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A Snapshot on Crowdfunding

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Abstract

This article addresses crowdfunding, a relatively new form of informal financing of projects and ventures. It describes its principle characteristics and the range of players in this market. The different business models of crowdfunding intermediaries are explored and illustrated. A first attempt is made to classify the different forms of funding and business models of crowdfunding intermediaries. Based on the available empirical data the paper discusses the economic relevance of crowdfunding and its applicability to start-up financing and funding creative ventures and research projects

1 Introduction

Mozart and Beethoven financed concerts and publications of new music manuscripts via advance subscriptions from interested parties. The Statue of Liberty in New York was funded by small donations from the American and the French people.[1] In 1997, the British rock band Marillion collected US $ 60,000 from their fans via an Internet call to finance their US concert tour.[2] An American journalist is currently writing a book about the actions of US investigative authorities against environmentalists and is trying to finance its printing by appealing for sponsors on the Internet.[3] The designer Scott Wilson designed a collection of simple silicone rubber wrist straps for the new Apple iPod Nano to enable people to wear it like a wrist watch and received nearly US $ 1 million from over 13,000 fans from the Internet community to finance their production and distribution. Many independent film productions have been financed through the donations of backers from the Internet.[4] There was even a web-based appeal for funds to fans of the Swedish car Saab in order to rescue the carmaker who was in trouble.[5] The British software company Trampoline Systems raised over £ 260,000 of equity via an Internet call to finance a specific software project.[6]

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1 Source: http://en.wikipedia.org/wiki/Statue_of_Liberty (retrieved on May 24, 2011).

2 Source: www.kickstarter.com/projects/1104350651/tiktok-lunatik-multi-touch-watch-kits?ref=users (retrieved on Feb. 4, 2011).

3 Source: www.message-online.com/112/heft.html (retrieved on July 14, 2011).

4 One famous example is the film "The Age of Stupid".

5 Source: www.rescue-saab.com/en7cotnact/index.php (retrieved on Feb. 2, 2011).

6 Source: www.trampolinesystems.com (retrieved on Jan. 24, 2011).

A human rights organisation is currently trying to raise US $ 150,000 in donations from the Internet community in order to buy a communications satellite to provide Internet access to people in peripheral and rural areas of third world countries.[7] And, finally, President Barack Obama's election campaign in 2008 raised much of its cash via small donations over the Web, with about 50% coming in payments of less than US $ 200.[8]

These are just a small selection of older and more recent examples of the thousands available which mark a specific form of microfinancing of projects or ventures by a large number of funders which has – for its Internet-based variant – come to be known as *crowdfunding.* Since the late 1990s, crowdfunding (in the following also abbreviated as CF) has been emerging and developing within the Internet community, mainly in the creative industries comprising music, film and video, independent writers, journalists, publishers, creators of performing and visual arts, games, theatres etc. In this scene, crowdfunding remained largely unnoticed by the outside world and was more of a closed shop phenomenon with a somewhat anarchistic character until around the year 2006. Crowdfunding applications in the area of social projects were more visible such as health care, aid to developing countries, alleviation of poverty, diffusion of new technologies, support of democratic movements etc. In these fields, the major characteristic is the provision of funds through small donations or sponsoring by individuals from various Internet communities or from organisations which identify themselves with the specific project seeking funding. In a way, crowdfunding has now become an established variant of classical fund-raising for non-profit ventures. Thousands of small or large projects have been funded this way and crowdfunding has become widely accepted by the general public. Hundreds of intermediary services (called "CF platforms") have emerged to act as facilitators for crowdfunding; some of them are globally well known (e.g. Kiva, Kickstarter, IndieGoGo, Spot-us etc.).

CF is on the verge of also becoming a substitute seed financing source for entrepreneurial ventures that have difficulties raising capital from traditional sources like bank loans, angel capital, VC, state promotion and others because they appear too exotic, too innovative to be understood, too complex, too crazy, too risky or which are, simply, poorly presented.

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7 Source: www.buythissatellite.org (retrieved on July 14, 2011).

8 Source: http://en.wikipedia.org/wiki/Barack_Obama_presidential_campaign,_2008 (retrieved on July 14, 2011).

The central thesis for this article is that, if carefully designed, crowdfunding could become a serious alternative to or could at least complement the classical forms of early-stage start-up financing and for this reason it deserves close monitoring.

The difficulty, however, is that this phenomenon is so new that, so far, little empirical data exists and the number of scientific papers is still limited. On the other hand, thousands of web-based articles and blog comments have been posted and the print media have also begun to take up this subject in popular articles, but these do not provide sufficient information to obtain a clear picture of what crowdfunding really is.

2 Research questions and methodological approach

As the author is active in applied research in the field of innovation financing, both a scientific and a practical view of crowdfunding is assumed in this paper, which addresses the following research questions:

- Under which conditions can crowdfunding help to bridge the early-stage gap in financing entrepreneurial start-ups?
- What do we really know about crowdfunding? Which knowledge gaps have to be closed?
- What drives individuals who are not wealthy people to give away part of their earnings to ventures they have little personal connection to?
- Which are the most important applications for crowdfunding and how relevant are they in economic terms?
- What is the current structure of the crowdfunding scene; who are the principal players, how can they be classified?
- What are the capabilities and limitations of crowdfunding, particularly when applied in the arena of entrepreneurial finance?
- How should interfaces between traditional start-up financing instruments and crowdfunding be designed to allow for optimal synergies and interoperability?
- Is there a need for state intervention and regulation?
- What are the future research tasks?

In order to address these questions, a small study was initiated, which aimed at preparing the field for a more comprehensive investigation of the crowdfunding phenomenon and collecting more empirical data. This article presents selected results of this study. It used a conventional methodological approach:

- Literature analysis,
- Web research (study of blogs and other Web postings),
- identification of more than 240 crowdfunding cases worldwide (crowdfunded ventures and crowdfunding intermediaries; mainly via an Internet search),
- study of more than 35 crowdfunding projects and systematic description of their main characteristics,
- study of more than 200 CF platforms, selection of approx. 30 thereof and systematic description of their main characteristics,
- talks with initiators of selected crowdfunded ventures, CF platforms, bloggers and other insiders,
- talks with representatives from business angel clubs, banks and the VC industry,
- six interviews with active crowdfunders about their funding motives,
- talks and interviews with policymakers from the EU Commission and from German Länder and federal ministries, and
- participation in conferences and organisation of a workshop on crowdfunding as an instrument for start-up funding.

The budgetary limitations of this study did not allow a detailed empirical investigation of crowdfunded projects and ventures, not least because these are often concealed as they do not publicly display their sources of financing. Fortunately, two empirical studies done in Europe could be consulted which shed some light on the characteristics of crowdfunded ventures or projects (for further details see below). The following sections present selected results from the exercises listed above.[9]

3 Literature analysis

The accumulated literature on general entrepreneurial financing including bootstrapping, angel finance, bank loans, public support, VC and private equity is enormous, but will not be referred to in this paper, although it does contribute partially to the issue of crowdfunding. As mentioned in the introduction, the number serious papers and the amount of data focused mainly on crowdfunding is still rather small, but growing quickly. So far, only a few scientific articles deal exclusively with crowdfunding, more are available on the subject of crowds*ourcing,* which is related but not always very

9 See Hemer et al. (2011a).

helpful for investigating the specificities of crowdfunding[10]. Many of the available scientific articles focus on specific sectors like social projects, NGO projects, the music and film industry etc. Kappel (2009), for instance, made the distinction between ex ante crowdfunding of music projects and ex post crowdfunding for political lobbying and projects. Wojciechowski (2009) discusses the potential of social networks for charity organisations and NGOs.

Much space is dedicated to the new functionalities computer science and the software industry can provide for Web 2.0 and crowds*ourcing* (e.g. Brabham 2008 or Kleeman et al. 2008). These findings are also relevant for crowd*funding* to some extent, as many processes can be supported and automated so that new crowdfunding routines can be realised at no cost (e.g. for viral networking and marketing, financial transactions etc.). Kozinets et al. defined different online groups in 2008 and addressed the Online Creative Consumer Communities (OCCC), a concept which can be helpful to characterise crowdfunding and crowdsourcing actors.

Certain psychology papers are very relevant for crowdsourcing and crowdfunding, particularly those addressing mass psychology, the psychology of charitable giving or donation behaviour. Theories on mass psychology can be traced back to Le Bon (1895), Freud (1921), Turner/Killian (1972) and others; more recent works focus on the newer phenomenon of Internet crowd psychology (Russ 2007, Surowiecki 2004, Wallace 1999). Another group of papers elaborates the conditions and background of individual motives for charitable giving and altruistic donations (Brady et al. 2002, Martin/Randal 2009, McClelland/Brooks 2004, Piferi et al. 2006, Schervish/Havens 1997, Wiepking 2010, and more).

Sommeregger (2010) studies one CF platform specialising in donations for social and charity projects and discusses the motives of both private and corporate donors, sponsors and lenders. Starting from 15 hypotheses, Harms elaborated a model in his master thesis 2007 to determine the principal motives that drive potential supporters to really invest in projects via crowdfunding. He worked out 10 such determinants and grouped them under 5 "value categories": financial value, functional value, social value, epistemic value and emotional value.

Surowiecki's work "Wisdom of the Crowd" (2004) received a lot of attention and contributed to the popular notion of using the Internet community to help with problem-solving and other decision-making, both in the private and public domain. Travis (2008), O'Neil (2010) and Gaggioli/Riva (2008) even dealt with the idea of applying the

10 See, for instance Geerts (2009).

'wisdom-of-the-crowd' principle to sourcing knowledge in research and development and Oinas-Kukkonen (2008) places crowdsourcing within the context of corporate knowledge management.

In the meantime, CF has drawn attention in the context of research funding as well. On August 2010, L. Sattary wrote in the RSC-Journal: [11]

"Over the last 3 years, a number of microfinancing initiatives for science research have emerged in the US. The Open Source Science Project[12] *allows researchers to propose projects and pitch for funding from the broader online community. Priyan Weerappuli, the project's executive director, believes it is successful in helping researchers find alternative funding sources. 'The project started in a time of funding cuts in the US and intended to give researchers a different funding model and also increase scientific literacy in the public,' he says. ... 'Initially most projects were "pop-science" - subjects that were already in the public eye - but now many projects that are funded are in niche disciplines. Although the way projects are financed differs greatly from the traditional funding routes through government, charity or industry, there are many familiar features. Projects are peer reviewed by experts in their field before they are placed online for funding, a research log must be kept to update the donors on progress and researchers are expected to publish an informal paper on completion. There are also some unique positive aspects to the scheme - researchers retain complete ownership and intellectual property rights and are free to publish as they wish. Although anyone can apply, about 70 per cent of projects on the Open Source Science Project were proposed by university academics."*

And Margareta Pagano cited this article from October 2010 in The Independent and adds:[13]

"Take microfinancing, or crowd funding as it's known in the US. Cuts to US government funding three years ago were the catalyst to this kind of donating, whereby Joe Public gives small contributions to research projects chosen by scientists."

Up to now, the question of applying CF to research funding has only been dealt with in the scientific media and in blogs in the context of shrinking research resources and the

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11 Cf. http://www.rsc.org/chemistryworld/News/2010/August/09081001.asp (retrieved on 22.7.2011).

12 Cf. http://www.theopensourcescienceproject.com.

13 Cf. http://www.independent.co.uk/news/business/comment/margareta-pagano/margareta-pagano-theres-an-art-to-funding-science-after-the-cuts-2102455.html (retrieved on 19.7.2011).

debate about the legitimacy of research, public participation in research allocation decisions, ethics, democratisation of defining research goals etc.

The team around A. Schwienbacher were among the first to address entrepreneurial crowdfunding scientifically in Europe (Lambert/Schwienbacher 2010; Schwienbacher/Larralde 2010; Belleflamme et al. 2010). Remarkably, Schwienbacher and his co-authors conducted an empirical survey based on a sample of 88 entrepreneurial crowdfunding ventures (collected from their Internet homepages) which had not been supported by CF platforms and which were not artists' initiatives. The results are very important, as – for the first time in Europe – they shed light on the population of crowdfunded entrepreneurial ventures and provide first insights into the characteristics of the business in this specific section of crowdfunding. Based on the same sample, they also tried to develop a crowdfunding model for industrial organisations (Belleflamme et al. 2010).

During December 2010 and July 2011 the Fraunhofer Institute for Systems and Innovation Research ISI (Fraunhofer ISI) conducted a study on crowdfunding, which included literature and Internet searches and interviews with actors in the European crowdfunding scene. Its main focus was the adaptability of the crowdfunding instrument to the needs of young innovative companies in their start-up phase and the interfaces with conventional financing instruments. It also dealt with the legal and regulatory issues of crowdfunding (see Hemer et al. 2011a; 2011b).

The German private institute ikosom very recently conducted an empirical survey of 125 German crowdfunding projects which were supported by all 6 German CF platforms known at this time. These projects cover all the application fields of crowdfunding (from projects in the creative industry, charities and health to innovative start-ups), but includes only a small number of start-ups. The sample represents all the clients the 6 platforms have cultivated from their own inception[14] until April 2011 (Eisfeld-Reschke/Wenzlaff 2011). Therefore, it can be assumed that this sample represents 100% coverage of the crowdfunding projects managed by CF platforms in Germany during this period. Some of these data were made available to be included in this article.[15]

Concluding the literature analysis, we can state that the most important aspects related to modern crowdfunding are now being addressed and that the number of paper is in-

14 In fact, all these platforms were initiated after May 2010 which shows the infancy of this market.

15 The full report (in German) was published in June 2011 (Eisfeld-Reschke/Wenzlaff 2011).

creasing. So far, we have discovered a lot about the spectrum, structures and profiles of crowdfunding projects or ventures and the CF platforms. What is still missing are robust, empirical and differentiated data on the profiles of crowdfunders (supporters). It is to be hoped that there will soon be more empirical data about the entire crowdfunding scene, including the supporters. It was also a positive surprise to find a growing number of serious publications about the commercial side of crowdfunding (start-up financing, social corporate responsibility, corporate support, relations to private equity and VC etc.).

4 Description of the phenomenon crowdfunding

The term "crowdfunding" is derived from the better known term "crowdsourcing", which describes the process of outsourcing tasks to a large, often anonymous number of individuals, a "crowd of people" (here: the Internet community) and drawing on their assets, resources, knowledge or expertise. In the case of crowd*funding,* the objective is to obtain money. Practitioners in the crowdfunding business use different definitions for crowdfunding, often in a rather narrow sense. We suggest the following definition according to Lambert/Schwienbacher (2010):

"Crowdfunding involves an open call, essentially through the Internet, for the provision of financial resources either in form of donations (without rewards) or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes"

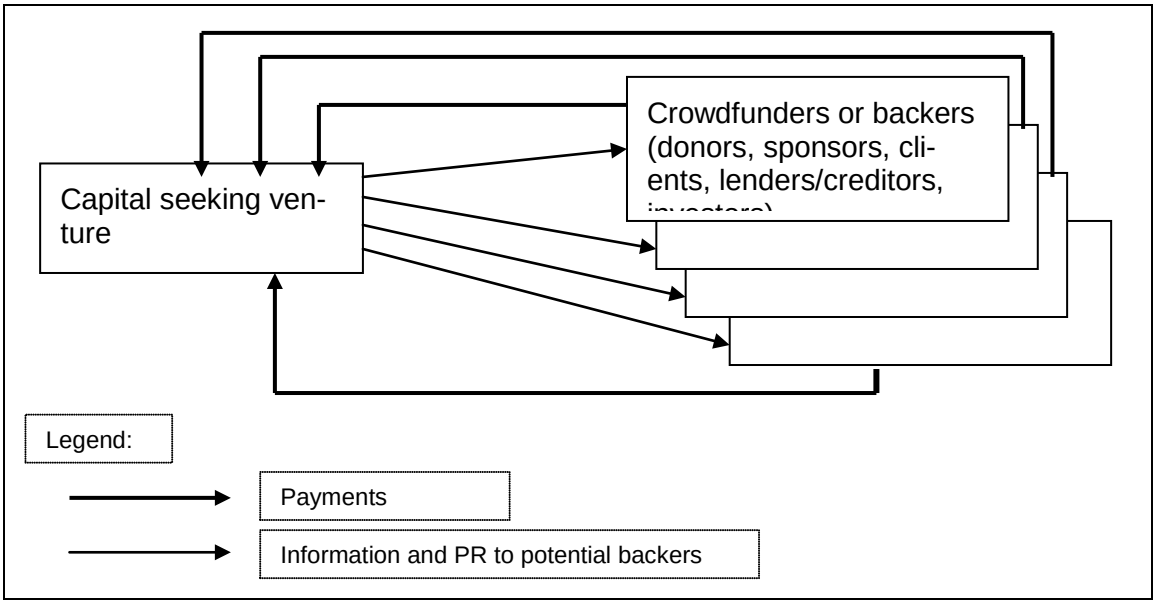
Most of the crowdfunded projects in the past had no or little entrepreneurial ambition. Neither the capital markets, nor traditional financing institutions nor business angels have, so far, taken much notice of crowdfunding as a potential financing instrument for start-ups in the seed stage.[16] In their view, crowdfunding can be regarded as a novel form of the bootstrap financing of new ventures, a form of microfinancing which mobilises individuals from some large community, the *"crowd"*, to give away small amounts of money to other persons' ventures and initiatives they find attractive. This mode of financing is not really new (see the examples at the beginning of chapter 1). What is new in crowdfunding is that it exploits the capabilities of social networks and other new features of Web 2.0, especially the function of "viral networking and marketing", which enables the mobilisation of a large number of users in specific Web communities within a relatively short period of time.

16 Only recently have European business angels, angel clubs and the European Business Angel Network (EBAN) started addressing the subject actively.

4.1 Typology of actors in the crowdfunding arena

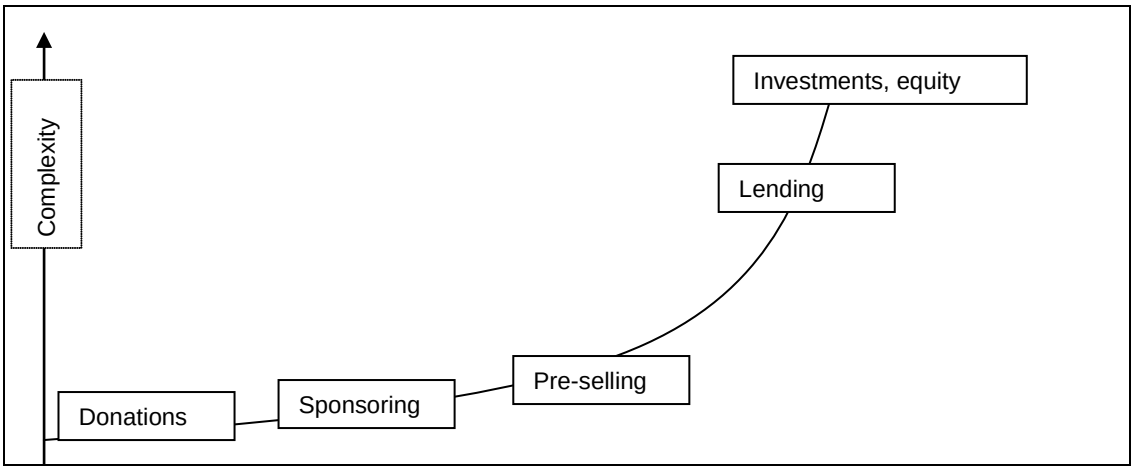
In order to explain the essential characteristics of the crowdfunding phenomenon, this is reduced to its basic elements as shown below:

Figure 1: Basic actors in the crowdfunding process



Source: Hemer et al. (2011a).

Figure 2: The major forms of capital provision ranked by process complexity



Source: Hemer et al. (2011a).

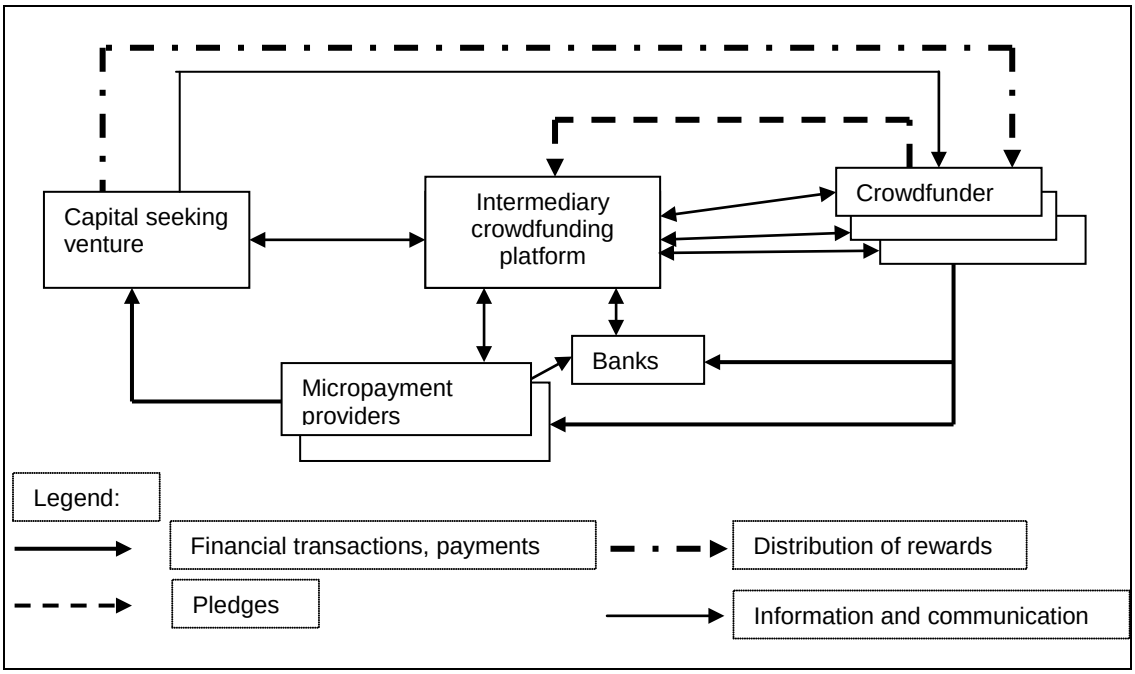
As the provision of capital can take the form of donations, sponsoring, pre-ordering or pre-selling, fees for membership in clubs, crediting or lending and Private Equity (PE) investments, the complexity of processes varies greatly. These different forms of capital provision can be ranked in a graph, starting from very simple processes (donations)

through to more complex and highly regulated forms (investments) as illustrated in Figure 2.

In order to highlight the important differences between these crowdfunding instruments, we suggest that delimiting terms should be used like c*rowd donations, crowd sponsoring, crowd pre-selling (or crowd pre-ordering), crowd lending and crowd equity (or crowd investing).*

The processes behind these instruments may be complex if large numbers of backers and micro-payment transactions have to be managed. Many initiators of ventures are either inexperienced or not interested in managing the crowdfunding process themselves and prefer to hand over this task to so-called "intermediaries".

Figure 3: The crowdfunding process involving intermediaries



Source: Hemer et al. (2011a).

In accordance with the origin of the crowdfunding phenomenon, these intermediary services tend to be Web- and software-based; therefore they call themselves *"CF platforms"*. They act as neutral facilitators both for the project initiators and the crowdfunders. They have a wide range of activity and intensity; most platforms do not do more than offer a physical (internet) platform, websites to present the projects, proven procedures and the software through which the financial pledges are collected and administered. But some platforms make greater efforts and give advice, organise public relations, make arrangements with micro-payment providers etc. Sometimes they offer other value added services beyond the sheer facilitation of funding (e.g. due diligence,

consulting, managing a co-investment fund, search for co-investors, etc.). As most project initiators go through a crowdfunding process only once or only a few times in their lifetime, it is very unlikely they will gain the experience and professionalism that CF platforms develop through their routine work. Therefore, the rapid emergence of such platforms is logical and crucial for this new market to function properly. Figure 3 illustrates how the platforms function as intermediaries between the capital-seeking ventures, financial service providers and the crowdfunders themselves.

4.2 Typology of crowdfunding projects and instruments

Looking at the already wide and very fuzzy spectrum of crowdfunded projects which we can observe on a global scale, it seems helpful to differentiate and classify them in order to be able to identify which type of project is a candidate for which form of crowdfunding. We chose the following categories for classification:

1. **Commercial background or objectives of the initiative or project**: We suggest three sub-categories or values:
   - **Not-for-profit**: the project is intended to be non-profit with societally important goals for instance in the area of public health care, public infrastructure (e.g. promotion of renewable energy technologies or new transport media), foreign development aid, general charity, public research projects, open source software etc.
   - **For profit:** the initiative pursues clearly commercial (for-profit) goals like setting-up a company, funding a commercial project within an existing company, promoting new private goods (e.g. the installation of a wind farm by a utility), an R&D project within a company, the funding of a commercial film or a music album etc.
   - **Intermediate:** the project is not clearly assignable as it is not yet clear what the commercial background will be in the long run. If so, we put it into this intermediate sub-category. Examples are projects from the area of entertainment or media (private and public), new services or social networks on the Web like Skype, Facebook, YouTube etc. once were, and which only later developed into commercial services, independent music albums and films on a mere subsistence basis, artistic performances and pieces of art, public events like festivals or concerts organised by private organisations etc. and which often find only a temporary market.
2. **Original organisational embeddedness:** This category also includes three sub-categories: independent/single, embedded and start-up. The **original** characteristic of a project or initiative should be classified at its inception date since its goal or character is most likely to evolve over time:

- **Independent and single:** The initiative has no background in an institution or organisation and is set up by individuals.
- **Embedded:** Projects originally initiated by or from within an incumbent private or public organisation (e.g. a company, an NGO, a consortium of project partners, an authority, a supranational organisation like the EU Commission or UN) and originally intended to remain part of such an organisation.
- **Start-up:** These are projects that may start as independent ones but are intend to lead to the foundation of an organisation (private or public) with unlimited scope, i.e. they start as projects with a defined end and then, after terminating successfully, be transformed into something like a firm, an association, a club, an authority, a foundation etc.

With the two main categories and six sub-categories outlined above, the following matrix can be constructed which can be used to map all existing crowdfunded projects (those which were funded both with and without the assistance of CF platforms). Some well-known crowdfunding projects are given as examples.

Table 1: Mapping crowdfunded projects

Original embeddedness of initiative	**Commercial background of initiative**		
	Not-for-profit	Intermediate	For profit, commercial
Independent, single	I am Verity SmallcanBeBig Solarimpulse Friendly Fire	Lynch Three Project Love Like hers Iron Sky The Age of Stupid The Cosmonaut Artemis Eternal	MillionDollarHomepage Exthanded lunatik.com
Embedded	Blender Reduce the Cost of Energy in Africa	Racing Shares Project Franchise Justin Wilson plc	Hotel Chocolat Media No Mad Trampoline Systems Cintep
Start-up	Buy this Satellite 4th Revolution Energy Autonomy	The Independent Collective MyFootballClub	Outvesting

Source: Hemer et al. (2011a).

These categories can also be used to map how the different forms of crowdfunding instruments displayed in Figure 2 best suit the nine types of project the matrix covers. This is done in Table 2.

This mapping exercise remains rather speculative due to its weak empirical base. But it can at least give hints as to where the various crowdfunding instruments should or could be best applied. It suggests that the instruments based on altruistic or charitable motivations (i.e. donations, sponsoring or low-interest lending) are the first choice for all

projects of the not-for-profit type and perhaps also for the intermediate category. On the other hand, projects or ventures with a commercial perspective call for instruments which yield some monetary or material return of value equivalent to the money given (particularly high interest loans and equity).

The pattern also suggests that money could be raised via crowdfunding instruments from the "not-for-profit" categories even for commercial, entrepreneurial start-up companies. This is because, in their pre-seed and seed phase, entrepreneurial ventures are start-up projects and have characteristics which can (and, in fact, do) attract altruistic supporters and sponsors (e.g. business angels).[17] This is the case if the start-up project aims to develop an innovative technology, software or service, which is attractive to people who are enthusiastic about this subject. Somehow such start-up-projects then pass through the intermediate phase where the product or service is not yet marketable and where altruistic support is still justified. Later on, these start-up projects are transformed into market-driven companies and attract investors from the formal capital market. This transition phase marks the shift from informal funding (to which crowdfunding belongs) to traditional, return-oriented funding instruments and this is exactly the point at which appropriate interfaces need to be designed to allow a smooth transition between informal and formal financial instruments.

4.3 Rewards and motivation

A crucial aspect in crowdfunding is the question of compensation, acknowledgement or rewards for the *crowdfunders*.

Crowd donations: Although a *donation* is – in essence – an altruistic act without any obligation for the recipient to give the donor anything in return, one feature of crowdfunding is for donors to be given some *"reward"* for their support. These rewards are often just immaterial acknowledgements, ranging from a mere thank-you mail, an artist's autograph or mentioning the crowdfunder's name on the cover of a film DVD or music CD (*"credit"*), through invitations to visit a film set or artist workshop or a vernissage or dinner, up to being given a minor role in the film produced with the donor's money. Some rewards are in the form of small gifts like T-shirts advertising the project, or other assets of low value. Since, in most projects, the crowdfunders understand the offer of a reward to be a binding promise, these types of donations are more like *sponsoring* which is described next.

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17 See, for instance, the solar-powered aircraft SolarImpulse, a project that attracted many enthusiastic sponsors (cf. www.solarimpulse.com).

Crowd sponsoring: In the case of sponsoring, the project initiator and the sponsor agree on a defined reward which the initiator is obligated to give. Often these rewards take the form of services like PR or marketing for the sponsor.

Crowd pre-selling: Very often the donation takes the form of *pre-selling* or *pre-ordering*: The donation is meant to help produce something (a book, a film, a music album, a theatre performance, software, some new technical product, an agricultural product, a service concept etc.) and the promised return is the delivery of an early version of the product or service. In such a case, crowdfunding is basically an advance order of a product and represents a purchasing act which is subject to turnover tax.

Crowd lending: Here the rewards are normally the interest and the payback after the lending period. One alternative to this is long-term lending based on the revenue sharing principle. Here, the creditor gives a risk-bearing loan. He does not get interest but receives, at the defined end of the lending period, an amount including an agreed share of the earnings of the venture, which could be a multiple of the original loan but could – in the case of bad performance – also be nothing.

Crowd equity: This variant of micro-investments is – in administrative terms – the most complicated alternative in the spectrum of crowdfunding instruments. Crowdfunders invest equity; the rewards are either shares of the venture, dividends and/or voting rights.

Closely linked to the issue of rewards is, of course, the question of the crowdfunders' motivation give away smaller or larger amounts of their income, often without a detailed screening, evaluation or scrutiny of the project to be funded. There is some relevant literature on this (e.g. Sommeregger 2010 or Harms 2007) and a small interview study conducted by the author's team confirmed these authors' findings as follows. It must be emphasised that the backers are not primarily motivated by material rewards, but predominantly by the mentioned immaterial rewards and a range of intrinsic motives like

- personal identification with the project's subject and its goals,
- contribution to a societally important mission,
- satisfaction from being part of a certain community with similar priorities,
- satisfaction from observing the realisation and success of the project funded,
- enjoyment in being engaged in and interacting with the project's team,
- enjoying contributing to an innovation or being among the pioneers of new technology or business,
- the chance to expand one's own personal network, or
- the expectation of attracting funders in return for one's own crowdfunding project.

4.4 Business models of CF platforms[18]

CF platforms are the intermediaries that act as facilitators for crowdfunding. At present lots of new platforms are being founded on all continents, each one attempting to offer novel features and business models. In a phase where regulation is still relatively low, a great deal of experimentation is taking place. This includes testing new service features both for the initiators of capital-seeking ventures and for the potential crowdfunders (e.g. consulting, project evaluation or due diligence, building communities, public relations and advertising, project management, interim management etc.), new models to guarantee the platforms' own funding (e.g. new commission or honorarium schemes), setting up and managing co-investment funds, searching for other (qualified) investors and brokerage of capital etc. This dynamics is already giving birth to a wide variety of business models and at first sight it appears difficult if not impossible to construct a robust typology based on the existing material. Despite this, the author has identified the following few basic models:[19]

The "threshold pledge model"

This model, also called the "all-or-nothing model", is widely applied and forms the business core of many platforms. Its main characteristic is that the platform and the project initiator agree on a concrete pledging period (between two weeks and several months) and a so-called threshold, a targeted sum of money that must be reached via the contributions of the backers or crowdfunders before any financial transaction is generated. Below this threshold, there is no flow of funds. The backers only promise to pay a specified amount if the threshold is reached within the agreed period; they only give pledges. In some business models the pledged amounts are transferred to and parked in an escrow account, which is managed by either the platform or by a partner bank. In order to make the status of each funding process fully transparent, the platform manages a website for each project where the Web community or the interested public can view the current status of the incoming pledges and the number of backers. The platform administers the pledges and once the sum of money pledged has reached or exceeded the threshold at the end of the period, the pledges are transformed into financial transactions, e.g. the payments are released from the escrow account and transferred to the project's account. If the threshold has not been reached, the fund-raising is regarded as unsuccessful and the financial transactions are not realised or are transferred back to the funders, respectively.

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18 Source: Hemer et al. (2011a)

19 This listing is, of course, not comprehensive.

The threshold pledge model or the all-or-nothing principle is the predominant model for crowdfunding projects that aim to collect capital via donations, sponsoring, pre-selling or pre-ordering. In more advanced business models the platforms tend to combine this model with other features like lending or investment models, which are described next.

Micro-lending models

Several platform models exist which broker small credits on a peer-to-peer (P2P) basis, i.e. from individual to individual without the (direct) involvement of a bank. As one example, the German platform smava[20] collects loan pledges from the "crowd" for private projects and, according to the threshold-principle, releases them at the moment the target is reached. Smava then collects the repayment instalments from the debtor (the project initiator) and forwards them to each crowd-lender. In the smava model the relationship between lender and debtor remains fully anonymous, whilst P2P lending normally includes personal contact between the partners in the credit contract.

Investment or equity models

Investment or equity models first became known through two platforms specialising in the music business (SellaBand[21] and Bandstocks[22]). Project initiators (here: musicians) and their partner platforms define a time period and a target amount of money which serves as a threshold. They divide this target into thousands of equal slices which are offered via the platform as equity shares (or stocks) to the crowd at fixed prices (e.g. € 10). Pledging then begins, analogous to the threshold-pledge model, until the threshold is reached. After that, a so-called investment phase begins.

Holding model

The former British music platform Bandstocks and the current French platform WiSeed (specialised in start-ups[23]) both supplement the above outlined investment model with a feature that we suggest to call the *"holding model".* This involves the platform operator creating a subsidiary company as an individual holding for each of the crowdfunding ventures that are to be funded. Each holding owns the above mentioned shares of "its" venture and sells them to the crowd. It acts as a single investor in the crowdfunding venture, alongside other potential investors from the conventional capital market.

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20 See www.smava.de.

21 See www.sellaband.com.

22 No longer operational.

23 See www.wiseed.fr.

The club model

The public offering of investment opportunities (securities) is highly regulated and restricted. In many countries this requires the publication of a sales prospectus, which must be accepted by a supervisory authority (e.g. the SEC in the USA, BaFin in Germany). The procedures involved are complicated, time-consuming and costly, so that in practice they are prohibitive to a small crowdfunding project. To avoid this bureaucracy and cost, some platforms organise their community by recruiting potential funders from the crowd as members of a closed circle, which acts like an investment club. The regulatory provisions are then less strict, because members of these clubs are regarded as *"qualified investors"* who need less legal protection. (In our view this assumption is rather unrealistic since the club members may have been recruited from the same inexperienced and sometimes anonymous crowd). This brings to mind the construction of business angel clubs, which – among others – serve the same purpose of bypassing the cumbersome concession process.

5 Economic relevance of crowdfunding

5.1 Empirical basis

The following analyses are based on two distinct samples of CF platforms plus a nearly comprehensive list of platforms worldwide compiled from Internet research.

In both these samples and in crowdfunding practice, the terms "*successful"* and *"unsuccessful*" projects are used. We adopt these notions, but must emphasize that this refers only to the success (or failure) of finishing the crowdfunding process on the CF platform according to the pre-set targets. The project could still go on to fail after this initial "successful" fund-raising campaign, as is the case with any other project. This subsequent performance is not considered at all.

Sample I:

The first source is a table from a website retrieved in March 2010 (http://paidcontent.org/table/crowdfunding), which shows selected performance data of 10 CF platforms from different countries. Unfortunately, the website does not reveal how or by whom this data was generated, and there is no description of the variables or categories. The data are therefore weak in terms of robustness but are one of the few data sources available so far. The author used these data and complemented them with some calculations (see Table 2) to make them comparable with the data from the second source (Sample II, see below). The majority of the platforms shown in this sample specialise in projects in the music business which somewhat distorts the pattern. However, this is also a consequence of the crowdfunding's origin in the music scene.

Table 2: Performance data of 10 selected crowdfunding platforms (data collected from December 2010 until February 2011)

Platform (country)	Sector	Start date, (months of operation until Jan. 11)	Deal flow, all projects submitted (per month)	All projects tended (selection rate)	All projects realised (success rate)	Cumulated no. of supporters (per month)	Amount of money pledged* (per project)	Cumulated amount of money paid out*	Avg. pledge per supporter	Source of earnings for platform
Kickstarter (US)	Any except social & charity	Apr. 09 (21 months)	12,000 (571 p.m.)	>5,000 (>42%)	3,500 – 4,000 (70 - 80%)	>400,000 (>19,000 p.m.)	>€ 24.6 m (>4,920 p. pr.)	?	€ 50	5% of payout
IndieGoGo (US)	Any	Jan. 08 (37 m.)	>15,000 (405 p.m.)	>4,000 (>27%)	"Thousands"			"Millions of dollars"	€ 56	4% of payout (9% of pledges)
SellaBand (NL/DE)	Music	Aug. 06 (53 m.)	?	54	38 CDs (70%)	>70,000 (>1,320 p.m.)	>€ 2.7 m (>50,000 p.pr.)	€ 2.7 m	€ 41	15% of payout
RocketHub (US)	Any	Feb. 10 (12 m.)	350 (29 p.m.)	75 (21%)	?	?	?	€ 300,000	?	8% of payout
Ulule (F)	Any	Oct. 10 (4 m.)	169 (42 p.m.)	53 (31%)	42 (80%)	4,818 (1,204 p.m.)	€ 100,000 (1,887 p.pr.)	€ 70,000	€ 32	0% for now
SliceThePie (UK)	Music	Jun. 07 (43 m.)	?	31	26 albums (84%)	?	?	€ 750,000	?	?
PledgeMusic (UK/US)	Music	Jul. 09 (19 m.)	>2,700 (>115 p.m.)	2,079 ? (77%)	132 (6%)	74,000 (3,895 p.m.)	?	?	€ 65	15% of payout
Sonicangel (B)	Music	Apr. 10 (11 m.)	1,500 (142 p.m.)	13 (0.8%)	12 (92%)	3,500 (318 p.m.)	?	?	€ 46	0% (shares in return)
MyMajorCompany (F)	Music	Dec. 07 (38 m.)	18,000 (473 p.m.)	36 (0.2%)	15 (42%)	30,000 (789 p.m.)	€ 5 m (138,889 p.pr.)	€ 360,000	€ 150	0% (shares in return)
Grow VC (FIN, UK, internat.)	Start-ups	Aug. 10 (6 m.)	1,758 (293 p.m.)	73 (4.1%)	?	7,229 members (1,205 p.m.)	€ 11.6 m. (148,904 p.pr.)	?	?	staged membership fees + 25% of ROI
Total or average			51,477 (258 per month)	11,414 (25%)	64%	84,200 p. platform, 51.7 p. proj.	>€ 45 m (8 m p. platf., 3,942 p. proj.)		€ 62.9	

Source: http://paidcontent.org/table/crowdfunding, retrieved in March 2011 complemented by author's own data search. *) Exchange rate US$/€ = 0.7057

Sample II (German Sample)

The second sample draws on two sources but both are based on data from and about nearly the same CF platforms: These are 7 German-language platforms; 6 from Germany and one from Austria. They all are fairly young, the oldest was founded in April 2009; one became operational in 2011 and the others in 2010. They cover a broader spectrum of sectors than the platforms in Sample I, including technology start-ups.

On the one hand we searched the Internet for the platforms' current performance data and processed them in the same way as the data in Sample I (see Table 3). Since the data on the Austrian platform's homepage was not very significant, it was omitted. Due to the short existence of the remaining 5 German platforms, their homepages displayed information about all the projects they had handled since their inception until June 2011. And as these were the only German platforms existing during the period under scrutiny, our data represent 100% coverage of all crowdfunding projects in Germany which were assisted by platforms.

The second source stems from a very recent empirical study by the Institute for Communication in Social Media (ikosom, see Eisfeld-Reschke/Wenzlaff, (2011)) of the identical platforms from Germany and Austria described above. This study was done as a questionnaire-based survey of all platform operators and covered all the 125 projects they managed in the observation period from May 2010 until April 2011. Hence, this study also has 100% coverage. This part of the study was complemented by a representative interview survey with a sample of 25 initiators selected from the population of 125 projects. Some of the data from this study are complementary to the first source but they also represent a sub-section of it since the observation period is shorter than in the first source.

The population of existing CF platforms:

In April 2011, more than 240 crowdfunding cases were found on the Internet. However, the majority of 200+ are CF platforms whose number is growing rapidly. The total number of crowdfunded projects or ventures must be much higher than this, but is hidden because they were either not managed on platforms and do not display their funding sources, or the intermediaries closed down the projects' webpages on their platforms once the funding campaign had been completed. We have tried to estimate the number of crowdfunded projects or ventures by extrapolating some figures of Sample I and II.

Table 3: Performance data of 6 selected German crowdfunding platforms

Platform (country)	Sector	Foundation, (months of operation until June 11)	All projects offered until June 11 (per month)	Active projects presently offered in June 11	All unsuccessful projects until June 2011	All successful projects until June 2011 (success rate)
Pling (DE)	Creative projects, mainly films and games	Apr. 09 (21 months)	31 (1.5 p.m.)	20	8	3 (9.6%)
StartNext (DE)	All creative industry	Sept. 10 (9 m.)	168 (18.7 p.m.)	64	73	31 (18.4%)
VisionBakery (DE)	Creative industry, social, sports	Jan. 10 (17 m.)	29 (1.7 p.m.)	12	17	10 (34.5%)
Inkubato (DE)	Creative projects, mainly films and games	Oct. 10 (8 m.)	40 (5 p.m.)	24	13	3 (7.5%)
mySherpas (DE)	Any, incl. start-ups	Aug. 10 (10 m.)	56 (5.6 p.m.)	33	4	19 (33.9%)
Seedmatch (DE)	Start-ups	5-09/9-10 (9 m.)	?	?	0	0
Total (average)			324 (6.5 p.m.)			66 (20.4%)

Source: author's own web research June 2011.

Table 4: Projects tended by 5 German and one Austrian crowdfunding platforms

Platform	All projects offered between 5/10 and 4/11	successfully funded	funding unsuccessful
Pling (DE)	6		
StartNext (DE)	41		
VisionBakery (DE)	6		
Inkubato (DE)	12		
mySherpas (DE)	8		
German total	73		
Respekt.Net (AT)	52		
Grand total	125	67 (53.6%)	58 (46.4%)

Source: Eisfeld-Reschke/Wenzlaff (2011).

5.2 Number of crowdfunding ventures

Sample I (Table 3):

What is striking at first glance about Table 3 is the high number of 51,477 project applications (in VC business also called "deal flow") forwarded to these 10 platforms between December 2007 and January 2011.[24] And if this sample's average of 258 applications per month is taken and extrapolated, you get the *amazing but fictitious figure of over 600,000 projects per year applying to the 200+ CF platforms* worldwide to be accepted for a crowdfunding campaign. It should be noted, however, that this figure includes all projects with limited scope and without any entrepreneurial ambition (the majority being creative projects). In view of the enormous number of company start-ups each year (globally), this figure is therefore not that exciting (in Europe alone many more start-ups are founded per annum).

MyMajorCompany, IndieGoGo and Kickstarter are among the oldest platforms we know of and they account for the highest number of crowdfunding project applications submitted (18,000, 15,000 and 12,000, respectively). The French music platform MyMajorCompany is the most attractive one in terms of total applications and second in terms of influx per month. Related to the lifetime of the platforms, the influx of new applications varies from an average of 29 per month of lifetime (the relatively young RocketHub) up to 571 per month (the "old" Kickstarter). Although this pattern is somewhat fuzzy, it does indicate that the platforms win increasing numbers of clients over their lifetime.

The acceptance rate varies widely: PledgeMusic ranks the highest; they accept and process 77% of all applications forwarded to them, followed by Kickstarter (42%) and Ulule (31%). At the lower end of this ranking, we find the attractive MyMajorCompany with only 0.2% and Sonicangel (0.8%). This pattern confirms what we learned from our qualitative scrutiny of a large number of platforms' business models, namely that the platforms apply very different selection methods. Some offer detailed advice to the initiators or have intensive assessment processes (e.g. due diligence) when selecting the most promising projects for their platforms, whilst others invest very little effort and simply accept most applications.

With the exception of the young platform Sonicangel, which, according to its high success rate of 92%, seems to have a very successful business model, all the other platforms (SellaBand MyMajorCompany, SliceThePie, IndieGoGo and Kickstarter) claim to

24 This sample includes the most successful platforms.

have good success rates of between 42 and 84% (the overall average being 64%). In contrast, only the platform PledgeMusic has a low rate of 6%. No clear picture emerges when comparing success rates with acceptance rates, which could be taken as an indicator of the effort invested in project selection: High success rates go together with both low and high acceptance rates and vice versa.

At the end of the day, the number of projects which were finally accepted and successfully crowd-financed is disappointingly small. Only Kickstarter accounts for up to 4,000 successfully funded projects in its lifetime of 21 months. Compared to the number of 12,000 submitted projects (deal flow), its rate is high (33%). The success rate of IndieGoGo is over 25%, that of Ulule is 25%, whilst the rates of other platforms are much lower (e.g. MyMajorCompany: 0.08%). In contrast, the international VC business has success rates between 1 and 5% – with similar figures worldwide (funded ventures related to deal flow into VC fund). So the likelihood of obtaining some seed funding via crowdfunding seems to be in the same order of magnitude as in the VC business, with a wider variation due to the different selection and screening methods used.

Sample II:

The performance figures in the German sample (Table 4) are much more modest, as these platforms are relatively young (none being older than 21 months). Although it has only been operating for 9 months, StartNext has by far the highest number of projects, followed by mySherpas. StartNext also has the highest average of projects across all months of operation before mySherpas; the overall average is 6.5 per month. The equivalent figures were of similar order of magnitude as in Sample I (except for the extraordinary and distorting cases of Kickstarter, IndieGoGo and PledgeMusic) from 0.7 for SliceThePie to 13 per month for Ulule. VisionBakery and mySherpas have the highest success rates (approx. 34%) compared to the rest. The average is only 20.8% – one third of the rate in Sample I. Both this pattern and that of Sample I do not support the hypothesis that the success rate can be correlated with the lifetime of the platform. Apparently other success factors are at work.

The German ikosom study (see explanation above) makes it possible to observe the growth dynamics of the German platforms. Its questionnaire-based survey looked at the period between May 2010 and April 2011. Since then, the number of projects has increased rapidly from 73 to 324, an astounding and encouraging growth. The new platforms are able to learn a lot from their forerunners, can improve their business models and processes, avoid some mistakes the pioneers made and thus catch up quickly.

Concluding this section, we can state that genuine entrepreneurial ventures funded through crowdfunding play only a minor role at present. The majority of crowdfunding projects are still from the creative industry and in the field of not-for-profit, and social applications. It will take some time before the crowdfunding alternative becomes popular for entrepreneurial ventures and before it is better promoted by politics and traditional actors in the financial markets. At this point in time, it is worth remembering the difficult start business angel financing had in Europe, which needed several years of active promotion to take off.

5.3 Mobilising the crowd: Number of supporters

The term *crowd*funding suggests a huge financial potential hidden in a large population of enthusiastic individuals willing to give away small amounts of money to one and the same project and thus resulting in a substantial budget. This vision remains realistic in the long term, but at present the proportion of people that can be mobilised from the crowd for funding projects is still very small. The two samples yield some data about this issue.

Sample I (Table 3):

Table 3 shows the spectrum of the 10 platforms' supporter portfolio: This ranges from 3,500 to over 400,000 supporters per platform, with an average of 84,000. This sounds more impressive than it is when you consider the hundreds of millions of active users in the Web's social networks which form the target group for crowdfunding. It is interesting to see how many supporters any one project can attract: This sample has an average of 51.7 supporters per project.

Sample II:

In the German study, a total of 2,624 supporters are counted for 125 projects, of which fundraising was successful for 67 and unsuccessful for 58 (Eisfeld-Reschke/Wenzlaff 2011). These supporters were mobilised in a period of only one year (approx. 219 per month on average). This is one order of magnitude less than in Sample I. In Sample I, even the platforms as young as the German ones in Sample II gained more supporters per month across their lifetime (e.g. Ulule won 1,200 supporters per month).

In Sample II, the average number of supporters is 21 per project (including the 58 unsuccessful funding campaigns, see Table 5). This is only 40% of the equivalent figure of Sample I.

Concluding this section, it becomes obvious that – so far – only a small slice of the total "crowd" on the Internet is being mobilised through the activities of CF platforms. However, there is still the enormous number of millions of "sleeping" candidates that can be addressed. Looking at each crowdfunding project, the number of supporters is limited and does enter a sphere which would justify calling it a "crowd". Although projects with thousands of supporters are known (e.g. MyFootballClub, TikTok & LunaTik, TheMillionDollarHomepage etc.), in general, it is more likely that figures like 21 in Sample II or 52 in Sample I are achieved.

5.4 Volume of funds mobilised from the crowd

The third important aspect of crowdfunding is the amount of capital that can be tapped from the crowd. Again, we look at the two samples.

Sample I (Table 3):

Although only 5 of the 10 platforms in this sample released their financial figures, the total sum pledged (commitments to fund) was more than € 45 million. The amount finally paid out to projects that reach their threshold is always much smaller because unsuccessful projects do not receive any funding according to the all-or-nothing principle. In any case, the level of the crowdfunders' commitment is already revealed by the pledges made.

If the average € 8 million of pledges per platform (see Table 3) is extrapolated to the 200+ platforms existing worldwide, you arrive at a theoretical funding potential of € 1.6 billion that crowdfunders might be ready to dedicate to crowdfunding projects on a global scale. Broken down to the level of individual projects, the amount ranges from € 1,887 (Ulule) up to about € 159,000 (Grow VC) per project with an average of € 3,942.

Sample II:

The financing targets (thresholds) of all 125 projects observed in Sample II amount to € 400,064 (Eisfeld-Reschke/Wenzlaff 2011). Targets range between € 1 and € 25,000 per project. The average is € 3,205 per project, which corresponds quite well to the equivalent figure of Sample I (€ 3,942). Overall, a total of € 208,746 was pledged.

For Sample II, equivalent figures are only available for the 67 successfully financed projects: Their total target budgets summed up to € 182,182, with an average of € 2,719 per project. The total pledged was € 197,204, which is identical to the total actually paid out. Funds ranged from € 94 to € 26,991 per project with the average of

€ 2,943 per project. Overall, these 67 successfully funded projects received 8% more funds than they had asked for. In contrast, the unsuccessful projects achieved only 5.3% of their targets.

Conclusion for this section:

The average amount of money per project is small in both samples: The targets' average lies between € 3,200 and 4,000. However, individual projects which reach or exceed their goals often end up with a large surplus; there are examples which achieved high multiples of their targets (e.g. TikTok & LunaTik[25] achieved US $ 941,718 and had a goal of US $ 15,000: a multiple of 68).

In economic terms, these usually small project budgets indicate a low level of entrepreneurial ambition, otherwise the target budgets would have been higher. The majority of projects are, hence, projects with limited scope, without longer-term visions or sustainable perspectives. This is typical for projects in the creative industry where many initiators (particularly artists) subsist by carrying out one project after the other.

What is apparent is that there is a huge funding potential in the (worldwide) crowd contrasted with low-budget projects. This discouraging picture can, however, be brightened by looking at a few extraordinary projects and ventures which managed to raise hundreds of thousands or even millions of dollars from the crowd (e.g. TiTok & LunaTik[26], trampolinesystems.com, the milliondollarhomepage.com_and many more).

5.5 Funding contribution from each crowdfunder

Both samples include figures about the amount pledged by each of the supporters.

Sample I (Table 3):

Here, the average pledge is reported to be approx. € 63 per supporter. There is no information about the average per project and supporter but we assume that the figures mean per project rather than across all projects of any one serial supporter.

25 See http://www.kickstarter.com/projects/1104350651/tiktok-lunatik-multi-touch-watch-kits.

26 See http://www.kickstarter.com/projects/1104350651/tiktok-lunatik-multi-touch-watch-kits.

Sample II:

In this sample, the supporters pledged about € 80 on average across all 125 projects. In this case the figure refers to the average contribution per project. The contribution for only the successful projects was higher at € 89 per supporter.

Conclusion:
Both samples underpin that the individual contribution of supporters is not constrained to the range of a few dollars or euros, but can be substantially higher. Crowdfunding is more than just collecting loose change in a collection box on the street.

6 Potential role of crowdfunding in start-up financing and conclusions

After the rather disappointing figures shown above, the question arises whether crowdfunding can become a realistic option among the spectrum of instruments for financing start-ups and, if so, for which types of venture? In this paper we focus on only two categories of ventures: on innovative projects or ventures from the creative industry and on technology-, science- or knowledge-based start-ups. Comments will also be made on other types of projects for which crowdfunding seems well suited.

6.1 Innovative projects or ventures from the creative industry

The Web community in the creative industry is the sector from which *crowd*sourcing and *crowd*funding in the narrow sense of these terms first emerged (in the music and film business to start with). This confirms with the century-old tradition of private sponsorship and donations to culture and the arts. In this sector, entrepreneurship is not very prominent and the actors (artists and related service providers) tend to remain in very small businesses, mostly self-employed without staff and are used to making their living on a subsistence basis, often from project to project. One characteristic is that peers help peers. Much too often their chances of surviving are limited. The reasons for such depressing structures are manifold and will not be discussed here, but the fact is that this sector, particularly the private part of it,[27] notoriously suffers from a dramatic shortage of financing:

27 The public cultural sector comprising public theatres and operas, museums, orchestras etc. traditionally receives huge support in the form of public subsidies.

- Apart from a few extraordinarily successful cases, the turnover from services or sales of artwork remains low, and may not even allow for sufficient income to make a decent living;
- public grants are hardly available or accessible to private persons;
- public or bank loans are almost entirely absent,
- so far, this sector has not attracted private equity or even VC funds.

As a consequence and in spite of this situation, the players in this scene continue to be creative and produce innovations (traditionally called "creative ideas, projects or ventures" rather than "innovations"), although usually on a small scale and with narrow economic scope. *Many of these projects do have the potential to be big commercial successes.* Even if such a venture promises a broad market and good commercial success, few of the artists involved have the right entrepreneurial mindset (although this is beginning to develop) capable of driving commercially-relevant activities, including professional fund-raising and financing. So it is no surprise that crowdfunding emerged from this sector as it is best suited to its characteristics: Case-by-case funding of single projects which may be of limited scope but are compelling and attract many individuals. Funders are often peers from the same scene with similar problems and, thus, empathy with anyone trying to finance a project. The German sample (see section 5) revealed that all projects from the creative and culture sector tended by German platforms remained below a budget of € 25,000. It would be difficult for crowdfunding in this scene to generate substantial amounts of money for projects with a greater capital demand, e.g. projects with an entrepreneurial perspective. There are some exceptions where one large sponsor is able to be located. These are important because they send positive and motivating signals to other enthusiasts from the crowd and thus trigger a greater flow of small contributions.

In conclusion, it can be stated that crowdfunding is already an established financing instrument in the creative industry, which is well accepted and has the tendency to increase in importance as one of the few financing instruments available in this sector. It may help to develop further entrepreneurial ambition in this sector.

6.2 Applicability of crowdfunding to funding knowledge- or technology-oriented start-ups

Any venture begins as a start-up project which ends the moment it is formally transformed into a firm. Therefore the funding conditions for this start-up project phase are similar to those for creative projects (see above). However, such start-up projects usually address different target groups than the creative scene with the possible exception

of the Internet community interested in IT and software technologies. What is most important is that a start-up concept must have some sort of fascination, must be compelling and exciting to a certain group of people like, e.g. IT experts, engineers, scientists, marketers or people with visions of future applications. Under these preconditions crowdfunding could be one informal financing alternative to close the early-stage gap which represents one of the major obstacles when getting start-up projects off the ground. Business angel financing is a good reference here and fuels the hope that crowdfunding may also be able to tap into hidden informal capital resources. However, unlike business angels, crowdfunding does not focus on "high net worth individuals" but rather on the crowd of "normal", less wealthy individuals who are enthusiastic about the respective project. Of course, syndication or other forms of collaboration with business angels would be most welcome, as this would send a positive signal to others.

Signalling is one of the most important functions of crowdfunding and there are indications that its effect ranks strategically higher than the funding results. Having found a large number of supporters – which is visible to everybody who consults the CF-website – means, on the one hand, that these already form a core market and, on the other hand, that they can be easily mobilised as multiplicators and sales agents within their personal (social) networks.

What we can say for certain is that crowdfunding should function well in the pre-seed or seed phase when a relatively small amount of seed money (some thousands of euros) is sufficient to spur on the project and get it off the ground.

CF seems less suited to the ventures described below.

Ventures which have easy-to-understand and easy-to-copy business concepts or products. In start-up financing in general, the entrepreneur or project initiator has to disclose a large part of his concept or the innovation he wants to bring to market in order to win supporters (sponsors, lenders or investors). This also applies to crowdfunding, but with the difference that the number of (potential) supporters here is, by definition, much larger (up to thousands) and it is either impossible or legally very difficult to arrange non-disclosure agreements with all of them. In the crowdfunding process the entrepreneur virtually discloses his business concept and competitive details to the public at large.

CF seems hardly viable for large budgets or capital requirements. Up to now, there have not been enough examples where large amounts of capital have been raised from the crowd for commercial business concepts to be able to regard crowdfunding as capable of providing a substantial share of start-up financing.

CF is not appropriate for later stage financing. Although there are a few examples which show that, through crowdfunding, large sums were able to be raised even for later-stage projects of incumbent companies (see the case of Trampoline Systems[28], which crowdfunded a costly software project for which no traditional financiers could be found), these must be regarded as exceptions. Financing stages later than the start-up or early-stage phase are the domains of private equity or other instruments from the organised capital market.

Summing up, crowdfunding cannot replace traditional sources of entrepreneurial finance, particularly not in the later stages. But it can complement them. Even with small amounts of money, it can support the emergence of a company which otherwise would not even be able to fund the initial activities needed to set up the firm (e.g. writing the business plan, doing a small market analysis, filing a patent, professional advice through consultants or tax accounts etc.). Depending on the amount of money that can be raised, crowdfunding can help to make a start-up "investment ready".

6.3 Applicability of crowdfunding for funding other types of ventures

On a worldwide scale, crowdfunding is already an established way to fund social and/or not-for-profit projects, particularly in the Third World. Many organisations which have a long tradition of fund-raising for social and/or not-for-profit projects (e.g. the Red Cross, Oxfam, NGOs and other organisations for development aid) employ the instrument of crowdfunding rather virtuously.[29] But there are also for-profit organisations active in this business field.[30] They all benefit from being well networked on a global scale and from the positive image and reputation they enjoy among the public at large. Because they have access to a very large community, they are able to fund very large projects, although small ones are handled as well.

Another application field for crowdfunding, albeit a very young one, are projects or ventures developing, piloting or marketing new technologies, particularly in the domains of (renewable) energies, clean-tech, climate and environmental protection.[31] Although

28 See www.trampolinesystems.com.

29 See KIVA, Betterplace in Germany or Respekt.Net in Austria.

30 For example, the Bangladesh Grameen Bank of Nobel Prize winner Yunus, Micro Equity Development Fund (MEDF) in USA or "Crowdfund" in South Africa.

31 Example: the solar aircraft SolarImpulse.

such technologies do not necessarily have the same compelling esteem as projects from the creative scene, they do attract people with social responsibility or an idealistic mindset who are prepared to give away parts of their income without expecting material returns. These projects can attract large communities of backers. If crowdfunding campaigns are well organised, they can contribute substantially to the development and penetration of societally important technologies. One surprise is that even some for-profit projects are supported. As a result, even companies can promote new technologies in this way if societal aspects are rated (or marketed) higher than the commercial outcome for the company.

Table 5: Applicability of CF-instruments by types of project

Original embeddedness of initiative	**Commercial background of initiative**		
	Not-for-profit	Intermediate	For profit, commercial
Independent, single	Donations: +++ Sponsoring: +++ Pre-selling: +++ Lending: ++ Equity: -	Donations: +- Sponsoring: ++ Pre-selling: +++ Lending: ++ Equity: -	Donations: - Sponsoring: ++ Pre-selling: +++ Lending: +++ Equity: -
Embedded	Donations: +++ Sponsoring: +++ Pre-selling: ++ Lending: - Equity: -	Donations: +- Sponsoring: +++ Pre-selling: +++ Lending: +- Equity: -	Donations: Sponsoring: ++ Pre-selling: +++ Lending: + Equity: -
Start-up	Donations: +* Sponsoring: +++ Pre-selling: +++ Lending: ++ Equity: +*	Donations: +* Sponsoring: +* Pre-selling: +++ Lending: ++ Equity: +*	Donations: +* Sponsoring: +* Pre-selling: +++ Lending: ++ Equity: +

Source: Hemer et al. (2011a).

Legend: +++ very well suited, ++ well suited, + partially applicable, +* applicable in early stage, - less suited, +- case dependent.

Closely related to this latter application is that of using crowdfunding to finance research and development (R&D) projects. Despite their societal relevance or future importance, many research subjects are not funded because there are no matching public promotion programmes, or because policymakers or funding agencies are not (yet) aware of the importance of the project in question. But there may be communities of people in science or political groups who are ready to contribute small sums of money to such research activities, at least to enable a small kick-off or pre-study, a feasibility study, a demonstration study or an awareness campaign to mobilise other funding organisations. This applies to research subjects of both a technical and non-technical nature.

6.4 Conclusions and outlook

The crowdfunding scene is currently characterised by high dynamics. Increasing numbers of projects from various application fields are trying out the crowdfunding option; the number of crowdfunding platforms is growing rapidly, and they are experimenting with various new business models. Crowdfunding will receive more scientific attention and the associated press articles and scientific papers will help to clarify the crowdfunding picture. This dynamic should hold for some months, but consolidation should result within a few years. The projects funded via crowdfunding will show what works and what does not and the market performance of the crowdfunding platforms will sort out the feasible business models. The crowdfunding scene will have to face failures and disappointments and, most probably, also some cases of fraud. So far, there is little regulation of the crowdfunding market which allows the great range of experimentation we are seeing, but this fact also gives scope to many undesirable developments. If crowdfunding is to be established within the spectrum of serious financing instruments and be given more momentum, policymakers will certainly have to implement some rules to protect both sides: the project initiators/ start-up founders and the supporters or investors.

And, last but not least, successfully motivated supporters from the crowd might become active investors in innovative start-ups in the future. For the above mentioned reasons, crowdfunding is worthy of being promoted and supported, as it is one of the few instruments that can mobilise private capital in the early stages. It is no longer a minor issue belonging exclusively to the creative scene; it deserves greater attention, both in politics and in science.

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