

2. FINANCING OF BUSINESS START-UPS: A TOPIC OF GREAT RELEVANCE FOR FIRM PERFORMANCE, GROWTH AND SURVIVAL

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Abstract:

In this paper, we consider what determines the capital structure of business start-ups. Empirical research shows that when information and incentive problems are potentially large, banks limit their fraction of total financing. Conversely, banks are willing to invest more in firms with promising growth prospects. Besides, entrepreneurs who highly value private benefits of control structure their financing so as to reduce the likelihood of premature liquidation. Thereafter, we look at the implications of financing decisions for firm performance, growth and survival. Empirical research here reveals that business start-ups with higher leverage are not only more profitable, but also report higher growth in earnings over time. Yet, leverage also makes firms vulnerable to financial market predation, which reduces their survival chances.

1. Introduction

When examining the role of finance in entrepreneurial business start-ups, it is important to keep in mind the following firm characteristics. First, information asymmetries between firm-insiders, i.e. the entrepreneur, and outside financiers are large, as no historical information is available on newly established ventures. These firms just lack a prior financial and operating history. Also, business start-ups are subject to less stringent rules regarding information disclosure than are large listed firms. Moreover, start-up firms do not have a reputation at stake that can reduce asymmetric information and moral hazard concerns in the spirit of Diamond (1991). Second, the failure rates of business start-ups are known to be huge. The literature has documented repeatedly that about 50% of new entrepreneurial ventures disappear within the first five years after their establishment (e.g., Berger and Udell, (1998); Huyghebaert and Van de Gucht, (2004)). Hence, the issues of adverse selection before a financial contract is written and ex-post risk-shifting incentives cannot be ignored. Third, ownership is typically highly concentrated in the hands of the entrepreneur and perhaps also some friends and members of the family, who are willing to assume and share risk. Although the latter informal financing channels are even more important in developing countries, their role in more developed economies in Europe and even the USA is not trivial either. Because of this ownership structure, without separation of ownership and managerial control, agency problems of equity are negligible, whereas private benefits of control can be quite substantial. In the context of entrepreneurial firms, private benefits of control include the prestige and status that comes with ownership, the power to decide on the business strategy of the firm, and independence from superiors (see Huyghebaert et al. (2007)). These private benefits of control can explain the reluctance of entrepreneurs to raise equity from outsiders. Also, because of control rents, entrepreneurs sometimes are willing to stay in self-employment, despite their lower income, whereas they may be unwilling to liquidate their venture when outside financiers consider this to be the most efficient solution. Private benefits of control tend to reinforce risk-shifting incentives once the firm is heading for financial distress.

In this paper, we elaborate on the implications of the above firm characteristics for the financing decisions of business start-ups. So, in the first part of this article, we consider what determines the capital structure of business start-ups. We look at the generalizability of research outcomes in this stream of the

literature to the more general context of small- and medium-sized enterprises (SMEs) and point out some avenues for future research. In the second part of the paper, we discuss the implications of financing decisions for firm performance, growth and survival, from which we draw some conclusions for public policy.

2. Financing decisions

When considering the sources of financing that are available for entrepreneurial business start-ups, it seems that traditional newly established firms usually do not rely upon venture capital (e.g., Ooghe et al. (1991); Berger and Udell (1998)). In general, external financing sources are limited to bank loans and trade credit in the first few years after start-up. Berger and Udell (1998), among others, already pointed this out when stressing the importance of the 'life cycle paradigm' for SME financing decisions. For US firms, Berger and Udell claim that the sources from the principal owner, bank loans and trade credit account for 70% to 80% of total financing for SMEs, independent of firm size and age. For Belgian business start-ups, Huyghebaert and Van de Gucht (2007) demonstrate the huge reliance of these firms on debt financing. The median company raises 82% of its total sources by means of external debt (in their definitions, debt never includes the loans the entrepreneur extends to her own company). About half of this debt – 45% to be exact – is contracted from banks, whereas trade credit accounts for about 25% of total debt. The other debt largely consists of liabilities vis-à-vis the workforce, tax authorities and prepayments from customers. Leasing is only marginally important for the enterprises in their sample (4%). Besides, the debt that is being raised in the start-up year has to be repaid on short notice. The maturity structure of borrowings indeed reveals that most debt has a maturity less than one year. However, when focusing solely on the outstanding bank loans, only 20% of outstanding bank debt has to be repaid within the coming year.

Within this sample of business start-ups, Huyghebaert and Van de Gucht (2007) use a simultaneous equations model to examine the joint determinants of leverage, the fraction of debt that consists of bank loans, and the maturity structure of these bank loans. Although the literature has argued repeatedly that banks, through their screening and monitoring of borrowers, have an

advantage in financing informationally opaque firms, the empirical results in the study of Huyghebaert and Van de Gucht (2007) reveal that when adverse selection problems are potentially large, banks actually finance a smaller fraction of total debt, *ceteris paribus*. The same applies to incentive problems between borrowers and lenders. When risk-shifting incentives are potentially large, banks actually finance a smaller fraction of total debt, all else constant. Adverse selection and risk-shifting problems do not affect the maturity structure of these bank loans, however. Interestingly, when start-up firms rely less on bank loans for their financing, they turn to leasing companies and – especially when leasing is not easily accessible – to trade credit. Arguably, these results thus suggest that lessors and suppliers use other mechanisms than banks to reduce information and incentive problems. Nonetheless, business start-ups are not able to fully compensate their more difficult access to bank debt by relying more on these alternative financing sources.

Overall, the empirical findings in the article of Huyghebaert and Van de Gucht (2007) point out that when information and incentive problems are potentially large, banks do not finance a larger proportion of total debt. These results thus conflict with the theoretical framework in the corporate finance literature up till now, where it has been argued that by specializing in the assessment and monitoring of borrowers, banks can overcome the problems of duplication of efforts and free-riding among lenders (Diamond (1994)). However, the results also reveal that banks do not decide to stay out of these enterprises all together, but simply finance a smaller fraction of total debt, possibly to reduce their exposure to potential losses upfront. Simultaneously, by providing at least part of total financing, banks can secure that a long-term relationship that may pay off in the future can be built up with these firms. Given their lower involvement in the financing of risky business start-ups, banks no longer feel a need to reduce their exposure to information and incentive problems by shortening the maturity of their loans, which allows terminating the contract when bad information is obtained and/or expropriation is detected. In sum, these results suggest that banks are not largely involved in the screening of borrowing candidates. In a follow-up study, Huyghebaert et al. (2008 mimeo), who analyze the earnings management incentives of business start-ups, find that newly established ventures in need of a first bank loan manage their earnings upwards by means of trade accruals and non-cash working capital accruals. However, this earnings management does not affect the lending decisions of banks either, not in a positive manner when entrepreneurs are able to positively influence bank lending decisions, but also not in a negative manner when banks penalize companies for the information risk resulting from higher accruals. These results again question the idea of extensive

screening by banks in the start-up context. We are aware, however, that these results may be difficult to generalize to other SMEs. Nonetheless, the above findings raise questions about how relationships between banks and firms are actually developed. Indeed, our knowledge of how firms acquire a reputation in the bank loan market is only limited. What type of information do banks actually collect? How frequently do they do this? Etc. These are questions we are far more familiar with when considering venture capital contracts as opposed to bank loans. Up till now, researchers typically have used the 'length of the lending relationship' as a proxy for private information that was collected by the bank over time, but this measure seems to be a black box, especially in the context of business start-ups and even in the broader context of SMEs. Hence, more research seems needed to further explore what banking relationships mean and imply for these firms. Thereby, one may have to take into account that when firms are very small and when screening and monitoring is complex, the latter activities may be cost ineffective from the point of view of banks (see also Ravid and Spiegel (1997)).

Besides, Huyghebaert and Van de Gucht (2007) document that banks are willing to lend to business start-ups with promising growth prospects, although these firms have a lower total debt ratio. These results again support the notion that banks may be interested in building up relationships especially with companies where the payoffs from such relationships tend to be higher. Once business start-ups in industries with a high-growth profile reach the growth stage, banks indeed may be able to reap the full benefits of having invested in a long-term relationship. Some authors have argued that banks earn rents from investing in relationships with their debtors. Consider the study of Degryse and Ongena (2005), who point out that banks charge higher loan rates to borrowers that are located closest to their bank branch. From these results, Degryse and Ongena infer that local banks are able to earn location rents from developing relationships with clients in close proximity. Here too, we do not know yet much about such inter-temporal substitution effects. While Petersen and Rajan (1994) find that the development of a banking relationship positively affects the availability of bank loans, they also conclude that the length of the relationship virtually has no impact on the price of this financing. Some authors have pointed out that collateral requirements decrease over the course of a lending relationship, while other studies have shown that the price of bank loans actually increases as firms develop a relationship with their bank (e.g., Degryse and Van Cayseele (2000)). So, there is room for a further examination of these dynamics in lending and borrowing decisions. More importantly, we believe that these research questions can best be answered in the context of SMEs, including

business start-ups, which have little alternative financing options than bank loans. Detecting such behavior in the context of large, listed firms may indeed be very difficult, because these firms may not accept bank hold-up behavior and turn to public debt and public equity markets. This is not to say that SMEs are defenseless against bank hold-up behavior. They indeed can develop multiple banking relationships, but this is again a topic we are not very familiar with. As an example, how do firms decide on the mix of loans raised from multiple banks? What is the minimum stake banks have to assume in order to perform screening and monitoring activities? Etc.

In addition to these supply-driven determinants, Huyghebaert and Van de Gucht (2007) demonstrate that the demand side has a huge impact on capital structure, too. Entrepreneurs who highly value private benefits of control structure their financing so as to reduce the likelihood of premature liquidation. More specifically, they rely less on bank debt and short-term bank loans in particular. These results are consistent with the idea that banks follow stricter liquidation rules than suppliers, as has been pointed out by Wilner (2001), Franks and Sussman (2005), and Huyghebaert et al. (2007), among others. Huyghebaert and Van de Gucht (2007) even find some evidence that entrepreneurs who highly value private benefits of control limit their overall debt ratio. In this area, further research could investigate how entrepreneurs who operate in a team make corporate finance decisions, as the meaning of 'private benefits of control' is likely to be different in such a context.

Future research could also focus on how financing decisions evolve over time, as firms grow older (see also Huyghebaert (2006)). We indeed expect the influence of firm age on capital structure to be more fundamental than the impact of firm size. Overall, little research has examined capital structure in the more general context of small and medium-sized enterprises, mostly because of the difficulty to obtain data on these firms. Nonetheless, this limited research on the capital structure of SMEs shows that the results that apply to large listed firms also largely arise in samples of SMEs. In a recent study, Daskalakis and Psillaki (2008) find that asset structure, firm size, profitability and growth affect the debt to assets ratio in a comparable way for SMEs in Greece and France during 1998–2002. Likewise, Sogorb-Mira (2005) concludes that the debt ratio is negatively affected by non-debt tax shields and profitability, while positively influenced by firm size, asset structure, and growth opportunities in the context of Spanish SMEs during 1994–1998. When examining the maturity structure of bank loans, Berger et al. (2005) find that asymmetric information and risk affect bank debt maturity in SMEs in a way that is similar to what has been documented for large, listed

firms. So, these variables negatively affect the maturity structure of bank loans, and this in contrast to the results for business start-ups (Huyghebaert and Van de Gucht (2007)).

Given the above results and discussion, we argue that it is more appropriate to distinguish firms based upon differences in firm age rather than to classify firms based upon their size. Further support for this conjecture is obtained when looking again at the summary statistics in the study of Berger and Udell (1998), but for US data. Firm size is shown not to have much impact on firm financing decisions. The most significant change that takes place as firm size increases, is that the principal owner reduces his/her stake in the firm, thereby suggesting that he or she aims for portfolio diversification. As a result, the debt ratio increases, but the main debt sources (i.e. loans from commercial banks and trade credit) grow by a similar percentage and thus remain equally important. The impact of firm age on capital structure is documented to be more significant, however. In the first stage, from infant to adolescent, firms substantially increase their borrowings from banks, while trade credit is not largely affected. As firms reach the middle-aged stage and the old stage, these bank loans are being repaid, thereby reducing the debt ratio again. At the same time, the stake of the principal owner increases, probably because of retained earnings. So, firms obtain access to internal sources of financing as they grow older, which allows reducing their reliance on bank loans, consistent with the pecking order theory of capital structure.

When looking at the above issues in a wider European context, Wagenvoort (2003) already pointed out that these same conclusions regarding the impact of firm size apply to most European countries, that is firm size does not significantly affect corporate finance decisions. However, the study of Wagenvoort also reveals a few exceptions to this general finding. For Austria, Germany and Sweden, Wagenvoort shows that the use of financial debt reduces substantially with firm size. Overall, we do not know what is driving these differences in results across European countries. Although some researchers have documented that the determinants of capital structure are comparable around the world (see, e.g., Rajan and Zingales (1995); Booth et al. (2001)), we conclude from the above results that more research is needed on cross-country differences in the determinants of financing choices. More specifically, we believe that it is worthwhile to investigate in more detail the impact of differences in institutions and financial market development across countries on corporate finance decisions. Thereby, researchers also have to better explore the specificities of SMEs, in particular their asymmetric information with outside financiers, their higher failure risk, and their

owner's desire to maintain control. Giannetti (2003) has an interesting paper on this topic for Europe, but she concentrates on firms included in the Amadeus database. So, most firms that are examined by Giannetti (2003) exceed the size criteria for SMEs, as their number of employees is larger than 250. Finally, a recent study by Beck and Demirgüç-Kunt (2006) points out that cross-country research casts doubt on a causal link between SMEs and economic development, while the authors stress the role of institutional and financial development. Yet, we believe that SMEs simply may not be able to contribute to economic growth when they face difficulties in accessing the formal sources of external finance. So, this argument points out once more that it is necessary to also investigate more extensively the relation between the quality of institutions and the capital structure of SMEs.

3. Implications of financing decisions for firm performance, growth and survival

In a recent article, Franck and Huyghebaert (2008 mimeo) examine whether having a lot of debt outstanding improves or hampers firm performance in the first few years after start-up. According to Modigliani and Miller (1958), financing decisions should not affect product market outcomes, as long as financial and product markets are perfect. So, Franck and Huyghebaert (2008) argue that leverage can affect firm performance only when some market imperfections pertain. When outside financiers do not have the same information about firm quality as do firm insiders and when it is difficult for insiders to credibly transfer this information to outsiders, an important *financial market imperfection* arises. Regarding *product market imperfections*, firms may recognize the impact of their decisions and behavior on one another when the number of competitors in a market is limited. Rival firms may then engage in predation to drive entrants out of their market, provided that the benefits of doing so outweigh the costs (see also Huyghebaert and Van de Gucht (2004)).

Franck and Huyghebaert (2008) focus on the above two market imperfections and investigate how the incentives of an entrepreneur and her rival firms

affect the relation between leverage and post-entry performance in the context of business start-ups. Also, they examine how this relation changes over time, as the entrepreneurial venture grows older. For this purpose, they focus on two complementary measures of firm performance: current profitability and growth in earnings over time. As a number of authors have already shown that profitability is an important determinant of firm growth, through the use of retained earnings (see, for example, Watson, (2006)), examining the link between leverage and internal cash generation in the context of business start-ups can make a further contribution to the literature. Other studies on SMEs have shown that small and medium-sized enterprises are financially constrained and face a financing gap. Cash-flow investment sensitivities are typically large for SMEs and particularly for the smallest and unquoted among them. These studies thus stress once more the importance of internally generated earnings for firm growth and survival.

From a *start-up's* perspective, firm survival is indeed a key consideration for entrepreneurs, as they usually hold a largely undiversified portfolio, have pledged personal assets to secure their firm's bank debt, and enjoy sizeable private benefits of control. So, entrepreneurs may take into account that, given asymmetric information, weak firm performance in one year could reduce their firm's access to future financing from banks and could even lead to firm liquidation following default. As a result, entrepreneurs may have incentives to boost short-term profitability, especially in the first few years after start-up, when information asymmetries are large. These incentives are likely to rise with the firm's debt ratio, as the probability of default tends to increase with leverage because of higher interest payments and capital installments. As banks are fierce liquidators following default (e.g., Wilner (2001); Franks and Sussman (2005); Huyghebaert et al. (2007)), firm survival could be jeopardized. So, entrepreneurs in high-debt ventures may focus especially on projects that generate high immediate earnings in order to meet their large debt-payment obligations. These entrepreneurs could even initiate projects that raise short-term profits to the detriment of projects with smaller initial earnings, but a larger net present value. Hence, more highly indebted business start-ups could be largely incentivized to boost their short-term EBITDA, *ceteris paribus*. For a given level of profitability, leverage-induced efforts to increase firm performance may also result in a higher EBITDA growth rate when firms have more debt outstanding. However, as newly established ventures grow older, information asymmetries decrease and firms typically start to generate more (stable) earnings. So, the pressure arising from debt markets to focus on immediate profits could decline. As an example, firms may then also initiate projects that produce higher earnings in later periods

rather than concentrate on projects that boost immediate profitability. In contrast to these arguments, when a large financial pressure just induces more highly leveraged business start-ups to maximize their current and future profitability, leverage could also have more long-lasting positive effects for firm performance.

The incentives of *rival firms* can also affect the leverage-performance relation when information asymmetries between a start-up firm and its lender(s) are large and when the start-up is highly dependent on the financing decisions of its bank. In industrial organization and corporate finance papers on this topic, a lot of attention has gone to the signal-jamming predation hypothesis, arguing that industry rivals may have incentives to distort the quality signals of firms to their financiers, for example through initiating a price war, if the expected payoff from such predatory behavior is positive for the predator. The predation literature has already pointed out that the payoff from predation is more likely to be positive when the prey is heavily indebted (e.g., Huyghebaert and Van de Gucht (2004)). As the likelihood of strategic interactions is larger when product markets are more highly concentrated, Franck and Huyghebaert (2008) examine whether the above positive relation between leverage on the one hand and profitability and growth in earnings on the other hand weakens with industry concentration. The reason is that the gains from strategic interactions are to be shared among fewer competitors in a highly concentrated industry. Also, as a first extension to Huyghebaert and Van de Gucht (2004), Franck and Huyghebaert (2008) investigate whether the effects of industry concentration differ across low and high-debt industries. Prior empirical research has documented that strategic interactions are especially important in industries where incumbent firms have relatively low debt ratios. Besides, when industry rivals themselves are highly leveraged, predatory actions, such as price wars, are more difficult to sustain over a long period. Finally, Franck and Huyghebaert (2008) analyze whether the effects of industry concentration on the leverage-performance relation become smaller as start-ups grow older, given that a longer operating and financial history reduces the information value of performance indicators in one particular year and given that the start-up becomes less dependent on external financiers over time. Then, industry rivals may cut back on their predatory activities. This research design again extends the study of Huyghebaert and Van de Gucht (2004).

To examine the effects of leverage on firm performance throughout the start-up years, Franck and Huyghebaert (2008) collect data on a unique and large sample of 12,489 Belgian business start-ups that were established between

1996 and 2003. These firms are followed during a five-year period following start-up and before December 2005. 17.29% of the start-up firms in the sample have left the sample by the age of six. Summary statistics highlight that surviving firms have significantly less debt outstanding than failing firms. Yet, the average ratio of total debt to total assets is still very high at 87.68% in the subsample of surviving firms, with a median value of 81.10%. Next, on average 36.90% of the assets of surviving firms are financed by means of bank debt, with the bulk contracted for a period longer than one year. Interestingly, although failing firms have significantly higher debt ratios than surviving firms, banks actually finance a significantly smaller fraction of total assets in failing firms. The other debt again largely consists of trade credit. Survivors have significantly more fixed tangible assets, whereas their capital expenditures are significantly larger, too. Not surprisingly, surviving firms significantly out-perform failing firms, both in terms of profitability and in terms of growth in earnings over time. The average ratio of EBITDA to total assets equals 18.85% for surviving firms and -9.72% for failing firms. Also, EBITDA on average grows by 18.05% per year for surviving firms and by 2.76% per year for failing firms.

Franck and Huyghebaert (2008) use a firm fixed-effects panel data specification to examine the relation between leverage and post-entry performance. Model (1) is used to test the financial pressure hypothesis, whereas Model (2) is used to test the predation hypothesis:

$$Performance_{i,t} = \beta_0 + \beta_1 * Leverage_{i,t-1} + \beta_2 * Leverage_{i,t-1} * Age_{i,t} + \beta_3 * Age_{i,t} + \beta_4 * Firmsize_{i,t} + \beta_5 * Investments_{i,t-1} + (\beta_6 * (EBITDA/TA)_{i,t-1}) + \alpha_i + \varepsilon_{i,t} \quad (1)$$

$$Performance_{i,t} = \beta_0 + \beta_1 * Leverage_{i,t-1} + \beta_2 * Leverage_{i,t-1} * HHI_{i,t} + \beta_3 * Leverage_{i,t-1} * HHI_{i,t} * Age_{i,t} + \beta_4 * HHI_{i,t} + \beta_5 * Age_{i,t} + \beta_6 * Firmsize_{i,t} + \beta_7 * Investments_{i,t-1} + (\beta_8 * (EBITDA/TA)_{i,t-1}) + \alpha_i + \varepsilon_{i,t} \quad (2)$$

The test variable, Leverage, is calculated as the ratio of long-term bank loans to total assets and is lagged during one year. This definition takes into account that 1) bank loans and trade credit are the sources of external funds upon which most business start-ups rely and 2) trade credit usually is short-term financing and largely fixed at the industry level. As a result, start-ups typically depend upon bank loans for their long-term financing of assets, operations and growth. To account for the fact that a firm's historical performance could have influenced its current debt ratio, i.e. a potential endogeneity problem, firm leverage is estimated as a function of asset tangibility – that is the ratio of fixed

tangible assets to total assets. This instrumental variable approach builds on the empirical work of Campello (2006), who argues that the liquidation value of firm assets is a good instrument for leverage. The reason is that asset tangibility is unrelated to firm performance. Yet, when banks incorporate the liquidation value of firm assets into their lending decisions, asset tangibility will greatly affect the firm's debt ratio. Firm age is included as a control variable, given that firm performance is likely to vary with age. Franck and Huyghebaert (2008) further use the log of total assets and the lagged value of capital expenditures relative to fixed tangible assets as control variables. Besides, they include the sales-based Herfindahl-Hirschman concentration index, measured in the corresponding five-digit NACE industry. Finally, when considering the EBITDA growth rate as the dependent variable, the lagged value of the ratio of EBITDA to total assets is included as another control variable.

The models are estimated using Estimated Generalized Least Squares, to make adjustments for serial correlation and heteroskedasticity so that the error terms in the model are IID. In addition to estimating the above models in absolute terms, Franck and Huyghebaert (2008) also run the models in relative-to-rival terms. The reason is that industry characteristics, such as entry barriers, economies of scale, or market structure, can affect leverage as well as post-entry performance, for instance through the impact of competition. To implement these relative-to-rival regressions, the data are standardized at the corresponding five-digit NACE industry level. Finally, Franck and Huyghebaert account for the fact that a substantial percentage of start-up firms leave the sample in the first few years after start-up, thereby potentially inducing an attrition bias. For this purpose, they use a two-step procedure where annual inverse Mills ratios are calculated based on year-by-year failure regressions, to test the robustness of their findings.

In support of the financial pressure hypothesis, the data reveal that business start-ups with higher leverage in one year report a higher ratio of EBITDA to total assets in the subsequent year. Also, more highly indebted business start-ups exhibit higher growth in earnings, as captured by their EBITDA growth rate. This positive effect of leverage on firm profitability and growth in earnings is robust to also including short-term bank loans in the definition of leverage. It continues to hold when firm performance and the explanatory variables are standardized at the corresponding five-digit NACE industry level. Lastly, it is also robust to correcting for a potential attrition bias. From interacting leverage with firm age, Franck and Huyghebaert (2008) conclude that the positive effect of leverage on the ratio of EBITDA to total assets increases as start-ups grow older. In contrast, the positive influence

of leverage on the EBITDA growth rate diminishes as newly established ventures mature. Overall, these findings do not support the idea that the pressure arising from debt markets becomes smaller once firms establish an operating and financial history. Rather, the data reveal that leverage has more long-lasting positive effects on firm performance. Indeed, when entrepreneurs in highly indebted business start-ups are maximizing the performance of their firm, the rate at which they are able to further improve profitability is likely to decline with firm age.

To test the predation hypothesis, Franck and Huyghebaert (2008) separately run their regression models for firms in low-debt industries and firms in high-debt industries, respectively. They use the sales-weighted industry debt ratio, again calculated as the ratio of long-term bank loans relative to total assets, to capture the overall indebtedness of industry incumbents. The sample is subsequently split into two subsamples, using the median value of this industry debt ratio. For high-debt industries, the empirical results reveal that the interaction term between leverage and the HHI concentration index is (marginally) significant, but positive. A positive coefficient on this interaction variable thus indicates that in high-debt industries, high-debt business start-ups outperform low-debt entrepreneurial ventures when the industry is highly concentrated and, thus, the number of rival firms is limited. Hence, this finding suggests that high-debt business start-ups are not targeted by rival predatory actions when industry rivals themselves are highly leveraged. What's more, the data even point out that a lack of competition in product markets further strengthens the positive relation between leverage and post-entry performance for highly leveraged business start-ups, thereby suggesting that leverage can still incentivize entrepreneurs when disciplining from product markets is largely lacking.

For low-debt industries, the empirical results point out that the interaction term between leverage and the HHI concentration index is significantly negative. Under the assumption that the intensity of strategic interactions is stronger in low-debt industries, the negative effect of leverage times industry concentration on firm performance in low-debt industries suggests that highly indebted business start-ups find it more difficult to realize high profitability and growth in EBITDA over time when the odds of rival predatory actions are larger. Furthermore, the negative effects of industry concentration for high-debt ventures in low-debt industries decline as start-ups grow older, again consistent with the predation hypothesis.

Overall, the above results refine earlier findings by Huyghebaert and Van de Gucht (2004). The latter authors show that entrepreneurial business start-ups in highly competitive industries are more likely to exit and that firm leverage compounds this failure risk. Huyghebaert and Van de Gucht (2004) do not consider the role of the debt ratio of industry incumbents, however. Yet, they do point out that start-up leverage negatively affects firm survival only when potential adverse selection and moral hazard problems in financial markets are considerable at the moment of start-up. Under these circumstances, competitors can use aggressive strategic actions to impede future financing by negatively influencing creditors' perceptions on entrepreneurial quality and/or firm behavior (e.g., expropriation). By adjusting their output or price in response to new firm entry, incumbent firms can negatively impact the cash flows of business start-ups, which could make financiers reluctant or unwilling to grant subsequent financing or roll over existing short-term debt contracts. In other words, incumbent strategic behaviour in the product market can further induce the exit of newly established entrepreneurial ventures through its impact on the financial markets so that firms are denied financial capital.

4. Conclusions

This paper argues that the capital structure of business start-ups is an endogenous result, where entrepreneurs as well as financiers try to maximize their utility. Entrepreneurs are concerned about firm survival, especially when they highly value private benefits of control. Banks wish to reduce their exposure to information and incentive problems. The outcome of this joint optimizing behavior is important, as it has implications for firm performance, growth and survival. On the one hand, entrepreneurs in highly indebted new ventures face stronger pressure from debt markets to increase post-entry performance in order to reduce the likelihood of adverse credit decisions and firm liquidation. The idea that leverage can improve firm performance is not new. It has long been recognized by researchers in corporate finance as a mechanism to reduce firm free cash flows and thus avoid over-investment in projects with a negative net present value. So, Franck and Huyghebaert (2008) point out that leverage has more general positive implications for firm performance that go beyond the reduction of managerial self-serving behavior,

as the incentives of the entrepreneurs in this sample are generally aligned with the maximization of shareholder value. Next, while the positive effects of leverage on profitability increase as start-ups grow older, the positive effects of leverage on growth in earnings decline with start-up age. Together, these findings indicate that highly indebted business start-ups continue to hold a strong focus on profit maximization as time goes by, so that their ability to realize further increases in earnings actually declines as firms grow older.

Besides, the results of Huyghebaert and Van de Gucht (2004) and Franck and Huyghebaert (2008) point out that business start-ups may suffer from predation, especially in low-debt industries. Indeed, industry concentration tends to reduce the positive effects of leverage on post-entry performance (profitability and growth in earnings over time). Yet, this negative influence of industry concentration becomes smaller as start-ups grow older. Arguably, these results are consistent with the idea that information asymmetries between business start-ups and their bank incite rival firms to distort a start-up's quality signals, being its earnings to its bank. Simultaneously, these results point out that predation is more likely to occur when rival firms can endure the adverse consequences of predatory actions for their own profitability and the benefits from predation are to be shared among only a limited number of industry incumbents. When information asymmetries between the start-up firm and its bank diminish over time, these effects decline too, consistent with the idea that low performance in one year is less likely to lead to adverse lending decisions by banks when the banking relationship has grown stronger and firms have easier access to other financing sources.

Arguably, these findings have implications for public policy. First, they suggest that in the start-up context, bank loans are an effective tool to force firms to maximize profitability, despite the fact that agency problems of equity are trivial because of high ownership concentration. Second, the results suggest that when the likelihood of predation is larger, highly indebted business start-ups are more likely to suffer. For these firms, having a low debt ratio is the optimal response to a stronger predatory threat, whereas high leverage is the best option for firms that face a low likelihood of rival predation.