A model of adaptive relationship between the entrepreneur and the bank : the case of French vineyards entrepreneurs

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A model of adaptive relationship between the entrepreneur and the bank : the case of French vineyards entrepreneurs

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Abstract:
Availability of funds is a critical question for new French vineyards entrepreneurs. Indeed, investment for grape growing, wine making and wine marketing, as compared to sales, is very large. As these new entrepreneurs free cash-flows stay rather low, their investment capacity can be strongly limited if they do not benefit from a tight relationship with their bankers.
In this paper, we present the relationship between the bank and the entrepreneur as an adaptive relationship. We aim at encompassing the literature on corporate debt and investment, initiated by Myers (1977) and debt maturity and information asymmetry in the manner of Diamond (1991). In the model, we study the project value and the liquidity risks when the entrepreneur investment varies. As information interacts with short term debt maturity (thus, liquidity risks), the entrepreneur can undertake a sub-optimal investment in the first period if he expects that this can increase his probability to benefit from a reputation effect in the second round of investment. It thus optimizes the investment process.
The hypotheses of a need for a larger bank support of the 'ambitious' wine-grower entrepreneurs, together with a continuous monitoring are verified, both theoretically and empirically. This model of bank-entrepreneur relationship appears to be relevant for small scale business with high capitalistic intensity, and therefore highly leveraged firm, found in sectors such as the agrifood business. Results therefore plead for a special place of "entrepreneurship finance" in commercial banks and the need for an expertise in different industrial and agricultural sectors, as credit scoring approaches seem irrelevant for some specific types of businesses.

Keywords :
Entrepreneur, bank relationship, agrifood and wine business

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1. Introduction

Availability of funds is a critical question for new French vineyards entrepreneurs. Indeed, investment for grape growing, wine making and wine marketing, as compared to sales, is very large. As these new entrepreneurs free cash-flows stay rather low, their investment capacity can be strongly limited if they do not benefit from a tight relationship with their bankers.

Here we will argue for an adaptive investment and bank financing process. In our proposal, project value and liquidity risks act as incentives to reorient the investment process, and ultimately match the project scale to the entrepreneur's quality (understood as its financial performance).

This research follows a field study we conducted for Crédit Agricole (the largest French bank involved in the agricultural sector) within the population of the "vineyards entrepreneurs", i.e. those starting their own grape growing business. In the well-known context of the current wine crisis, the bank question was: who succeeds, who fails and why? The study gathered extensive information about 272 vineyards entrepreneurs spread in the main French wine producing regions. In contradiction with common ideas, there are no simple criteria to predict success or failure of vineyards succession, acquisition or creation. For example, the proportion of failure (measured by repayment delay and negative annual mean current account) for acquisition and creation is not larger than it is for succession. In fact, the collected data are showing that there is an adjustment of the financial structure to the return on equity, leading to an almost perfect risk-return trade-off. As we observe that the investment process following the business starting-point seems rather long (in our sample, only 58% of the project investments are engaged the first year, on average), the global hypothesis is that the bank will implement a financing contract which leads the entrepreneur to adapt the investment process to the "state of affair". Instead of a classical credit rationing, this adaptive relationship would stem from incentives specific to the banking relationship.

Some empirical evidences would support this view of the banking relationship in the whole agricultural sector. Indeed, for Barry and Robison (2001), some specificities of the agricultural firms - exposure to natural and food-specific market risks, high capital intensity, small-scale and family nature of the business, and therefore highly leveraged – are pleading for an efficient close-ties relationship between the banker and the entrepreneur. Hence, instead of a conflicting relationship, such as it is implied by the credit rationing hypothesis, we observe an alignment of preferences.

In order to design the model, we borrow from the Myers' model design of underinvestment (Myers, 1977) and add the concepts of renegotiation and reputation (Diamond,1991 (1) and Diamond,1991) (2). In our view, the entrepreneur's profit is directly linked to the project value but also to the liquidity risks, which is directly depending upon the long term finance the bank is ready to provide. But because short term debt (and thus, higher liquidity risks), is information productive, the entrepreneur can undertake a sub-optimal investment in the first period if he expects a positive effect of the information asymmetry reduction in the second period, i.e. in the second stage of the investment process. Two hypotheses follow from the theoretical presentation: (i) the short term debt should be

relatively greater for higher scale ("ambitious") projects than for lower scale ("reasonable") ones; (ii) the long term debt renegotiation is more likely to occur when information asymmetry is important.

Note that the model of bank-entrepreneur relationship is particularly relevant of small scale business with high capitalistic intensity, high leverage and a certain level uncertainty, such as agricultural firms, which are typically showing these characteristics.

In the following section, we review the literature on the relationship between bank finance and investment process. In the section 3, we present an exploratory model, we test it against some of the results obtained from the field study in section 4, and then conclude.

2. Literature review

For corporate finance researchers, the bank relationship has been a topic of interest since the seminal paper of Jensen and Meckling (1976), who introduced the agency theory into the corporate finance field. In our view it has been providing a unique perspective to link firm value to information asymmetry.

Focusing on the debt contract, Jensen and Meckling pointed out the risk of overinvestment resulting from the bank financing. In this respect, the debt feature, i.e. a fixed repayment for every pay-off superior to this payment, acts as an incentive for the owner-manager to choose risky project with high pay-off and high volatility instead of financially healthier project with lower volatility. This is equivalent to a value transfer from the bank to the owner-manager. For Degryse and de Jong (2006) the main cause of overinvestment problems is *the managerial discretion*.

In the same vein, Myers (1977) pointed out the problem of underinvestment. For Myers, the difficulty to contract on ex post performance, which cannot be assessed by a third stake, prevents renegotiation of the repayment once the investment has been made. Therefore, the entrepreneur does not undertake some positive net present value projects because his pay-off is lower than the debt repayment. For Degryse and de Jong (2006) this *information asymmetry* explains why overinvestment problems arise.

In our view, the information asymmetry is more critical than managerial discretion in the entrepreneurship context. Indeed, for the same reasons that shareholders do not face a managerial discretion problem with rapidly growing firms, which need "to go regularly to the financial markets to obtain capital" (Jensen, 1986), the banker does not need to protect himself against managerial discretion from the entrepreneur who initiates an investment process. Moreover, underinvestment is likely to be particularly stringent when capital intensity is high, i.e. when return on investment is relatively lower.

In this respect, the corporate finance theory provides a framework which helps understand how the entrepreneur behaves when his prime financing resource is the bank. However, both the credit rationing and the financial intermediation theories have gone further, explaining the bank contract characteristics. For example, Stiglitz and Weiss (1981) focused on the effect of

the rate of interest or the use of collaterals. In line with Diamond (1984) financial intermediation theory, Sharpe (1990) was the first to show how the bank can take advantage from its capacity to collect information. Rajan (1992) clarified how the bargaining power and the project quality can lead the entrepreneur to prefer long term debt to short term debt. Hence he gave prominence to the role of debt maturity in solving information asymmetry problems.

In our view, Diamond (1991) contributed to bridging bank contract theory and corporate finance in giving some value to reputation and "control rent". The "control rent" is the rent over which the entrepreneur has full property rights, and is directly linked to liquidity risks arising "from the borrower's loss of control rents in the event that lenders are unwilling to refinance when bad new arrives" (Diamond, 1991)." This is showing that there can exist a life-cycle effect when liquidity risks interact with reputation. Indeed, as Fama (1985) suggested, liquidity risks should imply more information sharing, when the banker's need is appearing, in order to assess the credit value of the firm when refinancing is required. Therefore, the entrepreneur could seek to obtain short term credits in order to build up reputation and adjust the debt level in the future, even in the presence of liquidity risks (see also Childs, Mauer and Ott, 2005). In a dynamic setting[3], the entrepreneur who is expecting a positive credit rating, initially ignored by the bank, will have to arbitrate between an immediate project value decrease because of liquidity risks and a potential future value for his reputation. For Diamond (1991), the value of reputation indirectly equates "the value to [an entrepreneur] of making optimal project decisions over this date [when the entrepreneur values reputation]", as, indeed, this value corresponds to the "reputation capital" loss in the event of default.

Our model is an attempt to encompass these two strands of literature. Its originality is to try and make explicit the link between project choices and liquidity risks. Within this global frame, we will show that the entrepreneur can choose high scale projects in spite of long term finance limitations, and thus is accepting to increase liquidity risks, in order to obtain a better access to long term finance in the future.

3. An adaptative entrepreneur-bank relationship model

In the model, the entrepreneur is facing a choice between projects of different scales, but constant value on investment and constant risk. However, he is strongly capital-limited and the bank long term credit availability are set in line with the evaluation or rating done before financing. The bank, however, can revise its first rating if it has granted a revolving short term credit, which requires regular auditing the entrepreneur performance. This exploratory model

[3] "Dynamic models that allow for interactions between flexible financing *and* investment decisions are rare, and dynamic models that allow for agency are even rarer (Childs et al., 2005)." In our view, if the corporate finance approach of the bank relationship is effectively static, this is not the case for approaches focusing on the bank contracts, such as credit rationing or financial intermediation theories, which provides, for most of them, a clear schedule of actions.

is showing the dynamics of adverse selection. Its main purpose is to measure the impact of the information asymmetry decrease on the relationship.

3.1. Liquidity risks and Readjusted Value

In a similar way as Myers (1977), we aim at encompassing together the firm value (V), the amount of investment (I) and the long term debt (D). Therefore, we draw up a model inspired from this paper. However, the hypotheses are slightly different. First, instead of classifying project value according to an exogenous signal, we will consider the scope of activities chosen by the entrepreneur, i.e. the project scale (θ). Investment (I) and value (V) are increasing with the project scale. We assume that the value of the assets is constant, relatively to the project scale, as well as the risk level.

We define:

- $\Theta \in \Re^{+}$ the set of projects of different scale θ the entrepreneur can undertake ;
- $\theta = g(I)$ and $V = v(\theta)$ with g and v strictly increasing ;
- Above a minimum level of investment under which the project has no value, $\frac{V(\theta)}{I(\theta)}$ is constant as well as the risk level.

For simplicity, we will consider that the entrepreneur's equity equals zero and that the investment can be financed through long term debt (D) only, or through both long and short term debt (S). Therefore,

I=D+S.

We consider that the entrepreneur's quality is characterized by his capacity to financially succeed in his project, which is taken as a probability of success p. In our setting, the bank can underrate the success probability of the entrepreneur. As a result, if $\tilde{p}$ is the subjective entrepreneur's success probability for the bank, thus $\tilde{p} < p$. Therefore the level of long term debt is directly depending upon the entrepreneur's bank-perceived quality and the investment which is demanded, i.e.:

$D = d(\tilde{p}; I) + L$

with L the debt level that the bank is ready to lend for any project and any entrepreneur.

Therefore, if I<D, the entrepreneur will obtain enough long term debt and completely benefit from the profit of the project. Moreover, he is sure to have enough financing in order to pursue the project in the next period.

However, when I>D, the entrepreneur can choose to try and complement the long-term debt with short-term debt. In case of success, the entrepreneur is earning the project value surplus less the cost of the short term debt (γS). In case of failure, the entrepreneur will no longer benefit from the short term debt financing. The entrepreneur then faces a liquidity crisis

which should prevent him to pursue his project on the same scale in a further period. For example, the bank can even force him to sell some assets.

Therefore, the liquidity crisis is costly and the cost ($\phi(S)$) overcomes the level of short term debt that should entirely be repaid to the bank.

In a one-period setting, the first project decision is taken at t=0. Profits (π) are realized at t=1.

Balance sheet at t=0

I	$D = d(\tilde{p};I) + L$ S

At t=1 :

- if the entrepreneur is successful in the first period, the value of the project is V but the entrepreneur has to pay the short term debt interest rate, $-\gamma S$. Therefore, the entrepreneur's profit is $\pi^S = V - \gamma S - I$
- if he has been failing, the value of the project is V but the entrepreneur has to pay the costs of the liquidity crisis $\phi(S)$. Therefore, the entrepreneur's profit is $\pi^F = V - \phi(S) - D$.

Hence, we can establish the date 1 expected profit for the entrepreneur:

$\Pi_1 = p\pi_1^S + (1-p)\pi_1^F = V - p(\gamma S(\tilde{p}) + I) - (1-p)(\phi(S(\tilde{p})) + D)$

Now, consider that $\phi(S) = S + a(S)$ with *a(S)* a convex function of S. We have seen that $\phi(S) > S$.

given that $D = D + S = I$

it comes that:

$\Pi_1 = V - p(\gamma S + I) - (1-p)(a(S) + I)$

$\Pi_1 = V - [p(\gamma S + (1-p)(a(S)] - I$

Defining V_R as the re-adjusted value of the firm, given the liquidity crisis costs

$\Pi_1 = V_R - I$

In figure 1, I, V and V_R have been drawn up in function of the project scale (θ). Note that in a one-period setting, $\underset{\theta}{Max}(\Pi_1) = \Pi_1(\theta^*)$. Therefore, the entrepreneur should undertake the project θ*.

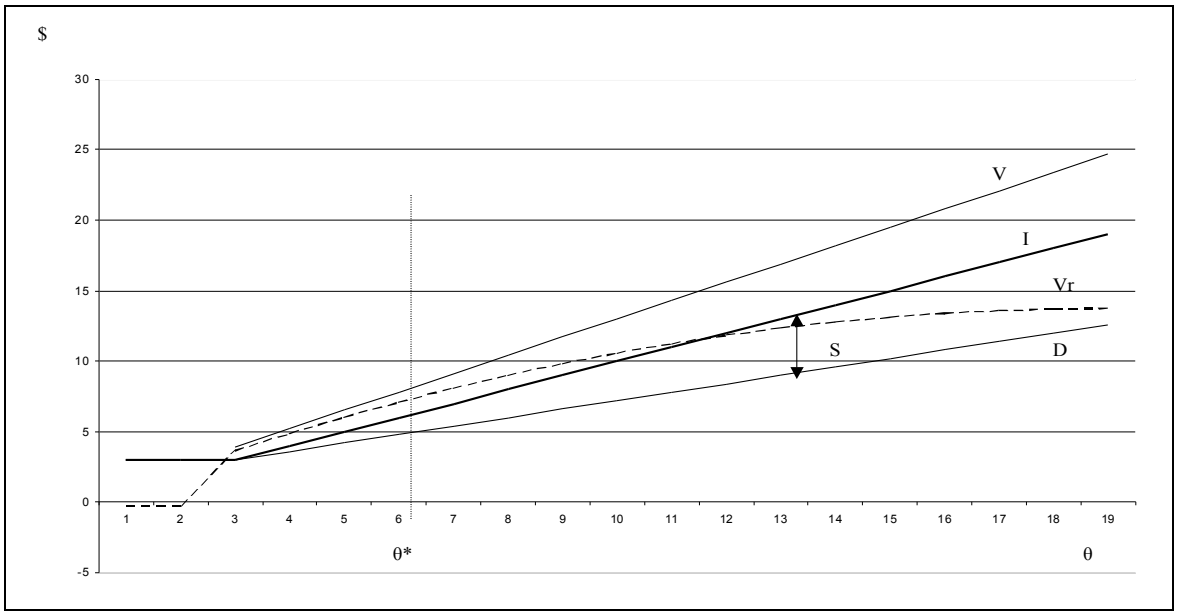

Figure 1: Optimal project in a one-period setting

3.2. Liquidity risks and readjusted value in a dynamic setting

The schedule

We will now consider two periods and thus, three observation dates, and assume that the entrepreneur has a unique project.

Date 0	Date 1	Date 2
Bank rating $\widetilde{p}_1$ implies that the entrepreneur chooses the project scale: θ_1^i	State realized (p(S)=p and p(F)=(1-p) If S, $\widetilde{p}_2 > \widetilde{p}_1$ If F, $\widetilde{p}_2 = \widetilde{p}_1$ and the entrepreneur has to pay $\phi(S)$. The entrepreneur is modifying his project, given that he optimizes his *new* readjusted value: θ_2^{i*}.	The entrepreneur profits amount to: $V_{R2}^{i*} - I(\theta_2^{i*})$.

At date 0, the banker is assessing the quality of the entrepreneur and decides which proportion of his demand for long term finance he will grant.

At date 1, the banker gets information and will revise his first rating. If this new rating is positive, the entrepreneur will get access to more long term debt. Therefore, the same set of formulas than for the one-period setting will apply. In the figure below, we illustrate the case when the new rating is positive. Therefore we set $\widetilde{p}_2 > \widetilde{p}_1$, i.e. $D_2 > D_1$ and, for each θ and I, $S_2 < S_1$.

We can write the entrepreneur's expected profit at date 2:

$$\Pi_2 = p\pi_2^S + (1-p)\pi_2^F = V - p(\gamma S_2 + I) - (1-p)(\phi(S_2) + D_2) = V_{R2} - I$$

In the figure below, we draw the two readjusted values as a function of θ.

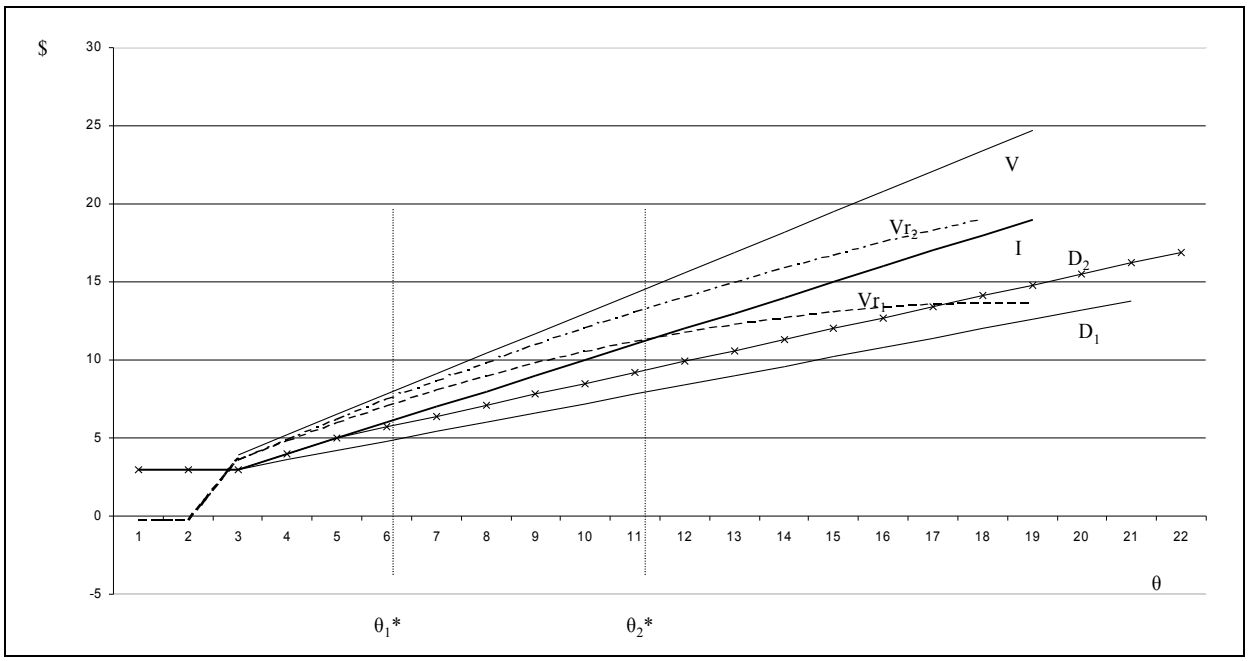

Figure 2: Optimal projects in a two-period setting

The entrepreneur's dilemma

The assumption is that the entrepreneur is given a choice between only two projects without any possibility to switch from one project to the other, namely θ^a and θ^b. The project *a* is a "prudent" project. The project *b* is an "ambitious" project, i.e $V_b - I_b > V_a - I_a$ (cf. Figure 3).

In the first period, the readjusted value of project *a* is optimized. In contrast, the entrepreneur is taking some liquidity risks when he undertakes the project *b*. Therefore, at date 0, the expected readjusted value of project *b* is almost null for period 1 (the first-period readjusted value function is the same as the project second-period value function).

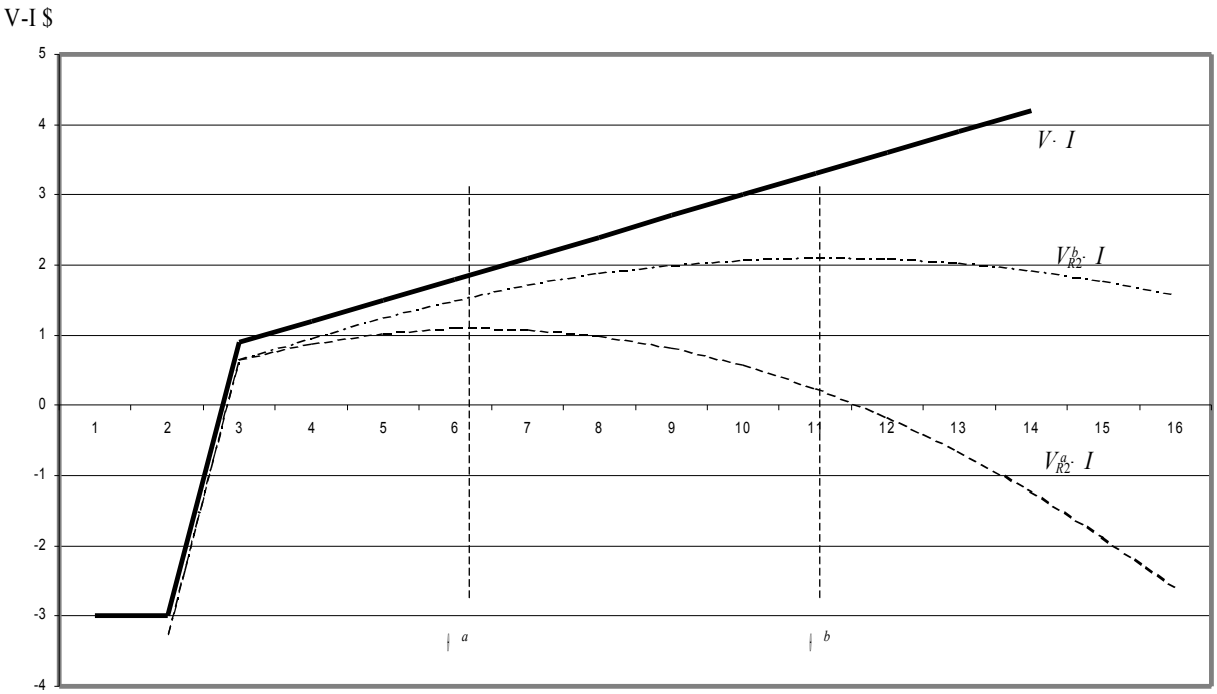

Figure 3: Absolute and readjusted value of the two projects in a one-period setting

Now, we will consider that the entrepreneur optimizes the value of the project for the two periods. The expected value of project *a* is:

$$\sum \Pi_t^a = (V_{R1}^a - I^a) + \frac{1}{1+\delta}(V_{R1}^a - I)$$

The expected value of project *b* is:

$$\sum \Pi_t^b = (V_{R1}^b - I^b) + \frac{1}{1+\delta}[p(V_{R2}^b - I^b) + (1-p)(V_{R1}^a - I^a)]$$

With δ the time discounted rate.

The first part of the equation is the first-period expected profit. The second part is the second-period expected profit. The last part corresponds to the case of failure in the first period. In this case, the bank does not revise its rating. As the entrepreneur will optimize his second-period expected value in undertaking the project for which he will obtain optimal financing, he undertakes the project *a* when the project has been failing in period 1.

The two projects expected values have been drawn in figure 5.

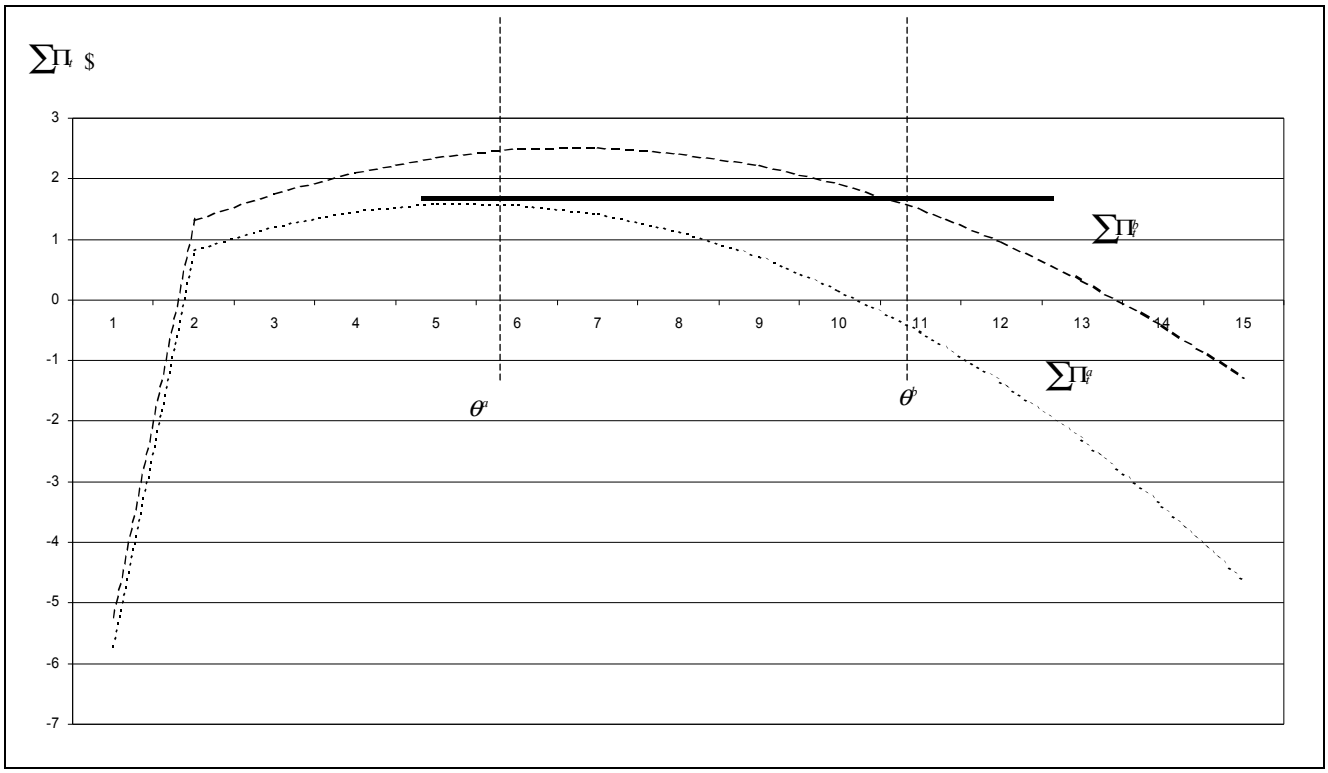

Figure 4: First-period projects and optimal second-period readjusted value

In figure 4, we can observe that the expected value of the two projects is quite similar. This is what we call the entrepreneur's dilemma. Indeed, he has two choices: take liquidity risks in order to benefit from the profit of a higher scale project in period 2, or be cautious and benefit from equivalent profit in period 1 and in period 2.

In order to estimate whether it will be profitable or not to realize the more ambitious project, the entrepreneur has to compare

$$\sum \Pi_t^b = (V_{R1}^b - I^b) + \frac{1}{1+\delta}[p(V_{R2}^b - I^b) + (1-p)(V_{R1}^a - I^a)] > \sum \Pi_t^a = (V_{R1}^a - I^a) + \frac{1}{1+\delta}(V_{R1}^a - I)$$

i.e. $$(V_{R1}^a - I^a) - (V_{R1}^b - I^b) < \frac{1}{1+\delta} p[(V_{R2}^b - I^b) - (V_{R2}^a - I^a)]$$

At the right hand side of the equation, stands the first period profit. In this case, this represents an opportunity cost as, by definition, $(V_{R1}^a - I^a) - (V_{R1}^b - I^b) < 0$. The entrepreneur will compare this first-period loss with his probability of future success. Obviously, the time discount rate remains a decision variable. Moreover the higher quality of the entrepreneur should encourage him to choose higher liquidity risks, as failure is less likely to occur.

The last part of the equation needs to be further discussed.

$$(V_{R2}^b - I^b) - (V_{R2}^a - I^a) = (V^b - I^b) - (V^a - I^a) - [[p(\gamma S_2^b) + (1-p)(a(S_2^b)] - [p\gamma S_2^a + (1-p)(a(S_2^a)]]$$

The term outside brackets corresponds to the differential value in between project *a* and project *b* if the entrepreneur would not choose to face liquidity risks, or equivalently, if he was not limited in capital.

The term within brackets corresponds to the differential costs of obtaining short term debt, i.e. the higher interest rate (compared to the long term interest rate) in case of success, and the liquidity crisis costs in case of failure. We have seen that the short-term debt requirement is directly linked to the investment and the long term financing availability. Therefore, if we consider a function of short term debt cost *c*, with $c(S)=[p(\gamma S)+(1-p)(a(S)]$, we can write that the entrepreneur will have incentives for choosing higher liquidity risks if $c(I^b;D_2^b)-c(I^a;D_2^a)$ is not too large. Given that $D=d(\tilde{p};I)+L$, we can rewrite the previous expression in the following manner: $\Delta c=c(I^b;\tilde{p}_2^b)-c(I^a;\tilde{p}_2^a)$. There is a trade-off in between the increase of $\Delta c=c(I^b;\tilde{p}_2^b)-c(I^a;\tilde{p}_2^a)$ implied by the investment spread and the reduction of information asymmetry (the difference between the first and second period bank rating). Therefore, the capacity of the bank to change its rating in case of success in the first period is a necessary condition for the entrepreneur to undertake the "ambitious" project. In other words, the entrepreneur investment choice is directly depending upon the bank willingness to renegotiate its credit terms.

The outcome is resulting from a path-dependent project choice. In figure 4, we have been drawing each optimal project choice according to the project undertaken in the first period. We notice that there is no obvious optimal path. This illustrates the fact that the entrepreneur can accept to increase liquidity risks if this choice is improving his long term debt access in the following period.

3.3. Managerial implications and discussion

This exploratory model assumes that the bank does not merely ration entrepreneurs in the sense of Stiglitz and Weiss (1981). However, the bank can decide to limit its long term financing offer, according to its *ex ante* rating of the entrepreneur. This limitation will have direct consequences on the liquidity risks that the entrepreneur will incur. As a result, the entrepreneur should be led to reduce his project scale. In a static setting, this would indeed be equivalent to some kind of credit rationing. From another standpoint, however, the amount of short term debts, which will imply regular renegotiation, is positively related to the need for the bank to collect information. As a result, a potential positive rating revision should induce the entrepreneur to take more risks and to therefore undertake an "ambitious" (high scale) project, even if, in the first period, these higher liquidity risks could overcome the value differential obtained from this larger project.

As a result, we expect different potential trajectories for the entrepreneur:

i. The "prudent" trajectory witch does not exclude some liquidity difficulties. However, their consequences are limited due to the fact that the level of short term debt is rather low.
ii. The "growth" trajectory, when the access to long term debt is increasing with time, partly thanks to renegotiations following normal short term debt repayment.
iii. The "go-back" trajectory, when the entrepreneur cannot access to the long term debt needed to undertake his project. If a liquidity crisis arises, he will have to reduce the scale of his projects.

It is worth noting that the timing of information sharing with the bank has very important implications. If the bank is able to fully assess the quality of the entrepreneur as early as the first financing round (or, similarly, if its rating cannot be changed), the notion of financial trajectory is not relevant.

In contrast, if the bank financing is depending upon information collected through the interaction with the entrepreneur, then the "growth" and the "go-back" trajectories, from a financial standpoint, are likely to occur.

One major assumption of our model is that (following Fama (1985) or Diamond (1991)) short maturity is informative because of the renegotiation process. However, in a context of pure bank relationship, the information sharing process does not necessary depend upon short term debt. Therefore, the "growth" and "go-back" trajectories can co-exist and would imply no additional costs (liquidity crisis costs) for the entrepreneur.

To summarize, our global model is leading to the following hypotheses :

H1: the short term debt should be relatively greater for higher scale ("ambitious") projects than for lower scale ("reasonable") ones;

H2: the long term debt renegotiation is more likely to occur when information asymmetry is important.

Discussion should take into account that this model assumes that the bank underrates the entrepreneur and that he can attempt "ambitious" projects if the new information to be given to the bank is potentially leading to a better rating. If, however, the entrepreneur is wrong about his own competencies he can choose to take unreasonable liquidity risks… As entrepreneurs are rather optimistic (De Meza and Southey, 1996), we would expect that this is likely to occur. In this event, the entrepreneur would experience the first period liquidity crisis costs. As he should maximize the project value in the following period he should be conducted to eventually sell some assets and to revert to a less ambitious project than the one selected in the first period. To a certain extent, the adaptive bank-entrepreneur relationship provides an efficient way of dealing both with the risk of entrepreneur competencies'

underrating when information is poor (as set in our model) and when there exists a bias of optimism.

4. Empirical results and discussion

In this section, we are introducing some empirical results issued from the field study, which are illustrating the hypotheses drawn from our theoretical model. However, this exercise does not pretend to provide a satisfying model validation, which will rather imply more sophisticated quantitative or qualitative evidences.

4.1. Data about the bank-entrepreneur adaptative relationship

The data base has been built up from documents collected by the main French agricultural bank (financing about 80% of the French farmers) for "new wine growers" (NWG), identified as such by the Ministry of Agriculture offices in France. The bank collects and keeps extensive information on the NWG education and training, the production structures, the business plan with expected financial performances and investments budgets. Access to this information was obtained thanks to a research partnership with the bank for 272 vineyards' buyouts or creations spread among the main French wine producing regions. Data on the evolution of the new vineyard owners' bank situations (debt's nature, amount of short and long term debt, lines of credit (LCs), nature and level of collaterals – and on other elements of the bank relationship such as the duration, incidents such as debt repayment delays, defaults, etc.) and accounting reports were also collected when available.

This data set is providing us with information on the firm characteristics and the debt contract terms. As a result, we can test our hypothesis on short term debt. Moreover, as we get data on the investment and the debt initially agreed by the entrepreneur and the bank in the business plan, we are able to build up direct measures of credit availability (see table 1). The project scale will be approached through a discrete classification. Indeed, in our framework, the project scale is supposing a positive relationship between value and investment. However, the mere size of the vineyards is not always positively related to value creation. Instead, the level of integration is a more significant proxy of the project scale in the sense of the model proposed in the section 3. The project scale of the new vineyard owner increases from grape growing and delivering grapes to cooperatives (grape growers), to bulk wine making to be sold to *négociants*[4] (wine makers) and ultimately to producing and selling wine bottles directly to distributors or consumers (independent vineyards).

Category	Variables names	Variables definitions
Debt structure	Debt size	Total financial debt size in 2005
	Total short term credit	LCs and Short term debt to total debt ratio
	Short term credit	Short term credit to total debt ratio

[4] Peculiar types of wholesalers found in the wine industry.

	LCs	Line of Credit to total debt ratio
Credit availability	Ex ante availability	Expected debt to expected investment ratio at the time of acquisition
	Ex post availability	Real debt to expected debt ratio
	General availability	Expected debt to expected investment ratio at the time of acquisition

Table 1: the bank contract variables

4.2. Debt contract and vertical integration

First, we need to define a proxy in order to estimate the firm value. In the context of very Small Businesses, such as these French wine-farms, there is a confusion between the firm return and the wages that can both increase the entrepreneur's profit. As we will suppose that the level of asset depreciation is about equivalent to the debt repayment, we can consider that the profit per unit of labour (PL) (generally the entrepreneur and his associates) is the best proxy for the entrepreneur's residual cash-flows. We will suppose that the average PL is constant through time. As a result, if we assume a "cost of capital" of 10% and an infinite time horizon, we can accept that V=PL/0.1 as a proxy of the firm value (cf. Goffin, 1999).

In this section, we compare these three different types of project scales in relation to the variables of the model, i.e. the firm value, the long term debt and the short term debt ratio. Note that we assess the value of each project for a limited sample, due to the fact that exhaustive financial data were not available for some entrepreneurs. In contrast, the debt contract terms are very well informed, as the database has been built up through an exceptionally opened collaboration with the bank. Now, we can discuss the hypothesis formulated in the previous section.

First, we discuss **H1** in light of the data presented in table 2. The mean values presented are showing that a vertical integration towards an "independent vineyard" is leading to a higher investment and a larger short term debt. The information asymmetry hypothesis stated in our model is partly validated by the fact that conventional short term credit is significantly different, when the line of credit is not. This can be explained by the fact that a line of credit does not generally imply a renegotiation (Berger and Udell, 1995, Chakraborty and Hu, 2006)). However, we have to recognize that the short term credit of independent vineyards is not significantly higher than those of wine makers. Actually, some previous research has been showing that the wine makers category has predominantly been hit by the wine crisis, which is resulting in two effects on the level of short term debt:

- a direct negative impact on their inflows, and the bank has thus been compensating the loss through larger short term debt;
- some kind of long term debt rationing. As a result, they show good solvability ratios but bad liquidity ratios.

Average value (€)	**Grape growers**	**Wine makers**	**Independent Vineyards**	**Total**	**Anova***
N	*30*	*41*	*22*	*93*	
Profit per unit of Labour	19 697	26 873	36 873	26 924	0,046
Value	**196 970**	**268 730**	**368 730**	**269 240**	**0,046**
N	*140*	*63*	*38*	*241*	
Inflows	86 405	204 583	327 165	153 424	0,000
Total debt	**54 394**	**106 219**	**167 378**	**85 252**	**0,000**
Short maturity	**14%**	**23%**	**23%**	**18%**	**0,030**
Short term credit	4%	14%	11%	8%	0,001
Line of credit	9%	8%	11%	9%	0,781

*We use ANOVA test in order to compare means within three categories of observations (we can apply the T-Test only with two categories). Statistical significance at the 5% test levels.

Table 2: value, inflows, debt contract terms and vertical integration

In figure 5 below, we have been replacing the three vertical integration vineyard owners categories in a similar manner than we dealt with the project scale in section 3, with the variables from table 2, value, total debt and short maturity (V, D+S and D). As expected, in a context of entrepreneurs under stringent capital limitations, the proportion of short term debt is mechanically increasing with the project scale.

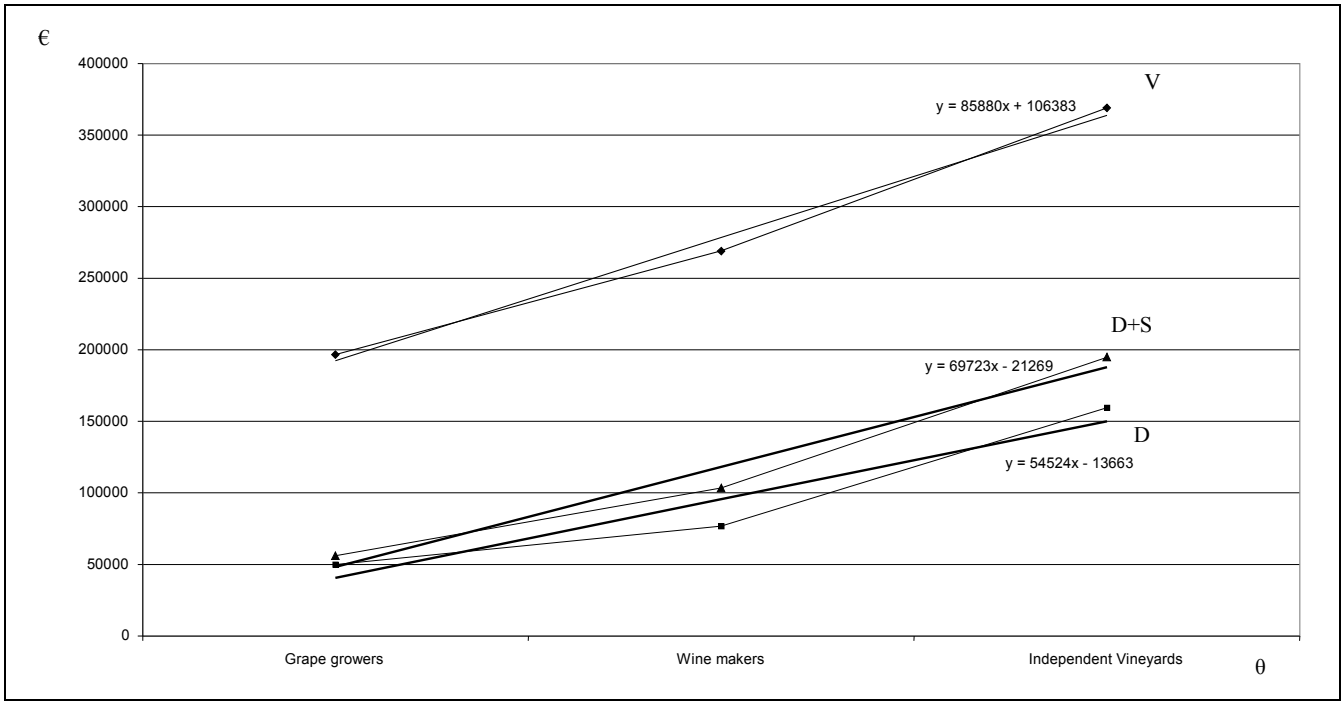

Figure 5 : Value, debt and vertical integration

Now, we have to deal with the hypothesis of a credit availability evolution, **H2**. In our model, the entrepreneur who wishes to undertake an "ambitious" project should first be limited in long term financing (and so experience a low ex ante credit availability but a high ex post availability). This is what we are examining through the data about credit availability

presented in table 3. We compare the expected debt to the investment (ex ante credit availability), the real debt to the expected debt (ex post credit availability) and the real debt to the investment (general credit availability)[5]. In our view, this method is one of the main originality of our work. It worth the various proxies generally used when assessing credit availability or developing credit rationing theories (see bank contract variables in table 1 below).

Vertical integration Mean	General availability	*Ex post* availabilty	*Ex ante* availability
Anova	*0,013*	*0,053*	*0,128*
Grape growers	68%	94%	65%
N	*128*	*141*	*148*
Wine makers	77%	80%	72%
N	*65*	*64*	*67*
Independent Vineyards	95%	115%	69%
N	*37*	*38*	*40*
Total	75%	94%	67%
N	*230*	*243*	*255*

Table 3: vertical integration and credit availability

As expected, we observe that the independent vineyards entrepreneurs experience a general credit availability higher than an *ex ante* credit availability. This would suggest that renegotiation on the level of long term debt is more likely to occur for this category of entrepreneurs, i.e. who have undertaken "ambitious" projects. A striking result is that wine makers show the lowest ex post credit availability: this is not so surprising when we know that the recent wine crisis was particularly tough for this category of entrepreneur. The relatively good grape growers' *ex post* credit availability confirms our hypothesis about their bank relationship: there is no renegociation of their credit. But we see that, at the end, they do not benefit from the best general credit availability. Indeed, the banker does not lend less or more *ex post*, but he is less generous ex ante.

These preliminary results provide some evidences of our model potential relevance, even if it obviously needs more sophisticated testing, with fully specified control variables.

5. Conclusion

In our view, this exploratory adaptive relationship model between the bank and the entrepreneur can provide a useful framework to describe and explain the influence of the bank relationship over the investment process. The underinvestment problem, which is specific to the debt contract and particularly stringent in an entrepreneurship context, can be solved if the bank is able to negotiate refinancing and if the entrepreneur can strategically use short term debt to reduce information asymmetry.

The bank will adjust long term debt to the entrepreneur's rating and the entrepreneur will consider potential project value, but also the level of liquidity risks, before investing. This

[5] As the young farmers are rather capital limited (see Barry (2001)), we suppose that they are interested in

results in an adaptive bank-entrepreneur relationship which has a direct impact on the value-creation process.

The model assumptions seem relevant for a capital limited entrepreneur, undertaking high capital intensity projects throughout a rather long investment process (in order for the strategic use of time, dedicated to reputation building, to become possible). This, typically, is the case within the agricultural sector and more specifically the wine growers.

Moreover, we tend to think that this model could provide insights on the entrepreneurship banking finance beyond agriculture, as long as the business tangible assets capital intensity is high. In contrast, this model appears as quite irrelevant for high-tech projects which will be better financed through venture capital…

This integrative framework can provide different theoretical insights to the bank-entrepreneur relationship. For instance, it can be helpful when discussing some concepts of *the bank relationship theory* (for a review, see Berger, Klapper and Udell, 2001, Boot, 2000, Degryse and Van Cayseele, 2000, Ongena and Smith, 1998). This theory considers that the bank relationship is structured along two dimensions (Degryse and Van Cayseele, 2000): the depth, stemming from the "off-contract" entrepreneur-banker relationship, and the thickness, defined as the information conveyed to the bank through its multiple financial contracts and services. Our model gives particular prominence to the thickness of the relationship. In our view, this dimension appears to be particularly important in the entrepreneurship context. Indeed, the depth of the relationship is dependant upon its duration, obviously too limited when entrepreneurs are just starting their own businesses.

To conclude, this approach of the bank relationship should clearly plead for commercial banks 1) to differentiate the entrepreneurship projects from mature firms ones and 2) to build adequate industrial and agricultural sectors expertise in order to match the entrepreneur investment financing demand and his competencies. This, in particular, as banks now have to report about the credit risk they are incurring (according to Basel II requirements, for example). Indeed, the model states that the bank is able to finance projects for which the classical financial analysis is likely to be irrelevant. But the disincentives to invest in a "risky" project (according to a rating or credit scoring) should be ruled out by the advantages for the bank to become the *first* (or prime) entrepreneur's stakeholder…

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