Professionalization and Debt Financing of New Ventures: Evidence from the United States

A Thesis Submitted to the College of

Graduate Studies and Research

In Partial Fulfillment of the Requirements

For the Degree of Master of Science in Finance

In the Department of Finance and Management Science

Edwards School of Business

University of Saskatchewan

Saskatoon, Saskatchewan, Canada

By

LI SUN

Keywords: small business, debt financing, professionalization

PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a Postgraduate degree from the University of Saskatchewan, I agree that the Libraries of this University may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purposes may be granted by the professor or professors who supervised my thesis work or, in their absence, by the Head of the Department or the Dean of the College in which my thesis work was done. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the University of Saskatchewan in any scholarly use which may be made of any material in my thesis.

Requests for permission to copy or to make other use of material in this thesis in whole or part should be addressed to:

Head of the Department of Finance and Management Science
Edwards School of Business
University of Saskatchewan
25 Campus Drive
Saskatoon, Saskatchewan S7N 5A7

ABSTRACT

Small businesses significantly rely on debt financing. However, it is challenging for them to convince the lenders on their creditworthiness because of the agency problems rooted in information asymmetry. Professionalization, as one of the signal devices, may carry positive information about a small firm since it helps enhance the firm value by aligning owner and manager's interests. If firm value goes up, the financial leverage drops without any new external debt financing. Thus, it is safer for the lenders to provide the capital. Unfortunately, whether professionalization helps mitigate the lender-borrower conflict of interest has not been investigated in the previous literature. This study intends to help fill in this gap by investigating the influence of professionalization on small business debt financing. Our empirical results show that professionalization tends to increase the use and the amount of new venture debt financing. Findings also indicate that the solution to owner-manager agency problem can also help alleviate the creditor-shareholder conflict of interests in new venture debt financing.

ACKNOWLEDGMENTS

Certain data included herein are derived from the Kauffman Firm Survey release 3.0. Any opinion, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the Ewing Marion Kauffman Foundation.

I would like to express my sincere appreciation to my thesis supervisor Dr. Zhenyu Wu for all his invaluable guidance, unwavering support, and consistent encouragement. He has spent much time reading through each draft and provided me with sound advice. This thesis could never have been completed without his patient instruction and insight suggestions.

I would also like to express my heartfelt gratitude to the members on my supervisory committee, Dr. Craig Wilson and Dr. Fan Yang as well as my external examiner Dr. Douglas Cumming, for their instructive comments and useful suggestions on my thesis.

I am also deeply indebted to all the faculty and staff of the Department of Finance and Management Science, especially Dr. Marie Racine and Ms. Brenda Orischuk, for their assisting, supporting, and caring during my studies at the University of Saskatchewan.

I should finally like to express my gratitude to my beloved family for their unconditional love and understanding.

TABLE OF CONTENTS

LIST OF TABLES

1. Introduction

Small firms and new ventures make great contributions to the economy (Berger and Udell, 1998; Cavalluzzo, Cavalluzzo, and Wolken, 2002; Dicke, 1996); however, financing difficulties definitely challenge small firms' growth and innovation (Berger and Udell, 2002; Coleman, 2000; Zider, 1998). Berger and Udell (1998) reveal two reasons regarding the difficulty for small firms to obtain equity financing at their initial stages; one is the existence of transaction costs, the other is the information asymmetry problem because small firms are usually privately held. Thus, scholars (e.g., Berger and Udell, 2002; Cassar, 2004) consider debt financing as a major source of capital for small firms. Compared to equity financing, debt financing allows small firms to keep ownership control (Ueda, 2004), reduces the costs (Graham, 2000), and sends a signal about the firm's quality (Ross, 1977).

However, it is also hard for small firms and new ventures to obtain debt financing because they are usually young without sufficient track records. Consequently, investors cannot identify the creditworthiness of the firms. In short, information asymmetry causes agency problems between lenders and borrowers, and a good relationship with the lenders is one of the solutions to lower this type of the agency cost (e.g., Berger and Udell, 1995; Boot, 2000; Elyasiani and Goldberg, 2004; Petersen and Rajan, 1994). Besides it, the corporate finance literature suggests several mechanisms to mitigate the agency problems caused by information asymmetry, including monitoring, bonding, and signaling (Bar-Isaac, 2003; Jensen and Meckling, 1976; Jensen and Smith, 1985; Shieh, 1993). Among those, signaling is one of the most effective approaches for alleviating the information asymmetry because it sends indirect information to convince the lenders about the quality of privately held firms (Shleifer and Vishny, 1997; Zahra and Filatotchev, 2004). Professionalization, as one of the signaling devices, may carry positive information about the small firms and new ventures since it helps enhance the firm value by aligning owner and manager's interests. This view has been supported by Golembiewski (1983) and Newcomer (1955). If firm value goes up, the financial leverage drops without any new external debt financing. Thus, it is safer for the lenders to provide the capital. Unfortunately, whether professionalization helps mitigate the lender-borrower conflict of interest has not been investigated in the literature on small business and new venture financing.

Most of the studies related to professionalization are based on the organizational theory

perspective (Hall, 1968; Newcomer, 1955). To the best of our knowledge, the paper by Hellmann and Puri (2002) is the only existing empirical study which discusses professionalization in the new venture finance and corporate finance literature. According to Hellmann and Puri (2002), venture capitalists make great contributions to the internal organization's professionalization, including the introduction of "human resources policies, the adoption of stock option plans, and the hiring of a vice president of marketing and sales" (p. 170). In addition, they also point out that venture-capital financed firms are also more likely to replace the founder with a professional outsider in the position of the company's chief executive officer.

This study intends to help fill in this gap by investigating the influence of professionalization on new venture debt financing. The intuition behind is that professionalization is viewed as a strong signal sent to the potential capital suppliers. According to the agency theory, this positive signal may help firm owners succeed in applying for financing. In this study, we use the compensation plan as a proxy for professionalization, and construct a dummy variable Incentive Plan to measure the adoption of compensation plan, whose value is one if the business offers a compensation plan in any forms among stock options, bonus plans, and/or paid vacation plans, and zero if the firm does not offer any of these compensation plans. The use of stock options is consistent with the professionalization measure adopted by Hellmann and Puri (2002). We also add two variables (bonus plans and paid vacation plans) when we create the professionalization variable because they capture the short-term incentives. According to a survey asking employees to choose their most desired benefits plan among seven options, extra paid vacation and a yearly bonus are ranked the first (38%) and the second (36%), respectively (Lissy, 1992). In addition, the paid vacation also increases the productivity, enhances the quality of employees' life, helps achieve better health outcomes for individual employees, and reduces the overall health care expenditure (De Graaf, 2009). The above arguments also imply that bonus plans and paid vacation plans are the most effective means to motivate employees to work hard and/or stay in the current company.

According to the agency theory, the compensation plan as a means of incentive mechanisms mitigates the conflicts of interests between owners and managers. However, this study is to explore if the use of the compensation plan, as a proxy for professionalization, may

reduce the agency problems between creditors and shareholders. To broaden this research question, we attempt to find whether the solutions to the owner-manager conflict of interest can also mitigate that between creditors and shareholders because the theoretical link between these two different types of agency problems has not been well explored. Brau (2002) suggests no, while Brander and Poitevin (1992) suggest yes based on the empirical studies. In conclusion, the major research question of this study is: "Does professionalization help improve debt financing of new ventures?"

The sample used in our study is extracted from questionnaires of the Kauffman Firm Survey (KFS), sponsored by the Ewing Marion Kauffman Foundation and conducted by the Mathematica Policy Research Inc. (MPR). The KFS is one of the very few surveys that track the performance of the U.S. new businesses over their formative period. That is, only small businesses founded in 2004 were selected to engage in the Baseline Survey. Following that, the MPR project team conducted further follow-up surveys annually to track over the same firms' operation performance. Besides it, the KFS is also well known for its consistency, accuracy, and coverage. The data used in this study are from year 2004 (the Baseline Survey) to year 2007 (the Third Follow-up). 4,928 businesses completed the Baseline Survey. Excluding the businesses that permanently out of business from the 4,928 participating businesses, the project team conducted three follow-ups so far to look at dynamic changes of the firms. 3,998, 3,390, 2,915 businesses completed the interviews for the First, Second, and Third Follow-ups, respectively.

Our empirical results show that professionalization tends to improve the access to and increase the amount of new venture debt financing. Findings also support that the solution to the owner-manager agency problem can also help alleviate the creditor-shareholder conflict of interests. This study contributes to the literature in three ways. First, it is one of the early studies which investigate the relationship between professionalization and debt financing of new ventures. Second, this study also adds to the agency theory literature by showing that the solution to owner-manager agency problem may also help mitigate the creditor-shareholder conflicts. Third, our findings also provide important implications for new ventures, potential investors, and researchers. New ventures that are professionalized are more likely to successfully raise capital through debt financing. For potential investors, understanding

professionalization as a signal can help them make financing decisions. This study also helps academics better understand the role of professionalization, which can lead to further research in this field.

The rest of the paper is structured as follows. Section 2 reviews relevant research related to our study and proposes our research question. Section 3 describes data and variables used in our study. The methodology, as well as the empirical models, is presented in Section 4. Section 5 contains a discussion of the results. Section 6 gives the conclusions and limitations.

2. Literature Review

2.1. Small Business Debt Financing

Small firms make great contributions to the economy by "making up over 90% of all American businesses, employing nearly half of the workforce, and producing over one-third of America's gross national product" (Dicke, 1996, p.11). However, financing difficulties definitely challenge small firms' growth and innovation (Coleman, 2000). Generally, it is hard for small firms to obtain equity financing (Berger and Udell, 1998; Weinberg, 1994). On the one hand, according to Berger and Udell (1998), a significant amount of transaction costs, such as "public market due diligence, distribution, and securities registration" make small businesses favor private financing (p.628). They explain that substantial fixed costs by equity financing may create economies of scale in issue size. As there is a positive relationship between a firm's issue size and asset size, it is difficult for small businesses to overcome such transaction costs. On the other hand, unlike larger publicly held firms that are obligated to disclose their information to capital market, small firms generally keep transactions private with their suppliers, customers, and labor force (Berger and Udell, 1998). Consequently, it is even harder for small firms to obtain external credit because audited financial statements are not available to convey the firms' quality (Berger and Udell, 1998).

Based on the above discussion, it is found that unlike large publicly listed companies that have great opportunities to finance through the equity market, low risk small business focuses on bank loans, trade credit, and internal financing that is provided by families, friends, or a start-up team (Berger and Udell, 1995; Binks and Ennew, 1996). This view is also consistent with the financial growth cycle perspective and the pecking order theory perspective. From the financial growth cycle perspective adopted by Berger and Udell (1998), a small business at its inception heavily depends on internal financing, trade credit, and angel investment. A short-term loan and venture capital may be available at the firm's growing stage. Finally, the firm tends to obtain equity financing and long-term loans as it becomes larger and older. Consistent with the financial growth cycle perspective, the pecking order theory introduced by Myers (1984) states that companies rely on retained earnings when it is available, and then low-risk debt is preferred to equity if external financing is required. However, very high growth small businesses in high-tech industries often rely on venture capital for early stage financing

(Cumming and MacIntosh, 2004). In addition, debt financing is the major sources of capital for truly nascent firms since the retained earnings are insufficient or not available (Robb and Robinson, 2008). In general, there are two main reasons for small businesses to significantly depend on debt financing. First, debt financing is relatively cheap compared to equity financing (Graham, 2000). Second, new firms have insufficient track records, resulting in a relatively higher risk for capital suppliers (Berger and Udell, 1998). Therefore, shareholders are less likely to provide money for such firms.

Unfortunately, the nature of small businesses results in a hard time for them to obtain debt financing. Small firms are usually young without sufficient track records or pledgeable business assets. Therefore, "a potential lender is uncertain about the competence and trustworthiness of the management, as well as the kinds of investment opportunities that could arise" (Petersen and Rajan, 1994, p.4). With all other factors controlled, the relationship lending helps small business get debt financing in the short run, in that it enables lenders to have more information about small firms (Berger and Udell, 1995; Boot, 2000; Elyasiani and Goldberg, 2004; Petersen and Rajan, 1994). With the relationship lending, the lender makes decisions based on the information that is gathered "over time through contact with the firm, its owner, its local community", and the borrower's customers and suppliers (Berger and Udell, 2002, p.32). A bank usually charges a high interest rate and requires more collateral at the initial banking relationship when a borrower's track record information is not available (Berger and Udell, 1995). Then a longer relationship with a bank lowers a small firm's interest rate and collateral requirement on average (Berger and Udell, 1995). In summary, lending relationships benefit small firms from the ability of increasing the credit availability with less associated costs and obtaining capital even if small firms are financially distressed in the short run (Petersen and Rajan, 1994).

Default risk is the leading reason why small firms significantly rely on short-term loans (Myers, 1977). According to Harris and Raviv (1991), in the hope of obtaining enormous returns, small firms tend to choose risky projects before building their reputation. In Diamond's (1991) model, long-term debt financing requires a higher interest rate for bearing the long-term credit risk. A firm then is more likely to choose highly risky projects due to adverse selection. Consequently, no one is willing to provide long-term loans for those risky firms. For these

reasons, Diamond (1991) summarizes that very risky firms, such as a small firm, must rely on short-term loans. It is also worthwhile pointing out that short-term debt financing has its own strength. For instance, it charges a lower interest rate initially, compared to long-term loans, and also provides refinancing opportunities if the firm can reveal positive information later on (Diamond, 1991). That is, it is possible for a small firm to obtain permanent debt sources by continuously rolling over short-term debt claims.

The literature has shown that relationship lending benefits small firms in terms of the availability of a guaranteed borrowing in the short run and the feasibility of a continuously renewal policy in the long run. However, relationship lending also causes agency problems within the lenders' organizations. For instance, a loan officer is better informed than a bank about a borrower's true situation, in that the loan officer is responsible to gather soft information about the firm in order to make loan decisions (Berger and Udell, 2002). In other words, a bank, because it has less experience with the prospective borrowers, is obviously less informed. Therefore, the loan officer tends to have opportunistic behavior due to the conflicts of interests between owners and managers (Berger and Udell, 2002). Berger and Udell (2002) further explain that a borrower's unfavorable situation may be hidden by a loan officer because the loan officer has a personal relationship with the small firm or because the loan officer wants to secure his or her job.

Akerlof (1970) is the first to address the concepts of informational asymmetry based on an example of the market for "lemons". In his example, there are high quality used cars and "lemons" (low quality used cars) in the market. Because of the existence of asymmetrical information, which means that the prospective buyers are less informed about the quality of used cars than the sellers are, the sellers then have the incentive to sell their "lemons" at the prices of high quality used cars. At the same time, it is not likely for prospective buyers to distinguish a "lemon" from a high quality one. Thus, prospective buyers will ask for a discount to adjust for this lemon phenomenon. Thereafter, this unbalanced informational distribution discourages the prospective sellers who have high quality cars, which may lead to the existence of "lemons" in the market as a whole. Furthermore, markets may disappear in a situation where the low quality products drive out the high quality products.

Borrowers as the better informed party tend to act immoral behaviors that take the

advantage of asymmetric information in the credit markets. “In a frictionless capital market, funds will always be available to firms with positive net present value investment opportunities” (Petersen and Rajan, 1994, p.3). However, Stiglitz and Weiss (1981) explore that adverse selection and moral hazard as market frictions explain why there is insufficient capital for small firms to finance their profitable investment opportunities. The adverse selection problem increases the number of risky borrowers and reduces the bank’s overall profits, because a bank’s certain lending requirements tend to attract the below average prospective borrowers with risky projects. The moral hazard problem arises since borrowers and creditors do not have coincident interests. As explained by Stiglitz and Weiss (1981), borrowers only concern about returns on the investments as long as the firms do not go bankrupt, but lenders care about the interest payments they will receive on the loans. Therefore, small businesses may lose opportunities to invest in profitable projects, because external capital suppliers cannot identify the projects’ quality (adverse selection problem) or they are even not sure whether the funds will be used for investing alternative risky projects (moral hazard problem) (Berger and Udell, 2002).

2.2. Agency Theory

“Capital structure is designed to mitigate inefficiencies in the firm’s investment decisions that are caused by the information asymmetry” (Harris and Raviv, 1991, p.306). For example, as explained by Myers and Majluf (1984), under-pricing becomes severe in a situation where managers are better informed about a firm’s value and the firm needs to issue stocks to finance a new project. Therefore, they believe that this underinvestment allows new shareholders to capture more than the new project’s net present value at the expense of the existing shareholders. In this case, by assuming that managers act in the best interest of the existing shareholders, the managers refuse to undertake the project even if it is a valuable investment opportunity. Finally, they conclude that firms then prefer internal financing or riskless debt to equity in order to avoid the underinvestment problem. In short, agency problems resulting from asymmetrical information need to be identified and solved for the benefits of mitigating excess perquisite consumption (Jensen and Meckling, 1976), expropriation (Morck, Shleifer, and Vishny, 1988; Shleifer and Vishny, 1997), and the suboptimal investment opportunity (Myers, 1977). Three fundamental agency problems as well as the solutions are discussed below.

First, the conflicts of interest between owners and managers arise because managers do not own 100 percent of the residual claim (Jensen and Meckling, 1976). In other words, management is separated from the ownership. According to Jensen and Meckling (1976), managers are usually better informed about the firm's true situation than the outside investors. As a result, it is reasonable to believe that the manager will not always act in the best interest of the owner if both parties want to maximize their own utilities (Harris and Raviv, 1991). As illustrated in the literature (e.g., Jensen and Meckling, 1976; La Porta, Lopez de Silanes, Shleifer, and Vishny, 2000; Shleifer, and Vishny, 1997), managers tend to use the firm's profits to benefit themselves rather than return the money to the investors. First, managers can sell the output, assets or securities to other firms they own at below market prices (La Porta et al., 2000). Second, it is also possible for managers to overpay the top executives (La Porta et al., 2000). Third, managers can expropriate owners by staying on the job even if they are incapable of managing the firm (Shleifer and Vishny, 1989).

Second, Shleifer and Vishny (1997) summarize the benefits of being large investors, especially when small investors are not fully protected by the legal system. They demonstrate that large investors not only have power to protect the money they have invested, but also ensure managers to act in their best interests by monitoring. Subsequently, they consider expropriation as the fundamental issue between majority and minority shareholders, which refers to a process of using large shareholders' power to maximize their own welfare at the expense of minority shareholders by redistributing the wealth. Moreover, Grossman and Hart (1988) believe that this expropriation is especially stronger when the large investors own superior voting right equity or in a situation where the firm does not implement one-share-one vote policy. As a consequence, the interests of large shareholders will no longer coincide with the interests of the remaining minority shareholders. For example, large shareholders can decide not to pay dividends to all investors instead to pay themselves in a special form, or transfer profits to another companies they control (Shleifer and Vishny, 1997). Furthermore, Morck, Shleifer, and Vishny (1988) use Tobin's Q to measure the relationship between management ownership and the firm's value. Morck et al. (1988) find that the firm's value increases as raising ownership in the range from 0% to 5%, and declines as ownership rises up to 25%. One explanation of this finding is that managers improve their performance as

management ownership rises up to 5% (Morck et al, 1988). However, once large investors gain complete control of the firm as ownership gets beyond to 5%, they "prefer to use firms to generate private benefits of control that are not shared by minority shareholders" (Shleifer and Vishny,1997, p.759).

Last, Myers (1977) provides evidences to show that a risky debt contract creates the sub-optimal investment opportunity which is the essence of agency conflicts between creditors and shareholders. They argue that firms have optimal investment opportunities when they issue risk-free debts or use no debt at all. However, firms are responsible for the promised payments when issuing risky debts, which will weaken their incentives to undertake some valuable investment opportunities. As a consequence, debt financing reduces the firm's present market value and shareholders' wealth by making sub-optimal decisions. Moreover, Jensen and Meckling (1976) also notice that the debt contract allows shareholders to capture most of its profit if the project yields positive returns; while, creditors are responsible to the cost of failure. As a result, they summarize that shareholders have an incentive to invest in risky projects even though they are value-decreasing in the hope of obtaining abnormal positive returns. In reality, however, the effect of asset substitution, which occurs when a firm chooses to invest too much risky, negative net present value investments, weakens the availability of funds provided by creditors (Jensen and Meckling, 1976). In addition, shareholders will even forgo good investments because debt holders have priority to shareholders on claiming the residual when a firm is in a bankruptcy (Jensen and Smith, 1985). In a similar way, shareholders who are in a financial distress firm even can pay out excess dividends to reduce the residual available that can pass on to the debt holders (Jensen and Smith, 1985).

The nature of agency problems between owners and managers, between majority and minority shareholders, and between creditors and shareholders has been demonstrated above. Small business debt financing focuses on the agency problems between creditors and shareholders, because small firms have serious asymmetric information problems with external financing suppliers. It is expected that "firms with high liquidity and low information asymmetry exhibit a lower degree of agency cost" (Depken, Nguyen, and Sarkar, 2005, p.2). Therefore, solving the agency problems definitely plays a key role in reducing the informational asymmetry problem in small business financing. Eventually, it will help small

firms build sound reputation and obtain capital with favorable terms. The corporate finance literature suggests several mechanisms such as monitoring, bonding, and signaling to reduce agency problems root in the information asymmetry (Jensen and Meckling, 1976; Jensen and Smith, 1985; Ross, 1977).

Jensen and Meckling (1976) point out that shareholders can limit the owner-manager conflicts by incurring monitoring or by implementing compensation contracts that bond managers' activities with shareholders interests. They indicate that monitoring not only includes measuring or observing the performance of decision agents, but also includes shareholder control processes over agents through "budget restrictions, compensation policies, and operating rules" (p.308). Monitoring activities through the capital market, regulatory agencies, financial press, and investors are examples of external monitoring mechanisms (Depken et al., 2005). Internal monitoring comes from the boards of directors and the majority shareholders (Lippert and Moore, 1995). The corporation's board of directors has responsibility to monitor the top managers' performance, to decide the CEO's wage, and to replace the managers when it is necessary (Fama and Jensen, 1983). Moreover, Fama (1980) mentions that there is also internal monitoring among managers themselves, which arises from higher levels of management to the lower managers. Last but not least, the free-riding problem suggests that only large shareholders have incentives to monitor managers (Shleifer and Vishny, 1986).

Jensen and Meckling (1976) define bonding as a situation that firms expand resources to alter investment opportunities and to align the managers' utility with the shareholders' interests. Depken et al. (2005) consider bonding costs as the costs that the manager undertakes at the expense of his own wealth to reduce conflicts of interests. According to Depken et al. (2005), it is generally accepted that investors and managers have distinct perspectives on risk tolerance as follows. On the one hand, shareholders are considered risk-neutral because they are able to diversify their investment portfolios; therefore, they are more likely to invest in risky projects. On the other hand, managers are risk-averse because it is impossible for them to diversify their human capital, thus, they prefer to undertake low risk projects to protect their managerial positions. As a result, Depken et al. (2005) confirm the important role of boding managers' performances with shareholders' interests in order to reduce agency conflicts between managers and shareholders. This can be accomplished through compensation plans in various

forms (Brander and Poitevin, 1992; Lippert and Moore, 1995; Smith and Watts, 1982). That is, compensation plans, such as salaries and pensions in terms of the nonperformance-based compensation, stock options in terms of the market-based performance compensation, and bonus plans in terms of the accounting-based performance measure, help mitigate the conflicts of interest between managers and shareholders (Smith and Watts, 1982).

In conclusion, both monitoring and bonding mechanisms make great contributions on reducing the agency problems between owners and managers, majority and minority shareholders (Jensen and Meckling, 1976; Jensen and Smith, 1985). It is worthwhile pointing out that monitoring is a substitute for bonding. In other words, monitoring is less likely to be used to the extent that the firm aligns the interests of managers and shareholders (Lippert and Moore, 1995). In addition, firms will implement monitoring or engage in bonding activities if and only if the net benefits of monitoring or bonding are sufficient to cover the associated costs (Jensen and Meckling, 1976). However, in consideration of the existence of serious information asymmetry, small business debt financing mainly relies on the signaling effect in order to solve the agency problem between creditors and shareholders. The signaling is considered as one of the most effective approaches to mitigate the informational asymmetry issue, in that it sends indirect information to convince the lender about the firm's credibility (Shleifer and Vishny, 1997). Zahra and Filatotchev (2004) also indicate that "when asymmetry exists, exchange parties usually look for signals that can fill the gaps that exist between what they know and what they should know" (p. 889). They also believe that "signals, whether verbal or non-verbal, provide useful clues about others' behavior" (p. 889).

2.3. Signaling

Signaling effects have been extensively studied in the literature (Bar-Isaac, 2003; Ross, 1977; Shieh, 1993; Sobel, 1985; Spence, 1973). Sobel (1985) builds a model for helping people decide whether to trust someone in an uncertain situation. In Sobel's signaling model, the receiver (principal) is not sure about the sender's (agent) performance at the beginning, but the receiver will adjust his or her decisions based on the relevant information that he or she gains during the relationship. He suggests that reputation can be used as a strong signal to demonstrate the sender's reliable performance and this is only valid if the sender continuously carries out his or her responsibilities in a timely and accurate manner. Applying Sobel's

signaling model to the lemon phenomenon described by Akerlof (1970), high-quality used car sellers may use reputation as a signal of quality to perspective buyers in an attempt to stop price discount.

Spence (1973) also sets up a model to explain how one party sends some relevant information as a signal to another party in order to reduce the problem rooting in asymmetric information in the context of a job market. In Spence's job-market signaling model, good employees and bad employees are two categories in the job market and employers tend to offer higher wages to good employees. Unfortunately, the employee knows his or her own skills and productivity, but the employer is not able to ascertain the type of employee in advance. As a result, good employees invest in education as a credible signal in attempts to reveal the level of skills to potential employers. This signal not only increases wages that good employees should receive but also avoids the free-riding problem taken by bad employees. In the hope of having a rigorous result, Spence makes one key assumption that good employees can finish college more quickly and easily than bad employees with respect to the same grades from the same institution. Therefore, because education and ability are strongly correlated, certain education credentials contribute to good employees' higher productivity.

Finally, "a firm's financing decisions are actually signaling devices, conveying information on investors about the firm's business risk and profitability" (Myers, 1977, p.148). On the one hand, the pecking order theory indicates that debt financing is a signal illustrating a firm's confidence to succeed. For example, a firm may choose to use debt financing in order to keep ownership, to demonstrate its ability of repayment, and to build a sound track record (Berger and Udell, 1998). Otherwise, investors tend to believe the inability of repaying the loan if a firm relies on equity financing, because all investors share the potential risks (Berger and Udell, 1998). On the other hand, Ross (1977) develops an incentive-signaling model and suggests that debt financing definitely sends a signal about a firm's high quality based on the following assumptions and facts. First, managers are much better informed about a firm's potential value and risk than outside investors, which resulting the existence of information opacity. Second, in general, investors evaluate a firm's value based on the signal sent by managers. Third, it is well accepted that debt financing is associated with higher bankrupt costs at any debt level and managers are penalized if a firm does not have a good performance. Last, a low quality firm

increases the chance of going bankrupt. Therefore, managers who are in a low quality firm will not issue more debts in an attempt to imitate a high quality firm, because those managers have incentives to reduce bankrupt costs and to secure their jobs.

Our discussions of signaling in various ways above lead us to believe its ability to deliver some meaningful information indirectly. However, the third-party certification is also considered as one of the most effective means of signaling (Deaton, 2004). Deaton (2004) defines the third-party certification as "external institutions that assess, evaluate, and certify quality claims" to address the problem of information asymmetry between insiders and outsiders (p. 615). Deaton (2004) also explains that being independent is the necessary condition to implement the third-party certification, and it is also the most comparative advantage comparing with any other means of signaling. The independence indicates an inverse relationship between the quality and the cost to "allow for discrimination on the basis of quality" (Deaton, 2004, p.617). That is, a high-quality product reduces the costs of obtaining the certification. Equity market and debt market may use different ways to certify the quality of a firm to the public. Investment bankers, auditors, and venture capitalists are considered as three conventional mechanisms to certify the quality of equity in the initial public offerings market (Stover, 1996). For instance, Cumming and Johan (2010) state that "[venture capitals] certify the quality of the firm that goes public and thereby increases investor confidence that the firm seeking public funding is of sound quality" (p. 229). Large businesses should pay attention on these signaling strategies since they tend to finance their projects in the equity market.

In the credit markets which small businesses focus on, the roles of commercial banks in issuing the standby letter of credit and the rating agency are very important considerations to the extent of certification (Stover, 1996). On the one hand, borrowers with low credit ratings not only display high default rates but also demonstrate the failure to use reputation as a signal, so that it is extremely difficult for such borrowers to obtain funds from banks (Diamond, 1991). On the other hand, high credit ratings are given to borrowers who have sound reputation by continually fulfilling their promised liabilities (Diamond, 1991). It is well accepted that borrowers with high credit ratings tend to maintain their reputation by not defaulting in order to signal their creditworthiness to banks (Harris and Raviv, 1991). Consequently, this high credit rating as a signal reduces the costs of debt, increases the availability of funds, and mitigates the

moral hazard and adverse selection problems (Diamond, 1991). Altogether, there are three important points to summarize based on the above discussion. First, the lending decisions made by commercial banks play a key role in assuring the firms' quality to outside investors. Second, banks tend to make loan decisions based on firms' track records. Third, a firm's reputation is closely related to its historical financing success.

Besides the rating agency as an indicator of signaling in the context of certification in the credit markets, professionalization is another guideline to certify a firm's qualification. Studies on the impacts of professionalization can be traced back as far as 1955. Newcomer (1955) explores three preconditions and two general policies related to professionalization for employees and owners to follow in order to enhance the value of the firm. He argues that a firm tends to achieve a better performance not only by professionalizing its employees and owners with a formal education, long years of experience, and a dedicated attitude toward work, but also by establishing a complete set of code of conducts and a professional management team Newcomer (1955). Following that, Hall (1968) uses the Likert technique to demonstrate five traditional measurements of professionalization, including professional organization reference, belief in service to the public, belief in self regulation, sense of calling to field, and feeling of autonomy. However, the above points of views are largely based on organizational behavior perspective. To the best of our knowledge, the paper by Hellmann and Puri (2002) is the only existing empirical study discussed professionalization in the corporate finance literature. According to Hellmann and Puri's paper (2002), venture capitalists play broader roles in the professionalization of a new firm's development. On the one hand, venture capitalists make great contributions to the internal organization's professionalization, including the introduction of human resources policy, the adoption of a stock option plan, and the recruitment of sales and marketing personnel (Hellmann and Puri, 2002). On the other hand, venture-capital financed firms are also more likely to replace the founder with a professional outsider in the position of the company's chief executive officer (Hellmann and Puri, 2002). In short, these effects of venture capital send a strong signal of a firm's high qualification and professionalization to potential lenders. Based on the combination of the measurements of professionalization in the above stream of literature, professionalization has three dimensions, including the human resources structure, the compensation plan, and the code of conducts.

In terms of the organizational behavior theory perspective, it is generally accepted that human capital is the essential to the development of new firms. Therefore, a person's educational levels and years of work experience are used as proxies for the human resources structure (Newcomer, 1955). Newcomer (1955) emphasizes that professionalization is represented by the completion of college degree, bachelor degree, master or doctorate degree and having increasingly long years of work experience in the same or the related field. In addition, the owners and employees' educational levels, as well as the certification, are positively related with an employee's ethical orientation, which eventually signals a highly competitive edge of a professionalized firm (Bigel, 2000). In terms of the corporate finance theory perspective, the importance of professionalizing the human resource policies as well as the human resource management has been well demonstrated in the literature. Hellmann and Puri (2002) interpret human resources structure as the formulation of human resource policies including the "recruitment and selection practices" (p. 175). With regard to family-owned firms, Dyer (1989) emphasizes that improving the management skills in the areas in finance, marketing, and accounting is the leading reason for professionalizing the management team. Chittoor and Das (2007) also suggest that a firm is likely to have a better performance by having a professionalization of management. That is, a nonfamily professional manager in charge of the management may contribute to a family-owned firm's overall performance.

Based on the above discussion, professionalization is closely related to the use of skilled employees in the organization. Empson (1999) proposes two reasons regarding the important roles of recruiting and retaining those employees as follows. First, if skilled employees quit from a firm, they may take their advanced techniques to its competitor. Second, "the act of codifying knowledge will ultimately diminish its market values as codifies knowledge becomes demystified" (p. 3). However, retaining skilled employees is always a challenge because of two reasons. On the one hand, highly talented employees are considered as scarce resources, and therefore, it is hard to retain them because there are always better external opportunities available (Teece, 2003). On the other hand, those skilled individuals are also hard to direct (Starbuck, 1992). Starbuck (1992) points out that skilled employees have preference for autonomy and dislike supervision and formal rules. Several studies show that the stock option plan help retain the right employees in both private and public firms (Core and Guay, 2001;

Hand, 2008). Hellmann and Puri (2002) also use the stock option as a proxy for professionalization. Therefore, a compensation plan, such as a stock option plan, as a proxy for professionalization may motivate the right employees to stay on the current firm.

The most discriminative characteristics of professionalization is its standard code of conducts, which guides owners and employees to make decisions based on appropriate moral principles or values (Newcomer, 1955). Newcomer, 1955 considers ethical codes as the best evidence of quality signaling, since a skilled employee's efforts coincide with the interests of clients. In addition, Starbuck (1992) insists that "ethical codes require [firm owners and employees] to serve clients unemotionally and impersonally, without self-interest" (p. 717). For these reasons, professionalization is achieved because those firms tend to have higher code of conducts than any other organizations in the society (Bigel, 2000).

2.4. Research Question

We attempt to investigate the influence of professionalization on new venture debt financing in this study. As discussed earlier, studies on professionalization can be traced back as far as 1955, and previous studies show a positive relationship between professionalization and firm's performance according to the organizational theory perspective (Golembiewski, 1983; Newcomer, 1955). However, to the best of our knowledge, no study has addressed the effects of professionalization on small business and new venture debt financing. Therefore, we intend to help fill in this gap.

Based on the literature reviews, small businesses and new ventures heavily rely on debt financing. However, information asymmetry causes the agency problems between creditors and shareholders, and signals help small businesses reduce such agency problems. Professionalization is viewed as a strong signal sent to the potential capital suppliers. As a seminal study, Hellmann and Puri (2002) address the role of venture capitalists in professionalizing the start-ups firms. In their study, professionalization is measured by the human resources policy, the adoption of stock option plans, and the use of marketing staffs. Except the standard code of conducts, the measurements of professionalization in Hellmann and Puri (2002) are consistent with the dimensions in the literature, such as the human resources structure, the compensation plans, and the standard code of conducts. Therefore, three dimensions, including the human resources structure, the incentive plan, and the standard

code of conducts, are used as proxies for professionalization in this study. However, none of the variables can be used as a proxy for standard code of conducts in our data set. In addition, in terms of the new venture finance, literature tends to use human resources structure variables as control variables. Therefore, our study only focuses on the compensation plan as a proxy for professionalization. Because this is an exploratory study, we ask a research question, instead of proposing a hypothesis. Our major research question is "Does professionalization help improve debt financing of new ventures?"

According to the agency theory, the compensation plan as a means of incentive mechanisms mitigates the conflict of interests between owners and managers. This study intends to use the compensation plan as a proxy for professionalization in order to reduce the agency problems between creditors and shareholders. Unfortunately, the theoretical link between these two different types of agency problems has not been well explored. Brau (2002) studies the agency problem connection by proposing that a bank as the better informed party will charge a higher interest rate or require more collateral to a small firm if the owner-manager agency conflicts tend to affect the firm value. However, according to his empirical results, interest rates and collateral requirements are affected by banking relationship, firm size and age rather than the owner-manager conflicts. Confirming Brau's (2002) findings, Wu, Hedges, and Zhang (2007) conclude that solutions to the owner-manager conflicts do not significant alleviate the creditor-shareholder conflicts on small business lending. In contrast, Brander and Poitevin's (1992) model shows that managerial compensation contracts, in particular bonus contract, as a means of aligning the interests of owners and managers, can mitigate the agency conflict between shareholders and creditors. The above two opposite views also motivate us to study this topic.

3. Data and variables

3.1. Data[1]

We extracted the data from the questionnaires of the Kauffman Firm Survey (KFS), sponsored by the Ewing Marion Kauffman Foundation and conducted by the Mathematica Policy Research Inc. (MPR). The KFS is well known for its longitude, consistency, accuracy, and coverage.

First, despite the challenge, such as business attrition[2], in conducting a longitudinal study, the KFS is one of the very few surveys that track the performance of the U. S. new businesses over their formative period. In other words, only small businesses founded in 2004 were selected to engage in the Baseline Survey. Following that, the MPR project team planned to conduct seven follow-up surveys annually to track over the same firms' operation performance. Up to the present, the project is at the midpoint and three follow-up has been completed. At the end of the project, the KFS will cover the data period from 2004 to 2011 to track the development of the U. S. new ventures that stared in 2004.

Second, consistency is essential to develop any study, and a panel study requires a more consistent standard throughout all the surveys. Thus, the MPR project team suggests consistent and rigorous criteria for defining new businesses and selecting respondents. On the one hand, only businesses, listed in the Dun & Bradstreet (D&B) corporation database in calendar year 2004, were eligible for the Baseline Survey. The D&B database was used for selecting sampling frame because it is the largest commercial list so far containing the insight information about businesses. On the other hand, a respondent should belong to a founder or an owner who is also involved in business' day to day operations. In this manner, it ensures the respondent to provide accurate information regarding all the areas on the business. Besides that, in terms of questionnaires, the further follow-ups only slightly add few related questions on the basis of the Baseline Survey. In general, the design and contents are almost identical between the Baseline Survey and the further follow-ups.

Third, the accuracy is guaranteed before, during, and after conducting the longitudinal KFS.

[1] The contents in this section (3.1. data) are either based on the "Kauffman Firm Survey methodology report" (Ballou, Barton, DesRoches, Potter, Zhao, Santos, and Sebastian, 2007) or "An overview of the Kauffman Firm Survey: results from the 2004-2007 data" (Robb, Ballou, DesRoches, Potter, Zhao, and Reedy, 2009).

[2] Business attrition refers to some of the participating businesses in the Baseline Survey will no longer participate the follow-up surveys as a consequence of bankruptcy, refusal, or failure to locate the new address.

Two pretests were implemented to determine the Baseline Survey's preparation and improvement. The Pilot Test 1 confirmed the criteria of eligible businesses, which included those if they begin to pay state unemployment (UI) taxes or federal insurance contribution act (FICA) taxes in 2004, or if year 2004 is the first time they have legal forms, employer identification numbers (EIN), schedule C incomes on personal tax returns. In addition, inherited businesses, wholly owned subsidiary firms, or non-profit organizations were not qualified under these criteria. Several suggestions were made after the Pilot Test 2. Firstly, one-third of the questionnaires have been reduced. Secondly, a web survey, as well as a telephone interviewing follow-up, was used for collecting data. Finally, a $50 incentive was paid to owners one week after completing the surveys for thanking their participation.

Besides that, in the hope of assuring data quality, the MPR project team implements several mechanisms, such as an interviewer training course, a performance monitoring, and an edit check software, during the Baseline Survey and the follow-ups. First, it is undeniable that acknowledgeable and experienced interviewers can lead a higher overall response rate through phone call interviews. Therefore, all interviewers are required to take a 12-hour mandatory training course. Materials, such as business eligibility criteria, interviewing skills, strategies for deal with avoidance respondents, and the importance of confidentiality will be taught during the training course. Interviewers then apply the theoretical knowledge in practice by implementing mock interviews. During this process, one interviewer acts as a respondent, and the other play the role of an interviewer. In general, interviewers can gain experience and build confidence during repeated practice. Second, monitoring interviewers' performance also plays a key role in assuring the data accuracy. Project staff generates evaluation reports based on interviewers' performance every week. Then the staff members and each individual interviewer review the feedback, such as good interview skills or the difficulty to avoid gatekeepers, together during the weekly meeting. Generally, suggestions based on interviewers' strengths and weaknesses provide opportunities to improve interviewers' performance as well as further enhance the response rate. Last but not least. With respect to the telephone interviews, interviewers have abilities to check inconsistent information during interviews. For instance, interviewers will make sure the data are considered debt or equity. As regards the web surveys, edit checks programmed by the project staff allow surveys to automatically correct any

numerical inconsistency during the interviews.

Furthermore, cleaning data also needs special care in order to ensure the accuracy. Some open ended questions are available in the Baseline Surveys and the follow-ups, which allow respondents to provide their own answers if none of the existing answers fit their situation. However, since not all the respondents have enough knowledge or time to understand the existing answers, their own responses may actually be very similar to any of the existing options. Therefore, back coding, a process to check the similarity between the respondent's answer and the exiting answers, becomes a typical and important task for data accuracy purpose, especially for the web surveys.

Last, the KFS also contains a wide range of information in questionnaires. The questionnaires consist of seven sections in total. The first section is the introduction which discusses the sponsor, makes sure respondents are owner/founder/operators, and confirms business addresses or reasons for bankruptcy. Unlike the follow-up surveys, only the Baseline Survey has the second section known as the eligibility screening. Eligible businesses and forms of business organization are determined in this section. Section three includes questions related to business characteristics, such as industry types, number of employees in terms of full time and part time, and number of owners. Questions about the strategy and innovation are asked in section four, including whether the business provides a service or a product, whether the business owns patents, copyrights, or trademarks, and business sales with different types of customers. The fifth section collects information based on the business organization and human resources benefits. This section covers employees or owners' roles in the organization and their compensation plans, such as health insurance plans, stock option plans, and paid sick days. The financial information in the next section is the focus of the KFS. Sources of financing, including equity or debt, are first determined in this section. They are followed by business revenues, expenses, profits or losses, and types of assets and liabilities. Topics related to work behaviors and demographic of up to ten business owners per firm are included in the last section. A respondent needs to answer questions about his or her characteristics, such as, age, educational levels, years of experience, race, gender, weekly working hours, and whether she or he is also a paid employee. For a multiple-owned business, a respondent first answers the questions for himself (herself), and then for other owner/founder/operators. In summary,

according to all have been discussed above, the KFS is a reliable resource of data to be used for our study.

The data used in our study are from year 2004 (the Baseline Survey) to year 2007 (the Third Follow-up). The four sets of data include all the surveys available so far and there carry the most up-to-date information. Project employees spend a full year (from July 2005 to July 2006) to collect the Baseline Survey. In the end, 4,928 businesses out of 32,469 selected businesses were interviewed, indicating overall 43 percent response rate[3] after applying for the sample weights. Excluding the businesses that permanently out of business from the 4,928 participating businesses, the MPR project team conducted three follow-ups to look at dynamic changes of the firms. For the First Follow-up, data collection started at June 2006 and finished in January 2007. A total of 3,998 businesses completed the interviews, resulting in 89 percent weighted response rate. From May 31, 2007 to December 1, 2007 and from June 24, 2008 to December 23, 2008 were two time intervals for conducting the Second and the Third Follow-ups, respectively. Among the eligible businesses, 3,390/2,915 businesses were interviewed, showing 84 percent and 83 percent response rates (weight adjusted) in the Second and Third Follow-ups, respectively.

It is noteworthy that our study has two data limitations. One is that the data set contains a small portion of outliers. For example, in the case of asking how many full-time employees in the business, most of the data are recorded in continuous forms as their original states. However, the data set also includes some unusable values, such as more than fifteen (15+) to indicate the highest value of certain variables. Since only very small number of cases[4] have more than

[3] The KFS Baseline Methodology Report defines response rates as "measures of the 'potential' for nonresponse bias and of the quality of a survey" (Ballou et al., 2007, p.53). In other words, low response rates lead to a larger potential for nonresponse bias and a worse survey quality compare with high response rates. It is widely accepted that response rates can be divided into weighted response rates and unweighted response rates. The report also provides two separate definitions as follows:

"Unweighted response rates measure the proportion of the sample that resulted in useable information for analysis" (Ballou et al., 2007, p.55).

"Weighted response rates can be used to estimate the proportion of the survey population for which useable information is available and is generally considered as a measure of the potential for nonresponse bias" (Ballou et al., 2007, p.55). Therefore, weighted response rate is much more appropriate than unweighted response rate, because the weighted response rate takes sample selection probability into consideration.

[4] In our study, we remove outliers from six variables, including total number of employees, number of human resources person, number of sales person, number of R&D person, number of finance person, and owner's work experience in years. With respect to each variable, four percentages indicate the corresponding outliers in the Baseline, the First Follow-up, the Second Follow-up, and the Third Follow-up, respectively. The percentages of outliers are reported as follows.

Total number of employees: 1.14%, 2.28%, 2.83%, and 2.34%

fifteen full-time employees. To ensure the accuracy, we cannot change 15+ to 15, and therefore treat them as missing values. The other limitation is that the data set only provides a range, rather than a precise figure, of values of financial variables, such as total expenses, amounts of borrowing from friends, and so on. In other words, the MPR project team preferred ordinal variables to continuous variables when they prepared the public use data file. There is no problem of using ordinal variables for analyzing models, but continuous variables may generate more accurate results. In addition, these ordinal variables cannot be used to construct other variables, such as ratios, sums, or products. Consequently, this is likely to reduce the accuracy of the results. The following section (the variable descriptive section) will present some real examples related to the use of these data limitations in detail.

3.2. Debt financing (Dependent Variables)

We use two dummy variables to characterize small business debt financing and two ordinal variables to measure the total amount of debt. As mentioned before, because of the difficulty in obtaining funds in the equity market, a small business is more likely to rely on debt financing from commercial banks or from other non-bank financial institutions with the help of either personal or business relationships (Berger and Udell, 2002). Therefore, to measure the use of debt, the first dummy variable (Business Bank Loan) is extracted directly from the date set. It has a value of one if the business uses business loans from a commercial bank, and zero otherwise. Business Loan as the second dummy variable, whose value is one if the business uses business loans from either a commercial bank or a non-bank financial institution, and zero otherwise. This variable is constructed based on two dummy variables in the data set. One is our first dependent variable (Business Bank Loan); the other is a dummy variable, whose value is one if the business uses business loans from a non-bank financial institution, and zero otherwise.

In previous studies, the use of debt is usually measured by financial leverage, the total debt to book value of assets ratio (e.g., Petersen and Rajan, 1994). However, it is impossible to construct the debt to asset ratio even though both variables are available in the data set due to

---

Number of human resources person (HR): 0.52%, 0.34%, 0.55%, and 0.29%
Number of sales person (Sales): 2.1%, 2.96%, 3.00%, and 3.48%
Number of R&D person (R&D): 0.98%, 1.24%, 1.49%, and 1.86%
Number of finance person (Finance): 0.49%, 0.38%, 0.27%, and 0.39%
Owner's work experience in years (Work Exp): 3.81%, 4.2%, 3.89%, and 4.08%

the data limitation. Therefore, two ordinal variables (Total Debt and Total Business Debt) are employed instead for measuring the amount of debt in this study. The former one measures the total amount of business loans and personal loans for business-related purposes, while the latter one represents the total business loans only due to business-related purposes. The data set contains those two variables in ordinal forms, using numerical values from zero to nine, to represent the amount of respective debt[5].

3.3. Professionalization (Independent Variables)

As mentioned earlier in the research question, our study focuses on the effects of compensation plans as a proxy for professionalization on debt financing of new ventures. This is consistent with the professionalization measure in the finance literature (e.g., Hellmann and Puri 2002). The data set contains several dummy variables to measure employee benefit plans, including a health insurance plan, a retirement plan, a stock option plan, a bonus plan, a paid vacation plan, a paid sick day plan, and a tuition reimbursement plan. Among those benefit plans, our proxy variable (Incentive Plan) is constructed based on stock options, bonus plans, and the vacation paid. Therefore, Incentive Plan is also a dummy variable, whose value is one if the business offers a compensation plan in any forms among bonus plans, vacation paid plans, and/or stock option plans, and zero if the business does not implement any of these compensatory plans.

The use of stock options is consistent with the professionalization measure adopted by Hellmann and Puri (2002). It is also worthwhile to point out that stock options are widely used in both public and private firms. On the one hand, the effects of stock options in publicly listed firms have been intensively studied (Core and Guay, 2001; Oyer and Schaefer, 2005). Core and Guay (2001) find that firms are more like to use stock options for retaining the right employees and helping increase firm value, especially when they are lack of financial resources or have

[5] The ranges of each category are indicated as below,
0. 0
1. $500 or less
2. $501 to $1,000
3. $1,001 to $3,000
4. $3,001 to $5,000
5. $5,001 to $10,000
6. $10,001 to $25,000
7. $25,001 to $100,000
8. $100,001 to $1,000,000
9. $1,000,001 or more

greater financing needs. The empirical evidence in Oyer and Schaefer (2005) supports the roles of stock options in retaining the right employees and sorting the employees' belief about the firms. On the other hand, Hand (2008) evaluates the use of stock options in privately held firms, even though his finding demonstrates that 27% private U.S. start-up companies do not offer stock options to their employees based on the cost-benefit analysis. We also add two variables (bonus plans and paid vacation plans) when we create the professionalization variable because they capture the short-term incentives. According to a survey asking employees to choose their most desired benefits plan among seven options, extra paid vacation and a yearly bonus are ranked the first (38%) and the second (36%), respectively (Lissy, 1992). In addition, the paid vacation also increases the productivity, enhances the quality of employees' life, helps achieve better health outcomes for individual employees, and reduces the overall health care expenditure (De Graaf, 2009). All the evidences above imply that bonus plans and paid vacation plans are the most effective means to motivate employees to work hard and/or stay in the current company.

Intuitively, we expect a positive relationship between the incentive plan and debt financing of new ventures. As discussed in the literature reviews, the incentive plan helps enhance firm performance. In other words, a company is predicted to have a better performance if it has an incentive plan in some forms. Therefore, on the supply[6] side, this is a good signal to convince investors that the company is more likely to have the ability to repay its loan on time. As a result, investors are more likely to provide funds in the short run if they receive and believe in the credibility of this signal. On the demand side, a better performed company also tends to issue debt to keep ownership, to reduce costs, and to signal its confidence to succeed.

3.4. Control variables

Two sets of control variables are included to capture the characteristics of the firm and its owners, respectively.

3.4.1. Firm characteristics

According to Hrebiniak (1976), even though the organizational size is kept constant, the level of professionalization affects the structure of the organization. In other words, the various

[6] In this study, the supply constraint refers to the amount of loans that lenders are willing to provide at various interest rates. The demand constraint refers to the amount of loans that small firms are willing to borrow at various interest rates.

employee functional compositions result in different consequences in terms of corporate governance and investment control. Therefore, four variables are used as the proxies for employees' expertise and functionality in the business. The continuous variables HR, Sales, R&D, and Finance capture the percentage of employees and owners who are responsible for human resources, sales, research & development, and the financial administrative, respectively. We construct those four variables by dividing total number of employees and owners who are primarily responsible for the above areas respectively by the sum of total number of employees and owners. We also introduce another variable (Personnel) to measure the total number of persons who are responsible for all the areas together. The variable (Personnel) has the same denominator as before; however, the sum of all four categories (HR, Sales, R&D, and Finance) becomes the numerator. Due to the data limitation (discussed earlier in Section 3.1), more than twenty-five total employees (25+) and more than five HR, Sales, R&D, and Finance (5+) are excluded before we create the variables. In addition, very few inconsistent cases[7], such as the percentage over 100%, are also excluded when we review the constructed variables.

Firm size also needs to be considered because larger firms are expected to have a better borrowing ability. Follow the literature; we measure the firm size using the firm's total assets (Total Assets) as a control variable. This measure has been more widely adopted in numerous previous studies, such as Berger and Udell (1995), Chittenden, Hall, and Hutchinson (1996), and Elyasiani and Goldberg (2004). The ordinal variable (Total Assets) is from the original data set, using zero to nine to represent the ranges of assets in each level[8]. Since the information about firm size provided in the data set is not a continuous variable, we cannot use the logarithm value of total assets to normalize them.

We also include the legal forms of the organization and industry types as control variables for measuring firm characteristics. Respectively, three dummy variables are used to represent a firm that is owned and managed by the same person (Sole Owner), a legal entity separates from

[7] In our study, "inconsistent case" refers to a situation where the percentage is over 100%. In general, less than 1% of cases are inconsistent. The detail percentages of each variable are presented as below. With respect to each variable, four percentages indicate the corresponding inconsistent cases in the Baseline, the First Follow-up, the Second Follow-up, and the Third Follow-up, respectively.
Number of human resources person (HR): 0.13%, 0.32%, 0.12%, and 0.10%
Number of sale person (Sales): 0.80%, 0.77%, 0.42%, and 0.84%
Number of R&D person (R&D): 0.41%, 0.54%, 0.17%, and 0.57%
Number of R&D person (Finance): 0.54%, 0.47%, 0.16%, and 0.41%

[8] The variable (Total assets) has the same ranges as the variables in Footnote 5.

their owners that may engage in own rights and liabilities (Corporation), and a type of business in which two or more owners share the profits or losses (Partnership). Industry sectors are divided into eight categories and characterized by seven dummy variables[9] based on the North American Industry Classification System (NAICS). Industry variables have been used for all model analysis, but the results are not reported in the paper because of two reasons. First, the industry effects are not focus of our study. Second, industry variables yield overall mixed results.

3.4.2. Owner's characteristics

In the literature on small business financing, the effect of owner's characteristics have been widely recognized. It is expected that people become more conservative on financing decisions as they become older, devote more formal school education, and have more work experience. Therefore, control variables measuring the owner's characteristic include owner's age, educational level, and work experience. Both single-owner businesses and multiple-owner businesses participate in the survey. Therefore, we need to pay special attention when we construct these sets of variables. This is because up to ten owner's attributes are recorded with respect to the multiple-owner company. In terms of constructing the owner's age, for each company, the data set has the records of all individual owners' ages. The highest age among all owners determines the owner's age for that company. The same as its original state, Age Owner is an ordinal variable, using one to seven to represent an owner's age[10].

In terms of owner's educational level, we first find one owner, who has the highest degree, to determine the owner's level of education for each firm. Then, those ten levels of education categories in the original data set have been amalgamated into four classes, including, high school degree, post secondary degree, post graduated degree, and others. Finally, the owner's educational level can be measured by three dummy variables High School, Post Secondary,

[9] The eight categories of industry sectors are agriculture, construction, manufacturing, wholesale trade, financial industry, health care, food industry, and other services. In order to reduce the multicollinearity problem, we exclude the financial industry, which has the largest proportion.

[10] The ranges of owner's age are displayed as follows,

1. 18-24
2. 25-34
3. 35-44
4. 45-54
5. 55-64
6. 65-74
7. 75+

Post Graduate, whose value is one if the owner has a high school degree, post secondary degree, or post graduate degree, respectively, and zero otherwise.

The information about owner's work experience in the original data set contains outliers. For instance, a small number of cases are recorded as 40+ to represent an owner who has 40 or more years of work experience. As discussed earlier in the data limitation section, we focus on continuous variables and treat the outliers as missing data. In the end, a continuous variable (Work Exp) captures the highest years of work experience among all the owners in a firm.

Previous studies support the existence of racial and gender discrimination in the credit market (Blanchflower, Levine, and Zimmerman 2003; Cavalluzzo et al., 2002; Riding and Swift, 1990). Thus, owner's gender and race are also controlled in our study. With respect to the gender, we first calculate the total number of male owners and female owners in each business separately. A dummy variable (Male) is used as a proxy of owner's gender, which has a value of one if majorities of owner/founder/operators are male in the business, and zero otherwise.

Finally, according to Robb, Fairlie, and Robinson (2009), the race has three categories including white, Hispanic, and others, such as blacks or African Americans, Asians, Pacific Islanders, American Indians, or Alaskan Natives. Robb et al. (2009) considers the later two categories the visible minority. Therefore, we use the variable non-white as a proxy for visible minority in our study and construct the proxy variable (Minority) in a similar way as it is for the owner's gender in the previous. For each company, total number of white owners and non-white owners (a member of visible minorities) are counted at first. The majority number between white owners and visible minority owners determines the owner's race. At the end, a dummy variable (Minority) is used in our analysis, whose value is one if majorities of owner/founder/operators are member of visible minorities, and zero otherwise.

3.5. Variables measuring change in professionalization

An alternative approach to investigate the effects of professionalization on new venture debt financing is to make use of the improvement in professionalization. We measure the professionalization variable changes between the First Follow-up and the Baseline Survey, between the Second Follow-up and the First Follow-up, between the Third Follow-up and the Second Follow-up, and the change within the pooled sample using all four surveys. As

discussed above in section 3.2., we have two dummy dependent variables (Business Bank Loan and Business Loan) and two ordinal dependent variables (Total Debt and Total Business Debt). To ensure the robustness, those dependent variables are turned into two versions of change variables due to different scenarios. One set of change is a dummy variable, whose value is one if the change (Change Business Bank Loan, Change Business Loan, Change Total Debt, and Change Total Business Deb) is positive, and zero if the change is negative. For instance, we assign one if Business Bank loan in the Third Follow-up is greater than it is in the Second Follow-up, and zero if it is lower. The other set of change is also a dummy variable, whose value is one if the change (Change Business Bank Loan, Change Business Loan, Change Total Debt, and Change Total Business Deb) is positive, but zero if the change is negative or zero. Besides the changes in dependent variables, we also employ changes in the independent variable (Incentive Plan) as well as one of the control variables (Total Assets). By using different time intervals, the variable Incentive Plan/ Total Assets in the former period subtracted from the later period gives the Change Incentive plan and the Change Total Assets, respectively.

4. Methodology

We first introduce the baseline model to examine the effects of professionalization on new venture debt financing:

$$\begin{aligned}\text{Dependent Variables} = {} & a_0 + a_1 \times \text{Professionalization Variable} \\ & + a_2 \times \text{Firm characteristics} \\ & + a_3 \times \text{Owner characteristics} + \varepsilon_1 \end{aligned} \quad (1)$$

Dependent variables include Business Bank Loan, Business Loan, Total Debt, and Total Business Debt. The professionalization variable is measured by Incentive Plan. Control variables include both firm and owner characteristics.

In the baseline model, all four subsamples based on four surveys (the Baseline Survey, the First Follow-up, the Second Follow-up, and the Third Follow-up), as well as the pooled sample using all four surveys, are used for testing the effects of professionalization on new venture debt financing. Logit models are employed since Business Bank Loan and Business Loan are binary variables. We adopt three different methods for another two ordinal dependent variables (Total Debt and Total Business Debt) to ensure the robustness. First, the ordinary least squares (OLS) regressions are used since we treat them as continuous variables. Second, one-sided tobit models are adopted because they are censored at zero. Finally, we also use the ordered logit models for the robustness checks. The sole-owner cases might have different agency problems compare to other forms of organizations. Therefore, all the models above are first estimated using the full samples, and then the sub-samples by excluding all the sole-owner cases. It is noteworthy that we also add three year dummy variables (Baseline, First, Second) for the pooled sample analysis in order to control the fixed effects. A significant positive coefficient a_1 on Incentive Plan would indicate that professionalization improves new venture debt financing.

As mentioned earlier, the incentives help retain the right employees, so there is a potential causality issue between personnel (HR, Sales, R&D, and Finance) and Incentive Plan. In other words, the personnel may induce the implementation of the incentive plan. In order to control the causality issue, therefore, we further adopt two-stage models measured by dummy variables Business Bank Loan and Business Loan as well as by continuous variables Total Debt and Total Business Debt to test the effects of professionalization on new venture debt financing. The

equation for the first stage is as follows:

$$\text{Incentive plan} = B_0 + B_1 \times \text{HR} + B_2 \times \text{Sales} + B_3 \times \text{R\&}D + B_4 \times \text{Finance} + B_5 \times \text{Other firm characteristics} + B_6 \times \text{Owner characteristics} + \varepsilon_2 \quad (2.1)$$

In the first stage, we measure the relationship between Incentive Plan and the use of personnel, including HR, Sales, R&D, and Finance. A probit model is used for one of the subsamples, the Third Follow-up, and the pooled sample using all four surveys because Incentive plan is a binary variable. We then generate the inverse Mills ratios (Invmills) and treat it as the independent variable in the second stage of the model. The inverse Mills ratios (Invmills) measure the probabilities of using the incentive plan. The equation for the second stage is as below:

$$\text{Dependent Variables} = \mathrm{C}_0 + C_1 \times \text{Invmills} + C_2 \times \text{Firm characteristics} + C_3 \times \text{Owner characteristics} + \varepsilon_3 \quad (2.2)$$

Dependent variables include Business Bank Loan, Business Loan, Total Debt and Total Business debt. Firm characteristics represent HR, Sales, R&D, Finance, Total Assets, Sole Owner, Corporation, Partnership, and industry types. Owner characteristics represent owner work experience, educational levels, race, and age.

One of the owner's characteristics Male is used as the instrumental variable (IV), and it is a valid IV both statistically and conceptually. By using the same sample sources, the Third Follow-up and the pooled sample using all four surveys, as model 2.1, Model 2.2 is estimated using probit models for the former two dependent variables and using ordinary least squares regressions for the latter two. A significant coefficient on the inverse Mill's ratio C_1 would indicate that professionalization affects new venture debt financing after controlling the potentially causality issue.

Model 3 measures the effects of change incentive plan on the change in new venture debt financing. The equation for Model 3 is:

$$\text{Dependent Variable} = \mathrm{d}_0 + \mathrm{d}_1 \times \text{Change Incentive Plan} + \mathrm{d}_2 \times \text{Change Total Assets} + d_3 \times \text{Firm characteristics} + d_4 \times \text{Owner characteristics} + \varepsilon_4, \quad (3)$$

where dependent variables include Change Business Bank Loan, Change Business Loan, Change Total Debt, and Change Total Business Debt.

As mentioned in the section 3.5., there are two distinct definitions of those dependent variables measuring changes in small business debt finance. The former one is used for Model 3: the change dependent variable is a dummy variable, whose value is one if the change is positive, and zero if the change is negative. There are two sample sources for analyzing the change in debt financing of new ventures. One sample source is derived from the Third Follow-up minus the Second Follow-up. Control variables measuring firm characteristics as well as owner characteristics in the Second Follow-up are used for this analysis. The other sample source is derived from the change in pooled sample using all four surveys. The dependent variables are constructed based on the sum of changes between the adjacent time intervals. That is, the sum of the differences between every two years of the same company. The control variables measuring firm and owner characteristics in the pooled sample using the Baseline, the First, and the Second Follow-up are used for this analysis. Model 3 is repetitively estimated using logit models because all four dependent variables are binary variables. The same as before, the models are estimated using the full samples as well as the sub-samples by excluding all the sole-owner cases. A significant coefficient on the variable Change Incentive Plan d_1 would indicate that there is a relationship between a new venture's change in professionalization and the change in its debt financing.

To further investigate the effect of change in professionalization on the change in new venture debt financing, we redefine and reconstruct our change dependent variables. The equations are as below:

$$\begin{aligned}\text{Dependent Variable} = {} & e_0 + e_1 \times \text{Change Incentive Plan} + e_2 \times \text{Change Total Assets} \\ & + e_3 \times \text{Firm characteristics} \\ & + e_4 \times \text{Owner characteristics} + \varepsilon_5 \end{aligned} \quad (4)$$

Similar to Model 3, the dependent variables include Change Business Bank Loan, Change Business Loan, Change Total Debt, and Change Total Business Debt, but with distinct variable interpretations and constructions. In Model 4, all dependent variables are dummies, whose values are one if the changes are positive, and zero if the changes are negative or zero. Model 4 is estimated using logit models.

Except the interpretation and the construction of dependent variables, Model 4 follows the same procedures as Model 3. First, models are estimated using two sample resources. One is based on the difference between the Third Follow-up and the Second Follow-up, while the other is based on the change in the pooled sample. Second, models are estimated using the full samples and then the sub-samples by excluding all the sole-owner cases.

5. Empirical Results

5.1. Descriptive Statistics

Panel A of Table 1 presents the summary statistics based on the pooled sample using all four surveys. According to the descriptive statistics in Panel A of Table 1, on average 6.5% of small businesses used business loans from a commercial bank in the period 2004-2007. 7.8% of small businesses obtained debt financing from either a commercial bank or a non-bank financial institution during the sample period. In this 4-year period, the firm's average amount of total business loans and total personal loans for business-related purposes was 3, representing the firm's total debt in a range from $1,001 to $3,000 on average. The firm also had 1.481 total business loans on average during this period, indicating that the average amount of total business loans used by the firm was between $501 and $1,000. Many companies did not have any loans, eventually lowering the amount of total debt and total business debt. When we excluded all the firms with zero debt, the average total debt and total business debt were both 5.5 during the sample period, representing a range between $10,001 and $25,000, respectively.

The percentage of firms which have offered an incentive plan in any forms among stock option plans, bonus plans, or paid vacation plans to either full-time or part-time employees was 45.3% on average from 2004 to 2007. On average 20.1%, 32.2%, 26.2%, and 30.7% of employees or owners were primarily responsible for human resources department, marketing and sales department, research and development department, and financial administrative department, respectively during the sample period. According to the summary statistics of the variable Personnel, on average one person was responsible for all the above areas. The average size of the business in terms of total assets was between $10,001 and $25,000 in 2004 to 2007. The average age of the owners was in a range from 45 to 54 years. Owners had 13.250 years work experience on average. 79.8% of the owners were male, and 13.7% were members of visible minorities. On average, 8.5%, 58.7%, and 31.1% of the owners had high school degrees, post secondary degrees, or post graduate degrees, respectively. 31.7% and 31.1% of the firms were sole owner and corporation, respectively.

[Insert Panel A of Table 1 here]

Panel B of Table 1 shows the descriptive statistics of all four subsamples based on four surveys in each calendar year during the sample period. In general, the statistics in each

calendar year are consistent with that of the pooled sample from 2004 to 2007 as described above. To spare space, we do not repeat the results here. However, there is at least one thing worth mentioning. According to this panel, the percentage of firms offering incentive plans has been steadily rising during the sample period. 39.7% of businesses offered the incentive plan to either full-time or part-time employees as of 2004. In 2005, the percentage of firms offering incentive plans increased to 45.6%. On average 47.2% and 50.6% of businesses offered incentive plans in 2006 and 2007, respectively. These results suggest that firms tend to become more professionalized over time when they grow.

[Insert Panel B of Table 1 here]

Panel C of Table 1 shows the changes in debt financing variables and incentive plans over three adjacent time intervals (comparison between the First Follow-up and the Baseline, between the Second and the First, between the Third and the Second) as well as over the period from 2004 to 2007. There are several general findings based on this Panel. First, the majority of firms (approximately 90%) did not change their borrowing status. Second, slightly more firms increase the use of debt. That is, the number of increasing cases (4.8%) is slightly higher than that of the decreasing cases (4.7%). Third, 47% and 65% of firms maintained the same level of borrowing in terms of total debt and total business debt. Fourth, the change in Total Debt had a mean around 3.3 for both increasing and decreasing cases, indicating a range between $3,001 and $5,000. On average, the change in Total Business Debt was 4.2, representing a relatively higher range from $5,001 to $10,000. Last, the independent variable Change Incentive Plan follows the same pattern as above. That is, a majority of firms (81.7%) on average did not change their compensation plans.

[Insert Panel C of Table 1 here]

Results from the compare-mean tests are presented in Panel D of Table 1. As indicated in Panel D, except for the Total Business Debt, the averages of two groups were not statistically different from each other in the initial period, which indicates insufficient evidence showing that firms change their debt financing significantly. This insignificant change may be caused by two possible reasons: new ventures are not very likely to borrow, or they rely on internal financing at the early stage. The former view has been supported by Guiso (2003); the empirical findings in his study show that the limited bank debt is more likely to result from that

firms decide not to borrow rather than banks choose not to lend. The later view is consistent with the financial growth cycle perspective by Berger and Udell (1998). They argue that a small business focuses on internal financing at the beginning, and may rely on short term external credit at the firm's growing stage. According to this panel, dependent variables become statistically different from each other at the most recent period (last column of the Panel: The Third follow-up minus the Second Follow-up), which coincides with the financial growth cycle perspective again.

In general, the mean differences of the proxy for professionalization (Incentive Plan) were statistically different from zero. The positive change in Incentive Plan suggests that owners may understand the important roles of a compensation plan as they continue to operate the company.

[Insert Panel D of Table 1 here]

5.2. The effects of professionalization on new venture debt financing (Baseline Model)

Table 3 presents the results based on Model 1. A total of sixteen versions of Model 1 (4 dependent variables × 2 sample sources × 2 sample sizes) were estimated. The four dependent variables are Business Bank Loan, Business Loan, Total Debt, and Total Business Debt. The two sample sources include the Third Follow-up (year 2007) and the pooled sample from 2004 to 2007. The full samples and the sub-samples by excluding the sole proprietorship were adopted. Panel A and B report the results based on the full samples, which contains the analysis for the Third Follow-Up and the pooled sample using all four surveys, and Panel C and D show the results based on the sub-samples. As mentioned in the methodology section, we employed the OLS regressions, Tobit models, and ordered logit models[11] for the two ordinal dependent variables (Total Debt and Total Business Debt). The results of using the one-sided Tobit models are reported in Panel E and F of Table 3.

[Insert Panel A. B. C. D. E. and F of Table 3 here]

According to Panel A to Panel F of Table 3, Incentive Plan is significantly positively related to debt financing in all the sixteen regressions. Using logit models, we find that the adoption of incentive plans significantly increases the odds of using debt financing. Statistically,

[11] The results of using ordered logit models for Total Debt and Total Business Debt are not reported in the tables. There is no qualitative difference in the results and the results are available upon request.

according to the results presented in column 1 of Panel A, for a one unit increase in adopting plans, the odds of being borrowed for a bank or a non-bank financial institution (vs. not being borrowed) increased by a factor of 2.166. Using OLS regressions or Tobit models, the results lead to the conclusion that the adoption of incentive plans is associated with expanded amount of loans. Statistically, according to the results presented in column 1 of Panel B, a firm adopting incentive plans uses 81.0% more debt than a firm which does not adopt incentive plans. In summary, the results are consistent since the models by using four different dependent variables, two distinct sample sources, and two sample sizes serve as robustness checks. Therefore, we conclude that professionalization tends to improve new venture debt financing.

It is worth pointing out that the unknown willingness to use external debt is one of the limitations of this study. That is, we cannot tell whether the debt financing variables employed in our study are interpreted from the supply perspective or from the demand perspective. As a consequence, we have to take both sides into consideration for the analysis. As mentioned in the literature reviews, a firm is more likely to have a better performance if it offers incentive plans to its employees and owners. Therefore, on the supply side, such firms are more likely to obtain debt financing because a firm with good performance has low default risks. On the demand side, a firm with good performance tends to issue debt to maintain ownership control, to reduce the costs, and to signal its confidence to succeed.

Several control variables also have significant impacts on debt financing. The variable Total Assets is always significantly positively related to the use of debt and to the amount of debt, which suggests that a larger firm tends to obtain more debt from lenders when the firm has more assets as collaterals. The other control variables, including Finance, Sole Owner, Partnership, Work Exp, High School, Post Secondary, Post Graduate, Minority, and Age Owner, also significantly affect debt finance of new ventures.

5.3. The effects of professionalization on new venture debt financing (Two-stage Model)

To effectively control the causality issue, a two-stage model was used to further test the impacts of professionalization on new venture debt financing. Panel A of Table 4 presents the results of the first stage, which addresses the potential impacts of using human resource management on the adoption of incentive plan. Since Incentive Plan is a dummy, the inverse Mills ratios (Invmills) were generated from the first stage and were employed as proxies for

professionalization in the second stage.

[Insert Panel A of Table 4 here]

In the first stage, Incentive Plan is the dependent variable. Model 2.1 was estimated using probit models based on two samples as before. One is the Third Follow-up; the other is the pooled sample using all four surveys. Two versions of Model 2.1 were estimated. According to Panel A of Table 4, the significantly positive coefficient on HR indicates that it increases the probability of using incentive plans. However, the significantly negative coefficients on R&D and Finance show that they decrease the probability of using incentive plans. In general, the variable Personnel is negatively and significantly related to the use of Incentive Plan. The results also show that a larger firm in terms of the size (Total Assets) is more likely to offer incentive plans to employees. Due to the severe agency problems between owners and managers, a corporation is also more likely to offer incentive plans than a sole proprietorship or a partnership.

The second stage of model 2 measures whether Invmills, as a proxy for professionalization, influences the use of debt financing and the amount of debt. Eight versions of Model 2.2 were estimated and the results are presented in Panel B and C of Table 4 (4 dependent variables × 2 sample sources).

[Insert Panel B and C of Table 4 here]

From the table, if we focus on the results of the Third Follow-up, the incentive plan only plays a role on the Total Business Debt. Statistically, according to the results presented in column four of Panel C, a firm adopting incentive plans uses more debt than a firm which does not adopt incentive plans. However, with respect to the analysis of the pooled sample using all four surveys, the use of incentive plan always significantly increases the use of debt and amount of debt used. Therefore, the above analysis leads to the conclusion that professionalization has significantly impacts on debt financing and the effects are more pronounced in a relatively long period of time.

5.4. The effects of change in professionalization on the change in New Venture Debt Financing.

To investigate the impacts of professionalization on debt financing thoroughly, we make use of the improvement in professionalization as the independent variable. The results of Model

3 are presented in Table 5, while the results of Model 4 are summarized in Table 6. As discussed before, the difference between Model 3 and Model 4 lies in the interpretation and construction of the dependent variables. A total of sixteen versions of each model (4 dependent variable × 2 sample sources × 2 sample sizes) were estimated.

[Insert Panel A, B, C and D of Table 5 here]

As the results from Table 5, the coefficients on the change in Incentive Plan are positive and statistically significant in the models with Change Business Bank Loan and Change Business Loan as the dependent variables, while those are statistically insignificant in the other two models with Change Total Debt and Change Total Business Debt as the dependent variables. Statistically, according to the results presented in column 1 of Panel A, a firm moving to the use of inventive plans is more likely to increase the use of debt, compared to a firm which does not change. The strong positive relationship suggests that a firm has a higher probability of obtaining debt from either a commercial bank or a non-bank financial institution as the firm adopts incentive plans the first time.

According to the results, we observe that the change in firm size (Change Total Assets) has a strongly positive relationship with the change in the amount of debt (Change Total Debt, and Change Total Business Debt) and a weakly positive relationship with the change in the use of debt (Change Business Bank Loan, and Change Business Loan). In conclusion, these results suggest that a larger firm is more likely to obtain debt financing.

The owner's educational level, race, and age continue to show a negative impact on the debt financing as before. In addition, a sole proprietorship or a partnership firm is less likely to use external credit. On the demand side, those small businesses (usually smaller than a corporation in terms of the size) are more likely to obtain funds from friends and a start-up team rather than from a bank at their initial stages. Alternatively, they are less likely to apply credit from a bank due to fear of being denied.

[Insert Panel A, B, C, D of Table 6 here]

Table 6 presents the results for Model 4. According to the results, the positive and statistically significant coefficients on the change in Incentive plan confirm that the increasing in use of incentive plans has a positive impact on the change in debt financing. Moreover, in general, the coefficients on the Change Total Assets are also positive and statistically

significant in the change in debt financing. This result is also consistent with the previous discussion: a large firm tends to use more external credit. In short, to summarize the results of Table 5 and Table 6, empirical evidence supports that increasing in professionalization has greater effects on the increase in new venture debt financing.

5.5. Robustness Tests

To check for multicollinearity, we calculate the variance inflation factor (VIFs) for the variables. In general, multicollinearity does not introduce a bias if the VIF for each variable is 10 or lower. In this study, multicollinearity is not a significant concern since the average value of VIFs is 2.7.

To ensure the robustness of our results, we first replace the HR, Sales, R&D, and Finance by Personnel, and re-estimate all the models mentioned above. Based on Tables 3-6, the results after this change remain consistent. Second, we re-estimate the model based on the pooled sample using all four surveys in two different ways. In order to capture the year effect, we replace the three year dummies to a continuous variable represented by numerical values, one, two, three, and four. Although the results are not reported, there is no qualitative change in the results. We then control the fixed and random effects by re-estimating the models and regressions in the panel setting. According to the results presented in Table 7, the use of Incentive Plan is significantly and positively related to debt financing of new ventures in all these cases. According to the Hausman test, fixed effects should be used.

6. Conclusions and limitations

Debt financing is a major source of capital for small firms and new venture. However, it is also a challenge for them to obtain debt financing because of the information asymmetry problems. Solving the agency problems between borrowers and lenders definitely plays a key role in reducing the informational asymmetry problem in small business and new venture debt financing. Eventually, it will help them improve their access to external financing. Signaling as one of solutions to the agency problem is considered as the most effective approach to reduce the information asymmetry because it sends indirect information to convince the lender about the firm's credibility (Shleifer and Vishny, 1997; Zahra and Filatotchev, 2004). Professionalization may be viewed as a strong signal sent to the potential capital suppliers. According to the agency theory, this positive signal may help firm owner succeed in applying for financing. According to Golembiewski (1983), a professionalized firm is much related to a good performance. On the supply side, such firm is more likely to obtain debt financing because a firm with good performance reduces the default risk. On the demand side, a firm with good performance tends to use debt to keep ownership control, to reduce the costs, and to signals the firm's high quality. In this way, professionalization tends to increase the use of debt financing.

In this study, we follow Hellmann and Puri (2002) and use the compensation plan, measured by a dummy variable, whose value is one if a business offers a compensation plan in any forms among stock options, bonus plans, and/or paid vacation plans, and zero if the firm does not offer any of these compensation plans, as a proxy for professionalization. We find that the adoption of incentive plan is positively and significantly related to the use and amount of new venture debt financing. These findings are robust according to various empirical models.

This study contributes to the literature in three ways. First, it is one of early studies investigate the relationship between professionalization and new venture debt financing. Second, this study also adds to the agency theory literature by showing that the solution to owner-manager agency problem may also help mitigate the creditor-shareholder conflicts. According to the literature, the theoretical link between owner-manager and shareholder-creditor agency problem has not been well explored. To the best of our knowledge, there are only two paper address the theoretical link between these two different types of

agency problems but with opposite conclusions. Based on the empirical study, Brander and Poitevin (1992) suggest that managerial compensation contracts, as a means of aligning the interests of owners and manager, can also mitigate the agency conflict between shareholders and creditors. However, Brau (2002) has an opposite view by implying that solutions to owner-manager conflicts do not significant alleviate the creditor-shareholder conflicts on small business lending. Our study contributes to the new venture financing literature by confirming the Brander and Poitevin's (1992) view. Third, our findings also provide important implications for new ventures, potential investors, and researchers. New ventures that are professionalized are more likely to successfully raise capital through debt financing. For potential investors, understanding professionalization as a signal can help them make financing decisions. This study also helps academics better understand the role of professionalization, which can lead to further research in this field.

Our study is subject to several limitations. First, the data set contains a small portion of unusable values, such as 25+, to indicate the highest value of a certain variable. To ensure the accuracy, we cannot change 25+ to a continuous variable 25, and therefore treat them as missing values. The second limitation is that all financial variables are in ordinal forms, which prevent the construction to other variables, such as ratios or sums. The third limitation is that we cannot tell whether the debt financing variables employed in our study are interpreted from the supply side or from the demand side. As a consequence, we have to take both sides into consideration for the analysis. The fourth limitation is that our data set does not contain any information about the cost of debt. According to the economic theory, the price and the quantity should be determined simultaneously. The use of debt in our study is equivalent to the quantity; however, the unavailability of the information about the cost not only prevents us from measuring the price but also leads to a potential omitted variable issue. Even though it is generally accepted that using panel data may help resolve this issue, it may not provide us with a clearer picture of the equilibrium. Last, none of variables in our data set can be used as a proxy for geographical regions, and therefore, we cannot take into account the effects of different bankrupt laws and regulations in different states on debt financing.

References

Akerlof, G. A. (1970). The market for "lemons": quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, 84(3), 488-500.

Ballou, J., Barton, T., DesRoches, D., Potter, F., Zhao, Z., Santos, B., & Sebastian, J. (2007). Kauffman Firm Survey (KFS) baseline methodology report. Available at SSRN: http://ssrn.com/abstract=1024045

Bar-Isaac, H. (2003). Reputation and survival: learning in a dynamic signaling model. *The Review of Economic Studies*, 70, 231-251.

Berger, A. N., & Udell, G. F. (1995). Relationship lending and lines of credit in small firm finance. *The Journal of Business*, 68(3), 351-381.

Berger, A. N., & Udell, G. F. (1998). The economics of small business finance: the roles of private equity and debt markets in the financial growth cycle. *Journal of Banking and Finance*, 22, 613- 673.

Berger, A. N., & Udell, G. F. (2002). Small business credit availability and relationship lending: the importance of bank organizational structure. *The Economic Journal*, 112(477), 32-53.

Bigel, K. S. (2000). The ethical orientation of financial planners who are engaged in investment activities: a comparison of United States practitioners based on professionalization and compensation sources. *Journal of Business Ethics*, 28(4), 323- 337.

Blanchflower, D. G., Levine, P. B., & Zimmerman, D. J. (2003). Discrimination in the small business credit market. *The Review of Economics and Statistics*, 85(4), 930-943.

Binks, M. R., & Ennew, C. T. (1996). Growing firms and credit constraint. *Small Business Economies*, 8, 17-25.

Boot, A. W. (2000). Relationship banking: what do we know? *Journal of Financial Intermediation* 9, 7-25.

Brander, J. A., & Poitevin, M. (1992). Managerial compensation and the agency costs of debt finance. *Managerial and Decision Economics*, 13(1), 55-64.

Brau, J. C. (2002). Do banks price owner-manager agency costs? An examination of small business borrowing. *Journal of Small Business Management*, 40(4), 273-286.

Cassar, G. (2004). The financing of business start-ups. *Journal of Business Venturing*, 19, 261-283.

Chittenden, F., Hall, G., & Hutchinson, P. (1996). Small firm growth, access to capital market and financial structure: Review of issues and an empirical investigation. *Small Business*

Economics, 8, 59-67.

Cavalluzzo, K. S., Cavalluzzo, L. C., & Wolken, J. D. (2002). Competition, small business financing, and discrimination: evidence from a new survey. *The Journal of Business*, 75(4), 641-679.

Chittoor, R., & Das, R. (2007). Professionalization of management and succession performance: a vital linkage. *Family Business Review*, 20(1), 65-79.

Coleman, S. (2000). Access to capital and terms of credit: A comparison of men- and women-owned small businesses. *Journal of Small Business Management*, 38(3), 37-52.

Core, J. E., & Guay, W. R. (2001). Stock option plans for non-executive employees. *Journal of Financial Economics*, 61, 253-287.

Cumming, D. J., & Johan, S. A. (2010). Venture capital investment duration. *Journal of Small Business Management*, 48(2), 228-257.

Cumming, D. J., & MacIntosh, J.G. (2004). Law, finance and Canadian venture capital cycle. in Waddell, C., ed. *Financial Services and Public Policy*. (McGill Queen's University Press). Available at: http://mqup.mcgill.ca/book.php?bookid=1848

Deaton, J. B. (2004). A theoretical framework for examining the role of third-party certifiers. *Food Control*, 15, 615-619.

De Graaf, J. (2009). H. R. 2564: the paid vacation act of 2009-rebutting the opposition. Available at: http://www.timeday.org/pdf/PAID%20VACATION%20ACT%20OF%202009.pdf

Depken, C. A., Nguyen, G. X., & Sarkar, S. K. (2005). Agency costs, executive compensation and external monitoring: a stochastic frontier approach. Available at: http://belkcollegeofbusiness.uncc.edu/cdepken/P/agencycosts.pdf

Diamond, D. W. (1991). Monitoring and reputation: the choice between bank loans and directly placed debt. *Journal of Political Economy*, 99(4), 689-721.

Diamond, D. W. (1991). Debt maturity structure and liquidity risk. *The Quarterly Journal of Economics*, 106, 709-737.

Dicke, T. S. (1996). The small business tradition. *Magazine of History*, 11(1), 11-16.

Dyer, W. G. (1989). Integrating professional management into a family owned business. *Family Business Review*, 11(3), 221-235.

Elyasiani, E., & Goldberg, L. G. (2004). Relationship lending: a survey of the literature.

Journal of Economics and Business, 56, 315-330.

Empson, L. (1999). Lessons from professional services firms. *The Financial Times*, Nov. 8.

Fama, E. F. (1980). Agency problems and the theory of the firm. *The Journal of Political Economy*, 88(2), 288-307.

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics*, 26(2), 301-325.

Golembiewski, R. T. (1983). Professionalization, performance, and protectionism: a contingency view. *Public Productivity Review*, 7(3), 251-268.

Graham, J. R. (2000). How big are the tax benefits of debt? *Journal of Finance*, 55(5), 1901-1941.

Grossman, S. J., & Hart, O. D. (1988). One share-one vote and the market for corporate control. *Journal of Financial Economics*, 20, 175-202.

Guiso, L. (2003). Small business finance in Italy. EIB Papers, 8, 120-149.

Hall, R. H. (1968). Professionalization and bureaucratization. *American Sociological Review*, 33(1), 92-104.

Hand, J. R.M. (2008). Give everyone a prize? Employee stock options in private venture - backed firms. *Journal of Business Venturing*, 23, 385-404.

Harris, M., & Raviv, A. (1991). The theory of capital structure. *The Journal of Finance*, 46(1), 297-355.

Hellmann, T., & Puri, M. (2002). Venture capital and the professionalization of start-up firms: empirical evidence. *The Journal of Finance*, 57(1), 169-197.

Hrebiniak, L. G. (1976). Size and staff professionalization. *The Academy of Management Journal*, 19(4), 662-669.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305-360.

Jensen, M. C., & Smith, C. W. (1985). Stockholder, manager, and creditor interests: applications of agency theory. Harvard University Press, December 2000. Available at SSRN: http://ssrn.com/abstract=173461

La Porta, R., Lopez de Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. *Journal of Financial Economics*, 58, 3-27.

Lippert, R. L., & Moore, W. T. (1995). Monitoring versus bonding: shareholder rights and management compensation. *Financial Management*, 24(3), 54-62.

Lissy, W. E. (1992). Currents in compensation and benefits. *Compensation Benefits Review*, 24, 9 -17.

Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation. *Journal of Financial Economics*, 20, 293-315.

Myers, S. C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, 5, 147-175.

Myers, S. C. (1984). The capital structure puzzle. *The Journal of Finance*, 39(3), 575-592.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. J*ournal of Financial Economics*, 13, 187-221.

Newcomer, M. (1955). Professionalization of leadership in the big business corporation. *The Business History Review*, 29(1), 54-63.

Oyer, P., & Schaefer, S. (2005). Why do some firms give stock options to all employees? An empirical examination of alternative theories. *Journal of Financial Economics*, 76, 99-133.

Petersen, M. A., & Rajan, R. G. (1994). The benefits of lending relationship: evidence from small business data. *The Journal of Finance*, 49(1), 3-37.

Riding, A. L., & Swift, C. S. (1990). Women business owners and terms of credit: Some empirical findings of the Canadian experience. *Journal of Business Venturing*, 5, 327-340.

Robb, A., Ballou, J., DesRoches, D., Potter, F., Zhao, Z., Reedy, E. J. (2009). An overview of the Kauffman Firm Survey: results from the 2004-2007 data. Available at SSRN: http://ssrn.com/abstract=1456380

Robb, A. M., Fairlie, R. W., & Robinson, D. T. (2009). Financial capital injections among new black and white business ventures: evidence from the Kauffman Firm Survey. Working paper.

Robb, A., & Robinson, D. T. (2008). The capital structure decisions of new firms: Second in a series of reports using data from the Kauffman Firm Survey. Available at SSRN: http://ssrn.com/abstract=1292552

Ross, S. A. (1977). The determination of financial structure: the incentive-signaling approach. *Journal of Economics*, 8(1), 23-40.

Shieh, S. (1993). Incentives for cost-reducing investment in a signaling model of product quality. *The Rand Journal of Economics*, 24(3), 466-477.

Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *The Journal of Political Economy*, 94(3), 461-488.

Shleifer, A., & Vishny, R. W. (1989). Management entrenchment: the case of manager-specific investments. *Journal of Financial Economics*, 25, 123-139.

Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *The Journal of Finance*, 52(2), 737-783.

Smith, C. W., & Watts, R. L. (1982). Incentive and tax effects of executive compensation plans. *Australian Journal of Management*, 7(2), 139-157.

Sobel, J. (1985). A theory of credibility. *The Review of Economic Studies*, 52(4), 557-573.

Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355-374.

Starbuck, W. H. (1992). Learning by knowledge-intensive firms. *Journal of Management Studies*, 29(6), 713-740.

Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *The American Economic Review*, 71(3), 393-410.

Stover, R. D. (1996). Third-party certification in new issues of corporate tax-exempt bonds: standby letter of credit and bond rating interaction. *Financial Management*, 25(1), 62-70.

Teece, D. J. (2003). Expert talent and the design of (professional services) firms. *Industrial and Corporate Change*, 12(4), 895-916.

Ueda, M. (2004). Banks versus venture capital: project evaluation, screening, and expropriation. *Journal of Finance*, 59(2), 601-621.

Weinberg, J. A. (1994). Firm size, finance, and investment. *Federal Reserve Bank of Richmond Economic Quarterly*, 80(1), 19-40.

Wu, Z., Hedges, P. L., & Zhang, S. (2007). Effects of concentrated ownership and owner management on small business debt financing. *Journal of Small Business Management*, 45(4), 422-437.

Zahra, S. A., & Filatotchev, I. (2004). Governance of the entrepreneurial threshold firm: a knowledge-based perspective. *Journal of Management Studies*, 41(5), 885-897.

Zider, B. (1998). How venture capital works. *Harvard Business Review*, 76(6), 131-139.

Table 1. Descriptive Statistics

The dependent variables used in our study are Business Bank Loan, Business Loan, Total Debt, and Total Business Debt, which indicates whether the business mainly focuses on a commercial bank as a source of financing, whether the business obtains debt from either a commercial bank or a non-bank financial institution, the total amount of business loans and personal loans for business-related purposes, and the total amount of business loans due to business-related purposes, respectively.

Incentive plan as the only independent variable measures whether the business offers a compensation plan in any forms among bonus plans, vacation paid plans, or stock option plans.

In terms of the firm characteristics, the continuous variables HR, Sales, R&D, and Finance capture the percentage of employees or owners who are responsible for human resources, sales, research & development, and the financial administrative, respectively. The variable Personnel measures how many persons are responsible for all the above areas together. Firm size is measured by the Total Assets. Three dummy variables are used to represent a firm that is owned and managed by the same person (Sole Owner), a legal entity separates from their owners that may engage in own rights and liabilities (Corporation), and a type of business in which two or more owners share the profits or losses (Partnership). Industry sectors are divided into eight categories and presented by seven dummy variables based on the North American Industry Classification System. The owner's characteristic as the other control variables include owner's work experience (Work Exp), educational level measured by three dummy variables (High School, Post Secondary, and Post Graduate), whether majorities of owners are member of visible minorities (Minority), whether the firm is owned by male (Male), and the owner's age (Age Owner).

The above variables are used repetitively in the pooled sample using all four surveys and all four subsamples based on each survey. Panel A shows the summary statistics of the pooled sample. Panel B shows the descriptive statistics of the Baseline Survey (Year 2004), the First Follow-up (Year 2005), the Second Follow-up (Year 2006), and the Third Follow-up (Year 2007), respectively.

Panel C shows the means and the percentages of increasing/decreasing/no changing cases for the change in major variables used in our study. The changes occur between the First Follow-up and the Baseline Survey, between the Second Follow-up and the First Follow-up, between the Third Follow-up and the Second Follow-up, and within the pooled sample.

Panel A. Descriptive Statistics of the Variables Used in the Pooled Sample

Variable	Mean	S. D.	Min	Max	N
Dependent Variables					
Business Bank Loan	0.065	0.246	0	1	15168
Business Loan	0.078	0.269	0	1	15201
Total Debt	2.995	3.173	0	9	15271
Total Business Debt	1.481	2.681	0	9	15241
Independent Variable					
Stock Option	0.081	0.272	0	1	10591
Bonus Plan	0.242	0.428	0	1	10589
Paid Vacation	0.364	0.481	0	1	10587
Incentive Plan	0.453	0.498	0	1	10599
Firm Characteristics					
HR	0.201	0.267	0	1	9932
Sales	0.322	0.300	0	1	9714
R&D	0.262	0.301	0	1	9837
Finance	0.307	0.284	0	1	9928
Personnel	1.105	0.972	0	4	9592
Total Assets	5.752	2.548	0	9	15210
Sole Owner	0.317	0.465	0	1	15366
Corporation	0.311	0.463	0	1	15366
Partnership	0.045	0.207	0	1	15366
Firm Owner Attributes					
Work Exp	13.250	9.886	0	39	14622
High School	0.085	0.280	0	1	15247
Post Secondary	0.587	0.492	0	1	15247
Post Graduate	0.311	0.463	0	1	15247
Minority	0.137	0.344	0	1	15234
Male	0.798	0.402	0	1	15281
Age Owner	3.705	1.122	1	7	15256

Panel B. Descriptive Statistics of the Variables Used in the Four Subsamples

	Baseline Survey			First Follow-up			Second Follow-up			Third Follow-up		
Variable	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N	Mean	S. D.	N
Dependent Variables												
Business Bank Loan	0.067	0.250	4889	0.061	0.240	3968	0.061	0.240	3392	0.069	0.254	2919
Business Loan	0.082	0.274	4895	0.074	0.262	3980	0.073	0.260	3402	0.085	0.279	2924
Total Debt	2.993	3.150	4919	2.977	3.162	3995	3.086	3.206	3419	2.919	3.189	2938
Total Business Debt	1.318	2.583	4916	1.514	2.681	3988	1.603	2.753	3406	1.566	2.747	2931
Independent Variable												
Stock Option	0.088	0.284	3051	0.085	0.279	2923	0.073	0.260	2572	0.073	0.260	2045
Bonus Plan	0.191	0.393	3053	0.246	0.431	2917	0.269	0.443	2573	0.281	0.449	2046
Paid Vacation	0.292	0.455	3049	0.365	0.482	2922	0.395	0.489	2571	0.429	0.495	2045
Incentive Plan	0.397	0.489	3053	0.456	0.498	2923	0.472	0.499	2576	0.506	0.500	2047
Firm Characteristics												
HR	0.273	0.315	2892	0.172	0.239	2755	0.173	0.237	2371	0.170	0.236	1914
Sales	0.384	0.328	2836	0.302	0.284	2690	0.289	0.281	2328	0.297	0.284	1860
R&D	0.340	0.334	2876	0.239	0.280	2726	0.227	0.276	2348	0.220	0.282	1887
Finance	0.379	0.311	2886	0.281	0.269	2753	0.274	0.260	2377	0.277	0.272	1912
Personnel	1.392	1.082	2817	0.996	0.897	2649	0.979	0.890	2289	0.978	0.900	1837
Total Assets	5.241	2.692	4915	5.910	2.425	3994	6.046	2.432	3385	6.057	2.462	2916
Sole Owner	0.332	0.471	4928	0.318	0.466	3998	0.303	0.460	3469	0.307	0.461	2971
Corporation	0.301	0.459	4928	0.308	0.462	3998	0.319	0.466	3469	0.325	0.469	2971
Partnership	0.050	0.217	4928	0.046	0.210	3998	0.042	0.201	3469	0.039	0.195	2971
Firm Owner Attributes												
Work Exp	12.880	9.853	4739	13.264	9.937	3829	13.464	9.870	3258	13.612	9.876	2796
High School	0.088	0.284	4918	0.082	0.274	3996	0.084	0.277	3420	0.088	0.284	2913
Post Secondary	0.592	0.492	4918	0.584	0.493	3996	0.580	0.494	3420	0.595	0.491	2913
Post Graduate	0.302	0.459	4918	0.318	0.466	3996	0.324	0.468	3420	0.302	0.459	2913
Minority	0.148	0.355	4884	0.134	0.340	3991	0.133	0.340	3418	0.128	0.334	2941
Male	0.792	0.406	4921	0.794	0.404	3998	0.804	0.397	3421	0.805	0.396	2941
Age Owner	3.653	1.122	4904	3.713	1.122	3993	3.723	1.121	3418	3.758	1.123	2941

Panel C. Descriptive Statistics of the Changes in Variables

	The First Follow-up minus the Baseline Survey			The Second Follow-up minus the First Follow-up			The Third Follow-up minus the Second Follow-up			Change in the Pooled Sample		
Variable	Mean	%	N	Mean	%	N	Mean	%	N	Mean	%	N
Dependent Variables												
Business Bank Loan↑	1	0.038	149	1	0.039	126	1	0.043	118	1	0.040	393
Business Bank Loan↓	-1	0.042	167	-1	0.036	117	-1	0.034	94	-1	0.038	378
Business Bank Loan =	0	0.920	3624	0	0.926	3019	0	0.922	2513	0	0.922	9156
Business Loan ↑	1	0.047	185	1	0.047	153	1	0.053	145	1	0.048	483
Business Loan ↓	-1	0.054	212	-1	0.045	149	-1	0.041	112	-1	0.047	473
Business Bank Loan =	0	0.900	3558	0	0.908	2978	0	0.906	2478	0	0.904	9014
Total Debt↑	3.490	0.277	1105	3.347	0.277	914	3.182	0.238	655	3.366	0.266	2674
Total Debt↓	-3.505	0.286	1142	-3.347	0.243	802	-3.416	0.250	688	-3.434	0.262	2632
Total Debt=	0	0.437	1742	0	0.481	1588	0	0.513	1414	0	0.472	4744
Total Business Debt↑	4.285	0.192	765	4.145	0.192	633	4.263	0.176	483	4.232	0.188	1881
Total Business Debt↓	-4.172	0.152	605	-4.345	0.163	537	-4.255	0.177	486	-4.254	0.163	1628
Total Business Debt =	0	0.656	2611	0	0.644	2119	0	0.647	1776	0	0.650	6506
Independent Variable												
Incentive plan↑	1	0.148	331	1	0.089	194	1	0.086	153	1	0.110	678
Incentive plan↓	-1	0.068	151	-1	0.078	170	-1	0.073	130	-1	0.073	451
Incentive plan =	0	0.784	1749	0	0.832	1806	0	0.840	1487	0	0.817	5042
Control Variable												
Total Assets↑	2.502	0.409	1632	2.063	0.288	942	2.093	0.253	690	2.289	0.327	3264
Total Assets↓	-2.291	0.194	774	-2.194	0.238	777	-2.206	0.235	642	-2.232	0.220	2193
Total Assets=	0	0.397	1581	0	0.474	1552	0	0.512	1396	0	0.454	4529

Panel D. T-Test for Differences between Mean Values

Panel D shows the results for testing differences between mean values of the dependent variables, the independent variables, and some of the major control variables in all possible time intervals. The two-tailed paired t-test is employed in the analysis and the hypothesis testing is as follows:

Ho: mean difference =0

Ha: mean difference ≠0

Mean Difference						
	The First follow-up minus the Baseline	The Second follow-up minus the Baseline	The Third follow-up minus the Baseline	The Second follow-up minus the First follow-up	The Third follow-up minus the First follow-up	The Third follow-up minus the Second Follow-up
Business Bank Loan	-0.005	-0.002	0.007	0.003	0.008	0.009*
Business Loan	-0.007	-0.006	0.008	0.001	0.010	0.012**
Total Debt	-0.037	0.106*	-0.020	0.113**	0.026	-0.096*
Total Business Debt	0.189***	0.310***	0.282***	0.088*	0.060	-0.003
Stock Option	0.001	-0.014*	-0.013*	-0.015**	-0.010	0.002
Bonus Plan	0.062***	0.098***	0.097***	0.025***	0.025**	-0.004
Paid Vacation	0.100***	0.132***	0.160***	0.024***	0.048***	0.020**
Incentive Plan	0.081***	0.104***	0.121***	0.011	0.030***	0.013
HR	-0.093***	-0.093***	-0.103***	0.001	-0.001	-0.006
Sales	-0.078***	-0.086***	-0.075***	-0.014*	-0.005	0.009
R&D	-0.101***	-0.103***	-0.108***	-0.016**	-0.023***	-0.009
Finance	-0.091***	-0.092***	-0.089***	-0.010	-0.005	0.002
Personnel	-0.370***	-0.377***	-0.378***	-0.034	-0.019	-0.004
Total Assets	0.579***	0.685***	0.716***	0.073**	0.085**	0.010

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Table 2. Univariate Analysis

Based on the pooled sample using all four surveys, column two to five of Table 2 show the pairwise correlation coefficients between each dependent variable and the individual explanatory variables used in this study. The pairwise correlation coefficients between the independent variable and the control variables are presented in column six of Table 2.

	Business Bank Loan	Business Loan	Total Debt	Total Business Debt	Incentive Plan
Stock Option	0.007	0.031***	0.009	0.035***	0.326***
Bonus Plan	0.092***	0.107***	0.115***	0.147***	0.621***
Paid Vacation	0.142***	0.160***	0.192***	0.227***	0.831***
Incentive Plan	0.129***	0.151***	0.181***	0.206***	1
HR	-0.016	-0.015	-0.009	-0.046***	-0.041***
Sales	-0.038***	-0.044***	-0.032***	-0.063***	-0.116***
R&D	-0.050***	-0.050***	-0.058***	-0.093***	-0.123***
Finance	-0.043***	-0.051***	-0.072***	-0.104***	-0.195***
Personnel	-0.044***	-0.047***	-0.050***	-0.088***	-0.137***
Total Assets	0.176***	0.187***	0.340***	0.296***	0.325***
Sole Owner	-0.096***	-0.098***	-0.146***	-0.157***	-0.207***
Corporation	0.076***	0.080***	0.137***	0.146***	0.245***
Partnership	0.003	0.008	-0.007	-0.004	-0.079***
Work Exp	0.006	0.017**	-0.031***	0.031***	0.139***
High School	0.018**	0.014*	-0.008	-0.018**	-0.050***
Post Secondary	-0.009	-0.017**	0.008	-0.010	-0.048***
Post Graduate	-0.004	0.005	-0.008	0.018**	0.081***
Minority	-0.036***	-0.043***	-0.026***	-0.041***	-0.045***
Male	0.051***	0.059***	0.079***	0.091***	0.132***
Age Owner	0.006	0.012	-0.009	0.016*	0.001

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Table 3. The Effects of Professionalization on New Venture Debt Financing (Baseline Model)

Results presented in this table are based on Model 1. The dependent variables in Model 1 are Business Bank Loan, Business Loan, Total Debt, and Total Business Debt, which indicates whether the business uses debt only from a commercial bank; or from either a commercial bank or a non-bank financial institution, the total amount of debt in terms of both business loans and personal loans, and the total amount of business loans only, respectively.

The results based on the former two dependent variables (Business Bank Loan, Business Loan) are shown in Panel A. Model 1 is estimated repetitively using one year full sample data (the Third Follow-up) as well as the pooled full sample data using all four surveys. Logit models are employed for these two versions model analysis.

The results based on the later two dependent variables (Total Debt and Total Business Debt) are presented in Panel B. Again, Model 1 is estimated repetitively using one year full sample data (the Third Follow-up) as well as the pooled full sample data using all four surveys. Ordinary least squares (OLS) regressions are used since we treat these two ordinal dependent variables as continuous variables.

The results based on the former two dependent variables (Business Bank Loan, Business Loan) are shown in Panel C. Model 1 is estimated repetitively using one year sub-sample data (the Third Follow-up) as well as the pooled sub-sample data using all four surveys by excluding all the sole proprietorship cases. Logit models are used since both dependent variables are dummy variables.

The results based on the later two dependent variables (Total Debt and Total Business Debt) are presented in Panel D. Again, Model 1 is estimated repetitively using one year sub-sample data (the third Follow-up) as well as the pooled sub-sample data using all four surveys by excluding all the sole proprietorship cases. Ordinary least squares (OLS) regressions are used since we treat these two ordinal dependent variables as continuous variables.

For the later two dependent variable Total Debt and Total Business Debt, one-sided tobit models are adopted because they are censored at zero. The results are presented in Panel E. Again, Model 1 is estimated repetitively using one year full sample data (the Third Follow-up) as well as the pooled full sample data using all four surveys.

As Panel E, Panel F shows the corresponding results based on the sub-sample data by excluding all the sole proprietorship cases.

Panel A. The Effects of Professionalization on the Use of Debt (Full Sample): Logit Models

	Third Follow-up				Pooled Sample Using All Four Surveys			
Dep. Var.	Business Bank Loan		Business Loan		Business Bank Loan		Business Loan	
Incentive Plan	0.773***	0.799***	0.880***	0.882***	0.382***	0.398***	0.495***	0.514***
	(3.490)	(3.650)	(4.300)	(4.390)	(4.150)	(4.360)	(5.790)	(6.060)
Personnel		-0.260**		-0.182		-0.142***		-0.141***
		(-2.050)		(-1.640)		(-2.910)		(-3.130)
HR	0.233		0.202		0.080		0.207	
	(0.380)		(0.360)		(0.360)		(0.990)	
Sales	-0.466		-0.376		-0.118		-0.195	
	(-0.860)		(-0.770)		(-0.530)		(-0.940)	
R&D	0.037		0.011		-0.464**		-0.361*	
	(0.070)		(0.020)		(-2.100)		(-1.760)	
Finance	-0.699		-0.526		-0.030		-0.175	
	(-1.160)		(-0.980)		(-0.130)		(-0.790)	
Total Assets	0.245***	0.246***	0.240***	0.241***	0.400***	0.402***	0.370***	0.372***
	(3.330)	(3.340)	(3.640)	(3.680)	(11.210)	(11.290)	(11.730)	(11.830)
Sole Owner	-0.689**	-0.681**	-0.523*	-0.536*	-0.518***	-0.512***	-0.443***	-0.438***
	(-2.140)	(-2.130)	(-1.830)	(-1.890)	(-3.660)	(-3.630)	(-3.440)	(-3.410)
Corporation	-0.156	-0.154	-0.147	-0.162	0.068	0.064	0.049	0.045
	(-0.750)	(-0.740)	(-0.760)	(-0.840)	(0.720)	(0.690)	(0.560)	(0.530)
Partnership	0.163	0.133	0.264	0.204	-0.073	-0.084	-0.004	-0.019
	(0.350)	(0.290)	(0.640)	(0.490)	(-0.390)	(-0.450)	(-0.020)	(-0.110)
Work Exp	-0.013	-0.012	-0.012	-0.013	-0.008*	-0.007	-0.004	-0.004
	(-1.200)	(-1.150)	(-1.240)	(-1.330)	(-1.730)	(-1.640)	(-1.050)	(-0.990)
High School	-0.294	-0.269	-1.039*	-1.022*	-0.202	-0.206	-0.349	-0.346
	(-0.410)	(-0.380)	(-1.800)	(-1.770)	(-0.680)	(-0.700)	(-1.270)	(-1.260)
Post Secondary	-0.454	-0.444	-1.249**	-1.231**	-0.707***	-0.717***	-0.793***	-0.794***
	(-0.690)	(-0.670)	(-2.400)	(-2.370)	(-2.590)	(-2.640)	(-3.140)	(-3.150)
Post Graduate	-0.999	-0.989	-1.431***	-1.429***	-0.923***	-0.933***	-0.883***	-0.887***
	(-1.450)	(-1.440)	(-2.630)	(-2.640)	(-3.270)	(-3.320)	(-3.390)	(-3.410)
Minority	-0.219	-0.189	-0.325	-0.223	-0.347**	-0.351**	-0.404***	-0.384***
	(-0.690)	(-0.600)	(-1.100)	(-0.770)	(-2.360)	(-2.390)	(-2.940)	(-2.820)
Male	0.606*	0.617*	0.569*	0.597*	0.081	0.081	0.054	0.058
	(1.730)	(1.760)	(1.830)	(1.920)	(0.620)	(0.620)	(0.450)	(0.490)
Age Owner	-0.042	-0.056	-0.036	-0.036	-0.072*	-0.075*	-0.062	-0.065*
	(-0.430)	(-0.580)	(-0.410)	(-0.400)	(-1.690)	(-1.760)	(-1.570)	(-1.650)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-4.136***	-4.170***	-3.296***	-3.381***	-4.585***	-4.586***	-4.186***	-4.218***
	(-4.180)	(-4.220)	(-3.970)	(-4.090)	(-10.610)	(-10.650)	(-10.670)	(-10.790)
N	1713	1726	1717	1730	9006	9052	9032	9078
LR value	97.860***	97.500***	109.170***	107.040***	479.850***	479.340***	549.080***	547.020***
Pseudo R2	0.103	0.102	0.100	0.097	0.100	0.099	0.100	0.100

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel B. The Effects of Professionalization on the Amount of Debt (Full Sample): OLS Regressions

	Third Follow-up				Pooled Sample Using All Four Surveys			
Dep. Var.	Total Debt		Total Business Debt		Total Debt		Total Business Debt	
Incentive Plan	0.810***	0.858***	0.877***	0.911***	0.465***	0.498***	0.483***	0.507***
	(4.890)	(5.250)	(5.890)	(6.230)	(6.530)	(7.060)	(7.620)	(8.080)
Personnel		-0.104		-0.247***		-0.103***		-0.199***
		(-1.270)		(-3.360)		(-3.080)		(-6.660)
HR	0.071		-0.249		0.173		-0.017	
	(0.180)		(-0.690)		(1.120)		(-0.120)	
Sales	0.171		0.474		0.279*		0.176	
	(0.460)		(1.440)		(1.770)		(1.250)	
R&D	0.414		-0.320		-0.252		-0.443***	
	(1.110)		(-0.960)		(-1.630)		(-3.220)	
Finance	-1.071***		-0.909***		-0.586***		-0.511***	
	(-2.750)		(-2.600)		(-3.500)		(-3.430)	
Total Assets	0.342***	0.339***	0.217***	0.213***	0.375***	0.376***	0.245***	0.246***
	(9.810)	(9.780)	(6.910)	(6.830)	(26.260)	(26.450)	(19.250)	(19.420)
Sole Owner	0.001	-0.012	-0.295	-0.315*	-0.319***	-0.311***	-0.343***	-0.345***
	(0.010)	(-0.060)	(-1.540)	(-1.650)	(-3.470)	(-3.390)	(-4.180)	(-4.230)
Corporation	0.234	0.209	0.192	0.167	0.209***	0.200***	0.230***	0.222***
	(1.340)	(1.200)	(1.220)	(1.070)	(2.750)	(2.640)	(3.400)	(3.300)
Partnership	-0.251	-0.324	0.070	0.005	-0.341**	-0.367***	-0.178	-0.200
	(-0.720)	(-0.940)	(0.220)	(0.020)	(-2.450)	(-2.660)	(-1.440)	(-1.630)
Work Exp	-0.017**	-0.017**	-0.001	-0.002	-0.018***	-0.018***	-0.002	-0.002
	(-2.070)	(-2.090)	(-0.100)	(-0.250)	(-5.140)	(-5.130)	(-0.790)	(-0.770)
High School	-0.893	-0.841	-1.494**	-1.426**	-0.155	-0.134	-0.631**	-0.616**
	(-1.380)	(-1.300)	(-2.580)	(-2.470)	(-0.540)	(-0.460)	(-2.460)	(-2.400)
Post Secondary	-0.846	-0.794	-1.011*	-0.938*	-0.208	-0.182	-0.613**	-0.596**
	(-1.410)	(-1.330)	(-1.880)	(-1.750)	(-0.780)	(-0.680)	(-2.580)	(-2.510)
Post Graduate	-0.945	-0.857	-1.280**	-1.171**	-0.408	-0.383	-0.735***	-0.721***
	(-1.540)	(-1.400)	(-2.330)	(-2.140)	(-1.500)	(-1.410)	(-3.030)	(-2.980)
Minority	-0.254	-0.234	-0.058	-0.056	-0.016	-0.014	-0.127	-0.128
	(-1.160)	(-1.070)	(-0.300)	(-0.290)	(-0.170)	(-0.150)	(-1.510)	(-1.520)
Male	-0.078	-0.110	0.250	0.216	-0.079	-0.083	0.007	0.001
	(-0.370)	(-0.530)	(1.330)	(1.160)	(-0.890)	(-0.940)	(0.080)	(0.010)
Age Owner	-0.027	-0.030	-0.069	-0.062	-0.052	-0.055*	-0.067**	-0.068**
	(-0.360)	(-0.410)	(-1.030)	(-0.930)	(-1.600)	(-1.720)	(-2.330)	(-2.360)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	1.776**	1.698**	1.241*	1.202*	1.229***	1.188***	0.882***	0.856***
	(2.420)	(2.320)	(1.890)	(1.830)	(3.770)	(3.650)	(3.040)	(2.960)
N	1724	1737	1721	1734	9055	9101	9047	9093
F-value	11.990***	13.510***	9.830***	11.030***	54.180***	60.790***	38.890***	43.580***
Adj R-squared	0.128	0.126	0.106	0.104	0.133	0.131	0.098	0.097

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel C. The Effects of Professionalization on the Use of Debt (Sub-Samples): Logit Models

	Third Follow-up				Pooled Sample Using All Four Surveys			
Dep. Var.	Business Bank Loan		Business Loan		Business Bank Loan		Business Loan	
Incentive Plan	0.781***	0.805***	0.928***	0.923***	0.336***	0.349***	0.471***	0.487***
	(3.260)	(3.400)	(4.120)	(4.190)	(3.410)	(3.580)	(5.110)	(5.340)
Personnel		-0.314**		-0.206*		-0.147***		-0.135***
		(-2.260)		(-1.710)		(-2.870)		(-2.840)
HR	-0.048		-0.012		-0.036		0.106	
	(-0.070)		(-0.020)		(-0.150)		(0.480)	
Sales	-0.419		-0.322		-0.064		-0.124	
	(-0.720)		(-0.620)		(-0.270)		(-0.570)	
R&D	0.065		-0.041		-0.466**		-0.384*	
	(0.110)		(-0.080)		(-2.020)		(-1.790)	
Finance	-0.759		-0.461		-0.006		-0.112	
	(-1.170)		(-0.800)		(-0.020)		(-0.480)	
Total Assets	0.251***	0.251***	0.234***	0.236***	0.389***	0.391***	0.358***	0.360***
	(3.070)	(3.070)	(3.200)	(3.240)	(10.150)	(10.210)	(10.510)	(10.600)
Sole Owner	Dropped							
Corporation	-0.157	-0.159	-0.144	-0.160	0.078	0.073	0.057	0.052
	(-0.750)	(-0.770)	(-0.750)	(-0.840)	(0.840)	(0.780)	(0.660)	(0.600)
Partnership	0.162	0.146	0.284	0.234	-0.071	-0.084	-0.001	-0.018
	(0.350)	(0.310)	(0.680)	(0.570)	(-0.370)	(-0.450)	(-0.010)	(-0.110)
Work Exp	-0.021*	-0.020*	-0.019*	-0.020**	-0.013***	-0.013***	-0.010**	-0.010**
	(-1.830)	(-1.820)	(-1.840)	(-1.980)	(-2.710)	(-2.680)	(-2.170)	(-2.160)
High School	-0.276	-0.232	-0.749	-0.716	-0.131	-0.141	-0.238	-0.245
	(-0.310)	(-0.260)	(-0.950)	(-0.910)	(-0.370)	(-0.410)	(-0.710)	(-0.740)
Post Secondary	-0.568	-0.531	-1.055	-1.016	-0.656**	-0.674**	-0.693**	-0.704**
	(-0.680)	(-0.640)	(-1.430)	(-1.380)	(-2.020)	(-2.080)	(-2.250)	(-2.290)
Post Graduate	-1.137	-1.097	-1.230	-1.208	-0.869***	-0.884***	-0.782**	-0.796**
	(-1.330)	(-1.280)	(-1.640)	(-1.610)	(-2.620)	(-2.670)	(-2.490)	(-2.540)
Minority	-0.169	-0.146	-0.187	-0.082	-0.461***	-0.470***	-0.545***	-0.525***
	(-0.490)	(-0.430)	(-0.590)	(-0.270)	(-2.760)	(-2.810)	(-3.440)	(-3.340)
Male	0.551	0.559	0.505	0.536	0.105	0.105	0.066	0.071
	(1.410)	(1.430)	(1.430)	(1.520)	(0.720)	(0.720)	(0.490)	(0.520)
Age Owner	-0.021	-0.035	-0.002	0.003	-0.053	-0.053	-0.047	-0.048
	(-0.210)	(-0.340)	(-0.020)	(0.040)	(-1.170)	(-1.190)	(-1.110)	(-1.140)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-3.851***	-3.893***	-3.352***	-3.452***	-4.498***	-4.478***	-4.155***	-4.164***
	(-3.270)	(-3.320)	(-3.200)	(-3.330)	(-9.280)	(-9.280)	(-9.290)	(-9.350)
N	1343	1352	1346	1355	7105	7146	7128	7169
LR value	75.430***	75.380***	78.270***	76.620***	357.610***	357.680***	404.720***	403.650***
Pseudo R2	0.092	0.092	0.085	0.082	0.087	0.087	0.087	0.087

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel D. The Effects of Professionalization on the Amount of Debt (Sub-Samples): OLS Regressions

	Third Follow-up				Pooled Sample Using All Four Surveys			
Dep. Var.	Total Debt		Total Business Debt		Total Debt		Total Business Debt	
Incentive Plan	0.978***	1.040***	0.945***	0.990***	0.416***	0.455***	0.455***	0.481***
	(5.140)	(5.550)	(5.390)	(5.750)	(5.140)	(5.680)	(6.180)	(6.620)
Personnel		-0.131		-0.255***		-0.139***		-0.214***
		(-1.440)		(-3.050)		(-3.690)		(-6.280)
HR	0.202		-0.252		0.128		-0.066	
	(0.440)		(-0.600)		(0.740)		(-0.420)	
Sales	0.075		0.648*		0.291		0.220	
	(0.180)		(1.650)		(1.620)		(1.340)	
R&D	0.357		-0.458		-0.261		-0.490***	
	(0.850)		(-1.190)		(-1.510)		(-3.110)	
Finance	-1.135**		-0.992**		-0.690***		-0.531***	
	(-2.570)		(-2.450)		(-3.640)		(-3.090)	
Total Assets	0.314***	0.313***	0.232***	0.228***	0.369***	0.371***	0.262***	0.263***
	(7.580)	(7.590)	(6.050)	(5.990)	(21.940)	(22.090)	(17.090)	(17.250)
Sole Owner	Dropped							
Corporation	0.187	0.161	0.168	0.141	0.215***	0.204***	0.229***	0.219***
	(1.040)	(0.900)	(1.020)	(0.860)	(2.750)	(2.610)	(3.210)	(3.100)
Partnership	-0.216	-0.290	0.114	0.048	-0.362**	-0.389***	-0.180	-0.204
	(-0.600)	(-0.820)	(0.350)	(0.150)	(-2.530)	(-2.740)	(-1.390)	(-1.580)
Work Exp	-0.022**	-0.023**	-0.001	-0.002	-0.022***	-0.021***	-0.003	-0.003
	(-2.360)	(-2.420)	(-0.070)	(-0.260)	(-5.310)	(-5.320)	(-0.710)	(-0.720)
High School	-0.580	-0.461	-1.592*	-1.521*	-0.255	-0.255	-0.766**	-0.765**
	(-0.590)	(-0.470)	(-1.750)	(-1.670)	(-0.640)	(-0.640)	(-2.120)	(-2.120)
Post Secondary	-0.369	-0.261	-0.902	-0.817	-0.350	-0.338	-0.779**	-0.772**
	(-0.390)	(-0.280)	(-1.040)	(-0.940)	(-0.940)	(-0.910)	(-2.310)	(-2.290)
Post Graduate	-0.558	-0.426	-1.258	-1.130	-0.602	-0.592	-0.907***	-0.903***
	(-0.590)	(-0.450)	(-1.440)	(-1.300)	(-1.600)	(-1.580)	(-2.660)	(-2.650)
Minority	-0.285	-0.248	-0.066	-0.062	-0.155	-0.150	-0.263**	-0.264**
	(-1.080)	(-0.950)	(-0.270)	(-0.260)	(-1.340)	(-1.300)	(-2.500)	(-2.520)
Male	-0.023	-0.062	0.227	0.169	-0.059	-0.067	0.007	-0.008
	(-0.090)	(-0.240)	(0.940)	(0.700)	(-0.530)	(-0.600)	(0.070)	(-0.080)
Age Owner	-0.021	-0.027	-0.073	-0.062	-0.051	-0.054	-0.081**	-0.080**
	(-0.240)	(-0.320)	(-0.910)	(-0.790)	(-1.330)	(-1.430)	(-2.370)	(-2.350)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	1.479	1.344	1.127	1.081	1.465***	1.437***	1.022***	1.010***
	(1.380	(1.260)	(1.140)	(1.100)	(3.410)	(3.350)	(2.620)	(2.600)
N	1363	1373	1361	1371	7145	7186	7139	7180
F-value	9.850***	11.180***	7.780***	8.640***	40.160***	45.290***	29.620***	33.330***
Adj R-squared	0.125	0.124	0.099	0.096	0.121	0.119	0.091	0.090

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel E. The Effects of Professionalization on the Amount of Debt (Full Sample): Tobit Models

	Third Follow-up				Pooled Sample Using All Four Surveys			
Dep. Var.	Total Debt		Total Business Debt		Total Debt		Total Business Debt	
Incentive Plan	1.248***	1.315***	2.494***	2.581***	0.713***	0.757***	1.252***	1.308***
	(4.410)	(4.720)	(5.500)	(5.770)	(5.950)	(6.380)	(6.410)	(6.770)
Personnel		-0.117		-0.735***		-0.125**		-0.580***
		(-0.820)		(-3.030)		(-2.170)		(-5.910)
HR	0.197		-0.772		0.217		-0.215	
	(0.280)		(-0.640)		(0.820)		(-0.480)	
Sales	0.206		1.134		0.444		0.621	
	(0.320)		(1.090)		(1.630)		(1.360)	
R&D	0.743		-0.801		-0.309		-1.285***	
	(1.140)		(-0.740)		(-1.160)		(-2.860)	
Finance	-1.617**		-2.634**		-0.821***		-1.492***	
	(-2.330)		(-2.280)		(-2.840)		(-3.040)	
Total Assets	0.634***	0.634***	0.716***	0.710***	0.652***	0.656***	0.878***	0.884***
	(9.610)	(9.640)	(6.390)	(6.340)	(24.950)	(25.140)	(18.500)	(18.660)
Sole Owner	0.241	0.232	-0.716	-0.829	-0.326**	-0.314**	-0.808***	-0.833***
	(0.650)	(0.630)	(-1.170)	(-1.360)	(-2.070)	(-1.990)	(-3.040)	(-3.150)
Corporation	0.454	0.423	0.550	0.454	0.371***	0.358***	0.666***	0.633***
	(1.520)	(1.420)	(1.170)	(0.970)	(2.890)	(2.800)	(3.200)	(3.060)
Partnership	-0.499	-0.622	0.212	-0.050	-0.494**	-0.530**	-0.668	-0.720*
	(-0.800)	(-1.000)	(0.210)	(-0.050)	(-2.050)	(-2.220)	(-1.640)	(-1.780)
Work Exp	-0.035**	-0.036**	-0.013	-0.017	-0.033***	-0.033***	-0.013	-0.013
	(-2.440)	(-2.520)	(-0.560)	(-0.760)	(-5.500)	(-5.520)	(-1.300)	(-1.290)
High School	-1.579	-1.492	-4.838***	-4.718***	-0.393	-0.356	-2.168***	-2.136***
	(-1.470)	(-1.390)	(-2.950)	(-2.880)	(-0.820)	(-0.740)	(-2.880)	(-2.840)
Post Secondary	-1.601	-1.533	-3.336**	-3.166**	-0.468	-0.427	-1.988***	-1.948***
	(-1.620)	(-1.550)	(-2.260)	(-2.140)	(-1.060)	(-0.960)	(-2.890)	(-2.840)
Post Graduate	-1.745*	-1.618	-4.275***	-3.986***	-0.836*	-0.798*	-2.407***	-2.377***
	(-1.720)	(-1.600)	(-2.810)	(-2.620)	(-1.850)	(-1.770)	(-3.420)	(-3.390)
Minority	-0.535	-0.502	-0.137	-0.090	0.043	0.047	-0.324	-0.312
	(-1.390)	(-1.310)	(-0.220)	(-0.150)	(0.260)	(0.290)	(-1.190)	(-1.150)
Male	-0.155	-0.225	0.743	0.614	-0.167	-0.178	-0.151	-0.177
	(-0.420)	(-0.620)	(1.230)	(1.020)	(-1.090)	(-1.170)	(-0.590)	(-0.700)
Age Owner	-0.053	-0.052	-0.264	-0.232	-0.117**	-0.123**	-0.303***	-0.305***
	(-0.400)	(-0.410)	(-1.260)	(-1.130)	(-2.130)	(-2.230)	(-3.320)	(-3.350)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-0.928	-1.062	-4.248**	-4.376**	-1.599***	-1.657***	-5.825***	-5.880***
	(-0.750)	(-0.860)	(-2.200)	(-2.280)	(-2.910)	(-3.020)	(-6.590)	(-6.670)
N	1724	1737	1721	1734	9055	9101	9047	9093
LR value	240.860***	236.740***	191.010***	186.480***	1193.750***	1189.300***	889.710***	883.540***
Pseudo R2	0.033	0.032	0.039	0.038	0.031	0.031	0.035	0.035

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel F. The Effects of Professionalization on the Amount of Debt (Sub-Samples): Tobit Models

	Third Follow-up				Pooled Sample Using All Four Surveys			
Dep. Var.	Total Debt		Total Business Debt		Total Debt		Total Business Debt	
Incentive Plan	1.533***	1.624***	2.613***	2.708***	0.625***	0.679***	1.134***	1.199***
	(4.740)	(5.090)	(5.090)	(5.360)	(4.620)	(5.070)	(5.190)	(5.540)
Personnel		-0.168		-0.785***		-0.193***		-0.645***
		(-1.050)		(-2.930)		(-3.010)		(-5.940)
HR	0.416		-0.888		0.136		-0.356	
	(0.520)		(-0.650)		(0.460)		(-0.710)	
Sales	-0.006		1.430		0.478		0.687	
	(-0.010)		(1.210)		(1.560)		(1.350)	
R&D	0.642		-1.338		-0.344		-1.471***	
	(0.880)		(-1.130)		(-1.160)		(-2.980)	
Finance	-1.669**		-2.592**		-1.013***		-1.532***	
	(-2.130)		(-2.010)		(-3.120)		(-2.810)	
Total Assets	0.590***	0.594***	0.731***	0.732***	0.639***	0.643***	0.907***	0.914***
	(7.540)	(7.590)	(5.560)	(5.570)	(20.950)	(21.100)	(16.480)	(16.640)
Sole Owner	Dropped							
Corporation	0.380	0.348	0.514	0.416	0.387***	0.370***	0.702***	0.664***
	(1.250)	(1.140)	(1.080)	(0.880)	(2.960)	(2.830)	(3.310)	(3.150)
Partnership	-0.419	-0.542	0.303	0.046	-0.527**	-0.566**	-0.690*	-0.746*
	(-0.660)	(-0.860)	(0.300)	(0.050)	(-2.150)	(-2.320)	(-1.660)	(-1.810)
Work Exp	-0.044***	-0.045***	-0.014	-0.021	-0.038***	-0.038***	-0.015	-0.015
	(-2.680)	(-2.800)	(-0.540)	(-0.810)	(-5.610)	(-5.650)	(-1.320)	(-1.350)
High School	-0.872	-0.672	-4.138*	-3.968	-0.521	-0.516	-1.992**	-2.001**
	(-0.530)	(-0.410)	(-1.670)	(-1.600)	(-0.810)	(-0.800)	(-2.000)	(-2.010)
Post Secondary	-0.620	-0.447	-2.071	-1.841	-0.681	-0.658	-1.942**	-1.925**
	(-0.390)	(-0.280)	(-0.890)	(-0.790)	(-1.130)	(-1.100)	(-2.120)	(-2.100)
Post Graduate	-0.876	-0.668	-3.185	-2.822	-1.097*	-1.078*	-2.333**	-2.326**
	(-0.550)	(-0.420)	(-1.360)	(-1.200)	(-1.810)	(-1.770)	(-2.510)	(-2.510)
Minority	-0.567	-0.502	-0.258	-0.199	-0.241	-0.231	-0.788**	-0.774**
	(-1.240)	(-1.100)	(-0.360)	(-0.280)	(-1.240)	(-1.180)	(-2.420)	(-2.390)
Male	0.057	-0.038	0.664	0.468	-0.108	-0.127	-0.100	-0.159
	(0.130)	(-0.080)	(0.900)	(0.640)	(-0.570)	(-0.680)	(-0.320)	(-0.520)
Age Owner	-0.061	-0.067	-0.295	-0.242	-0.131**	-0.137**	-0.360***	-0.355***
	(-0.410)	(-0.450)	(-1.250)	(-1.040)	(-2.060)	(-2.160)	(-3.460)	(-3.430)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-1.742	-1.979	-5.280*	-5.505**	-1.204*	-1.246*	-5.846***	-5.861***
	(-0.960)	(-1.090)	(-1.920)	(-2.010)	(-1.710)	(-1.770)	(-5.240)	(-5.270)
N	1363	1373	1361	1371	7145	7186	7139	7180
LR value	194.030***	190.890***	149.790***	144.480***	884.330***	880.590***	688.780***	682.460***
Pseudo R2	0.034	0.033	0.037	0.035	0.029	0.029	0.033	0.033

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Table 4. The Effects of Professionalization on New Venture Debt Financing (Two-stage Model)

Results presented in Panel A are based on Model 2.1. Incentive plan is a dummy dependent variable, whose value is one if the business offers compensation plans to its employees or owners, and zero otherwise. Therefore, the model is estimated using the probit model. Panel B and C of this table present the results of Models 2.2. In Panel B, probit models are used since Business Bank Loan and Business Loan are dummy dependent variables. In Panel C, Ordinary least squares (OLS) regressions are employed since we treat Total Debt and Total Business Debt as continuous variables. In short, the full sample data in the Third Follow-up and the pooled sample using all four surveys are used repetitively for estimating the coefficients on Model 2.1 and 2.2.

Panel A. The Effects of Personnel on the Use of Incentive Plan (The First Stage): Probit Models

	Third Follow-up (Full Sample)		Pooled Sample Using All Four Surveys (Full Sample)	
Dep. Var.	Incentive Plan		Incentive Plan	
Personnel		-0.133***		-0.138***
		(-3.590)		(-9.080)
HR	0.799***		0.554***	
	(4.220)		(7.660)	
Sales	0.200		0.025	
	(1.190)		(0.340)	
R&D	-0.284		-0.176**	
	(-1.630)		(-2.450)	
Finance	-1.124***		-0.870***	
	(-6.150)		(-11.090)	
Total Assets	0.197***	0.200***	0.158***	0.161***
	(11.680)	(11.960)	(23.380)	(23.980)
Sole Owner	-0.121	-0.092	-0.318***	-0.304***
	(-1.250)	(-0.960)	(-7.520)	(-7.260)
Corporation	0.455***	0.472***	0.413***	0.424***
	(5.910)	(6.230)	(12.480)	(12.950)
Partnership	-0.230	-0.249	-0.210***	-0.223***
	(-1.410)	(-1.570)	(-3.220)	(-3.470)
Work Exp	0.017***	0.019***	0.017***	0.017***
	(4.680)	(5.140)	(10.450)	(11.080)
High School	0.024	0.066	-0.005	0.003
	(0.080)	(0.230)	(-0.040)	(0.030)
Post Secondary	0.041	0.097	0.077	0.097
	(0.150)	(0.370)	(0.630)	(0.810)
Post Graduate	0.177	0.253	0.207*	0.225*
	(0.650)	(0.940)	(1.680)	(1.840)
Minority	-0.097	-0.086	0.012	0.022
	(-0.970)	(-0.870)	(0.290)	(0.510)
Male	0.112	0.103	0.196***	0.197***
	(1.180)	(1.100)	(4.740)	(4.820)
Age Owner	-0.116***	-0.129***	-0.113***	-0.124***
	(-3.430)	(-3.920)	(-7.700)	(-8.530)
Industry Dummies	Yes	Yes	Yes	Yes
Year Dummies	---	---	Yes	Yes
Constant	-1.407***	-1.502***	-1.158***	-1.215***
	(-4.230)	(-4.590)	(-7.790)	(-8.260)
N	1725	1738	9059	9105
LR value	436.410***	394.540***	1933.740***	1792.910***
Pseudo R2	0.183	0.164	0.157	0.145

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel B. The Effects of Professionalization on the Use of Debt (The Second Stage): Probit Models

	Third Follow-up (Full sample)				Pooled Sample Using All Four Surveys (Full sample)			
Dep. Var.	Business Bank Loan		Business Loan		Business Bank Loan		Business Loan	
Invmills	0.539	0.773	0.070	0.306	0.767**	0.672*	0.677**	0.632*
	(0.590)	(0.770)	(0.080)	(0.330)	(2.160)	(1.810)	(2.020)	(1.810)
Personnel		-0.203**		-0.133		-0.147***		-0.150***
		(-2.000)		(-1.430)		(-3.580)		(-3.870)
HR	0.516		0.275		0.374**		0.420**	
	(0.900)		(0.510)		(2.110)		(2.510)	
Sales	-0.065		-0.086		-0.044		-0.085	
	(-0.230)		(-0.320)		(-0.400)		(-0.810)	
R&D	-0.160		-0.090		-0.354***		-0.309***	
	(-0.510)		(-0.310)		(-3.110)		(-2.850)	
Finance	-0.904		-0.512		-0.528**		-0.573**	
	(-1.230)		(-0.750)		(-2.200)		(-2.520)	
Total Assets	0.207	0.244*	0.149	0.184	0.265***	0.257***	0.249***	0.247***
	(1.610)	(1.680)	(1.240)	(1.360)	(6.220)	(5.700)	(6.240)	(5.870)
Sole Owner	-0.464***	-0.462***	-0.352**	-0.368**	-0.494***	-0.463***	-0.442***	-0.424***
	(-2.660)	(-2.740)	(-2.180)	(-2.370)	(-4.520)	(-4.200)	(-4.300)	(-4.110)
Corporation	0.101	0.178	0.002	0.064	0.233**	0.215**	0.216**	0.210**
	(0.390)	(0.610)	(0.010)	(0.230)	(2.360)	(2.040)	(2.300)	(2.120)
Partnership	-0.106	-0.187	0.049	-0.034	-0.187*	-0.188*	-0.133	-0.145
	(-0.380)	(-0.640)	(0.190)	(-0.120)	(-1.730)	(-1.690)	(-1.310)	(-1.400)
Work Exp	0.003	0.007	-0.001	0.002	0.006	0.006	0.007*	0.007
	(0.310)	(0.600)	(-0.100)	(0.160)	(1.330)	(1.160)	(1.660)	(1.580)
High School	-0.188	-0.139	-0.590*	-0.557*	-0.145	-0.142	-0.222	-0.212
	(-0.510)	(-0.380)	(-1.860)	(-1.750)	(-0.920)	(-0.900)	(-1.480)	(-1.410)
Post Secondary	-0.237	-0.181	-0.664**	-0.619**	-0.351**	-0.350**	-0.401***	-0.390***
	(-0.700)	(-0.530)	(-2.320)	(-2.140)	(-2.400)	(-2.390)	(-2.900)	(-2.800)
Post Graduate	-0.431	-0.344	-0.717**	-0.656**	-0.390**	-0.398**	-0.379**	-0.375**
	(-1.190)	(-0.910)	(-2.320)	(-2.010)	(-2.490)	(-2.520)	(-2.560)	(-2.510)
Minority	-0.160	-0.155	-0.196	-0.154	-0.172**	-0.171**	-0.208***	-0.193***
	(-0.980)	(-0.960)	(-1.260)	(-1.010)	(-2.430)	(-2.400)	(-3.080)	(-2.880)
Male	---	---	---	---	---	---	---	---
Age Owner	-0.078	-0.113	-0.044	-0.066	-0.100***	-0.100***	-0.093***	-0.097***
	(-0.930)	(-1.170)	(-0.550)	(-0.730)	(-2.890)	(-2.650)	(-2.830)	(-2.710)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-2.709*	-3.204*	-1.505	-1.993	-3.266***	-3.147***	-2.958***	-2.935***
	(-1.670)	(-1.720)	(-1.000)	(-1.150)	(-5.700)	(-5.170)	(-5.490)	(-5.150)
N	1713	1726	1717	1730	9007	9053	9034	9080
LR value	78.980***	77.460***	83.350***	79.830***	448.750***	443.970 ***	497.330***	489.740***
Pseudo R2	0.083	0.081	0.076	0.072	0.093	0.092	0.091	0.089

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel C. The Effects of Professionalization on the Amount of Debt (The Second Stage): OLS

	Third Follow-up (Full Sample)				Pooled Sample Using All Four Surveys (Full Sample)			
Dep. Var.	Total Debt		Total Business Debt		Total Debt		Total Business Debt	
Invmills	1.168	1.480	2.815**	3.438***	1.397***	1.413***	2.305***	2.289***
	(0.940)	(1.050)	(2.510)	(2.730)	(2.890)	(2.800)	(5.360)	(5.100)
Personnel		-0.267*		-0.583***		-0.261***		-0.441***
		(-1.840)		(-4.490)		(-4.470)		(-8.490)
HR	0.929		1.557**		0.818***		1.006***	
	(1.130)		(2.120)		(3.270)		(4.510)	
Sales	0.386		0.893**		0.302*		0.206	
	(0.960)		(2.470)		(1.910)		(1.470)	
R&D	0.118		-0.924**		-0.450***		-0.750***	
	(0.270)		(-2.330)		(-2.720)		(-5.100)	
Finance	-2.263**		-3.408***		-1.578***		-2.074***	
	(-2.170)		(-3.640)		(-4.610)		(-6.800)	
Total Assets	0.558***	0.607***	0.678***	0.775***	0.560***	0.570***	0.538***	0.545***
	(3.070)	(2.940)	(4.150)	(4.170)	(9.680)	(9.270)	(10.440)	(9.960)
Sole Owner	-0.139	-0.143	-0.639***	-0.637***	-0.711***	-0.696***	-0.977***	-0.956***
	(-0.570)	(-0.600)	(-2.920)	(-3.000)	(-4.690)	(-4.570)	(-7.240)	(-7.050)
Corporation	0.677*	0.768*	1.090***	1.287***	0.636***	0.650***	0.891***	0.904***
	(1.780)	(1.770)	(3.180)	(3.300)	(4.390)	(4.250)	(6.900)	(6.640)
Partnership	-0.526	-0.679	-0.511	-0.734*	-0.593***	-0.638***	-0.581***	-0.622***
	(-1.260)	(-1.550)	(-1.360)	(-1.870)	(-3.720)	(-3.930)	(-4.090)	(-4.310)
Work Exp	0.001	0.006	0.037**	0.046***	0.001	0.002	0.027***	0.029***
	(0.040)	(0.320)	(2.550)	(2.760)	(0.090)	(0.290)	(4.620)	(4.570)
High School	-0.864	-0.747	-1.430**	-1.236**	-0.169	-0.139	-0.656**	-0.629**
	(-1.330)	(-1.150)	(-2.450)	(-2.110)	(-0.590)	(-0.480)	(-2.550)	(-2.450)
Post Secondary	-0.789	-0.648	-0.906*	-0.659	-0.129	-0.081	-0.497**	-0.448*
	(-1.310)	(-1.060)	(-1.670)	(-1.200)	(-0.480)	(-0.300)	(-2.080)	(-1.870)
Post Graduate	-0.755	-0.526	-0.901	-0.515	-0.189	-0.142	-0.402	-0.362
	(-1.190)	(-0.800)	(-1.590)	(-0.870)	(-0.680)	(-0.500)	(-1.610)	(-1.440)
Minority	-0.363	-0.349	-0.287	-0.291	-0.004	0.010	-0.110	-0.092
	(-1.530)	(-1.480)	(-1.340)	(-1.370)	(-0.040)	(0.110)	(-1.300)	(-1.090)
Male	---	---	---	---	---	---	---	---
Age Owner	-0.149	-0.195	-0.327***	-0.403***	-0.180***	-0.198***	-0.269***	-0.288***
	(-1.210)	(-1.370)	(-2.950)	(-3.160)	(-3.590)	(-3.650)	(-6.020)	(-5.960)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-0.269	-1.064	-3.428*	-4.884**	-0.888	-1.014	-2.544***	-2.644***
	(-0.120)	(-0.400)	(-1.650)	(-2.040)	(-1.110)	(-1.190)	(-3.560)	(-3.500)
N	1724	1737	1721	1734	9057	9103	9049	9095
F-value	11.350***	12.630***	8.740***	9.690***	54.850***	61.460***	39.180***	43.640***
Adj R-squared	0.120	0.113	0.090	0.090	0.129	0.128	0.095	0.094

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Table 5. Effects of Change in Professionalization on Change in New Venture Debt Financing (Model 3)

Results presented in this table are based on Model 3. The dependent variables in Model 3 are Change Business Bank Loan, Change Business Loan, Change Total Debt, and Change Total Business Debt. Each of the dependent variables is a dummy variable, whose value is one if the change is positive, and zero if the change is negative. Therefore, Model 3 is repetitively estimated using the logit models.

Panel A and Panel B of this table present the results based on the former two dependent variables Change Business Bank Loan and Change Business Loan and the later two dependent variables Change Total Debt and Change Total Business Debt, respectively. Model 3 is first estimated using full sample variable differences between the Third Follow-up and the Second Follow-up. Control variables measuring firm characteristics as well as owner characteristics in the Second Follow-up are used for this analysis. Model 3 is then estimated based on the change in the pooled full sample. The dependent variables are constructed based on the sum of changes between the adjacent time intervals. The control variables measuring firm and owner characteristics in the pooled sample using the Baseline, the First and the Second Follow-up are used for this model.

Follow the same procedure as Panel A and Panel B, Panel C and Panel D report the results based the sub-samples by excluding all the sole proprietorship cases.

Panel A. The Effects of Change in Professionalization on the Change in the Use of Debt (Full Sample)

	Third Follow-up minus Second Follow-up				Change in Pooled Sample			
Dep. Var.	Change Business Bank Loan		Change Business Loan		Change Business Bank Loan		Change Business Loan	
Change Incentive Plan	2.268***	2.255***	1.376***	1.322***	0.485**	0.529**	0.502**	0.551***
	(3.220)	(3.260)	(2.800)	(2.750)	(2.100)	(2.320)	(2.520)	(2.790)
Change Total Assets	-0.062	-0.098	-0.023	-0.016	0.154***	0.150***	0.151***	0.149***
	(-0.450)	(-0.740)	(-0.210)	(-0.150)	(2.940)	(2.900)	(3.180)	(3.160)
Personnel		-0.737**		-0.284		-0.108		-0.071
		(-2.490)		(-1.320)		(-1.050)		(-0.790)
HR	0.752		0.213		-0.220		-0.281	
	(0.530)		(0.190)		(-0.440)		(-0.620)	
Sales	-0.422		0.330		0.219		0.311	
	(-0.380)		(0.340)		(0.410)		(0.650)	
R&D	-1.822		-1.509		0.073		0.049	
	(-1.520)		(-1.560)		(0.160)		(0.110)	
Finance	-1.145		-0.485		-0.575		-0.507	
	(-0.890)		(-0.450)		(-1.040)		(-0.990)	
Sole Owner	-2.285**	-2.210**	-1.244*	-1.128*	0.394	0.375	0.327	0.312
	(-2.410)	(-2.330)	(-1.830)	(-1.700)	(1.200)	(1.150)	(1.130)	(1.090)
Corporation	-0.251	-0.262	-0.025	0.095	-0.083	-0.081	-0.083	-0.064
	(-0.520)	(-0.550)	(-0.060)	(0.250)	(-0.400)	(-0.390)	(-0.450)	(-0.350)
Partnership	1.006	0.957	0.888	0.890	-0.855*	-0.852*	-0.511	-0.517
	(0.780)	(0.750)	(0.950)	(0.960)	(-1.660)	(-1.660)	(-1.260)	(-1.280)
Work Exp	0.014	0.014	-0.008	-0.008	0.003	0.002	0.000	0.000
	(0.630)	(0.610)	(-0.400)	(-0.470)	(0.270)	(0.220)	(-0.050)	(-0.050)
High School	-1.059	-1.198	-0.659	-0.665	0.380	0.367	0.129	0.092
	(-0.700)	(-0.790)	(-0.530)	(-0.540)	(0.510)	(0.490)	(0.200)	(0.140)
Post Secondary	0.694	0.451	0.177	0.180	0.560	0.586	0.291	0.303
	(0.490)	(0.330)	(0.160)	(0.160)	(0.800)	(0.830)	(0.480)	(0.500)
Post Graduate	-0.642	-0.876	-0.352	-0.367	0.660	0.673	0.294	0.287
	(-0.440)	(-0.610)	(-0.300)	(-0.310)	(0.910)	(0.930)	(0.470)	(0.460)
Minority	0.598	0.528	0.388	0.375	0.037	0.038	0.214	0.208
	(0.740)	(0.670)	(0.640)	(0.630)	(0.120)	(0.120)	(0.770)	(0.750)
Male	0.863	0.739	0.821	0.607	0.017	0.033	0.109	0.096
	(1.030)	(0.910)	(1.320)	(1.010)	(0.060)	(0.110)	(0.410)	(0.370)
Age Owner	0.198	0.222	0.012	0.061	-0.081	-0.076	-0.047	-0.036
	(0.870)	(1.030)	(0.060)	(0.330)	(-0.820)	(-0.780)	(-0.520)	(-0.410)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-1.241	-0.840	-0.322	-0.278	0.008	-0.055	0.128	0.089
	(-0.620)	(-0.440)	(-0.210)	(-0.180)	(0.010)	(-0.060)	(0.170)	(0.120)
N	137	137	171	172	514	516	627	631
LR Value	36.620**	34.740**	23.870	20.170	31.510	31.540*	35.290*	35.190**
Pseudo R2	0.195	0.185	0.102	0.086	0.044	0.044	0.041	0.040

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel B. The Effects of Change in Professionalization on the Change in the Amount of Debt (Full Sample)

	Third Follow-up minus Second Follow-up				Change in Pooled Sample			
Dep. Var.	Change Total Debt		Change Total Business Debt		Change Total Debt		Change Total Business Debt	
Change Incentive Plan	0.270	0.267	0.311	0.317	0.066	0.058	0.114	0.109
	(1.530)	(1.520)	(1.420)	(1.460)	(0.780)	(0.690)	(1.110)	(1.070)
Change Total Assets	0.142***	0.143***	0.148***	0.145***	0.139***	0.139***	0.103***	0.102***
	(3.470)	(3.520)	(2.960)	(2.920)	(7.390)	(7.410)	(4.370)	(4.320)
Personnel		-0.025		0.117		0.051		0.080
		(-0.290)		(1.140)		(1.290)		(1.640)
HR	-0.358		0.115		-0.010		0.146	
	(-0.940)		(0.230)		(-0.060)		(0.640)	
Sales	-0.227		0.810		0.197		0.317	
	(-0.530)		(1.600)		(1.030)		(1.320)	
R&D	0.259		0.275		0.201		0.268	
	(0.650)		(0.580)		(1.110)		(1.190)	
Finance	0.097		-0.831		-0.222		-0.422	
	(0.210)		(-1.560)		(-1.100)		(-1.630)	
Sole Owner	-0.069	-0.069	-0.045	-0.092	-0.019	-0.028	0.222	0.200
	(-0.310)	(-0.310)	(-0.170)	(-0.350)	(-0.160)	(-0.250)	(1.580)	(1.440)
Corporation	-0.248	-0.235	-0.100	-0.100	-0.017	-0.013	0.090	0.083
	(-1.440)	(-1.370)	(-0.520)	(-0.530)	(-0.190)	(-0.150)	(0.890)	(0.830)
Partnership	-0.349	-0.323	0.612	0.579	-0.058	-0.061	-0.107	-0.126
	(-0.960)	(-0.900)	(1.350)	(1.290)	(-0.350)	(-0.380)	(-0.520)	(-0.620)
Work Exp	0.000	0.000	-0.003	-0.003	0.005	0.005	0.000	0.001
	(-0.030)	(-0.020)	(-0.320)	(-0.310)	(1.130)	(1.290)	(0.040)	(0.180)
High School	-1.647*	-1.652*	-1.581*	-1.548*	-0.114	-0.115	-0.307	-0.333
	(-1.900)	(-1.910)	(-1.710)	(-1.690)	(-0.320)	(-0.320)	(-0.780)	(-0.850)
Post Secondary	-1.404*	-1.409*	-0.885	-0.840	-0.113	-0.101	0.005	0.007
	(-1.710)	(-1.710)	(-1.020)	(-0.980)	(-0.340)	(-0.300)	(0.010)	(0.020)
Post Graduate	-1.275	-1.273	-1.067	-1.032	-0.116	-0.109	0.024	0.021
	(-1.540)	(-1.530)	(-1.220)	(-1.180)	(-0.340)	(-0.320)	(0.060)	(0.060)
Minority	-0.302	-0.310	0.025	-0.007	0.126	0.122	0.051	0.042
	(-1.330)	(-1.360)	(0.100)	(-0.030)	(1.080)	(1.040)	(0.360)	(0.300)
Male	-0.059	-0.085	0.542**	0.521**	-0.036	-0.047	0.281**	0.265**
	(-0.260)	(-0.390)	(2.070)	(2.010)	(-0.330)	(-0.430)	(2.150)	(2.030)
Age Owner	-0.180**	-0.177**	-0.086	-0.080	-0.005	-0.003	-0.057	-0.056
	(-2.350)	(-2.330)	(-0.980)	(-0.920)	(-0.120)	(-0.070)	(-1.250)	(-1.240)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	2.152**	2.140**	0.796	0.748	0.025	0.005	-0.056	-0.060
	(2.390)	(2.370)	(0.820)	(0.770)	(0.070)	(0.010)	(-0.130)	(-0.140)
N	779	780	605	606	2956	2974	2144	2155
LR Value	35.260**	33.670**	32.630*	28.760*	85.130***	83.890***	61.810***	56.790***
Pseudo R2	0.033	0.031	0.039	0.034	0.021	0.020	0.021	0.019

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel C. The Effects of Change in Professionalization on the Change in the Use of Debt (Sub-Samples)

	Third Follow-up minus Second Follow-up				Change in Pooled Sample			
Dep. Var.	Change Business Bank Loan		Change Business Loan		Change Business Bank Loan		Change Business Loan	
Change Incentive Plan	2.562***	2.532***	1.298**	1.254**	0.586**	0.635**	0.520**	0.576***
	(2.970)	(3.030)	(2.420)	(2.390)	(2.330)	(2.550)	(2.410)	(2.710)
Change	-0.145	-0.172	-0.072	-0.063	0.133**	0.129**	0.130**	0.127**
Total Assets	(-0.920)	(-1.140)	(-0.570)	(-0.510)	(2.400)	(2.370)	(2.580)	(2.550)
Personnel		-0.792**		-0.343		-0.135		-0.092
		(-2.500)		(-1.510)		(-1.250)		(-0.970)
HR	-0.094		0.049		-0.319		-0.350	
	(-0.060)		(0.040)		(-0.600)		(-0.740)	
Sales	0.067		0.665		0.101		0.198	
	(0.060)		(0.650)		(0.180)		(0.390)	
R&D	-1.815		-1.591		0.177		0.191	
	(-1.500)		(-1.580)		(0.360)		(0.420)	
Finance	-1.200		-0.836		-0.580		-0.566	
	(-0.930)		(-0.770)		(-0.990)		(-1.050)	
Sole Owner	Dropped							
Corporation	-0.180	-0.200	-0.005	0.106	-0.101	-0.105	-0.088	-0.073
	(-0.370)	(-0.410)	(-0.010)	(0.270)	(-0.480)	(-0.510)	(-0.470)	(-0.390)
Partnership	1.213	1.166	0.906	0.909	-0.924*	-0.916*	-0.546	-0.549
	(0.930)	(0.900)	(0.970)	(0.980)	(-1.780)	(-1.770)	(-1.340)	(-1.360)
Work Exp	0.029	0.026	-0.003	-0.005	0.001	0.001	-0.001	0.000
	(1.220)	(1.110)	(-0.150)	(-0.270)	(0.110)	(0.060)	(-0.080)	(-0.050)
High School	-1.368	-1.485	-0.791	-0.814	-0.007	-0.049	-0.080	-0.134
	(-0.830)	(-0.920)	(-0.500)	(-0.520)	(-0.010)	(-0.060)	(-0.100)	(-0.180)
Post Secondary	0.235	0.058	0.133	0.123	0.063	0.061	0.023	0.018
	(0.150)	(0.040)	(0.090)	(0.080)	(0.080)	(0.070)	(0.030)	(0.030)
Post Graduate	-1.069	-1.249	-0.414	-0.432	0.134	0.133	0.000	-0.014
	(-0.670)	(-0.790)	(-0.270)	(-0.280)	(0.160)	(0.160)	(0.000)	(-0.020)
Minority	0.371	0.332	0.568	0.558	0.034	0.032	0.334	0.325
	(0.420)	(0.390)	(0.840)	(0.840)	(0.090)	(0.090)	(1.050)	(1.020)
Male	0.739	0.635	0.393	0.136	0.111	0.118	0.184	0.159
	(0.790)	(0.690)	(0.550)	(0.200)	(0.320)	(0.340)	(0.610)	(0.530)
Age Owner	0.081	0.138	-0.014	0.056	-0.049	-0.047	-0.012	-0.004
	(0.330)	(0.590)	(-0.070)	(0.280)	(-0.470)	(-0.460)	(-0.120)	(-0.050)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-0.303	-0.035	0.364	0.424	0.451	0.418	0.328	0.304
	(-0.140)	(-0.020)	(0.190)	(0.230)	(0.450)	(0.420)	(0.370)	(0.350)
N	125	125	153	154	455	457	551	555
LR Value	31.430*	30.070**	19.150	15.220	30.400	30.590*	32.030	31.790*
Pseudo R2	0.185	0.177	0.092	0.073	0.048	0.048	0.042	0.041

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel D. The Effects of Change in Professionalization on the Change in the Amount of Debt (Sub-Samples)

	Third Follow-up minus Second Follow-up				Change in Pooled Sample			
Dep. Var.	Change Total Debt		Change Total Business Debt		Change Total Debt		Change Total Business Debt	
Change Incentive Plan	0.636***	0.627***	0.379	0.395	0.093	0.089	0.137	0.143
	(3.000)	(2.970)	(1.500)	(1.580)	(0.980)	(0.950)	(1.220)	(1.280)
Change	0.113**	0.114**	0.102*	0.100*	0.129***	0.129***	0.081***	0.079***
Total Assets	(2.480)	(2.510)	(1.830)	(1.830)	(6.180)	(6.200)	(3.110)	(3.040)
Personnel		-0.055		0.150		0.047		0.085
		(-0.580)		(1.330)		(1.120)		(1.640)
HR	-0.258		0.137		-0.014		0.105	
	(-0.600)		(0.240)		(-0.080)		(0.430)	
Sales	0.102		1.228**		0.323		0.386	
	(0.210)		(2.160)		(1.540)		(1.470)	
R&D	0.348		0.594		0.262		0.454*	
	(0.790)		(1.150)		(1.350)		(1.900)	
Finance	-0.562		-1.489**		-0.435**		-0.641**	
	(-1.050)		(-2.390)		(-1.980)		(-2.270)	
Sole Owner	Dropped							
Corporation	-0.261	-0.262	-0.089	-0.100	-0.022	-0.021	0.088	0.076
	(-1.500)	(-1.510)	(-0.460)	(-0.530)	(-0.250)	(-0.240)	(0.860)	(0.750)
Partnership	-0.323	-0.314	0.592	0.545	-0.031	-0.047	-0.100	-0.127
	(-0.880)	(-0.870)	(1.300)	(1.220)	(-0.190)	(-0.290)	(-0.480)	(-0.620)
Work Exp	-0.006	-0.005	-0.006	-0.006	0.003	0.004	-0.001	0.000
	(-0.610)	(-0.510)	(-0.610)	(-0.600)	(0.750)	(0.960)	(-0.240)	(-0.020)
High School	-0.952	-0.934	-1.814	-1.701	-0.087	-0.079	-0.375	-0.382
	(-0.970)	(-0.960)	(-1.430)	(-1.370)	(-0.200)	(-0.180)	(-0.780)	(-0.800)
Post Secondary	-0.541	-0.524	-1.050	-0.964	0.013	0.011	-0.059	-0.055
	(-0.600)	(-0.580)	(-0.880)	(-0.820)	(0.030)	(0.030)	(-0.140)	(-0.130)
Post Graduate	-0.539	-0.516	-1.276	-1.195	-0.033	-0.037	-0.055	-0.047
	(-0.590)	(-0.570)	(-1.060)	(-1.010)	(-0.080)	(-0.090)	(-0.120)	(-0.110)
Minority	-0.534**	-0.538**	-0.112	-0.136	0.080	0.079	0.068	0.054
	(-1.990)	(-2.000)	(-0.380)	(-0.470)	(0.600)	(0.590)	(0.420)	(0.340)
Male	-0.047	-0.079	0.438	0.375	0.112	0.101	0.308**	0.282*
	(-0.170)	(-0.290)	(1.400)	(1.220)	(0.860)	(0.780)	(2.020)	(1.860)
Age Owner	-0.188**	-0.193**	-0.095	-0.089	-0.002	-0.001	-0.048	-0.051
	(-2.160)	(-2.250)	(-0.960)	(-0.920)	(-0.040)	(-0.010)	(-0.940)	(-1.010)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	1.539	1.515	1.191	1.131	-0.240	-0.252	0.016	0.017
	(1.540)	(1.530)	(0.920)	(0.890)	(-0.540)	(-0.570)	(0.030)	(0.040)
N	631	632	503	504	2457	2473	1805	1815
LR Value	36.300**	34.520**	27.570	19.740	71.270***	66.590***	50.190***	42.250***
Pseudo R2	0.042	0.040	0.040	0.028	0.021	0.019	0.020	0.017

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Table 6. Effects of Change in Professionalization on Change in New Venture Debt Financing (Model 4)

The results of Panel A to D presented in this table are based on Model 4. As Model 3, the dependent variables are Change Business Bank Loan, Change Business Loan, Change Total Debt, and Change Total Business Debt. Each of the dependent variable is a dummy, whose value is one if the change is positive, and zero if the change is negative or zero. Model 4 is estimated using the logit models repetitively.

Panel A and Panel B of this table present the results based on the former two dependent variables Change Business Bank Loan and Change Business Loan and the later two dependent variables Change Total Debt and Change Total Business Debt, respectively. Model 4 is first estimated using full sample variable differences between the Third Follow-Up and the Second Follow-Up. Control variables measuring firm characteristics as well as owner characteristics in the Second Follow-up are used for this model. Model 4 is then estimated based on the change in the pooled full sample. The dependent variables are constructed based on the sum of change between the adjacent time intervals. The control variables measuring firm and owner characteristics in the pooled sample using the Baseline, the First and the Second Follow-Up are used for this model.

Follow the same procedure as Panel A and Panel B, Panel C and Panel D report the results based the sub-samples by excluding all the sole proprietorship cases.

Panel A. The Effects of Change in Professionalization on the Increasing in the Use of Debt (Full Sample)

	Third Follow-up minus Second Follow-up				Change in Pooled Sample			
Dep. Var.	Change Business Bank Loan		Change Business Loan		Change Business Bank Loan		Change Business Loan	
Change Incentive Plan	1.086*** (3.740)	1.104*** (3.840)	1.003*** (3.900)	1.001*** (3.950)	0.455*** (3.140)	0.482*** (3.340)	0.483*** (3.650)	0.519*** (3.950)
Change Total Assets	-0.004 (-0.060)	-0.009 (-0.130)	0.009 (0.160)	0.007 (0.120)	0.062** (2.040)	0.061** (2.010)	0.057** (2.040)	0.054** (1.960)
Personnel		-0.330** (-2.100)		-0.131 (-1.030)		-0.169** (-2.330)		-0.140** (-2.150)
HR	0.977 (1.360)		0.904 (1.510)		0.380 (1.150)		0.474 (1.590)	
Sales	0.698 (1.130)		0.840 (1.550)		0.116 (0.350)		0.139 (0.460)	
R&D	-1.928** (-2.570)		-1.741*** (-2.800)		-0.459 (-1.390)		-0.491 (-1.650)	
Finance	-1.055 (-1.380)		-0.689 (-1.080)		-0.694* (-1.880)		-0.719** (-2.140)	
Sole Owner	-1.711*** (-3.110)	-1.732*** (-3.150)	-1.182*** (-2.870)	-1.194*** (-2.910)	-0.534** (-2.500)	-0.530** (-2.480)	-0.473** (-2.470)	-0.467** (-2.440)
Corporation	0.100 (0.390)	0.084 (0.330)	0.059 (0.250)	0.075 (0.320)	-0.053 (-0.370)	-0.036 (-0.250)	-0.099 (-0.750)	-0.063 (-0.480)
Partnership	-0.258 (-0.450)	-0.297 (-0.530)	-0.043 (-0.090)	-0.119 (-0.250)	-1.124*** (-2.810)	-1.139*** (-2.850)	-0.769** (-2.460)	-0.787** (-2.530)
Work Exp	-0.018 (-1.340)	-0.018 (-1.340)	-0.011 (-0.910)	-0.009 (-0.740)	-0.006 (-0.820)	-0.005 (-0.770)	-0.002 (-0.390)	-0.001 (-0.170)
High School	0.452 (0.390)	0.430 (0.380)	-0.075 (-0.090)	-0.043 (-0.050)	0.480 (0.850)	0.496 (0.880)	0.093 (0.190)	0.114 (0.240)
Post Secondary	0.264 (0.250)	0.216 (0.200)	-0.372 (-0.470)	-0.356 (-0.450)	-0.054 (-0.100)	-0.032 (-0.060)	-0.347 (-0.780)	-0.315 (-0.710)
Post Graduate	-0.569 (-0.510)	-0.696 (-0.630)	-0.739 (-0.900)	-0.811 (-1.000)	-0.295 (-0.540)	-0.293 (-0.540)	-0.492 (-1.080)	-0.494 (-1.090)
Minority	-0.125 (-0.310)	-0.130 (-0.330)	-0.181 (-0.510)	-0.188 (-0.530)	-0.083 (-0.400)	-0.090 (-0.430)	0.050 (0.270)	0.040 (0.220)
Male	1.155** (2.130)	1.151** (2.130)	0.790* (1.900)	0.638 (1.620)	0.340 (1.580)	0.344 (1.600)	0.266 (1.390)	0.243 (1.290)
Age Owner	0.032 (0.260)	0.052 (0.420)	0.010 (0.090)	0.031 (0.280)	-0.009 (-0.140)	-0.013 (-0.190)	0.006 (0.100)	0.006 (0.090)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-3.773*** (-2.990)	-3.716*** (-2.960)	-2.814*** (-2.910)	-2.750*** (-2.880)	-3.012*** (-4.760)	-3.060*** (-4.840)	-2.516*** (-4.650)	-2.576*** (-4.780)
N	1465	1469	1474	1478	5186	5211	5221	5246
LR Value	72.150***	63.230***	56.630***	44.480***	84.930***	81.280***	80.250***	73.290***
Pseudo R2	0.118	0.104	0.079	0.061	0.042	0.040	0.034	0.031

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel B. The Effects of Change in Professionalization on the Increasing in the Amount of Debt (Full Sample)

	Third Follow-up minus Second Follow-up				Change in Pooled Sample			
Dep. Var.	Change Total Debt		Change Total Business Debt		Change Total Debt		Change Total Business Debt	
Change Incentive Plan	0.225	0.219	0.313*	0.316*	0.115	0.109	0.113	0.124
	(1.490)	(1.460)	(1.930)	(1.940)	(1.600)	(1.530)	(1.460)	(1.610)
Change	0.136***	0.137***	0.092***	0.090***	0.119***	0.120***	0.052***	0.050***
Total Assets	(4.200)	(4.240)	(2.680)	(2.650)	(7.960)	(8.000)	(3.210)	(3.140)
Personnel		0.034		-0.016		0.046		-0.016
		(0.500)		(-0.210)		(1.460)		(-0.450)
HR	-0.151		0.216		0.065		0.139	
	(-0.490)		(0.630)		(0.450)		(0.860)	
Sales	-0.234		0.289		0.029		0.224	
	(-0.720)		(0.820)		(0.190)		(1.320)	
R&D	0.231		-0.044		0.174		0.083	
	(0.730)		(-0.130)		(1.190)		(0.510)	
Finance	0.258		-0.530		-0.106		-0.538***	
	(0.740)		(-1.360)		(-0.650)		(-2.920)	
Sole Owner	-0.025	-0.020	-0.246	-0.255	-0.059	-0.058	-0.055	-0.062
	(-0.140)	(-0.110)	(-1.220)	(-1.260)	(-0.620)	(-0.620)	(-0.530)	(-0.600)
Corporation	-0.019	-0.005	0.040	0.044	0.060	0.067	0.119	0.123
	(-0.130)	(-0.040)	(0.270)	(0.290)	(0.840)	(0.930)	(1.540)	(1.590)
Partnership	-0.356	-0.359	-0.161	-0.180	-0.159	-0.152	-0.395**	-0.401**
	(-1.210)	(-1.230)	(-0.520)	(-0.580)	(-1.190)	(-1.150)	(-2.470)	(-2.530)
Work Exp	-0.006	-0.007	-0.005	-0.004	-0.006	-0.005	-0.004	-0.003
	(-0.930)	(-0.960)	(-0.710)	(-0.600)	(-1.640)	(-1.480)	(-1.070)	(-0.910)
High School	-0.520	-0.539	-0.629	-0.608	0.080	0.089	-0.321	-0.319
	(-0.950)	(-0.990)	(-1.030)	(-1.000)	(0.270)	(0.300)	(-1.040)	(-1.040)
Post Secondary	-0.394	-0.409	-0.212	-0.182	0.020	0.033	-0.224	-0.203
	(-0.800)	(-0.830)	(-0.390)	(-0.340)	(0.070)	(0.120)	(-0.800)	(-0.730)
Post Graduate	-0.479	-0.490	-0.397	-0.387	-0.078	-0.073	-0.284	-0.275
	(-0.950)	(-0.970)	(-0.710)	(-0.700)	(-0.280)	(-0.260)	(-1.000)	(-0.970)
Minority	-0.174	-0.177	0.011	0.015	0.039	0.043	-0.038	-0.041
	(-0.910)	(-0.930)	(0.060)	(0.080)	(0.410)	(0.460)	(-0.360)	(-0.390)
Male	0.151	0.123	0.417**	0.393*	0.055	0.044	0.228**	0.221**
	(0.830)	(0.680)	(1.960)	(1.870)	(0.600)	(0.480)	(2.200)	(2.150)
Age Owner	-0.113*	-0.109*	-0.084	-0.085	-0.023	-0.023	-0.084**	-0.085**
	(-1.770)	(-1.720)	(-1.220)	(-1.240)	(-0.720)	(-0.720)	(-2.400)	(-2.460)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-0.447	-0.433	-1.108*	-1.136*	-1.069***	-1.094***	-1.003***	-1.039***
	(-0.780)	(-0.750)	(-1.750)	(-1.810)	(-3.400)	(-3.490)	(-3.050)	(-3.180)
N	1483	1487	1478	1482	5248	5273	5235	5260
LR Value	40.230**	39.100***	31.960	29.420*	104.440***	104.880***	74.480***	65.760***
Pseudo R2	0.024	0.023	0.022	0.020	0.017	0.017	0.014	0.012

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel C. The Effects of Change in Professionalization on the Increasing in the Use of Debt (Sub-Samples)

	Third Follow-up minus Second Follow-up				Change in Pooled Sample			
Dep. Var.	Change Business Bank Loan		Change Business Loan		Change Business Bank Loan		Change Business Loan	
Change Incentive Plan	1.018***	1.036***	0.963***	0.963***	0.444***	0.478***	0.459***	0.504***
	(3.350)	(3.450)	(3.470)	(3.530)	(2.820)	(3.040)	(3.170)	(3.510)
Change	-0.001	-0.005	0.025	0.023	0.080**	0.078**	0.075**	0.071**
Total Assets	(-0.010)	(-0.070)	(0.410)	(0.390)	(2.430)	(2.390)	(2.500)	(2.400)
Personnel		-0.333**		-0.151		-0.217***		-0.166**
		(-2.070)		(-1.140)		(-2.760)		(-2.390)
HR	0.742		0.837		0.182		0.333	
	(1.000)		(1.320)		(0.510)		(1.040)	
Sales	0.710		0.908		0.078		0.117	
	(1.120)		(1.620)		(0.220)		(0.360)	
R&D	-1.787**		-1.762***		-0.407		-0.423	
	(-2.360)		(-2.740)		(-1.160)		(-1.330)	
Finance	-1.002		-0.764		-0.727*		-0.754**	
	(-1.290)		(-1.140)		(-1.840)		(-2.100)	
Sole Owner	Dropped							
Corporation	0.099	0.081	0.076	0.095	-0.048	-0.034	-0.090	-0.056
	(0.380)	(0.310)	(0.320)	(0.400)	(-0.330)	(-0.240)	(-0.680)	(-0.430)
Partnership	-0.271	-0.319	-0.033	-0.115	-1.157***	-1.171***	-0.795**	-0.813***
	(-0.480)	(-0.560)	(-0.070)	(-0.240)	(-2.890)	(-2.920)	(-2.540)	(-2.600)
Work Exp	-0.014	-0.014	-0.010	-0.009	-0.009	-0.009	-0.007	-0.005
	(-1.020)	(-1.040)	(-0.850)	(-0.740)	(-1.240)	(-1.210)	(-0.960)	(-0.750)
High School	0.453	0.387	0.714	0.706	0.603	0.612	0.261	0.273
	(0.390)	(0.330)	(0.620)	(0.620)	(0.930)	(0.940)	(0.450)	(0.470)
Post Secondary	0.143	0.058	0.314	0.308	-0.034	-0.015	-0.203	-0.177
	(0.130)	(0.050)	(0.290)	(0.290)	(-0.050)	(-0.020)	(-0.380)	(-0.330)
Post Graduate	-0.724	-0.880	-0.083	-0.180	-0.338	-0.337	-0.436	-0.442
	(-0.650)	(-0.790)	(-0.080)	(-0.160)	(-0.540)	(-0.540)	(-0.790)	(-0.800)
Minority	-0.210	-0.212	-0.156	-0.164	-0.220	-0.225	-0.033	-0.043
	(-0.500)	(-0.500)	(-0.420)	(-0.440)	(-0.900)	(-0.920)	(-0.160)	(-0.210)
Male	1.314**	1.313**	0.726	0.539	0.417*	0.422*	0.319	0.288
	(2.140)	(2.130)	(1.620)	(1.290)	(1.650)	(1.680)	(1.440)	(1.320)
Age Owner	0.013	0.037	0.042	0.071	0.032	0.030	0.058	0.058
	(0.100)	(0.280)	(0.350)	(0.620)	(0.450)	(0.420)	(0.890)	(0.890)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-3.707***	-3.630***	-3.460***	-3.368***	-3.035***	-3.079***	-2.698***	-2.749***
	(-2.840)	(-2.810)	(-2.830)	(-2.780)	(-4.230)	(-4.290)	(-4.250)	(-4.350)
N	1188	1192	1195	1199	4282	4305	4313	4336
LR Value	52.590***	45.530***	41.900***	30.270**	86.110***	84.450***	77.900***	73.210***
Pseudo R2	0.095	0.082	0.066	0.047	0.049	0.048	0.039	0.036

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Panel D. The Effects of Change in Professionalization on the Increasing in the Amount of Debt (Sub-sample)

	Third Follow-up minus Second Follow-up				Change in Pooled Sample			
Dep. Var.	Change Total Debt		Change Total Business Debt		Change Total Debt		Change Total Business Debt	
Change Incentive Plan	0.519***	0.514***	0.434**	0.433**	0.145*	0.141*	0.130	0.145*
	(2.970)	(2.930)	(2.360)	(2.360)	(1.840)	(1.790)	(1.530)	(1.710)
Change Total Assets	0.127***	0.127**	0.071*	0.068*	0.112***	0.112***	0.042**	0.040**
	(3.410)	(3.410)	(1.830)	(1.770)	(6.760)	(6.790)	(2.350)	(2.250)
Personnel		-0.009		-0.026		0.040		-0.029
		(-0.120)		(-0.330)		(1.180)		(-0.750)
HR	-0.100		0.278		0.045		0.072	
	(-0.280)		(0.730)		(0.290)		(0.410)	
Sales	0.024		0.576		0.095		0.242	
	(0.070)		(1.500)		(0.570)		(1.310)	
R&D	0.322		0.081		0.285*		0.196	
	(0.920)		(0.210)		(1.820)		(1.130)	
Finance	-0.348		-1.078**		-0.307*		-0.681***	
	(-0.870)		(-2.430)		(-1.730)		(-3.400)	
Sole Owner	Dropped							
Corporation	-0.021	-0.020	0.042	0.032	0.061	0.065	0.121	0.120
	(-0.140)	(-0.140)	(0.280)	(0.210)	(0.850)	(0.900)	(1.550)	(1.550)
Partnership	-0.317	-0.325	-0.139	-0.164	-0.138	-0.136	-0.373**	-0.382**
	(-1.070)	(-1.100)	(-0.450)	(-0.530)	(-1.030)	(-1.020)	(-2.330)	(-2.400)
Work Exp	-0.013	-0.012	-0.010	-0.009	-0.009**	-0.009**	-0.008*	-0.007*
	(-1.650)	(-1.590)	(-1.210)	(-1.060)	(-2.510)	(-2.310)	(-1.920)	(-1.750)
High School	-0.617	-0.570	-0.509	-0.495	-0.055	-0.038	-0.386	-0.395
	(-0.850)	(-0.790)	(-0.640)	(-0.640)	(-0.150)	(-0.110)	(-1.020)	(-1.050)
Post Secondary	-0.190	-0.137	-0.016	-0.006	-0.004	0.011	-0.237	-0.223
	(-0.290)	(-0.210)	(-0.020)	(-0.010)	(-0.010)	(0.030)	(-0.690)	(-0.660)
Post Graduate	-0.365	-0.310	-0.197	-0.212	-0.141	-0.132	-0.278	-0.276
	(-0.550)	(-0.470)	(-0.270)	(-0.300)	(-0.420)	(-0.390)	(-0.800)	(-0.800)
Minority	-0.396*	-0.392*	-0.102	-0.094	-0.018	-0.008	-0.100	-0.100
	(-1.710)	(-1.700)	(-0.440)	(-0.400)	(-0.170)	(-0.070)	(-0.820)	(-0.820)
Male	0.196	0.167	0.399	0.355	0.194*	0.183*	0.267**	0.251**
	(0.880)	(0.760)	(1.590)	(1.440)	(1.780)	(1.690)	(2.180)	(2.070)
Age Owner	-0.132*	-0.135*	-0.081	-0.084	-0.024	-0.025	-0.082**	-0.085**
	(-1.820)	(-1.870)	(-1.050)	(-1.100)	(-0.690)	(-0.710)	(-2.120)	(-2.210)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	---	---	---	---	Yes	Yes	Yes	Yes
Constant	-0.366	-0.421	-1.170	-1.169	-1.094***	-1.131***	-0.929**	-0.953**
	(-0.500)	(-0.580)	(-1.480)	(-1.510)	(-2.940)	(-3.050)	(-2.390)	(-2.470)
N	1202	1206	1198	1202	4334	4357	4323	4346
LR Value	44.940***	43.900***	30.760	23.880	99.500***	95.870***	73.100***	61.710***
Pseudo R2	0.033	0.032	0.025	0.019	0.019	0.018	0.016	0.014

Level of significance: ***p<0.01; **p<0.05; *p<0.1

Table 7. The Effects of Professionalization on New Ventures Debt Financing in the Panel Setting

	Full Sample				Sub-Sample			
	Logit Models		OLS Regressions		Logit Models		OLS Regressions	
Dep. Var.	Business Bank Loan	Business Loan	Total Debt	Total Business Debt	Business Bank Loan	Business Loan	Total Debt	Total Business Debt
Incentive Plan	0.651***	0.661***	0.237**	0.263***	0.624***	0.644***	0.247**	0.274**
	(3.090)	(3.550)	(2.380)	(2.670)	(2.740)	(3.190)	(2.160)	(2.420)
HR	0.020	0.264	0.085	-0.096	0.102	0.330	0.196	-0.028
	(0.050)	(0.790)	(0.520)	(-0.590)	(0.260)	(0.950)	(1.060)	(-0.150)
Sales	-0.100	-0.139	-0.177	-0.071	-0.045	-0.113	-0.256	-0.130
	(-0.250)	(-0.380)	(-1.000)	(-0.410)	(-0.110)	(-0.290)	(-1.260)	(-0.650)
R&D	-0.297	-0.187	0.012	-0.172	-0.232	-0.189	0.042	-0.152
	(-0.720)	(-0.500)	(0.070)	(-0.970)	(-0.550)	(-0.480)	(0.210)	(-0.770)
Finance	-0.007	-0.042	-0.220	-0.051	-0.018	0.014	-0.253	-0.089
	(-0.020)	(-0.110)	(-1.150)	(-0.270)	(-0.040)	(0.030)	(-1.180)	(-0.420)
Total Assets	0.109**	0.116***	0.180***	0.119***	0.097*	0.099**	0.181***	0.115***
	(2.310)	(2.590)	(8.870)	(5.920)	(1.930)	(2.060)	(7.770)	(4.970)
Sole Owner	-0.742	-0.168	-0.063	-0.405	Dropped			
	(-0.880)	(-0.240)	(-0.170)	(-1.080)				
Corporation	-1.096	-0.637	-0.291	-0.107	-1.270	-0.668	0.011	0.210
	(-1.600)	(-1.100)	(-0.860)	(-0.320)	(-1.640)	(-1.040)	(0.030)	(0.540)
Partnership	-0.992	-1.230	-0.460	-0.404	-1.501	-1.141	-0.339	0.074
	(-0.900)	(-1.390)	(-0.920)	(-0.820)	(-1.180)	(-1.180)	(-0.560)	(0.120)
Work Exp	0.072*	0.059	-0.023	0.017	0.059	0.046	-0.022	0.016
	(1.790)	(1.590)	(-1.220)	(0.910)	(1.290)	(1.090)	(-1.070)	(0.760)
High School	-1.361	-2.313*	-0.638	-1.122*	-0.694	-1.753	0.152	-0.313
	(-0.950)	(-1.890)	(-1.070)	(-1.910)	(-0.430)	(-1.250)	(0.190)	(-0.390)
Post Secondary	-0.664	-1.563	-0.331	-0.551	0.220	-0.810	0.490	0.326
	(-0.510)	(-1.350)	(-0.570)	(-0.970)	(0.150)	(-0.640)	(0.630)	(0.420)
Post Graduate	-0.052	-0.736	-0.140	-0.260	0.931	0.063	0.667	0.627
	(-0.040)	(-0.620)	(-0.230)	(-0.440)	(0.610)	(0.050)	(0.830)	(0.780)
Minority	0.588	-0.430	-0.897*	-1.120**	1.001	-0.234	-0.615	-0.850
	(0.560)	(-0.540)	(-1.700)	(-2.140)	(0.820)	(-0.280)	(-1.050)	(-1.470)
Male	0.196	0.196	-0.099	-0.163	0.177	0.232	-0.193	-0.086
	(0.250)	(0.300)	(-0.320)	(-0.540)	(0.230)	(0.360)	(-0.560)	(-0.250)
Age Owner	-0.620**	-0.447*	-0.104	-0.161	-0.714**	-0.502**	-0.191	-0.229
	(-2.190)	(-1.930)	(-0.790)	(-1.230)	(-2.300)	(-2.060)	(-1.340)	(-1.630)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	---	---	3.560***	2.143***	---	---	3.036***	1.245
			(4.290)	(2.610)			(2.980)	(1.230)
N	1236	1513	9055	9047	1096	1329	7145	7139
F-value			5.000***	3.320***			4.330***	2.670***
LR value	35.860**	39.710**			32.530*	33.120*		
Fixed / Random	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed

Level of significance: ***p<0.01; **p<0.05; *p<0.1