Distance in reward based crowdfunding

Ludovic Vigneron

CRISS, Université Polytechnique Hauts-de-France, Valenciennes, France

Campus Universitaire Les Tertiales, Rue des cents têtes, 59313 Valenciennes cedex 09.
ludovic.vigneron@uphf.fr

Distance in reward-based crowdfunding

This paper, questions the impact the distance between backers and entrepreneurs has on the success of reward based crowdfunding campaigns and provides a framework to understand the association. A unique dataset provided by *Ulule*, the leading French platform, provides a sample of 4861 campaigns to work on and shows that the campaigns attracting more distant backers succeed more frequently and more intensively than the others. This result is attributed to the fact that campaigns that succeed are those launched by entrepreneurs with the most important social capital, a social capital that includes more weak ties. The way that support is expressed is in line with this. It also shows that successful campaigns attracting the most distant backers are also those for which the average individual support is the lowest. They also attract more numerous support from more numerous backers. Successful campaigns attracting less distant backers (more local ones) collect more important average supports, but less numerous ones from less numerous backers.

Keywords: reward-based crowdfunding; campaign's success; entrepreneur's social capital; geographic distance; weak ties versus strong ties.

1. Introduction

Information technologies profoundly alter the way exchanges can be made in our economies. Their unexampled ability to reduce transaction costs allows consumers and investors to access a broader range of products and services from suppliers established all around the world (Bakos, 1991). In theory, they virtually abolish the penalties associated with distance between potential buyers and potential sellers. In a context of low transport and almost zero communication costs, they promote matching between actors, who, using classical mediums, would not even have heard about each other. However, the profusion of offers creates congestion problems (Roth, 2008). New activities emerge to help deal with these difficulties. E-commerce platforms (like *Amazon*), on line brokers and a lot of new innovative firms build their business model around this new need for a specific intermediation. Crowdfunding platforms are one of them.

Previous work provides evidence that distance still affects the way people exchange, even in electronic markets. “Home bias” has been documented in many types of electronic markets. Hortaçsu, Martinez-Jerez and Douglas (2009) report that on *eBay* and *MercadoLibre* transactions are more frequent between buyers and sellers located in the same geographical area. Behavioural finance studies show that the same type of bias also affects investment decisions (French and Porterba, 1991; Grinblatt and Keloharju, 2001; Graham, Harvey and Huang, 2009). Studies on different forms of crowdfunding provide results in line with the fact that the probability for a given platform’s user to support a campaign is negatively correlated to the geographic distance between them and the campaign carrier (herein called the entrepreneur). Lim and Viswanathan (2016) provide evidence of such behaviour in classical lending crowdfunding, Burtch, Ghose and Wattal (2014) document the same pattern in non-profit lending crowdfunding, Guenther, Johan and Schweizer (2018) in equity crowdfunding, Agrawal, Catalini and Goldfarb (2015) in reward-based crowdfunding.

Even if transportation and negotiation costs, which are positively correlated with distance, have drastically dropped since the introduction of information technologies, in a context where asymmetric information problems remain between contractors, other factors also correlated with proximity matter. Geographically determinate elements, like the sharing of a common language (Gomez-Herra, Martens and Turlea, 2014), cultural proximity (Burtch, Ghose and Wattal, 2014) and social relationships, have (Dejean, 2020) become more and more important in creating the conditions of trust required to enable transactions between distant contractors in electronic markets.

This paper investigates how geographic distance between entrepreneurs and backers affects the success of reward-based crowdfunding campaigns. Using data provided by the French platform *Ulule*, distance is measured using the postcodes declared by users, entrepreneurs and backers, when they register. The distance for each campaign is taken to be

as the crow flies between the postcodes' centre, where the entrepreneur and their backers are, and is averaged. This allows detailed information on 4,861 campaigns to be collected. There is evidence that campaigns attracting on average more distant backers are more frequently successful than the others. This difference appears from an early stage in the campaign. This is explained by the structure of the entrepreneurs' social capital, seen through the strong and weak ties linking them with their backers. Campaigns that succeed more frequently and more intensively are those conducted by entrepreneurs more able to activate weak ties, which are more frequent with distant backers. The way that support is expressed is in line with this assumption. There is evidence that successful campaigns, which attract more distant backers, collect more numerous support from more numerous backers, and that this support presents a lower average amount than successful campaigns, which attract less distant backers.

The work is close to Guo *et al.* (2018), who test the presence of "home bias" on the US platform *Kickstarter*. There is confirmation that distance still matters in crowdfunding and that geographic considerations affect campaign outcomes. The result provides evidence that backers "home bias" is not the key element allowing a fund collection to reach its target. There is also a contribution to the debate on the role entrepreneurs' social capital has on crowdfunding and more generally on seed financing. Previous literature has pointed out the positive role of family and friends (Agrawal, Catalini and Goldfarb, 2015) and of acquaintances (Mollick, 2014) in a success. One specific contribution is to provide evidence on how they are expressed and on the importance of the other ones to efficiently collect funds. A coherent theoretical framework is introduced into the analysis, one derived from social network analyses inspired by Granovetter's works. This allows a consideration of two types of schematic ties that can be related individuals (entrepreneurs and backers): strong and weak ties (Granovetter, 1973). There is a crossover with studies that associate the strength of ties with the physical distance separating individuals (Omelia *et al.*, 2011; Laniado *et al.*, 2018).

The remaining section of the paper is organised as follows. In section 1 gives a review of the literature both on the determinants of reward-based crowdfunding campaigns' success and on the impact distance has on online transactions. These considerations help to formulate a set of hypotheses. Section 2 presents the empirical setting: the data and test methodology. Section 3 presents results and discussion. The final section gives a conclusion.

2. Related literature and hypothesis development

2.1. The determinants of crowdfunding campaigns' success

In crowdfunding, potential backers face great uncertainty about the ability and the willingness of entrepreneurs to keep their promises. Even if they are genuinely interested in a project to fund and the rewards associated with it, they may be afraid to back a campaign due to the risk of failures in both the fundraising and carrying out the project. These fears are all the more important as information asymmetries between entrepreneurs and potential backers come into play. Previous works provide evidence on mechanisms that help to overcome these difficulties and allow transactions to happen. They can be regrouped into four categories: prior trust, the backers' involvement, signalling and outside certification.

Arrow (1974) points out that, regardless of the field or type, a prior minimal trust between buyers and sellers is required to make a transaction to occur. This prior trust is defined as the conviction that each part undertakes in good faith, without any dissimulation, or the will not to fully fulfil its obligations. Experimental economics studies have highlighted the conditions for a transaction to take place only on the basis of trust mechanisms (Berg, Dickhaut and Cabe, 1995; Bohnet and Croson, 2004). One of them is sharing common values that can be achieved by belonging to the same group or community. In crowdfunding, studies have provided evidence of such phenomenon. They show that altruism (Allison *et al.*, 2015;

Cholakova and Clarysse, 2015) and homophily (Greenberg and Mollick, 2016) are important motivation in the choice of backers for a campaign to finance.

Interactions through the platform between actual or potential backers and entrepreneurs allow relationships to be established. Regular communication of information both on fundraising and the completion of the project gives the opportunity for the community to monitor the entrepreneur and to influence its work. This reassures the backers and makes them more interested in the success of the campaign. Boeuf, Darveau and Legoux (2014), studying theatre projects funded via *Kickstarter* in 2011, provide evidence that campaigns implying co-creation process are more frequently successful. They also identify the fact that the platform allows artistic networks to be built involving reciprocity between entrepreneurs in the financing of their projects. Belleflamme, Lambert and Schwienbacher (2014) show in a theoretical model that, in presale campaigns, one of the key points of success is the participation of backers in the project. This generates a feeling they belong to a privileged community and convinces them to promote the campaign and the product sold after its completion.

Campaign parameters can be chosen to signal the entrepreneurs' willingness to make efforts to fulfil their promises. By setting these as harder to achieve than necessary, the most motivated entrepreneurs distinguish themselves from less motivated ones. The increase in the risk of failure in fundraising discourages lazy entrepreneurs to imitate hard working ones. Ahlers *et al.* (2015) note that, in equity crowdfunding, the fact that entrepreneurs retain significant quantity of equities is interpreted as an effective signal fostering funding success. In reward crowdfunding, Cumming, Leboeuf and Schwienbacher *et al.* (2019) note that choosing the "All or Nothing" campaign modality instead of the "Keep it All" one is perceived as a quality signal by backers and so increases the probability of successful fundraising. This choice means that the entrepreneurs only get the money brought in by backers if the targeted amount is reached instead of getting it directly. Working on "All or Nothing" campaigns, Hakenes and

Schlegel (2014) provide evidence that, for equivalent projects to be funded, initially setting a higher targeted amount is also perceived as a good signal by backers. Those campaigns are more frequently successful.

The observation by potential backers of the behaviour of actual backers can also influence their decision on whether to finance a campaign. The active support that they make can be considered by outsiders as a quality certification. This point finds its empirical concretization in the fact that campaigns which start quickly by collecting a significant share of their target are more often successful (Ordanini *et al.*, 2011; Agrawal, Catalini and Goldfarb, 2015; Colombo, Franzoni and Rossi-Lamastra, 2015; Kuppuswamy and Bayus, 2017). The most relevant source of this certification identified by the literature is the social capital, the personal network of relationships, which the entrepreneur is able to activate. Here, the research distinguishes two types of social capital: one external to the platform and the other internal (Adler and Kwon, 2002; Gedajlovic *et al.*, 2013). Agrawal, Catalini and Goldfarb (2015) note that the involvement in the campaign of the carrier's family and friends is positively appreciated by potential backers. Mollick (2014) and Zheng *et al.* (2014) note that entrepreneurs with more *Facebook* friends than the others more often reach the target of their campaign. Lin, Prabhala and Viswanathan (2013), studying the lending crowdfunding platform *Prosper.com*, provide evidence that borrowers with more internal friendly relationships (approval in the platform) obtain better credit conditions. Colombo, Franzoni and Rossi-Lamastra (2015), in reward crowdfunding, provide evidence that carriers who have already financed at least one campaign on the platform before launching their own fundraising are more frequently and intensively successful when they do. They attribute this positive effect to reciprocity triggered by belonging to the carrier's internal community of potential backers (those previously funded). The reciprocity is here defined as the feeling of a perceived obligation between a member of a community which can be specific, "I fund you because you have funded me", and/or general,

"I help you succeed in your campaign contributing directly to it or by diffusing your call, because we belong to the same community".

Here, an entrepreneur's social capital can be modelled as an acquaintances network in which each of them is considered to be a link which connect them directly or indirectly to other people. In an analysis of the labour market, Granovetter (1973) points out that there are two types of connexions in a search network: strong ties and weak ties. The former represents the kind of relationships we can have with our family and close friends. They are characterised by the trust that we can have in exchanges with people who participate in them with us. An individual can only benefit from a limited number of them, because they are costly to maintain. The latter are less involving. They are the kind of relationships that we can have with co-workers or simple friends. Maintaining them costs virtually nothing. Individuals can benefit from many of these kind of ties. They do not allow the sharing of resources or secure exchanges, but they connect them to other groups of connected people. In so doing, they allow broader information sharing. Granovetter (1973) shows that people find better jobs most of the time thanks to information they get from weak ties. If this model is transposed to the crowdfunding context, it can be inferred that external social capital is composed more of strong ties and internal social capital of weak ties. Both help the campaigns to succeed.

2.2. Distance in electronic markets

Geographic distance between supply and demand is a classical source of market imperfection. It increases transaction costs, especially through transportation costs, and reinforces asymmetric information problems. As a result, distances segment markets. Salop (1979) shows that, when considering distances, consumers have to travel to buy products, so markets function like oligopolies with differentiated products. Grossman and Shapiro (1984) show that the use of an optimal advertising technology helps to mitigate information problems associated with distance and reinforce market competition.

The generalisation of the Internet and information technology in the late 90's and the early 2000's changed the equilibriums in place. They drastically reduce information and transaction costs broadening the scope and completeness of markets, allowing the emergence of new activities based on electronic transactions (Shapiro and Varian, 1998). As a result, there has been an important increase in the volume of trade around the world (Freund and Weinhold, 2004) during this period. Those changes have profoundly transformed the industrial organisation, allowing the emergence of new dominant firms like *Amazon*, *Facebook*... They operate in two-sided markets. They develop platform models by acting as intermediaries between two categories of users (buyers and sellers) that can be located all over the world.

To be successful in these new fields, companies must not only attract enough users to ensure the thickness of their markets, but also have to face congestion (the difficulties to efficiently match supply and demand) and transaction security problems (Roth, 2008). Empirical investigations show that, to meet these objectives, geographical considerations like distance still have an impact. Blum and Goldfard (2006), for the US, and Gomez-Herrera, Martens and Turlea (2014), for the EU, provide evidence that an increase in distance between the users and the country where a website is located reduces the website's number of visits. This tendency is especially clear when it comes to financial transactions and when the products traded are specific. Extensive research attributes this effect to users' cultural and language proximity.

Even in electronic markets, transactions are distorted through the "home bias". This can be caused both with individual preferences and with remaining asymmetric information problems. A shared culture provides buyers and sellers with tacit information about their potential trade that internet cannot emulate. In practice, culture sharing is strongly negatively correlated with distance which is frequently used as an inverse proxy for it. Evidence that proximity (cultural) shapes market exchanges in domains where uncertainty about transactions

outputs is high are numerous. Since French and Porterba (1991), who showed that investors under diversify their portfolio by overinvesting in domestic assets, studies reporting "home bias" have been numerous in many fields related with funding. Individual and collective investors overweigh their portfolios of local equities (Seasholes and Zhu, 2010; Sulaeman, 2014). Venture capitalists (Cumming and Dai, 2010; Kolympiris, Hoenen and Kalaitzandonakes, 2018) and business angels (Harrison, Mason and Robson, 2010) more frequently invest in companies that are located close to them. The same patterns are reported on electronic markets. Hortaçsu, Martinez-Jerez and Douglas (2009) report, in on-line auctions, that buyers more frequently bid on sales originated from sellers that are located in the same city as them. Zhang and Liu (2012), Lin, Prabhala, and Viswanathan (2013), Burtch, Ghose and Wattal (2014) and Lin and Viswanathan (2016) report that, in peer-to-peer lending, lenders contribute more frequently to loans to a borrower located in the same area as them. Guenther *et al.* (2018) find the same type of configuration in equity crowdfunding.

The literature on distance in reward crowdfunding provides evidence that the geographic proximity between the entrepreneur and potential backers increases the probability of them funding the campaign (Agrawal, Catalini and Goldfarb, 2015; Dejean, 2020). Agrawal, Catalini and Goldfarb (2015) report that, for small projects, entrepreneurs' friends and family financial support is a key element of a fund collection's success. The relationship that they have developed through time with an entrepreneur makes them more able to assess his/her trustworthiness. For them, asymmetric information problems are less important. Their backing in the early stage of the campaign can be interpreted as a good quality signal by potential backers. Family and friends are usually located in the same geographic area as the campaign' carrier or in a close one. Dejean (2020), using the same dataset as us and applying a gravity model to it, reports that the distance between a department (midrange French administrative areas) where an entrepreneur is located and the ones where the backers are located, is negatively

correlated with the total amount collected via the platform in a given department. The penalty associated with distance is reduced when it is checked by data about the importance of migrations between departments which is interpreted as a proxy for the development of social relationships' (ties) between the departments' inhabitants (backers and entrepreneurs).

The crowdfunding activity appears to be shaped by backers' "home bias". How does it impact the way that distance between entrepreneurs and backers affect campaigns' success? It is the question posed in this paper, however, this paper is not the first to address it. Guo *et al.* (2018), using data from *Kickstarter*, find that campaigns that are able to attract more distant backers are the most frequently successful. Failed campaigns are funded to a higher degree by backers located in the same city or the same state (US) as the entrepreneurs. They, however, point out that the distance between entrepreneurs and backers has different effects on the campaigns' outputs according to the activity sector of the project they are supposed to fund. Food related projects are more local than technology related ones.

This paper goes further by relating the impact geographic constraints have on campaigns' success to their entrepreneurs' social capital. The starting point is the literature about social network analysis and more specifically those that investigate the relationship between individuals' tie structures and physical location. Omelia *et al.* (2011) find that small groups, small communities, are, geographically, very tight. They report that the probability for two individuals to be tied decreases as geographical distance between them increases. Laniado *et al.* (2018) expand the analysis and consider the strength of the social ties that related individuals have. They show that this strength is negatively correlated with the physical distance separating individuals. Strong ties more frequently connect individuals located in the same geographic area while weak ones more frequently connect distant individuals. Even though information technologies reduce costs associated with creating and maintaining social ties between distant individuals, geographic considerations still influence their articulation and nature. This paper

argues that entrepreneurs with the highest social capital are those that are the most engaged in weak ties. As a result, they are able to reach more numerous and more distant backers, backers that are part of different communities. For this reason, they collect funds more easily and reach the targeted amount more frequently. To test this rationale, the following hypothesis is proposed.

H1: Campaigns attracting the most distant backers are more frequently and more widely successful than the opposite.

It is also argued that the involvement of backers in a campaign depends of the type of tie that links them to the entrepreneur. Backers engaged in a strong tie with an entrepreneur, typically family and friends, are more interested in the campaign's success than backers engaged in weak tie with an entrepreneur. As a result, they tend to bring more money to it. Agrawal, Catalini and Goldfarb (2015) report that they are less sensitive to the amount previously collected to assess their pledge. Successful campaigns which have relied more on strong ties, those which have attracted backers located closer to the entrepreneur, must have collected more important individual pledges than the successful campaigns which have relied more on weak ties, those which have attracted backers located further away from the entrepreneur. The more distant ones must have collected more numerous but less important individual pledges. For these reasons, the following hypothesis is proposed.

H2: Successful campaigns that have attracted less distant backers collect less numerous pledges but more important ones than successful campaigns that have attracted more distant backers.

3. Data and methodology

3.1. The Ulule platform

Ulule is one of the most important French reward-based crowdfunding platforms. It was created in 2010. Since its beginning, it has managed to collect about €110m for about 24,000 successful campaigns[1]. Similarly to its equivalent in the USA, *Kickstarter*, it is mostly dedicated to funding creative activities. It offers two types of campaign mechanisms: presales, where the entrepreneur directly obtains the money given by the backers; and the "All or Nothing" campaign, where the entrepreneur obtains the money only if the targeted amount is effectively reached. To use the platform to launch a campaign or to support one, people have to register first. After that, they can interact using pseudonyms. Detailed information about campaigns and platform users was obtained through the dataset that *Ulule* displayed via a call for tender of research projects diffused by the French Ministry of Culture. It includes both elements about successful and failed campaigns: their characteristics, those of the entrepreneur, those of their backers and the timing and the nature of the different supports provided. Some fields of the user register form are not always accurately fill out. This is especially the case for the postcode of the area the user lives in, which is the main element of information used to build our distance measurements between entrepreneurs' and backers' proxies. The issue of missing values is dealt with by excluding incomplete observations.

3.2. The sample dataset

The initial dataset covers the platform's activity between its start in 2010 and March 2016. It includes observations for more than 37,000 campaigns, engaging about 1 million users which have done a total of more than 1 million contributions. Only 392,395 users have correctly

[1] Those figures are extracted from the web site of the platform (https://fr.ulule.com/stats/) in July 2018.

entered their postcode in the form. 89% of them are located in the French metropolitan territory. It is possible to connect those users' data to 4,864 entrepreneurs, who have launched a total of 5,640 campaigns, and to 196,929 backers, who have supported campaigns a total of 286,437 times. The campaigns only funded by their entrepreneur and those for which information required to build the variables mobilised in the study are not fully available were excluded. The final sample was 4,861 campaigns.

Table 1 displays some descriptive elements about its composition. 55.44 % of the campaigns are held by individuals and only 11.77 % by firms. The remaining is held by associations. Most of them are launched to finance projects in the arts. Only 30.12 % of the projects deal with entrepreneurship, 21.54 % with solidarity. The average amount targeted by campaigns is 3,814.97 Euros. Higher targets are set by Firms. They relate to the field of entrepreneurship. The average campaign lasts 44.44 days. The rate of success among the sample is 79.1%. Campaigns driven by associations and those dedicated to art projects are the most frequently successful. When a campaign succeeds, it collects, on average, 135 % of the targeted amount, which means that it generates a surplus of 35%. When it fails, it collects only an average of around 20% of the targeted amount.

Table 1. Sample description.

	Association	Individual	Business	Art	Entrepreneurship	Solidarity	Other	Full sample
Nb. of campaign	1594	2695	572	2209	1464	1047	141	4861
%	32.79	55.44	11.77	45.44	30.12	21.54	2.9	100
target in Euros	3350.88 (4739.67)	3360.77 (29245.83)	7248.23 (8116.22)	2945.87 (3624.24)	5225.59 (39734.28)	3613.32 (6052.46)	4281.87 (4993.76)	3814.97 (22153.92)
duration in days	45.35 (16.94)	43.08 (16.75)	48.31 (17.47)	44.04 (16.88)	45.08 (17.25)	44.10 (16.70)	46.65 (17.76)	44.44 (16.98)
% of successful campaigns	81.24	77.77	79.37	83.43	75.82	76.41	65.24	79.10
Average % of target reached	104.93	109.43	136.47	105.66	129.29	100.43	87.86	111.14
Success	124.63	134.95	166.71	122.51	164.34	125.16	126.17	135.23
Failure	19.58	20.13	20.15	20.83	19.38	20.34	15.93	19.97

3.3. Empirical strategy

Two types of models were estimated to test the hypotheses: one for a campaign's probability of success, and one for the ratio between the amount collected and the targeted amount. The

first gives the impact a set determinant has on the binary outcome of the campaign: success or failure. It is taken into account in a *Logit* specification and estimated using maximum likelihood. The second adds a consideration of the intensity of the success of the campaign (or of its failure) using a continuous metric (herein called T_reach), the ratio of the amount finally collected at the end of the campaign over the targeted amount. It is taken into account via a *log-linear* specification and estimated using OLS. In each case, the model is built using the following pattern.

$$Campaign's\ Success_i = \alpha + \beta\ Distance_i + \gamma\ Controls_i + \varepsilon_i \quad (1)$$

The metrics of the campaigns' success are explained with a set of determinants including the different variables of interest built around the geographic distance between entrepreneurs and backers and a set of control variables.

The geographic distance between the entrepreneurs and their backers is determined on the basis on the number of kilometres as the crow flies between the centroid of the postcode of the area they live in. The longitude and latitude of the centroids are used to compute this distance via a trigonometric formula[2]. For each campaign, the average distance between the entrepreneur and each backer is computed. Naturally, the entrepreneurs' support to their own campaigns are excluded from the computation. The variable generated is called DISTANCE., a set of variables are established in parallel indicating for each campaign the proportion of supports that originated from, respectively, the same postcode area as the one where the entrepreneur lives, the same French administrative area called a department[3], the same French

[2] To do so, the R package called geosphere and more specifically its function distGeo() is used. The result is converted into kilometres.

[3] In France Departments are intermediary administrative areas. Since 2011, the territory includes 101 departments. 96 of them are located in Metropolitan France (continental Europe).

administrative area called a region[4]. These four variables are respectively named Prop_ZIP, Prop_Dep and Prop_Reg.

A set of control variables have been included in the estimations to deal with the campaigns' characteristics, the type of entrepreneur, the date when the campaign was launched and its location. The following are ascertained for the first group: the campaign target in Euros, called the Goal; the number of days that it lasted, called the Duration; the number of communications exchanged about it on the platform, called Information; and a set of dummy variables each one taking the value 1 if the campaign purpose is to fund one of the following activities (Art and Photo, Games, Film and Video, Craft and Food, Stage, Fashion and Design, Technology, Sports, Charities and Citizen, Publishing and Journal, Music, Comics, Childhood and Education, Heritage, Other) and 0 otherwise. Entrepreneur type is also considered through a set of dummy variables each one taking the value 1 if the entrepreneur belongs to one of these categories: Association, Firm or Individual. To deal with the potential effect of factors related with the date when the campaign is launched, time fixed effects defined on a monthly basis have been included in the regression. A set of dummy variables have also been included to control for the entrepreneurs' location. They are defined based on Departments. Another dummy variable is added for entrepreneurs not established in continental France, established abroad or in French overseas territories. The variable is called Abroad.

Table 2 displays some descriptive statistics for the continuous variables mobilised in the analysis. Two things are clear. Firstly, their distributions appear slightly skew due to important maximum values. Secondly, they present differences in scale. To deal with this in the

[4] In France Regions are the biggest administrative areas. Since 2016, the territory includes 18 regions. 13 of them are located in Metropolitan France (continental Europe).

estimations, a logarithmic transformation is used adding one to the variable before the transformation to avoid problems with zero values.

Table 2. Summary statistics.

	Minimum	Median	Mean	Maximum	Standard deviation
T_reach	0.10	105.91	111.14	4 029.85	110.28
DISTANCE	0.00	236.25	389.61	17 199.21	779.27
Prop_Zip	0.00	2.44	10.51	100.00	17.01
Prop_dep	0.00	26.32	32.12	100.00	28.54
Prop_reg	0.00	50.00	49.00	100.00	30.84
Goal	50.00	2 200.00	3 814.98	1 500 000.00	22 153.92
Duration	1.00	42.00	44.44	181.00	16.99
Information	0.00	5.00	7.94	140.00	9.34

Statistics about the Prop_ variables give a first glance at where the campaigns' supports come from. On average the proportion of very local (from the postcode area) supports is very low with a median of 2.4 %. The average value is higher (10.51 %) due to campaigns being entirely funded locally. The proportion of supports coming from the Department is relatively important with a median value of a quarter (26.32 %) and an average value of a third (32.12 %). On average half of the supports come from the same Region where the entrepreneur is located.

Table 3 provides a correlation matrix for the same variables. As expected, the Prop_ variables negatively correlate with DISTANCE. This confirms that they can be interpreted as a measure of the degree of the local nature of the campaigns. They also negatively correlate with T_reach, which means that it appears to be harder to succeed for local campaigns. The positive correlation between T_reach and DISTANCE is in line with this interpretation.

Table 3. Correlation matrix.

The following table displays, each continuous variable used in the analysis, each box also shows both the Pearson correlation coefficients and, in brackets, the associated t-statistic.

	T_reach	DISTANCE	Prop_Zip	Prop_dep	Prop_reg	Goal	Duration	Information
T_reach		0.027* (1.931)	-0.105*** (7.361)	-0.143*** (10.142)	-0.155*** (0.182)	-0.011 (0.750)	-0.064*** (4.491)	0.372*** (27.912)
DISTANCE	0.027* (1.931)		-0.138*** (9.759)	-0.230*** (16.547)	-0.326*** (24.078)	0.0002 (0.017)	0.010 (0.693)	0.037** (2.571)
Prop_Zip	-0.105*** (7.361)	-0.138*** (9.759)		0.573*** (48.754)	0.407*** (31.056)	-0.021 (1.480)	-0.019 (1.355)	-0.121*** (8.485)
Prop_dep	-0.143*** (10.142)	-0.230*** (16.547)	0.573*** (48.754)		0.734*** (75.385)	-0.018 (1.274)	-0.016 (1.143)	-0.151*** (10.673)

Prop_reg	-0.155*** (0.182)	-0.326*** (24.078)	0.407*** (31.056)	0.734*** (75.385)		-0.024* (1.672)	-0.021 (1.437)	-0.168*** (11.865)
Goal	-0.011 (0.750)	0.0002 (0.017)	-0.021 (1.480)	-0.018 (1.274)	-0.024* (1.672)		0.048*** (3.395)	0.059*** (4.139)
Duration	-0.064*** (4.491)	0.010 (0.693)	-0.019 (1.355)	-0.016 (1.143)	-0.021 (1.437)	0.048*** (3.395)		0.206*** (14.713)
Information	0.372*** (27.912)	0.037** (2.571)	-0.121*** (8.485)	-0.151*** (10.673)	-0.168*** (11.865)	0.059*** (4.139)	0.206*** (14.713)	

Significant at the level of 99%, ** 95%,* 90%.

4. Results

4.1. Some stylised facts

Before testing the hypotheses, it is good to focus on the distances between the entrepreneurs and the backers for each support provided to a campaign. It will help to get a better understanding of the nature of the variables of interest which are built from it. The starting point is an examination of its distribution and a comparison to the distribution of DISTANCE. After that, geographical repartition of entrepreneurs and backers is highlighted. To conclude, there is a consideration of how the distance is affected by campaign timing.

The starting point of the analysis is a database of 239,025 distance measurements between entrepreneurs and backers which correspond to as many supports to the campaigns of the sample. Those observations include backers' extra supports to the same campaign and the supports provided by the entrepreneurs to their own campaign (hereafter self supports). This can bias a campaign's typical distance range indicator. In order to avoid the problem, the corresponding information is excluded. 19,203 extra supports are dropped (8 %) as are 5,594 self supports (2.34 %). The final database is composed of 217,513 observations of distances between entrepreneurs and their backers. It is noted that 17.15 % of the extra supports are also self supports. 62 % of the campaigns (3,010) received extra supports. 47.5 % of the campaigns (2,309) received self supports. The distribution of distance between the entrepreneur and its backers is highly asymmetric with a concentration of the observations on small values. The average distance is 439 kilometres but the median one is only 257 kilometres. 6.17 % of the supports came from the entrepreneur's postcode area. 17.6 % came from less than 10

kilometres. Only 4.4 % came from more than 1,000 kilometres. This information is aggregated at the campaign level using the mean which gives the variable DISTANCE. The remaining distribution (4,861 observations) is still asymmetric. A campaign, on average, deals with backers who are 389.92 kilometres distant from the entrepreneur. The median DISTANCE is 236.93 kilometres. Campaigns attracting only supports from the postcode area where the entrepreneur is located are very few (0.82 %). 3.09 % of the campaigns attracted supports from backers who were, on average, less than 10 kilometres distant from the entrepreneur. 4.75 % of the campaigns attracted supports from backers who were, on average, more than 1,000 kilometres from the entrepreneurs. *Figure 1* provides histograms representing the two distributions (only for observations below 1,000 km).

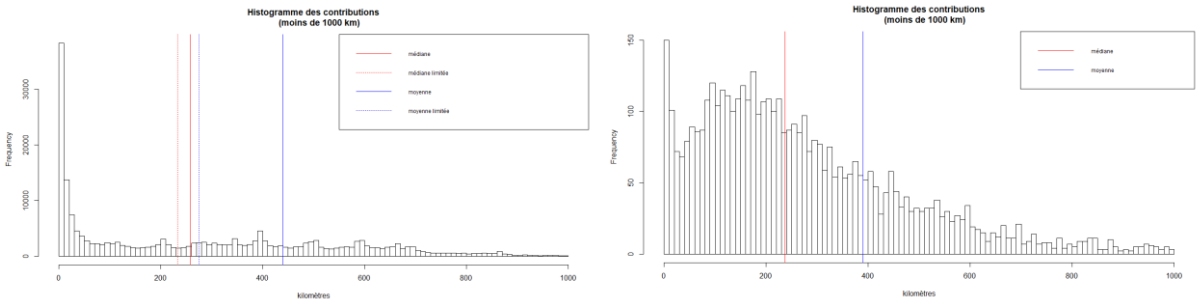

Figure 1. Distributions of distance measurements.

Figure 2 provides a map in which each point corresponds to the centroid of an entrepreneur's residence postcode. Polygons correspond to the French administrative areas called departments. Plotting is limited to campaigns launched from the French metropolitan territory (including Corsica, from where 13 campaigns were launched). This excludes 295 campaigns from overseas territory or from abroad. A concentration of points around big cities (Paris, Lille, Lyon, Nantes and Bordeaux) can be observed, especially around Paris. 647 campaigns were launched from the capital and a total of 1,250 came from the "Ile de France" administrative area. More generally, it can be noted that the majority of campaigns appear to be held in dense urban areas.

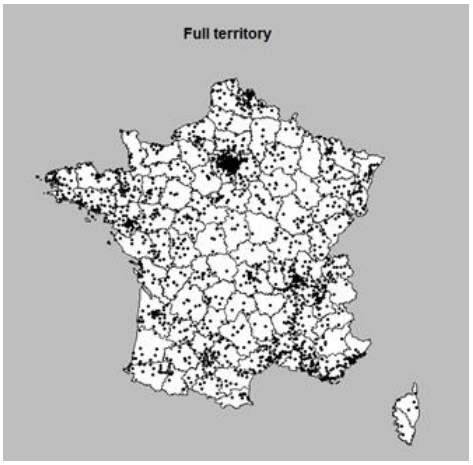

Figure 2. Geographic repartition of crowdfunding campaigns.

Figure 3, considering the same subsample, gives the average value of the distance for campaigns held in each department. As indicated in the graph's legend, the further away the backers are from the entrepreneurs located in the department, the redder the colour of the corresponding polygon is. A gradation following octiles of distance is considered. The sample is split into eight groups of equal size. it is noted that a central department tends to attract less distant backers. They seem to hold more local projects. They also hold a lower number of campaigns, as can be seen in *Figure 2*. At the opposite end, campaigns located in more peripheral departments, especially those in the south and in the west, tend to attack more distant backers. Corsica is an extreme case, funding from continental France mechanically increases DISTANCE. Considering all these elements, it clearly appears that the location of the campaign affects the variable of interest.

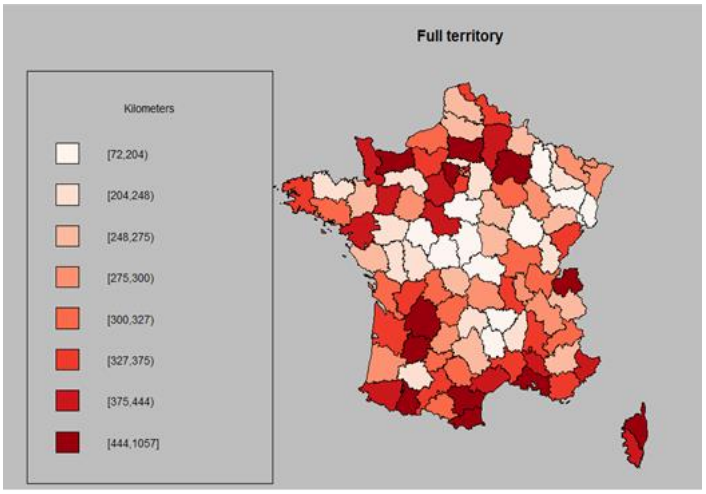

Figure 3. Average distance of contribution by department.

Table 4 provides the median[5] values of the geographic distance between entrepreneurs and their backers, thew variable of interest, DISTANCE, and the average values of the proportion of the target reached at different points of time. The campaigns' duration has been cut into ten subperiods of equal size. The median values are computed for each of them for the full sample (excluding self supports and extra supports), the sub sample of the campaigns which are successful and the one of those which are not. It can be noted that, from the beginning, campaigns that are destined to be successful attract backers more distant than those of campaigns destinated to fail. The median distance, for the former, over the first tenth of the campaign's duration, is 264.18 km, while it is 81.38 km, for the latter. A difference of approximatively the same magnitude remained until the end of the campaign. The median distance between entrepreneurs and backers for the successful ones is 263.03 km while it is 112.63 km for the failed ones. It can also be noted that successful campaigns attract the most distant backers at their beginning and at their end, whereas failed ones tend to attract more and

[5] The median is used here to illustrate the point, because of the asymmetry of the DISTANCE distribution. Extreme values skew the mean. However, the table interpretations are qualitatively the same with the mean as the aggregator instead of the median.

more distant backers as long as they last. To interpret these reports, it must be borne in mind that backers supporting campaigns that are destined to fail are less numerous at each stage. The difference in term of the proportion of the target raised at different points of time between campaigns that will be a success and those that will not, follows the same tendency. It appears that the former collect between 4 and 5 times more than the latter in the first tenth of the campaign's duration. The gap remains as the campaign carries on. At the end, successful campaigns collect an extra third of their goal whereas the failed ones only collect about 20 % of their goal.

Table 4. Campaigns' duration.

The following table displays the value of a series of aggregated measures for each of ten equal subperiods of the campaigns' duration. In the first part, there is the median value of the distance between entrepreneurs and backers at the end of the subperiod. In the second part, there is the median value of the same distance but only of support occurring during the subperiod. In the last one, there is the average proportion (in percent) of the campaigns' target reached at the end of the period. All these indicators are provided for the full sample (without self-support and extra-support: 217,513 observations), the sub-sample of the successful campaigns and the one of failed ones.

% Duration Last	Cumulated average distance			Average distance during the period			Cumulated share of the goal raised		
		Success	Failure		Success	Failure		Success	Failure
10	253.33	264.18	81.38	253.33	264.18	81.38	22.91	27.38	5.99
20	256.58	266.22	83.9	263.54	272.56	93.47	34.54	41.36	8.73
30	249.66	260.82	86.9	216.69	225.28	110.85	43.43	52.11	10.58
40	247.97	258.53	95.14	236.21	239.94	183.72	51.02	61.32	12.06
50	245.65	255.96	99.72	223.23	229.95	154.48	58.09	69.87	13.48
60	244.63	254.63	101.58	236.12	243.32	115.56	64.71	77.9	14.79
70	243.37	252.98	102.55	230.42	235.74	117	71.79	86.56	15.92
80	243.63	252.57	104.38	245.94	249.5	151.56	79.93	96.51	17.15
90	246.29	254.22	108.92	263.55	264.62	201.23	89.94	108.88	18.24
100	257.57	263.03	112.63	292.01	293.75	179.67	109.96	133.83	19.65

4.2. Main results

4.2.1. Campaigns' success

Table 5 provides estimations, on the full sample, of the *Logit* models explaining the probability for a campaign to be successful considering different specifications. Regression coefficients are not given, instead there are the marginal effects which are easier to interpret. Following H1, it can be expected, all else being equal, that there will be a positive relationship between the probability for a campaign to reach its target and DISTANCE. This would mean that campaigns

attracting on average backers that are the most distant from the entrepreneur are also those that are the most frequently successful. Such a result would confirm the evidence provided by descriptive statistics, and it is what is found. In each specification (column 1, 5 and 9) that include the variable, the associated coefficient (in the table for the marginal effect) is positive and statistically significant at the level of 99 %. Even if, as previous studies have shown (Dejean, 2020), backers are subject to "home bias", which mean that they seem to prefer to support campaigns which are launched by entrepreneurs that are located in their (extended) neighbourhood, the campaigns that are able to also convince individuals that are not located in this neighbourhood are those which more easily reach their target. This result is in line with the one foundf by Guo *et al.* (2018) on *Kickstarter* (US).

Table 5. Logit model estimations of campaigns' probability of success.

The following table displays results of maximum likelihood estimation for the Logit model of crowdfunding campaign success probability. Each box gives both the marginal effect associated with the corresponding coefficient and, below, in brackets, the Z-stat for the hypothesis that the explanatory variable has no influence on the campaign's probability of success. The test is built using White-Hubbard robust standard error. Fixed effects associated with sectors, the date (month) when the campaign was launch and the department where the campaign carrier lives are not reported for the purpose of clarity.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Distance	0.038***				0.061***				0.033***
	(8.613)				(11.272)				(5.682)
Prop_Zip		0.011***			0.015***				
		(2.824)			(3.143)				
Prop_Dep			0.008**		0.008				
			(2.031)		(1.374)				
Prop_Reg				0.009**	0.025***				
				(2.032)	(3.929)				
Maj_Zip						-0.143***			-0.085***
						(7.537)			(3.813)
Maj_Dep							-0.049***		0.019
							(4.349)		(1.236)
Maj_Reg								-0.051***	-0.006
								(4.661)	(0.436)
Goal	-0.110***	-0.107***	-0.108***	-0.108***	-0.11***	-0.109***	-0.108***	-0.110***	-0.111***
	(15.439)	(14.988)	(15.083)	(15.061)	(15.713)	(15.246)	(15.042)	(15.121)	(15.511)
Duration	-0.023	-0.028*	-0.026*	-0.027*	-0.029**	-0.023	-0.025*	-0.022	-0.022
	(1.604)	(1.908)	(1.824)	(1.856)	(2.052)	(1.639)	(1.742)	(1.548)	(1.523)
Information	0.152***	0.163***	0.163***	0.163***	0.144***	0.158***	0.160***	0.161***	0.151***
	(24.039)	(25.438)	(25.476)	(25.47)	(23.045)	(24.892)	(25.056)	(25.028)	(23.963)
Firm	-0.032*	-0.029	-0.030*	-0.030*	-0.029*	-0.034**	-0.032*	-0.032*	-0.033*
	(1.800)	(1.606)	(1.662)	(1.657)	(1.665)	(1.903)	(1.783)	(1.776)	(-1.873)
Individual	-0.071***	-0.063***	-0.063***	-0.063***	-0.067***	-0.067***	-0.069***	-0.068***	-0.071***
	(5.981)	(5.253)	(5.275)	(5.231)	(5.707)	(5.614)	(5.710)	(5.710)	(5.936)
Fixed effects									
Sectors	Yes	yes	yes	yes	yes	yes	yes	yes	yes
Month	Yes	yes	yes	yes	yes	yes	yes	yes	yes
Dep./Abroad	Yes	yes	yes	yes	yes	yes	yes	yes	yes
Pct.good class	0.837	0.832	0.834	0.833	0.842	0.834	0.832	0.831	0.838
R2 Mc fadden	0.269	0.253	0.252	0.252	0.288	0.261	0.255	0.256	0.272
Obs.	4861	4861	4861	4861	4861	4861	4861	4861	4861

*** Significant at the level of 99%, ** 95%,* 90%.

In order to have a closer look at the impact of backers' "home bias" on a campaign's success, specifications are considered where the variables Prop_ZIP, Prop_Dep and Prop_Reg (see column 2, 3 and 4) are alternatively substituted into DISTANCE. They indicate the proportion of supports that originated from the entrepreneur's postcode area, department or region. Remember that these geographic zones are included one into another. A region includes departments and a department includes postcode areas. For each of them, there is a positive and statistically significant impact of these variables on the campaign's probability of success. They also present marginal effects very close to one another. This raises both the question of the relevant level of local preference of backers and the relationship with DISTANCE. This is why all the variables have been introduced in the same specification (column 5). It can be seen that DISTANCE is still relevant, but it is not the case for the entire local proportion of support variables. Prop_Dep is no more significant. Furthermore, the other variables have seen their marginal effect increase, especially Prop_Reg. The proportion of variables associated with the larger geographic areas are more important. It appears that to be a success, campaigns have to attract first supports from local communities (activate strong ties, family and friends that are usually located close to the entrepreneur), but this is not enough to be really successful. They have to attract support on a larger scale at the regional level or more (and so activate weaker ties, friends of acquaintances…).

These results ask questions. Do the proportions of local supports (ZIP, Department or Region) influence linearly the campaigns probability of success or are there level effects? To investigate this point, three new variables were created, some dummy ones taking the value one respectively if the proportion of support coming from the same postcode, Maj_Zip, the same department, Maj_Dep, or the same region, Maj_Reg, as the one where the entrepreneur is located, is higher or equal to 50 %. This confirms the intuition. The relationship between the probability of success and the proportion of local supports is not univocal. Obtaining a majority

of local supports (ZIP area, department and even region) has a negative and statistically significant impact on a campaign's ability to raise enough funds to reach their targets.

Table 6, gives estimations, once again on the full sample, of the *log linear* version of the model. The explained variable is the log of the ratio of the total amount finally collected at the end of the campaign over the initially targeted one. This new set of specifications allows the second part of H1 to be tested. Not only is it expected that campaigns attracting more distant backers more frequently end in success, but it is expected that their success will be more intense. The new tests are designed to take into account a continuous spectrum of success. A spectrum that goes from total failure (0 % of the target collected) to huge success (more than 100 % of the target collected) going through all the intermediary possible results. The same kind of relationship between DISTANCE and the explained ratio can be found as with the probability of success. The link is positive and statistically significant whatever the specification considered (column 1, 5 and 9). As they attract more distant backers, campaigns collect more money relative to their initial target. Available local resources of potential backers can be too scarce to efficiently fund the entrepreneur's project. This intuition is confirmed by the analysis of local proportion variables Prop_Zip, Prop_Dep and Prop_Reg. The only one that appears to individually impact the ratio is the one defined at the regional level, the widest geographical area (column 4). It increases the intensity of campaign success to attract a higher proportion of supports that comes from the entrepreneurs' region. When all the variables are introduced in the same model, the same pattern is found as for the probability of success model. Mobilising backers very close to entrepreneurs (same postcode) slightly increases the proportion of funds finally collected with regards to the target, but mobilising backers established on a broader geographic area (region) has a more positive impact. That is clearly in line with what is found on success probability. It seems that proximity (strong ties) can be important for campaigns to

initiate success (reach the target and go further) but to be really successful, campaigns have to enlarge their geographic scope.

As previously, the analysis considering the non-linearity of the relationship between the proportion variables and the explained variable is extended. The variables are recoded once again to indicate if the considered proportion is equal to or higher than 50%. That gives the Maj_ variables (Maj_Zip, Maj_dep, Maj_reg). The estimations show that they all have a negative impact on the amount collected (relatively to the target). The negative impact is more pronounced for the postcode level (column 6). Campaigns that attract a majority of (very) local supports are less intensively successful than the others (in fact most of them do not have any success at all). In the global estimation (column 9), Maj_Zip is the only statistically significant Maj_ variable.

In both tables, the control variables' behaviour corresponds to the expectation. It can be seen that the higher the targeted amount to collect (Goal) is, the more difficult it is to reach. It can also be found that campaign duration (Duration) has no clear impact on its success. The intensity of communication on the platform between the entrepreneur and the community (Information) is positively related to the campaign's probability of success and the intensity of this success. Finally, it can be seen that, when the entrepreneur is an individual, achievement is less frequent and less important than when the entrepreneur is an association (the reference category).

Table 6. Log-Log OLS estimation of success or failure intensity.

The following table displays the results of an OLS estimation for the model of the campaign's final position related to its goal. Each box gives both the regression coefficient and, below, in brackets, the t-stat for the hypothesis that the explanatory variable has no influence on the campaign's final position relative to its target. The test is built using White-Hubbard robust standard error.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	4.409***	4.790***	4.797***	4.693***	3.732***	4.779***	4.822***	5.008***	4.468***
	(16.369)	(17.889)	(17.890)	(17.664)	(13.921)	(17.833)	(17.991)	(18.530)	(16.495)
Distance	0.157***				0.236***				0.138***
	(10.486)				(13.750)				(7.727)
Prop_Zip		0.014			0.027**				
		(1.317)			(2.142				
Prop_Dep			0.012		0.015				
			(1.023)		(0.828)				
Prop_Reg				0.027*	0.119***				
				(1.769)	(5.323)				
Maj_Zip						-0.604***			-0.331***
						(7.237)			(3.899)
Maj_Dep							-0.206***		0.041
							(6.437)		(1.056)
Maj_Reg								-0.199***	-0.025
								(7.119)	(0.725)
Goal	-0.398***	-0.387***	-0.388***	-0.388***	-0.403***	-0.390 ***	-0.388***	-0.393***	0.399***
	(20.789)	(19.844)	(19.815)	(19.828)	(21.111)	(20.021)	(19.903)	(20.222)	(20.768)
Duration	-0.048	-0.065	-0.065	-0.068	-0.066	-0.056	-0.061	-0.051	0.044
	(1.021)	(1.379)	(1.371)	(1.426)	(1.422)	(1.186)	(1.292)	(1.077)	(0.951)
Information	0.532***	0.572***	0.572***	0.572***	0.514***	0.554***	0.559***	0.559***	0.528***
	(29.276)	(31.447	(31.429)	(31.520)	(29.464)	(30.488)	(30.711)	(30.526)	(28.944)
Firm	0.031	0.038	0.037	0.037	0.040	0.026	0.024	0.024	0.027
	(0.666)	(0.803)	(0.776)	(0.782)	(0.876)	(0.555)	(0.520)	(0.503)	(0.581)
individual	-0.186***	-0.155***	-0.156***	-0.154***	-0.177***	-0.166***	-0.176***	-0.176***	-0.185***
	(6.427)	(5.277)	(5.300)	(5.240)	(6.198)	(5.664)	(5.999)	(5.998)	(6.417)
Fixed effects									
Sectors	yes	Yes	yes	yes	yes	yes	yes	yes	yes
Month	yes	Yes	yes	yes	yes	yes	yes	yes	yes
Dep./Abroad	yes	Yes	yes	yes	yes	yes	yes	yes	yes
Fisher	14.25***	12.56***	12.55***	12.59***	15.19***	13.31***	12.93***	12.97***	14.19***
R2 Adj	0.3179	0.2891	0.289	0.2897	0.3368	0.3022	0.2956	0.2964	0.3208

Obs.	4861	4861	4861	4861	4861	4861	4861	4861	4861

*** Significant at the level of 99%, ** 95%,* 90%.

4.2.2. Support patterns of successful campaigns

There is evidence that campaigns attracting on average backers established further from the entrepreneur succeed more frequently and more intensively than the others (H1). This is in line with the theoretical conjecture that a campaign's outcome depends on the ability of the entrepreneurs to activate weak ties. But, does it the real mechanism in place? To go further on the point, it is necessary to look at the way that supports express themselves with DISTANCE. As was seen when H2 was built, weak and strong ties differ on the way they engage individuals. Strong ties (family and friends), usually located close to the entrepreneur, are few but more interested in the entrepreneur's success. Weak ties (acquaintances) can be located further from the entrepreneur and are, above all, more numerous but less interested in the entrepreneur's success. This has some consequences on the way people are involved in their support campaigns. Campaigns relying on strong ties must collect less numerous supports from less numerous backers, but their supports have to be individually more important than those attracted by campaigns relying on weak ties, which have to collect more numerous supports from more numerous backers. This pattern was tested on the subsample of campaigns that succeeded. These are the ones for which it would be the most salient. This reduces the number of observations to 3,845 (79.1 % of the original sample).

Table 7 provides the first pieces of evidence related to the way that supports relate with distance separating backers and entrepreneurs. It shows the results of a set of bivariate analyses based on tests of difference in mean between campaigns that can be seen as local (so mostly based on the activation of strong ties) and campaigns that cannot be (so mostly based on the activation of strong ties). Four ways are considered to approximate the local character of campaigns: belonging to the first quartile of DISTANCE; the fact that most (at least for 50 %) of the funds are from backers in the same postcode area as the entrepreneur; the same Department; the same Region. It appears that campaigns that are part of the first quartile of

DISTANCE attract supports with, on average, a more important unitary amount than the others (65.56 Euros versus 60.02 for the last quartile). They also attract, on average, less numerous backers (52.63 backers versus 122.57) which make less numerous supports (on average 59.22 supports for campaigns versus 134). Basically the same patterns can be found with the other ways to distinguish local versus not local groups except for the amount of the average support, for which the difference does not appear statistically significant. Successful campaigns mainly funded locally attract less numerous backers and obtain less numerous supports.

Table 7. Support patterns with mean differences.

The following table displays an element associated with a series of bilateral Student tests of difference in means between unpaired groups with unequal variances. The groups are defined as follow. Comparisons are made for which are part of the first quartile of DISTANCE (those for which backers are, on average, established closer to the entrepreneur) with campaigns which are part of the last quartile of DISTANCE (those for which backers are, on average, established further from the entrepreneur). Comparisons are also made for campaigns for which supports mainly came from backers established in the same postcode area, the same Department, the same Region as the entrepreneur and campaigns for which this is not the case. Comparisons are done for the campaigns' average individual support amount, number of backers and number of supports received. Each one shows the average calculation for the two groups and ,in brackets, the test t-stat.

	Distance		A majority of backers come from					
	1st quartile	last quartile	the same ZIP	another ZIP	the same department	another department	the same region	Another region
Av. support	65.56	60.02	64.19	60.06	60.32	60.13	60.290	60.06
	(2.197)**		(1.013)		(0.110)		0.129	
No. of backers	52.63	122.57	46.94	85.61	62.68	92.451	62.55	107.16
	(5.534)***		(4.471)***		(5.331)***		(6.061)***	
No. of supports	59.22	134.00	53.38	93.8	69.36	101.12	68.67	117.38
	(5.175)***		(4.447)***		(5.074)***		(5.859)***	

*** Significant at the level of 99%, ** 95%,* 90%.

These first pieces of evidence are in line with H2. To ensure that this conclusion is accurate, a multivariate analysis was conducted using the same model specifications as the ones in previous regression analyses. The explained variables are alternatively the average amount of the campaign's supports, the number of backers funding it and the number of supports they provide. Estimations are performed through OLS and data are scaled using a logarithm transformation. The test variables are DISTANCE, Prop_Zip, Prop_Dep, Prop_Reg. The estimations are reported in table 8. If H2 is accurate, it is expected that there will be a negative impact of the first one on the average support size, a positive impact on the number of backers and also a positive impact on the number of supports. This is what was found (columns 1, 2 and 3). For the Prop_ variables, whatever the limit level retained (Postcode, Department, Region), the higher the value, the more local the campaign. Accordingly, if H2 is accurate, it is expected

there would be a positive impact of each of those variables on the average support size and a negative impact on the number of backers and on the number of supports. Results confirm these assumptions (columns 5, 6, 8, 9, 11 and 12) except for the first one, for which the coefficients are not statistically significant (columns 4, 7 and 10).

Seeing that, it can be concluded that the way the supports articulate themselves in the function of the distance separating backers and entrepreneurs is compatible with the hypothesis saying that local campaigns success rely more on strong ties and the success of non-local ones rely more on weak ties. However, H2 cannot be rejected. This helps us to understand the mechanisms making campaigns attracting backers that are further away more frequently (and intensively) successful. This good performance can be attributed to the entrepreneur's ability to activate their social capital in a broader way. Doing so, the entrepreneur activates weak ties acting as bridges between different communities (groups of people sharing relationships together). These communities can be located everywhere in the territory. This allows the campaign to attract supports from a larger geographic area.

Table 8. Log-Log estimations of supports patterns.

The following table displays estimations of log-log models established using OLS. The specifications are the same as in the previous regression tables but three different explained variables are considered: the average amount of support a campaign attracted, its total number of backers and its total number of supports. Each box gives both the regression coefficient and, below, in brackets, the t-stat for the hypothesis that the explanatory variable has no influence on the explained one. The test is built using White-Hubbard robust standard error.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Constant	2.841***	-2.081***	-2.233***	2.530***	-1.518***	-1.747***	2.532***	-1.543***	-1.772***	2.530***	-1.525***	-1.755***
	(18.586)	(11.467)	(12.997)	(17.232)	(8.791)	(10.625)	(17.275)	(8.960)	(10.799)	(17.253)	(8.841)	(10.709)
Distance	-0.051***	0.094***	0.081***									
	(6.539)	(10.693)	(9.637)									
Prop_Zip				-0.006	-0.027***	-0.025***						
				(1.038)	(4.015)	(3.988)						
Prop_Dep							0.001	-0.039***	-0.038***			
							(0.124)	(5.680)	(5.793)			
Prop_Reg										-0.004	-0.035***	-0.036***
										(0.510)	(4.022)	(4.304)
Goal	0.349***	0.560***	0.573***	0.343***	0.572***	0.583***	0.343***	0.574***	0.585***	0.343***	0.573***	0.584***
	(33.478)	(44.015)	(47.373)	(32.930)	(44.433)	(47.810)	(32.870)	(44.892)	(48.313)	(32.915)	(44.521)	(47.907)
Duration	0.102***	-0.173***	-0.148***	0.107***	-0.178***	-0.152***	0.106***	-0.175***	-0.149***	0.107***	-0.175***	-0.148***
	(4.296)	(6.089)	(5.312)	(4.479)	(6.181)	(5.405)	(4.447)	(6.091)	(5.308)	(4.476)	(6.066)	(5.276)
Information	-0.119***	0.212***	0.217***	-0.127***	0.224***	0.227***	-0.127***	0.223***	0.226***	-0.127***	0.223***	0.226***
	(13.461)	(19.378)	(20.556)	(14.167)	(20.127)	(21.199)	(14.108)	(20.070)	(21.154)	(14.159)	(20.076)	(21.147)
Firm	-0.021	0.132***	0.111***	-0.025	0.132***	0.111***	-0.024	0.133***	0.112***	-0.024	0.135***	0.113***
	(0.798)	(3.907)	(3.427)	(0.923)	(3.863)	(3.383)	(0.884)	(3.910)	(3.422)	(0.894)	(3.958)	(3.472)
individual	0.021	-0.018	-0.026	0.009	-0.001	-0.011	0.010	-0.001	-0.011	0.009	-0.001	-0.011
	(1.281)	(0.976)	(1.492)	(0.544)	(0.043)	(0.645)	(0.593)	(0.040)	(0.648)	(0.569)	(0.035)	(0.650)
Fixed effects												
Sectors	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Month	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Dep./Abroad	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Fisher	16.41***	41.53***	48.00***	15.88***	39.69***	46.35***	15.86***	40.02***	46.75***	15.87***	39.73***	46.46***
R2 Adj.	0.4053	0.6419	0.6752	0.3968	0.6311	0.6673	0.3966	0.6331	0.6693	0.3967	0.6314	0.6678
Obs.	3845	3845	3845	3845	3845	3845	3845	3845	3845	3845	3845	3845

*** Significant at the level of 99%, ** 95%,* 90%.

5. Conclusion

This paper examines how geographic configuration, especially distance between backers and entrepreneurs, affects the outcomes of reward crowdfunding campaigns. Consistent with the hypotheses, the empirical estimates show that campaigns attracting more distant backers succeed more frequently and more intensively. This first point completes and extends the results of Agrawal, Catalini and Goldfarb (2015) and Dejean (2020). It shows that, even if, as previous works have provided evidence of, backers are affected by "home bias", which means that the probability for a potential backer to support a campaign is higher when the entrepreneur is located close by, it is the ability of campaigns to go beyond proximity that guarantees success. These results confirms the ones found by Guo *et al.* (2018) on the US platform *Kickstarter*.

However, the paper does not stop there. It goes further, trying to explain the phenomenon using the social capital theoretical framework and more precisely an analysis based on the strength of weak ties (and weakness of strong ties) discover by Granovetter (1973). Doing that, it also extends previous works showing that the entrepreneur's social capital, internal (Lin, Prabhala and Viswanathan, 2013; Colombo, Franzoni and Rossi-Lamastra, 2015) and external (Agrawal, Catalini and Goldfarb, 2015; Mollick, 2014; Zheng *et al.*, 2014) to the platform, is a key element that creates the requisite trust to allow campaigns to attract enough backers to reach their funding targets. Starting from the fact that strong ties are more frequently established between individuals living nearby each other (family and friends) and that weak ties can be established between individuals living in more distant places (acquaintances). As a result, it can be assumed, following Laniado *et al.* (2018), that the strength of ties linking individuals are negatively correlated to the distance between them. This allows us to explain the finding by the fact that more successful campaign rely more on weak ties (those involving backers

more distant from the entrepreneurs). In order to test this conclusion the analysis is completed by looking at the way supports patterns are articulated with distance in successful campaigns. Backers involved in weak ties with the entrepreneur, or backers reached through them, are less interested in the campaign's success than backers involved in strong ties with the entrepreneur. As a result, the former must individually support the campaigns less intensively than the second ones, even if they are more numerous. Consequently, successful campaigns, which attract more distant backers, must collect more numerous supports from more numerous backers with an average amount lower than successful campaigns which attract less distant backers (local ones). The paper shows that this view is consistent with the facts.

The paper however raises new questions that can be addressed by subsequent research. Reward-based crowdfunding is mainly used to fund artistic and cultural projects. It is clearly the case on *Ulule*, the platform on which the investigation was conducted, and on *Kickstarter*, the US platform on which most studies are conducted. In this domain, potential backers' preferences are not mainly shaped by purely economic considerations (objective value of what the backer gets for their support), instead affective and psychological considerations matter. The question can be posed whether the same kinds of patterns would be found in other types of crowdfunding activities that are less community dependant, such as lending-based crowdfunding or equity based ones. Furthermore, in the paper, the ties' strength is only approximated using indirect measures related to the shape that the supports take. It would be interesting to use more direct measures asking backers about their relationship with the entrepreneur and the way they get informed about when a funding campaign has been launched.

REFERENCES

- Adler, P., and S. Kwon. 2002. “Social capital: prospects for a new concept”. *Academy of Management Review* 27 (1): 17-40. DOI: 10.2307/4134367.
- Agrawal, A., C. Catalini, and A. Goldfarb. 2015. “Crowdfunding: geography, social networks, and the timing of investment decisions”. *Journal of Economics and Management Strategy* 24 (2): 253-274. DOI: 10.1111/jems.12093.
- Ahlers, G., D. Cumming, C. Gunther, and D. Schweizer. 2015. “Signaling in equity crowdfunding”. *Entrepreneurship Theory and Practice* 39(4): 955-980. DOI: 10.1111/etap.12157.
- Allison; T., B. Davis, J. Short, and Webb J. 2015. “Crowdfunding in a prosocial microlending environment: examining the role of intrinsic versus extrinsic cues”. *Entrepreneurship Theory and Practice* 39 (1): 53-73. DOI: 10.1111/etap.12108.
- Arrow, Kenneth. 1974. “The limits of organization”. *New York: Norton York.*
- Bakos, J.Y. 1991. “A strategic analysis of electronic marketplaces”. *MIS Quarterly* 15 (3): 295-310. DOI: 10.2307/249641.
- Belleflamme, P., T. Lambert, and Scwienbacher A. 2014. “Crowdfunding: tapping the right crowd”. *Journal of Business Venturing* 29 (5): 585-609. DOI: 10.1016/j.jbusvent.2013.07.003.
- Berg, J., J. Dickhaut, and K. Cabe. 1995. “Trust, reciprocity and social history”. *Games and Economic Behavior* 10 (1): 122-142. DOI: 10.1006/game.1995.1027.
- Blum, B., and A. Goldfard. 2006. “Does the internet defy the law of gravity?” *Journal of International Economics* 70 (2): 384-405. DOI: 10.1016/j.jinteco.2005.10.002.

- Boeuf, B., J. Darveau, and R. Legoux. 2014. “Financing creativity: crowdfunding as a new approach for theatre projects.” *International Journal of Arts Management* 16 (3): 33-48.
- Bohnet, I., and R. Croson. 2004. “Trust and trustworthiness.” *Journal of Economic Behavior and Organization* 55 (4): 443-445. DOI: 10.1016/j.jebo.2003.11.002.
- Burtch, G., A. Ghose, and S. Wattal. 2014. “Cultural differences and geography as determinants of online pro-social lending.” *MIS Quarterly* 38 (3): 773-794.
- Cholakova, M., and B. Clarysse. 2015. “Does the possibility to make equity investments in crowdfunding projects crowd out reward-based investments?” *Entrepreneurship Theory and Practice* 39 (1): 145-172. DOI: 10.1111/etap.12139.
- Colombo, M., C. Franzoni, and C. Rossi-Lamastra. 2015. “Internal social capital and the attraction of early contributions in crowdfunding.” *Entrepreneurship Theory and Practice* 39 (1): 75-100. DOI: 10.1111/etap.12118.
- Cumming D., and N. Dai. 2010. “Local bias in venture capital investments”. *Journal of Empirical Finance* 17 (3): 362-380. DOI: 10.1016/j.jempfin.2009.11.001.
- Cumming, D., G. Leboeuf, and A. Schwienbacher. 2019. “Crowdfunding models: keep-it-all vs all-or-nothing.” *Financial Management* 46 (2): 331-360. DOI: 10.1111/fima.12262.
- Dejean, S. 2020. “The role of distance and social networks on the geography of crowdfunding: evidence from France.” *Regional Studies* 54 (2): 329-339. DOI: 10.1080/00343404.2019.1619924.
- French, K., and J. Poterba. 1991. “Investor diversification and international equity markets.” *The American Economic Review* 81 (2): 222-226.

- Freund, C., and D. Weinhold. 2004. "The effect of the internet on international trade." *Journal of International Economics* 62 (1): 171-189. DOI: 10.1080/09638199.2014.881906.
- Gedajlovic, E., B. Honig, B. Moore, C. Curt, T. Payne, and M. Wright. 2013. "Social capital and entrepreneurship: a schema and a research agenda." *Entrepreneurship Theory and Practice* 37 (3): 455-478. DOI: 10.1111/etap.12042.
- Gomez-Herrera, E., B. Martens, and G. Turlea. 2014. "The drivers and impediments for cross-border e-commerce in the EU." *Information Economics and Policy* 28: 83-96. DOI: 10.1016/j.infoecopol.2014.05.002.
- Graham, J.R., C.R. Harvey, and H. Huang. 2009. "Investor competence, trading frequency, and home bias." *Management Science* 55 (7): 1094-1106.
- Granovetter, M. 1973. "The strength of weak ties." *American Journal of Sociology* 78 (6): 1360-1380.
- Greenberg, J., and E. Mollick. 2016. "Activist choice homophily and crowdfunding of female founders." *Administrative Science Quarterly* 62 (2): 341-374. DOI: 10.1177/0001839216678847.
- Grinblatt, M., and M. Keloharju. 2001. "How distance, language, and culture influence stockholding and trades." *Journal of Finance* 56 (3): 1053-1073. DOI: 10.1111/0022-1082.00355.
- Grossman, G., and C. Shapiro. 1984. "Informative advertising with differentiated products." *The Review of Economic Studies* 51 (1): 63-81. DOI: 10.2307/2297705.
- Guenther, C., S. Johan, and D. Schweizer. 2018. "Is the crowd sensitive to distance? - How investment decisions differ by investor type." *Small Business Economics* 50 (2): 289-305. DOI: 10.1007/s11187-016-9834-6.

- Guo, L., D. Guo, W. Wang, H. Wang and Y. Wu. 2018. "Distance diffusion of home bias for crowdfunding campaigns between categories: insights from data analysis." *Sustainability* 10 (4). DOI: 10.3390/su10041251.
- Hakenes, H., and F. Schlegel. 2014. "Exploiting the financial wisdom of the crowd – crowdfunding as a tool to aggregate vague information." *Working Paper, SSRN*: https://ssrn.com/abstract=2475025.
- Harrison, R., C. Mason, and P. Robson. 2010. "Determinants of long-distance investing by business angels in the UK." *Entrepreneurship and Regional Development*. 22 (2): 113-137. DOI: 10.1080/08985620802545928.
- Hortaçsu, A., F.A. Martinez-Jerez, and J. Douglas. 2009. "The geography of trade in online transactions: evidence from *eBay* and *MercadoLibre*." *American Economic Journal: Microeconomics* 1 (1): 53-74. DOI: 10.1257/mic.1.1.53.
- Kolympiris, C., S. Hoenen, and N. Kalaitzandonakes. 2018. "Geographic distance between venture capitalists and target firms and the value of quality signals." *Industrial and Corporate Change* 27 (1): 189-220. DOI: 10.1093/icc/dtw057.
- Kuppuswamy, V., and B. Bayus. 2017. "Does my contribution matter? An analysis of the kickstarter crowdfunding community." *Journal of Business Venturing* 32 (1): 72-89. DOI: 10.1016/j.jbusvent.2016.10.004.
- Laniado, D., Y. Volkovik, S. Scellato, C. Mascolo, and A. Kaltenbrunner. 2018. "The impact of geographic distance on online social." *Information Systems Frontiers* 20 (6): 1203-1218. DOI: 10.1007/s10796-017-9784-9.
- Lim, M., and S. Viswanathan. 2016. "Home bias in online investments: an empirical study of an online crowdfunding market." *Management Science* 62 (5): 1393-1414. DOI: 10.1287/mnsc.2015.2206.

- Lin, M., N. Prabhala, and S. Viswanathan. 2013. "Judging borrowers by the company they keep friendship networks and information asymmetry in online peer-to-peer lending." *Management Science* 59 (1): 17-35. DOI: 10.1287/mnsc.1120.1560.
- Mollick, E. 2014. "The dynamics of crowdfunding: an exploratory study." *Journal of Business Venturing* 29 (1): 1-16. DOI: 10.1016/j.jbusvent.2013.06.005.
- Omelia, J-P., S. Arbesman, M. Gonzalez, A-L. Barabasi, and N. Christakis. 2011. "Geographic constraints on social network groups." *Plos One* 6 (4): e16939. DOI: 10.1371/journal.pone.0016939.
- Ordanini, A., L. Miceli, M. Pizzetti, and A. Parasuraman. 2011. "Crowdfunding: transforming customers into investors through innovative service platforms." *Journal of Service Management* 22 (4): 443-470. DOI: 10.1108/09564231111155079.
- Roth, A. 2008. "What have we learned from market design?." *The Economic Journal* 118 (527): 285-310. DOI: 10.1111/j.1468-0297.2007.02121.x.
- Salop, S. 1979. "Monopolistic competition with outside goods." *The Bell Journal of Economics* 10 (1): 141-156. DOI: 10.2307/3003323.
- Seasholes, M., and N. Zhu. 2010. "Individual investors and local bias." *Journal of Finance* 65 (5): 1987-2010. DOI: 10.1111/j.1540-6261.2010.01600.x.
- Shapiro, C., and H. Varian. 1998. "Information rules: a strategic guide to network economy." *Harvard Business Press*.
- Sulaeman, J. 2014. "Do local investors know more? Evidence from mutual fund location and investments." *Quarterly Journal of Finance* 4 (2): 1450010, DOI: 10.1142/S2010139214500104.

- Zhang, J., and P. Liu, 2012. “Rational herding in microloan markets.” *Management Science* 58 (5): 892-912. DOI: 10.1287/mnsc.1110.1459.
- Zheng, H., D. Li, J. Wu, and Y. Xu. 2014. “The role of multidimensional social capital in crowdfunding: a comparative study in China and US.” *Information and Management* 51 (4): 488-496, DOI: 10.1016/j.im.2014.03.003.