.1 Wisdom of crowds and knowledge management

Wisdom of crowds

A theory that people commonly refer to when explaining the incentives behind choosing crowdsourcing or crowdfunding rather than internal or more traditional resources is the notion of *wisdom of crowds*. As stated by the New Yorker business columnist James Surowiecki in his best seller:

> *Large groups of people are smarter than an elite few, no matter how brilliant – better at solving problems, fostering innovation, coming to wise decisions, even predicting the future (Surowiecki, 2005).*

In other words – and by qualifying the above statement – a collective decision-making can achieve better results than an individual one (Ray, 2006; Howe, 2008; Budescu & Chen, 2014). The same idea is also described by Lévy and Bonomo (1999) when they talk about the notion of "collective intelligence", defined as "No one knows everything, everyone knows something, all knowledge resides in humanity". Brabham (2008) adds to this by arguing that efficiency in a group decision-making process increases along with the diversity of the people being part of the group. The usefulness of the crowd in fundraising is supported by Lawton and Marom (2010) stating that the power of crowds lies not only in the ability to access ideas, but also and more importantly in the ability to use the collective wisdom as a means to sort out firms and notice the leading ones – allowing for scalability. This is in line with Yochai Benkler (2006) describing the crowd as a sorting mechanism through a system of peer review. Consequently, in the context of equity crowdfunding, it is believed that the aggregated due diligence performed by the potential investors within the "crowd" can achieve to detect promising business opportunities in which to invest.

However, conducting due diligence is a process that takes time and that is often under-performed by investors on equity crowdfunding platforms. Indeed, it usually requires a long number of hours to perform an appropriate due diligence aiming to narrow down the number of potential projects to invest into, and then to evaluate if the remaining firms are actually worth being funded (Ahlers et al., 2012; Dorff, 2013). If we view that number of hours in relation to the relatively low amount of money invested on average by each investor on equity crowdfunding, and that we compare it to the salary that could have been potentially earned by working instead of conducting due diligence, it appears that in many cases the latter would cost to the investor more than what s/he plan on investing (Dorff, 2013). Former venture capitalist Daniel Isenberg (2012) also raises the concern that due diligence is a complex process that most inexperienced investors wouldn't be able to understand and consequently to conduct properly. Consequently, due diligence is perceived as being costly and as providing little benefits in return, leading to a general under-investment in due diligence by potential investors on crowdfunding platforms (Agrawal et al., 2013). To translate that into numbers, Yannis Pierrakis and Liam Collins (2013) have shown for instance in their study – conducted on loan-based crowdfunding – that business angels spend on average 20 hours conducting due diligence while loan-based crowdfunding investors only dedicate on average 15 minutes to it before investing.

As a result, potential investors will tend to reduce their own due diligence duty by free-riding on the duty performed by other investors before them (Agrawal et al., 2013, Hornuf & Schwienbacher, 2014). In other words, investors will simply look at the number of people who already invested in a specific project – which is publicly available on most crowdfunding platforms – and tend to invest in the projects that already received a considerable number of backers (Zhan & Liu, 2012). By imitating the investment behavior of other people, investors therefore tend to stop paying attention to their own knowledge and adopt a herd behavior instead (Bikhchandani & Sharma, 2000; Surowiecki, 2005). This phenomenon is particularly visible on the equity-based and loan-based crowdfunding campaigns – where a financial return is expected – because herding gives a "rational" way to inexperienced investors to believe that a project is less risky (than it may actually be) only because other people already invested in this project before them (Burtch et al., 2013; Kuppuswamy & Bayus, 2013). Interestingly, Bikhchandani proved in an earlier study (Bikhchandani et al., 1992) that projects having a large support from the community are usually associated with a high quality. However, in the context of equity crowdfunding, the latter statement is still subject to debates (Isenberg, 2012).

Knowledge management

As described by Zachary Gubler (2013) in the Wall Street Journal, crowdfunding gives the opportunity to ordinary persons to "get in the ground floor of the next big idea". Who wouldn't like to be one of the first investors in the next Facebook or Apple? An example of the power of equity crowdfunding as opposed to reward-based crowdfunding is Facebook's recent acquisition of the tech firm Oculus Rift for $2 billion. The latter firm had previously completed a reward-based crowdfunding campaign from 9'500 investors who received in return diverse rewards such as posters or T-shirts. But as underlined by Forbes' contributor Chance Barnett (2014), if the firm had conducted an equity crowdfunding campaign instead, the Facebook's acquisition would have given each of the 9'500 investor a 200 times return on their investment. Instead, they received nothing but their initial reward.

However, studies have revealed that the financial return on investments was not the only reason for ordinary people to invest through equity crowdfunding (Belleflamme & Lambert, 2014; Hornuf & Schwienbacher, 2014). Indeed, the social interactions and emotional connections behind the process of investing, and then being part of a firm offer

benefits that are also often mentioned by investors (Schwienbacher & Larralde, 2010; Gajda & Mason, 2013). Gerber et al. (2012) support this argument by stating that crowdfunding investors are looking for ways to connect with a community sharing similar interest and ideas, and that they want to feel "special" or "privileged" by belonging to this community. It has also been shown that some investors only choose to support a firm because it shares their own values and it contributes to the local community (De Buysere et al., 2012; Gajda & Mason, 2013). Consequently, investors seem motivated to support the firm and to contribute to its development – during the crowdfunding campaign, but also afterwards (Jeppesen & Frederiksen, 2006; Gerber et al., 2012).

This willingness to get involved in the firm is in line with entrepreneurs' willingness to involve investors in the decision-making of the firm. Indeed, when asked about the reasons why they decided to use equity investment, it is common that entrepreneurs answer that it is not only about the money, but also about what investors could bring to their firm in terms of knowledge and expertise (Ferrary & Granovetter, 2009; Belleflamme & Lambert, 2014). A study of the investors using the German equity crowdfunding platform Innovestment by Klöhn and Hornuf (2012) revealed that the majority of investors were working within finance, consulting or IT – many being self-employed – and that 82% of those investors had previously invested in firms. Another research of the Financial Conduct Authority (2013, p.37) shows that equity crowdfunding investors "tend to be high-net worth individuals with investment experience" – which could be assimilated to business angels – while Gajda and Mason (2013) claim that a part of investors have a real knowledge of the industry they invest into. Consequently, it is not surprising that entrepreneurs encourage their investors to get involved and to provide them feedback and advice on the development of the firm (De Buysere et al., 2012; Agrawal et al., 2013).

This contribution leads to the notion of *knowledge management*, and on how the firms can get more value than simply money out of their relationships with their investors (Belleflamme et al., 2013b). Indeed, there is an increasing recognition that being able to manage knowledge efficiently is a source of competitive advantage for firms (Huber, 1991; Argote & Ingram, 2000). According to Teece (2000), this competitive advantage is sustained once a firm is able to create/collect, retain and protect its knowledge assets from the firm's competitors. The flow of knowledge within or between the firms and their outside environment is called *knowledge transfer*, and is defined by Argote and Ingram (2000) as

"the process through which one unit is affected by the experience of another". While it was perceived as a one-way transfer from the firm to the outside world not so long ago, it is now widely recognized that those flows are in all directions (Teece, 2000) – and thus that a firm's knowledge transfer involves both the transmission and the reception of knowledge (Grant, 1996). Indeed, Quinn (1999) argues that successful knowledge strategies imply "leveraging the firm's resources by using the capabilities and investments of others", while Ekanem (2005) underlines the importance for entrepreneurs to use the knowledge of others through situated network and stakeholders' relationships in order to improve their firm's decision-making process. In other words – and as seen with the entrepreneurs/investors relationship within equity crowdfunding – the knowledge and expertise of people *outside* the firm has the potential to increase the competitive advantage of the firm, *if shared with the firm* (Barney, 1986). The latter point is a necessity to the success of knowledge transfer (and thus knowledge management) for a firm, as those processes rely mainly on "the willingness of individuals to freely share their knowledge and experiences" (Teece, 2000).

This raises the concern that unsophisticated investors might not always be willing to either get involved within the firm or share their knowledge and expertise with the entrepreneur. Indeed, investors have the choice to decide to which extend they want to participate to the development of the newly funded firm (Pierrakis & Collins, 2013). If, as seen before, the motivation behind investing is in many cases not only monetary, Belleflamme et al. (2013b) have shown that only a third of those unsophisticated investors tend to be "active" – that is getting involved in the firm beyond the money invested. An explanation to this phenomenon is that, contrary to angel investors usually investing in their area of expertise (Wiltbank & Boeker, 2007), equity crowdfunding investors are more likely to prefer investing in a diverse range of firms, relying more on their emotional attachment rather than their expertise (Hornuf & Schwienbacher, 2014). As a consequence, investors might be attracted by a firm operating in an industry that is totally unknown to them, thus reducing the potential for help. Another explanation comes from Michael Dorff (2013) who argues that even if investors had relevant expertise to share with the firm, it is unlikely that they would spend time mentoring the entrepreneur considering the relatively low amount of money invested by each investor on average. As Dorff (2013) concludes, "the amounts involved are just too small to justify large time expenditures".

Another concern lies in the firm's willingness and ability to use its investors' knowledge and expertise. Indeed, the communication between the firm and a wide range of

disparate investors can be difficult (Gajda & Mason, 2013) and therefore time consuming and costly (Agrawal et al., 2013). Dorff (2013) claims that listening to each investor's advice and comments would require the entrepreneur to work full-time on this communication process, leaving no time to actually run the firm. Moreover, theories emphasize the fact that knowledge is by nature difficult to transfer, making it harder for entrepreneurs to collect it first, and apply it later on (Szulanski, 2000) – especially if this knowledge is *tacit* (Grant, 1996). The less codified this tacit knowledge is, and the harder it is to learn it through observation and/or practice, the more its transfer will be slow, costly, and uncertain (Kogut & Zander, 1992). Another issue lies in the compatibility between the environment where the knowledge comes from and the environment where the knowledge is transferred (Argot & Ingram, 2000). Consequently, the knowledge and expertise brought by the investors might not fit the newly funded firm due to incompatibility of "members, tools and tasks" involved in knowledge transfer (Argote & Ingram, 2000).

2.3.2 Information asymmetries

The typical types of firms seeking financing through equity crowdfunding are often associated with uncertainty and a risky profile (Dorff, 2013). Given the fact that the majority of these firms are start-ups and early-stage businesses, uncertainty arises from information asymmetries – which are expected to be particularly high in those firms (Belleflamme et al., 2013). The information asymmetries give rise to some of the most common concerns regarding equity crowdfunding both before and after the funding campaign, and the theory helps us understand why this is the case.

Concerns before the campaign

Before and during the equity crowdfunding campaign, common concerns are related to perceptions of an unknown quality of these firms. To get an indication of the types of firms that, in theory, would resort to equity crowdfunding, it is relevant to understand the preferences behind the different sources of financing among firms. The *pecking order theory* suggests that the priority for financing is first to go for cash or internal funds, then to issue debt and as a last resort to issue equity (Myers & Majluf, 1984; Narayanan, 1988). Transaction costs are an important cause of this capital structure priority, as internal funds do not bear any transaction costs while external financing (with equity in particular) is

associated with higher transaction costs (Chen, 2011). The implication of the pecking order theory is that firms issuing equity are those that are unable to find enough funds internally or through debt. For start-ups deciding to issue equity after all, a common perception is that only ventures with the highest growth and return potential will be financed by venture capitalists and business angels (Bradford, 2012). In the equity crowdfunding setting, this implies that only firms that have insufficient internal funds, no option to issue debt and that are not funded by venture capitalists and business angels are those that would set out for an equity crowdfunding campaign. This could explain the existing concern about the risk that these firms might not be the best prospects for investors, particularly for inexperienced investors (Dorff, 2013). The empirical evidence on the pecking order theory has been questioned and in particular its applicability for start-ups, but it is still widely spread in predicting the priorities for firms when choosing financing (Paul et al., 2007).

A main cause of information asymmetries is moral hazard as it impairs the information transfer between entrepreneurs and investors – since neither parties can be expected to be completely transparent with their qualities (Leland & Pyle, 1977). This issue may be particularly evident in the crowdfunding context, on one hand as investors in general are not specialists and have access to less information relating to, for instance, the industry, historical performance of the entrepreneur and other value related information (Schwienbacher & Larralde, 2010). On the other hand, entrepreneurs may also be less willing to disclose information to investors in the crowdfunding context – as compared to more traditional investment contexts – due to the risk involved with sharing sensitive information with a wider audience (Schwienbacher & Larralde, 2010). When information asymmetries are particularly pronounced, as in the case of equity crowdfunding, there is an increased risk of adverse selection (Ahlers et al., 2012). The adverse selection problem arises when investors are not able to distinguish high quality ventures from poor investment opportunities due to a lack of information (Nayyar, 1990). The resulting situation that may occur is very similar to what Akerlof (1970) calls the "lemons problem" – in which buyers will not be willing to pay a high price for a good, simply because they cannot observe quality and do not know if the good is of a corresponding high quality. The implication is that market prices will reflect an average quality of goods that is below acceptable for high-quality sellers and, in the end, high-quality goods are driven from the market and only the low quality "lemons" are left (Kwoka, 2005). The *lemon* problem can also be applied on the equity crowdfunding market where the quality of an entrepreneur or

his/her venture is largely hidden from investors, which may consequently lead to discounted prices that force high-quality ventures to desert the market (Tomboc, 2013).

In order to avoid or counteract the implications of this kind of adverse selection, firms can use certain positive "signals" to distinguish themselves and display quality to investors (Connelly et al., 2011). This *signaling theory*, as originally proposed by Spence (1973), has been used in the research context of crowdfunding in order to assess signals to which investors respond when making an investment decision (Ahlers et al., 2012; Mollick, 2013; Mollick, 2014; Guidici et al., 2013; Schwienbacher, 2014). The presumption, according to Mollick (2014), is that "these signals reveal the underlying quality of projects and ensure that higher-quality projects are more likely to receive funding". It has been found that increasing factors such as the number of board members, the entrepreneurs' education or the firm age act as positive signals and increases the chance of getting funded (Ahlers et al., 2012). The network of the entrepreneur also acts as a signal as an increased network can relate to a good reputation, and thus provide more guarantees and comfort to potential investors considering investing (Tomboc, 2013).

Concerns after the campaign

Even after a successful funding campaign, there exist concerns which can be traced back to information asymmetries, related for instance to how the invested funds will be handled by the management of the funded firm. The *agency theory* comes to mind and has been referred to in some crowdfunding research such as Ley and Weaven (2011) and Kortleben and Vollmar (2012). The agency theory is well known in many fields of research and the fundamental idea is that agency problems may occur when one party, the *principal* (or commonly the investor), assigns work to another, the *agent* (or management of the firm). These problems arise on one hand when goals between principal and agents are not aligned and because it is not possible for the principal to verify what the agent is doing (Eisenhardt, 1989). On the other hand, problems also occur when principal and agents have different attitudes towards risk, which may lead to prefer different actions.

In the crowdfunding context, the agency theory can be related to the fact that information asymmetries are typically very high in small firms due to the lack of public information and disclosure. Potential agency problems could be for instance moral hazard – that is the risk that the firm receiving funds will not use the money as it was intended, or

that the firm will take high risks or under-estimate the level of risk. In a study of 48'500 crowdfunded projects, Mollick (2014) found though that the rate of fraud was very low.

In the equity crowdfunding context, parallels can be drawn to the theory where agency problems pose a potential risk for investors, as the interests of the firm's management may be different from that of the investors. In listed corporations, there exist corporate governance frameworks as a monitoring tool in order to keep incentives aligned between owners and management. However, the lack of legal frameworks for start-ups – such as disclosure and board structures – might limit the monitoring and the ability of shareholders to exercise their rights and hence make agency risks a reality.

What happens to the firms after an equity crowdfunding campaign involving a substantial amount of new investors is currently not known. How funds are managed, what outcomes face the firms and even whether corporate governance-like structures are set up in order to account for potential agency problems are so far unknown, and more research is still needed in the field.

2.3.3 The business angel analogy

Since equity crowdfunding is still much undiscovered and, in many cases, too new to have generated measurable results, researchers have looked at what is perceived to be the closest analogue in order to get indications on the potential performance in the field – namely business angel investing (Dorff, 2013). First of all, the European Trade Association for Business Angels (EBAN) defines a business angel as "a private individual, mostly high net worth, usually with business experience, who directly invests part of his or her personal assets in new and growing unquoted businesses". The market for business angel investments in Europe was estimated at €5.5 billion in 2013, dominating the overall market of early-stage investment's market estimated at €7.5 billion. In comparison, equity crowdfunding represents €0.08 billion with that market (EBAN, 2014b). Business angels invest either individually or alternatively in syndicates as groups of business angels, with the average investment size per individual angel being €20'000 and the average amount invested per firm reaching €166'000 as of 2013 (EBAN, 2014b). In addition to capital, angel investors commonly provide business management experience and skills and often have

industry knowledge and contacts to pass on to the entrepreneur[5]. According to the same source, the most common sectors of angel investments are the ICT, biotech, healthcare and mobile sectors. The main similarities between angel investing and equity crowdfunding are that both are based on private individuals making the exchange of money against shares of a firm, and that both of the investing types are primarily focused on investments in seed- or early-stage businesses.

To get an idea of potential firm performance using business angel investing as a proxy, we refer to a study performed by the EBAN on the impact of business angel investment on the performance of European start-up firms (EBAN, 2014a). The study found for instance that angels-backed firms have a cumulative annual employee growth rate of 231% between the year of the investment and three years afterwards, and went on average from 5 employees before the investment to 16.7 afterwards. The growth rate of revenues was on average 150% over the three years and the one of assets 156.5% during the same period of time. The growth rates corresponded to an average revenue increase from €0.7 to €1.8 million and to an average assets increase from €0.8 to €1.9 million. With regards to profit, as measured by EBITDA, it was found that firms do not break even during the analyzed period of four years, but rather have a negative growth of -64% – from €-0.21 to €-0.35 million, over these years. Furthermore, studies of business angel investing in both the U.K. and U.S. are supporting that active participations of business angels in coaching and monitoring the firm and contributing with business connections increases the performance of the firm and generates higher returns (Wiltbank & Boeker, 2007; Wiltbank, 2009).

There are indeed also differences between the two types of investing, and consequently parallels to angel investing can be drawn to certain extent only. While BAs commonly invest individually or in small groups, equity crowdfunding typically involves a larger crowd of investors. Equity crowdfunding investors are also in general to much less extent professional investors and they commonly have a smaller amount of capital to invest (Hornuf & Schwienbacher, 2014a). The typical equity crowdfunding investors hold very small shares of the firm and are less likely to be as actively involved in the firm or to have the same level of experience and expertise as angel investors (Dorff, 2013).

[5] The European Trade Association for Business Angels: http://www.eban.org/about-angel-investment/early-stage-investing-explained (Accessed 3 November 2014)

Some similarities can also be found between equity crowdfunding and venture capital investments, resembling of the ones for business angels. However, due to the fact that venture capitalists often invest a substantially larger amount of money in firms and tend to focus on comparably later-staged businesses (Aernoudt, 2005), the comparability to equity crowdfunding is therefore more distant than with business angels.

Equity crowdfunding as an unknown research area

Even though equity crowdfunding can be seen as similar to business angel investing – which could give some indications of what to expect in terms of outcomes of funded firms – there are still differences between the two and outcome parallels must be made with care. The fact remains that equity crowdfunding in general is still a much unknown research area within entrepreneurial finance and a lot has still to be studied (Hornuf & Schwienbacher 2014b). Even the reward-based branch of crowdfunding has been sparsely researched and, relating to outcomes, we have found only one study by Mollick and Kuppuswamy (2014) that makes a first attempt to investigate outcomes and benefits of funded rewards-based projects. However, equity crowdfunded firms were not part of this study. More specifically, the actual outcomes of equity crowdfunding are a grey area that has not yet been studied, and hence a lot more research is needed in order to contribute to understanding better the dynamics behind equity crowdfunding.

2.4 Research question

Given that so little is known about equity crowdfunding, we have found an opportunity for our thesis to contribute with a study in a currently very under-researched area. More specifically we have chosen to delve into what happens after an equity crowdfunding campaign and assess the outcomes of the funded firms – something that is still unknown so far. Due to the novelty of the industry, we will be able to assess mostly short-term outcomes. However, we believe it will still shed light on what happens after the campaign. This leads us to the following research question:

- *What are the post-funding outcomes of equity crowdfunded firms in Europe?*

3 Data

In the following section we describe the data collection process of our research. First, we describe the data selection criteria we have considered in order to enable comparability of data. This is then followed by a description of the data sources used, the data collected and the final data sample.

3.1 Data selection

In order to assure a high level of comparability between the firms included in our study of post-funding outcomes, we have collected our data with certain selection criteria in mind, which we describe below.

3.1.1 Geographical scope

With the European equity crowdfunding market as the focus for this study, it has been important for us to consider comparability between the countries selected for the collection of our sampled firms. Differing regulatory frameworks between countries is one factor we have found particularly relevant to look at, since legal aspects are greatly influencing the opportunities and structures of equity crowdfunding platforms and fundraising.

First of all, we have chosen to include only countries within the European Union (EU). On one hand, in order to make sure the broad regulatory boundaries are equal between countries, and on the other hand since we discovered that the countries with major equity crowdfunding activities are so far concentrated within the European Union. On an EU level, there is currently no legal framework specifically developed to cover equity crowdfunding and the European Commission concluded, after a study in late 2013, that for now, the EU should not take part in creating a pan-European legislation (European Commission, 2014). Equity crowdfunding may however be considered as a public securities offering and legal aspects to consider are mainly related to prospectus requirements and other investor protection regimes. The EU regulation sets the outer borders, for example thresholds for prospectus requirement, but there is a lot of room for each member state to adopt their own regimes. When selecting the countries, we therefore have had to consider each country's regulatory environment.

The countries selected for this study are the U.K., Germany, the Netherlands, Sweden, Finland, Austria and France. These countries represent the countries with significant equity crowdfunding activity and a comparability in the sense that equity crowdfunding has not been excessively restricted (European Crowdfunding Network, 2013). As a comparison, in other large countries such as for example Italy, equity crowdfunding has been prohibited altogether until recently and is at a very early stage. Another example is Spain where the regulation has been very restrictive and possibly subject to an even more limiting regulation that is currently in the works.

There are also other geographical factors to consider, such as cultural differences among countries. Although we are assuming that the countries chosen are relatively similar, we acknowledge that there are also cultural aspects and similar which may impact the investment behavior of investors, for example risk averseness. The differences may also influence the behavior of entrepreneurs, with for example differing willingness to disclose information to the extent required for equity crowdfunding or the attitude towards having a large number of investors.

3.1.2 Platforms

Once determining what countries to focus on in the study, the equity crowdfunding platforms from each country have been chosen with respect to their business models, which set the standard for how the firms are able to raise capital on the platform. We have selected platforms that are applying very similar business models in order to be able to compare the campaign of firms from different platforms.

The platforms selected are all using a very common type of business model, in some cases with small deviations that we have assumed will not significantly impact the comparability of the funded firms. This common type of business model is to allow the firms wanting to raise capital to decide an investment target, and commonly also an upper limit above the target in case of overfunding, to ensure that dilution is within a desired range. Typically the firms have to reach 100% of their investment targets by the end of their funding campaign in order for the money invested to be paid out, otherwise the money stays with the investors. In some cases a minimum level close to the investment target is also enough for money to be paid out when the campaign ends, this level is generally set according to the standards of the platform. In this case, it is also common to allow for

investors who have already invested to increase their shares in order to reach the target. It is most common to have none or very small thresholds for the lowest amount of money that can be invested by each individual investor.

Other business models of platforms we have excluded are for example when platforms act as special vehicles and investors, instead of investing in shares of firms directly, invest in a fund held by the platform – which in turn is invested in selected firms.

3.1.3 Temporal scope

The firms selected for our study have all been funded on equity crowdfunding platforms in Europe between 2009 and May 2014. This corresponds to the very earliest campaigns from of the first platforms in Europe in 2009 and the upper limit of May 2014 is decided on with the rationale that firms funded closer than six months from now are less likely to have seen substantial outcomes if their invested funds yet.

3.2 Data collection and description of data

The data used in our study has been collected through both primary and secondary data sources and includes both quantitative and qualitative data. The data sources and collected data, along with our final sample, are described below.

3.2.1 Data from equity crowdfunding platforms

According to our data selection criteria we have been able to narrow down what equity crowdfunding platforms to include in our study and what firms to draw from each platform. On the chosen platforms we have been able to find publicly available information about the firms that have been funded and details of their respective funding campaigns. The data collected includes for example company related data such as the name of the firm and owner, the industry of the firm and a description of the business. In addition there is also data available relating to the funding campaign, such as the investment target and corresponding equity offered, the final funds raised, number of investors and the closing date of the campaign. All financial data we have collected from the platforms has been

converted to euros, using the average exchange rate of the year concerned[6]. Contact details of the owners have in some cases been available on the platforms and in other cases found on the respective firm's webpage or through searching the Internet.

3.2.2 Data from survey

The main source of data for our study has been a survey that we have sent out to our sampled firms (please refer to Table 1 in the Appendix for statistics of the sample and surveys sent). The survey has been used in order to collect both financial and qualitative data related to outcomes of the equity crowdfunded firms after their funding campaigns, since this type of data is rarely publicly available. The survey has been constructed using the survey tool Qualtrics with carefully chosen questions.

The survey questions were developed with the purpose of serving as variables in our subsequent analysis and these are described in the Methodology section below. The data collected through the survey is related to different types of firm outcomes. One category of data has been the evolution in selected financial measures such as sales, profit and assets. Another category of data has been various qualitative outcomes and the degree to which they are perceived to result from the equity crowdfunding campaign, such as for example receiving additional funding, hiring of new employees and growth in customer base after the campaign.

3.2.3 Data from online database

To collect financial data of the firms we have also used the database Mint Global, which incorporates data on private firms. The data drawn from Mint Global is firms' financial data from as many years we found available and all numbers have been extracted in euros. The data varied in completeness between firms and in order to account for missing financial data, additional information was asked for through the survey.

3.2.4 Data sample

The sample of equity crowdfunded firms has been collected from our chosen European equity crowdfunding platforms with similar business models in our selected countries. In

[6] Average exchange rates from http://www.x-rates.com (Accessed 21 October 2014)

total our initial sample did consist of 337 firms funded between year 2009 and May 2014 from 14 different platforms in 7 different European countries. Of the initial 337 firms, we found through Mint Global, news articles and firms' websites that at least 33 firms were no longer active, possibly due to bankruptcies – and in such case the bankruptcy rate of our initial sample would be about 10%. Excluding the non-active firms gave us a sample of 304 firms to which we sent out our survey. We received survey responses from 46 firms in total, which give us a response rate of just over 15%. In addition to the 46 firms that answered our survey, we have also been able to add 39 other firms to our study from which we have been able to collect enough data and information manually for it to partly be included in some financial analysis. The final sample hence consists of 85 firms, which in turn represent 12 platforms, 7 countries and 8 different industries. A statistical description of our sample of firms can be found in Table 1 in the Appendix. The data collected from the sampled firms through the different data sources has been compounded into a dataset, which has been the basis of our subsequent analyses. Descriptive statistics of the data collected can be found in Table 2 in the Appendix.

4 Methodology

In this section we provide an explanation of the methods used in our research. The methodology applies statistical analyses using descriptive statistics and regressions. Descriptive statistics analysis has been conducted on data collected from both the full sample of 337 firms and on the 46 survey respondents, whereas the regression analyses are performed on the sub-sample of 85 firms for which we had enough data. We focus here on defining the variables used for our regression analyses, along with an explanation of their respective construction. Secondly, we describe the statistical models used for assessing the firm outcomes in our regressions, together with the logic behind the choice of models.

4.1 Variable construction

4.1.1 Dependent variables

The dependent variables in our analysis are the post-funding outcomes and performance of our sampled European equity crowdfunded firms. The outcomes of the firms are

represented by a set of quantitative and qualitative variables respectively, which are all described in detail below. Please also refer to Table 3 in the appendix for an overview of the dependent variables with brief descriptions.

Quantitative dependent variables

The quantitative dependent variables represent the performance of the equity crowdfunded firms in terms of financial measures, as indicated by the variables *Sales growth*, *Profit growth* and *Asset growth*. These three variables have all been constructed by calculating the percentage change (in decimal form) in sales, profit and assets respectively, between two years with financial data. By using the percentage growth we account for differences in size between firms. The fourth quantitative outcome variable is *Employee growth*. This variable, indicating the growth in number of employees from before the campaign to now, has been constructed by calculating the percentage change (in decimal form) in the number of employees working at least half time between the year right before the equity crowdfunding campaign and today.

The four growth variables are found to be positively skewed and a common practice in such case is to log transform the variables in order to make them more normally distributed to improve model fit. However, in our case, a consequent amount of the growth ratios are taking on negative values which would have been lost if logarithms were used, since logarithms of negative values are undefined. Although logarithms would have made our variables more normally distributed, with regards to the considerable drawback of losing many observations, the variables are therefore kept in their original form.

Qualitative dependent variables

The qualitative dependent variables are based on the responses from our survey. The variable *Post-campaign funding* is a binary variable, taking on the value 1 if the firm has obtained any additional funding after the equity crowdfunding campaign, and 0 if no additional funding has been obtained.

The remaining qualitative dependent variables are ordinal variables, meaning they are categorical but with a ranked order, here in the form of a five-point Likert scale. The scale is based on the survey respondents ranking the degree to which the campaign helped

them to receive certain outcomes after the campaign. The ordinal variables take on values from 1 to 5, where 5 being the highest degree and 1 the lowest. *Effect on post-funding* indicates the degree to which the campaign helped the firm receive additional funding after the campaign. *Effect on hiring* indicates how much the campaign helped the firm to find and/or hire new employees after the campaign. The variable *Effect on customer base* indicates to what degree the campaign helped increase the firm's customer base and the variable *Effect on portfolio* how it helped increase the firm's products or services portfolio. Lastly, *Effect of press attention* indicates to which degree the campaign helped the firm receive press attention and publicity after the campaign.

4.1.2 Independent variables

The independent variables in our analysis are chosen in order to assess whether outcomes of our studied funded firms can be attributed to certain equity crowdfunding campaign related factors. The variables represent factors that, on one hand, relate directly to the equity crowdfunding event itself – such as the raised funds and number of investors – while others account for additional factors that, on the other hand, might have impacted the outcomes of the firms – such as if the firm had any business angels on board before the campaign. All independent variables are described in the following section. Please also refer to Table 4 in the Appendix for an overview of the independent variables with brief descriptions.

Quantitative independent variables

The quantitative independent variables relates mainly to the equity crowdfunding campaign directly. The variable *Equity offered* is the percentage equity (in decimal form) offered by the firm in relation to its investment target in the campaign. *Raised funds* is the final amount of funds, in euros, that the firm raised through the equity crowdfunding campaign. *Investors* is the total number of investors that invested in the firm through the campaign. The three aforementioned variables were all positively skewed and we have therefore used the natural logarithm of the variable values in order to make them more normally distributed and improve the model fit.

Remaining quantitative variables that are not logarithmic are first *Industry investors*, which is the proportion of investors (decimal form) from the campaign that belong

to the same industry as the firm – according to the survey responses obtained. *Leverage* is the leverage ratio, stated as the debt-to-equity ratio in decimal form, of the firm before the campaign. This debt-to-equity ratio has been estimated using financial data on the firms' total assets and total equity, where the debt has been calculated, as well as assumed, as the difference between assets and equity – and then together with total equity been used to calculate an approximate leverage ratio. *Firm age* is the age of the firm at time T, in years, and is used to account for the age of the firms at all the years (T) of the observations.

Qualitative independent variables

The qualitative independent variables are based on our survey responses. Three of the qualitative variables are binary. The *Founder investment* variable is 1 if the founders of the firm had invested their own money in the firm before the equity crowdfunding campaign, and 0 if they have not invested in the firm. The variable *Campaign BAs* takes on the value 1 if any of the investors that invested in the firm through the campaign were business angels, and 0 otherwise. The third variable, *Pre-campaign BAs*, takes on the value 1 if the firm had any business angel investors on board before the campaign and 0 otherwise.

The last qualitative independent variable, *Investor contribution*, is an ordinal variable on a Likert scale from 1 to 5 (low to high) of the rating to which degree the investors from the campaign have contributed to the firm in addition to monetary following the campaign – with for example knowledge, advice, networks, business opportunities, etc.

4.2 Statistical analysis

In order to analyze our data we have performed statistical analysis using the software Stata. In the first part of our analysis, the descriptive statistics of all our data are produced and analyzed. In the second part of the analysis, we perform regression analyses using two statistical models: the Ordinary Least Squares model and the Linear Probability Model. The statistical models and the motivation behind the choice of them are described in this section.

4.2.1 Quantitative outcomes

For our quantitative dependent variables *Sales growth*, *Profit growth*, *Asset growth* and *Employee growth,* we have performed Ordinary Least Squares (OLS) multivariate regressions. This is in order to assess whether outcomes of the examined firms can be attributed to certain equity crowdfunding campaign related factors, as represented by our chosen independent variables. The same model is used for all the four quantitative dependent variables and includes all of the independent variables.

In these regressions, we have controlled for *fixed effects* in terms of year, time to funding, platform and industry fixed effects by including dummy variables. The *Year fixed effect* controls for differences in the fiscal year among the observations and covers for example potential business-cycle differences between the years. The *Time to funding fixed effect* controls for the fact that the time between the funding event and an observation at a given year may differ between firms depending on when they were funded. To make this more clear, consider for example observations on sales growth of firms in year 2013. For some firms, 2013 will be for instance 2 years (T=2) after funding while for others 3 years (T=3), and this is what the *Time to funding fixed effect* controls for. The *Platform fixed effect* controls for the fact that our sampled firms have been funded at different equity crowdfunding platforms. The *Platform fixed effect* also accounts for a potential country effect since many of the platforms are from different countries. Finally, the *Industry fixed effect* controls for the fact that the firms belong to eight different industries and isolates any time-invariant effects. The *Industry fixed effect* is used rather than to perform the regressions per group of industry, since the number of observations in each industry group would have been too small. The only regression that does not include all four fixed effects, due to a smaller sample size, is the *Employee growth* regression, where we have chosen not to include the *Platform fixed effect* but kept the other ones including the *Industry fixed effect*.

Ideally we would have liked to control for firm fixed effects but again, due to small sample sizes, this has not been feasible and platform and industry fixed effects have been used instead as substitutions. In addition, we also use *cluster-robust standard errors* on the firm level, in order to address any remaining within-group correlation of each firm since we have several yearly observations per firm. By doing so, we account for the fact that observations may be correlated within firms, but would be independent between firms.

For our multivariate OLS model, we run the following regression:

$$Y_{it} = \beta_0 + \beta_1 \ln(Equity\ offered)_{it} + \beta_2 \ln(Raised\ funds)_{it} + \beta_3 \ln(Investors)_{it} + \beta_4 Industry\ investors_{it} + \beta_5 Leverage_{it} + \beta_6 Firm\ age_{it} + \beta_7 Founder\ investment_{it} + \beta_8 Campaign\ BA's_{it} + \beta_9 Pre\ campaign\ BA's_{it} + \beta_{10} Investor\ contribution_{it} + \sum \gamma_k YD_{k,t} + \sum \tau_k TD_{k,t} + \sum \rho_k PD_{k,i} + \sum \theta_k IND_{k,i} + u_{it}$$

where Y_{it} is the dependent variable, i=firm and t=time. Each independent variable is included as illustrated with the variable names. β_k are the coefficients for the independent variables while β_0 is the intercept. The fixed effects are controlled for through the dummies YD for year, TD for time to funding, PD for platform and IND for industry where γ, τ, ρ and θ are their respective coefficients. u_{it} is the error term.

4.2.2 Qualitative outcomes

For our qualitative dependent variables that are binary and ordinal, we use the Linear Probability Model (LPM). An important difference between the LPM and OLS lies in the interpretation of the resulting regression coefficients. In the LPM, when the dependent variable is binary as for our variable *Post-campaign funding*, the coefficients indicate the change in the probability of the dependent variable being 1 (rather than 0) for a unit increase in an independent variable. One principal shortcoming of the LPM is that error terms will be heteroskedastic, since the variance is not constant but depends on the independent variables. We account for this by using robust standard errors, clustered at the firm level. Another possible shortcoming of the LPM model is that non-conforming predicted probabilities can be obtained, i.e. that the LPM can report probabilities outside the logical range between 0 and 1. To account for the latter shortcoming, an alternative to the LPM for binary variables would be to use for example any of the non-linear logit or probit models. These, however, have not been applicable in our case mainly due to our small sample size, for which the maximum likelihood estimation of the logit and probit models are not able to converge. Nevertheless, it is commonly argued that the LPM still yields unbiased parameter estimates and furthermore the LPM holds an advantage to the logit and probit models in that it can be interpreted more straightforward.

The LPM has also been used for our ordinal dependent variables *Effect on post-funding*, *Effect on hiring*, *Effect on customer base*, *Effect on portfolio* and *Effect on press attention*. This has been done under the assumption that, for the ordinal variables, each step on the scale can be seen as equal intervals and the variables seen as if they were *continuous*. The interpretation of the coefficients then changes in comparison to the LPM for binary dependent variables and is instead interpreted in a similar way to a regular OLS model – where in this case the coefficients are expressed in terms of change in steps on the scale. For example a positive coefficient would imply that a unit change in the independent variable would lead to a move up on the 5-point scale dependent variable by as many steps as indicated by the coefficient. An alternative would have been to use for example ordered logit or probit models but again, for the same reason as for the binary variable, our sample is not big enough to give results with those kinds of models.

In the LPM regressions, we have also controlled for fixed effects in terms of year, time to funding and industry by including dummy variables with the same motivation as for the OLS model (as seen above). Similarly as with the OLS model, we would ideally have wanted to control for firm fixed effect. But due to the limited sample size, this was not feasible and we also had to restrict the fixed effects by omitting the *Platform fixed effect*, consistent with the OLS regression for *Employee growth*. Additionally, we use *cluster-robust standard errors* on the firm level, in order to address any remaining within-group correlation of each firm because of the several yearly observations per firm.

For our Linear Probability Model, we run the following regression:

$$\begin{aligned} Y_{it} = {} & \beta_0 + \beta_1 \ln(Equity\ offered)_{it} + \beta_2 \ln(Raised\ funds)_{it} + \beta_3 \ln(Investors)_{it} \\ & + \beta_4 Industry\ investors_{it} + \beta_5 Leverage_{it} + \beta_6 Firm\ age_{it} \\ & + \beta_7 Founder\ investment_{it} + \beta_8 Campaign\ BA's_{it} + \beta_9 Pre\ campaign\ BA's_{it} \\ & + \beta_{10} Investor\ contribution_{it} + \sum \gamma_k YD_{k,t} + \sum \tau_k TD_{k,t} + \sum \theta_k IND_{k,i} + u_{it} \end{aligned}$$

where similarly to above, Y_{it} is the dependent variable, i=firm and t=time. The independent variables are included with the variable names. β_k are the coefficients of the independent variables while β_0 is the intercept. The fixed effects are controlled for through the dummies YD for year, TD for time to funding and IND for industry where γ, τ, ρ and θ are their respective coefficients. u_{it} is the error term.

5.3 Limitations

Due to the novelty of the equity crowdfunding market and its limitations in some countries, the amount of firms that have been completing an equity crowdfunding campaign until now is relatively low as compared to other financing models and benchmarks haven't yet been established. In addition to the low number of firms, the amount of historical data that can be found for those firms was also constraint by the relatively young age of firms within our sample (2.4 years on average) and the closeness between their campaigns and today. As a consequence, the viewpoint from which we can conduct our analysis is based on a short-term perspective before and after the equity crowdfunding campaigns occurred – limiting the conclusions that can be drawn from our results.

Connecting to the previous limitation lies the fact that the survey conducted was an essential aspect of our data collection, and that the rather small response rate limited the size of the sub-sample that has been used to perform the regressions. Considering the number of explanatory variables used in our model, our regressions are likely to be perform on a very small number of observations, restricting on one hand to accuracy of the results, and on the other ends the opportunities to push our analysis further – such as for instance comparing the results between firms' industries or countries. Also, it constraints us to use a LPM model in some cases as well as to reduce the number of fixed effects controlled.

A limitation related to the survey is the self-selection bias in the sampled firms, as entrepreneurs may have been more likely to answer our survey if they had a good experience with their campaign and its outcomes. Also, surveyed entrepreneurs may remember the good things better than the bad ones, and thus over-estimate the actual outcomes of the campaign. At the opposite, the outcomes observed for our sampled firms may be by definition lower than other similar financing models (such as angel investing) as theories suggest that firms often resort to equity crowdfunding because they couldn't obtain other types of financing (Dorff, 2013).

Finally, the regression model used in our study accounts for ten explanatory variables (excluding fixed effects) that we believe can capture the impact on our dependent variables, but an omitted variable bias is likely to occur as possible other variables that have not been considered may help explaining our model more accurately.

5 Empirical findings

In the section we present the empirical findings from the analysis of our collected data using the methods outlined in the Methodology section. We start by providing the results and a discussion of our descriptive statistics analysis of the firms included in our study. This is then followed by the results of our regression analyses along with interpretations and discussions of the results in terms of assessing the outcomes of the equity crowdfunded firms.

5.1 Descriptive statistics analysis

5.1.1 The firms resorting to equity crowdfunding

From the manually constructed database of 337 European firms having successfully conducted an equity crowdfunding campaign, we calculated that firms are on average 2.4 years old when they achieve their first crowdfunding campaign. This result coheres well with the statistics provided by Knowledge Peers (2013) as seen in the section 2.1. The firms are commonly founded by one to three entrepreneurs and a large majority of those entrepreneurs are university graduates. Female entrepreneurs account for slightly more than 10% of the sampled firms, ranging from 6% in the Netherlands up to 24% in Sweden – considerably above the second largest female ratio of 17% for Finland and the third of 14% for Austria. This relatively large presence of women entrepreneurs amongst Scandinavian countries for crowdfunded firms is in line with the general predominance of Scandinavian countries when it comes to the rate of entrepreneurial activity for women in relation to men (European Commission, 2008; GEM, 2013).

The leverage ratio that has been possible to calculate on a fifth of our overall sample shows an average rate of 1.07 and the survey conducted reveals that half of the firms have already received some kind of external funding prior to their equity crowdfunding campaign. Moreover, 82% of respondents have already invested their own money into their business at some point prior to the campaign. Considering on average the young age of firms using equity crowdfunding, the latter percentage is consistent with the bootstrapping theories arguing that the resources raised by firms in their early years commonly originate from the owners of the business ventures themselves, as well as from the people

surrounding them such as family and friends (Starr & MacMillan, 1990; Winborg & Landström, 2001; Cumming & Johan, 2009). Indeed, according to the Global Entrepreneurship Monitor (GEM, 2004), founders, family and friends are actually participating in the financing of the founders' start-ups in more than 90% of the cases. Also, Parker (2009) shows that relatives and friends account for 31% of new business ventures' capital. Through the survey conducted on our sample, we found that 70% of respondents don't have any professional investor on board (such as business angels or venture capitalists) prior to the campaign, as opposed to 24% of respondents having one or two professional investors on board before the campaign, and 6% having more than a couple.

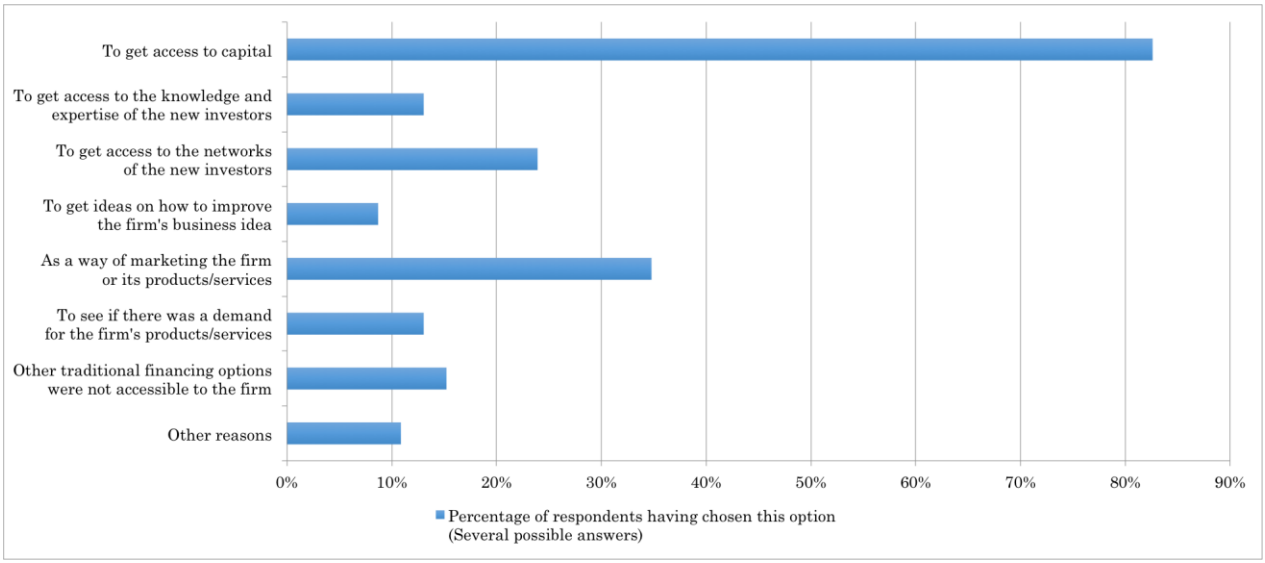
5.1.2 The firms and their equity crowdfunding campaign

Our sample of 337 firms shows that, on average, firms aim to raise €117'000 through their equity crowdfunding campaign, and that they eventually manage to overfund this initial investment target by an average of 135%. The equity of the firm offered in return once the campaign has been successfully completed is on average 13.4%. In comparison, an average angel investment in Europe commonly acquires 8% of the firm – as seen for instance on the U.K. angel investment market (Wiltbank, 2009) and on the Finnish one (FiBAN, 2013). As we can see in the Figure 1 in the Appendix, the number of successfully funded firms on the European platforms that are part of our database is growing exponentially over the years, however this number remains extremely low as compared to the overall number of completed campaigns for all types of crowdfunding in Europe – 470'000 as estimated by Massolution (2013). Among our sample of 337 firms, 34 successfully completed a second or even a third or fourth round before the end of May 2014 – date after which we decided not to consider any further data due to a too closeness to the moment this research was conducted (September – December 2014).

The Figure 2 below shows that, when asked about the reasons for launching an equity crowdfunding campaign, more than 80% of the entrepreneurs who filled the survey stated that access to capital was one of the reasons – far ahead of the second most mentioned reason that is launching a campaign as a way of marketing the firm or its products/services (chosen by 35% of respondents). Getting access to new networks through the investors of the campaign is the third most chosen reason, with about a fourth of respondents considering it as a motive behind using equity crowdfunding. Among the other

reasons mentioned that were not included in the list, entrepreneurs also said that their campaign aimed at acting as a PR tool, at reinforcing the firm's commitment to its engagements and goals, or at completing a round of financing. Those results are coherent with the already established research conducted on the entrepreneurs' motivations behind crowdfunding by Gerber et al. (2012), Belleflamme et al. (2013a), or more recently Mollick and Kuppuswamy (2014). Consequently, equity crowdfunding campaigns appear to be used mainly as a financial and promotional tool.

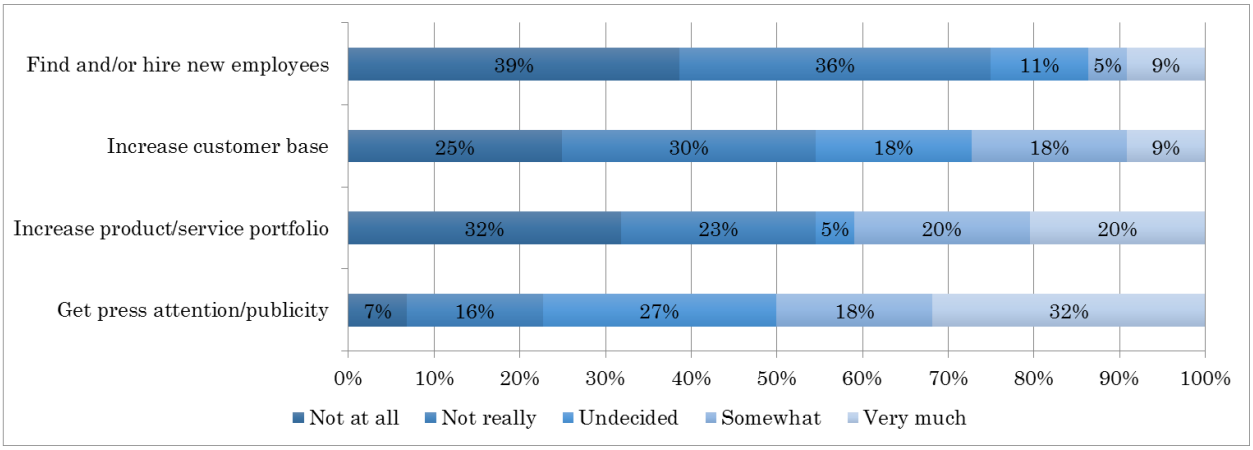
Figure 2
Reasons for entrepreneurs to raise funds through equity crowdfunding



5.1.3 The entrepreneurs' perception on the outcomes of their campaign

The Figure 3 below summarizes the survey responses of the entrepreneurs on their perception of the degree to which the campaign helped their firm to achieve certain outcomes. As we can see, entrepreneurs perceive today that, on average, the equity crowdfunding campaign they completed back in the time helped them to increase their attention from the press and their publicity, but at the opposite that it didn't help them finding and hiring new employees, as well as increasing their customer base. The effect of the campaign on the ability to increase the firm's product or service portfolio gives more balanced results among the surveyed entrepreneurs. Possible explanations for those results will be discussed in the regression's part of this analysis.

Figure 3
Degree to which the campaign helped the firm to…



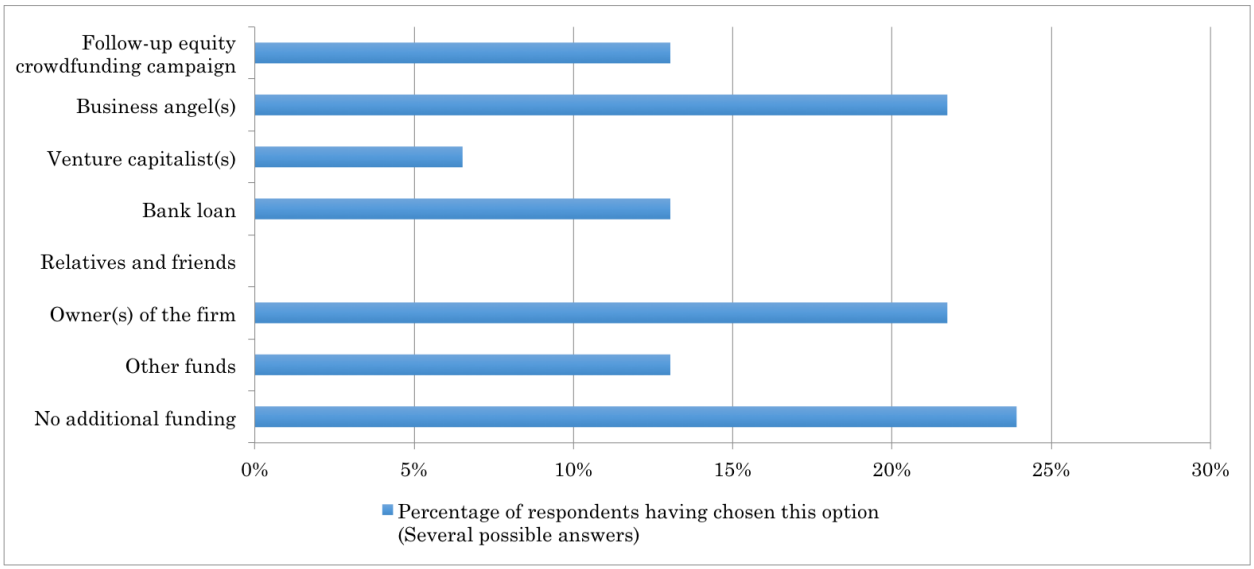
As mentioned in the paragraph above, those numbers show the perception of entrepreneurs today in relation to their campaign completed in the past. Therefore, the time spent in between varies between firms, so could the perception of the entrepreneurs. In order to account for this, the average answer to those questions *per year since the crowdfunding campaign* has been compiled in the Table 2 in the Appendix. Considering that the answers to the four questions above range from 1 ("Not at all") to 5 ("Very much"), an average answer ("Mean" in the table) below 3 can be interpreted as a relatively low perception by the entrepreneur while a mean above 3 can be interpreted as a relatively high perception on the degree to which the campaign helped the firm for each of the four attributes. Interestingly, the table shows that for those four attributes, the perception of the entrepreneur a year after the campaign is always higher on average than the subsequent years. In other words, entrepreneurs tend to be more positive soon after the campaign about the impact of the campaign than they seem to be later on. This could be possibly explained by a certain excitement following the successful completion of the campaign that diminishes along the year. Another explanation could be that the campaign creates a certain "buzz" effect around the firm that could possibly positively impact those four attributes, but here again that could diminish with time.

Another question asked to the entrepreneurs through the survey is the degree to which they believe the funds raised through the campaign were enough to achieve the goals set for this money. On average, about 80% of entrepreneurs think they underestimated the amount of money needed in order to achieve the goals planed with that money – no matter

if the crowdfunding campaign took place a year ago or several years ago. When asked today about the degree to which those entrepreneurs believe their crowdfunding campaign helped their firm to find additional funding following the campaign, 57% of respondents claim that the campaign helped them "somewhat" to "very much", as opposed to 27% who answered either "not at all" or "not really" – leaving in between 15% of indecisive respondents.

From the 46 firms that replied to our survey, 11 said they didn't receive any additional funding since the campaign occurred, and 27 said they received one or several types of additional funds following the completion of their equity crowdfunding round. The following question in the survey aimed at learning more about the types of additional funds that the respondents said they raised after the campaign, and the distribution of those answers can be seen in the Figure 4 below. We notice that slightly more than 20% of firms' owners have injected more money into their business, and that about the same proportion of firms have received additional funds from one or several business angels. At the other extreme, no firm has raised funds from its founder's family and friends following the campaign. The category "Other funds" includes governments and other entities commonly providing grants and loans.

Figure 4
Additional funds raised by the firms following the campaign



To push our analysis further, we decided to observe the firms that answered at the question from which the Figure 2 has been designed that they chose to launch an equity

crowdfunding campaign because "no other financing options were accessible to them at the time". Using the answers provided in the Figure 4 by the same entrepreneurs, we found out that among those firms, about a third managed to contract a bank loan following the campaign, about 15% of them got at least one business angel on board, and another 15% got funded by both a bank and at least one business angel. However, none of those firms managed at the date of today to raise additional funds from a venture capitalist. Therefore, it appears that there could be a positive effect of achieving an equity crowdfunding campaign on the probability to raise additional funds following the campaign. But this probability could not only be influenced by the simple fact of achieving an equity crowdfunding campaign, but also by the investors getting on board *during* the campaign.

5.1.4 The firms and their investors

If equity crowdfunding platforms are a rich source of data when it comes to information about the campaigns, they are however much less transparent when it comes to describing who the investors on their platforms are. Consequently, apart from few elements that could be found publicly on the platforms, most of our analysis of those investors is a result of what we could learn from them through the surveyed entrepreneurs.

From our overall database of 337 firms, we see that there is an average of 166 investors per equity crowdfunding campaign. Considering that the average campaign ends up collecting €192'000 (with a median of €143'000), it means that the average investment size *per investor* is €1'157. The average amount raised in our sample is higher than the average found for equity crowdfunding in the Massolution (2013) report. As compared to the European Trade Association for Business Angels statistics on angel investing (EBAN, 2014a), the average amount collected per campaign in our sample appears to be also higher than the average angel investment of €166'000 per firm. However, also based on the EBAN (2014a) report, the average investment per investor is relatively low as compared to the average business angel's investment of €20'000 per investor and per firm. This tend to support Michael B. Dorff (2013) argument on the reason why equity crowdfunding investors are less likely to conduct a proper due diligence. The entrepreneurs who replied to our survey revealed that, on average, 14% of their investors from the campaign belong to the same industry as them, which is consistent with Hornuf and Schwienbacher (2014) findings

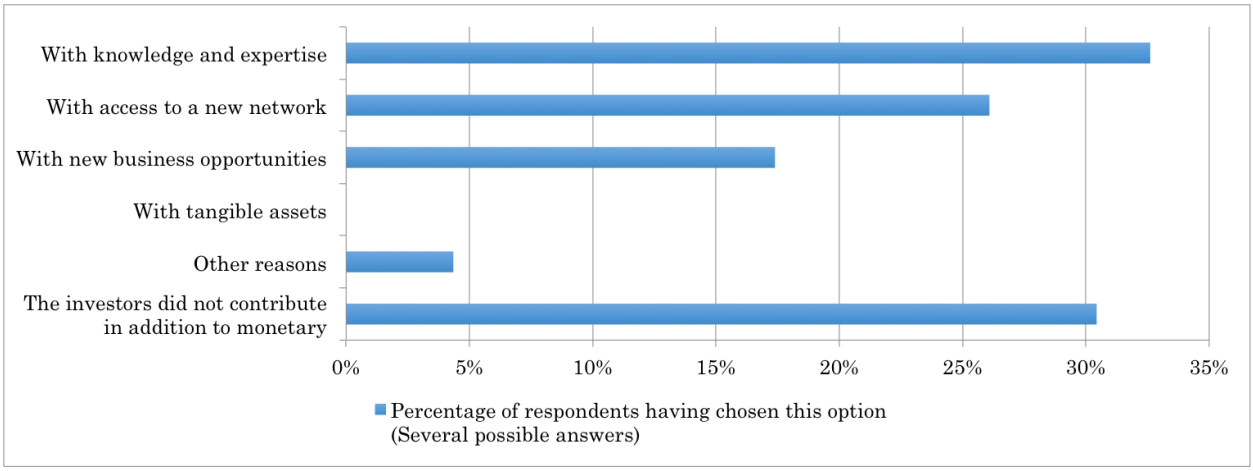
stating that equity crowdfunding investors commonly invest in areas that are outside their area of expertise – relying more on their emotional bound with the campaign instead.

Entrepreneurs were also asked if any professional investors had been investing in their firm through the campaign, and 57% of respondents said that one or two professional investors featured among their investors, while 16% featured more than a couple, and 27% featured no professional investor at all. We decided to push the analysis further by combining those results to the number of professional investors that those entrepreneurs claimed they had before the campaign. The results show that firms that had no professional investor prior to the campaign got funded by one or two professional investors through the campaign in 62% of the cases, more than two in 19% of the cases, and none in 19% of the cases. Firms that had one or two professional investors prior to the campaign got funded by the same amount of investors in 44% of the cases, more than two in 12% of the cases, and no further investor in 44% of the cases. Only two firms that filled the survey had more than two professional investors on board prior to the campaign, and one got one or a couple more professional investors through the campaign while the other didn't get any additional one. Therefore, it seems that equity crowdfunding helps firms to find the support of professional investors – who may have potential knowledge and expertise to share with the entrepreneurs. This result is in line with angel investment's statistics showing that angel investors are commonly co-investing in projects with other types of investors (Wiltbank, 2009; EBAN, 2014b).

In order to find an answer to the latter supposition, our survey asked the entrepreneurs the degree to which they feel that the overall investors from their campaign have contributed to the firm so far in addition to monetary. 24% of the respondents said that their investors didn't contribute at all, 38% feel that they only contributed a little, while 22% think that they contributed somewhat and only 3% think that they contributed a lot. 14% of respondents said they were indecisive on that question. Therefore, we see that on average investors are perceived to contribute very little to the firm they funded via equity crowdfunding. Those numbers are in line with Belleflamme et al. (2013b) who found in their study that only a third of unsophisticated investors tend to be involved in the firms they finance. This is also supporting Dorff (2013) argument that equity crowdfunding investors are unlikely to spend time mentoring the entrepreneurs considering the relatively low amount of money they invested.

The following question in the survey aimed at observing the investors' contribution more in-depth by asking the entrepreneurs what kind of contributions they perceive that their investors from the campaign brought to their firm in addition to monetary. The Figure 5 below summarizes those answers. A third of the respondents said that investors brought knowledge and expertise to the firm, which supports the arguments of Ferrary and Granovetter (2009) as well as Belleflamme and Lambert (2014), and which is consistent with the knowledge transfer theories as seen earlier in this thesis. Slightly more than a quarter of the respondents said that investors facilitated the access to new networks, and 17% said that they brought new business opportunities to the firm – such as new customers, suppliers, distribution channels, etc. According to the entrepreneurs, none of the investors contributed in terms of tangible assets – such as for instance furniture or machines. Among other types of contributions not listed in the answer's choices, but mentioned by some of the entrepreneurs, feature less quantifiable attributes such as PR, word-of-mouth or inspiration. Overall, this graph shows that investors are likely to bring more than just money to the firm, reinforcing the previous literature done on this concern such as seen in Belleflamme et al. (2013b).

Figure 5
Contribution to the firms by investors in addition to monetary



The end of the survey included a couple of open-ended questions aiming to understand better how entrepreneurs communicate with their investors. The analysis of those answers reveals similar patterns that firms commonly follow. In most cases, the interactions between an entrepreneur and its investors happen through a newsletter sent by email. The

interval between two newsletters varies on average between one and three months, which is significantly lower than the average frequency at which angel investors interact with their portfolio firms – providing mentoring, coaching, leads and performance monitoring on average twice a month (Wiltbank & Boeker, 2007). However, part of the entrepreneurs who answered the survey say that they try to encourage a more dynamic relationship with their investors by having an online group restricted to the investors and the entrepreneurs, and aiming to generate discussions as well as Q&As on a more regular basis. Investors particularly involved within the firm or particularly useful to the entrepreneur are often in a more continuous contact with the firm, which can involve direct meetings or regular phone calls. The latter finding connects with angel investment theories stating that the proximity to the firm is a key criterion for angel investors' investment choices as closer exchanges between the entrepreneur and the angel investors facilitate the monitoring of the firm (Zook, 2002; Mason, 2007). However, this is said to apply to a very limited number of investors only per firm.

5.1.5 The firms' growth

The growth rates summarized on Table 2 for the sales, profit, assets and employees have been represented as graphs in the Figure 6 in the Appendix in order to facilitate the visualization of the growth rates' evolution along the years. We see similar trends between the evolution of sales growth and asset growth – taking the shape of a normal distribution – at the exception that the impact of the crowdfunding campaign seems to be much more immediate with the assets. This could be explained by the fact that a firm that just raised money will certainly start by investing and growing its assets, which will have an impact on the sales only in a second phase. When it comes to the average profit growth along the years, we notice a growth taking the shape of a logarithmic function. The employee growth's evolution has mainly been collected through the survey, and therefore barely any information earlier than the year of the crowdfunding campaign could be obtained. But we can see a decrease over time of the growth rate of employees since the crowdfunding event. This could possibly be explained by an optimization of the resources and staff making fewer employees more efficient, and therefore reducing the need for additional employees other time. The Figure 7 in the Appendix is similar to the Figure 6, but this time it shows the

average evolution of sales, profit, assets and employees before and after the crowdfunding campaign in terms of actual values in euros. Also, the latter figure compares those evolution as the ones found on average for business angel's firms, as shown in EBAN (2014a) We see that those trends are similar to those of business angels' firms – despite common differences in terms of cumulated annual growth. This suggests once again similarities between equity crowdfunding and angel investing.

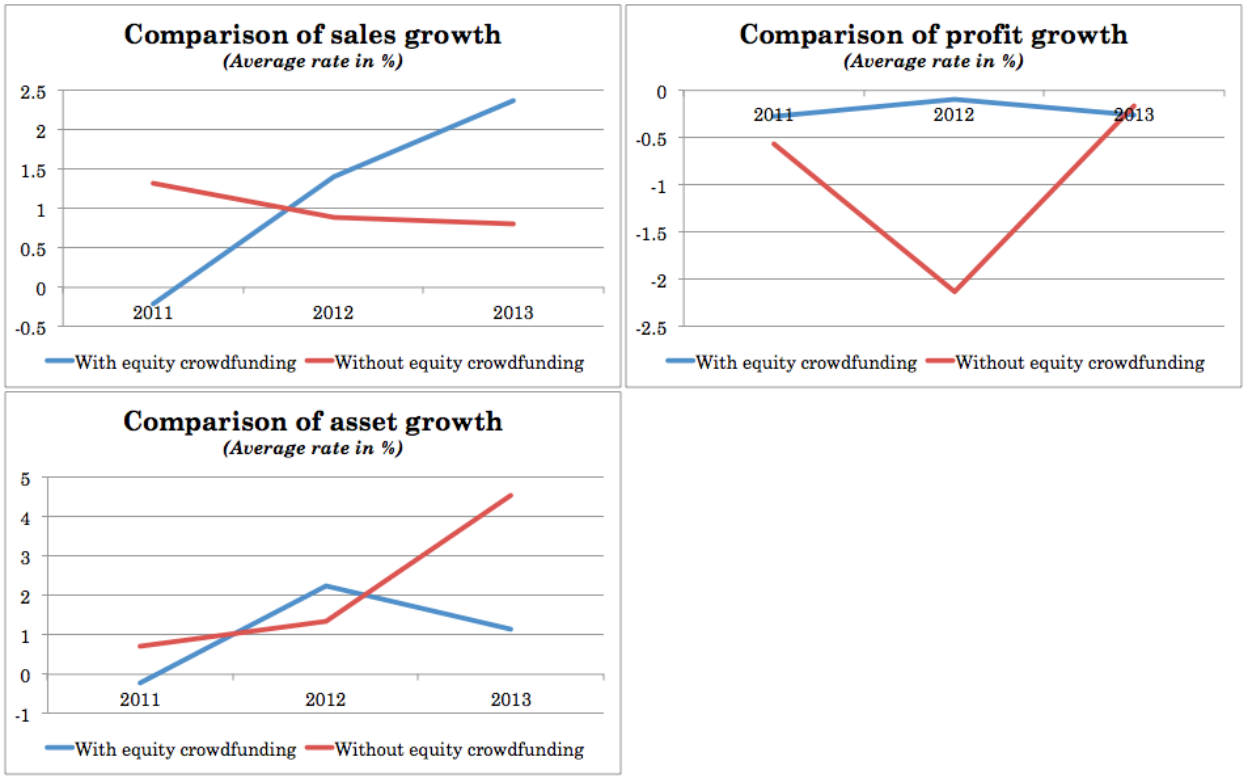
5.1.6 Difference-in-differences

The previous section showed the average evolution of equity crowdfunded firms before and after the campaign – based on four variables. However, chances exist that those trends could not only be the result of the crowdfunding campaign, but also of time trends unrelated to the crowdfunding campaign that may have impacted the overall economy in which each firm operates during the specific period of time observed. As a consequence, the impact of the crowdfunding campaign on our sample may be over- or under-estimated since a fraction of this impact could be common to the all firms operating on the same industry or market, etc. independently of whether they resorted to crowdfunding or not. In order to account for such time trends, difference-in-differences models (also called Diff-in-Diffs) are commonly used by researchers (Athey & Imbens, 2006), which aim to compare the evolution over time of a group subject to a treatment (the treatment group) as opposed to a similar group not subject to any treatment (the control group).

In our case, the treatment is the crowdfunding campaign and therefore the treatment group is composed of the firms from our sample having already successfully completed a crowdfunding campaign *before* the specific year observed. At the opposite, the control group is formed by picking the firms from our sample that have not yet completed their crowdfunding campaign *at* the specific year. This ensures that both the treatment group and the control group are on average composed of firms from similar countries and with similar profiles – notably when it comes to their age, size, financials, etc.

Figure 8
Diff-in-Diffs between equity crowdfunded and non-equity crowdfunded firms

Those graphs show the comparison per year of the average growth of sales, profit and assets of firms having already and having not yet completed an equity crowdfunding campaign. Due to the limited amount of data available on the employee growth over years, the comparison has unfortunately not been made possible. Similarly, too few data were available on years earlier than 2011 and later than 2013 to allow for an actual comparison of firms having already completed an equity crowdfunding campaign before those years with firms having not yet launched an equity crowdfunding campaign.



Looking at the comparison of sales growth, we can notice that firms being crowdfunded prior to 2011 seem to under-perform as compared to our control group for this specific year. However crowdfunded firms seem to over-perform the firms from our sample having not been crowdfunded yet in years 2012 and 2013. When it comes to the comparison of profit growth, equity crowdfunded firms seems to be overall over-performing or equally performing as compared to our control group for each specific year. Finally, the observation of the average asset growth per year for firms equity crowdfunded and not yet equity crowdfunded reveals that the latter tend to over-perform the former in 2011 and 2013 – but the opposite happens in 2012.

5.2 Regression analysis of firm outcomes

In the following section we first present the results of our regressions. Secondly we will go into the analysis of the results in terms of how selected equity crowdfunding related factors can explain the post-campaign outcomes of the funded firms.

5.2.1 Regression results

Our regressions have been run in accordance with the models described in the Methodology section and in Table 5 we show the corresponding results of both the OLS and the LPM regressions. The table states which are the OLS regressions, where the dependent variables are the percentage growth in sales, profits, assets and employees respectively in decimal form, and which are the LPM regressions for the qualitative dependent variables of how the equity crowdfunding campaign helped the firm achieve certain outcomes. The independent variables in the regressions are the equity crowdfunding related factors that we wish to know the impact of on the outcomes of the firms. Brief definitions of each of the variables and the variable types can be found in Table 2 in the Appendix.

The fixed effects included in each regression are stated in the table and the number of observations and R-squared values of the regressions are also presented. Significant coefficients are marked with stars, indicating significance levels of 5%, 1% and 0.1% and the P-values are presented within parenthesis below the coefficients. We use cluster-robust standard errors on firm level to account for within group error correlation accounting for the facts that we for each firm have observations for several years.

Table 5

Regressions results of the impact of equity crowdfunding factors on post-funding outcomes

The table reports the results of our OLS and LPM regressions, of how equity crowdfunding campaign factors as independent variables can explain outcomes of the funded firms. In the OLS regressions the dependent variables are the percentage growth outcomes between two consecutive years, in decimal form. In the LPM regressions the first dependent variable is binary (1 if the firm got additional funding, 0 otherwise) and the rest ordinal Likert scales of 1-5, low to high, of the degree to which the campaign help the firm in getting additional funding, find or hire employees, increase customer base or portfolio or gain press attention respectively. The fixed effects included in each regression are stated in the table. We use cluster-robust standard errors on firm level to account for within group error correlation, due to observations several years per firm. Number of observations varies according to how many observations have complete data for the variables included. Significant coefficients are marked with stars, indicating significance levels of 5%, 1% and 0.1% and the P-values are presented within parenthesis below the coefficients. R-squared values of the regressions are also presented.

	OLS regressions				LPM regressions					
Variable	Sales growth	Profit growth	Asset growth	Employee growth	Post-campaign funding	Effect on post-funding	Effect on hiring	Effect on customer base	Effect on portfolio	Effect on press attention
Equity offered (ln)	-0.4768	**9.3018***	5.3536	-3.6803	0.9775	-1.6782	0.7703	**2.6046****	-0.0812	0.4013
	(0.748)	(0.021)	(0.179)	(0.053)	(0.075)	(0.382)	(0.747)	(0.010)	(0.894)	(0.681)
Raised funds (ln)	-0.1731	-0.5385	0.2878	1.1248	0.1545	-0.7924	-0.8523	0.7957	-0.5131	-0.3623
	(0.787)	(0.870)	(0.952)	(0.446)	(0.740)	(0.840)	(0.664)	(0.364)	(0.173)	(0.544)
Investors (ln)	**4.5298*****	-1.8804	-1.8207	1.7387	-0.2788	-1.0754	0.3234	-1.7065	0.8407	**1.5504***
	(0.000)	(0.555)	(0.500)	(0.331)	(0.579)	(0.680)	(0.884)	(0.055)	(0.090)	(0.045)
Industry investors	(omitted)	(omitted)	4.194	5.1108	3.5473	40.4982	-4.7431	9.0958	**9.1883****	5.1184
			(0.890)	(0.498)	(0.153)	(0.376)	(0.655)	(0.067)	(0.005)	(0.281)
Leverage	**-0.3109***	-0.3008	-0.2544	**0.6207****	0.0431	-0.4642	-0.2266	-0.1314	0.0316	**0.2773***
	(0.034)	(0.531)	(0.731)	(0.007)	(0.548)	(0.300)	(0.460)	(0.351)	(0.658)	(0.024)
Firm age	-0.1067	**1.1649****	-0.2197	**-0.7005*****	-0.0788	-0.0986	-0.0584	-0.0354	**-0.4402*****	**-0.2211****
	(0.442)	(0.003)	(0.746)	(0.000)	(0.199)	(0.619)	(0.829)	(0.751)	(0.000)	(0.005)
Founder investment	(omitted)	**23.8273*****	7.0557	2.1023	1.5377	1.1760	0.2241	**3.2093***	**4.4759*****	**3.6715****
		(0.000)	(0.225)	(0.266)	(0.081)	(0.834)	(0.954)	(0.045)	(0.000)	(0.001)
Campaign BAs	5.021	**8.1096****	0.4103	-3.6867	-0.2827	-3.8146	0.7225	-0.9345	0.1150	0.9474
	(0.050)	(0.005)	(0.865)	(0.223)	(0.672)	(0.410)	(0.806)	(0.443)	(0.843)	(0.459)
Pre-campaign BAs	**-5.3564***	-2.1403	0.3053	**-3.6182****	-0.1828	-6.9115	1.0770	0.4575	**-2.9877*****	**-2.3788****
	(0.014)	(0.307)	(0.890)	(0.009)	(0.706)	(0.326)	(0.601)	(0.636)	(0.000)	(0.005)
Investor contribution	**-2.9390*****	-1.6502	-1.0541	0.0327	-0.2374	1.1090	0.4722	-0.4514	0.0400	-0.1233
	(0.000)	(0.074)	(0.678)	(0.940)	(0.293)	(0.472)	(0.602)	(0.332)	(0.812)	(0.641)
Fixed effects										
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time to funding FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Platform FE	Yes	Yes	Yes	No	No	No	No	No	No	No
No. of observations	32	36	41	24	24	20	24	24	24	24
R-squared	0.8843	0.7843	0.6419	0.9301	0.825	0.9301	0.5657	0.8654	0.9828	0.8908

* p<.05; ** p<.01; *** p<.001

5.2.2 Regression analysis of post-funding outcomes

We here provide the analysis of our regression results. We have structured the findings of our analysis by the significant independent variables – the equity crowdfunding campaign factors - and examine how these factors can explain the post-funding outcomes of the studied equity crowdfunded firms. We first examine investor related campaign factors and then firm related campaign factors.

5.2.2.1 Analysis of investor related campaign factors on post-funding outcomes

The number of investors

Through the regressions we find that the number of investors investing through the campaign has a positive impact on outcomes of the firms, in terms of sales growth and the firms gaining publicity and press attention.

The outcome *Sales growth* is positively impacted by the number of investors with statistical significance at a level of confidence of at least 99%. The coefficient indicates that a 1% increase in the number of investors through the campaign increases the sales growth by approximately 4.50%. A possible explanation relates to our survey results of how entrepreneurs perceive that their investors contributed to the firm in addition to monetary. We found that investors commonly contribute by promoting the firm through their own professional and private networks as well as through *word-of-mouth*. As a consequence, a potential cause of the effect between the *Investors* and *Sales growth* is that the investors' promotion of the firm leads to an increased exposure towards new potential customers. This goes in line with the findings by Tomboc (2013) relating to the signaling theory, who argues that a good network of the entrepreneur can convey a good reputation and provide security to potential investors as well as customers. It can also be connected to knowledge management theories, which emphasize the importance of leveraging the capabilities and the networks of others (Ekanem, 2005). A final connection relates to theories on wisdom of crowds, suggesting that a collective decision-making can perform better than an individual decision-making (Ray, 2006; Howe, 2008; Budescu & Chen, 2014) and in other words, more investors on board may generate more exchange of ideas and consequently a better

decision-making – potentially improving sales. This is in line with Bikhchandani et al. (1992) claiming that projects supported by a large community are usually of higher quality.

However, a limitation to the latter interpretation is the negative coefficient of *Investors contribution* in explaining sales growth, significant at 99% confidence level or more. This coefficient can be interpreted as a one-step increase in the investors' contribution on the 1-to-5 Likert scale engenders a 2.94% decrease in the sales growth. This effect is in line with theories arguing that the communication between investors and entrepreneurs can be difficult (Gajda & Mason, 2013) and time consuming (Agrawal et al., 2013) and as a result can impact negatively the time entrepreneurs can actually focus on running their firm (Dorff, 2013).

Another way to approach the connection between investors and sales growth is to look at the significant impact of the number of investors on the *Effect on press attention* generated by the campaign. As seen in the table of results, a 1% increase in the number of investors increases the perceived gain of press attention from the campaign by 0.02 steps on the 1-to-5 Likert scale – which is significant at a 5% level. A possible explanation is that campaigns attracting a large number of investors are more likely to generate a "buzz" effect, reinforced by the commonly found herding behavior that applies to equity crowdfunding campaigns (Zhan & Liu, 2012). This buzz can lead to an increased media coverage and publicity (for instance on social media), which therefore increases the reach of the firm to new potential customers – which will eventually increase the sales (Birley, 1987). This argument is reinforced by the significant positive correlation that we find between press attention and the perceived increase in customer base from the campaign, as seen in the correlation matrix in Table 6 in the Appendix.

Concluding this first part of the impact of investors on firm outcomes, it is suggested that investors from the equity crowdfunding campaign have a positive effect on the sales growth of the firms they fund. This effect seems to be attributable to the promotion and press attention effect generated by the increased number of investors, rather than the active contribution of investors.

Business angel investors

The results from the regressions reveal an overall significant negative impact of having one or several angel investors on board prior to the campaign. We find that having pre-

campaign business angels decreases sales growth by 536%, employee growth by 362% and the effect on the firms' portfolio and press attention by about 3 and 2.4 steps on their respective Likert scales (ranging from 1 to 5).

When it comes to the negative effect on the growth variables, the results can be connected to the finance theories on start-ups growth, stating that young ventures usually tend to grow fast but can often be exposed to problems of uncontrolled growth, which could lead to a failure of the venture (Abetti, 2001). Pier Abetti (2001) adds that the arrival of experienced people in the firm – such as incubators, business angel investors or a more experienced CEO – usually engenders in a first phase a control of the firm's growth, and in a second phase an optimization of the growth. Consequently, those theories suggest that the significantly negative coefficients on sales growth and employee growth, as a result of having professional investors on board prior to the campaign, can be due to the firms' control and optimization of the growth. Additionally, by comparing the effects to those of similar firms being funded by business angels only, we observe identical trends (EBAN, 2014a), which supporting the coefficients we found. The controlled growth could also explain the negative coefficient between having a business angel on board and a firm's increase in its product or service portfolio, using the similar assumption that angel investors are likely to mentor firms by recommending a focus on its core products first.

In order to interpret the causality between the presence of pre-campaign angel investors and the campaign's effect on gained press attention, it can be appropriated to look first at how pre-campaign angels could impact the campaign itself, which may consequently impact the press attention in a second time. Based on the statistics of our sample of 337 firms, we find that there is little difference in the funds raised and the equity offered between firms that have and those that do not have angel investors on board prior to the campaign. However, there is on average half as much investors taking part in the campaigns of the firms already having angel investors on board before the launch of the campaign. By connecting this finding with the positive impact of the number of investors on the press attention (as seen in the first part of this investors' analysis), it seems therefore plausible that pre-campaign angel investors can have such a negative impact on the campaign's effect on press attention given the fewer number of investors overall.

The regressions show that there is a positive impact on profit growth of having business angel investors investing in the firm through the campaign, which is significant at a 99% confidence level. Indeed, the coefficient implies that if professional investors are

investing in a firm during an equity crowdfunding campaign, this firm's profit growth is on average 811% higher than if no professional investors had taken part in that campaign. This is in line with angel investment's theories claiming that the mentorship, coaching and monitoring conducted by angel investors increase on average the profitability of the firms (Wiltbank & Boeker, 2007).

An overall conclusion for this part in the analysis of the impact of investors on firm outcomes suggests that involvement of professional investors, such as business angels, will tend to control the firm's growth in order to optimize its performance as indicated by an increased profitability.

Industry investors

A final significant regression result that refers to the impact of investors on firm outcomes, is the relation between the proportion of investors from the same industry as the firm and that the campaign helped the firm increase its product or service portfolio. *Industry investors* have a significant positive impact on the portfolio effect, at a 99% confidence level. This can be interpreted as a 1% increase in the proportion of industry investors will make the portfolio effect increases by 0.09 steps on the 1-to-5 Likert scale. The findings suggest that investors with industry experience tend to favor the development of new products, which supports knowledge transfer theories arguing that using the knowledge and expertise of individuals outside the firm can contribute to the development of the firm's internal processes (Quinn, 1999; Ekanem, 2005).

To close this analysis of the investors and firm outcomes, we consider it may be important to acknowledge the fact that the coefficients found in this analysis are sometimes relatively large in comparison to similar coefficients found in the rest of the analysis, and could therefore seem suspicious. This is especially the case of coefficients relating to growth, such as seen in the paragraphs above. We believe that some possible limitations could lie on one hand in the small number of observations used for those regressions, and on the other hand in the relatively high variability of young firms' growth as shown by David S. Evans (1987).

5.2.2.2 Analysis of firm related campaign factors on post-funding outcomes

Equity offered

The regression results indicate a positive impact of the *Equity offered* on the customer base and on the profit growth, significant at respectively a 1% and a 5% level. Consequently, for every percent increase in the equity offered by the firm during a campaign, the campaign's effect on customer base increases by 0.03 steps on the 1-to-5 Likert scale and the profit growth increases by 9.30%.

An increase in the equity offered in the campaign could result in either a higher number of investors, or a larger average amount of money invested per investor. In both cases, the share of the firm controlled by the investors will be higher, and theories suggest that the pressure on the management team of the firm is therefore increasing in order to generate higher profits – and consequently higher return on investment for investors (Lawler, 2000). Also, in the case the result is a higher average amount of money invested per investor, this can incentivize those investors to get more involved within the firm since a larger investment is a stake – which could lead to higher returns, but also higher losses. The latter possible explanation is suggested by Rusbult et al. (1998) who demonstrated that a positive correlation exists between an investor's investment size and its subsequent commitment to the firm.

A potential explanation of the positive impact of equity offered on the customer base is that enabling a higher number of investors could give increased network and word-of-mouth effects of the investors, resulting in an increased reach to new potential customers – in accordance to what was mentioned in the part about investors and outcomes above. By linking the effect on customer base to profit growth, it could be suggested that an increase in the equity offered will increase the number of customers, and consequently the profit of the firm (with the assumption that each unit sold brings profit).

Leverage

By looking at the coefficients obtained from the regressions, we notice that there is a positive effect between the leverage ratio and employee growth as well as between the leverage ratio and press attention, significant at a 1% and 5% level respectively. At the

opposite, the effect on sales growth is negative with a 95% confidence level. Translated into numbers, it means that a 1% increase of the leverage ratio increases the employee growth by 0.62% and the press attention by 0.03 steps on the 1-to-5 Likert scale, but decreases the sales growth by 0.31%.

The leverage ratio of the firms is defined as total debt divided by total equity. An increase of the leverage ratio would likely correspond to an increase in the total debt of the firm, since it is unlikely that the equity of a firm decreases following an equity crowdfunding campaign. The ability to issue debt can be assumed to be related to the firm being perceived as less risky and, in the context of start-ups, could therefore be a sign of a well performing firm – since financial institutions are more likely to grant loans to firms providing evidence of performance. Given this reasoning and combining it with the regression results, with an increased performance of the firm it is plausible that growth increases as well and here in term of the employee growth. A relatively higher performing firm is also more likely to attract press attention. If the decrease in the sales growth could appear counter-intuitive at first, a possible explanation for this lies in the fact that firms raising funds could use that money to focus on R&D and other types of investments, therefore focusing less on sales in a first phase. This is notably true for young business ventures such as those in our sample that may not already have a final product to put on the market or that may need consequent investments in order to add structure to their processes. However, we notice that each coefficient is low, which suggests that the leverage ratio is not the most important variable explaining the effects on those three variables.

Firm age

The regression results show a positive effect of the firms' age on the profit growth, with a confidence level of at least 99%. This implies that increasing the firm age by a year increases the profit growth by 116%, which can be intuitive considering that an older firm would probably gain experience and become more established. The same explanation could be used to explain the 70% decrease in employee growth for each additional year of the firm. Indeed, a more experienced and established firm may optimize over time the use of its resources and increase its productivity. As a consequent, fewer employees could manage to do more, reducing the need for additional employees. This is in line with the growth evolution over years of firms funded by business angels (EBAN, 2014a), showing once again

similarities between outcomes in equity crowdfunding and business angel investing. A negative effect of the firm age can be seen on the campaign's effect on press attention. A logical explanation could be that, over the years following the campaign, the "buzz" generated by the campaign is fading away, consequently generating less media coverage or publicity. A negative effect of the firm age on the campaign's effect on the portfolio can also be observed, with a confidence level equal or above 99%. Here again, this could be explained by the fact that entrepreneurs will tend to diminish the impact of the campaign on their firm's portfolio over the years, since many things will happen in between the campaign and today that could have influenced the portfolio as well. As a consequence, it might become less obvious for entrepreneurs over time to distinguish the impact of the campaign from impact unrelated to the campaign.

Founder investments

The last independent variable that will be analyzed in the regression analysis is the effect of the founders' own investment in the firm on the dependent variables. We can observe a very strong effect of the *Founder investment* variable on the profit growth, significant at more than 1% level. We see that if the founders of the firms have invested in their own business prior to the campaign, the profit growth increases by 2383%. Considering the very high coefficient, the same limitations in terms of sample size or as supported by Evans (1987) at the end of the investors' analysis part can be considered. A possible interpretation behind this number could lie in a considerable increase in the motivation of the entrepreneurs investing their own money into their business idea. As described by Wasserman (2008), entrepreneurs investing a lot of time and money in their venture usually become emotionally attached to their firm and tend to even personify it. As an example to support his claim, Wasserman showed than on average, business ventures' founders pay themselves a salary 20% lower than non-founders usually get for accomplishing the same tasks. Accordingly, the high commitment of the entrepreneurs could impact the way the firm is managed, and consequently its performance in terms of profitability.

Lastly, there is a significant impact of the founders' own investments on the perceived campaign effects on customer base, portfolio and press attention. If the founder invested in his own firm prior to the campaign, it increases the effect on customer base by

3.21 steps on the Likert scale, the effect on portfolio by 4.48 steps and the effect on press attention by 3.67 steps. Considering that the Likert scales were designed on a 1 to 5 basis, those coefficients can be considered as high, with the limitation that the small size of our sample may have over-estimated the impacts on those variables. Following a similar reasoning as with the previous coefficient analysis, a plausible interpretation is that the entrepreneurs' high motivation can be reflected in the success of the campaign as it could help increasing the probability to attract investors by sending positive signals about the firm's potential. This is coherent with studies conducted on the criteria adapted by business angel investors when selecting investment opportunities, which find that the entrepreneur's enthusiasm as well as trustworthiness is ranked the top three out of more than 25 different criteria (Van Osnabrugge & Robinson, 2000; Sudek, 2006). It is also in line with the knowledge management theories arguing that the involvement of external people within the firm depends partly on the willingness of the entrepreneur to benefit from those people (Dorff, 2013). Therefore, more committed entrepreneurs will probably be more willing to involve additional people, which could impact the firm's customer base and portfolio. As an overall consequence for that increased commitment, it is more likely that the firm will generate press attention and publicity.

6 Concluding remarks

This section presents the conclusions drawn from our study along with suggestions for further research.

6.1 Conclusions

The purpose of this study has been to explore the post-funding outcomes of equity crowdfunded firms in Europe. Previous research within this field is very limited and the outcomes of firms following their funding campaigns have been widely unresearched until now. We used a manually constructed sample of 337 firms funded on equity crowdfunding platforms in Europe between 2009 and 2014, from which we collected data through a survey, databases and the firms' website. Whenever possible, the observations aimed at focusing on the evolution of firms before and after their equity crowdfunding campaign, for which both descriptive statistics and regressions have been the basis of our results.

We find that the asset growth of equity crowdfunded firms peaks shortly after the campaign, while a similar peak only appears a year after the campaign on the sales growth. The negative growth for sales seen on average on firms before the campaign tends to decrease following the campaign, and the employee growth is decreasing following the campaign. A comparison made with angel investing data on the European market (EBAN, 2014a) shows relatively similar trends with equity crowdfunding for assets growth and profit growth, however the trends seems to differ when it comes to sales growth and employee growth. Indeed, this comparison indicates that firms benefiting from angel investments seem to have a more controlled growth, as suggested by Abetti (2001). However, when accounting for assets, sales, profit and employees in actual values rather than growth, we observe a very similar evolution of those average variables between equity crowdfunding and angel investing, suggesting similarities between those two methods of financing. A difference-in-differences comparison has also been used to compare this time the growth rates of the variables mentioned above between firms from our sample having been crowdfunded with similar firms having not been crowdfunded. The results show that the performance of equity crowdfunded firms as compared to the non-funded firms seems to be higher on average for sales and profit growth, but lower on average for asset growth, suggesting guarded interpretations on the positive impact of equity crowdfunding on firms.

The regression results show that the larger an equity crowdfunding campaign is, the higher will be the impact on its firm's growth. This is suggested by the positive effect of the number of investors and the equity offered for their investment on respectively the sales growth (Ekanem, 2005) and the profit growth (Rusbult et al., 1998; Lawler, 2000). Interestingly, while more investors increase the firm's growth, however the more they contribute the lower is the growth. As suggested by theories, this effect can be linked to the time required to communicate with a large number of investors with keeps the entrepreneur away for running his/her firm (Dorff, 2013). However, another plausible explanation relates to similarities that can be drawn with angel investment. Indeed, previous researches conducted reveal that angel investors' coaching and monitoring are likely to control the firms' growth in order to provide a healthier and more profitable evolution *over time* (Abetti, 2001), which is supported by our results found on the effect of having pre-campaign angel investors on our different growth variables. Moreover, we suggest that firms optimize their processes over time, as firms tend to decrease the additional number of employees needed over time while their profit growth increases. The

latter conclusion is suggested by the similar evolution of profit growth with business angels' firms (EBAN, 2014a), which supports an optimization of processes as business angels' involvement within a firm is positively correlated to the firm's performance (Wiltbank, 2009).

Additionally, statistics obtained from surveyed entrepreneurs show that the contribution of the campaign to the growth of the hiring opportunities, the customer base and the portfolio of products/services seems to be quite limited, and that this perceived contribution decreases over time. This can be due on one hand on the fact that the funds raised were judged insufficient by the entrepreneurs as compared to what they expected to achieve with those. On the other hand, this can suggest a low contribution of the investors (Belleflamme, 2013b; Dorff, 2013), which are an essential factor of the campaigns apart from the money. This is in line with our statistics indicating that investors contributed little to none in about two thirds of the firms. We found that when investors contribute, it is mainly in the form of knowledge and expertise (Ferrary & Granovetter, 2009; Belleflamme & Lambert, 2014), but also in the form of access to new networks and business opportunities. The entrepreneurs surveyed also believe that their campaign increased the likeliness of their firm to generate press attention and to receive additional funds. In the latter case, it has been shown through our study that firms that couldn't benefit from external funds prior to the campaign are likely to raise such funds after the campaign. Also, the firms that didn't have any professional investor on board prior to the campaign are likely to get at least one of those professional investors during the campaign. Overall, about a fourth of the firms raised angel funds following their campaign, a sixth bank loans and an additional sixth of the firms completed another equity crowdfunding round. Consequently, our study supports the fact that equity crowdfunding is increasing the attractiveness of the firms in the eyes of the investors (De Buysere et al., 2012).

The results from our regressions show that the entrepreneurs who invest money in their own firm prior to their campaign are more likely to contribution from the campaign in terms of customer base, product/service portfolio and press attention growth, which is assumed to be linked to a higher motivation of those entrepreneurs, and therefore commitment (Wasserman, 2008). Also, we find that larger campaigns are likely to generate higher returns on customer base growth and press attention growth, which can relate on one hand to an increased "buzz" surrounding a successful large campaigns, and on the other

hand to a higher possible commitment of the overall investors increasing the reach of the firm. As a consequence, it is again supported that equity crowdfunding contributes positively to the outcomes of the firms.

Therefore, as far as this study could go in terms of outcomes, it appears that equity crowdfunding contributes on overall to the outcomes of the firms successfully funded through that financing model. This could have been expected regarding the number of similarities that exist between equity crowdfunding and its closest financing model – business angel investing. Indeed, considering the positive impact of angel investment on their firms' outcomes (Wiltbank, 2009), a similar financing model could be expected to contribute similarly. However, results tend to indicate that angel investing still appears to provide stronger outcomes and it seems therefore more likely – from a short-term point of view – that firms under the influence of business angels will remain healthier over time. But time will tell if this is the case or not.

6.2 Further research

As mentioned earlier in this thesis, equity crowdfunding is still an emerging phenomenon that has consequently been little understood until now. Therefore, we believe that the limited research conducted on this topic leaves room for numerous other studies that could contribute to both the financial and the entrepreneurial communities.

For instance, as indicated in our research, it is hard to quantify who the typical equity crowdfunding investor is since such campaigns usually gather a wide range of different investors – suggesting that there may not be a typical equity crowdfunding investor. It could therefore be interesting to learn more about the investors behind equity crowdfunding and their actual motives.

A limitation of our study was the relatively low sample from which the regressions were performed. Having more observations to regress would have increased the accuracy of our model and helped understand equity crowdfunding even better – notably if comparisons between industries or countries can be made possible. Similarly, our study is certainly one of the firsts aiming to assess the post-funding outcomes of equity crowdfunding, and thus the closeness between the campaigns and today provides a short-term overview only on those outcomes. As the industry matures, opportunities will be offered to capture the outcomes of equity crowdfunding with a longer-term perspective, which will eventually

create equity crowdfunding benchmarks. As a consequence, further researches similar to our thesis would then be able to talk in terms of performance of a sample of firms relative to those benchmarks – rather than simply talk in terms of outcomes. Additionally, time will clarify where equity crowdfunding stands as compared to other investment methods – and especially angel investing.

Finally, our research focused on the European Union market. As the equity crowdfunding legislation within or between countries is currently in continuous change over time, it is likely that the nascent equity crowdfunding market will continue to evolve as well, developing new opportunities for further research in new or established equity crowdfunding markets. Taking into account the fact that the United States represents the largest market for business angels and venture capitalists investing (ACA, 2014), we believe that the most exciting change to come that will deserve further investigation is the passing of the Title III of the U.S. JOBS Act – which will open the American equity crowdfunding market to unaccredited investors as well.

8 References

Abetti, P. A. (2001). Accelerated growth: helping companies get and stay on the fast track. *International Journal of Manufacturing Technology and Management*, *3*(1), 15-30.

ACA (2014). *Important Things to Know About Angel Investors – 2014*. Angel Capital Association.

Aernoudt, R. (2005). Business Angels: The smartest money for starters?. *International Journal of Business, 10*(3), 271-285.

Agrawal, A. K., Catalini, C., & Goldfarb, A. (2011). The geography of crowdfunding. *National Bureau of Economic Research,* No. w16820.

Agrawal, A. K., Catalini, C., & Goldfarb, A. (2013). Some simple economics of crowdfunding. *National Bureau of Economic Research,* No. w19133.

Ahlers, G. K., Cumming, D., Günther, C., & Schweizer, D. (2012). Signaling in equity crowdfunding. *Social Science Research Network,* 2161587.

Akerlof, G. A. (1970). The market for" lemons": Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, 488-500.

Argote, L., & Ingram, P. (2000). Knowledge transfer: A basis for competitive advantage in firms. *Organizational behavior and human decision processes, 82*(1), 150-169.

Athey, S., & Imbens, G. W. (2006). Identification and inference in nonlinear difference-in-differences models. *Econometrica*, *74*(2), 431-497.

Barnett, C. (2014). *$2B Facebook Acquisition Raises Question: Is Equitiy Crowdfunding Better?*. Forbes, 1 May. Available at: http://www.forbes.com/sites/chancebarnett/2014/05/01/2-billion-facebook-acquisition-raises-question-is-equity-crowdfunding-better (Accessed 3 November 2014)

Barney, J. B. (1986). Strategic factor markets: Expectations, luck, and business strategy. *Management science, 32*(10), 1231-1241.

Belleflamme, P., & Lambert, T. (2014). Crowdfunding: Some Empirical Findings and Microeconomic Underpinnings. *Revue Bancaire et Financière, 2014*(4), 288-296.

Belleflamme, P., Lambert, T., & Schwienbacher, A. (2013a). Crowdfunding: Tapping the right crowd. *Journal of Business Venturing*.

Belleflamme, P., Lambert, T., & Schwienbacher, A. (2013b). Individual crowdfunding practices. *Venture Capital, 15*(4), 313-333.

Benkler, Y. (2006). *The wealth of networks: How social production transforms markets and freedom*. Yale University Press.

Bikhchandani, S., Hirshleifer, D., & Welch, I. (1992). A theory of fads, fashion, custom, and cultural change as informational cascades. *Journal of Political Economy*, 992-1026.

Bikhchandani, S., & Sharma, S. (2000). Herd behavior in financial markets. *IMF Staff Papers*, 279-310.

Birley, S. (1987). New ventures and employment growth. *Journal of Business Venturing*, *2*(2), 155-165.

Brabham, D. C. (2008). Moving the crowd at iStockphoto: The composition of the crowd and motivations for participation in a crowdsourcing application. *First Monday, 13*(6).

Bradford, C. S. (2012). Crowdfunding and the federal securities laws. *Columbia Business Law Review, 2012*(1), 1-150.

Brynjolfsson, E., Hu, Y., & Rahman, M. S. (2009). Battle of the retail channels: How product selection and geography drive cross-channel competition. *Management Science, 55*(11), 1755-1765.

Budescu, D. V., & Chen, E. (2014). Identifying Expertise to Extract the Wisdom of Crowds. *Management Science.*

Burtch, G., Ghose, A., & Wattal, S. (2013). *An Empirical Examination of Users' Information Hiding in a Crowdfunding Context.* Thirty Fourth International Conference on Information Systems, Paper 6.

Chen, L. J., & Chen, S. Y. (2011). How the Pecking-Order Theory Explain Capital Structure. *Journal of International Management Studies, 6*(3), 92-100.

Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling theory: A review and assessment. *Journal of Management, 37*(1), 39-67.

Cumming, D. J., & Johan, S. A. (2013). *Venture capital and private equity contracting: An international perspective*. Academic Press.

Dawson, R., & Bynghall, S. (2012). *Getting Results from Crowds*. Advanced Human Technologies.

De Buysere, K., Gajda, O., Kleverlaan, R., Marom, D., & Klaes, M. (2012). *A framework for European crowdfunding*. European Crowdfunding Network.

Dorff, M. B. (2014). The Siren Call of Equity Crowdfunding. *Iowa J. Corp. L., 39*, 492-657.

EBAN (2014a). *The Economic Impact of Angel Investment Unveiled*. European Trade Association for Business Angels.

EBAN (2014b). *Angel Investment Grows to €5.5 billion*. European Trade Association for Business Angels

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review, 14*(1), 57-74.

Ekanem, I. (2005). 'Bootstrapping': the investment decision-making process in small firms. *The British Accounting Review, 37*(3), 299-318.

Estellés-Arolas, E., & González-Ladrón-de-Guevara, F. (2012). Towards an integrated crowdsourcing definition. *Journal of Information Science, 38*(2), 189-200.

European Commission (2008). *Evaluation on policy: Promotion of Women Innovators and Entrepreneurship*. European Commission.

European Commission (2014). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Unleashing the potential of Crowdfunding in the European Union*. European Commission.

European Crowdfunding Network (2013). *Review of Crowdfunding Regulation - Interpretations of existing regulation concerning crowdfunding in Europe, North America and Israel.* European Crowdfunding Network.

Evans, D. S. (1987). The relationship between firm growth, size, and age: Estimates for 100 manufacturing industries. *The Journal of Industrial Economics*, 567-581.

Ferrary, M., & Granovetter, M. (2009). The role of venture capital firms in Silicon Valley's complex innovation network. *Economy and Society, 38*(2), 326-359.

FiBAN (2013). *Finnish Business Angel Activity 2013*. Finnish Business Angels Network.

Financial Conduct Authority (2013). *The FCA's Regulatory Approach to Crowdfunding (and Similar Activities).* Consultation Paper, CP13/13.

Friedman, T. (2005). *The world is flat: A brief history of the globalized world in the 21st century*. London: Allen Lane, 393-395.

Gajda, O., & Mason, N. (2013). *Crowdfunding for impact in Europe and the USA*. European Crowdfunding Network.

GEM (2004). *2004 Global Report*. Global Entrepreneurship Monitor.

GEM (2013). *2013 Global Report*. Global Entrepreneurship Monitor.

Gerber, E. M., Hui, J. S., & Kuo, P. Y. (2012). *Crowdfunding: Why people are motivated to post and fund projects on crowdfunding platforms*. CSCW Workshop.

Giudici, G., Guerini, M., & Rossi Lamastra, C. (2013). Why Crowdfunding Projects Can Succeed: The Role of Proponents' Individual and Territorial Social Capital. *Social Science Research Network*, 2255944.

Goldfarb, A., & Tucker, C. (2011). Substitution between offline and online advertising markets. *Journal of Competition Law and Economics, 7*(1), 37-44.

Grant, R. M. (1996). Toward a Knowledge-Based Theory of the firm. *Strategic Management Journal, 17*(S2), 109-122.

Gubler, Z. J. (2013). *Inventive Funding Deserves Creative Regulation*. The Wall Street Journal, 31 January. Available at: http://online.wsj.com/articles/SB10001424127887323468604578251913868617572 (Accessed 3 November 2014)

Hornuf, L., & Schwienbacher, A. (2014). Crowdinvesting – Angel Investing for the Masses?. *Handbook of Research on Venture Capital*, 3.

Howe, J. (2006). *Crowdsourcing: A definition*. Crowdsourcing.com, 2 June. Available at : http://crowdsourcing.typepad.com/cs/2006/06/crowdsourcing_a.html (Accessed 31 October 2014)

Howe, J. (2008). *Crowdsourcing: How the power of the crowd is driving the future of business*. Random House.

Huber, G. P. (1991). Organizational learning: The contributing processes and the literatures. *Organization Science, 2*(1), 88-115.

IFC (2014). *IFC and Small and Medium Enterprises*. International Finance Corporation Issue Brief.

Ingram, C., & Teigland, R. (2013). Crowdfunding Among IT Entrepreneurs in Sweden: A Qualitative Study of the Funding Ecosystem and ICT Entrepreneurs' Adoption of Crowdfunding. *Social Science Research Network*, 2289134.

Isenberg, D. (2012). The Road to Crowdfunding Hell. *Harvard Business Review*.

Jeppesen, L. B., & Frederiksen, L. (2006). Why do users contribute to firm-hosted user communities? The case of computer-controlled music instruments. *Organization Science, 17*(1), 45-63.

Klöhn, L., & Hornuf, L. (2012). Crowdinvesting in Deutschland – Markt, Rechtslage und Regulierungsperspektiven. *Zeitschrift fur Bankrecht und Bankwirtschaft-ZBB, 24*(4), 237.

Knowledge Peers (2013). *Alternative Funding Network's Crowdfunding Industry Report: Phase 1, December 2013*. Knowledge Peers.

Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization science, 3*(3), 383-397.

Kortleben, H., & Vollmar, B. (2012). *Crowdinvesting, an Innovative Option for Start-up Financing?*. Seventh European Conference on Innovation and Entrepreneurship, p. 404. Academic Conferences Limited.

Kuppuswamy, V., & Bayus, B. L. (2013). Crowdfunding Creative Ideas: The Dynamics of Project Backers in Kickstarter. *UNC Kenan-Flagler Research Paper, 2013*(15).

Kwoka, J. E. (2005). The Federal Trade Commission and the professions: A quarter century of accomplishment and some new challenges. *Antitrust Law Journal*, 997-1012.

Lambert, T., & Schwienbacher, A. (2010). An empirical analysis of crowdfunding. *Social Science Research Network,* 1578175.

Lawler, E. E. (2000). Rewarding excellence. *Pay Strategies for the New Economy.*

Lawton, K., & Marom, D. (2010). *The crowdfunding revolution: Social networking meets venture financing*. CreateSpace.

Lehner, O. M. (2013). Crowdfunding social ventures: a model and research agenda. *Venture Capital, 15*(4), 289-311.

Leland, H. E., & Pyle, D. H. (1977). Informational asymmetries, financial structure, and financial intermediation. *The Journal of Finance, 32*(2), 371-387.

Lévy, P., & Bonomo, R. (1999). *Collective intelligence: Mankind's emerging world in cyberspace*. Perseus Publishing.

Ley, A., & Weaven, S. (2011). Exploring agency dynamics of crowdfunding in start-up capital financing. *Academy of Entrepreneurship Journal, 17*(1), 85-110.

Massolution (2013). *2013CF The Crowdfunding Industry Report*. Massolution.

Mason, C. M. (2007). Venture capital: a geographical perspective. *Handbook of Research on Venture Capital, Edward Elgar, Cheltenham*, 86-112.

Mitra, D. (2012). The role of crowdfunding in entrepreneurial finance. *Delhi Business Review, 13*(2), 67-72.

Mollick, E. (2013). Swept away by the crowd? Crowdfunding, venture capital, and the selection of entrepreneurs. *Venture Capital, and the Selection of Entrepreneurs* (March 25, 2013).

Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing, 29*(1), 1-16.

Mollick, E. & Kuppuswamy, V., 2014. After the Campaign: Outcomes of Crowdfunding, *UNC Kenan-Flagler Research Paper,* No. 2376997.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13*(2), 187-221.

Nanda, R., & Khanna, T. (2010). Diasporas and domestic entrepreneurs: Evidence from the Indian software industry. *Journal of Economics & Management Strategy, 19*(4), 991-1012.

Narayanan, M. P. (1988). Debt versus equity under asymmetric information. *Journal of Financial and Quantitative Analysis, 23*(01), 39-51.

Nayyar, P. R. (1990). Information asymmetries: A source of competitive advantage for diversified service firms. *Strategic Management Journal, 11*(7), 513-519.

Parker, S. C. (2009). *The economics of entrepreneurship*. Cambridge University Press.

Paul, S., Whittam, G., & Wyper, J. (2007). The pecking order hypothesis: does it apply to start-up firms?. *Journal of Small Business and Enterprise Development, 14*(1), 8-21.

Pierrakis, Y., & Collins, L. (2013). Crowdfunding: A New Innovative Model of Providing Funding to Projects and Businesses. *Social Science Research Network,* 2395226.

Quinn, J. B. (1999). Strategic outsourcing: leveraging knowledge capabilities. *Sloan Management Review, 40*(4), 9-21.

Ray, R. (2006). Prediction Markets and the Financial "Wisdom of Crowds". *The Journal of Behavioral Finance, 7*(1), 2-4.

Rusbult, C. E., Martz, J. M., & Agnew, C. R. (1998). The investment model scale: Measuring commitment level, satisfaction level, quality of alternatives, and investment size. *Personal Relationships, 5*(4), 357-387.

Schwienbacher, A. (2014a). Entrepreneurial Risk-Taking in Crowdfunding Campaigns. *Social Science Research Network, 2506355.*

Schwienbacher, A. (2014b). *Financing the business*. London: Routledge Companion of Entrepreneurship, 193-206.

Schwienbacher, A., & Larralde, B. (2010). Crowdfunding of Small Entrepreneurial Ventures. *Handbook of Entrepreneurial Finance*, Oxford University Press.

Sohl, J. (2003). The private equity market in the USA: lessons from volatility. *Venture Capital: An international journal of entrepreneurial finance, 5*(1), 29-46.

Sorenson, O., & Stuart, T. E. (2005). The evolution of venture capital investment networks. *Federal Reserve Bank of Atlanta*, 1936.

Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 355-374.

Starr, J. A., & MacMillan, I. (1990). Resource cooptation via social contracting: Resource acquisition strategies for new ventures. *Strategic Management Journal*, *11*, 79-92.

Sudek, R. (2006). Angel investment criteria. *Journal of Small Business Strategy*, *Vol, 17*(2), 2007.

Surowiecki, J. (2005). *The wisdom of crowds*. Random House LLC.

Szulanski, G. (2000). The process of knowledge transfer: A diachronic analysis of stickiness. *Organizational behavior and human decision processes, 82*(1), 9-27.

Taylor, J. B. (2009). The financial crisis and the policy responses: An empirical analysis of what went wrong. *National Bureau of Economic Research*, No. w14631.

Teece, D. J. (2000). Strategies for managing knowledge assets: the role of firm structure and industrial context. *Long Range Planning, 33*(1), 35-54.

Tomboc, G. F. (2013). The Lemons Problem In Crowdfunding. *The John Marshall Journal of Information Technology & Privacy Law, 30*(2), 2.

Van Osnabrugge, M., & Robinson, R. J. (2000). *Angel Investing: Matching Startup Funds with Startup Companies--The Guide for Entrepreneurs and Individual Investors*. John Wiley & Sons.

Wasserman, N. (2012). *The founder's dilemmas: Anticipating and avoiding the pitfalls that can sink a startup*. Princeton University Press.

Wiltbank, R. E. (2009). *Siding with the Angels: Business Angel investing-promising outcomes and effective strategies*. NESTA.

Wiltbank, R., & Boeker, W. (2007). Returns to angel investors in groups. *Social Science Research Network,* 1028592.

Winborg, J., & Landström, H. (2001). Financial bootstrapping in small businesses: examining small business managers' resource acquisition behaviors. *Journal of Business Venturing*, *16*(3), 235-254.

Wong, A. Y. (2002). Angel finance: The other venture capital. *Social Science Research Network,* 941228.

Zhang, J., & Liu, P. (2012). Rational herding in microloan markets. *Management Science, 58*(5), 892-912.

Zook, M. A. (2002). Grounded capital: venture financing and the geography of the Internet industry, 1994–2000. *Journal of Economic Geography, 2*(2), 151-177.

9 Appendix

Table 1
Sample of firms from European equity crowdfunding platforms

The table includes statistics of our sampled equity crowdfunded firms in Europe. Out of a full sample of 337 firms, 33 firms were found to be non-active, leading to a sample of 304 firms to which our survey was sent out. 46 survey responses were received, corresponding to a response rate of just over 15%. In addition, for 39 extra firms enough data was collected manually in order for the firms to be included in the analysis, giving us a sub-sample of 85 firms.

Country	Platform	Surveys sent	Responses	Manual data	Sub-sample
Austria	Conda	7	1	0	1
Finland	Invesdor	12	0	3	3
France	Anaxago	11	3	0	3
France	WiSEED	26	4	7	11
Germany	Companisto	23	1	2	3
Germany	Fundsters	7	2	1	3
Germany	Innovestment	22	2	4	6
Germany	Seedmatch	44	1	10	11
Sweden	FundedByMe	17	6	1	7
The Netherlands	Symbid	18	8	1	9
UK	BankToTheFuture	4	0	0	0
UK	Crowdbnk	2	0	0	0
UK	Crowdcube	79	14	6	20
UK	Seedrs	32	4	4	8
Total	14	304	46	39	85

Table 2
Summary statistics of the dependent variables

Those statistics have been compiled from our sub-sample of 85 firms used *for the regression*. Those firms have been selected out of the 337 firms from the complete sample in relation to their financial data available from the difference sources used in the construction of our dataset. Therefore, the numbers shown here may differ from those mentioned in the thesis for the whole sample of 337 firms. Additionally, the average growth of sales, profit, assets and employees of our sample is summarized in relation to the number of years before or after the year of crowdfunding campaign – represented as T0. Consequently, T0 can be interpreted as the growth just before the campaign until the end of the fiscal year when the crowdfunding campaign occurred, and T+1 as the growth during the first fiscal year since the crowdfunding campaign took place. This implies to take into consideration the limitation that the date of closure of a firm's crowdfunding campaign can often be different from the date when the firm's annual report is being published, and that consequently there may be a time lag of few months between both events – which could have a possible impact on the perfect accuracy of some values in our database.

Dependent variables		Obs	Mean	SD	Min	Max	Mdn
Sales growth	T -2 yrs	1	72,30		72,30	72,30	72,30
	T -1 yrs	3	0,12	0,21	-0,08	0,34	0,09
	T 0 at campaign	19	1,04	1,68	-0,91	5,03	0,26
	T +1 yrs	37	6,41	22,50	-0,80	137,48	1,34
	T +2 yrs	15	2,49	3,86	-0,85	11,55	1,00
	T +3 yrs	2	0,19	0,55	-0,20	0,57	0,19
Profit growth	T -2 yrs	0					
	T -1 yrs	2	-4,25	5,01	-7,79	-0,71	-4,25
	T 0 at campaign	20	-0,94	8,63	-27,96	24,18	-0,47
	T +1 yrs	35	-0,65	7,55	-42,20	7,40	-0,13
	T +2 yrs	11	0,19	0,88	-1,85	1,40	0,28
	T +3 yrs	3	0,29	0,43	-0,20	0,60	0,48
Asset growth	T -2 yrs	2	0,02	0,20	-0,12	0,16	0,02
	T -1 yrs	13	0,38	1,27	-0,69	4,11	0,01
	T 0 at campaign	36	3,80	8,68	-0,69	47,38	0,80
	T +1 yrs	45	1,74	3,58	-0,51	15,94	0,83
	T +2 yrs	9	0,15	0,87	-0,45	2,38	-0,18
	T +3 yrs	4	-0,33	0,14	-0,52	-0,20	-0,30
Employee growth	T -2 yrs	0					
	T -1 yrs	0					
	T 0 at campaign	0					
	T +1 yrs	30	2,05	3,06	-0,89	10,50	0,90
	T +2 yrs	21	1,41	1,74	-0,40	5,50	0,67
	T +3 yrs	7	1,04	1,17	0,00	3,00	0,43
Post-campaign funding	T +1 yrs	23	0,65	0,49	0,00	1,00	1,00
	T +2 yrs	11	0,91	0,30	0,00	1,00	1,00
	T +3 yrs	5	0,60	0,55	0,00	1,00	1,00

Continued on next page

Table 2 (continued)

Dependent variables		Obs	Mean	SD	Min	Max	Mdn
Effect on post-funding	T +1 yrs	19	4,05	1,13	2,00	5,00	4,00
	T +2 yrs	10	2,50	1,08	1,00	4,00	2,50
	T +3 yrs	5	3,80	1,64	1,00	5,00	4,00
Effect on hiring	T +1 yrs	25	2,44	1,26	1,00	5,00	2,00
	T +2 yrs	13	1,46	0,78	1,00	3,00	1,00
	T +3 yrs	6	2,00	1,55	1,00	5,00	1,50
Effect on customer base	T +1 yrs	25	3,04	1,17	1,00	5,00	3,00
	T +2 yrs	13	2,23	1,36	1,00	5,00	2,00
	T +3 yrs	6	1,33	0,52	1,00	2,00	1,00
Effect on portfolio	T +1 yrs	25	3,16	1,49	1,00	5,00	4,00
	T +2 yrs	13	1,85	1,14	1,00	4,00	1,00
	T +3 yrs	6	3,00	2,19	1,00	5,00	3,00
Effect on press attention	T +1 yrs	25	4,08	1,00	2,00	5,00	4,00
	T +2 yrs	13	2,77	1,01	1,00	5,00	3,00
	T +3 yrs	6	2,83	1,83	1,00	5,00	2,50

Table 2 (Continued)
Independent variables

Those statistics have been compiled from our sub-sample of 85 firms used *for the regression*. Those firms have been selected out of the 337 firms from the complete sample in relation to their financial data available from the difference sources used in the construction of our dataset. Therefore, the numbers shown here may differ from those mentioned in the thesis for the whole sample of 337 firms.

Independent variables	Obs	Mean	SD	Min	Max	Mdn
Equity offered	67	0,13	0,10	0,03	0,68	0,10
Raised funds	82	258 481	406 871	13 834	2 322 861	100 000
Investors	73	167	193	1	883	101
Industry investors	37	0,14	0,14	0,00	0,50	0,10
Leverage	63	1,07	4,05	-11,21	14,75	0,37
Firm age						
T -2 yrs	3	6,11	3,59	2,42	9,58	6,33
T -1 yrs	14	5,01	2,98	1,33	11,00	3,75
T 0 at campaign	43	5,84	3,62	1,42	20,58	4,75
T +1 yrs	75	5,25	3,28	2,00	21,58	4,42
T +2 yrs	31	5,38	2,54	2,67	14,42	4,58
T +3 yrs	9	6,56	3,43	4,00	15,42	5,75
Binary						
Founder investment	39	0,82	0,39	0,00	1,00	1,00
Campaign BA's	37	0,73	0,45	0,00	1,00	1,00
Pre-campaign BA's	37	0,30	0,46	0,00	1,00	0,00
Ordinal						
Investor contribution						
T +1 yrs	33	2,42	1,17	1,00	5,00	2,00
T +2 yrs	14	2,00	1,04	1,00	4,00	2,00
T +3 yrs	5	1,60	0,89	1,00	3,00	1,00

Table 3
Dependent variables – post-funding outcomes

An overview and brief definition of each of the dependent variables used in our analysis, representing post-funding outcomes of firms, can be found below. The variable definition also indicates the variable type and the format in which is presented.

Dependent variable	Definition
Sales growth	The percentage growth in the firm's sales (in decimal form) between two years.
Profit growth	The percentage growth in the firm's profits (in decimal form) between two years.
Asset growth	The percentage growth in the firm's assets (in decimal form) between two years.
Employee growth	The percentage growth in number of employees of the firm (in decimal form) between one year before the equity crowdfunding campaign and today.
Post-campaign funding	If the firm has obtained any additional funding after the equity crowdfunding campaign. Binary variable.
Effect on post-funding	The degree to which the campaign helped the firm receive additional funding after the campaign. Ordinal variable based on Likert scale 1-5.
Effect on hiring	The degree to which the campaign helped the firm find and/or hire new employees after the campaign. Ordinal variable based on Likert scale 1-5.
Effect on customer base	The degree to which the campaign helped increase the firm's customer base. Ordinal variable based on Likert scale 1-5.
Effect on portfolio	The degree to which the campaign helped increase the firm's product or service portfolio. Ordinal variable based on Likert scale 1-5.
Effect on press attention	The degree to which the campaign helped the firm receive a PR effect and press attention after the campaign. Ordinal variable based on Likert scale 1-5.

Table 4
Independent variables – equity crowdfunding campaign factors

An overview and brief definition of each of the independent variables used in our analysis, representing equity crowdfunding related factors, can be found below. The variable definition also indicates the variable type and the format in which is presented.

Independent variable	Definition
Equity offered (ln)	The natural logarithm of the percentage equity (in decimal form) offered by the firm in the equity crowdfunding campaign.
Raised funds (ln)	The natural logarithm of the final amount of funds, in euros, that the firm raised through the equity crowdfunding campaign.
Investors (ln)	The natural logarithm of the number of investors that invested in the firm through the campaign.
Campaign BA's	If the firm have any Business Angels investing through the equity crowdfunding campaign. Binary variable.
Industry investors	The proportion of investors from the campaign that belong to the same industry as the firm.
Investor contribution	The degree to which the investors from the campaign have contributed to the firm in addition to monetary after the campaign. Ordinal variable based on Likert scale 1-5.
Founder investment	If the founders of the firm had invested in the firm themselves before the campaign. Binary variable.
Pre-campaign BA's	If the firm had any Business Angels as investors before the campaign. Binary variable.
Leverage	The leverage ratio of the firm before the campaign.
Firm age	The age of the firm, in years, at time T.

Figure 1
Number of successfully equity crowdfunded firms per year

This graph is the representation of the 337 European firms from our sample, divided by the year during which each firms has successfully completed its *first* equity crowdfunding campaign. It doesn't take into account the possible successive campaigns that some firms may have complete. During the year 2014, only firms that have been successfully funded between January and May (included) have been taken into consideration, giving 97 firms. This number has then been proportionally computed to a 12-month basis in order to get an estimated number of firms for 2014.

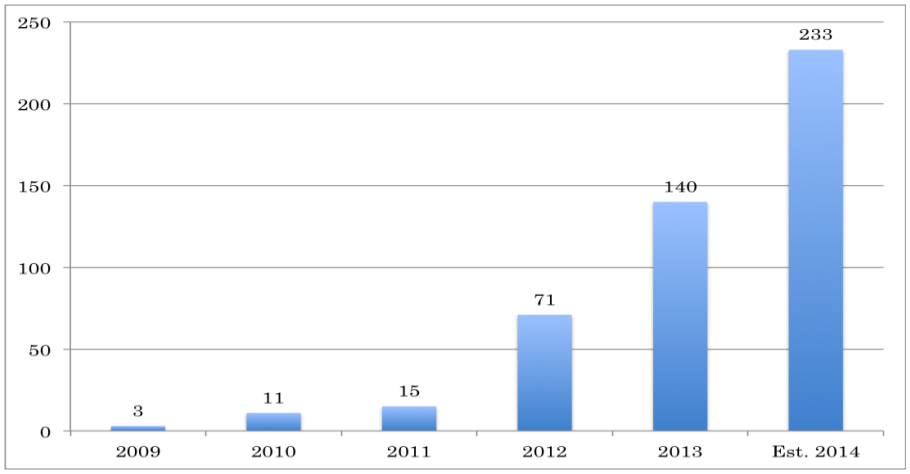


Figure 6
Evolution of the firms' average growth rates

Those graphs have been drawn based on the values found in the Table 2 and represent the average growth rates over years of the sales, profit, assets and employees of the firms from our sample of 337 observations having enough financial data available.

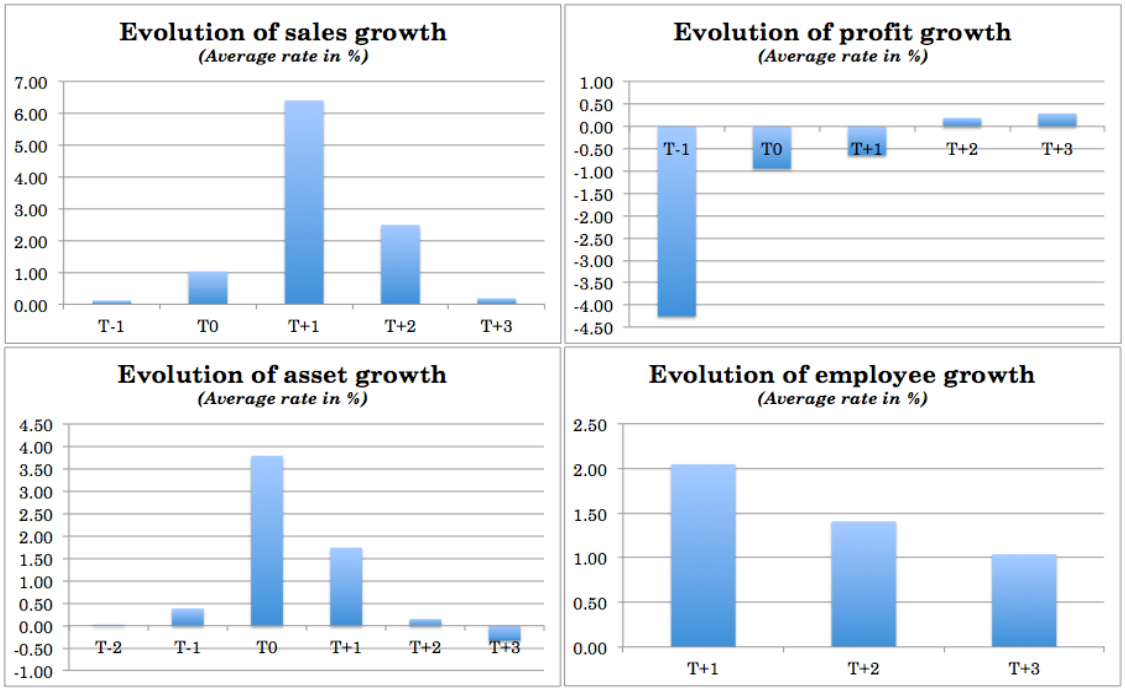
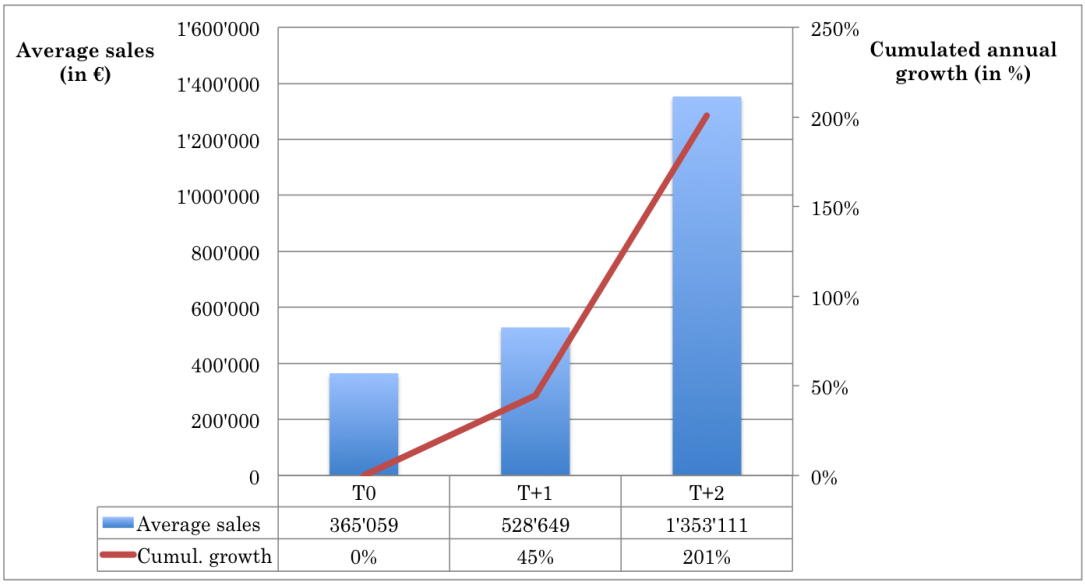
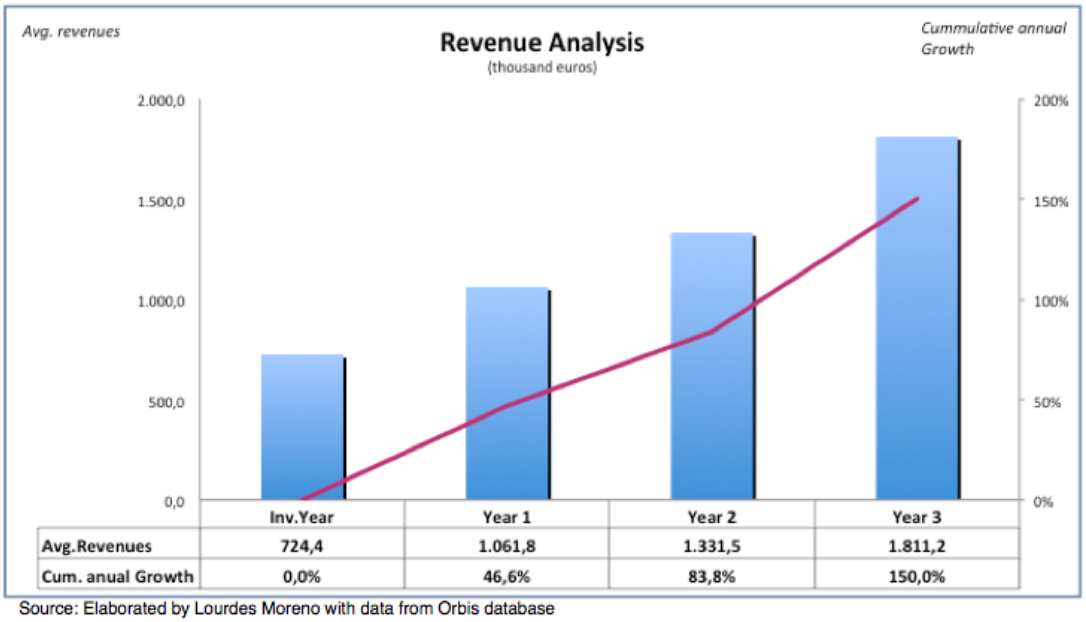


Figure 7
Comparison of average sales between equity crowdfunded firms and business angels' firms

The first graph represents the equity crowdfunded firms from our sample, the second graph the business angels' firms as found by EBAN (2014a). The first graph has been drawn based on the actual values of the firms from our sample of 337 observations having enough financial data available. A main difference with the Figure 6 is that the growth averages were calculated looking at a year at a time, which consequently didn't take into account the fact that most firms only have partial data and that years were missing for many firms from one year to another. At the opposite, for the variable represented here, this first graph only takes into account the evolution of firms for a certain range of years for which we have a *complete* overview of the data for those specific firms during that specific range. As a consequence, this first graph is being based on the observation of a fewer firms, but with a higher accuracy on the average evolution of this sub-sample – which allows for a better comparability with the angel investment's trend as seen in the second graph.

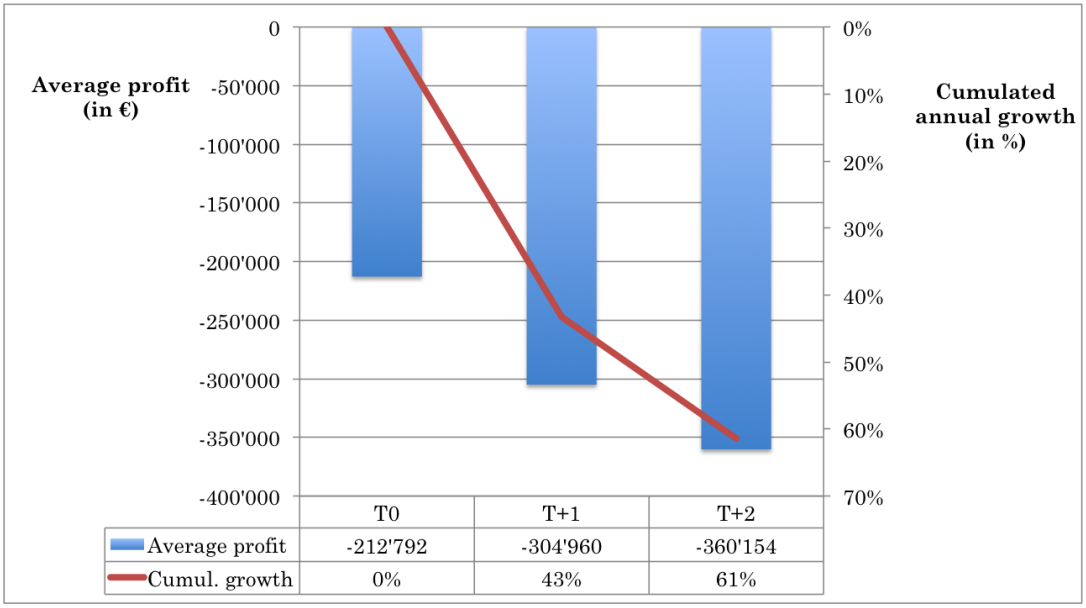


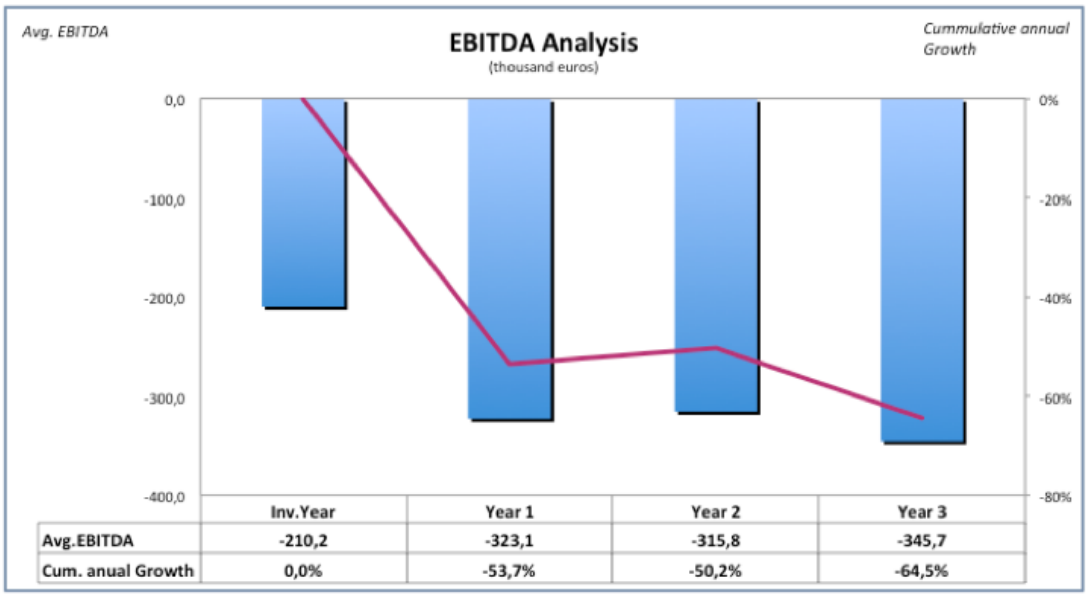


Source: Elaborated by Lourdes Moreno with data from Orbis database

Figure 7 (Continued)
Comparison of average assets between
equity crowdfunded firms and business angels' firms

The first graph represents the equity crowdfunded firms from our sample, the second graph the business angels' firms as found by EBAN (2014a). The first graph has been drawn based on the actual values of the firms from our sample of 337 observations having enough financial data available. A main difference with the Figure 6 is that the growth averages were calculated looking at a year at a time, which consequently didn't take into account the fact that most firms only have partial data and that years were missing for many firms from one year to another. At the opposite, for the variable represented here, this first graph only takes into account the evolution of firms for a certain range of years for which we have a *complete* overview of the data for those specific firms during that specific range. As a consequence, this first graph is being based on the observation of a fewer firms, but with a higher accuracy on the average evolution of this sub-sample – which allows for a better comparability with the angel investment's trend as seen in the second graph.

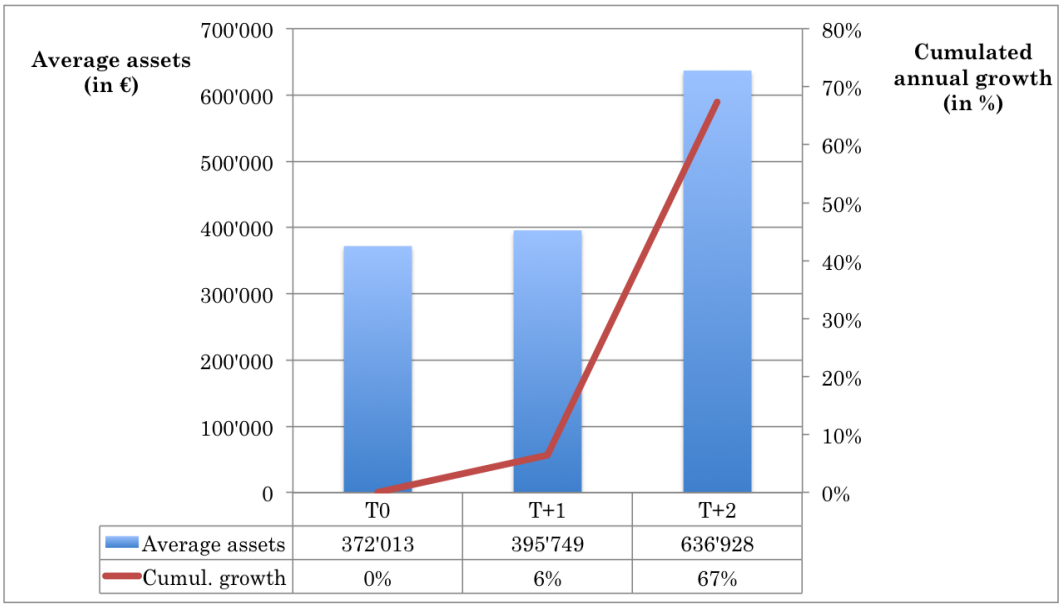


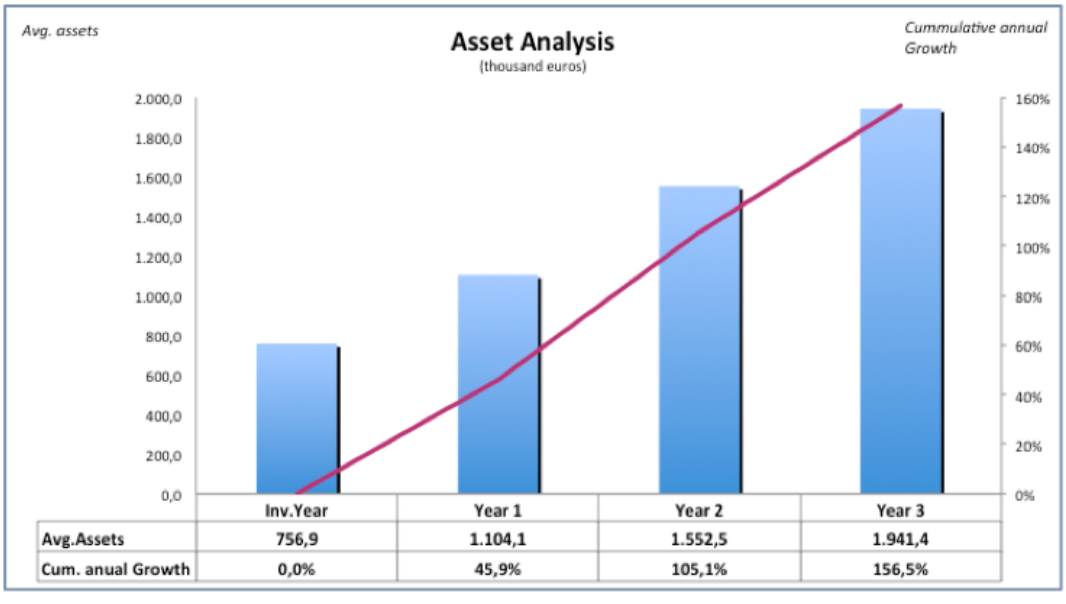


Source: Elaborated by Lourdes Moreno with data from Orbis database

Figure 7 (Continued)
Comparison of average assets between equity crowdfunded firms and business angels' firms

The first graph represents the equity crowdfunded firms from our sample, the second graph the business angels' firms as found by EBAN (2014a). The first graph has been drawn based on the actual values of the firms from our sample of 337 observations having enough financial data available. A main difference with the Figure 6 is that the growth averages were calculated looking at a year at a time, which consequently didn't take into account the fact that most firms only have partial data and that years were missing for many firms from one year to another. At the opposite, for the variable represented here, this first graph only takes into account the evolution of firms for a certain range of years for which we have a *complete* overview of the data for those specific firms during that specific range. As a consequence, this first graph is being based on the observation of a fewer firms, but with a higher accuracy on the average evolution of this sub-sample – which allows for a better comparability with the angel investment's trend as seen in the second graph.

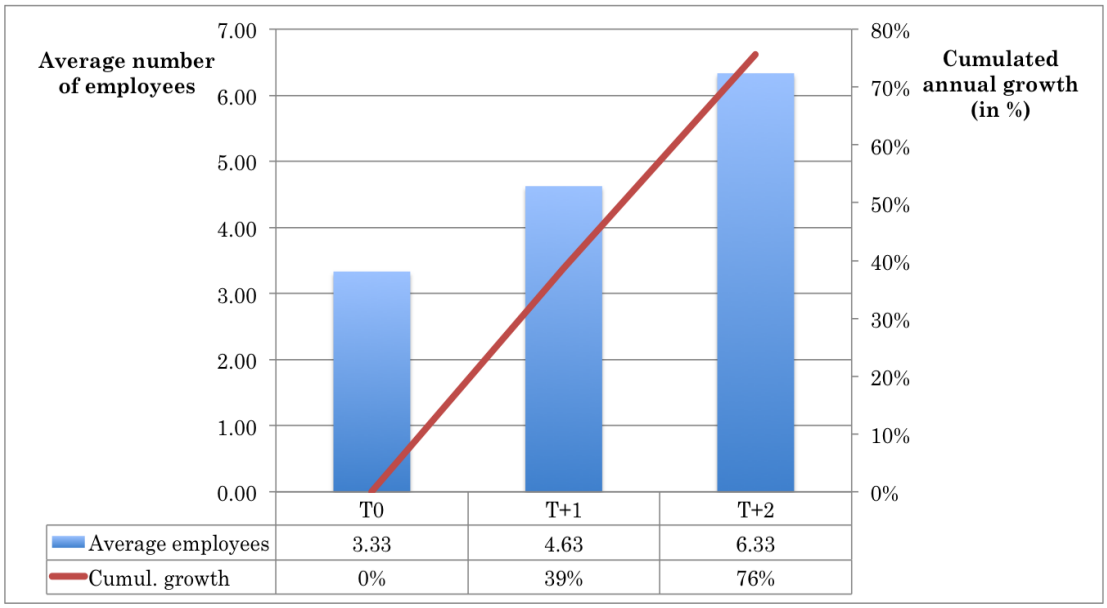


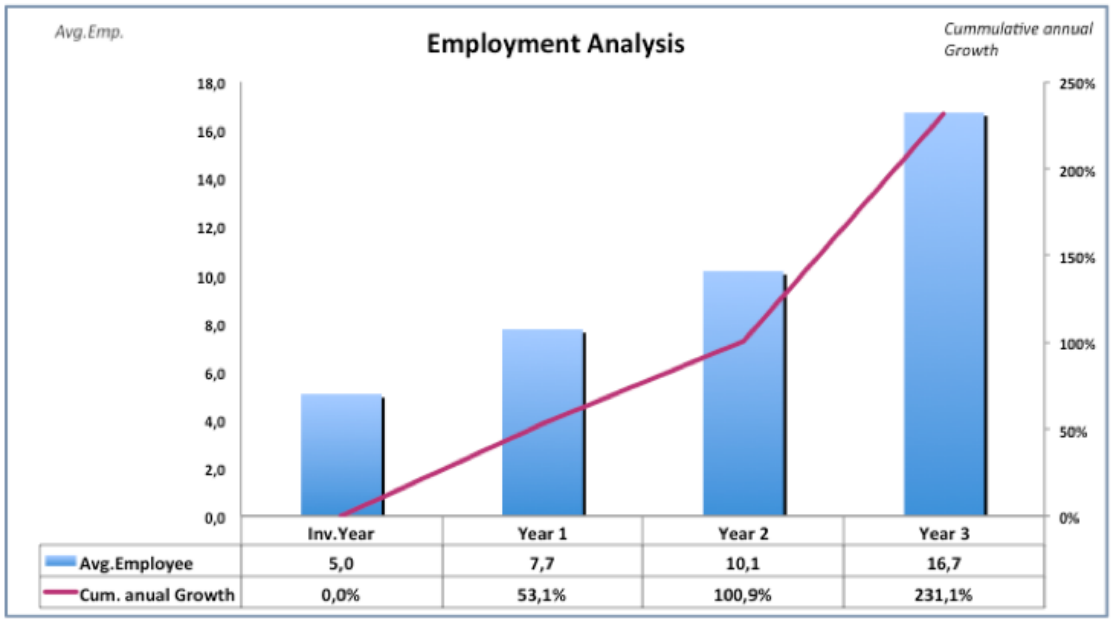


Source: Elaborated by Lourdes Moreno with data from Orbis database

Figure 7 (Continued)
Comparison of average employees between equity crowdfunded firms and business angels' firms

The first graph represents the equity crowdfunded firms from our sample, the second graph the business angels' firms as found by EBAN (2014a). The first graph has been drawn based on the actual values of the firms from our sample of 337 observations having enough financial data available. A main difference with the Figure 6 is that the growth averages were calculated looking at a year at a time, which consequently didn't take into account the fact that most firms only have partial data and that years were missing for many firms from one year to another. At the opposite, for the variable represented here, this first graph only takes into account the evolution of firms for a certain range of years for which we have a *complete* overview of the data for those specific firms during that specific range. As a consequence, this first graph is being based on the observation of a fewer firms, but with a higher accuracy on the average evolution of this sub-sample – which allows for a better comparability with the angel investment's trend as seen in the second graph.





Source: Elaborated by Lourdes Moreno with data from Orbis database

Table 6
The correlation matrix

This table shows the pairwise correlations between our variables. Pairwise correlations have been preferred to casewise correlations due to the frequent partial completeness of the data that composes our sample, and consequently to the relatively high number of omitted values that result from the calculation of casewise correlations coefficients – biasing our calculations. Additionally, despite correlation matrices are usually widely built on Pearson's correlation coefficients, this table has been designed as a combination of both Pearson's correlation coefficients and Spearman's rank correlation coefficients in order to account for our ordinal-based and binary-based variables. Significant coefficients are marked with stars, indicating significance levels of 5%, 1% and 0.1%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1) Sales growth	1.00																			
(2) Profit growth	-0.02	1.00																		
(3) Asset growth	0.02	-0.07	1.00																	
(4) Employee growth	0.13	0.31	-0.08	1.00																
(5) Post-campaign funding	0.05	0.21	-0.21	-0.04	1.00															
(6) Effect on post-funding	**0.58***	0.10	-0.02	0.24	0.01	1.00														
(7) Effect on hiring	0.34	-0.11	0.43	0.04	**-0.52*****	**0.44****	1.00													
(8) Effect on customer based	0.42	0.06	0.26	-0.05	0.01	0.18	**0.43****	1.00												
(9) Effect on portfolio	0.24	0.44	**0.72***	0.01	-0.12	**0.45****	**0.52*****	**0.46****	1.00											
(10) Effect on press attention	0.12	0.34	0.32	0.18	0.11	**0.43***	**0.41****	**0.52*****	**0.46****	1.00										
(11) Equity offered (ln)	0.04	**-0.33***	**0.21***	-0.04	-0.03	0.22	0.14	-0.07	-0.04	0.18	1.00									
(12) Raised funds (ln)	-0.05	**-0.26***	-0.01	-0.11	-0.24	**0.43***	**0.43****	0.25	**0.37***	**0.30***	**0.30*****	1.00								
(13) Investors (ln)	-0.03	0.02	-0.04	-0.01	-0.25	0.32	0.31	0.17	0.21	**0.46****	-0.05	**0.38*****	1.00							
(14) Campaign BAs	0.28	-0.01	-0.05	-0.03	0.14	0.21	0.06	0.14	-0.09	0.17	**0.28***	-0.04	0.09	1.00						
(15) Industry investors	-0.05	-0.15	-0.16	-0.06	0.08	0.15	0.17	-0.04	0.04	0.19	-0.18	-0.07	-0.06	0.15	1.00					
(16) Investor contribution	0.17	0.09	0.01	-0.02	-0.10	0.35	**0.41***	**0.33***	0.23	**0.33***	**0.36****	**0.35*****	0.12	**0.45*****	**0.21***	1.00				
(17) Founder investment	-0.03	0.05	-0.05	-0.12	0.01	-0.01	0.03	-0.02	-0.02	-0.22	**-0.43*****	0.15	0.05	0.03	-0.05	-0.17	1.00			
(18) Pre-campaign BAs	-0.29	-0.12	0.03	-0.09	0.04	-0.17	-0.06	0.04	0.10	-0.13	**-0.28***	0.11	-0.07	**-0.34****	-0.08	-0.16	-0.07	1.00		
(19) Leverage	-0.12	-0.07	-0.13	-0.10	0.32	-0.06	0.02	-0.12	-0.04	-0.01	-0.16	**-0.17***	**-0.22***	**0.26***	**0.51*****	0.21	-0.14	0.11	1.00	
(20) Firm age	-0.13	-0.23	0.01	**-0.33****	-0.22	-0.06	-0.09	-0.20	0.14	-0.19	**-0.23****	0.01	-0.05	**-0.32****	0.10	**-0.29****	0.11	-0.02	-0.02	1.00

* p<.05; ** p<.01; *** p<.001