Hédia FOURATI
Faculty Economics and Management
University of Sfax ,Tunisia
hedia.fourati@yahoo.fr

Information Problems, Crowdfunding and the capital Structure of Business Start-up

Résumé : Les entreprises en création font face aux contraintes financières. Ces contraintes sont dues à une limite d'autofinancement et aux problèmes informationnels (Carpenter and Petersen, 2002). Le financement participatif est le moyen de financement le moins coûteux pour limiter ces problèmes. Nous étudions le rôle des problèmes informationnels à définir le choix de financement des 'start-up'. Notre étude part d'un échantillon de 1214 nouveaux entrepreneurs tiré de la base de données PSED (Panel Study of Entrepreneurial Dynamics). Les résultats de notre étude montrent qu'en termes d'opacité d'information la source de financement privilégiée est l'autofinancement. L'asymétrie d'information limite le financement participatif. L'entrepreneur refuse de diffuser l'information à certains investisseurs due au manque de professionnalisme, Schwienbacher and Larralde, (2010).
Mots-clés : structure de capital, financement participatif, opacité d'information.
Summary : Business start-ups face financial constraints due to lack of internal funds and information problems, (Carpenter and Petersen, 2002). Crowdfunding is the cheapest method to limit such problems. We are interested in studying the decisive weight of financial problems in information opacity and asymmetry on the decision about the capital structure of entrepreneurial projects. Our study is conducted on the PSED(panel study of entrepreneurial dynamics). In fact, evidence from analyzing the role of information opacity proves that the main source of finance is equity rather than debt. Moreover, Information asymmetry limits crowdfunding. In fact different parties engaged in funding have no access to the same level of information (Myers and Majluf, 1984). The entrepreneur might be even more reluctant to disclose information to some investors, due to the lack of professionalism, Schwienbacher and Larralde, (2010).
Keys words: Capital structure, crowdfunding, information asymmetry, information opacity.

INTRODUCTION

Business start-ups play a key role in the economies as they present an important source of job creation, innovation, growth and productivity. Financial capital is one of the important resources required for enterprise, Cassar, (2004). Novice entrepreneurial firms often suffer from financial constraints that limit their growth and threaten their survival. One of the causes of financial constraints is lack of internal cash flow, collateral, asymmetric information and agency problems, (Carpenter and Petersen, 2002). Compared with the position of large enterprises, the provision of finance to new venture by lending institutions can be problematic for a number of reasons. First, such institutions need to be able to effectively monitor the performance of the enterprise. They ensure that the firm is making satisfactory business progress and the interests of the lender are being respected. Those businesses also suffer from principal-agent problems, and asymmetric information, which can lead to investment in more risky projects[1], (Harvie, 2011; Berger and Udell, 2006; Frank and Goyal, 2003).

Business start-ups have no accumulated steady of cash flow and typically lack not only collateral, but also a track record establishing their good reputation among creditors. More specifically, the problem of adverse selection grows as entrepreneur becomes more reluctant to disclose information about the project. Moral hazard will increase if the investors have the difficulties distinguishing between the entrepreneur’s lack of effort and inherent risk as a cause of failure. Due to a large degree of information opacity and the associated problems of asymmetric information, start-up firms rely on insider funds (saving and crowdfunding). The conventional ‘pecking order’ posits that firms prefer internal financing from their own cash flow and retained earnings in favor of external financing and issuing debt before equity in case where internal funds are exhausted. The early paper by Colomiris and Hubbard, (1988) analyzed the different mechanisms by which credit markets sort borrowers in the presence of asymmetric information. Calomiris and Hubbard, (1988) developed a simple general equilibrium model of credit allocation. There are contracts offered, in "full-information" and "information imperfect." In fact, external finance will be differentially available to entrepreneurs. Credit restrictions may occur in response to a deterioration of net-worth positions. From this vintage point, we study in one side, the role of information problem on the capital structure of business start-up. In another side, crowdfunding is a solution to financial constraints. How information problems may limit or enhance crowdfunding?

[1] An agency problem where a company refuses to invest in low-risk assets, in order to maximize their wealth at the cost of the debt holders. Low-risk projects provide more security for the firm's debt holders, since a steady stream of cash can be generated to pay off the lenders.

1 Question of research

The literature introduced two opposite frameworks relevant for the financing hierarchy: a standard POT, following the spirit of (Myers & Majluf, 1984) and a reversed POT, where external equity is preferred over external debt. Our study contributes with a robust, explicit and comparative testing of the pecking order theory by studying the role of information problems in justifying the financial structure of start-up activities in internal finance, crowdfunding and external finance. We use then the logistic regression under Eviews5.

1.1 Information opacity and the capital structure of entrepreneurial firms

New firms have no historical and no reputational effects for judging theirs situation, (Hall and al., 2004 and Sanyal and Mann, 2010). The existing of information opacity hinders the debt supply, (Cassar, 2004; Avery and al,. 1998; Berger and Udell, 1998 and Paulson and Townsend, 2004). Under information opacity problem, a Pecking order will take place. Firstly, personal savings, secondly short-term debt, then long-term debt, and ultimately and the least preferred is the role of external investors, (Cosh and Hughes, 1994). Accordingly, given the difficulty in obtaining external financing, entrepreneurs rely heavily on crowdfunding or internal funds, (Berger and Udell, 1998; Huyghebart, 2003).

The relationship of debt helps in granting loans to small businesses, (Berger and Udell, 1998; Cole, 1998 and Hanley and Crook, 2005), and showed that a pre-existing reputation is an important factor leading the bank to increase the maturity of the loan. Due to this informational problem, internal financing is the primary source of funding followed by external debt and ultimately a limited amount of external equity, (Berger and Udell, 1998; Huyghebaert and Gucht, 2007). The following hypotheses regarding the problem of information opacity are proposed:

H1: Information opacity is positively correlated with the probability of using internal funds in financing new venture creation;
H2: More information opacity leads to less chances of having bank debts in financing new venture;
H3: More Information opacity leads to less chances of external equity

Information opacity leads to information asymmetry that creates some agency problems (Jensen and Meckling, 1976). Outside investors pay close attention to entrepreneur's creditworthiness and reputation (Ou and Haynes, 2006). In the following section, we analyze the role of moral hazard problem and credit rationing in justifying some financial choice of the entrepreneurial firms.

1.2 Information asymmetry and the capital structure of the entrepreneurial firms

According to Myers and Majluf, (1984) , due to the information asymmetry between insiders (entrepreneurs) and outsiders, firms use financial sources in the following order: initially internal funds (retained earnings or equity supply by insiders), after

wards long-term and short-term debt, and finally, if all other sources are exhausted, outside equity. The extent of asymmetric information between a company and possible capital suppliers affects the inherent cost of capital that increases in line with the pecking order (Pettit and Singer, 1985). In addition, entrepreneurs tend to be especially reluctant to increase business transparency, as that is often accompanied by lead to loss of control of the business, (Hamilton and Fox, 1998).

The provision of loan by investor to the entrepreneur will create an agency relationship between the entrepreneur (the agent) and the investor, who is the principal, (Chérif, 1999). Agency problems are more pronounced in novice entrepreneurial firms than their counterparts' large firms. In fact, collecting information by financial intermediary is rare and expensive, (Baas and Schrooten, 2006).

Agency problems in moral hazard and credit rationing and the study of theirs relations with bank debts of the entrepreneurial firms must be explained in next sub-sections.

*****Moral hazard and the capital structure of the entrepreneurial firms*

Due to the inability to write complete contracts specifying the benefits right under any liquidation act, the entrepreneur has interest to expropriate funds after signing the contract with the bank, (Huyghebaert and Gucht, 2007). The moral hazard problem leads therefore to a first incentive to undertake riskier projects and incentives of underinvestment in projects with positive net present value.

**Credit rationing and capital structure of the entrepreneurial firms*

Due to the problem of credit rationing, loan applicants are generally the firms with good quality, (Huyghbaert, 2001). The central contribution of Stieglitz and Weiss, (1981) is that imperfect information can limit the number of loans a lender will make; that is, "credit rationing" occurs in the sense that within a class of observationally identical borrowers, not all receive loans. Weiss, (1981) show that, due to asymmetric information and principal-agent problems, lending institutions find it difficult to distinguish between good and bad risks, resulting in adverse selection and moral hazard problems. From their point of view, therefore, it is rational to apply credit rationing to start-ups, which are subject to greater opaqueness and risk.

This discussion leads to the following hypothesis:

H4: Moral hazard problem is negatively associated with the probability of using bank debt in financing new venture;

H5: Credit rationing must be negatively associated with the probability of using bank debts in financing new venture;

1.3 The role of gender

For the research on women entrepreneurs' financing strategy, many scholars believe that there are some differences between male entrepreneurs and women entrepreneurs in financing patterns. Women entrepreneurs face more difficulties in obtaining financing, and seem to have some specific financing, (Coleman, 2000). Women face significant difficulties in external financing, particularly bank loans, venture financing. In the past 40 years, in the United States about 40% of the enterprises are owned or

managed by women, but less than 5% of the venture capital invest in the women-led enterprises, Candida and al, (2003).

H6: Women entrepreneur have less chances of financing by external debts;

2 Data

Our study uses the PSED database. The PSED is a longitudinal database selecting the period 2005–2010. PSED was started in 2005 with the selection of a cohort of 1214 nascent entrepreneurs chosen from a representative sample of 31845 adults. In the first year, a follow-up interview was completed with 1214 entrepreneurs (80% of the original cohort): 87% of the interviewed persons are 'novice' entrepreneur; 60% of them have accepted to participate to a second interview after one year. 30% of novice entrepreneur have information opacity problem have access to some crowdfunding. Entrepreneur with information opacity have 12% chances of accessing bank debt. Nevertheless 70% of entrepreneur who have external debt are information opaque. Invest appears more sensible to information opacity and 0, 18% of entrepreneur who are information opaque have some contribution of external investor. In term of experience 80% entrepreneur have no others activities. 16% have one another activity adding to the start-up. 63% of entrepreneurial activities are conducted by women entrepreneur.

3 Model and measure of variables

Our model is based on an equation where the dependent variable is dichotomous (i.e., whether or not an individual use the mean of finance in internal or external funds). Accordingly, we use the logistic regression methodology to estimate the coefficients and we control by gender. The generalized form for the response probabilities for the model is given in the following equation:

$$\boxed{financing_{pi} = \alpha_1 + \alpha_2 \ \mathrm{opacity}_{\mathrm{i}} + \alpha_3 \ \mathrm{agency} + \alpha_4 control + \varepsilon_{\mathrm{i}}}$$

Where:

- financing$_i$, is a dichotomous variable that measures if the entrepreneur adopt one of the modalities of financing in ((1) the owner resource, (3) external finance, and (4) outside equity).

-Information opacity: Is a vector that explain the existence or not of information opacity.

-Agency problem*:* Is a vector that explains the existence or not of an agency problem in moral hazard and credit rationing.

- Control: a dichotomous variable that measure gender.

3.1 Measure of variables

Table1 explains the different items of the dependent and the independent variables. Information opacity is measured by if the entrepreneur has an entrepreneurial experience. In term of agency problems, we consider credit rationing and moral hazard. We control by gender.

Table1: Measure of variables		
Variables	**Labels**	**Measures**
Dependent variables		
Saving	SAVING	Dichotomous variable coded '1' if the share of capital retained by the entrepreneur exceeds or equal 50%, (Berger and Udell, 1998; Huyghebart, 2001).
Crowdfunding	CROWDFUNDING	Dichotomous variable coded '1' if the entrepreneur use some debts from family, friends and others personal resources, (Berger and Udell, 1998; Huyghebart, 2001).
External debts	DETEXTERNE	Dichotomous variable coded '1' if the entrepreneur have some debts from banks, credit cards, suppliers and others external debts, (Berger and Udell, 1998 ; Huyghebart, 2001, Sanyal &Mann, 2010).
Bank debts	CREDIBANC	Dichotomous variable coded '1' if the entrepreneur uses some bank debts for financing the new venture, (Berger and Udell, 1998; Huyghebart, 2001, Sanyal &Mann, 2010).
External equity	PCEXTERNE	Dichotomous variable coded '1' if the entrepreneur uses some external equity, (Berger and Udell, 1998; Huyghebart, 2001, Sanyal &Mann, 2010).
Independent variables		
INFORMATION OPACITY		
Opacity	OPACITY	Dichotomous variable code '1' if the entrepreneur refuses to communicate information about initial predictive financial statement of the project to others.
AGENCY PROBLEMS		
Moral hasard	MORALHAZARD	Dichotomous variable coded '1' if the entrepreneur responds 'no' to the following question "all funds deposited in a bank account in the name of the company". (Huyghebart, 2001).
Credit rationning	RATIONNING	The percent of new venture which starts without having access to bank debts, (Huyghebart, 2001).
ENTREPRENEURIAL ATTRIBUTES		
Gender	GENDER	Dichotomous variable coded '1' if the entrepreneur is a woman, (Sanyal &Mann, 2010, Cassar, 2004, Storey, 1994).

3.2 Logistic regression and results

The econometric estimation of coefficient of logistic regression is presented in **Table 2** and reveals the following results. Since most firms are financed primarily by only one type of finance, we use discrete variables (for example, the binary 0, 1). [2] When describing financial structure for each firm. For our main assessment of the PSED financial structure, we consider the three-way financial source: internal finance, external equity, and external debt.

Table 2 : Logistic regression information problems and capital structure of business start-up

	Saving	crowdfunding	Internal finance[3]	External debt	Bank debt	External equity
Information opacity						
OPACITY	**0,041**	**0,229**	**,365***	**-0,244**	**-,441***	**-0,28**
Agency problems						
MORALHAZARD	**-0,226**	**-0,403***	**-,449***	**-0,656***	**-0,144****	**-0,657**
RATIONNING	**-0,482**	**-0,152****	**-1,143**	**-0,132**	**-0,44*****	**-0,635**
Control variables						
GENDER	**-0,132**	**0,019**	**-,076**	**0,304***	**-,242**	**-0,468**
constant	**0,045***	**0,669***	**2,041**	**2,882***	**4,129**	**-4,95****
Nagelkerke R Square	**0,011**	**0,024**	**0,026**	**0,041**	**0,052**	**0,036**
-2 Log likelihood	**1560,018**	**1601,839**	**1572,430**	**1216,59**	**1216,657**	**235,058**

** Significant at 5%; *Significant at 1%.; *** significant at 10%.

Table 2 explains the role of information problems in defining the capital structure of business start-up. The "opaqueness" of novice entrepreneurial activities, inhibits the access to external finance. Under this problem it is difficult to ascertain if firms have viable projects and/or the willingness to pay due to moral hazard, (Torre *et al.* 2010).

For these activities, crowdfunding dominate the financial structure and then external debt and little to equity finance, (Sanyal and Mann, 2010). In fact, information opacity for business start-up prevents any source of external financing and enhances financial constraints, (Guidici & Paleari, 2000). This result justifies the hypothesis H1, dictating a positive correlation between the existence of a potential problem of opacity of information and the use of internal funds. As, in spite of the information opacity, the entrepreneur has more than 30% of chance to access some equity funds and crowdfunding.

In term of agency problem, credit rationing is associated negatively with bank debt. Note that an increase in credit rationing in the market decreases by 44% the use of bank debt.

[2] Empirical work on established firms often uses the share of different types of financing instead of the 0-1 binary choice. However, for the startup financial data, the 0-1 choice variable is superior because some of the shares are small while others are at such extremes that there would not be a normal distribution for the share variable.

[3] Include funding from friends, colleagues and family

This result confirms the results of (Huyghebaert and Gucht, 2007). Moral hazard is negatively associated with bank debt. The central contribution of Stieglitz and Weiss, (1981) is that imperfect information can limit the number of loans a lender will make.
In fact, information asymmetry presents lenders with the difficulty of distinguishing good loans from bad loans. In these circumstances banks find it rational to engage in credit rationing (e.g. not extending the full amount of the credit requested, even when the borrower is willing to pay a higher interest rate).
The existence of moral hazard problem reduces with 50% the use of external debt and with 13% bank debt significantly. The 'opaqueness' of firm limit the capacity of lenders Torre *et al.* (2010) to ascertain if firms have the capacity to pay (have viable projects) and/or the willingness to pay (due to moral hazard).
Venture activities founded by women entrepreneur are 35% more likely to be financed by external debt. In term of personal saving, women entrepreneur have less initial saving. Women entrepreneur, in spite of information opacity, have more access to crowdfunding. Women entrepreneur have more than 30% chances of accessing external debts (supplier, government, leasing).
Taking into account the three funding scenarios flow, external debt and equity contribution by various external and financial problems of opacity of information, and agency problems we test the possible existence of a Pecking-order or inversed Pecking order for justifying the financial structure of new entrepreneurial projects. We take into account the sign of association and the existence of a more or less elastic coefficient. Taking into account the problem of information opacity, the entrepreneur has more chances of being financed by personal saving, then by external equity and less chance of being financed by external debt. Indeed in term of information opacity, we retain the inverted pecking-order: internal funds, external equity and external debt. The agency problems lead to the pecking –order in financing structure of new venture.

4 Results

Our study is conducted on the PSED database. We are interested on studying the decisive weight of information problems in information opacity, agency problems on the decision about the capital structure of business start-up. From a logistic regression of binary variables that defined the funding scenarios of finance we have drawn the following conclusions. In spite of information opacity, we conclude the existence of an inverted Pecking order defining the capital structure of business start-up with information opacity problems. Two main reasons for this pattern can be established. First, entrepreneurs consider debt as a personal liability as it requires to be underwritten by personal guarantees. Entrepreneurs place a self-imposed limit on the extent to which they are prepared to mortgage their assets. Second, entrepreneurs deliberately seek out equity investment as a means of obtaining added value. A well chosen investor can add business skills and social capital in the form of commercial contacts and access to relevant networks.
The entrepreneur in more information opacity faces less financial constraints. As crowdfunding afford them with more internal funds. Related to this point, Ueda (2004)

finds that entrepreneurs who go to venture capital are more likely to have secured their ideas via intellectual property rights.

ACKNOWLEGMENT

The theoretical contribution of this paper is in presenting crowdfunding as a financial tools that is as traditional funding so dependent to information problems for novice entrepreneurial venture. From a financial point of view, our empirical contribution justifies the role of crowdfunding as a mediator tool for limiting information problems and the related moral hazard problems and information opacity. Strausz, (2015) demonstrated the mediator role of crowdfunding from a study of demand or a marketing point of view. More concentrated in entrepreneurial finance, our funding stress the fact that crowdfunding appear as complement rather than a substitute to traditional funding for business start-up.

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