

Equity Crowdfunding

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ABSTRACT

This paper represents the first empirical examination of factors that affect successful equity crowdfunding. We examine the impact of firms' financial roadmaps (preplanned IPOs or acquisitions), venture risk (awards, government grants and patents), human capital (networks, board structure), and level of uncertainty (amount of equity offered, disclaimers, and financial forecasts) on fundraising success. The data indicate that retaining equity and providing more detailed information about risks have the highest impact on the probability of funding success. Financial roadmaps and venture risk, by contrast, have little or no impact on funding success. We also discuss the implications for successful policy design.

JEL Classification: G21, G24, L26

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INTRODUCTION

Crowdfunding is an umbrella term used to describe an increasingly widespread form of fundraising whereby groups of people pool money, typically (very) small individual contributions, to support a particular goal. Despite increased attention by policymakers, regulators, investors, and founders, however, the mechanisms and dynamics of crowdfunding in general, and equity crowdfunding in particular, are not yet well understood (Griffin, 2012).

Equity crowdfunding is a form of financing in which entrepreneurs make an open call for funding on the Internet, hoping to attract a large group of investors. The open call and the investments take place on an online platform (such as, e.g., Crowdcube) that provides the means for the transactions (the legal groundwork, pre-selection, the ability to process financial transactions, etc.). In recent years, the equity branch of crowdfunding has become an increasingly important financing alternative for companies and especially for start-ups, and volume has doubled every year since 2009. In 2011, start-ups worldwide raised U.S. \$88 million through equity crowdfunding platforms (Crowdfunding Industry Report, 2012).¹

With the introduction of the JOBS (Jumpstart Our Business Startups) Act in the U.S., as of November 2013, the opportunity for entrepreneurs to obtain financing through equity crowdfunding in exchange for equity shares from other than so-called “accredited” investors became possible. Future funding volume via this channel is likely to increase dramatically. Note that small investors, who are often the primary support of start-ups on equity crowdfunding platforms, do not usually have the capability to extensively research and assess potential investments. In order to successfully raise money via an equity crowdfunding platform, therefore, start-ups as well as more mature companies need to find ways to clearly signal their value to small investors.

¹ The entrepreneurs in our sample who are using equity crowdfunding are mostly start-up founders (the average company age in our sample is 2.63—see Table 3). However, there are also some mature companies trying to finance investment projects via equity crowdfunding (the oldest company age in our sample is 30—see also Table 3).

Two contrasting London-based crowdfunding cases illustrate the issues discussed here in more detail. In December 2011, The Rushmore Group, a start-up that now operates three bars in London, sold 10% of its equity for £1,000,000 to 143 small investors through Crowdcube. The aspiring entrepreneurs of The Rushmore Group accomplished this feat in a little over two weeks – a remarkable success story.

A strikingly different outcome, however, is illustrated by our second example. In early April 2012, another owner and operator of a London bar, Meatballs, offered a 25% equity stake for £300,000 on Crowdcube. Two months after the start of the offering, they had raised only £4,750.

The Rushmore Group and Meatballs perform essentially the same service in the same city. Both start-ups were presented in the same fashion and on the same online platform. Why, then, did the equity offering of The Rushmore Group succeed while that of Meatballs failed? The comparison of these two cases gives rise to the central question of our paper: *Given different crowdfunding projects with similar observable characteristics, what leads (small) investors to invest in certain projects and not in others?*

It seems that potential investors try to evaluate the unobservable characteristics of ventures by interpreting the signals sent by entrepreneurs and possibly also indicators characterizing company attributes (Connelly et al., 2011). In a similar context, signaling theory (as per, e.g., Spence, 1973) has been used to explain which types of information (board characteristics, top management team characteristics, the presence of venture capitalists or angel investors, founder involvement, etc.) lead investors to invest in start-ups (Cosh, Cumming and Hughes, 2009; Brinckmann, Salomo, and Gemuenden 2011; Robb and Robinson, 2013; Cole and Sokolyk, 2012). This stream of literature has focused predominantly on the signaling of young start-ups toward angel investors or venture capitalists (e.g., Collewaert, 2011, Schvienbacher, 2007, 2008; Ahlstrom and Bruton, 2006; Jääskeläinen, Maula, and Seppä, 2006; Mäkelä and Maula, 2006). There is, however, little research on the signaling of start-ups and ventures

toward small investors, and in particular no prior paper has examined signaling in the context of equity crowdfunding (although for related work on crowd financing, see Schwienbacher and Larralde, 2010; Agrawal, Catalini and Goldfarb, 2011; Burtch, Ghose, and Wattal, 2013; and Mollick, 2014).

The way entrepreneurs of e.g. start-ups signal to (small) investors is likely to be different from the way they would signal to angels or venture capitalists. The corporate finance literature defines small investors as those who 1) invest relatively small amounts of money, and 2) receive a relatively small stake of a company in return (e.g., Malmendier and Shanthikumar, 2007). Small investors are likely to lack the financial sophistication and experience of venture capitalists, who are generally highly knowledgeable about valuing start-ups and assessing founding teams (Freear, Sohl, and Wetzel, 1994). Furthermore, relative to their investments, the costs for angel investors and venture capitalists to evaluate ideas and teams are fairly small, but they would be prohibitively high for small investors. For example, it would not make economic sense for a potential investor to spend weeks evaluating the due diligence of a venture investment that may only yield an amount equal to several days' salary.

This paper presents an initial empirical examination of which crowdfunding project signals are most likely to induce investors to commit financial resources in an equity crowdfunding context. We examine 104 offerings between October 2006 and October 2011 based on data from one of the largest equity crowdfunding platforms, ASSOBS (the Australian Small Scale Offerings Board). We believe this platform is very suitable for our purpose because of its size and its location in Australia, a country that permits equity crowdfunding.

As our first measure of funding success, we first examine whether there are significant differences between fully funded projects (who receive the full amount requested in the offering documents), and non-fully funded projects. Second, we analyze in detail the data for other facets of funding success, namely, the number of investors per project, the amount of capital raised, and the speed (length of time) of capital-raising, in an effort to understand the

value of the different signals and attributes of potential project quality. We find that founders retaining equity and providing more detailed information about risks can be interpreted as effective signals. These variables have the strongest impact on funding success and raising capital over a shorter time period. Firms that have been in business longer prior to seeking equity crowdfunding are also more likely to raise their desired level of capital more quickly. Furthermore, companies with more board members, higher levels of education (as measured by the percentage of board members holding an MBA degree), and better networks, which are interpreted as positive attributes of quality, are more likely to attract a higher number of investors. We also note that variables such as the presence of a financial roadmap that includes the type of proposed exit channel, have at most a limited impact on funding success. These may be regarded as “cheap talk” by investors, because the statements are not legally binding.

This paper adds to the limited extant empirical literature on crowd financing (e.g., Schwienbacher and Larralde, 2010; Agrawal, Catalini and Goldfarb, 2011; Burtch, Ghose, and Wattal, 2013; and Mollick, 2014), and our dataset enables us to draw conclusions about equity crowdfunding before it has gained momentum in the U.S. The evidence can thus offer important insights not only for investors and founders, but also for regulators with the recent launch of the JOBS Act.

The remainder of the paper proceeds as follows. The next sections provide a discussion of the institutional setting and a description of the data in view of the institutional setting. Thereafter, we present the theoretical background with hypotheses development. Subsequently, we present empirical evidence and outline promising avenues for further research and discuss limitations of our study. The final section summarizes our main results, discusses the policy implications, and concludes.

INSTITUTIONAL BACKGROUND OF EQUITY CROWDFUNDING

In this section, we introduce the concept of equity crowdfunding as a new form of capital formation. We first give a general outline, and highlight the salient differences between equity crowdfunding and other types such as donations. Thereafter, we provide an overview of the equity crowdfunding market.

The market data and examples described below were collected for the Crowdfunding Industry Report (2012), a general market analysis conducted in the first quarter of 2012 by Crowdsourcing.org. The survey yielded over 170 responses from a total of 452 active crowdfunding platforms. Of these, 135 submissions were comprehensive and complete, and we obtained extensive data on volume, operations, and key constituents (e.g., funders and fundraisers) for the calendar years 2009, 2010, and 2011 (for further information, see also *Forbes Magazine*, 2012).

From Crowdfunding to Equity Crowdfunding

As we noted at the outset, the umbrella term “crowdfunding” encompasses various types of fundraising that can range from collecting donations to selling equity stakes via the Internet. But a clear definition of the term has yet to be proposed. One definition comes from Hemer (2011), who defines crowdfunding as an “open call, essentially through the Internet, for the provision of financial resources either in the form of donations (without rewards), or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes.” Belleflamme, Lambert, and Schwienbacher (2013) offer a similar definition.

The focus of crowdfunding can vary greatly, both in goals, such as political campaigns (Barack Obama raised over \$100 million in small contributions during the 2008 presidential

election), charities, or art projects, and in magnitude. Donations can range from \$1 to several millions of dollars in entrepreneurial seed financing.

Politicians in the U.S., seeking new routes to stimulate the economy, have favored small business and new venture creations (see the 2011 JOBS Act, as well as the Entrepreneur Access to Capital Act). However, such efforts often require external financing, which can be difficult to obtain at the initial stage via bank loans or equity capital. Thus, companies may find themselves either unfunded, or funded with a less than preferable source of capital (see, for example, Cosh, Cumming and Hughes, 2009; Robb and Robinson, 2013; and Cole and Sokolyk, 2012). To bridge this gap, politicians are suggesting new, more modern means of capital formation.

As noted above, the variety of crowdfunding systems is broad, and ranges from equity, lending, and reward-based methods to outright donations. Among these alternatives, equity crowdfunding, where a group of small investors provides predominantly young start-ups with funding in exchange for shares in the company, may be one of the most promising ways to increase small business growth. President Obama signed the JOBS Act on April 5, 2012, legalizing equity crowdfunding by so-called “non-accredited” investors, which became effective in November 2013.

The funding process on most crowdfunding platforms is similar, regardless of the type of crowdfunding used. It begins with a fundraiser initiating a request for funding, typically by indicating what the money is needed for, and what, if anything, is offered in exchange. Potential investors can browse the offers, and, if interested, invest a small amount (generally a few dollars) toward the target amount. The crowdfunding website provides the technical platform for the exchange of funds, voting rights, etc.

The categorization of the four main types of crowdfunding (donation-based, reward-based, lending, and equity)² is based on what, if anything, investors receive for their contributions. But the legal complexity and the degree of information asymmetry between fundraiser and investor, as well as the level of payoff uncertainty, differ significantly depending on the type of crowdfunding (see Figure 1).

For example, in donation-based crowdfunding, funders donate to causes they want to support, with no expectation of monetary compensation. This can also be considered a philanthropic or sponsorship-based incentive. This form of funding is not complex from a legal standpoint. Furthermore, the degree of payoff uncertainty is less important than it would be for other types of crowdfunding, because donors presumably already have a positive opinion of the organization. An example of a donations crowdfunding platform is Fundly,³ which allows individuals and organizations to create an online fundraiser solely for the purpose of collecting donations.

In contrast, reward-based crowdfunding offers funders a non-financial benefit in exchange for their investment. A prominent example of this type of platform is Kickstarter. Kickstarter allows fundraisers to raise money by offering non-monetary rewards in return for financial support. For example, a team of product developers raised over U.S. \$10 million⁴ on Kickstarter by pre-selling an e-paper watch at a discounted price.

Lending crowdfunding is another model, where funders receive fixed periodic income and expect repayment of principal. Lending crowdfunding platforms, such as Prosper, generally

² This categorization is similar to that used by other authors. For example, Hemer (2011) distinguishes “sponsoring” as a fifth category, alongside “donations,” “pre-purchasing” (i.e., reward-based), “lending,” and “equity.” Bradford (2012) cites “donation sites,” “reward and pre-purchase sites,” “lending sites,” and “equity sites.” Within the lending sites category, he further differentiates between “sites not offering interest,” and “sites offering interest.”

³ More detailed information about the crowdfunding platforms mentioned here can be found at: <http://fundly.com/about-us>, <http://www.kickstarter.com/help/faq/kickstarter%20basics#WhatIsKick>, <http://www.prosper.com/about/>, and <http://assob.com.au/about.asp?page=1>.

⁴ As of June 30, 2012 (<http://www.kickstarter.com/projects/597507018/pebble-e-paper-watch-for-iphone-and-android>).

facilitate peer-to-peer loans. In other words, individuals receive loans directly from other individuals.

The last model is equity crowdfunding, in which investors receive some form of equity or equity-like arrangements (e.g., profit-sharing) in the venture they support. As mentioned earlier, ASSOBS is one of the most prominent equity crowdfunding platforms. It enables entrepreneurs to sell equity shares to small investors. For example, an Australian high-tech start-up sold approximately 10% of its equity on ASSOBS for AUD 630,000 (approximately U.S. \$645,000) to twenty-three small investors in 2009.

We believe that equity crowdfunding is the most relevant empirically for studying entrepreneurial signaling to small investors. This is in contrast to donations crowdfunding, where factors other than potential monetary returns are important for funders. The variety of crowdfunding types can make a meaningful comparison difficult. Therefore, information asymmetries surrounding the entrepreneur's or start-up's ability to generate future cash flows are less important in this context.

Similarly, reward-based crowdfunding is less suitable for our purpose because funders receive a product rather than a share in a company in return for their financial contributions. Funders must evaluate an entrepreneur's ability to produce and deliver a pre-purchased product, and we thus believe that reward-based crowdfunding would be more suitable empirically for a pre-purchasing study (for similar arguments, see also Belleflamme, Lambert, and Schwienbacher, 2010).

Lending crowdfunding could be somewhat appropriate for an empirical analysis of signaling, but prior research has questioned whether the "essential" signal in lending crowdfunding is a company's credit information (Lin, Prabhala, and Viswanathan, 2009). For young or start-up companies, it is important to remember that sufficient deposits may not be obtainable, and that these companies likely do not have full credit histories.

– Figure 1 about here –

The term “equity crowdfunding” has not been specifically defined in previous research. Bradford (2012) explains equity crowdfunding as a model in which funders receive an interest in the form of equity or equity-like arrangements (e.g., profit-sharing) in the ventures they fund. Belleflamme, Lambert, and Schwienbacher (2013) point out that the central difference between equity crowdfunding and traditional capital-raising is the funding process itself: Entrepreneurs make an open call for funding on a crowdfunding platform, and investors make their decisions based on the information provided therein. Moreover, the crowdfunding platform facilitates the transaction by providing a standardized investment contract and settling the payments. Belleflamme, Lambert, and Schwienbacher (2013) also note that individual equity crowdfunding investments in start-ups are generally much smaller than venture capital or angel investments.

Combining these insights, we define equity crowdfunding as follows: *Equity crowdfunding is a method of financing whereby an entrepreneur sells equity or equity-like shares in a company to a group of (small) investors through an open call for funding on Internet-based platforms.*

An Overview of the Equity Crowdfunding Market

The equity crowdfunding market is substantially influenced by the legislative environment of its home country. Furthermore, because it involves the sale of a security (Bradford, 2012), and is thus subject to various regulatory issues, equity crowdfunding has been restricted until now in many countries, including until recently the U.S.

Despite the regulatory restrictions, most legislative frameworks in OECD countries allow for certain revenue and profit-sharing arrangements. A number of platforms therefore operate in countries where the sale of voting shares through crowdfunding platforms is prohibited, but where profit-sharing is allowed. For example, the German crowdfunding platforms

Seedmatch and Innovestment facilitate the sale of silent partnerships (*Stille Beteiligung*) through crowdfunding platforms. A silent partnership is an equity-like share in a company that gives investors a predefined share of profits but no voting rights. Moreover, the sale of voting rights through crowdfunding platforms is not permitted in Germany, but the sale of silent partnerships is permitted.⁵

As of April 2012, there were a total of thirty-nine^{6,7,8} crowdfunding platforms that facilitate equity crowdfunding or revenue-sharing models, which is 7.3% of the 452 total crowdfunding sites in existence. Of these thirty-nine, six offer unconventional revenue-sharing models for investments in music (e.g., My Major Company), films (e.g., Pirate My Film and Slated), arts in general (Sokap), or mobile applications (Appbackr and AppsFunder). The remaining thirty-three enable entrepreneurs and small enterprises to offer equity or equity-like shares in their companies to a large pool of small investors through open calls for funding on the Internet.

Eleven equity crowdfunding platforms are based in the U.S. (the California Stock Exchange, Cofolio, CrowdBackers, CrowdFundingBank, Junto, MicroVentures, Revenue-Trades, Rippple, Sprigster, WealthForger, and Vim Funding), six are in France (Anaxago, Buzz Entrepreneur, Cap Angel, Finance Utile, McKenson Invest, WiSeed), three in the Netherlands (CrowdAboutNow, Symbid, WeKomenErWel), three in Germany (Innovestment, Mashup Finance, Seedmatch), two in Australia (ASSOB, Project Powerup), two in the U.K. (Crowdcube, Grow VC), one in Spain (SeedQuick), and one each in Switzerland (C-crowd),

⁵ Presumably, the German government created this loophole to enable informal and less expensive individual investment in start-ups and small and medium-sized companies without decreasing general investor protection in the equity market.

⁶ This is according to the Massolution directory of sites. Massolution is a research and advisory firm specializing in the crowd sourcing and crowdfunding industries. As an industry analyst, Massolution tracks both the supply and demand side of each segment. Massolution also edited the Crowdfunding Industry Report (2012).

⁷ Several other crowdfunding platforms, such as Sellaband, also facilitate revenue-sharing agreements. However, the focus of these sites is generally the facilitation of pre-purchasing, which generally means the pre-selling of music albums to finance their production. The pre-selling aspect is more important in these cases, and thus the author categorizes them as reward-based platforms.

⁸ Additional equity crowdfunding sites are in the process of being launched. For example, Deutsche Venture Exchange (www.devexo.com) was recently launched in Germany.

Belgium (Mymicroinvest), Canada (Podium Ventures), Ireland (SeedUps), and Finland (Venture Bonsai).

In 2011, the total funding volume of equity crowdfunding platforms was approximately U.S. \$88 million (see Figure 2). 93% of this volume was raised on five platforms: SeedUps (approximately U.S. \$40 million), ASSO B (U.S. \$19 million), Grow VC (U.S. \$11 million), Buzz Entrepreneur (U.S. \$8 million), and Crowdcube (U.S. \$4 million). Therefore, most of the volume occurred on sites based in Ireland, Australia, the U.K., and France. However, average funding amount per project varied significantly, with U.S. \$200,000 for SeedUps, AUD 339,000 (U.S. \$347,000) for ASSO B, U.S. \$7,000 for GrowVC, U.S. \$136,000 for Buzz Entrepreneur, and GBP 188,000 (U.S. \$250,000) for Crowdcube. Other platforms, such as Innovestment and Seedmatch, tend to have relatively high average project volumes.

– Figure 2 about here –

DATA SAMPLE

In this section, we introduce the ASSO B platform as the source of our data sample. ASSO B, the Australian platform, has been in business since 2006. With AUD 125 million funded as of April 2012, it is also the equity crowdfunding platform that has raised the largest total amount of capital. Since 2006, over 100 companies have listed on ASSO B, and it is thus one of only a few platforms that currently possess sufficient data for a statistically significant analysis of equity crowdfunding offerings. Moreover, ASSO B operates in a legal environment that permits equity crowdfunding. We can view a study on ASSO B as a forward-looking illustration of how equity crowdfunding may ultimately work in other regions (such as the U.S.) in the near future.

The ASSOBS Investment Process

ASSOB allows investors to browse small equity offerings of entrepreneurs and to buy shares in these ventures. During registration, potential investors are required to provide certain personal information, including how much they expect to invest, and must confirm awareness of the potential risks involved in capital investments. Once registered, investors can peruse the general information on the offerings on what is called the “Primary Board.” This includes company name, listing code, security type (e.g., ordinary shares), industry (e.g., “technology”), status of the capital-raising (e.g., “open”), total funding sought, minimum parcel size, and allocation status. If there is interest in a specific offering, the investor can then access a detailed offering overview (see Appendix C, “ASSOB Screenshots”). Table 1 summarizes the seven main sections in the overview.

If the investor wishes to proceed, the next step is to download detailed offering documents. The offering documents are prepared by the entrepreneurs in cooperation with “sponsors,” who are typically professional business advisors such as accountants, corporate advisors, business consultants, finance brokers, or lawyers.⁹ Although offering documents are prepared individually for each entrepreneur, all follow a similar structure: 1) key investment highlights, 2) milestones achieved to date, 3) letter from the managing director, 4) business model, 5) market analysis, 6) financial projections, 7) purpose of the capital-raising, 8) offering details, 9) ownership structure, and 10) descriptions of the management team and external board members.

Based on this information, an investor can then apply for shares. A 10% security deposit is required at the time of application, with the remaining 90% due when the equity offering

⁹ However, companies have no obligation to report sponsors’ names in the offering documents. In addition, some include disclaimers similar to the following: “The information contained in this publication has been prepared by or on behalf of the Company. Neither ASSOBS as the publisher nor our Sponsor, as the Class Order Operator have undertaken an independent review of the information contained in this publication.” Ideally, we would like to have a complete list of sponsors and their respective companies in order to analyze, e.g., possible certification effects.

becomes effective, which occurs when the minimum number of shares has been sold. If a minimum number is *not* sold within the prespecified time frame, the equity offering does not become effective and investors are refunded their 10% deposits. The minimum number of shares is set individually for each venture, and can differ significantly from the total funding amount requested.

After founders have successfully financed on ASSOB, they have an opportunity to trade on the secondary market (see Appendix C, screenshot 2). Unlike common stock exchanges, where there is generally frequent trading (liquidity), ASSOB is a small platform and secondary sales occur relatively infrequently. ASSOB does not quote live share prices; it only displays the asking price of shares being offered by companies on the ASSOB Offer Board or shareholders on the ASSOB Secondary Sales System. In other words, there is no fixed price, there is only what a willing buyer is prepared to pay and a willing seller is prepared to accept (similar to an order book). ASSOB also publishes trade prices for shares traded on a single day. In that way ASSOB works similarly to a stock exchange, but there are fewer trades in shares in companies profiled on the ASSOB platform.

– Table 1 about here –

Dataset Construction

Our final sample consists of 104 equity crowdfunding offerings published on ASSOB between October 2006 and October 2011. All of these offerings were either listed for approximately one year—the most common offering period on ASSOB—or fully funded beforehand. To the best of our knowledge, this unique sample is the most comprehensive of equity crowdfunding offerings collected so far.

ASSOB provided a list of all 161 offerings for which they had basic information available in their database. We were able to obtain the basic information and the offering documents

with the variables in question for 139 of those. Given that not all of the offering documents included all variables, we used a conservative approach, and only included the projects in our final sample and the multivariate analyses that had no missing values. Thus, our final sample consists of 104 projects.

According to ASSOBS, when it first launched, it did not automatically store offering information, which explains the discrepancy between available listings and the number of total listings published on the site since 2006 (see Table 2 for summary statistics). However, all offerings were displayed in the same manner on ASSOBS's offering overview site, and all follow the general structure described above, which ensures comparability.

For our sample of 104 offerings, we collected six types of data: 1) basic information for potential investors, 2) financial statement, 3) venture risk, 4) human capital (network), 5) investment history, and 6) information on the speed of investment. The descriptive statistics for all variables are in Table 3 (note that the variable names used in the empirical analyses are in italics in parentheses after the descriptions).

– Tables 2 and 3 about here –

Attributes of Quality for Potential Investors

The basic information includes the offering information from the Primary Board and the detailed company overview (see again Table 1). ASSOBS makes no changes to the entrepreneur's self-reported data except for the industry category, where it mandates that one of eight industry descriptions be applied to each venture. We use this category as a control variable for *industry fixed effects*. Furthermore, we use the date on which the offering documents were placed on ASSOBS to control for *year fixed effects*. Information on venture location (headquarter) is used to control for the fact that projects in major cities may be

perceived as more attractive than those in more rural areas, via the variable *big city fixed effects*.

Capital Market Roadmap

We also obtained information from founders about how they planned to structure the funding process. We collected two types of information: 1) most likely exit channel: IPO (*most likely exit-IPO*), trade sale (*most likely exit-trade sale*), or LBO, reverse takeover, and other (*most likely exit-other*), and 2) number of planned years to exit (*years to planned exit*). All information comes from the original offering documents.

Venture Risk

Venture risk for potential investors includes any information on patents, government grants, target funding amount, or awards included in the offering documents. All offering documents include a subsection that lists the venture's intangible assets, and most mention registered trademarks. Only a small percentage of start-ups list registered or pending patents, so we can distinguish between ventures that list patent ownership in their offering documents and those that do not (*granted patent*).

Furthermore, some ventures list government loans (*government grant*) or awards (*award*). We considered a company an award winner if at least one award was mentioned in the offering documents; being only nominated or a finalist for an award was not considered. The spectrum of awards is very broad, and ranges from a Highest Achiever Award (e.g., Sonic Grip Ltd.), to the Asia Pacific ICT Alliance Awards: Tools & Infrastructure Category (Incriptus Ltd), to the Emerging Exporter Award 2006 for South East Queensland (Bantix). However, only eighteen companies mentioned awards in their offering documents, and we therefore did not weight the awards with regard to their importance. All other information was

obtained from the original offering documents, and all variables are designed as dummy variables.

Human Capital (Network)

We obtained management team information, such as composition and qualifications, from the offering documents. Every offering document includes short biographies of executive directors, non-executive directors, and, if applicable, key employees. We created a list of all 376 directors (board members) from the 104 offering documents, and noted for each the director type (e.g., executive versus non-executive), and whether the director holds an MBA. We also calculated the total number of board members (*# board*), percentage of non-executive directors on a company's board (*% non-executive board*), number of staff employed (*# staff*), percentage of directors holding an MBA (*% board MBA*), and number of years a company has been in business at the time of offering (*years in business*). All came from the detailed company overview page.

Level of Uncertainty

Information on the level of uncertainty also comes from the offering documents. Financial forecasts for potential investors generally refer to sales, EBITDA, EBIT, and net earnings forecasts. But there is no standard way to present forecasting information on ASSOB, and companies can decide whether to provide forecasts, and which items to provide if they do. Companies that opt not to provide a forecast can integrate a standard legal disclaimer¹⁰ into

¹⁰ The disclaimer reads: "The Directors have considered the matters set out in ASIC Regulatory Guide 130: Prospective Financial Information, and believe that they do not have a reasonable basis to forecast future earnings because the operations of the Company are inherently uncertain. Any forecast or projection would necessarily contain such a broad range of potential outcomes and possibilities that it would be unreliable and, for that reason, the Directors have decided not to include any financial projections or forecasts."

their documents. This generally states that the directors believe there is no reasonable basis to forecast future earnings because the operations of the company are inherently uncertain.

We calculate two dummy variables from the disclosure policy: 1) a cross term indicating that the venture has not provided a financial forecast but has included a disclaimer (*disclaimer x no financial forecast*), and 2) a cross term indicating that the venture has not provided a financial forecast or a disclaimer (*no disclaimer x no financial forecast*). Furthermore, we calculate the percentage offered to investors (*equity offering*) and the number of intended financing rounds (*intended number of rounds*).

Investment History

For each investment opportunity, ASSOBS provides information on the total number of shares purchased, as well as the total amount of AUD invested (*funding amount*) and by how many investors (*number of investors*) within its investment history. Of the 104 crowdfunding projects, 67 received funding, although not necessarily full funding. The total amount of funding received by all projects combined was AUD 33.1 million, which is an average of AUD 490,000 for each venture. The maximum funding amount was AUD 3.5 million (see Table 3).

Speed of Investment

As mentioned above, founders can choose the number of financing rounds they engage in (up to three). However, we collect detailed information only on the first round, because the number of observations for the second and third rounds is too low to be meaningful. We control for the number of planned rounds (*intended number of rounds*). We are left in the first round with ninety-two projects, of which nineteen successfully completed their first financing round, i.e., all shares offered were sold. Given a successful completion, we can calculate the

number of days from the opening day for investors until the day the targeted amount was raised (*duration of first financing round*). Projects that were only partially funded or not funded at all are delisted by ASSOBS after one year. Furthermore, we obtain information on parcel size in the first financing round (*parcel size*), and the requested share price (*share price*).

THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

In this section, we develop hypotheses about which signals and information in the offering documents impact funding success in equity crowdfunding most effectively. The first subsection focuses on the various facets of funding success. We define and use three different success measures: 1) whether and how fully funded projects differ from non-fully funded projects, 2) how the number of investors differs, and 3) absolute funding amount. The second subsection describes the determinants of the speed of investing, which we consider as a complementary dimension of funding success. The subsequent section will analyze the extent to which these hypotheses are supported by the empirical data available from ASSOBS.

What Drives the Funding Success of Venture Proposals?

Similarly to VC financing, with ventures, there is also a concern about information asymmetries between investors and entrepreneurs (Connelly et al., 2011). Naturally, an entrepreneur is assumed to be more knowledgeable about a venture's true value than a potential investor (see, for example, Michael, 2009; Backes-Gellner and Werner, 2007; and Busenitz, Fiet, and Moesel, 2005). This is even more pronounced in an equity crowdfunding context, however, because small investors are less likely to have experience evaluating investment opportunities. In an extreme case, one could argue that potential investors may not

be able to determine anything concrete about company value, and, as a result, even potentially high-performing ventures may not receive funding.

Thus, we observe the problem of adverse selection in entrepreneurial finance as noted in Leland and Pyle (1977), who state that “where substantial information asymmetries exist and where the supply of poor projects is large relative to the supply of good projects, venture capital markets may fail to exist” (p. 371). For ventures on equity crowdfunding platforms, these information asymmetries are comparably higher, because gathering information, monitoring progress, and providing input are particularly important for early-stage investors, but the costs of these activities are sensitive to distance (see Agrawal, Catalini, and Goldfarb, 2011).

As we noted earlier, entrepreneurs have been able to raise substantial amounts of funding through platforms such as ASSOB, SeedUps, or Crowdcube. Therefore, funders have seemingly been able to infer the quality of listed ventures on platforms by interpreting the information provided therein. In this sense, funders seem to regard at least some of the information as attributes of quality or signals, because not all ventures obtain financing. These may derive, for example, from the positive, unobservable qualities of the entrepreneurs (Spence, 1973, 2002; Busenitz, Fiet, and Moesel, 2005). As Stuart, Hoang, and Hybels (1999) state, “[B]ecause the quality of young companies often cannot be observed directly, evaluators must appraise the company based on observable attributes that are thought to covary with its underlying but unknown quality. Resource holders therefore assess value by estimating the conditional probability that a firm will succeed, given a set of observable characteristics of the organization” (p. 317).

For funders, one unobservable quality may be the ability of a venture to earn a certain level of cash flows in the future (see Ross, 1978). If we assume that funders and entrepreneurs act rationally, the latter will try to signal to the former (see Michael, 2009). In this context, Grossman (1981) and Milgrom (1981) show theoretically that funders will infer from

entrepreneurs who fail to provide information that their ventures are of below-average quality. This creates a strong incentive, however, to provide information, which can lead to an “unraveling effect,” where all firms signal in equilibrium.¹¹

Naturally, not all the information on the quality of a venture will ultimately be an effective *signal* to help overcome the problem of information asymmetry. Rather, some information can better be understood as “cheap talk.” Effective signals share two characteristics: observability and signal cost. Observability is the extent to which the signal is noticed and understood by investors; signal cost must be structured so that dishonest signals are not rewarded, and so the cost of *producing* the signal doesn’t outweigh its benefits (see, e.g., Connelly et al., 2011).

In our context, investors will likely be able to use the attributes of quality provided by entrepreneurs in the offering documents (e.g., the capital market roadmap, venture risk, board experience (network), and level of uncertainty) in their decision making. Attributes of quality are naturally of different value for different investors in the formation of their buying decisions, and can be categorized as 1) “cheap talk” (information that is generally “costless” for sellers, and does not directly affect future payoffs), such as, for example, the intended capital market roadmap, 2) established facts (inalterable attributes that cannot be chosen by founders at the offering date), such as venture risk and human capital (networks), and 3) effective signals, such as the level of uncertainty, which can be directly established by founders at the offering date.

¹¹ Neither paper specifically addresses start-ups or young ventures, however. Instead, both papers develop theoretical models and show that the competitive market provides adequate incentives for sellers to reveal information to buyers (Michael, 2009). Grossman (1981) analyzes the informational role of warranties and private disclosures about product quality. Milgrom (1981) develops an abstract model.

Cheap Talk

Entrepreneurs typically provide outlooks for intended future exit channels in the offering documents. In the past, IPOs and trade sales were the highest-returning exit channels for investors, but they also tend to be riskier in terms of realization (see, for example, Black and Gilson, 1998; Nahata, 2008; and Cumming and Johan, 2009). Timing is particularly important for IPOs, because IPO markets tend to dry up during, for example, financial crises, and this can create substantial timing risk for investors. Nevertheless, the presented exit channel in the offering document is not obligatory, and is of course subject to change in the future. No guarantee or legal claim exists, so, for that reason, its value is limited, and it can be regarded more as “cheap talk” than a credible promise.

Simultaneously, along with the proposed exit channel, founders often state the number of years to planned exit. Admittedly, the value of this information as well as its direction of action is ambiguous. Liquidity preference theory would argue for short durations, however, because they do not tie up capital as long (Keynes, 1936); a low number of years to planned exit could also be interpreted as a signal of relatively high confidence. Presumably, entrepreneurs who plan to exit within one or two years have more straightforward roadmaps than those who plan to exit in seven years.

Given such arguments, it seems investors do not value the number of planned years to exit as a meaningful signal. It may be that grandstanding and liquidity effects are balancing out the fact that it generally requires a certain amount of lead time to build a sustainable company.¹² Alternatively, potential investors may simply be considering the number of planned years to exit as “cheap talk” because it is not binding. We thus propose our first hypothesis:

¹² Gompers (1996), for example, notes that founders of young start-ups, similarly to new venture capital firms, may have an incentive to grandstand, and they may be more focused on taking their companies public than on maximizing company value.

Hypothesis 1: *“Cheap talk” is unrelated to funding success on equity crowdfunding platforms.*

Established Facts

The first set of variables, which can be regarded as established facts, are proxies to assess the venture risk of a proposal. In the venture capital literature, Davila, Foster, and Gupta (2003) argue that entrepreneurs may also signal unobservable characteristics of their start-ups by affiliating themselves with third parties such as venture capitalists. Likewise, Gulati and Higgins (2003) and Megginson and Weiss (1991) show that ties to prominent venture capitalists or investment banks are useful in an IPO context, and can also act as a proxy for success chances. Hsu (2004) shows that entrepreneurs are therefore willing to pay for venture capital affiliation, because they believe venture capitalists can beget a reputation effect that will facilitate growth (Davila, Foster and Gupta, 2003). Potential investors or employees can also observe which start-ups receive venture capital funding. Moreover, undergoing a lengthy due diligence process can be costly.

In an equity crowdfunding context, however, where founders seek seed financing, entrepreneurs are generally not affiliated with venture capitalists prior to the offering. Following a similar rationale, we argue that patents and awards are likely to correlate negatively with venture risk (see Hsu and Ziedonis, 2007). Patent registration can be expensive, due to registration fees, legal advice, etc., but a venture’s ownership of a registered patent at the time of offering shows that an entrepreneur has already incurred the costs. Moreover, patent ownership can protect against the risk of future market entrants, so it could be interpreted as a positive signal of a company’s strength and quality.

We also find that third-party endorsements are likely to have a positive effect on attractiveness to investors. In a similar line of reasoning, government grants and the targeted

funding amount on the equity crowdfunding platform can provide information about the current and (in the case of a *full* funding) future available financing. Both sources of corporate financing can reduce venture risk to the extent that positive NPV projects fail due to funding constraints. We therefore propose our second hypothesis:

Hypothesis 2: *Venture risk is negatively correlated with funding success on equity crowdfunding platforms.*

In addition to venture risk, the human capital (educational background) of entrepreneurs can also be viewed as a useful attribute of the quality of otherwise unobservable entrepreneurial productivity.

Backes-Gellner and Werner (2007) examine this angle empirically, and find that educational signals are often viewed as signs of *innovation*. Similarly, Levie and Gimmon (2008) argue that educational degrees are an effective signal about first-time *high-technology* venture founders. However, neither set of authors examines the effectiveness of educational signals for entrepreneurs in pure start-ups or young ventures.

As an attribute of the unobservable management ability (human capital) of an entrepreneur, we choose an MBA degree as a proxy for education. It is observable to (small) investors (e.g., through biographies in the offering documents), and is costly to acquire (both in tuition and in time). Furthermore, it can only be acquired by qualified candidates, and MBA graduates are often part of exclusive networks. Given that most MBA programs require applicants to have work experience, an MBA degree also denotes some professional experience and maturity. Thus, we expect that MBA graduates will tend to be more effective in attracting financing than others, due to, e.g., their broader network.

A further attribute of quality for investors could be potential networks, which could be proxied for by the number of staff and especially board members. We note that, on the one hand, a high number of staff suggests either profitability (the entrepreneur is able to pay

employees from the venture's revenues), or a willingness to invest personal wealth (i.e., paying staff out of one's own pocket). Common sense suggests the latter is more likely for a venture prior to its seed financing round. A high number of staff also suggests that an entrepreneur has been able to convince employees of the firm's potential. Moreover, a higher number of employees may imply that a company has a higher profile.

Another important attribute is a higher number of board members, which would indicate a broader network and a higher number of incentivized people with generally varied backgrounds who are striving for the venture's success (a qualitative assessment that can be made by reading the short bios in the offering documents). Board members have also usually been granted external options, and therefore face opportunity costs.

The endorsement of non-executive directors could also be argued to have a positive *signaling* effect. Non-executive directors are often respected industry veterans who act as mentors to ventures. They can add to the venture's legitimacy, and can introduce entrepreneurs to potential new stakeholders (such as clients), thus broadening the network. Experienced managers usually have only a limited amount of time to devote to such efforts. Thus, the support of a non-executive director may be viewed as a positive attribute of quality that the entrepreneurs have successfully undergone some kind of due diligence process.

A useful complementary attribute of quality for (small) investors could be the mix of entrepreneurial experience and financial commitment (Prasad, Bruton, and Vozikis, 2000; Conti, Thursby, and Rothaermel, 2010). Prasad, Bruton, and Vozikis (2000), building on Leland and Pyle (1977), argue that the percentage of personal wealth an entrepreneur has invested in a company should be a positive attribute of quality, and indicative of an entrepreneur's experience and commitment. Unfortunately, the percentage of personal wealth invested in a venture and the experience of an entrepreneur are not obvious to investors on equity crowdfunding platforms. But there are different possible proxies. For example, potential funders can interpret the number of years that a venture has been in business as an

indicator of how much time and money an entrepreneur has devoted to building the venture and gained in experience.

Hypothesis 3: *Higher levels of education and experience (human capital), as well as broader potential networks, positively affect funding success on equity crowdfunding platforms.*

Level of Uncertainty

The level of uncertainty about future prospects of proposed projects is a highly valuable signal for investors. Entrepreneurs can effectively signal unobservable characteristics of their venture by the amount of equity they retain after an offering. The rationale is that retaining ownership interests is costly, so entrepreneurs will only retain a “substantial” stake if they expect future cash flows to be high relative to current firm value. A substantial stake in the venture can also help better align the interests of funders and founders. Thus, the amount of equity offered is a costly and observable signal, set actively by founders.

Founders can also choose to provide earnings forecasts (which are negatively correlated with the level of uncertainty). This step is optional on ASSOB in Australia, so we posit that earnings forecasts are effective signals that can proxy for the level of uncertainty of a venture listed on ASSOB (see Michael, 2009, for a related study on franchise entrepreneurs). Australian law requires a “reasonable basis to forecast future earnings.”¹³ If a reasonable basis for forecasts exists, it is usually explicitly stated in the offering document. Earnings statements—such as EBIT or sales estimates—are therefore clearly observable to investors. We could also argue that the danger of legal prosecution makes such forecasts relatively expensive, which further strengthens the credibility of the signal.

¹³ ASIC Regulatory Guide 170: Prospective Financial Information.

Moreover, if entrepreneurs do not have a reasonable basis for forecasts, they can choose not to report financial predictions. But they still have the opportunity to include a disclaimer in the offering document that will describe the risks in more detail and explain the lack of forecasts, therefore reducing the level of uncertainty. This provides a more precise overview of the risks, and it can help lessen information ambiguity because investors will have a better basis on which to form earnings expectations, commonly favored by investors (Epstein and Schneider, 2008). We posit that including a disclaimer will help increase funding success, because it helps clarify expectations about ventures' future prospects. On the other hand, offering no disclaimer and no financial forecasts increases the level of uncertainty.

Hypothesis 4: *The level of uncertainty negatively affects funding success on equity crowdfunding platforms.*

Another control variable in the funding process is the number of intended financing rounds, which typically vary from one to three, and is known to investors. Founders who choose to engage in only one financing round may be forgoing two advantages: 1) the benefits of the announcement that they have successfully completed their first round, which is viewed positively by investors, and 2) an equal or (in most cases) higher share price in further rounds. These advantages can create a kind of group dynamic for interested investors who observe that only a few parcels are left, which can increase the likelihood of investing.

What Drives the Speed of Investment?

Since Penrose's (1959) original "theory of the growth of the firm," where managerial resources were found to play a pivotal role, several factors have been suggested that can affect growth. Some (such as environmental carrying capacity or market forces) are external to the organization. Others (capabilities, culture, strategy etc.) are internal, and have been addressed from the resource-based view of the firm. Within the field of entrepreneurship, previous

research has examined additional factors, and found that funding events are relevant to the evolution of growth. This is especially important for “high-growth” ventures, because they often need to rely on timely execution to take advantage of early-mover advantages; delayed execution may thus have significantly negative consequences for their success.

Given that we regard *speed of investment* as an important factor in funding success, we need to determine which factors explain the duration of the first financing round. On the ASSOB platform, management has several degrees of freedom to structure their financing process: *target amount*, *number of financing rounds*, *parcel size*, and *share price*. They must first define their target amount and denote the number of rounds (one to three) they wish to engage in (see Appendix C, screenshot 1, for two examples: Biodental Remein Ltd., which engaged in three rounds, and Aware Environment, which engaged in two).

Next, they define parcel size for each round, which means that only whole number parcel shares may be purchased by investors within the total amount available per round. To find out whether parcels are still available, on the ASSOB platform, one must check the status of the “red squares” (see again Appendix C, screenshot 1). Each red square represents a completed capital-raising parcel (for example, note that two parcels were raised by Female Friendly Limited). Grey squares represent available parcels. At the time of the screen shot, Biodental Remein Ltd. had completely filled the first two rows of red squares, which means it had successfully completed two rounds of capital-raising via ASSOB, and the remaining third round was still open. The status of individual ASSOB offerings is continually updated, so there is always complete transparency about an offering’s status. And, as we mentioned earlier, ventures that do not reach their minimum threshold for investment after one year are delisted. The last regulatory item for founders is the share price in each financing round.

Given that (potential) investors can observe all previous investments made, early investments are likely to be of higher importance than later ones (see Appendix C, screenshot 1). Under this circumstance, investors do not exclusively base their buying decisions on

fundamentals, which is known as the impresario hypothesis (see Ritter, 1998). Instead, the price formation of, e.g., Investor 1 is driven partly by what Investor 1 thinks Investor 2 is basing his price formation on. In that way, if parcels are sold soon after listing, this could create the appearance of excess demand. Subsequently, other investors may opt to invest because of the perceived demand, and not solely because of the information in the offering documents.

Similarly to our previous reasoning for the different attributes of quality, we argue that the direction of action is the same, and that the level of uncertainty, as an effective signal, has the highest impact on speed of capital allocation when compared to “cheap talk” and established facts. We use parcel size and share price as proxies for the structure of the financing process as controlling variables only, and formulate the following hypothesis:

Hypothesis 5: *Human capital and broader potential networks increase, and higher levels of uncertainty decrease, the speed of capital allocation on equity crowdfunding platforms.*

EMPIRICAL ANALYSES

In our first analysis, we focus on a univariate setting. For our first success measure, we test differences in means for the possible determinants of fully funded and non-fully funded investment projects (see Table 4). In subsequent analyses, we use multivariate settings to include possible determinants and control factors simultaneously.

More precisely, in the second analysis, we use zero-inflated negative binomial regressions to investigate which factors influence the number of funders (see Table 5). Given that a substantial share of projects did not attract any investors, we chose this method to control for factors that potentially affect whether a project will ultimately be funded at all, before analyzing in more detail which factors influence the actual number of funders. In particular,

we control for the possibility that projects initiated during the earlier days of the platform's existence had a lower probability of attracting investors because crowdfunding was not yet an established investment channel. Thus, projects that went unfunded in the past on ASSOBS may not have had undesirable characteristics, but there may have been greater investor inexperience with this type of fundraising platform. Moreover, in addition to the number of investors, we use OLS regressions to analyze which factors drive absolute funding amount (see Table 6). We winsorize non-dummy variables at the 99% level to control for potential outliers influencing the results, but find no evidence (see specification 4 in Table 6). In our final analysis, we use survival analysis (see Table 7) to examine factors that affect the speed of investment as another success measure. More specifically, we use exponential hazard models¹⁴ to identify which factors reduce the time to completion of the first financing round.

Table 4 gives the results of our first broad analysis. We explore whether and how fully funded projects differ from non-fully funded projects in terms of the described attributes of quality. Because we only use a univariate analysis, i.e., testing the equality of means between the two groups (with equal or unequal variances, respectively), we use the full sample, which contains basic information as well as offering documents (i.e., 139 projects, as explained in the data construction section).

Within the larger sample of 139 projects, we find missing values for individual variables. We thus exclude these cases from our more detailed analyses in order to keep the results comparable. In subsequent analyses, we use the reduced sample of 104 projects, where all projects offer complete information for all attributes of quality. Most importantly, Table 4 shows that higher equity offerings and lower information levels for risks, combined with the omission of a future outlook, are associated with non-fully funded projects (rows 14 and 16), which supports our Hypothesis 1. Furthermore, we find that the variables "proposed exit

¹⁴ We use the Akaike Information Criterion (AIC) to select the best-fitting model, which in our case is the exponential specification (Cleves, Gould, and Gutierrez, 2008).

channel” and “shorter time horizons until planned exit” are statistically different for fully and non-fully funded projects. This is somewhat surprising, because we regard those statements as examples of “cheap talk,” rather than credible signals (rows 2 and 4).

We also find that smaller projects are more likely to be financed. And, counterintuitively, award-winning companies tended not to receive full funding (rows 5 and 6). However, we find no initial support for our Hypothesis 3, regarding the value of human capital and potential networks. We do not find a significant difference between fully funded and non-fully funded projects, although our results are derived without controlling for simultaneous effects.

– Table 4 about here –

We now turn to a more detailed analysis, as described above, that also uses more sophisticated multivariate analyses. The first set of quality attributes we study are those summarized under the capital market roadmap. We use the IPO exit channel as our reference category, and find that it attracts significantly more investors than the trade sales exit channel (see rows 3 in Table 5). We find no evidence for a relationship between proposed exit channel and absolute funding amount (see Table 6). This does not provide conclusive evidence that funders regard the exit channel as a valuable signal. Simultaneously, with the proposed exit channel, founders can also state the number of planned years to exit. But, likewise, we find no empirical evidence that this signal either influences the number of investors or the absolute funding amount. These results provide support for our Hypothesis 1, as well as for the notion that investors regard financial roadmaps more as “cheap talk” than as effective signals.

Under Hypothesis 2, we claim that funders can base their investment decisions on facts that shed light on venture risk (besides industry-specific risk, which is incorporated into the analyses via *industry fixed effects*). Surprisingly, we do not find that any of these proxies for venture risk result in a higher number of funders or in higher funding amounts, however (see rows 5-8, Tables 5 and 6).

Next, we focus on the impact of human capital and potential networks on funding success (Hypothesis 3). In line with Hypothesis 3, we find statistically significant empirical evidence that the percentage of MBA graduates among executive board members of a founding team increases the number of investors. More precisely, a 1-percentage point increase in board members who hold MBAs increased the expected number of investors by a factor of 1.017, holding all other variables constant (row 11, Table 5).¹⁵ In contrast, we found no impact on total funding amount (row 11, Table 6).

Additionally, we find that a higher number of board members has a positive and statistically significant impact on funding success for both higher expected number of investors, and for higher funding amount. As Table 5 shows, an additional member on the board increases the expected number of investors by a factor of 1.408 ($\exp(0.342)$) (see row 9, Table 5), and increases expected total funding amount by 119,000 AUD ($0.119 \times 1,000,000$ AUD) (see row 9, Table 6). However, we find no statistically significant impact on funding success for the number of staff or non-executive directors (compare rows 10 and 12 in Tables 5 and 6). Similarly, we find no statistically significant impact from stage of maturity (proxied for by years in business) on the number of investors or realized funding amount (compare row 13 in Tables 5 and 6).

We summarize our empirical findings as at least weak support for a positive relationship between human capital and potential networks and funding success, as posited by Hypothesis 3. As we described in the previous section, we expect level of uncertainty to be the most relevant piece of information for potential investors. As proposed under Hypothesis 4, we observe a negative and significant influence for the percentage of offered equity with respect to the expected number of investors (row 14, Table 5). We find that a 1-percentage point increase in equity offered decreases the expected number of investors by a factor of 0.982161

¹⁵ The expected number of investors changes by the factor of $\exp(\text{coefficient})$ for each unit change in the respective predictor, holding all other variables constant. In this case, the expected number of funders increases by a factor of $\exp(0.017) = 1.01714532$.

(exp (-0.018)). This finding is in line with Downes and Henkel (1982), who provide empirical evidence that entrepreneurial ownership is an effective signal in an IPO context.

Hypothesis 4 is also supported by our finding of a statistically significant 210,000 AUD decrease in total funding amount, where no disclaimer and no financial forecasts are provided, compared to ventures that include a financial forecast (see row 16, Table 6). We interpret this to mean there is signaling value in financial forecasts, because the impact of this investment is larger when information asymmetries are high (see Hsu and Ziedonis, 2013, for a similar assessment of signal quality).

– Tables 5 and 6 about here –

Finally, and analogously to our previous analyses, we explore which attribute of quality impacts funding success, now measured by speed of capital allocation. We again find that one of the most important factors in shorter financing durations is a venture's level of uncertainty (supporting Hypothesis 5). We find that higher percentages of offered equity and less information provided by founders (with no disclaimer and no financial forecasts) are associated with later expected completions of the first financing round (rows 14 and 16, Table 7).

Interestingly, as we noted in the previous subsection, the number of years a venture has been in business does not significantly influence the expected number of investors or total funding amount. But we find here that more mature ventures have a higher likelihood of closing their first financing round earlier (row 13, Table 7). Moreover, a higher number of intended rounds leads to faster completion of the first financing round (row 17, Table 7).

– Table 7 about here –

In summary, we find strong empirical evidence that effective signals play an important role for investors, especially with respect to the level of uncertainty. The relationships among the aforementioned factors and the number of investors, total funding amount, and speed of the first financing round become apparent on an aggregate project level. But further analysis

would be needed to understand the other side of the equation, i.e., individual investors' decision-making processes. In particular, we are interested in determining which projects will be perceived as suitable investment alternatives from an individual investor's viewpoint.

LIMITATIONS AND AVENUES FOR FURTHER RESEARCH

Research on equity crowdfunding has only recently begun, and naturally many interesting questions remain unanswered. In the following, we give a summary of other promising research ideas not covered here.

1) We know very little about what drives entrepreneurs to equity crowdfunding over other financing sources. One reason may be an especially promising investment idea with the potential to inspire a large number of investors. Entrepreneurs should also like and have the skills to handle direct communications with "micro" investors; they should be using social networks such as Twitter and Facebook actively in their marketing strategies. On the other hand, one could argue that equity crowdfunding is still a funding source of last resort, and that more promising projects may have already received, e.g., venture capital.

2) Funders may be motivated by non-monetary rewards, which are dominant effects in patronage and reward-based crowdfunding (see Mollick, 2014). Unfortunately, we could not find appropriate proxies for non-monetary rewards in the offering documents, but we could consider, e.g., classifying investment proposals among dimensions of sustainability.

3) As more data on this investing platform becomes widely available, it may be promising to explore such research questions as which regulatory standards on different platforms foster funding success? And are platform standards related to future project performance? It would also be interesting to conduct a thorough comparison of equity crowdfunded start-ups and venture capital-funded start-ups in terms of future performance and business risk.

4) As previously described, ASSOBS offers investors the opportunity to sell their shares after a company has received funding (secondary market). Despite the low liquidity, the dynamics in this secondary market are highly interesting but largely unknown thus far, especially whether new investors can be attracted, or whether original shareholders tend to buy shares. It would also be interesting to determine whether price development is a good proxy for future company success.

5) We also believe that obtaining information on 1) the length of time investors take to screen the market and thus the platform before they invest in a project, and 2) whether the final choice set is restricted to a specific industry, time period, investment pattern, or region would further contribute to our understanding of crowdfunding dynamics. While these questions are clearly beyond the scope of this paper, our initial inspection of the available ASSOBS data for the 104 projects shows that approximately 53% of investors invest in projects that are headquartered in their state of residence. This suggests that geographic distance between investors and entrepreneurs remains an important factor in investor decision-making. Early-stage projects are particularly susceptible, because long distances can create barriers to acquiring information and can increase monitoring costs. Therefore, further analyses are necessary to understand whether crowdfunding platforms can indeed eliminate these distance-related economic frictions (see Agrawal, Catalini and Goldfarb, 2011).

6) Fourth, as more data become available it seems promising to investigate whether the effects we find differ for small and large firms, young and old, or technology-based versus non-technology-based firms, as per Stuart, Hoang, and Hybel (1999). Unfortunately, we only have 104 projects and 16 explanatory variables, plus *year*-, *industry*-, and *big city fixed effects* as controls. Thus, we are rather limited in the extent to which we can split our sample into subsamples, because some of our models would no longer be solvable. For the same reason, we cannot use interaction terms along these groups of firms and the sixteen explanatory variables.

7) Finally, it is possible that investors on crowdfunding platforms may be considering other, unobservable, characteristics in their investment decisions, in addition to the quality attributes we analyze here. It could be very insightful to ask investors to explicate their investment reasons further in order to learn more about the market dynamics.

CONCLUSION

This paper is the first to conduct an empirical examination of the effectiveness of different attributes of quality taken from offering documents used by entrepreneurs to induce (small) investors to commit financial resources in an equity crowdfunding context. The data highlight how important the level of uncertainty is for potential investors, such as amount of equity offered and whether financial forecasts are provided as well as human capital (measured by percentage with MBA degrees), and network effects (measured by number of board members) to form investment decisions. In contrast, we find that financial roadmaps (such as a preplanned IPO, or acquisition exit strategies) are generally of minor importance, because they tend to be regarded more as “cheap talk” than as effective signals. We also found, somewhat surprisingly, that venture risk (including patents and government grants), had little or no significant impact on funding success.

The findings have interesting implications for both practitioners and policymakers. For entrepreneurs that use equity crowdfunding, the data suggest that retaining equity and providing more detailed information about risks can be interpreted as effective signals, which can increase the likelihood of funding success. Moreover, internal governance, such as, e.g., proper board structure and more highly qualified board members, can enhance the likelihood of attracting investors and the speed of capital-raising.

With respect to policy implications, our data also highlight the fact that the participants on the equity crowdfunding sites we studied seem to differentiate between attributes of quality,

and they strongly value credible signals. Crowdfunding investors seem to pay a great deal of attention to the level of uncertainty and the governance material that firms provide. However, at this point, the industry is still in its infancy, and thus our data do not allow us to make a meaningful evaluation of firm outcomes yet. We hope such issues will be explored further as more data become available.

REFERENCES

- Agrawal, A., Catalini, C., and Goldfarb, A. (2011): The Geography of Crowdfunding, *Available at SSRN: <http://ssrn.com/abstract=1692661>*.
- Ahlstrom, D., and Bruton, G.D. (2006): Venture Capital in Emerging Economies: Networks and Institutional Change, *Entrepreneurship Theory and Practice* 30, 299-320.
- Backes-Gellner, U., and Werner, A. (2007): Entrepreneurial Signaling via Education: A Success Factor in Innovative Start-Ups, *Small Business Economics* 29, 173-190.
- Belleflamme, P., Lambert, T., and Schwienbacher, A. (2010): Crowdfunding: An Industrial Organization, Working Paper.
- Belleflamme, P., Lambert, T., and Schwienbacher, A. (2013): Crowdfunding: Tapping the Right Crowd, *Journal of Business Venturing, Forthcoming*
- Black, B.S., and Gilson, R.J. (1998): Venture Capital and the Structure of Capital Markets: Banks versus Stock Markets, *Journal of Financial Economics* 47, 243-277.
- Bradford, S.C. (2012): Crowdfunding and the Federal Securities Laws, *Columbia Business Law Review*, Vol. 2012, No. 1, 2012.
- Brinckmann, J., Salomo, S., and Gemuenden, G. (2011): Financial Management Competence of Founding Teams and Growth of New Technology-Based Firms, *Entrepreneurship Theory and Practice* 35, 217-243.
- Burtch, G., Ghose, A., and Wattal, S. (2012): An Empirical Examination of the Antecedents and Consequences of Investment Patterns in Crowd-Funded Markets, *Information Systems Research, Forthcoming*.
- Busenitz, L.W., Fiet, J.O., and Moesel, D. (2005): Signaling in Venture Capitalists—New Venture Team Funding Decisions: Does It Indicate Long-Term Venture Outcomes? *Entrepreneurship Theory and Practice* 29, 1-12.
- Cleves, M.A., Gould, W.W., and Gutierrez, R.G. (2008): An Introduction to Survival Analysis using STATA. STATA Press Publication, Texas.
- Cole, R.A., and Sokolyk, T. (2012): How Do Start-Up Firms Finance Their Assets? Evidence from the Kauffman Firm Surveys, Working Paper, Depaul University.
- Collewaert, V. (2011): Angel Investors' and Entrepreneurs' Intentions to Exit Their Ventures: A Conflict Perspective, *Entrepreneurship Theory and Practice* 36, 753-779.
- Connelly, B.L., Certo, S.T., Ireland, R.D., and Reutzel, C.R. (2011): Signaling Theory: A Review and Assessment, *Journal of Management* 37, 39-67.
- Conti, A., Thursby, M., and Rothaermel, F.T. (2010): Show Me What You Have: Signaling, Angel and VC Investments in Technology Startups, Working Paper.

- Cosh, A., Cumming, D.J., and Hughes, A. (2009): Outside Entrepreneurial Capital, *Economic Journal* 119, 1494-1533.
- Crowdfunding Industry Report (2012): Crowdfunding Industry Report: Market Trends, Composition and Crowdfunding Platforms: Crowdsourcing, LLC.
- Cumming, D.J., and Johan, S.A. (2009): *Venture Capital and Private Equity Contracting: An International Perspective*, Elsevier Science Academic Press.
- Davila, A., Foster, G., and Gupta, M. (2003): Venture Capital Financing and the Growth of Startup Firms, *Journal of Business Venturing* 18, 689-708.
- Downes, D.H., and Henkel, R. (1982): Signaling and the Valuation of Unseasoned New Issues, *Journal of Finance* 37, 1-10.
- Epstein, L.G., and Schneider, M. (2008): Ambiguity, Information Quality, and Asset Pricing, *Journal of Finance* 63, 197-228.
- Forbes Magazine* (2012): An Interview with Carl Esposti, Crowdfunding Industry Research, <http://www.forbes.com/sites/alanhall/2012/05/14/an-interview-with-carl-esposti-crowdfunding-industry-research>.
- Freear, J., Sohl, J.E., and Wetzel Jr., W E. (1994): Angels and Non-Angels: Are there Differences? *Journal of Business Venturing* 9, 109-123.
- Gompers, P.A. (1996): Grandstanding in the Venture Capital Industry, *Journal of Financial Economics* 42, 133-156.
- Griffin, Z.J. (2012): Crowdfunding: Fleecing the American Masses, Working Paper.
- Grossman, S.J. (1981): The Informational Role of Warranties and Private Disclosure about Product Quality, *Journal of Law and Economics* 24, 461-483.
- Gulati, R., and Higgins, M.C. (2003): Which Ties Matter When? The Contingent Effects of Interorganizational Partnerships on IPO Success, *Strategic Management Journal* 24, 127-144.
- Hemer, J. (2011): A Snapshot on Crowdfunding, Working Paper.
- Hsu, D.H. (2004): What Do Entrepreneurs Pay for Venture Capital Affiliation? *Journal of Finance* 59, 1805-1844.
- Hsu, D. H., and Ziedonis, R. H. (2013): Resources as Dual Sources of Advantage: Implications for Valuing Entrepreneurial-Firm Patents, *Strategic Management Journal, Forthcoming*.
- Hsu, D.H., and Ziedonis, R.H. (2007): Patents as Quality Signals for Entrepreneurial Ventures, Working Paper.

- Jääskeläinen, M., Maula, M., and Seppä, T. (2006): Allocation of Attention to Portfolio Companies and the Performance of Venture Capital Firms, *Entrepreneurship Theory and Practice* 30, 185–206.
- Keynes, J. M. (1936): *The General Theory of Employment Interest and Money*, London: Macmillan and Co.
- Kutner, M. H., Nachtsheim, C. J., Neter, J., and Li, W. (2005): *Applied Linear Statistical Models*, 5th edition. New York: McGraw-Hill.
- Leland, H.E., and Pyle, D.H. (1977): Informational Asymmetries, Financial Structure, and Financial Intermediation, *Journal of Finance* 32, 371-387.
- Levie, J., and Gimmon, E. (2008): Mixed Signals: Why Investors May Misjudge First Time High Technology Venture Founders, *Venture Capital* 10, 233-256.
- Lin, M., Prabhala, N., and Viswanathan, S. (2009): Social Networks as Signaling Mechanism: Evidence from Online Peer-to-Peer Lending, Working Paper.
- Mäkelä, M.M., and Maula, M.V.J. (2006): Interorganizational Commitment in Syndicated Cross-Border Venture Capital Investments, *Entrepreneurship Theory and Practice*, 30, 273–298.
- Malmendier, U., and Shanthikumar, D. (2007): Are Small Investors Naive about Incentives? *Journal of Financial Economics* 85, 457-489.
- Meggison, W., and Weiss, K. (1991): Venture Capital Certification in Initial Public Offerings, *Journal of Finance* 46, 879-903.
- Michael, S.C. (2009): Entrepreneurial Signaling to Attract Resources: The Case of Franchising, *Managerial and Decision Economics* 30, 405-422.
- Milgrom, P.R. (1981): Good News and Bad News: Representation Theorems and Applications, *Bell Journal of Economics* 12, 380-391.
- Mollick, E.R. (2014): The Dynamics of Crowdfunding: Determinants of Success and Failure, *Journal of Business Venturing* 29, 1-16.
- Nahata, R. (2008): Venture Capital Reputation and Investment Performance, *Journal of Financial Economics* 90, 127-151.
- Penrose, E.T. (1959): *The Theory of the Growth of the Firm*. New York, John Wiley.
- Prasad, D., Bruton, G.D., and Vozikis, G. (2000): Signaling Value to Business Angels: The Proportion of the Entrepreneur's Net Worth Invested in a New Venture as a Decision Signal, *Venture Capital* 2, 167-182.
- Ritter, J.R. (1998): Initial Public Offerings, in *Warren Gorham & Lamont Handbook of Modern Finance* (edited by Logue, D. and Seward, J.).

- Robb, A., and Robinson, D. (2013): The Capital Structure Decisions of New Firms, *Review of Financial Studies*, Forthcoming.
- Ross, S.A. (1978): Some Notes on Financial Incentive-Signalling Models, Activity Choice and Risk Preferences, *Journal of Finance* 33, 777-792.
- Schwienbacher, A. (2007): A Theoretical Analysis of Optimal Financing Strategies for Different Types of Capital-Constrained Entrepreneurs, *Journal of Business Venturing* 22, 753-781.
- Schwienbacher, A. (2008): Innovation and Venture Capital Exits, *Economic Journal* 118, 1888-1916.
- Schwienbacher, A., and B. Larralde (2010): Crowdfunding of Small Entrepreneurial Ventures, Working Paper.
- Spence, M. (1973): Job Market Signaling. *Quarterly Journal of Economics* 87, 355-374.
- Spence, M. (2002): Signaling in Retrospect and the Informational Structure of Markets, *American Economic Review* 92, 434-459.
- Stuart, T.E., Hoang, H., and Hybels R. (1999): Interorganizational Endorsements and the Performance of Entrepreneurial Ventures, *Administrative Science Quarterly* 44, 315-349.

Figure 1: Complexity and Uncertainty of Crowdfunding Business Models

This figure illustrates the differing levels of complexity and uncertainty over donations crowdfunding, reward-based crowdfunding, lending crowdfunding, and equity crowdfunding. Equity crowdfunding is the most complex from both a legal standpoint and with respect to information asymmetries (adapted from Hemer, 2011).

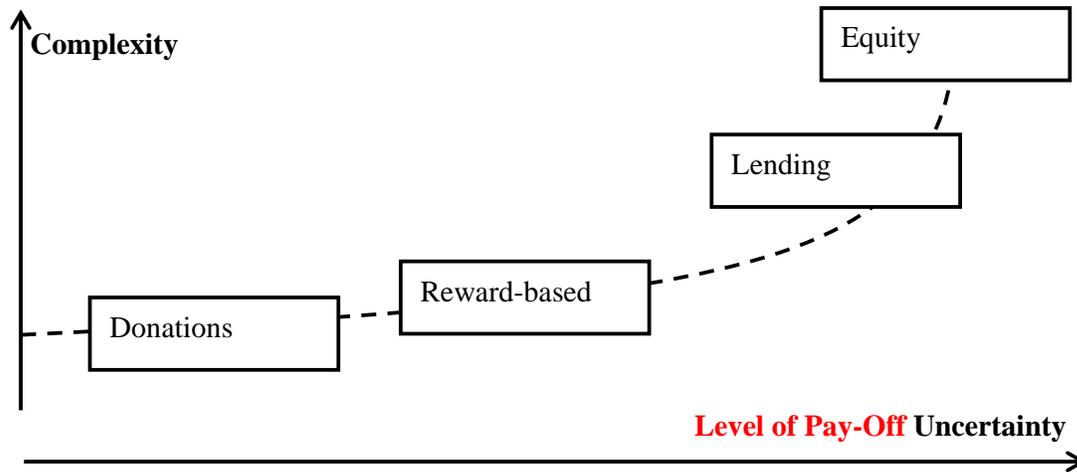


Figure 2: Total Volume Raised Through Crowdfunding Platforms

This figure shows the growth of crowdfunding volume between 2009 and 2011 in U.S.\$ millions. The equity crowdfunding numbers are at the top of the bars.

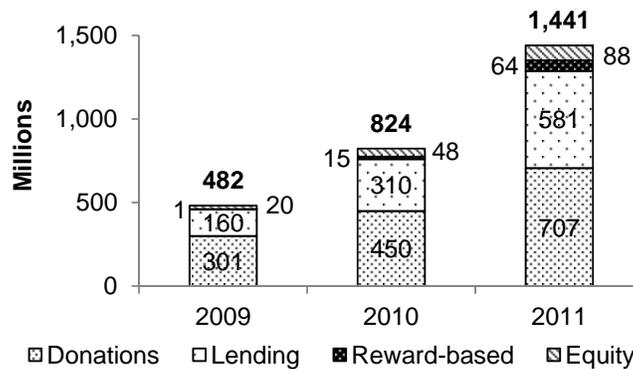


Table 1: Information in “Detailed Company Overviews”

This table shows the different sections of the detailed company overview provided by each entrepreneur on ASSOBS. This information is displayed when a potential investor clicks on the company on the offering overview site.

Section	Description
About	– Investment summary and company details, including number of current investors, company location, years in business, industry category, years to planned exit, most likely exit strategy (IPO, trade sale, etc.), current fundraising status, allocation status, and link to company homepage – Link to download key investment documents
Bid/Sell	– Investors can make a bid for company shares
Contact	– Investors can send an email to aspiring entrepreneurs
Sales Tracker	– Overview of share purchases by other small investors, including information on volume, price, and value
People	– Overview of other small investors who follow a certain company
Blog	– Company blog, integrated into the ASSOBS site
Q&A	– Public Q&A section

Table 2: Crowdfunding on ASSOBS – Summary Statistics

This table gives an overview of the crowdfunding companies funded on the ASSOBS platform in our sample and initiating date. Panel A includes only companies that actually received funding (67); volumes are in thousands AUD. Panel B provides an overview over time of the industries the venture team focuses on. This includes all ventures in our sample (104).

Panel A

	2006	2007	2008	2009	2010	2011	Total
Crowd Fin. Volume	3,540 AUD	1,222 AUD	6,708 AUD	5,581 AUD	11,864 AUD	4,216 AUD	33,131 AUD
Crowd Fin. Count	1	3	15	12	26	10	67
Crowd Fin. Volume							
< \$ 500,000	0 AUD	90 AUD	2,345 AUD	1,552 AUD	4,621 AUD	1,552 AUD	10,159 AUD
\$500,000 - \$1million	0 AUD	1,132 AUD	1,150 AUD	1,615 AUD	2,777 AUD	1,564 AUD	8,238 AUD
\$1 - \$2million	0 AUD	0 AUD	1,200 AUD	2,415 AUD	4,466 AUD	1,100 AUD	9,180 AUD
> \$2 million	3,540 AUD	0 AUD	2,014 AUD	0 AUD	0 AUD	0 AUD	5,554 AUD
Crowd Fin. Count							
< \$ 500,000		1	11	7	19	7	45
\$500,000 - \$1 million		2	2	3	4	2	13
\$1 - \$2 million			1	2	3	1	7
> \$2 million	1		1				2

Panel B

Industry	2006	2007	2008	2009	2010	2011	Total
Agriculture	0	0	0	0	0	0	0
Mining	0	1	3	1	2	0	7
Construction	0	0	1	1	1	0	3
Technology /Manufacturing	0	0	5	6	13	5	29
Transport	0	0	1	4	3	1	9
Retail /Financial Services/Real Estate	0	0	1	1	1	1	4
Property	0	0	4	1	2	3	10
Professional Services	1	2	7	10	17	5	42
Sum	1	3	22	24	39	15	104

Table 3: Descriptive Statistics

This table shows the mean, standard deviation (std), minimum value (min), and maximum value (max) for all variables in Appendix A. The sample covers 104 crowdfunding projects.

	# Observation	Mean	Std	Min	Max
<i>Dependent Variables</i>					
Funding Amount	104	318,568 AUD	515148.7	0 AUD	3,540,473 AUD
Number of Investors (without Founders)	104 (104)	7.52 (7.09)	12.05 (9.58)	0 (0)	88 (57)
Duration of First Financing Round (if successfully funded)	92 19	317.72 135.37	104.81 106.31	7 7	374 374
<i>Capital Market Roadmap</i>					
Most Likely Exit-IPO	104	.48	.50	0	1
Most Likely Exit-Trade Sale	104	.48	.50	0	1
Years to Planned Exit	104	3.86	1.15	1	7
<i>Venture Risk</i>					
Target Funding	104	1,778,799 AUD	1,421,268 AUD	300,000 AUD	5,000,000 AUD
Award	104	.17	.38	0	1
Government Grant	104	.019	.14	0	1
Patent	104	.20	.40	0	1
<i>Human Capital (Network)</i>					
# Board	104	3.61	1.02	1	8
# Staff	104	7.16	12.59	0	120
% Board MBA	104	4.47	11.62	0	50
% Non-Executive Board	104	22.91	25.49	0	75
Years in Business	104	2.63	4.92	0	30
<i>Level of Uncertainty</i>					
Equity Offering	104	21.30	13.25	1.53	90
Disclaimer	104	.15	.36	0	1
No Disclaimer x No Financial Forecast	104	.47	.50	0	1
Intended Number of Rounds	104	2.5	.59	1	3
<i>Speed of Investing</i>					
Funds Raised in Round 1	92	123,281 AUD	152,812 AUD	0 AUD	650,000 AUD
Parcel Size Round 1	92	31,304 AUD	20,097 AUD	5,000 AUD	200,000 AUD
Share Price Round 1	92	.079 AUD	.11 AUD	.01 AUD	.75 AUD

Table 4: Mean Differences between Fully Funded and Not Fully Funded Projects

This table presents the comparison of mean test for the fully crowd-funded investment projects (Fully Funded, # 10 projects) and partially or not funded investment projects (Not Fully Funded, # 129). The sample covers 139 crowd-funded projects. Given that we only run a univariate test, we include all projects that include basic information and offering documents in this analysis. As not all projects offer complete information for all variables, the sample used in the subsequent Tables 5-7 is reduced to 104. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	# of Observations	Fully Funded (Mean)	Not Fully Funded (Mean)	Difference Test (Fully Funded vs. Not Fully Funded)
<i>Capital Market Roadmap</i>				
(2) Most Likely Exit-Trade Sale	139	0.10	0.44	0.34***
(3) Most Likely Exit-Others	139	0.40	0.13	-0.27
(4) Years to Planned Exit	120	2.60	3.94	1.34**
<i>Venture Risk</i>				
(5) Target Funding	139	848,000	1,785,000	937,000***
(6) Award	139	0	0.16	0.16***
(7) Government Grant	139	0.10	0.02	-0.08
(8) Granted Patent	139	0.10	0.17	0.07
<i>Human Capital (Network)</i>				
(9) # Board	139	3.30	3.55	0.25
(10) # Staff	139	5	9.29	4.29
(11) % Board MBA	137	11.11	3.79	-7.32
(12) % Non-Executive Board Members	137	17.22	22.71	5.49
(13) Years in Business	129	3.63	2.65	-0.97
<i>Level of Uncertainty</i>				
(14) Equity Offering	139	0.10	0.23	0.13***
(15) Disclaimer x No Financial Forecast	139	0.50	0.16	-0.34***
(16) No Disclaimer x No Financial Forecast	139	0.20	0.48	0.28*
(17) Intended Number of Rounds	139	2.70	2.53	-0.17

Table 5: Success Determinants of Crowdfunding Projects Measured by Number of Investors

The sample covers 104 crowdfunded projects, and we account for multiple investments by a single investor in a specific project and exclude founders when counting the number of investors. We run zero-inflated negative binomial regressions (using robust standard errors) for the *number of investors* in a crowdfunding project, given over-dispersion (mean: 7.54, variance: 110.29) and the fact that 37 projects received no funding at all, resulting in a significant number of zeros in our dependent variable. Within the estimation, we control for factors that potentially influence the likelihood of whether a project can attract at least one investor (0/1 outcome via logit model; depicted in the last part of the table with offerings that began before 2009 as a reference category), because these zeros may be generated by an independent process. The full model is shown in Specification 3; exit channel IPO serves as a reference category. *Big city fixed effects* are dummy variables for Sydney, Melbourne, Brisbane, and Perth. In all specifications, we use offering timing as a potential reason why a project received no funding. As a further robustness check (not reported here), we included the additional variables: *equity offering*, *disclaimer x no financial forecast*, and *no disclaimer x no financial forecast*. Our results remain qualitatively stable. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Specification 1		Specification 2		Specification 3	
	Coefficient	z-Value	Coefficient	z-Value	Coefficient	z-Value
(1) Constant	2.491***	3.48	2.419***	3.46	1.112	1.63
	<i>Capital Market Roadmap</i>					
(2) Most Likely Exit-Trade Sale	-.277	-1.51	-.265*	-1.65	-.271*	-1.79
(3) Most Likely Exit-Others	-1.678***	-3.58	-2.314***	-3.21	-1.697***	-3.63
(4) Years to Planned Exit	-.125	-1.03	-.059	-0.40	.036	0.35
	<i>Venture Risk</i>					
(5) Target Funding			.079	0.78	-.022	-0.29
(6) Award			.261	0.77	.374	1.62
(7) Government Grant			.617	1.19	.530	1.30
(8) Granted Patent			.409	1.17	.174	0.52
	<i>Human Capital (Network)</i>					
(9) # Board					.342**	2.56
(10) # Staff					-.003	-0.38
(11) % Board MBA					.017*	1.74
(12) % Non-Executive Board Members					-.004	-1.05
(13) Years in Business					-.058	-1.19
	<i>Level of Uncertainty</i>					
(14) Equity Offering	-.016*	-1.88	-.018**	-2.58	-.018***	-3.08
(15) Disclaimer x No Financial Forecast	-.138	-0.53	-.157	-0.61	.312	0.94
(16) No Disclaimer x No Financial Forecast	-.231	-1.27	-.212	-1.14	-.180	-0.88
(17) Intended Number of Rounds	.248	1.30	.205	0.96	.071	0.28
<i>Year Fixed Effects</i>	YES		YES		YES	
<i>Industry Fixed Effects</i>	YES		YES		YES	
<i>Big City Fixed Effects</i>	YES		YES		YES	

(continued)

Table 5: Success Determinants of Crowdfunding Projects Measured by Number of Investors—Continued

<i>/alpha</i>	-1.367***	-4.63	-1.439***	-5.13	-2.033***	-5.35
<i>alpha</i>	.254		.237		.131	
<i>Inflate</i>						
<i>Offering 2009</i>	1.142	1.62	1.163	1.64	1.255	1.61
<i>Offering 2010</i>	.420	0.62	.445	0.66	.576	0.75
<i>Offering 2011</i>	.205	0.23	.098	0.11	.398	0.43
<i>Constant</i>	-1.215**	-2.10	-1.246**	-2.17	-1.394**	-2.13
<i># Observation</i>	104		104		104	
<i># Non-Zero Observation</i>	67		67		67	
<i># Zero Observation</i>	37		37		37	
<i>Log pseudolikelihood</i>	-266.0654		-263.5877		-253.2365	
<i>Wald $\chi^2(20)$</i>	88.69***					
<i>Wald $\chi^2(24)$</i>			135.89***			
<i>Wald $\chi^2(29)$</i>					204.98***	

Table 6: Success Determinants of Crowdfunding Projects Measured by Absolute Funding Amount

The sample covers 104 crowdfunding projects. We run standard OLS regressions (using robust standard errors) to identify the factors that determine *absolute funding amount* in millions, and show the coefficient and the standardized coefficient (beta). Exit channel IPO serves as a reference category. Specifications 1 and 2 show the results for blockwise regressions; in specification 3, all blocks are included simultaneously, including *year*, *industry* and *big city fixed effects*. *Big city fixed effects* are dummy variables for Sydney, Melbourne, Brisbane, and Perth. In order to rule out the influence of outliers, we winsorized Absolute Funding Amount and explanatory variables (4), (5), (9)-(14), and (17) in Specifications 4 at the 99%-level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Investigating the variance inflation factors reveals no multicollinearity exists, given the mean VIF of 2.01 and all individual values are well below the critical value of 5 (except for two industry dummies with a value of 5.21 and 4.53) (see Kutner et al., 2005). Excluding one of these borderline cases leads to a mean VIF of 1.65 and all individual values being well below 5. However, the exclusion neither changes the results qualitatively nor it affects the significance levels of the full model 3. As a further robustness check we repeated specification 4 and winsorized at the 95% level. The results remain qualitatively the same, though the significance of the variable “no disclaimer no forecast” decreases to the 10% level.

	Specification 1			Specification 2			Specification 3			Specification 4		
	Coefficient	Beta	t-Value	Coefficient	Beta	t-Value	Coefficient	Beta	t-Value	Coefficient	Beta	t-Value
(1) Constant	.194		0.57	.193		0.56	-.157		-0.37	.026		0.06
	<i>Capital Market Roadmap</i>											
(2) Most Likely Exit-Trade Sale	-.169**	-.164	-2.03	-.137	-.134	-1.59	-.106	-.104	-1.07	-.105	-.118	-1.09
(3) Most Likely Exit-Others	-.069	-.026	0.23	-.033	-.012	-0.11	.005	-.002	-0.02	.014	-.006	0.05
(4) Years to Planned Exit	-.062	-.139	-1.54	-.064	-.142	-1.52	-.040	-.090	-0.93	-.036	-.094	-0.89
	<i>Venture Risk</i>											
(5) Target Funding (millions)				.055	.151	1.33	.025	.070	0.66	.040	.126	0.94
(6) Award				.032	.024	0.27	-.054	-.040	0.45	.040	.035	0.33
(7) Government Grant				.261	.070	0.69	.127	.034	0.38	.160	.050	0.48
(8) Granted Patent				.057	.045	0.61	.076	.059	0.70	.064	.058	0.62
	<i>Human Capital (Network)</i>											
(9) # Board							.119*	.236 [†]	1.93	.062	.132	1.23
(10) # Staff							.004	.102	1.34	.003	.077	1.02
(11) % Board MBA							-.002	-.045	-0.52	-.003	-.064	-0.62
(12) % Non-Executive Board Members							-.002	-.098	-1.07	-.002	-.092	-0.89
(13) Years in Business							-.008	-.081	-1.10	-.009	-.095	-1.15
	<i>Level of Uncertainty</i>											
(14) Equity Offering	-.003	-.069	-0.68	-.005	-.118	-1.15	-.003	-.075	-0.77	-.004	-.121	-1.08
(15) Disclaimer x No Financial Forecast	-.127	-.089	-.81	-.138	-.097	-0.86	.049	.034	-0.28	-.127	-.104	-0.74
(16) No Disclaimer x No Financial Forecast	-.237**	-.231**	-2.59	-.227**	-.221**	-2.49	-.210**	-.205**	-2.14	-.202**	-.228**	-2.12
(17) Intended Number of Rounds	.164**	.187**	2.14	.137*	.157 [†]	1.91	.078	.090	1.03	.097	.128	1.32
<i>Year Fixed Effects</i>	YES			YES			YES			YES		
<i>Industry Fixed Effects</i>	YES			YES			YES			YES		
<i>Big City Fixed Effects</i>	YES			YES			YES			YES		
<i>F(20,83)</i> <i>[R²]</i>	1.89**											
	[47.29%]											
<i>F(24,79)</i> <i>[R²]</i>				1.60*								
				[49.25%]								
<i>F(29,74)</i> <i>[R²]</i>							1.59*			2.24***		
							[54.06%]			[43.50%]		

Table 7: Determinants of the Speed of Capital Allocation

The sample covers ninety-two crowdfunded projects, of which nineteen successfully completed their first financing round (i.e., nineteen entered a second round of financing after selling all shares offered in round 1). Projects that received no funding or were only partially funded are delisted after one year. We run exponential regressions (with log relative-hazard forms) to identify the determinants of the speed of capital allocation (*duration of first financing round*) by investors measured in days until the target amount for the first round is raised. Exit channel IPO serves as a reference category. Specification 3 represents the full model. *Big city fixed effects* are dummy variables for Sydney, Melbourne, Brisbane, and Perth. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Specification 1		Specification 2		Specification 3	
	Coefficient	z-Value	Coefficient	z-Value	Coefficient	z-Value
(1) Constant	-16.327***	-4.75	-15.371***	-3.68	-21.173***	-2.92
<i>Capital Market Roadmap</i>						
(2) Most Likely Exit-Trade Sale	.678	0.88	-.829	0.86	-1.245	1.38
(3) Most Likely Exit-Others	-.725	-0.46	-.597	-0.33	-.440	-0.20
(4) Years to Planned Exit	-.463	-1.35	-.492	-1.26	-.401	-0.82
<i>Venture Risk</i>						
(5) Target Funding			-.003	-0.01	-.050	-0.13
(6) Award			.308	0.37	.601	0.59
(7) Government Grant			-.904	-0.34	-2.425	-0.86
(8) Granted Patent			-.110	-0.13	-1.009	-1.04
<i>Human Capital (Network)</i>						
(9) # Board					.655	1.03
(10) # Staff					-.113	-0.83
(11) % Board MBA					.094*	1.83
(12) % Non-Executive Board Members					.003	0.12
(13) Years in Business					.213**	2.22
<i>Level of Uncertainty</i>						
(14) Equity Offering	-.139***	-3.08	-.138***	-2.97	-.165***	-2.92
(15) Disclaimer x No Financial Forecast	-.251	-0.28	-.474	-0.44	.863	-0.78
(16) No Disclaimer x No Financial Forecast	-2.099***	-2.68	-2.207**	-2.35	-3.385***	-3.27
(17) Intended Number of Rounds	1.326*	1.76	1.285	1.56	2.910**	2.43
(18) Parcel Size	>.000***	3.39	>.000***	2.83	>.000***	2.81
(19) Share Price	-4.043	-1.21	-3.624	-1.02	-1.137	-0.30
<i>Year Fixed Effects</i>	YES		YES		YES	
<i>Industry Fixed Effects</i>	YES		YES		YES	
<i>Big City Fixed Effects</i>	YES		YES		YES	
<i># Subjects</i>	92		92		92	
<i># Successful Completion of Financing Round 1</i>	19		19		19	
<i>LR χ^2</i>	58.19***		58.43***		65.99***	
<i>Log likelihood</i>	-45.177		-45.058		-41.280	

Appendix

Table A: Variable Definitions

This table gives a detailed description of the data-gathering process and the calculation method for all variables.

Variable Name	Description and Calculation
<i>Dependent Variables</i>	
Full Funding	Dummy variable indicating whether a company received full funding
Funding Amount	Absolute funding amount in millions AUD.
Number of Investors	Total number of individual investors in a venture. Adjusted for multiple investments by single investors.
Duration of First Financing Round	The number of days from the opening day for investors to the day the targeted amount is raised. If the targeted amount is not met, the project will be delisted from the platform after one year.
<i>Capital Market Roadmap</i>	
Most Likely Exit-IPO	Planned exit channel is an IPO.
Most Likely Exit-Trade Sale	Planned exit channel is a trade sale.
Most Likely Exit-Other	Planned exit channel is an LBO, reverse takeover, or not indicated.
Years to Planned Exit	The years to planned exit of a venture at the time of offering, or not announced because there is no obligation. This number is exhibited in the detailed company overview page.
<i>Venture Risk</i>	
Target Funding	Pursued target funding amount in millions AUD.
Award	Dummy variable indicating whether a project or a project's product received an award. The variable equals 1 if so, and 0 otherwise.
Government Grant	Dummy variable indicating whether a venture received government grants.
Granted Patent	Dummy Variable indicating whether a venture quotes a granted patent in an offering document. The variable equals 1 if so, and 0 otherwise.

(continued)

Table A: Variable Definitions—Continued

<i>Human Capital (Network)</i>	
# Board	Number of directors on a venture's board.
# Staff	Total number of staff employed by a start-up at the time of offering. This number is exhibited in the detailed company overview page.
% Board MBA	Percentage of MBA graduates among the executive directors of the board.
% Non-Executive Board	Percentage of non-executive directors on a company's board.
Years in Business	Number of years a company has been in business at the time of offering. This number is exhibited in the detailed company overview page.
<i>Level of Uncertainty</i>	
Equity Offering	Percentage of equity that a management team plans to sell in an offering prior to the offering. This number is exhibited in the detailed company overview page.
Disclaimer x No Financial Forecast	Dummy variable indicating whether a venture includes a disclaimer in its offering document that states that the entrepreneurs do not provide financial forecasts for legal reasons. The variable equals 1 if a disclaimer is included but without a financial forecast, and 0 otherwise.
No Disclaimer x No Financial Forecast	Dummy variable indicating that a company provides neither a financial forecast nor a disclaimer in the offering documents.
Intended Number of Rounds	Set number of rounds by founders in the offering documents in which they want to raise money. The number of rounds can vary between one and three.
<i>Speed of Investing</i>	
Parcel Size	Minimum investment amount in AUD; investors can purchase only whole numbers.
Share Price	Price investors must pay per share.

Appendix B: Correlation Matrix

This table shows the Pearson correlation coefficients for the variables in Table 3—p-values are given in parentheses below the coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Funding Amount (1)	1.0000												
# Staff (2)	0.0453 (0.6483)	1.0000											
Years in Business (3)	-0.0696 (0.4824)	0.4092*** (0.0000)	1.0000										
Equity Offering (4)	-0.1405 (0.1549)	0.0395 (0.6906)	0.0453 (0.6481)	1.0000									
# Board (5)	0.2604*** (0.0076)	0.2566*** (0.0086)	0.0989 (0.3178)	-0.1030 (0.2983)	1.0000								
Years to Planned Exit (6)	-0.2693*** (0.0057)	0.0719* (0.4682)	0.2270** (0.0205)	0.1622* (0.0999)	-0.1068 (0.2805)	1.0000							
% Non-Executive Board (7)	-0.0881 (0.3739)	0.1781* (0.0705)	0.0943 (0.3409)	0.1763* (0.0735)	0.0771 (0.4364)	0.1274 (0.1976)	1.0000						
% Board MBA (8)	-0.0714 (0.4713)	-0.1045 (0.2913)	-0.0439 (0.6579)	0.0276 (0.7807)	-0.0629 (0.5256)	0.0233 (0.8147)	-0.3130*** (0.0012)	1.0000					
Number of Investors (9)	0.8611*** (0.0000)	0.0288 (0.7715)	-0.1077 (0.2765)	-0.2013** (0.0405)	0.2534*** (0.0094)	-0.2833*** (0.0036)	-0.1205 (0.2232)	0.0050 (0.9599)	1.0000				
Parcel Size Round 1 (10)	0.1413 (0.1524)	-0.0489 (0.6222)	-0.0863 (0.3839)	0.0852 (0.3896)	-0.0217 (0.8267)	-0.1599 (0.1049)	-0.0666 (0.5019)	0.1363 (0.1677)	0.0793 (0.4237)	1.0000			
Share Price Round 1 (11)	0.5532*** (0.0000)	0.0463 (0.6408)	-0.0194 (0.8453)	-0.1942** (0.0482)	0.1634 (0.0974)	-0.1789* (0.0693)	0.0165 (0.8679)	-0.0511 (0.6067)	0.5694*** (0.0000)	0.2264** (0.0208)	1.0000		
Funds Raised in Round 1 (12)	0.5600*** (0.0000)	-0.0065 (0.9477)	-0.1749* (0.0757)	0.0562 (0.5710)	0.0712 (0.4725)	-0.1173 (0.2356)	-0.2126** (0.0303)	0.0742 (0.4540)	0.5446*** (0.0000)	0.1015 (0.3052)	0.1007 (0.3090)	1.0000	
Funding Sought Round 1 (13)	0.2226** (0.0232)	0.1397 (0.1572)	-0.0386 (0.6971)	0.0797 (0.4213)	0.1467 (0.1373)	-0.0275 (0.7820)	0.1625* (0.0993)	-0.1210 (0.2212)	0.2376** (0.0152)	-0.1621 (0.1003)	0.0420 (0.6717)	0.0316 (0.7500)	1.0000

Appendix C: ASSO B Screenshots

Company Name	Listing Code	Security Type	Industry	Capital Raising	Funding Sought	R1 Min Parcel	R2 Min Parcel	R3 Min Parcel	Allocation Status	View Company Profile Page
Acoustic3D Holdings Limited	A3H	Ordinary shares	Technology	closed	\$0					View
Historical Data: Round Original Offer (s708) , Open 1/09/2011, Closed 26/09/2011, Raised \$300,000.00										
Historical Data: Round 2, Open 26/09/2011, Closed 25/01/2012, Raised \$300,000.00										
Historical Data: Round 3, Open 25/01/2012, Closed 13/06/2012, Raised \$150,000.00										
Anti-Energy Beverages Australia Limited	LIQ	Ordinary shares	Food/Beverage	Open	\$400,000	\$20,000	\$20,000			View
Avado Organics Ltd	AVA	Ordinary shares	Consumer Goods	closed	\$0					View
Historical Data: Round Original Offer (s708) , Open 21/11/2011, Closed 8/03/2012, Raised \$300,000.00										
Aware Environmental Ltd	AWA	Ordinary shares	Environmental	closed	\$0					View
Historical Data: Round Original Offer (s708) , Open 10/06/2009, Closed 9/06/2010, Raised \$509,999.00										
Biodental Remin Ltd	BDR	Ordinary shares	Pharmaceutical	Open	\$1,000,000	\$25,000	\$25,000	\$20,000		View
BUZZcard Ltd	BZZ	Ordinary shares	IT & T	Open	\$800,000	\$30,000	\$30,000			View
Elevate Australasia Limited	ELE	Ordinary shares	Health	Open	\$1,000,000	\$50,000	\$50,000			View
Female Friendly Limited	FFL	Ordinary shares	Business Services	Open	\$800,000	\$30,000	\$30,000			View
Flextank International Limited	FLX	Ordinary shares	Technology	closed	\$0					View

(Screenshot 1, Primary Board)



- Acoustic3D Holdings Limited
- Anti-Energy Beverages Australia Limited
- Avado Organics Ltd
- Aware Environmental Ltd
- Biodental Remin Ltd
- BUZZcard Ltd
- Elevate Australasia Limited
- Female Friendly Limited
- Flextank International Limited
- Forrester Cohen International Group Limited
- ICT123 Holdings Ltd
- Ipowow! Ltd
- Keyhole TIG Limited
- KPG Pacific Properties Ltd
- Kudos Knowledge Limited
- Lahris Ltd
- Little Nest Furnishings Limited
- LJ Hooker International Limited
- Localite Limited
- Manifesto Of Light International Ltd
- Mercurien Limited
- Moneysoft Limited
- Ocular Robotics Limited
- Opmantek Ltd
- Oswill Limited
- PhotoMerchant Ltd
- Preshafood Limited

Share Sales Tracker - Acoustic3D Holdings Limited

Status > OPEN FOR SECONDARY SALES

* Most recent issue or sale on top

Volume	Price	Value	Movement since ASSOB listing	Type
1,000,000	\$0.10	\$100,000	▲ 66.67%	Primary
500,000	\$0.10	\$50,000	▲ 66.67%	Primary
1,500,000	\$0.08	\$120,000	▲ 33.33%	Primary
375,000	\$0.08	\$30,000	▲ 33.33%	Primary
375,000	\$0.08	\$30,000	▲ 33.33%	Primary
375,000	\$0.08	\$30,000	▲ 33.33%	Primary
375,000	\$0.08	\$30,000	▲ 33.33%	Primary
375,000	\$0.08	\$30,000	▲ 33.33%	Primary
3,000,000	\$0.06	\$180,000	00.00%	Primary
500,000	\$0.06	\$30,000	00.00%	Primary
500,000	\$0.06	\$30,000	00.00%	Primary
500,000	\$0.06	\$30,000	00.00%	Primary
500,000	\$0.06	\$30,000	00.00%	Primary

(Screenshot 2, Bid/Sell)