

**Interactions between family ownership and racial effects  
in small business debt financing: Evidence from the U.S.**

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Edwards School of Business  
University of Saskatchewan  
Saskatoon, Saskatchewan, Canada

By

Xing Zhou

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## **ABSTRACT**

This study examines the interactive effects of family and minority ownership on small business debt financing. On one hand, family involvement in ownership has an influence on small firm's financial decision. On the other hand, racial disparities in small business ownership make these firms experience differently in credit markets. In the context of family and minority involvements, this study measures two dimensions of small business debt financing, one for its use, a financing issue directly related to the capital structure, and the other for its cost, an agency issue related to the firms' ability to borrowing and repayment.

By using the unique data from the 1993, 1998, and 2003 Survey of Small Business Finances, our empirical results show significant evidence that family involvement has an impact on both the use of debt and the cost of debt financing in small businesses. That is, family ownership are negatively related to both the use of debt and the cost of debt financing, and when the firms are all non-visible minority owned, family firms have a lower level of debt and pay a lower interest rate than non-family firms. The results also show that the firm owner's visible minority are positively related to the cost of debt financing, and when these firms are all family owned, visible minority owned firms pay a higher interest rate than non-visible minority owned firms.

These results of our study also have important implications for both small business and family business research. For small business owners, it is important to understand the advantages and disadvantages of family as well as minority involvements to finance their businesses. And for policymakers and institutional lenders, understanding the family and minority effects also assists small businesses in obtaining debt financing.

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## **1. Introduction**

Small businesses play a vital role in the economy (Acs and Preston, 1997; Cavalluzzo, Cavalluzzo, and Wolken, 2002). Since financing small businesses is different from financing large businesses, it is particularly important for small business owners to determine its optimal capital structure for their firms. Traditional capital structure theory developed by Modigliani and Miller (1958) argue about how firms make a decision between debt and equity financing. Since then, the theory has been examined through various approaches (Harris and Raviv, 1991). Compared to equity financing, debt financing is favored by small businesses, because of the existence of the transaction costs and serious information asymmetry problems between them and their capital suppliers (Berger and Udell, 1998). As a result, debt financing is one of the main sources of capital for small businesses.

A large part of the theory of debt financing is based on the agency problems associated with conflicts of interest and information asymmetry between the firm and its capital suppliers. Due to the informational opacity for small business financing, the “lemon” problem suggested by Akerlof (1970) incurs both adverse selection and moral hazard for small businesses. That is, the adverse selection tends to have the risky borrowers, while moral hazard leads to the increase in investing alternative risky projects. One of the possible solutions for these issues is to build a relationship between a small firm and its lenders, since a good relationship can assist the lenders with the availability of more credible information about the firm (Petersen and Rajan, 1994; Berger and Udell, 1995; Elyasiani and Goldberg, 2004).

Previous studies (Romano, Tanewski, and Smyrniotis, 2001; Anderson, Mansi, and Reeb, 2003; Chrisman, Chua, and Litz, 2004; Chua, Chrisman, Kellermanns, and Wu, forthcoming) observe that family involvement may have an influence on small business debt financing. According to Anderson et al.’s study (2003), a family business is the one owned by a group of family members, while a non-family business is the one with controlling ownership held by a group of individuals without family connection. Based on an analysis of financial, family, and social factors, Romano et al. (2001) argue that family loans and debt are more likely to be used

by small family firms. Moreover, Chua et al. (forthcoming) suggest that family involvement can help family firms obtain debt financing through their social capital with lenders, because social capital can improve the relationship between the firm and its capital suppliers. However, Chrisman et al. (2004) argue that the agency relationship between the firm and its lenders may be more severe in small family firms, because the owners and managers in a family firm have the great chance to take opportunistic behaviors for their family rather than the firm's performance.

Besides the family involvement, previous studies, such as Cavalluzzo and Cavalluzzo (1998), Cavalluzzo et al. (2002), Blanchflower, Levine, and Zimmerman (2003), Cavalluzzo and Wolken (2005), Fairlie and Robb (2007, 2008), and Robb, Fairlie, and Robinson (2009), provide the evidence about the effects of racial disparities on small business debt financing. They show empirical evidence that minority owners are less of personal wealth, undercapitalized, and lower level of bank loans relative to white owners in small businesses, even after controlling for creditworthiness, firm characteristics, and other factors. With a particular view to the credit markets, minorities usually have to pay higher interest rates on their loans, and they have higher denial rates relative to the whites (i.e., Cavalluzzo and Cavalluzzo, 1998; Cavalluzzo et al., 2002; Blanchflower et al., 2003; Cavalluzzo and Wolken, 2005). In addition, minorities also have a lower of application rates for their loans, because they do not believe they can obtain such loans from the bank (Cavalluzzo et al., 2002). Therefore, racial disparities would affect the decision of debt financing for small businesses.

This study uses the data from the 1993, 1998, and 2003 Survey of Small Business Finances (SSBF)<sup>1</sup> to examine the interactive effects of family and minority<sup>2</sup> ownership on small business debt financing. As illustrated as the above, previous studies have already shown the effects of family ownership on small business debt financing, as well as the racial effects, this study will fill in the gap to explore the interactive effects. These SSBF data were conducted every five

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<sup>1</sup> The 1993 survey is in the name of "National Survey of Small Business Finances". For more information on these surveys, including the methodology reports, technical codebook, survey questionnaire, survey data, and bibliography of research using the 1993, 1998, and 2003 SSBF, see the Federal Reserve Board web site, at <http://www.federalreserve.gov/pubs/oss/oss3/SSBFtoc.htm>.

<sup>2</sup> According to the 1993, 1998, and 2003 SSBF, the race of minorities included all Black or African-American, Asian, Native Hawaiian or other Pacific Islander, American Indian or Alaska Native, and Hispanic.

years by the Board of Governance of the Federal Reserve System. We consider the SSBF data set as a valid sample for our study because of its high quality in coverage, accuracy, and consistency. As well, information provided by the 1993, 1998, and 2003 SSBF is among the most recent publicly available data on small businesses. An important feature of the SSBF data set is that it not only includes information on the sample firms' financial situation, but also focuses on information about the characteristics of small businesses and small business owners. These data allow us to test for the interactive effects of family ownership and firm owner's visible minority on the use of debt financing and the cost of debt financing.

[Insert Figure 1 about here]

Our empirical results show significant evidence that family involvement has an impact on both the use of debt and the cost of debt financing in small businesses. That is, family ownership are negatively related to both the use of debt and the cost of debt financing, and when the firms are all non-visible minority owned, family firms have a lower level of debt and pay a lower interest rate than non-family firms. The results also show that the firm owner's visible minority are positively related to the cost of debt financing, and when these firms are all family owned, visible minority owned firms pay a higher interest rate than non-visible minority owned firms.

These results of our study also have important implications for both small business and family business research. Since family involvement affects both the use of debt and the cost of debt financing, research on small businesses cannot ignore the family involvement. For small business owners, it is important to understand the advantages and disadvantages of family involvement to finance their small businesses. Furthermore, it also can help the policymakers and institutional lenders make financing decisions on small business loans based on the analysis of family involvement. On the other hand, the indications that the interest rate charged to the small business depends on the firm owner's visible minority imply that small businesses across demographic groups experience great differently in credit markets. It advises the visible minority owners in small businesses how to get a loan with their racial characteristics. And for policymakers and institutional lenders, understanding the racial effects also assists small

businesses in obtaining debt financing.

The remainder of this paper is organized as follows. Section 2 provides a review of related literatures and proposes our hypotheses. Section 3 describes the data and variables used in this study. Section 4 presents our methodology and empirical models. Section 5 discusses the empirical results and robustness checks for the effects of family ownership and firm owner's visible minority on small business debt financing. Section 6 concludes the thesis.

## **2. Literature Review**

### **2.1. Agency Theory of Debt Financing**

The finance literature concerning the theory of debt financing is based on the capital structure decision, whether a firm finances itself with debt or equity. Capital structure theory rooted in Modigliani and Miller (1958) points out that under certain assumptions, a firm's market value is irrelevant to the way it chooses to finance its investments or to distribute dividends. Since then, the theory has been examined by different kinds of approaches, such as agency costs and information asymmetry (Harris and Raviv, 1991).

The agency approach focuses on the conflicts of interest among various groups with claims to the firm's resources. First, Jensen and Meckling (1976) study the agency relationship between owners and managers. Due to the separation of ownership and management, managers bear the entire cost of their investment activities but do not have the 100 percent of the residual claim. As a result, manager has the tendency "to appropriate perquisites out of the firm's resources for his own consumption" (Jensen and Meckling, 1976, p.12). For example, managers can not only simply steal the profits from the firm they control, but also sell the output, assets, or securities to another firm they own at a price below market level (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 2000). In addition, managers can expropriate owners by keeping themselves stay on the position that they are incompetent (Shleifer and Vishny, 1989). To solve this agency issue, Jensen (1986) suggests that debt payment can reduce the amount of free cash available to managers. If the cash flows are poor, this problem can be solved by the benefit of debt financing in the way of giving "creditors the option to force the firm into liquidation" (Harris and Raviv, 1990, p.321). This will minimize the conflicts of interest and control the managers' behaviors.

The next is the agency relationship between debt holders and equity holders (Jensen and Meckling, 1976; Myers, 1977). Debt contract allows equity holders to capture most of the gain if their investment project is successful, but makes debt holders to bear the consequences if this investment project fails (Jensen and Meckling, 1976). In this case, the shareholders have a strong incentive to invest in the risky projects. Myers (1977) argues that issuing risky debt can induce

the suboptimal investment opportunities, which reduce the firm's present market value. To deal with this problem, Diamond (1989) considers the firm's reputation for promised debt repayment. When a firm initially seeks the loan from the debt market, it may choose the risky investment project due to its little reputation. Over time, when this firm has acquired a better reputation for its repayment, it can have a lower borrowing cost for the loan, and thus have the preference to choose the safe project. As a consequence, firms have an incentive to pursue relatively safe projects in the long run (Diamond, 1989).

The agency theory of debt financing recommends dealing with the private information in capital market that flow from asymmetric information and also the adverse selection effects (Harris and Raviv, 1991). Myers and Majluf (1984) discuss the corporate financing and investment decisions under the assumption that the managers are well informed about the firm's true value than outside investors. In their model, stock may be mispriced by the market if the firm issues equity to finance its investment. However, it would not happen if the firm issues safe debt, because debt financing is irrelevant to the firm's value, no matter it is overvalued or undervalued (Myers and Majluf, 1984). Thus, consistent with the Myers' (1984) pecking order theory, firms have a hierarchy of financing sources and prefer safe securities rather than risky ones. The first is the internal financing if available, and then debt is preferred to equity if external financing is required.

Signaling models that can be applied to reduce the adverse selection effects suggest that the choice of the firm's capital structure signals the private inside information to the market. Ross (1977) develops an incentive-signaling model and demonstrates that larger debt level is the signal of higher firm quality. Since managers know more about the value of a firm's assets than outside investors, investors evaluate the firm's value based on the signal sent by managers. Managers benefit when the firm's value is overpriced by the market but are penalized when the firm goes bankrupt. Therefore, managers of low quality firms will not issue more debt like the ones of high quality firms, because the low quality firms increase the chance of going bankrupt (Ross, 1977).

In summary, the agency theory of debt financing under asymmetric information has identified numerous potential determinants, and thus has a wealth of implications. Harris and Raviv (1991) summarize four properties of debt contract as follows. The first is the bankruptcy provision. Under certain conditions, debt makes the takeover of a firm more costly. The second implies a convex function between levered equity and its payoffs. The third is the effect of debt on managerial equity ownership. On one hand, debt forces manager's payoffs to be more sensitive to their performance in a firm. On the other hand, it concentrates voting power, since debt does not carry voting rights while equity does. The last indicates that debt is priced more accurately than equity in the market due to the presence of asymmetric information.

## **2.2. Small Business Debt Financing**

The financing decision of small businesses is different from that of the large public traded firms. Since small businesses are usually hard to access to financial market due to their serious information asymmetry problems (Scherr and Hulburt, 2001), they prefer to use private financing, whereas the large firms can obtain their financing through public sources. Berger and Udell (1998) explain why external equity financing is a challenge for small businesses. First, there is a significant amount of fixed costs when firms seek the public financing. Second, small businesses are more likely to keep private for their transactions with shareholders, suppliers, customers, workers, and lenders, since they are not required by law to disclose information to public. As a consequence, small businesses heavily rely on internal financing that is provided by families, friends, or a start-up team and short-term debt financing.

Previous studies (Petersen and Rajan, 1994; Berger and Udell, 1995; Elyasiani and Goldberg, 2004) find that lending relationship helps a small business obtain short-term debt financing from their capital suppliers. At the initial lending relationship, the lender is uncertain about the growth opportunities and investment decisions of the small firm, and thus requires a higher borrowing rate and more collateral as securities for its loan. After the small firm demonstrates its credibility in previous borrowing, it pays a lower interest rate and does not pledge collateral (Berger and Udell, 1995). As it keeps a favorable credit appraisal over time, the

small firm can obtain long-term debt financing through continuously rolling over short-term loans (Diamond, 1989). In short, prior research concludes that a good lending relationship benefits a small business from the availability of short-term debt and the feasibility of long-term debt financing.

However, the lending relationship may also create agency problems because of the asymmetric information between the firm and its capital suppliers (Myers, 1977; Smith and Warner, 1979). Due to the informational opacity for small business financing, the “lemon” problem suggested by Akerlof (1970) incurs adverse selection and moral hazard for small businesses. Adverse selection occurs when the principal inadvertently employs an agent who may be less suitable for the work than the principal expected, while moral hazard occurs when the agent intentionally hide information to perform his own interest, which will lead to the harm to the principal. Petersen and Rajan (1994, p.3) point out that “funds will always be available to firms with positive net present value investment opportunities” under a frictionless credit market. However, there is no sufficient fund for small businesses to finance their projects due to the market frictions such as adverse selection and moral hazard (Stiglitz and Weiss, 1981). That is because the borrower concerns about returns on their investments, while the lender cares about the interests they charged on the loans (Stiglitz and Weiss, 1981). Therefore, as a consequence of asymmetric information, the adverse selection tends to have the risky borrowers, while moral hazard leads to the increase in investing in alternative risky projects.

Berger and Udell (2002) show another agency problem of lending based on the assumption that a loan officer is better informed than a bank about the borrower’s true situation. Since a loan officer can make lending decisions based on the soft information that is gathered from the interaction with the borrower, whereas the bank has the difficulty to observe, verify, and transmit such soft information, the loan officer has the opportunity to act in his own interest, which may lead to the loss of bank. In addition, the loan officer may have some personal relationship with the borrower, so that he can hide the borrower’s true situation when it goes bad (Berger and Udell, 2002).



Besides the agency problems between the firm and its capital suppliers, financing also has the agency problems between owners and managers (Jensen and Meckling, 1976) and between majority and minority shareholders (Morck, Shleifer, and Vishny, 1988, 1989; Shleifer and Vishny, 1997). The latter arises because the large shareholders maximize their own welfare at the expense of the remaining minority shareholders' interests. Especially, Grossman and Hart (1988) show that this expropriation is stronger when the large investors have the superior voting stock in excess of their cash flow rights, or when the one share-one vote policy cannot be implemented. In this case, large shareholders have the power to pay out cash only to themselves, rather than all the investors (Shleifer and Vishny, 1997). Morck et al. (1988) present the empirical evidence on the relationship between cash flow ownership of the larger shareholders and the firm's market valuation by using the Tobin's Q. They find that the firm's value increases with the management ownership in a range of 0 to 5 percent, and then declines until the ownership rises up to 25 percent. One explanation of such phenomenon is that, the improved performance "reflect the convergence of interests between managers and shareholders" (Morck et al., 1988, p.312), while the decline reflect that the large shareholders have gained entire control so that they can "use firms to generate private benefits of control that are not shared by minority shareholders" (Shleifer and Vishny, 1997, p.759).

To solve these agency problems, Shleifer and Vishny (1997) suggest several corporate governance mechanisms including monitoring and signaling. Ever since Jensen and Meckling (1976), monitoring mechanisms are supervised by the principal. For instance, the board of directors is mainly responsible for monitoring the top manager's behaviors (Fama and Jensen, 1983), while only large shareholders have the powerful incentive to monitor managers, which results in the free rider problem (Shleifer and Vishny, 1986). The signaling mechanisms convey information about the firm from insiders to outside investors (Spence, 1973; Ross, 1977; Sobel, 1985), which best resolve the asymmetric information.

### **2.3. Family Businesses**

Family businesses have been observed dominance of the economic landscape in most

countries (Sharma, 2004). As illustrated by Anderson, Mansi, and Reeb (2003), a family business is the one owned by a group of family members, while a non-family business is the one with controlling ownership held by a group of individuals without family connection. At this point, a firm with a sole owner may not be regarded as a family firm, because there is no related family member working in this kind of firms. Anderson et al. (2003, p.267) suggest two important aspects to separate family firms from non-family firms: “the family’s interest in the firm’s long-term survival and the family’s concern for the firm’s (family’s) reputation”. They explain the reasons as follows. First, family firms are more likely to maximize firm value rather than the return to shareholders, because of their aim to pass the firm rather than the wealth to their heirs. This will mitigate the conflicts of interest between debt holders and equity holders. Thus, Anderson et al. (2003) expect a lower cost of debt in family firms rather than in non-family firms. Second, family firms have the incentive to maintain favorable reputations relative to non-family firms, because the managers in family firms are more stable than those in non-family firms. Such family’s reputation creates longer lasting economic consequences for the firms (Anderson et al., 2003).

Agency issues in family firms are different from those in non-family firms, mainly because of the characteristic of altruism in family firms (Schulze, Lubatkin, Dino, and Buchholtz, 2001; Schulze, Lubatkin, and Dino, 2003). In a family business perspective, “altruism is self-reinforcing and motivated by self-interest because it allows the individual to simultaneously satisfy both altruistic (other-regarding) preferences and egotistic (self-regarding) preferences” (Schulze et al., 2001, p.102). On one hand, altruism fosters loyalty, commitment, and a sense of belonging in a family firm (Schulze et al., 2001; Schulze et al., 2003). It not only guarantees children to succeed to the family firm from their parents, but also takes care of every family member in the firm. On the other hand, altruism gives the opportunities for both parents and children to destroy the firm’s value for their own interests (Schulze et al., 2001; Schulze et al., 2003). Both of them have an effect on the agency issues of family firms.

Traditional points of view in the literature (Becker, 1974; Jensen and Meckling, 1976; Fama

and Jensen, 1983) suggest that family involvement can reduce the agency problems, because of the concentration of substantial decision and cash flow rights in family firms, or family firm member's personal satisfaction from the success of organization (Perez-Gonzalez, 2006). Taking family altruism into consideration, Karra, Tracey, and Phillips (2006) show that family firms have lower agency costs, because altruism aligns the interests of family members, providing it is reciprocal and symmetrical between family owners and family managers. In addition, Chrisman et al. (2004, p.337) suggest that "family firms are the least costly and more efficient form of organization". One of the special cases is that the sole owner-managed firm has zero agency cost (Ang, Cole, and Lin, 2000).

However, family firms may be vulnerable to the agency problems, since "a family is not a monolithic or homogeneous group of people with congruent interests, nor are all family businesses identical with respect to organizational characteristics and behaviors" (Chrisman et al., 2004, p.338). La Porta, Lopez-de-Silanes, and Shleifer (1999) emphasize that family firms are internal dysfunction owing to controlling shareholders' autonomy in decision making. Schulze et al. (2001) and Schulze et al. (2003) show a tendency of altruism also create the agency problems in family firms due to "free riding, biased parental perception of a child's performance, difficulty in enforcing a contract, and generosity in terms of perquisite consumption" (Chrisman et al., 2005, p.560). Schulze et al. (2001) and Schulze et al. (2003) argue that family relationship make it more difficult to resolve these agency issues.

Since family firms have both economic and non-economic goals in reality (Chrisman et al., 2004, 2005), the agency problems in family firms are more complicated. For example, when an owner wants to pursue some non-economic goal and managers are also willing to do it, there may be less economic performance but no agency cost in the firm. This will reduce the agency costs between owners and managers, especially in terms of monitoring (Fama and Jensen, 1983; Ang et al., 2000). However, the agency relationships between majority and minority shareholders may be serious in family firms if the minority shareholders are not part of the family (Villalonga and Amit, 2006). This is because family members, as a special class of large shareholders, have a

powerful voice in the family firms (Anderson et al., 2003).

As to the relationship between the firm and its capital suppliers, family involvement has an influence on the firm's financing decision and thus related to the agency problems of debt financing for small businesses. Romano, Tanewski, and Smyrnios (2001) explore the financing decisions of small firms in a family business perspective. They suggest that family firm's financing decision is influenced by a complex array of financial, family, and social factors. They also explain that family loans and debt are more likely to be used by small family firms in which "owners' interest in retaining control and choosing to set limits on gearing because of risk factors and beliefs that disadvantages of stock exchange listing outweigh its advantages" (Romano et al., 2001, p.303).

Chrisman et al. (2004) argue the agency relationship between the firm and its lender may be more severe in small family firms due to the following two reasons. First, lenders need to put a great deal of time and efforts into analyzing and monitoring a small firm's behaviors, but such actions cannot be justified on the grounds of the returns to lenders. Second, the owners and managers in a family firm have a greater chance to take opportunistic behaviors for their family rather than the firm's performance. Therefore, family involvement increases the agency costs of debt financing for small businesses. In this case, Chrisman et al. (2004) suggest that a strategic business plan of small firms can be used to reduce these agency costs, because "there would be better communication and an explicit plan against which the lender can evaluate the firm's performance" (p.348).

Furthermore, Chua et al. (forthcoming) argue that such external debt financing can be obtained by small family businesses through their social capital with lenders, because social capital can improve the relationship between the firm and its capital suppliers. Social capital, defined by its function, is "the ongoing interdependence and interactions among individuals and the mutual trust they develop in terms of their ability to predict behaviors, the perceived commonality of goals, and the potential for an equitable exchange of resources over time" (Chua et al., 2009, p.3). Arregle, Hitt, Simon, and Very (2007) show that how family social capital can

be used to create the family firm's social capital. In their model, a small firm may not have enough social capital at the initial stage, so it has to use personal social capital, or borrow other person's social capital. However, the other's social capital is not easy to obtain. It happens only when the small firm has a good relationship with the owners of the social capital, especially in terms of trust and mutual obligation (Chua et al., forthcoming). At this point, family involvement should make the family firm easier to borrow social capital from family members, and thus to achieve the higher level of debt financing.

In this process, social capital also helps mitigate the conflicts of interest between the family firm and its lender (Chua et al., forthcoming). This is because borrowed family social capital cannot only improve the relationship between family firm and its lender, but also increase the probability of a lender receiving a third party guarantee, which in turn to reduce the agency costs of lending (Chua et al., forthcoming). Moreover, Chua et al. (forthcoming) suggest that family involvement should make family members more willing to lend their family social capital to family firm, due to both the alignment of interests between family members and family firms and the reduction in information asymmetry. The greater the firm has the ability to borrow family social capital, the better the firm has a relationship with its lender, and the more debt financing it can obtain. Even in a public firm, founding family ownership results in a lower agency cost of debt. Anderson and Reeb (2003) provide the empirical evidence to support it. Therefore, family involvement may reduce the agency problems between the firm and its lender with the help of social capital.

## **2.4. Racial Effects**

Among the owner's characteristics related to business capital structure, race seems to have a strong influence on a small firm's ability to access to financial capital in its whole lifecycle (Robb et al., 2009). Previous studies (Cavalluzzo and Cavalluzzo, 1998; Cavalluzzo et al., 2002; Blanchfouwer et al., 2003; Cavalluzzo and Wolken, 2005; Fairlie and Robb, 2008; Robb et al., 2009) indicate that minority owners are less of personal wealth, undercapitalized, and lower level of bank loans relative to white owners in small businesses. In particular, Robb et al. (2009) show

that low levels of personal wealth as well as lower level of credit score in black owned businesses decrease the firm's ability to obtain bank loans, because bank will use this wealth as collateral to make the firm's lending decision. Furthermore, such low levels of startup capital will influence the small firm's long term performance (Robb et al., 2009). It results the black owned businesses have a lower of success ratio than white owned businesses, and so have the less "wealth accumulation, economic advancement and job creation" (Robb et al., 2009, p.3). Therefore, the minority owned firms have more difficulties than white owned firms in the growth and development due to their weak initial situation.

Due to the lack of startup capital, the minority owned firms have to seek for external financing. However, it is difficult for them to obtain financial capital owing to lending discrimination. Early study by Becker (1971, p.14) explains that an individual with a taste for discrimination is willing to "pay something, either directly or in the form of a reduced income, to be associated with some persons instead of others". Applying Becker's discrimination idea into credit markets, racial disparities between minorities and whites lead to the minorities experiencing "higher cost or tougher lending standard" in their loan application (Cavalluzzo et al., 2002, p.677). For example, minorities have to pay higher interest rates on their loans, and they have higher denial rates relative to the whites. Cavalluzzo and Cavalluzzo (1998), Cavalluzzo et al. (2002), Blanchflower et al. (2003), Cavalluzzo and Wolken (2005), and Robb et al. (2009) all provide the empirical evidence on lending discrimination to support this idea, even after controlling for personal wealth, creditworthiness, firm characteristics, and other factors. In addition, minorities also have a lower of application rates for their loans, because they do not believe they can obtain such loans from the bank (Cavalluzzo et al., 2002).

Besides the lending discrimination, Fairlie and Robb (2007) explore the racial disparities in small business outcomes based on the family business background. Generally, the business outcomes are worse in minority owned firms than those in white owned firms, in terms of lower sales and profits, fewer employment, higher closure rates among minority owned firms (Bitler, Robb, and Wolken, 2001; Robb, 2002; Mach and Wolken, 2006; Fairlie and Robb, 2007). When

it comes to family business background, the intergenerational transmission may play an important role in contributing to racial disparities, not only in the business ownership, but also in business outcomes (Fairlie and Robb, 2007). Using data from the 1992 Characteristics of Business Owners survey, Fairlie and Robb (2007) find that whether having a self-employed family member owner prior to business startup does not help explain the racial differences in business outcomes, even the black owned firms are less likely to have self-employed family members relative to the white owned firms. Instead, they find that either the lack of previous work experience in a family business or the lack of previous work experience in a similar business among black business owners limits their opportunities for the acquisition of general business and specific human capital, which leads to the worse outcomes in black owned firms. Therefore, the racial disparities in previous work experiences are one of the main factors to result in the different business outcomes, other factors include the racial disparities in education level, geographic location, startup capital, and so on (Fairlie and Robb, 2007).

## **2.5. Research Hypotheses**

As the above literature review shows, not only family involvement, but also racial disparity in business ownership has an influence on firm's financial decision. In a small business setting, the business ownership can be owned by a family, or a visible minority, or both. If the small firm is owed by a family, and the family belongs to certain minority group, the firm's financial behavior will be affected by both family ownership and firm owner's visible minority. Otherwise, the family ownership, or the presence of minority in business ownership would solely fashion the small businesses' financial decisions.

Previous studies focus on the small business debt financing from various aspects. In the view of family ownership, Romano et al. (2001), Anderson et al. (2003), Chrisman et al. (2004), and Chua et al. (2009) examine the effects of family involvement on firm's financial decision based on the agency theory. They illustrate that family ownership has a mixed effect on the agency cost of debt. On one hand, family involvement in ownership may increase the agency conflicts between the firm and its lender due to the information asymmetry. On the other hand,

the agency cost of debt financing can be reduced by the presence of family ownership, because of the convergence of interests between family members and family firms. Whereas Cavalluzzo and Cavalluzzo (1998), Cavalluzzo et al. (2002), Blanchflower et al. (2003), Cavalluzzo and Wolken (2005), Fairlie and Robb (2007, 2008), and Robb et al. (2009) provide the evidence on the effects of racial disparities, not only on startup capital, as well as the following capital injections, but also on business performance and outcomes. In particular for family business background, minority owned firms have more disadvantages than white owned firms, such as the lack of previous work experiences in black owned firms (Fairlie and Robb, 2007). Among all these studies on small business debt financing, either the family ownership or racial disparity can have an influence on the firm's financial decision.

This study attempts to explore the small business debt financing in the context of both family ownership and racial effects. We do not only expect the direct effects by any one of family ownership or racial disparity, just like what the previous literatures have shown, but also expect the effects by the interactions between family ownership and firm owner's visible minority, which will help fill in the gap in this line of literature. Based on two dimensions of small business debt financing, one for its use, a financing issue directly related to the capital structure, and the other for its cost, an agency issue related to the firms' ability to borrowing and repayment, this study attempts to examine two sets of hypotheses as follows.

Set one for the use of debt financing:

Hypothesis 1: The use of debt financing is positively related to family ownership in small businesses.

Hypothesis 2: The use of debt financing is negatively related to the firm owner's visible minority in small businesses.

Hypothesis 3a: Given all the firms are non-visible minority owned, family firms are more likely to use debt financing than non-family firms.

Hypothesis 3b: Given all the firms are visible minority owned, family firms are more likely to use debt financing than non-family firms.



Hypothesis 4a: Given all the firms are family owned, visible minority owned firms are less likely to use debt financing than non-visible minority owned firms.

Hypothesis 4b: Given all the firms are non-family owned, visible minority owned firms are less likely to use debt financing than non-visible minority owned firms.

Set two for the cost of debt financing:

Hypothesis 5: The cost of debt financing is negatively related to family ownership in small businesses.

Hypothesis 6: The cost of debt financing is positively related to the firm owner's visible minority in small businesses.

Hypothesis 7a: Given all the firms are non-visible minority owned, family firms are charged a lower cost of debt financing than non-family firms.

Hypothesis 7b: Given all the firms are visible minority owned, family firms are charged a lower cost of debt financing than non-family firms.

Hypothesis 8a: Given all the firms are family owned, visible minority owned firms are charged a higher cost of debt financing than non-visible minority owned firms.

Hypothesis 8b: Given all the firms are non-family owned, visible minority owned firms are charged a higher cost of debt financing than non-visible minority owned firms.

### 3. Data and Variables

#### 3.1. Data

The data used for this study were drawn from the 1993, 1998, and 2003 Survey of Small Business Finances (SSBF). These survey data were conducted every five years by the Board of Governance of the Federal Reserve System. Each of the survey populations was a nationally representative sample of the U.S. small businesses that had 500 or fewer employees<sup>3</sup>. Based on the minimum eligibility requirements<sup>4</sup> by the Federal Reserve Board, the sample of this study has 12,434 firms, as a sum of 4,633 firms which represented 4.99 million small businesses in 1993, and 3,561 firms which represented 5.3 million small businesses in 1998, and 4,240 firms which represented 6.3 million small businesses in 2003 (1993, 1998, and 2003 SSBF Technical Codebooks).

The SSBF data set is a stratified random sample<sup>5</sup>. It does not only provide information on the sample firms' financial situation, such as their income statement and balance sheet, their use of financial products and services, and the recent credit applying as well as their credit history, but also focus on the information about the characteristics of small businesses and small business owners, such as the employment size, geographic location, the number of small business owners, and the owners' race, ethnicity, and gender<sup>6</sup>. All of them cover a wealth of information on small

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<sup>3</sup> The 1993 survey measured the employment as the sum of full-time owners and employees and half of part-time owners and employees working in the firm. However, the 1998 and 2003 surveys measured the employment as the number of owners and employees working in the firm, no matter the owners and employees were full- or part-time. In this case, we adjusted the measurement of total employees in the 1993 survey to be consistent with those in the 1998 and 2003 surveys, which made four firms having more than 500 employees out of 4,637 in the 1993 survey.

<sup>4</sup> The 1993, 1998, and 2003 SSBF technical codebooks explain the target population definition as follows. First, these firms were all for-profit, nonfinancial, nonfarm, and non-subsidary businesses. Second, these firms operated in the year-end 1993, 1998, and 2003, respectively. Third, there was no erroneous frame data for each of the firms in these surveys. All of these criteria made these surveys to have around 60 to 70 eligibility rates of sampled businesses.

<sup>5</sup> Each 1993, 1998, and 2003 SSBF data set is a stratified random sample with over sampling identified by employment size groups, urban or rural location, and census regions. Additionally, the 1993 and 1998 SSBF identified over sampling of firms as being owned by minority groups, including African Americans, Asians, Hispanics, and others. Each of the minority groups was proportionately stratified by urban or rural location, or employment size groups, urban and rural location, and census regions.

<sup>6</sup> Information collected by the Federal Reserve Board is a few different in each survey. For detailed illustration and comparison among the 1993, 1998, and 2003 SSBF, see Bitler, Robb, and Wolken (2001), and Mach, and Wolken (2006).

businesses.

More specifically, the survey data also aggregate some information from the original variables within the questionnaires. Such information are included in the variables generated from combining variables, the variables derived from combinations of other variables, the variables moved from one section to another in order to facilitate the analysis, the variables obtained from other sources more than the interviews, and the shadow variables which indicated the quality of information (1993, 1998, and 2003 SSBF Technical Codebooks). For example, the variable for the weighted percentage of minority ownership is the one derived from the weighted average of each individual minority owner's percentage of the ownership share. The shadow variables are a particular set of variables that indicate how each value of variables came from. In other words, the shadow variables represent whether the variables were originally reported, imputed for missing, or legitimately skipped.

However, not all the firms had the entire set of information in the survey data. To guarantee the data quality, the Federal Reserve Board staffs had build a series of criteria that had to be satisfied by each firm in order to be considered to complete their surveys since 1998. First, an individual firm had to answer at least 75 percent of all the questions. Second, an individual firm had to answer at least 75 percent of questions regarding their income statement and balance sheet. For example, in a question for a dollar dominated response, an actual dollar amount, or an estimate of the amount, was accepted, but a range of the amount was treated as missing data. Third, there was no missing data on information about whether a firm used various kinds of financial services. In other words, the firm had to respond to such questions as whether it had checking accounts, saving accounts, credit cards, lines of credit, leases, mortgages, motor vehicle loans, equipment loans, loans from partners or stockholders, or other loans, as well as whether it had applied for the recent loan and whether the loan had been approved if applicable. Given these completeness criteria, no more than 350 borderline cases in total were reviewed by the Federal Reserve Board staffs. It made the overall response rate around 32 to 33 percent (1998 and 2003 SSBF Technical Codebooks).

Furthermore, the survey data were edited and imputed by the Federal Reserve Board staffs to make sure the accuracy and consistency of the data. Additional information from diverse sources was provided to assist the staffs in the adjustment of data. For example, there were 600 firms in 1993, 1,940 firms in 1998, and 1,320 firms in 2003, respectively, that submitted their hard-copy records, such as filled-out worksheets, accounting statements, or tax forms, to help check and confirm the accuracy of data (1993, 1998, and 2003 SSBF Technical Codebooks). This led the information in the income statement and balance sheet to satisfy the requirements by accounting identities, which guaranteed the data accuracy and consistency. Moreover, the data were also examined and adjusted between source name, type, location, and other specific sections in the questionnaires, based on sufficient information.

In particular, the Federal Reserve Board staffs imputed the missing data by using some randomized regression models. For instance, a randomized linear-probability model was used for the missing values in the multiple-categorical response questions, while a randomized hot-deck procedure was used for the discrete categorical responses. In these regressions, the imputation process might be run up to three times to achieve the ideal imputation values (1993, 1998, and 2003 SSBF Technical Codebooks). As a result, one fully imputed data set was provided by each 1993 and 1998 SSBF, while five fully imputed data sets were provided by the 2003 SSBF. In the 2003 survey data, each set of data contains 4,240 firm observations; and across these sets, the values of all reported variables are identical, whereas the values of imputed variables might differ in the five different sets. These five sets of data provide an opportunity to analyze for the different estimations. In our study, one of the five data sets was chosen to compose our final fully 1993, 1998, and 2003 data.

In sum, the SSBF data set is a valid sample for our study on small business debt financing, due to its high quality in coverage, accuracy, and consistency. As well, information provided by the 1993, 1998, and 2003 SSBF is among the most recent publicly available data on small businesses, since the public versions of these surveys were released in the year of 1999, 2001, and 2007, respectively. It is noted that each of the surveys has only one year observations on the

sampled small businesses. Thus our whole sample contains three discrete year observations of variables. With the comprehensive information provided by each 1993, 1998, and 2003 SSBF, this study uses the survey data to examine the interactive effects of family ownership and firm owner's visible minority on small business debt financing.

### **3.2. Dependent Variables**

Two layers of debt financing information for small businesses are examined: the variable USE OF DEBT as measured by the ratio of total liabilities to total assets<sup>7</sup>, and the variable COST OF DEBT as measured by the fixed nominal interest rate that the firm paid at the time of issue of its most recent loan in the past three years. To ensure the accuracy of the data, we excluded observations that reported negative assets, because their representations in the income statement and balance sheet were suspect. Additional observations were omitted if the fixed nominal interest rate was reported as zero.

### **3.3. Independent Variables**

Since this study focuses on the effects of family ownership, those of firm owner's visible minority, and those of the interactions between these two factors on small business debt financing, several independent variables are used for the estimations. The first variable FAMILY is a dummy variable with the value of one if the firm was family owned and zero otherwise. Based on the 1993, 1998, and 2003 SSBF, it was considered a family owned firm if the firm was more than 50 percent owned by a single family<sup>8</sup>.

The second variable MINORITY is also a dummy variable with the value of one if the firm was owned by visible minorities and zero otherwise. A firm was considered a visible minority owned if the firm was more than 50 percent owned by individuals who were visible minorities. It is noted that information about the firm owners in the 2003 SSBF is different from those

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<sup>7</sup> An alternative measure for the use of debt financing is the ratio of total interest bearing liabilities to total assets, where the value of total interest bearing liabilities is calculated by total liabilities minus accounts receivable and trade notes. This measure excludes the effects of trade credit on debt financing. However, it is difficult to distinguish the effects of debt from the effects of trade credit due to the complicated transactions resulting from the use of trade credit. Thus, this study would not separate out the effects of trade credit on debt financing.

<sup>8</sup> The 1993, 1998, and 2003 SSBF also regarded a firm that had only one owner as a family firm. In this case, this study will deal with both of the family issues with and without the sole owner firms.

collected in the 1993 and 1998 SSBF. The previous 1993 and 1998 surveys collected information only for the owners with the largest shared ownership, whereas the 2003 survey collected information for three owners who had the largest shared ownership and reported the characteristics of them one by one. Thus, the 2003 survey provides additional details on specific owners and the organizational structure of a firm. In this case, an alternative measure, MINORITY2, is constructed for 2003 data only. It has the value of one if the principal owner of a firm was a visible minority, and zero otherwise.

On the basis of the interactions between family ownership and firm owner's visible minority, four aggregated dummy variables are created: FBVM, FBNONVM, NONFBVM, and NONFBNONVM. They represent that the firm was both family and visible minority owned; the firm was family owned, but not visible minority owned; the firm was visible minority owned, but not family owned; and the firm was neither family nor visible minority owned, respectively. Each of them has the value of one if its representation was true and zero otherwise. Since the 2003 SSBF has two sets of visible minority variables, it also aggregates two sets of interaction variables. The alternative group includes the variables FBVM2, FBNONVM2, NONFBVM2, and NONFBNONVM2.

### **3.4. Control Variables**

Five dimensions of control variables are included to capture the information about various aspects of the firms in the sample. These five groups of variables are agency variables, firm characteristics variables, firm owner attributes variables, most recent loan characteristics variables, and other control variables.

#### **3.4.1. Agency Variables**

Previous studies (Jensen and Meckling, 1976; Myers, 1977; Ross, 1977; Fama and Jensen, 1983; Sobel, 1985; Shleifer and Vishny, 1986, 1997) suggest that monitoring and signaling are two main tools for reducing the agency problems generated by agency costs and information asymmetry between two parties to a contract. Monitoring is measured by two variables. The first variable OWNMANAGE is a dummy variable with the value of one if there was at least one

owner responsible for the daily management of the business and zero otherwise. The second variable OWNERSHARE indicates the percentage ownership held by the principal owner. These are consistent with the previous studies (Berger and Udell, 1995; Cavalluzzo et al., 2002; Cavalluzzo and Wolken, 2005). Alternatively, the 2003 SSBF provides another two variables for measuring the monitoring. The dummy variable OWNMAMAGE2 indicates whether the principal owner was also the manager of the firm. The variable OWNERSHARE2 is a dummy variable with the value of one if any one individual or company owned 10 percent or more of the shares in this firm and zero otherwise.

In addition, two types of signaling variables are used to measure signals sent by borrowers. The dummy variable USEOWNERCC indicates whether the firm used owner's personal credit cards to pay business expenses. It provides "a strong signal to other stakeholders regarding the firm owner's financial and psychological attachment to the business" (Wu, Chua, and Chrisman, 2007, p.882). The other dummy variable FINSTATEMENT indicates whether the financial statements or accounting reports for the firm were audited. It signals the credibility of the information provided by small firms.

As a good relationship between small business and its lender could increase the availability of funds and reduce the cost of lending to small business (Petersen and Rajan, 1994; Berger and Udell, 1995), the variable RELATION is included to measure the length of a firm had conducted business with its lender at the time of application for its most recent loan. Since the length of relationship provided by the 1993 SSBF was in years, while those from the 1998 and 2003 SSBF were in months, we adjusted the variable in 1993 to have the same unit as the one in 1998 and 2003 by multiplying by twelve for consistency. Moreover, since a local lender could have better information about the small business' quality and market prospects (Berger and Udell, 2002), the distance between the firm's headquarter and its lender may also have an influence on the loan application. Thus the variable DISTANCE is included to indicate the distance in miles from the firm to its lender.

### **3.4.2. Firm Characteristics Variables**

Following the previous studies (Berger and Udell, 1998; Cavalluzzo and Cavalluzzo, 1998; Romano et al., 2001; Cavalluzzo et al., 2002; Blanchflower et al., 2003; Cavalluzzo and Wolken, 2005), firm characteristics influence the small business financing. These variables include FIRMAGE, measuring the firm's age at the time of each survey, EMPLOYEES, representing the total number of owners and employees working in the firm, and OWNERS, representing the number of owners in the firm<sup>9</sup>. Since a firm's ownership structure may have to do with "the amount of private information that borrowers have, the risks that borrowers take, and the ability of borrowers to shift risk to the bank and other fixed-claim holders" (Berger and Udell, 1995, p.359), three dummy variables SOLEPROP, PARTNERSHIP, and CORPORATION are created for the legal form of a firm. Each of these variables has the value of one if the firm was organized as a sole proprietorship, a partnership, or a corporation, respectively, and zero otherwise. Additional information emphasizes the firm's geographic location. The dummy variable METROPOLITAN indicates the main office of the firm was in a rural or metropolitan, owing to the economic advantages in metropolitan markets (Cavalluzzo and Wolken, 2005). Its value is one if the main office of the firm was in a metropolitan area and zero otherwise. Since the firm may have more than one office, the variable SITES is used to indicate the number of sites that a firm had, and the variable SAMESITES indicates the number of sites that a firm had in the same area as its main office.

Other important firm characteristics are about the firm's financial information. The variable ASSETS indicates the dollar amount of total assets of a firm, and the variable LNASSETS is computed by the natural logarithm of the sum of total assets plus one, measuring the size of the firm, since size has been shown to affect the small firm's financial decision (Berger and Udell, 1998; Romano et al., 2001; Cavalluzzo et al., 2002). Moreover, consistent with the previous studies (Cavalluzzo and Cavalluzzo, 1998; Cavalluzzo et al., 2002; Cavalluzzo and Wolken, 2005), we also include two variables PROFASSETS and SALEASSETS, which are computed by the ratio of profits to total assets, and the ratio of sales to total assets, respectively. Both of them

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<sup>9</sup> To ensure the accuracy of the data, we excluded eleven observations that reported zero owners in the 1993 SSBF data, because their representations in businesses were suspect.



suggest that the higher the ratios are, the more efficient the firm uses its business assets.

Furthermore, we add the Dun and Bradstreet credit score (DBSCORE) from the 1998 and 2003 SSBF to assist in evaluating a firm's credit worth (Cavalluzzo et al., 2002; Blanchflower et al., 2003; Cavalluzzo and Wolken, 2005). The scores provided by Dun and Bradstreet are from "a multitude of sources, including a firm's past experiences with banks, public utility payment histories, and trade experiences with other firms" (Blanchflower et al., 2003, p. 932). Different from the original Dun and Bradstreet credit score ranged from 0 to 100, the variable DBSCORE has the value from one to five in the 1998 SSBF and one to six in the 2003 SSBF. According to the 2003 SSBF, the value of one indicates the scores from 0 to 10, and the following values from two to six indicate the scores from 11 to 25, from 26 to 50, from 51 to 75, from 76 to 90, and from 91 to 100, respectively. In this case, a firm has the most risky of credit if its value is one, while a firm has the least risky of credit if its value is six. To keep a consistent measurement of the variable DBSCORE in our study, we adjusted this variable in the 1998 SSBF as follows: the value of one represents high risk, and the following values from two to five represent significant risk, average risk, moderate risk, and low risk, respectively.

### **3.4.3. Owner Attributes Variables**

The owner's personal attributes have stronger influence on firm's financial decision in small businesses than that in large public firms (Wu et al., 2007). Consistent with the previous studies (Cavalluzzo and Cavalluzzo, 1998; Romano et al., 2001; Cavalluzzo et al., 2002; Blanchflower et al., 2003; Cavalluzzo and Wolken, 2005; Fairlie and Robb, 2007; Wu et al., 2007; Robb et al., 2009), we include several important attributes of the owners as follows. The first variable FEMALE is a dummy variable with the value of one if the firm was female owned and zero otherwise. Similar to the definitions for the independent variable MINORITY, a female owned firm is also defined in two ways by the 2003 SSBF. The variable FEMALE is defined if the firm was more than 50 percent owned by individuals who were female, and the variable FEMALE2 is defined if the principal owner of the firm was a female.

Other control variables representing owner attributes include OWNERAGE, measuring the

age of the principal owner, EXPERIENCE, indicating how many years of experience the principal owner has had managing or owning a business, and the principal owner's highest education level. Based on the 1993, 1998, and 2003 SSBF, the education level is divided into five dummy variables: NOTFINIHS, HIGHSCHDIP, COLLEGE, BACHELORDEG, and POSTGRAD, which indicate the principal owner's highest education level was lower than high school degree, high school graduated or equivalent, some college or training school but no degree granted, bachelor degree like BA, BS, AB, etc., and post graduate degree like MBA, MS, MA, Phd, JD, MD, DDS, etc., respectively. Since the 2003 SSBF interviewed the characteristics of three owners in a firm, it generates the average age, work experience, and education level of owners in a firm. We use the variables OWNERAGE2, EXPERIENCE2, NOTFINIHS2, HIGHSCHDIP2, COLLEGE2, BACHELORDEG2, and POSTGRAD2 to stand for these characteristics. Each of the variables is a weighted average of the characteristics of three individual owners weighted by their ownership shares.

In addition, the dummy variable OWNHOME is derived from the 1998 and 2003 SSBF. Its value is one if the principal owner owned private residence and zero otherwise. This indicates the ability of a small firm to obtain the loan, because the owner could use his own residence as the collateral to pledge for the approval of loan application, which might reduce the adverse selection problems in lending markets (Cavalluzzo and Wolken, 2005).

#### **3.4.4. Measuring Most Recent Loan Characteristics Variables**

As for the characteristics of most recent loan, the 1993, 1998, and 2003 SSBF provide a wealth of information as follows. The dummy variable APPLY indicates whether the firm had applied for its most recent loan in the past three years, and the dummy variable APPROVED indicates whether the firm's most recent loan had been approved if applicable. Previous studies (Cavalluzzo and Cavalluzzo, 1998; Cavalluzzo et al., 2002) discuss the importance of analyzing the differences in application rates across demographic groups, and argue that these differences will "reflect differences in risk preferences, differences in use of informal networks (for example, family) over formal financial markets, and/or feedback effects of past discrimination"

(Cavalluzzo and Cavalluzzo, 1998, p.778).

When the most recent loan had been approved, the variable `AMTAPPLIED` indicates the dollar amount for which the firm applied, and the variable `AMTGRANTED` indicates the dollar amount of credit granted by the lender. One aggregated dummy variable `FULLAPPROVED` indicates whether the most recent loan for the firm had been fully approved, whose value is one if the dollar amount of credit granted by the lender is equal or more than the dollar amount for which the firm applied and zero otherwise.

### **3.4.5. Other Control Variables**

Other control variables in this study include three types of dummy variables. The first group has three year dummy variables, 1993, 1998, and 2003, indicating the year of observations for each survey. The next has nine industry dummy variables, `SIC1`, `SIC2`, `SIC3`, `SIC4`, `SIC5`, `SIC6`, `SIC7`, `SIC8`, and `SIC9`, which are based on groupings of two-digit SIC codes. These variables are included because of the industry effects on small business financing, such as the determination of loan rate (Berger and Udell, 1995). The third has nine region dummy variables, `REG1`, `REG2`, `REG3`, `REG4`, `REG5`, `REG6`, `REG7`, `REG8`, and `REG9`, for census region controls. Based on the 1993, 1998, and 2003 SSBF, these areas indicate East North Central, East South Central, Middle Atlantic, Mountain, New England, Pacific, South Atlantic, West North Central, and West South Central, of the United States, respectively.

## 4. Methodology

In order to explore the relationship between family ownership, firm owner's visible minority, and various measures of small business debt financing, a series of multivariate models are developed.

### 4.1. Models for the Use of Debt

The first model examines whether family and visible minority involvements directly affect the use of debt financing in small businesses (Hypothesis 1 and Hypothesis 2). The ordinary least squares (OLS) model has the following form:

$$\begin{aligned} \text{USE OF DEBT} = & \alpha + \beta_1 \text{FAMILY} + \beta_2 \text{MINORITY} + \beta_3 \text{Control Variables} \\ & + \beta_4 \text{Year Dummy Variables} + \beta_5 \text{Industry Dummy Variables} \\ & + \beta_6 \text{Region Dummy Variables} + \varepsilon \end{aligned} \quad (1)$$

where the control variables are represented by two separate groups. The first group includes the variables OWNMANAGE, OWNERSHARE, USEOWNERCC, FINSTATEMENT, RELATION, DISTANCE, FIRMAGE, EMPLOYEES, OWNERS, two organization forms SOLEPROP and PARTNERSHIP, METROPOLITAN, SITES, SAME SITES, LN ASSETS, DBSCORE, FEMALE, OWNERAGE, EXPERIENCE, four levels of education NOTFINIHS, HIGHSCHDIP, BACHELORDEG, and POSTGRAD, and OWNHOME. The second group adds two financial variables PROFASSETS and SALEASSETS into the control variables. The purpose is to examine whether the differences in control variables result in the different influences on the use of debt financing in small businesses, and how they work if applicable. Thus, two versions of Model (1) are estimated in the analysis.

The second model aims to examine whether the interactions between family ownership and firm owner's visible minority also affect the use of debt financing in small businesses. In particular, we use the variable FBNONVM as our comparison basis to test the interactive effects (Hypothesis 3a and Hypothesis 4a). Consistent with Model (1), this model also has two sets of control variables, and thus is estimated in two versions. It has the following form:

$$\begin{aligned}
\text{USE OF DEBT} = & \alpha + \beta_1 \text{FBVM} + \beta_2 \text{NONFBVM} + \beta_3 \text{NONFBNONVM} \\
& + \beta_4 \text{Control Variables} + \beta_5 \text{Year Dummy Variables} \\
& + \beta_6 \text{Industry Dummy Variable} + \beta_7 \text{Region Dummy Variables} + \varepsilon \quad (2)
\end{aligned}$$

Especially, the 2003 SSBF provides two separate types of variables, one for each of the characteristics of the owner individual and firm level. These firm level characteristics are a weighted average of the characteristics of the individual owners weighted by their ownership shares. Thus, the third model is developed to compare the effects of the two types of characteristics on the use of debt financing in small businesses. By using the 2003 data only, this model has the following form:

$$\begin{aligned}
\text{USE OF DEBT} = & \alpha + \beta_1 \text{FBVM (FBVM2)} + \beta_2 \text{NONFBVM (NONFBVM2)} \\
& + \beta_3 \text{NONFBNONVM (NONFBNONVM2)} + \beta_4 \text{Control Variables} \\
& + \beta_5 \text{Industry Dummy Variable} + \beta_6 \text{Region Dummy Variables} + \varepsilon \quad (3)
\end{aligned}$$

where the control variables for each set of independent variables are in accordance with those in Models (1) and (2). However, to be best to capture the effects of two characteristics of the owner individual and firm level, the control variables must stand at the same level as the independent variables. Thus, the variables FBVM, NONFBVM, and NONFBNONVM are estimated with the variables OWNMANAGE, OWNERSHARE2, FEMALE, OWNERAGE2, EXPERIENCE2, NOTFINIHS2, HIGHSCHDIP2, BACHELORDEG2, and POSTGRAD2 in the owners' firm level, whereas the variables FBVM2, NONFBVM2, and NONFBNONVM2 are estimated with the variables OWNMANAGE2, OWNERSHARE, FEMALE2, OWNAGE, EXPERIENCE, NOTFINIHS, HIGHSCHDIP, BACHELORDEG, and POSTGRAD in the owner individual level, all else are equal. Since each set of independent variables is accompanied with two sets of control variables, Model (3) is estimated in four different versions.

#### 4.2. Models for the Cost of Debt

As addressed in the previous section, the fourth model examines whether family and visible minority involvements directly affect the cost of debt financing in small businesses (Hypothesis

5 and Hypothesis 6). The OLS model has the following form:

$$\begin{aligned} \text{COST OF DEBT} = & \alpha + \beta_1 \text{FAMILY} + \beta_2 \text{MINORITY} + \beta_3 \text{Control Variables} \\ & + \beta_4 \text{Year Dummy Variables} + \beta_5 \text{Industry Dummy Variable} \\ & + \beta_6 \text{Region Dummy Variables} + \varepsilon \end{aligned} \quad (4)$$

where the control variables are represented by three separate groups. The first group includes the variables DISTANCE, FIRMAGE, EMPLOYEES, two organization forms SOLEPROP and PARTNERSHIP, METROPOLITAN, SITES, SAMESITES, LNASSETS, OWNERAGE, EXPERIENCE, four levels of education NOTFINIHS, HIGHSCHDIP, BACHELORDEG, and POSTGRAD, and OWNHOME. To be consistent with the estimation for the use of debt financing, we also add variables OWNMANAGE, OWNERSHARE, USEOWNERCC, FINSTATEMENT, RELATION, OWNERS, and DBSCORE as our second group of control variables. And the variables PROFASSETS and SALEASSETS are added as the third group. Thus, Model (4) is estimated in three versions.

The fifth model examines whether the interactions between family ownership and firm owner's visible minority affect the cost of debt financing in small businesses. Consistent with the use of debt financing, we also use the variable FBNONVM as our comparison basis to test the interactive effects on the cost of debt financing (Hypothesis 7a and Hypothesis 8a). This model also has three sets of control variables as Model (4), and thus is estimated in three versions. It has the following form:

$$\begin{aligned} \text{COST OF DEBT} = & \alpha + \beta_1 \text{FBVM} + \beta_2 \text{NONFBVM} + \beta_3 \text{NONFBNONVM} \\ & + \beta_4 \text{Control Variables} + \beta_5 \text{Year Dummy Variables} \\ & + \beta_6 \text{Industry Dummy Variable} + \beta_7 \text{Region Dummy Variables} + \varepsilon \end{aligned} \quad (5)$$

By using the 2003 data only, the sixth model explores the effects of the two characteristics of the owner individual and firm level on the cost of debt financing. Similar to Model (3), this model also has three sets of control variables, which are in accordance with the ones in Models

(4) and (5), for each set of independent variables, and thus is estimated in six different versions. Its form is as follows:

$$\begin{aligned} \text{COST OF DEBT} = & \alpha + \beta_1 \text{FBVM (FBVM2)} + \beta_2 \text{NONFBVM (NONFBVM2)} \\ & + \beta_3 \text{NONFBNONVM (NONFBNONVM2)} + \beta_4 \text{Control Variables} \\ & + \beta_5 \text{Industry Dummy Variable} + \beta_6 \text{Region Dummy Variables} + \varepsilon \quad (6) \end{aligned}$$

#### 4.3. Model Specifications

For each aspect of the small business debt financing that we examine, we compare results from four specifications of each model. The first is a baseline model that is described as previous. It captures the most common characteristics in small business debt financing. The second specification augments the first with the condition that there is no sole proprietorships firm in the estimation, because a sole proprietorships firm is excluded from the classical definition of a family business. The third specification augments the first with the demand constraints in credit markets. We add the condition that a firm had received a loan for at least the same amount as it applied into the baseline mode. This condition could be represented by the variable FULLAPPROVED. In a fully approved loan setting, small firms may mainly differ from each other in the term of interest rates charged on their loans. The presence of different interest rates will cause small firms to hold different amounts of loan. In turn, the loan difference will induce small firms to use different levels of debt. Therefore, the change in interest rates with respect to the demand constraints results in more or less debt for small businesses. The demand constraints thus would help us clarify the interactive effects of family ownership and firm owner's visible minority on small business debt financing. Finally, we combine these two conditions together as our fourth specification. These specifications provide an opportunity to thoroughly evaluate whether there is a real family effect and/or racial effect in small business debt financing.

## **5. Empirical Results and Robustness Checks**

### **5.1. Descriptive Statistics**

Table 2 presents the descriptive statistics based on the full sample with 12,434 firms. It provides information on the use of debt and the cost of debt financing, firm and owner characteristics, and information on the firm's most recent loan. The means and standard deviations of all the variables are presented in Panel A. The average liability ratio was 37.4%, and the fixed nominal interest rate charged on the most recent loan had a mean of 8.2%, which is significant higher than the average risk free rate of 3.2% during the same period. Family firms took up to 83.2% of the sample, while visible minority owned firms had 18.6%. 86.7% of the sample firms were owner-managed. The principal owner had an average 77.1% of ownership. 41% of the sample firms had used owner's personal credit card to pay for business, and 22.6% had the audited financial statement or accounting reports. The average relationship between lender and borrower was 98.2 months, and their average distance was 75.7 miles.

The average age of the firms was 15.5 years, and the average numbers of total employees and total owners were 31 and 9.5, respectively. 34.3% of the sample firms were operated in the legal form of sole proprietorship, 7.3% were in the form of partnership, and the rest 58.4% were in the form of corporation. 79.1% of the sample firms sited in a metropolitan. The average number of offices a firm had was 2.1, and the average number of offices that sited in the same city as the main office was 1.3. The average value of total assets of the firms was 2,031,203 dollars. The ratios of profits and sales to total assets were 3.6 and 11, respectively. The average Dun and Bradstreet credit score was 3.48, indicating the risk neutral for the overall small businesses. 19.6% of the sample firms were owned by female. The average age of the principal owners was 51.4 years, and the average experience of the principal owners in business was 20.3 years. 22.3% of the principal owners had received the high school education or less, and more than 77% had some form of post-secondary education. 90.1% of the principal owners owned personal residence. As to the firm's most recent loan information, 39.1% of the sample firms had applied for their loans in the past three years. Among the firms that applied for their loans, 87.4%



of the applications had been approved, and 91.5% of the approved loans had received the full loan amount as they applied for.

[Insert Panel A of Table 2 about here]

Panel B and Panel C display the comparisons of variables for two separate versions, one for each of the two independent variables FAMILY and MINORITY, respectively. The results are based on the univariate tests, and reported with the T-test analysis for the differences between mean values of these variables. Obviously, the use of debt financing in small businesses was significantly different between family and non-family firms, and also between visible minority and non-visible minority owned firms, at the 1% level. The family firms had a lower liability ratio of 35.7% than the non-family firms of 45.5%, and the visible minority firms also had a lower liability ratio of 35.1% than the non-visible minority firms of 37.9%. These suggest that, family firms have the lower level of debt than non-family firms on average, and visible minority owned firms are also less of debt than non-visible minority owned firms. The cost of debt financing was significantly different between visible minority and non-visible minority owned firms at the 1% level, but it was indifferent between family and non-family firms. The average interest rate charged on visible minority owned firms was around 1.5% higher than that on non-visible minority owned firms, which indicates that visible minority owned firms are charged higher interest rates relative to non-visible minority owned firms.

[Insert Panels B and C of Table 2 about here]

Panel B shows that 19.7% of family firms and 12.8% of non-family firms were visible minority owned firms, and it was significantly different at the 1% level. This indicates that firm owner's visible minority may be more involved under family ownership. The comparisons for the differences in control variables are as follows. 88.3% of family firms and 78.8% of non-family firms were owner-managed. The principal owner had an average 83.3% of ownership in family firms and 45.5% in non-family firms. 42.7% of family firms and 32.6% of non-family firms had used owner's personal credit card to pay for business, and 21.2% of family firms and 28.8% of non-family firms had the audited financial statement or accounting reports. The

average relationship between lender and borrower was 99.8 months in family firms and 93 months in non-family firms.

The average number of total employees was 26 in family firms and 56 in non-family firms. The average number of total owners was 3.8 in family firms and 37.7 in non-family firms. 78.4% of family firms and 82.4% of non-family firms sited in a metropolitan. The average value of total assets was 1,538,811 dollars in family firms and 4,508,897 dollars in non-family firms. The average Dun and Bradstreet credit score was 3.46 in family firms and 3.58 in non-family firms. 21.3% of family firms and 10.6% of non-family firms were owned by female. The average age of the principal owners was about 51 years in both family and non-family firms. All of the five education levels were significantly different between family firms and non-family firms. 89.7% of the principal owners in family firms and 92.1% in non-family firms owned personal residence. 36.4% of family firms and 52.4% of non-family firms had applied for their loans in the past three years, and among them, 86.2% of applications in family firms and 91.6% in non-family firms had been approved. All the above were statistically significant.

Panel C shows that 88.7% of visible minority owned firms and 82.4% of non-visible minority owned firms were family firms, and it was significantly different at the 1% level. This indicates the same argument as Panel B that firm owner's visible minority may be highly correlated to family ownership. The followings present the comparisons for control variables. 88.1% of visible minority owned firms and 86.4% of non-visible minority owned firms were owner-managed. The principal owner had an average 84.3% of ownership in visible minority owned firms and 75.5% in non-visible minority owned firms. 18.2% of visible minority owned firms and 23.5% of non-visible minority owned firms had the audited financial statement or accounting reports. The average relationship between lender and borrower was 70.3 months in visible minority owned firms and 100.9 months in non-visible minority owned firms. The average distance between lender and borrower was 107.2 miles in visible minority owned firms and 71.9 in non-visible minority owned firms.

The average ages of visible minority owned firms and non-visible minority owned firms

were 11.7 and 16.2, respectively. The average number of total employees was 16.2 in visible minority owned firms and 33.8 in non-visible minority owned firms. The average number of total owners was 1.9 in visible minority owned firms and 10.35 in non-visible minority owned firms. 89.6% of visible minority owned firms and 76.7% of non-visible minority owned firms sited in a metropolitan. The average value of total assets was 669,103 dollars in visible minority owned firms and 2,237,367 dollars in non-visible minority owned firms. The average Dun and Bradstreet credit score was 3.05 in visible minority owned firms and 3.55 in non-visible minority owned firms. 23.7% of visible minority owned firms and 18.6% of non-visible minority owned firms were owned by female. The average age of the principal owners was 48.4 in visible minority owned firms and 52 in non-visible minority owned firms. The average experience of the principal owners in business was 16.2 years in visible minority owned firms and 21.3 years in non-visible minority owned firms. 81.7% of the principal owners in visible minority owned firms and 91.7% in non-visible minority owned firms owned personal residence. 32.1% of visible minority owned firms and 40.5% of non-visible minority owned firms had applied for their loans in the past three years. Among them, 68.1% of applications in visible minority owned firms and 90.8% in non-visible minority owned firms had been approved, and 86.7% of the approved loans in visible minority owned firms and 92.1% in non-visible minority owned firms had received the full loan amount. All the above were statistically significant.

To investigate the interactive effects of family ownership and firm owner's visible minority on small business debt financing, additional information was provided for the use of debt and the cost of debt financing with the T-test analysis. Panel D1 describes the variable USE OF DEBT under family and visible minority involvements. No matter the firm was visible minority owned or not, there were significantly different for the use of debt financing between family and non-family firms at the 1% level. The liability ratios of family and non-family firms were 33.9% and 44.2%, respectively, when the firms were all visible minority owned, and the ratios were 36.2% and 45.8%, respectively, when the firms were all non-visible minority owned. This is consistent with the previous findings that family firms have a lower level of debt than non-family

firms. When the firms were all family owned, visible minority owned firms had a lower liability ratio 33.9% than non-visible minority owned firms 36.2%, significantly different at the 5% level. However, such difference did not exist when the firms were all non-family owned. This suggests the conditional findings that visible minority owned firms have the lower level of debt than non-visible minority owned firms only if these firms are all family owned.

[Insert Panel D of Table 2 about here]

Panel D2 describes the variable COST OF DEBT under family and visible minority involvements. When the firms were all visible minority owned, the average interest rate of 9.6% charged on family firms was higher than that of 8.5% charged on non-family firms, which was significantly different at the 10% level. But such difference did not exist when these firms were all non-visible minority owned. It suggests the conditional findings that family firms suffer higher interest rates than non-family firms only if these firms are all visible minority owned. When the firms were all family owned, the average interest rate charged on visible minority owned firms was 9.6%, while that charged on non-visible minority owned firms was 7.99%, which was significantly different at the 1% level. But such difference did not exist when the firms were all non-family owned. This leads to the conditional findings that visible minority owned firms suffer higher interest rates than non-visible minority owned firms only if these firms are all family owned.

Furthermore, the effects of family ownership and firm owner's visible minority on small business debt financing were analyzed in a fully approved loan setting (FULLAPPROVED=1). The sub-sample results were presented in Panels E1 and E2. Panel E1 shows the results for the variable USE OF DEBT. When the firms were all non-visible minority owned, family firms had a lower liability ratio 47.8% than non-family firms 52.5%, significantly different at the 1% level. However, such difference did not exist when the firms were all visible minority owned. This suggests the conditional findings that family firms have the lower level of debt than non-family firms only if these firms are all non-visible minority owned. In addition, there was no difference between visible minority and non-visible minority owned firms for the use of debt financing, no

matter the firms were family owned or not. Compared with the results in full sample, the liability ratios in fully approved sub-sample were about 1% higher. The liability ratios of family and non-family firms were 46.8% and 51%, respectively, when the firms were all visible minority owned, and the ratios were 47.8% and 52.5%, respectively, when the firms were all non-visible minority owned.

[Insert Panel E of Table 2 about here]

Panel E2 shows the results for the variable COST OF DEBT. When the firms were all family owned, the average interest rate charged on visible minority owned firms was 9.7%, while that charged on non-visible minority owned firms was 7.97%, which was significantly different at the 1% level. When the firms were all non-family owned, the average interest rate charged on visible minority owned firms was 9.1%, while that charged on non-visible minority owned firms was 8.02%, which was significantly different at the 5% level. Both of them indicate the unconditional findings that visible minority owned firms are charged higher interest rates than non-visible minority owned firms. However, there was no difference between family and non-family firms for the cost of debt financing, no matter the firms were visible minority owned or not.

[Insert Panels A and B of Table 3 about here]

In addition, Table 3 presents the pairwise correlations between each dependent variable and the independent variables, between each dependent variable and the control variables, and between each independent variable and the control variables, based on the univariate tests for the full sample. The results show that the dependent variable USE OF DEBT is highly correlated to all the independent variables, indicating that both family ownership and firm owner's visible minority have a significant effect on the use of debt financing in small businesses. Whereas the dependent variable COST OF DEBT is highly correlated to the independent variables MINORITY, FBVM, and FBNONVM. It suggests that the cost of debt financing in small businesses is mainly affected by firm owner's visible minority.

## **5.2. Use of Debt**

Tables 4, 5, and 6 present the results about the use of debt analysis based on Models (1), (2), and (3). They examined the amount of debt used across small businesses. Model (1) examined the direct effects of family ownership and firm owner's visible minority on the use of debt financing, whereas Models (2) and (3) examined the second order effects of family ownership and firm owner's visible minority using all three SSBF data sets and the most recent 2003 SSBF data set, respectively. Industry and region dummy variables were used for all model analysis, but their coefficients were not reported due to their overall mixed results. Year dummy variables were used in Models (1) and (2), but their coefficients were not reported, because nearly none of them were statistically significant.

[Insert Table 4 about here]

Table 4 provides the results about the direct effects of family and visible minority involvements on the use of debt financing. As discussed earlier, Model (1) was estimated for our four model specifications. Model (1.1) was our baseline model, and it presented the results for the full sample regressions. Whereas Models (1.2), (1.3), and (1.4) were estimated in different sub-samples, Model (1.2) was estimated with the condition that there was no sole proprietorship firm in the regressions (SOLEPROP=0), Model (1.3) was estimated with the demand constraints in credit markets (FULLAPPROVED=1), and Model (1.4) was estimated with our full specifications (SOLEPROP=0 & FULLAPPROVED=1). This is the same for all of the models in this study.

As shown in the results of Model (1), our Hypothesis 2 is rejected. Firm owner's visible minority does not have a significant impact on the level of debt used in small businesses. Contrary to Hypothesis 1, the coefficients on FAMILY are statistically significant and negatively associated with the dependent variable USE OF DEBT. This indicates that family ownership is related to the lower level of debt, just like the findings in Panel B and Panel D1 of Table 2. However, traditional view argues that family firms tend to have a highly levered capital structure owing to family owner's desire to hold the majority of control (Vos and Forlong, 1996). Mishra and McConaughy (1999) provide one possible explanation for this lower level of debt in family

firms. They suggest that family business owners are more likely to borrow less of debt because of the owner's higher expected costs of debt. The more a firm borrows, the larger costs of debt it has. This is because higher debt levels increase the rollover risk of their debt and also the probability of financial distress. Another possible explanation is that family firms can be more successful, then they do not need to keep higher levels of debt, as long as there is enough cash flow in the firm.

The coefficients on control variables show several important factors in small business debt financing. According to the results of Model (1), the coefficients on OWNERSHARE are positive and statistically significant, indicating that the level of debt increases with the principal owner's ownership. The coefficients on USEOWNERCC are negative and statistically significant, indicating that the level of debt decreases when the business owner can use personal credit cards to pay business expenses. The coefficients on RELATIONS are all positive and statistically significant, which is consistent with the literature (Petersen and Rajan, 1994; Berger and Udell, 1995, 2002) that a long-run relationship between the firm and its lender can make the small business obtain debt financing easier due to the resolve of informational asymmetry.

The coefficients on FIRMAGE are all negative and statistically significant. They indicate that the level of debt decreases with the firm's age. The older the firm is, the less it has the debt. Berger and Udell (1995) explain that by the accumulation of retained earnings over the business life cycle. Since such retained earnings can be used by small business owners to obtain a larger equity share, the owner's equity increases over time. In turn, debt from the short-term loan and credit debt declines as the firm matures. The coefficients on SOLEPROP and PARTNERSHIP are negative and statistically significant. Both of them suggest that debt in either form of business seems to be less than that in a corporation. Consistent with the previous studies (Berger and Udell, 1998; Romano et al., 2001), the coefficients on LNASSETS are all positive and statistically significant, indicating that the level of debt increases with the firm's assets. The coefficients on DBSCORE are all negative and statistically significant. Since higher credit score increases the risk of a firm, the firm with higher credit score may have the lower of debt in order

to avoid the higher risk. This is consistent with the previous studies (Diamond, 1989; Berger and Udell, 1995, 2002). The coefficients on SALEASSETS are positive and statistically significant, indicating the level of debt increases with the firm's sales to assets ratio. Moreover, when there was no sole proprietorship firm (SOLEPROP=0), the results of Models (1.2) and (1.4) show that the coefficients on FEMALE are all negative and statistically significant, which indicates that the role of female has a negative impact on the level of debt.

[Insert Table 5 about here]

Table 5 presents the results about the second order effects of family and visible minority involvements on the use of debt financing with the variable FBNONVM as the comparison basis. As illustrated in previous, Model (2) is estimated in two versions of control variables, but only reported for one of them, because their results are consistent. Similar to the findings in Model (1), Hypothesis 4a is rejected in Model (2). Firm owner's visible minority does not have a significant impact on the level of debt used in small businesses, even under the condition that all the firms are family owned. The results of Model (2) also contradict Hypothesis 3a. The coefficients on NONFBNONVM are positive and statistically significant, suggesting that non-family firms have the higher level of debt than family firms, when these firms are all non-visible minority owned. This is consistent with the finding of Panel E1 of Table 2. One reason for this finding may be the use of social capital, as well as the impact of cultural values and environment. Chua et al. (forthcoming) suggest that social capital can help small business build credibility and thus obtain a higher level of debt financing from various resources, especially in family businesses, because family members' social capital can be easily transmitted to family firm's social capital (Arregle et al., 2007). Since culture has an influence on the configurations of social capital and networking styles (Tata and Prasad, 2010), borrowed social capital and cultural issues in general improve the small business' performance. In this case, family involvement in ownership may make small business more likely to borrow their family members' social capital, which leads to the lower level of debt in family business.

Consistent with the findings of Model (1), the control variables in Model (2) show the same



factors that have significant impact on the level of debt in small businesses. These factors include the variables OWNERSHARE, USEOWNERCC, RELATION, FIRMAGE, SOLEPROP, PARTNERSHIP, LNASSETS, DBSCORE, and FEMALE.

[Insert Table 6 about here]

By using the most recent 2003 data set only, Table 6 also presents the results about the second order effects of family and visible minority involvements on the use of debt financing. It only reports for one version of control variables in Model (3). Since there were two characteristics of owner individual and firm level, the variable FBNONVM was used as the comparison basis in the owners' firm level, whereas the variable FBNONVM2 was in the owner individual level. As shown in Model (3), the coefficients on NONFBNONVM and NONFBNONVM2 are positive and statistically significant, which contradict Hypothesis 3a again. This result is consistent with the findings in Model (2), suggesting that non-family firms have the higher level of debt than family firms, when these firms are all non-visible minority owned. Moreover, the results of Model (3) also reject out Hypothesis 4a.

In addition to the consistent relationship between the use of debt financing and a series of control variables including RELATION, FIRMAGE, PARTNERSHIP, LNASSETS, and DBSCORE, the results of Model (3) also show that the coefficients on SAMEITES are all negative and statistically significant, suggesting that the more a firm has its offices, plants, or stores in the same area as its main office, the lower level of debt the firm has. The coefficients on OWNHOME are negative and statistically significant, which indicates that the level of debt decreases when the principal owner owned residence. This is because the owner could use personal residence as the collateral to pledge for the approval of loan application (Cavalluzzo and Wolken, 2005; Robb et al., 2009).

To sum up, we have the conclusion that family ownership is negatively related to the use of debt financing, and family firms have a lower level of debt than non-family firms when these firms are all non-visible minority owned. However, there is no evidence for the effects of firm owner's visible minority on the use of debt financing in small businesses. Coefficients on the

control variables show that in small businesses, the level of debt is negatively related to the firm's age and its credit score, whereas it is positively related to the relationship between the firm and its lender, and the firm size.

### **5.3. Cost of Debt**

Tables 7, 8, and 9 present the results about the cost of debt analysis based on Models (4), (5), and (6). They examined the fixed interest rates charged across the demographic characteristics of small businesses. Model (4) examined the direct effects of family ownership and firm owner's visible minority on the cost of debt financing, whereas Models (5) and (6) examined the second order effects of family ownership and visible minority using all three SSBF data sets and the most recent 2003 SSBF data set, respectively. Industry and region dummy variables were used for all model analysis, but their coefficients were not reported, because none of them were statistically significant. All of year dummy variables used in Models (4) and (5) were statistically significant, but not reported in the tables.

[Insert Table 7 about here]

Table 7 presents the results about the direct effects of family and visible minority involvements on the cost of debt financing. In support of Hypothesis 5 and Hypothesis 6, the results of Model (4) show that, the coefficients on FAMILY are statistically significant and negatively associated with the dependent variable COST OF DEBT, whereas the coefficient on MINORITY are statistically significant and positively associated with that variable. Both of them suggest that, family firms are charged a lower interest rate on their loans, whereas visible minority owned firms are charged a higher interest rate, which is consistent with the findings of Panel C and Panel E2 of Table 2. Consistent with the previous studies, Anderson et al. (2003) and Chua et al. (forthcoming) point out that family involvement can help family firm both directly and indirectly resolve the agency problems with lenders, which result in a lower cost of debt financing. Whereas previous empirical studies (Cavalluzzo and Cavalluzzo, 1998; Cavalluzzo et al., 2002; Blanchflower et al., 2003) also demonstrate that minority owned firms pay a higher interest rate on their loans than whiter owned firms. Thus this is the evidence that

small businesses have experienced differently in credit markets, and the interest rates charged on their loans vary across demographic groups in small businesses.

As shown in Model (4), the coefficients on DISTANCE are positive and statistically significant in Models (4.1) and (4.2), but become insignificant after controlling for the demand constraints. It suggests that to some extent, the interest rates increase with the distance between the firm and its lender. The coefficients on FIRMAGE are negative and statistically significant in Models (4.1) and (4.3), but become smaller and insignificant after we added the condition that there was no sole proprietorship firm (SOLEPROP=0). It suggests that the interest rates decrease with the firm's age, especially in a sole proprietorship. One reason is that the firm has acquired a better reputation for its credit over time, and thus can obtain a lower interest rate on their loans (Diamond, 1989). The coefficients on LNASSETS are all negative and statistically significant, indicating that the interest rates decrease with the firm size. This is consistent with the previous studies (Peterson and Rajan, 1994; Berger and Udell, 1995; Cavalluzzo et al., 2002) that the larger size of a firm incurs a lower cost of debt, because size can be used by lenders to measure a firm's default risk. The coefficients on FEMALE are negative and statistically significant, suggesting that female owned firms may be charged a lower interest rate on their loans. The coefficients on OWNERAGE are negative and statistically significant in Models (4.2) and (4.4), suggesting that the interest rates decrease with the principal owner's age, especially when the firms are not owned by a single owner. Similar to the variable FIRMAGE, the coefficients on POSTGRAD and OWNHOME are all negative and statistically significant in Models (4.1) and (4.3). They indicate that both the principal owner's education level and whether the owner owned personal residence have negative impacts on the interest rates charged on their loans, especially for the firms controlled by a single owner.

[Insert Table 8 about here]

Table 8 presents the results about the second order effects of family and visible minority involvements on the cost of debt financing with the variable FBNONVM as the comparison basis. In support of Hypothesis 8a, the coefficients on FBVM are all positive and statistically

significant, suggesting that visible minority owned firms are charged a higher interest rate than non-visible minority owned firms, when these firms are all family owned. This is consistent with the findings of Panel D2 of Table 2. Also in support of Hypothesis 7a, the coefficients on NONFBNONVM are also positive and statistically significant, suggesting that non-family firms are charged a higher interest rate than family firms, when these firms are all non-visible minority owned. Both of the above provide the evidence that there are conditional racial effects on small business debt financing.

In addition, the results of Model (5) also show the same factors that have significant impact on interest rates as the findings of Model (4). These factors include the variables FIRMAGE, LNASSETS, FEMALE, OWNERAGE, POSTGRAD, and OWNHOME.

[Insert Table 9 about here]

Table 9 also presents the results about the second order effects of family and visible minority involvements on the cost of debt financing using the most recent 2003 data set only. Model (6) is estimated with our four model specifications, but only reported for the full specifications (SOLEPROP=0 & FULLAPPROVED=1), since the results are consistent. Same as Model (3), the variable FBNONVM was used as the comparison basis in the owners' firm level, whereas the variable FBNONVM2 was in the owner individual level. As shown in Model (6), the coefficients on NONFBNONVM and NONFBNONVM2 are all positive and statistically significant. These results support Hypothesis 7a, and have the same argument as Model (5) that when the firms are all non-visible minority owned, non-family firms are charged a lower interest rate than family firms.

In support of Hypothesis 8a, the coefficients on FBVM are positive and statistically significant at the 10% level in the third column of Model (6.4.1). This suggests that firm owner's visible minority has limited impact on the interest rates charged on their loans. With the passage of time from 1993 to 2003, the change in the effects of firm owner's visible minority suggest that the racial disparities in small business credit markets have been reduced. One possible reason is that lenders adjust their strategies on loan origination for small businesses, and thus the lending

policy becomes more favorable to minority borrowers. Furthermore, compared with the results of Models (4) and (5), the coefficients on FEMALE in Model (6) become smaller and insignificant. This also suggests that the effects of minority on interest rates charged to them have been reduced. In addition, the control variables DISTANCE, FIRMAGE, and OWNHOME have been shown the same effects on the interest rates as the previous.

To sum up, we find evidence that the family ownership is negatively related to the cost of debt financing (Hypothesis 5), and family firms pay a lower interest rate than non-family firms when these firms are all non-visible minority owned (Hypothesis 7a). We also find evidence that the firm owner's visible minority are positively related to the cost of debt financing (Hypothesis 6), and visible minority owned firms pay a higher interest rate than non-visible minority owned firms when these firms are all family owned (Hypothesis 8a). Thus, we have the conclusion that in credit markets, both of family ownership and firm owner's visible minority have influence on the cost of small business debt financing. However, our results from the latest data show that the effects of firm owner's visible minority have been reduced with the passage of time. It makes the evidence on the racial effects in small business credit markets not convincing enough. Coefficients on the control variables show that in small businesses, the interest rates charged on their loans are significant and negatively related to the firm's age and whether the principal owner owned personal residence.

#### **5.4. Robustness Checks**

To ensure the robustness of our results, we do the following robustness checks. First, we change the independent variables in Models (2) and (5) to the variables FBVM, FBNONVM, and NONFBNONVM, so as to re-estimate the second order effects of family and visible minority involvements on the use of debt and the cost of debt financing, respectively, for our Hypotheses 3b, 4b, 7b, and 8b. With the variable NONFBVM as the comparison basis, the results show that the coefficients of the independent variables are all negative, but none of them are statistically significant, although they are not reported in the table. These suggest that when the firms are all visible minority owned, it is indifferent between family and non-family firms, in terms of their

level of debt and the interest rates charged on their loans. In addition, when the firms are all non-family owned, it is also indifferent between visible minority and non-visible minority owned firms, in terms of their level of debt and the interest rates charged on their loans. Thus, Hypotheses 3b, 4b, 7b, and 8b are all rejected, because they are not significantly associated with the use of debt and the cost of debt financing in small businesses.

[Insert Tables 10 and 11 about here]

Second, we use the default risk to measure the cost of debt financing in small businesses. This variable COST OF DEBT2 is calculated by the fixed nominal interest rate that the firm paid at the time of issue of its most recent loan minus 90 day T-bill rate over the same period. Then we re-estimate Models (4) and (5). Table 10 presents the results about the direct effects of family ownership and firm owner's visible minority on the cost of debt financing, whereas Table 11 presents the results about the second order effects. According to them, the results are consistent with our previous findings.

[Insert Tables 12 and 13 about here]

Third, we re-estimate Models (1), (2), (4) and (5) in two different categories, one for corporations, the other for sole proprietorships and partnerships. With the demand constraints in credit markets (FULLAPPROVED=1), Table 12 presents the results about the effects of family ownership and firm owner's visible minority on the use of debt financing, whereas Table 13 about the cost of debt financing. When the firms are all corporations, the results are consistent with our fully sample regressions. However, when the firms are either sole proprietorships or partnerships, there is no effect of family ownership and firm owner's visible minority on either the use of debt or the cost of debt financing. Thus, these results indicate that our findings in this study are favored by corporations rather than either sole proprietorships or partnerships.

Fourth, this study uses the variable USE OF DEBT to measure the quantity of debt, and the variable COST OF DEBT to measure the price of debt, so that the quantity and the price of debt in this study are not determined simultaneously. In order to solve the potential omitted variables issue in the price-quantity relationships, we replace our original three year dummy variables

1993, 1998, and 2003 with the years that the firms applied for their most recent loans. According to the 1993, 1998, and 2003 SSBF, there are 15 year dummy variables in total to identify each firm's application year. By re-estimating Models (1), (2), (4) and (5) with the 15 year dummy variables, the results are consistent with those reported in Tables 4, 5, 7 and 8. Therefore, although our dependent variables USE OF DEBT and COST OF DEBT do not measure the quantity and the price of debt at the same time, the findings in this study remain valid.

Furthermore, since the significant correlation between some of the independent and control variables may cause multicollinearity, we estimate the variance inflation factors (VIFs) in all of our regression models in order to minimize this potential problem. As a rule of thumb, multicollinearity may not be a serious problem if the value of VIF for variables does not exceed 10. Thus, there is no evidence of serious multicollinearity in this study as all the VIFs in our models are below 5.

## **6. Conclusions and Limitations**

Debt financing is one of the main sources of capital for small businesses. Current theory of debt financing does not only focus on the amount of debt used by small firms in their capital structure, but also the interest rates charged to these small firms. In this paper, we review the agency cost and small business literatures to argue that not only family involvement, but also racial disparity has an influence on small business debt financing.

In the empirical tests, we use data from the 1993, 1998, and 2003 SSBF to examine the interactive effects of family and minority ownership on different aspects of small business debt financing. Our analysis finds significant evidence that family ownership has an impact on both the use of debt and the cost of debt financing in small businesses. That is, family ownership are negatively related to both the use of debt and the cost of debt financing (Hypothesis 5), and when the firms are all non-visible minority owned, family firms have a lower level of debt and pay a lower interest rate than non-family firms (Hypothesis 7a). We also find that the firm owner's visible minority are positively related to the cost of debt (Hypothesis 6), and when these firms are all family owned, visible minority owned firms pay a higher interest rate than non-visible minority owned firms (Hypothesis 8a). However, the results by using the most recent 2003 data alone appear to be insignificant for the racial effects on the cost of debt financing. In addition, we find more robust evidence that our findings in this study are more favorable to corporations.

These findings also have important implications for both small business and family business research. Since family involvement affects both the use of debt and the cost of debt financing, research on small business cannot ignore the family involvement. For small business owners, it is important to understand the advantages and disadvantages of family involvement to finance their small businesses. Furthermore, it also can help the policymakers and institutional lenders make financing decisions on small business loans based on the analysis of family involvement. On the other hand, the indications that the interest rate charged to the small business depends on the firm owner's visible minority imply that small businesses across demographic groups experience great differently in credit markets. It advises the visible minority owners in small businesses how



to get a loan with their racial characteristics. And for policymakers and institutional lenders, understanding the racial effects also assists small businesses in obtaining debt financing.

Our study has several limitations. First, we treat all the minority races as a whole, rather than consider the disparities in different races. Since different races may have different preferences for their use of debt financing, and also may suffer different costs of debt financing, our results may be biased for some racial groups. Thus future research can be performed along this route. With the separation into different races, the interactive effects of family and minority ownership may be different. And it could have a better explanation for racial disparities on small business debt financing. Second, we may never have sufficient control variables for estimation. Thus it is possible that some unknown factor would have an influence on the small business debt financing. Third, we are unable to verify the self-reported data, since information on identifying each sample firm is not available to us. Take the Dun and Bradstreet credit score for example, the variable DBSCORE in our study is only available in the survey years 1998 and 2003. Even the Dun and Bradstreet provides the credit scores for the firms in the 1993 SSBF, we cannot match them to our sample firms due to the lack of firm identities. Thus, our results for the regressions with the variable DBSCORE in this study only take the survey years 1998 and 2003 into considerations. Furthermore, we cannot estimate our models in a panel setting, because our sample firms cannot be matched year over year.

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**Table 1. Variable Definitions**

Variables	Definitions
<b>Dependent Variables</b>	
USE OF DEBT	Total liabilities/total assets.
COST OF DEBT	Fixed nominal interest rate that the firm paid at the time of issue of its most recent loan in the past three years.
<b>Independent Variables</b>	
FAMILY	Equal to one if the firm was more than 50% owned by a single family and zero otherwise.
MINORITY	Equal to one if the firm was more than 50% owned by individuals who were visible minorities and zero otherwise.
MINORITY2	Equal to one if the firm's principal owner was a visible minority and zero otherwise.
FBVM (2)	Equal to one if the firm was both family and visible minority owned and zero otherwise.
FBNONVM (2)	Equal to one if the firm was family owned, but not visible minority owned, and zero otherwise.
NONFBVM (2)	Equal to one if the firm was visible minority owned, but not family owned, and zero otherwise.
NONFBNONVM (2)	Equal to one if the firm was neither family nor visible minority owned and zero otherwise.
<b>Control Variables</b>	
<b>Agency Variables</b>	
OWNMANAGE	Equal to one if there was at least one owner responsible for the daily management of the business and zero otherwise.
OWNMANAGE2	Equal to one if the principal owner was also the manager of the firm and zero otherwise.
OWNERSHARE	Indicates the percentage ownership held by the principal owner.
OWNERSHARE2	Equal to one if any one individual or company owned 10 percent or more of the share in this firm and zero otherwise.
USEOWNERCC	Equal to one if the firm used owner's personal credit cards to pay business expenses and zero otherwise.
FINSTATMENT	Equal to one if the financial statements or accounting reports for the firm were audited and zero otherwise.
RELATION	Indicates the length of a firm had conducted business with its lender at the time of application for its most recent loan.
DISTANCE	Indicates the miles from the firm to its lender.



**Table 1. Variable Definitions (Continued)**

Variables	Definitions
<b>Control Variables</b>	
Firm Characteristics	
FIRMAGE	Indicates the firm's age at the time of the survey.
EMPLOYEES	Indicates the total number of owners and employees working in the firm.
OWNERS	Indicates the number of owners in the firm.
SOLEPROP	Equal to one if the firm was organized as a sole proprietorship and zero otherwise.
PARTNERSHIP	Equal to one if the firm was organized as a partnership and zero otherwise.
CORPRATION	Equal to one if the firm was organized as a corporation and zero otherwise.
METROPOLITAN	Equal to one if the main office of the firm was in a metropolitan and zero otherwise.
SITES	Indicates the number of sites that a firm had.
SAMESITES	Indicates the number of sites that a firm had in the same area as its main office.
ASSETS	Indicates the dollar amount of total assets.
LNASSETS	Natural logarithm of the sum of total assets plus one.
PROFASSETS	Profits/ total assets.
SALEASSETS	Sales/total assets.
DBSCORE	Indicates the firm's credit score percentile created by Dum and Bradstreet.
<b>Most Recent Loan Characteristics</b>	
APPLY	Equal to one if the firm had applied for its most recent loan in the past three years and zero otherwise.
APPROVED	Equal to one if the firm's most recent loan had been approved and zero otherwise.
AMTAPPLIED	Indicates the dollar amount for which the firm applied.
AMTGRANTED	Indicates the dollar amount of credit granted by the lender.
FULLAPPROVED	Equal to one if the dollar amount of credit granted by the lender is equal or more than the dollar amount for which the firm applied and zero otherwise.

**Table 1. Variable Definitions (Continued)**

Variables	Definitions
<b>Control Variables</b>	
<b>Owner Attributes</b>	
FEMALE	Equal to one if the firm was more than 50% owned by individuals who were female and zero otherwise.
FEMALE2	Equal to one if the firm's principal owner was female and zero otherwise.
OWNERAGE	Indicates the age of the principal owner.
OWNERAGE2	Indicates the average age of three principal owners.
EXPERIENCE	Indicates the number of years of experience that the principal owner has had owning or managing a business.
EXPERIENCE2	Indicates the average number of years of experience that three principal owners have had owning or managing a business.
NOTFINIHS, HIGHSCHDIP, COLLEGE, BACHELORDEG, and POSTGRAD	Indicates the principal owner's education level. Equal to one if the principal owner's highest education level was lower than high school degree, high school graduated or equivalent, some college or training school but no degree granted, bachelor degree like BA, BS, AB, etc., and post graduate degree like MBA, MS, MA, Phd, JD, MD, DDS, etc., respectively, and zero otherwise.
NOTFINIHS2, HIGHSCHDIP2, COLLEGE2, BACHELORDEG2, and POSTGRAD2	Indicates the average education level of three principal owners. Equal to one if the average highest education level of three principal owner was lower than high school degree, high school graduated or equivalent, some college or training school but no degree granted, bachelor degree like BA, BS, AB, etc., and post graduate degree like MBA, MS, MA, Phd, JD, MD, DDS, etc., respectively, and zero otherwise.
OWNHOME	Equal to one if the principal owner owned private residence and zero otherwise.
<b>Additional Controls</b>	
1993, 1998, and 2003	Indicates the year of observations for each survey.
SIC1-SIC9	Indicates the industry controls based on grouping of two-digit SIC codes.
REG1-REG9	Indicates the census region controls.

## **Table 2. Descriptive Statistics**

Panel A presents the summary statistics based on the full sample with 12,434 firms.

Panel B and Panel C show the comparisons of variables for two separate versions, one for each of the two independent variables FAMILY and MINORITY, respectively. The results are reported with the T-test analysis for the differences between mean values of these variables.

Panel D1 and Panel D2 describe the means and standard deviations for the dependent variables USE OF DEBT and COST OF DEBT, respectively, under family and visible minority involvements, based on the full sample. The results are reported with the T-test analysis.

Panel E1 and Panel E2 describe the means and standard deviations for the dependent variables USE OF DEBT and COST OF DEBT, respectively, under family and visible minority involvements, based on a fully approved sub-sample (FULLAPPROVED=1). The results are reported with the T-test analysis.

**Panel A. Descriptive Statistics of the Variables**

Variables	N	Mean	Std.Dev.	Min	Max
<b>Dependent</b>					
USE OF DEBT	10078	0.374	0.301	0	1
COST OF DEBT	1995	8.198	2.956	0.900	32.000
<b>Independent</b>					
FAMILY	12434	0.832	0.374	0	1
MINORITY	12375	0.186	0.389	0	1
FBVM	12375	0.165	0.371	0	1
FBNONVM	12375	0.671	0.470	0	1
NONFBVM	12375	0.021	0.143	0	1
NONFBNONVM	12375	0.143	0.351	0	1
<b>Control</b>					
<b>Agency</b>					
OWNMANAGE	12375	0.867	0.339	0	1
OWNERSHARE	12384	77.092	27.770	0	100
USEOWNERCC	12434	0.410	0.492	0	1
FINSTATEMENT	6582	0.226	0.418	0	1
RELATION	4248	98.220	111.349	0	1155
DISTANCE	4247	75.714	279.856	0	4407
<b>Firm Characteristics</b>					
FIRMAGE	12434	15.452	12.794	0	216
EMPLOYEES	12434	31.007	60.419	0	500
OWNERS	12423	9.477	134.118	1	9000
SOLEPROP	12434	0.343	0.475	0	1
PARTNERSHIP	12434	0.073	0.260	0	1
CORPORATION	12434	0.584	0.493	0	1
METROPOLITAN	12434	0.791	0.407	0	1
SITES	12434	2.099	20.765	1	1987
SAMESITES	12434	1.329	2.077	1	150
ASSETS	10194	2031203.000	7908159.000	0	239000000
LNASSETS	10194	11.959	2.755	0	19.291
PROFASSETS	10078	3.593	120.071	-710	9500
SALEASSETS	10078	10.969	252.955	-0.185	19800.920
DBSCORE	7772	3.480	1.343	1	6
<b>Owner Attributes</b>					
FEMALE	12375	0.196	0.397	0	1
OWNERAGE	12350	51.360	11.396	19	95
EXPERIENCE	12350	20.341	11.742	0	72
NOTFINIHS	12350	0.030	0.170	0	1
HIGHSCHDIP	12350	0.193	0.395	0	1
COLLEGE	12350	0.251	0.433	0	1
BACHELORDEG	12350	0.322	0.467	0	1
POSTGRAD	12350	0.205	0.404	0	1
OWNHOME	7751	0.901	0.299	0	1
<b>Most Recent Loan Characteristics</b>					
APPLY	12434	0.391	0.488	0	1
APPROVED	4862	0.874	0.332	0	1
AMTAPPLIED	4560	934235.200	3849904.000	100	100000000
AMTGRANTED	4248	997600.500	4133095.000	100	100000000
FULLAPPROVED	4248	0.915	0.278	0	1

### Panel B. Descriptive Statistics of the Variables with/without Family

Panel B1. Descriptive Statistics of the Dependent Variables with/without Family

Variables	Family Firms		Non-Family Firms			T-test
	N	Mean	Std.Dev.	N	Mean	
USE OF DEBT	8395	0.357	0.300	1683	0.455	0.293
COST OF DEBT	1595	8.243	3.016	400	8.017	2.701
						12.249 ***
						-1.370

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

Panel B2. Descriptive Statistics of the Independent Variables with/without Family

Variables	Family Firms		Non-Family Firms		T-test	
	N	Mean	Std.Dev.	N		Mean
FAMILY	10349	1.000	0.000	2085	0.000	0.000
MINORITY	10340	0.197	0.398	2035	0.128	0.334
						-7.404 ***

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

Panel B3. Descriptive Statistics of the Agency Variables with/without Family

Variables	Family Firms			Non-Family Firms			T-test
	N	Mean	Std.Dev.	N	Mean	Std.Dev.	
OWNMANAGE	10340	0.883	0.321	2035	0.788	0.409	-11.599 ***
OWNERSHARE	10341	83.334	24.326	2043	45.499	21.999	-65.228 ***
USEOWNERCC	10349	0.427	0.495	2085	0.326	0.469	-8.600 ***
FINSTATEMENT	5406	0.212	0.409	1176	0.288	0.453	5.685 ***
RELATION	3248	99.821	112.490	1000	93.019	107.448	-1.690 *
DISTANCE	3248	73.273	275.984	999	83.652	292.090	1.025

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

Panel B4. Descriptive Statistics of the Control Variables with/without Family

Variables	Family Firms			Non-Family Firms			T-test	
	N	Mean	Std.Dev.	N	Mean	Std.Dev.		
Firm Characteristics	FIRMAGE	10349	15.464	12.311	2085	15.390	14.965	-0.242
	EMPLOYEES	10349	25.983	55.444	2085	55.946	75.938	21.023
	OWNERS	10340	3.788	102.515	2083	37.717	232.752	10.581
	SOLEPROP	10349	0.412	0.492				
	PARTNERSHIP	10349	0.047	0.211	2085	0.204	0.403	25.859
	CORPORATION	10349	0.541	0.498	2085	0.796	0.403	21.976
	METROPOLITAN	10349	0.784	0.411	2085	0.824	0.381	4.034
	SITES	10349	1.706	3.735	2085	4.049	49.985	4.704
	SAMESITES	10349	1.285	1.532	2085	1.546	3.746	5.232
	ASSETS	8504	1538811.000	5643241.000	1690	4508897.000	14500000.000	14.241
	LNASSETS	8504	11.670	2.734	1690	13.416	2.376	24.488
	PROFASSETS	8395	4.183	131.539	1683	0.648	3.911	-1.102
	SALE/ASSETS	8395	12.147	277.091	1683	5.093	11.744	-1.044
	DBSCORE	6550	3.461	1.329	1222	3.583	1.409	2.904
Owner Attributes	FEMALE	10340	0.213	0.410	2035	0.106	0.308	-11.189
	OWNERAGE	10335	51.440	11.482	2015	50.949	10.938	-1.768
	EXPERIENCE	10335	20.343	11.834	2015	20.331	11.265	-0.043
	NOTFINHS	10335	0.033	0.179	2015	0.014	0.117	-4.610
	HIGHSCHDIP	10335	0.204	0.403	2015	0.137	0.344	-6.894
	COLLEGE	10335	0.266	0.442	2015	0.170	0.376	-9.148
	BACHELORDEG	10335	0.310	0.462	2015	0.382	0.486	6.324
	POSTGRAD	10335	0.187	0.390	2015	0.297	0.457	11.208
	OWNHOME	6569	0.897	0.303	1182	0.921	0.269	2.536
	Most Recent Loan Characteristics	APPLY	10349	0.364	0.481	2085	0.524	0.500
APPROVED		3770	0.862	0.345	1092	0.916	0.278	4.759
AMTAPPLIED		3505	740860.800	3199611.000	1055	1576678.000	5434941.000	6.208
AMTGRANTED		3248	794516.300	3573751.000	1000	1657218.000	5526397.000	5.794
FULLAPPROVED		3248	0.918	0.274	1000	0.906	0.292	-1.234

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

### Panel C. Descriptive Statistics of the Variables with/without Visible Minority

Panel C1. Descriptive Statistics of the Dependent Variables with/without Visible Minority

Variables	Visible Minority Owned Firms		Non-Visible Minority Owned Firms		T-test
	N	Mean	Std.Dev.	Mean	Std.Dev.
USE OF DEBT	1846	0.351	0.299	0.379	0.301
COST OF DEBT	282	9.493	3.671	8.008	2.761
Significant level: ***p<0.01, **p<0.05, *p<0.1.					
					3.596 ***
					-7.940 ***

Panel C2. Descriptive Statistics of the Independent Variables with/without Visible Minority

Variables	Visible Minority Owned Firms		Non-Visible Minority Owned Firms		T-test
	N	Mean	Std.Dev.	Mean	Std.Dev.
FAMILY	2302	0.887	0.317	0.824	0.381
MINORITY	2302	1.000	0.000	0.000	0.000
Significant level: ***p<0.01, **p<0.05, *p<0.1.					
					-7.404 ***

Panel C3. Descriptive Statistics of the Agency Variables with/without Visible Minority

Variables	Visible Minority Owned Firms		Non-Visible Minority Owned Firms		T-test
	N	Mean	Std.Dev.	Mean	Std.Dev.
OWNMANAGE	2302	0.881	0.324	0.864	0.342
OWNERSHARE	2302	84.325	23.969	75.484	28.283
USEOWNERCC	2302	0.417	0.493	0.409	0.492
FINSTATEMENT	1263	0.182	0.386	0.235	0.424
RELATION	503	70.304	90.366	100.938	112.067
DISTANCE	503	107.243	361.526	71.860	267.839
Significant level: ***p<0.01, **p<0.05, *p<0.1.					
					-2.117 **
					-13.902 ***
					-0.770
					4.034 ***
					5.877 ***
					-2.653 ***

Panel C4. Descriptive Statistics of the Control Variables with/without Visible Minority

Variables	Visible Minority Owned Firms			Non-Visible Minority Owned Firms			T-test
	N	Mean	Std.Dev.	N	Mean	Std.Dev.	
Firm Characteristics							
FIRMAGE	2302	11.710	9.494	10073	16.234	13.190	15.561 ***
EMPLOYEES	2302	16.207	41.635	10073	33.841	62.820	12.839 ***
OWNERS	2297	1.922	7.154	10067	10.353	144.610	2.794 ***
SOLEPROP	2302	0.455	0.498	10073	0.320	0.466	-12.374 ***
PARTNERSHIP	2302	0.067	0.251	10073	0.073	0.260	0.928
CORPORATION	2302	0.478	0.500	10073	0.607	0.488	11.431 ***
METROPOLITAN	2302	0.896	0.305	10073	0.767	0.423	-13.894 ***
SITES	2302	1.442	1.736	10073	2.236	23.049	1.652 *
SAMESITES	2302	1.224	1.287	10073	1.347	2.204	2.578 **
ASSETS	1870	669102.800	3150763.000	8273	2237367.000	7843863.000	8.492 ***
LNASSETS	1870	11.093	2.465	8273	12.132	2.772	14.932 ***
PROFASSETS	1846	5.418	149.597	8181	3.197	112.747	-0.716
SALEASSETS	1846	8.923	102.847	8181	11.476	276.474	0.391
DBSCORE	1214	3.051	1.215	6499	3.554	1.347	12.124 ***
Owner Attributes							
FEMALE	2302	0.237	0.425	10073	0.186	0.389	-5.577 ***
OWNERAGE	2302	48.415	10.922	10048	52.035	11.396	13.851 ***
EXPERIENCE	2302	16.178	10.204	10048	21.295	11.864	19.136 ***
NOTFINHS	2302	0.053	0.225	10048	0.024	0.155	-7.374 ***
HIGHSCHDIP	2302	0.172	0.377	10048	0.198	0.398	2.860 ***
COLLEGE	2302	0.269	0.444	10048	0.247	0.431	-2.278 **
BACHELORDEG	2302	0.294	0.456	10048	0.328	0.469	3.176 ***
POSTGRAD	2302	0.212	0.409	10048	0.203	0.403	-0.918
OWNHOME	1224	0.817	0.387	6518	0.917	0.275	10.885 ***
Most Recent Loan Characteristics							
APPLY	2302	0.321	0.467	10073	0.405	0.491	7.475 ***
APPROVED	739	0.681	0.467	4080	0.908	0.289	17.604 ***
AMTAPPLIED	623	426410.200	1484187.000	3896	981628.100	3988251.000	3.437 ***
AMTGRANTED	503	489958.800	1617906.000	3704	1014949.000	4142795.000	2.813 ***
FULLAPPROVED	503	0.867	0.340	3704	0.921	0.269	4.128 ***

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.



**Panel D. Descriptive Statistics for the Dependent Variables**

**Panel D1. Descriptive Statistics for the variable USE OF DEBT**

	N=10027	FAMILY	Non-FAMILY	T-test
MINORITY	Mean	0.339	0.442	4.746***
	Std.Dev.	0.298	0.293	
	N	1635	211	
Non-MINORITY	Mean	0.362	0.458	11.079***
	Std.Dev.	0.300	0.293	
	N	6753	1428	
	T-test	2.762**	0.750	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Panel D2. Descriptive Statistics for the variable COST OF DEBT**

	N=1981	FAMILY	Non-FAMILY	T-test
MINORITY	Mean	9.641	8.538	-1.730*
	Std.Dev.	3.770	2.809	
	N	244	38	
Non-MINORITY	Mean	7.992	8.072	0.485
	Std.Dev.	2.787	2.659	
	N	1350	349	
	T-test	-8.015***	-1.019	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Panel E. Descriptive Statistics for the Dependent Variables  
in a fully approved sub-sample**

**Panel E1. Descriptive Statistics for the variable USE OF DEBT  
in a fully approved sub-sample**

	N=3088	FAMILY	Non-FAMILY	T-test
MINORITY	Mean	0.468	0.510	0.998
	Std.Dev.	0.281	0.287	
	N	290	52	
Non-MINORITY	Mean	0.478	0.525	3.852***
	Std.Dev.	0.273	0.267	
	N	2104	642	
	T-test	0.571	0.375	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Panel E2. Descriptive Statistics for the variable COST OF DEBT  
in a fully approved sub-sample**

	N=1809	FAMILY	Non-FAMILY	T-test
MINORITY	Mean	9.705	9.056	-0.897
	Std.Dev.	3.817	2.790	
	N	211	30	
Non-MINORITY	Mean	7.969	8.022	0.304
	Std.Dev.	2.808	2.623	
	N	1251	317	
	T-test	-7.844***	-2.054**	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Table 3. Univariate Analysis**

Panel A presents the pairwise correlation coefficients between each dependent variable and the independent variables.

Panel B presents the pairwise correlation coefficients between each dependent variable and the control variables in columns two to three, and between each independent variable and the control variables in the following columns.

**Panel A.**

	USE OF DEBT	COST OF DEBT
FAMILY	-0.121 ***	0.0307
MINORITY	-0.036 ***	0.1757 ***
FBVM	-0.0506 ***	0.1805 ***
FBNONVM	-0.0559 ***	-0.1129 ***
NONFBVM	0.0334 ***	0.0151
NONFBNONVM	0.1148 ***	-0.0231

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

Panel B.

	USE OF DEBT	COST OF DEBT	FAMILY	MINORITY	FBVM	FBNONVM	NONFBVM	NONFBNONVM
OWNMANAGE	-0.079 ***	0.027	0.104 **	0.019 **	0.030 ***	0.058 ***	-0.026 **	-0.099 ***
OWNERSHARE	-0.170 ***	0.123 ***	0.506 **	0.124 ***	0.175 ***	0.260 ***	-0.116 **	-0.486 ***
USEOWNERCC	-0.012	0.034	0.077 **	0.007	0.011	0.052 ***	-0.009	-0.077 ***
FINSTATEMENT	0.124 **	-0.074 **	-0.070 **	-0.050 **	-0.054 **	-0.010	0.006	0.067 **
RELATION	-0.106 ***	-0.136 ***	0.026 *	-0.090 ***	-0.089 ***	0.093 **	-0.018	-0.035 *
FIRMAE	-0.044 ***	-0.193 ***	0.002	-0.139 ***	-0.127 ***	0.109 ***	-0.049 **	0.008
EMPLOYEES	0.208 ***	-0.139 ***	-0.185 **	-0.115 **	-0.120 **	-0.044 **	-0.001	0.186 **
OWNERS	0.029 ***	-0.011	-0.095 **	-0.025 **	-0.024 **	-0.049 **	-0.006	0.094 **
SOLEPROP	-0.289 ***	0.153 ***	0.325 **	0.111 **	0.157 **	0.130 ***	-0.106 **	-0.297 ***
PARTNERSHIP	0.013	0.002	-0.226 **	-0.008	-0.040 **	-0.143 **	0.081 **	0.200 **
CORPORATION	0.272 ***	-0.143 ***	-0.193 **	-0.102 ***	-0.130 ***	-0.051 **	0.060 ***	0.181 **
METROPOLITAN	0.014	-0.006	-0.036 **	0.124 **	0.111 **	-0.117 **	0.049 **	0.019 *
SITES	0.029 ***	-0.059 ***	-0.042 **	-0.015 *	-0.015	-0.021 **	-0.003	0.045 **
SAMESITES	0.052 ***	-0.048 **	-0.047 **	-0.023 **	-0.022 **	-0.016 *	-0.005	0.047 **
LNASSETS	0.311 ***	-0.256 ***	-0.236 **	-0.147 **	-0.160 ***	-0.052 ***	0.017 *	0.233 **
PROFASSETS	-0.030 ***	0.060 **	0.011	0.007	0.009	0.002	-0.004	-0.010
SALEASSETS	-0.030 ***	0.051 **	0.010	-0.004	-0.003	0.010	-0.004	-0.009
DBSCORE	-0.036 ***	-0.213 ***	-0.033 **	-0.137 ***	-0.139 ***	0.087 **	-0.013	0.030 **
FEMALE	-0.100 ***	0.020	0.100 **	0.050 **	0.056 **	0.035 **	-0.010	-0.102 **
OWNERAGE	-0.076 ***	-0.186 ***	0.016 *	-0.124 **	-0.112 **	0.101 **	-0.046 **	0.002
EXPERIENCE	0.004	-0.200 ***	0.000	-0.170 ***	-0.160 ***	0.127 **	-0.046 **	0.019 *
NOTFINHS	-0.024 **	0.071 ***	0.042 **	0.066 ***	0.074 ***	-0.026 ***	-0.013	-0.039 ***
HIGHSCHDIP	-0.033 ***	-0.020	0.062 **	-0.026 **	-0.019 **	0.064 **	-0.020 **	-0.057 ***
COLLEGE	-0.031 ***	0.048 **	0.082 **	0.021 **	0.028 ***	0.042 **	-0.017 *	-0.080 **
BACHELORDEG	0.076 ***	-0.028	-0.057 **	-0.029 **	-0.033 **	-0.019 **	0.008	0.057 ***
POSTGRAD	-0.013	-0.030	-0.100 **	0.008	-0.005	-0.075 **	0.035 **	0.092 **
OWNHOME	0.056 ***	-0.159 ***	-0.029 **	-0.123 ***	-0.110 ***	0.060 **	-0.050 ***	0.051 **
DISTANCE	0.027	0.101 ***	-0.016	0.041 ***	0.040 **	-0.042	0.010	0.015

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Table 4. Direct Effects of Family and Visible Minority on the Use of Debt**

Results presented in this table are based on Model (1). The dependent variable measures the level of debt in business (USE OF DEBT). Model (1.1) presents the results for the full sample regressions. Model (1.2) is estimated with the condition that there is no sole proprietorship firm (SOLEPROP=0). Model (1.3) is estimated with the demand constraints in credit market (FULLAPPROVED=1). Model (1.4) is estimated with our full specifications (SOLEPROP=0 & and FULLAPPROVED=1).

Variables	Model (1.1)				Model (1.2)			
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
FAMILY	-0.049 **	-1.98	-0.046 *	-1.87	-0.044 *	-1.82	-0.040 *	-1.67
MINORITY	-0.015	-0.54	-0.021	-0.80	0.018	0.61	0.011	0.37
OWNMANAGE	0.011	0.42	0.010	0.39	0.008	0.28	0.007	0.25
OWNERSHARE	0.001 *	1.93	0.001 *	1.96	0.001	1.65	0.001 *	1.69
USEOWNERCC	-0.053 ***	-2.88	-0.051 ***	-2.79	-0.037 *	-1.89	-0.037 *	-1.90
FINSTATEMENT	-0.013	-0.59	-0.013	-0.59	-0.006	-0.25	-0.006	-0.27
RELATION	0.000 **	-2.29	0.000 **	-2.36	0.000 ***	-2.85	0.000 ***	-2.94
DISTANCE	0.000	-1.12	0.000	-1.23	0.000	0.15	0.000	-0.08
FIRMAGE	-0.002 **	-2.25	-0.002 **	-2.27	-0.003 ***	-2.76	-0.003 ***	-2.91
EMPLOYEES	0.000	-0.01	0.000	-0.61	0.000	-0.39	0.000	-1.03
OWNERS	0.000	-1.32	0.000	-1.34	0.000	-1.45	0.000	-1.43
SOLEPROP	-0.123 ***	-4.26	-0.105 ***	-3.59	-	-	-	-
PARTNERSHIP	-0.068 **	-2.02	-0.068 **	-2.01	-0.072 **	-2.19	-0.071 **	-2.17
METROPOLITAN	0.002	0.08	-0.002	-0.07	-0.001	-0.03	-0.005	-0.24
SITES	0.000	0.07	0.000	-0.01	-0.001	-0.19	-0.001	-0.26
SAMESITES	0.001	0.10	0.001	0.14	0.001	0.15	0.001	0.19
LNASSETS	0.027 ***	4.08	0.036 ***	5.01	0.033 ***	4.45	0.043 ***	5.43
DBSCORE	-0.028 ***	-3.82	-0.028 ***	-3.78	-0.025 ***	-3.27	-0.024 ***	-3.22
FEMALE	-0.034	-1.31	-0.029	-1.11	-0.068 **	-2.36	-0.062 **	-2.17
OWNERAGE	0.001	0.61	0.001	0.60	0.001	0.96	0.001	0.91
EXPERIENCE	0.000	0.20	0.000	0.04	0.000	0.00	0.000	-0.06
NOTFINIHS	0.048	0.78	0.054	0.87	-0.071	-0.84	-0.073	-0.86
HIGHSCHDIP	-0.018	-0.62	-0.013	-0.45	-0.052 *	-1.68	-0.047	-1.50
BACHELORDEG	0.009	0.39	0.007	0.32	-0.007	-0.27	-0.009	-0.37
POSTGRAD	0.019	0.66	0.022	0.78	-0.011	-0.36	-0.007	-0.24
OWNHOME	-0.061	-1.49	-0.069 *	-1.69	-0.054	-1.08	-0.062	-1.25
PROFASSETS			-0.003	-0.90			-0.002	-0.59
SALEASSETS			0.007 ***	3.11			0.008 ***	3.32
Constant	0.360 ***	2.93	0.216	1.64	0.320 **	2.44	0.162	1.16
Year Dummies	Yes		Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes		Yes	
N	955		955		780		780	
F-value	4.25 ***		4.32 ***		3.31 ***		3.45 ***	
Adj R-square	0.128		0.135		0.111		0.122	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

Variables	Model (1.3)				Model (1.4)			
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
FAMILY	-0.055 **	-2.11	-0.052 **	-2.00	-0.050 **	-1.99	-0.046 *	-1.82
MINORITY	-0.019	-0.67	-0.025	-0.88	0.015	0.46	0.008	0.25
OWNMANAGE	0.011	0.38	0.010	0.34	0.002	0.08	0.001	0.04
OWNERSHARE	0.001	1.62	0.001 *	1.65	0.001	1.37	0.001	1.42
USEOWNERCC	-0.053 ***	-2.76	-0.052 ***	-2.70	-0.038 *	-1.84	-0.038 *	-1.86
FINSTATEMENT	-0.017	-0.75	-0.017	-0.74	-0.010	-0.45	-0.010	-0.45
RELATION	0.000 **	-2.32	0.000 **	-2.39	0.000 ***	-2.79	0.000 ***	-2.88
DISTANCE	0.000	-0.86	0.000	-0.93	0.000	0.39	0.000	0.20
FIRMAGE	-0.002 **	-2.11	-0.002 **	-2.12	-0.003 **	-2.53	-0.003 ***	-2.66
EMPLOYEES	0.000	-0.16	0.000	-0.66	0.000	-0.55	0.000	-1.08
OWNERS	0.000	-1.36	0.000	-1.36	0.000	-1.44	0.000	-1.40
SOLEPROP	-0.119 ***	-3.94	-0.103 ***	-3.36	-	-	-	-
PARTNERSHIP	-0.068 *	-1.93	-0.068 *	-1.91	-0.069 **	-2.02	-0.068 **	-1.97
METROPOLITAN	-0.005	-0.21	-0.008	-0.36	-0.009	-0.35	-0.013	-0.55
SITES	0.000	0.08	0.000	0.05	0.000	-0.14	0.000	-0.17
SAMESITES	0.000	0.04	0.000	0.05	0.000	0.05	0.000	0.06
LNASSETS	0.027 ***	3.93	0.035 ***	4.65	0.033 ***	4.25	0.042 ***	5.01
DBSCORE	-0.030 ***	-3.96	-0.030 ***	-3.91	-0.027 ***	-3.53	-0.027 ***	-3.45
FEMALE	-0.025	-0.93	-0.021	-0.78	-0.067 **	-2.26	-0.063 **	-2.12
OWNERAGE	0.001	1.09	0.001	1.10	0.002	1.62	0.002	1.58
EXPERIENCE	0.000	-0.21	0.000	-0.35	-0.001	-0.63	-0.001	-0.69
NOTFINIHS	0.038	0.59	0.042	0.64	-0.042	-0.47	-0.046	-0.52
HIGHSCHDIP	-0.027	-0.94	-0.023	-0.79	-0.072 **	-2.23	-0.067 **	-2.09
BACHELORDEG	0.004	0.16	0.002	0.10	-0.013	-0.51	-0.016	-0.60
POSTGRAD	0.010	0.35	0.013	0.43	-0.023	-0.72	-0.021	-0.66
OWNHOME	-0.072	-1.65	-0.077 *	-1.77	-0.055	-1.01	-0.059	-1.09
PROFASSETS			-0.002	-0.78			-0.001	-0.46
SALEASSETS			0.006 **	2.58			0.006 ***	2.74
Constant	0.401 ***	3.25	0.276 **	2.07	0.325 **	2.36	0.186	1.27
Year Dummies	Yes		Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes		Yes	
N	885		885		721		721	
F-value	3.89 ***		3.89 ***		3.08 ***		3.14 ***	
Adj R-square	0.123		0.128		0.108		0.116	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Table 5. Second Order Effects of Family and Visible Minority on the Use of Debt**

Results presented in this table are based on Model (2). The dependent variable measures the level of debt in business (USE OF DEBT). Model (2.1) presents the results for the full sample regressions. Model (2.2) is estimated with the condition that there is no sole proprietorship firm (SOLEPROP=0). Model (2.3) is estimated with the demand constraints in credit market (FULLAPPROVED=1). Model (2.4) is estimated with our full specifications (SOLEPROP=0 & and FULLAPPROVED=1).

Variables	Model (2.1)		Model (2.2)		Model (2.3)		Model (2.4)	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
FBVM	-0.022	-0.76	0.012	0.36	-0.027	-0.88	0.007	0.21
NONFBVM	0.079	1.09	0.092	1.31	0.084	1.09	0.098	1.31
NONFBNONVM	0.045 *	1.74	0.041	1.61	0.050 *	1.88	0.047 *	1.78
OWNMANAGE	0.011	0.41	0.007	0.28	0.010	0.37	0.002	0.08
OWNERSHARE	0.001 *	1.94	0.001 *	1.66	0.001	1.63	0.001	1.39
USEOWNERCC	-0.053 ***	-2.89	-0.037 *	-1.89	-0.053 ***	-2.78	-0.038 *	-1.84
FINSTATEMENT	-0.014	-0.66	-0.007	-0.31	-0.018	-0.82	-0.012	-0.50
RELATION	0.000 **	-2.30	0.000 ***	-2.86	0.000 **	-2.32	0.000 ***	-2.80
DISTANCE	0.000	-1.07	0.000	0.20	0.000	-0.80	0.000	0.44
FIRMAGE	-0.002 **	-2.26	-0.003 ***	-2.77	-0.002 **	-2.11	-0.003 **	-2.53
EMPLOYEES	0.000	0.02	0.000	-0.36	0.000	-0.13	0.000	-0.52
OWNERS	0.000	-1.29	0.000	-1.43	0.000	-1.33	0.000	-1.41
SOLEPROP	-0.123 ***	-4.24	-	-	-0.118 ***	-3.91	-	-
PARTNERSHIP	-0.069 **	-2.04	-0.072 **	-2.21	-0.069 *	-1.94	-0.070 **	-2.03
METROPOLITAN	0.001	0.07	-0.001	-0.04	-0.005	-0.22	-0.009	-0.37
SITES	0.000	0.03	-0.001	-0.21	0.000	0.04	-0.001	-0.17
SAMESITES	0.001	0.13	0.001	0.17	0.000	0.07	0.000	0.08
LNASSETS	0.027 ***	4.10	0.033 ***	4.46	0.027 ***	3.95	0.033 ***	4.25
DBSCORE	-0.028 ***	-3.82	-0.025 ***	-3.26	-0.030 ***	-3.98	-0.028 ***	-3.54
FEMALE	-0.035	-1.33	-0.068 **	-2.38	-0.026	-0.96	-0.068 **	-2.27
OWNERAGE	0.001	0.61	0.001	0.96	0.001	1.08	0.002	1.60
EXPERIENCE	0.000	0.20	0.000	0.00	0.000	-0.22	-0.001	-0.64
NOTFINIHS	0.048	0.78	-0.073	-0.85	0.038	0.58	-0.044	-0.49
HIGHSCHDIP	-0.017	-0.59	-0.052 *	-1.66	-0.027	-0.91	-0.071 **	-2.21
BACHELORDEG	0.011	0.46	-0.006	-0.22	0.005	0.22	-0.012	-0.47
POSTGRAD	0.020	0.71	-0.010	-0.31	0.012	0.41	-0.021	-0.66
OWNHOME	-0.060	-1.46	-0.053	-1.06	-0.070	-1.59	-0.052	-0.95
Constant	0.309 **	2.49	0.274 **	2.07	0.343 ***	2.76	0.273 **	1.97
Year Dummies	Yes		Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes		Yes	
N	955		780		885		721	
F-value	4.16 ***		3.23 ***		3.81 ***		3.01 ***	
Adj R-square	0.127		0.110		0.123		0.107	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Table 6. Second Order Effects of Family and Visible Minority on the Use of Debt in 2003 sub-sample**

Results presented in this table are based on Model (3). The dependent variable measures the level of debt in business (USE OF DEBT). By using the 2003 data set only, Model (3.1.1) presents the results for the full sample regressions in the owners' firm level, and Model (3.1.2) presents the results in the owner individual level. Model (3.2) is estimated with the condition that there is no sole proprietorship firm (SOLEPROP=0). Model (3.3) is estimated with the demand constraints in credit market (FULLAPPROVED=1). Model (3.4) is estimated with our full specifications (SOLEPROP=0 & and FULLAPPROVED=1). Same as Model (3.1), the former is estimated in the owners' firm level, and the later is estimated in the owner individual level.

Variables	Model (3.1.1)		Model (3.1.2)		Model (3.2.1)		Model (3.2.2)	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
FBVM	-0.062	-1.14	-0.057	-1.07	-0.033	-0.58	-0.028	-0.53
NONFBVM	0.123	0.90	0.169	1.38	0.117	0.86	0.168	1.39
NONFBNONVM	0.066 *	1.83	0.081 **	2.15	0.064 *	1.79	0.080 **	2.13
OWNMANAGE	-0.001	-0.02	0.017	0.43	-0.002	-0.06	0.011	0.28
OWNERSHARE2	-		0.001 *	1.70	-		0.001	1.64
USEOWNERCC	0.007	0.23	0.001	0.05	-0.005	-0.17	-0.011	-0.37
FINSTATEMENT	-0.002	-0.05	-0.008	-0.25	0.006	0.19	0.000	-0.01
RELATION	0.000 *	-1.79	0.000 **	-2.12	0.000 **	-2.09	0.000 **	-2.41
DISTANCE	0.000	0.30	0.000	0.02	0.000	0.30	0.000	0.09
FIRMAGE	-0.003 *	-1.69	-0.003 *	-1.74	-0.003 *	-1.82	-0.003 **	-1.98
EMPLOYEES	0.000	-0.33	0.000	0.04	0.000	-0.66	0.000	-0.28
OWNERS	0.000	-0.50	-0.001	-1.09	0.000	-0.57	-0.001	-1.14
SOLEPROP	-0.060	-1.00	-0.080	-1.32	-		-	
PARTNERSHIP	-0.125 **	-2.37	-0.124 **	-2.36	-0.132 **	-2.52	-0.131 **	-2.53
METROPOLITAN	0.011	0.33	0.017	0.49	0.013	0.38	0.019	0.56
SITES	0.002	0.57	0.004	0.92	0.002	0.53	0.003	0.85
SAMESITES	-0.014 *	-1.81	-0.015 **	-2.00	-0.013 *	-1.78	-0.015 **	-1.99
LNASSETS	0.037 ***	3.27	0.039 ***	3.42	0.038 ***	3.08	0.039 ***	3.18
DBSCORE	-0.026 **	-2.49	-0.026 **	-2.47	-0.026 **	-2.42	-0.025 **	-2.36
FEMALE	-0.015	-0.33	-0.014	-0.34	-0.047	-1.00	-0.040	-0.96
OWNERAGE2	-0.002	-1.14	-0.001	-0.36	-0.002	-0.69	0.000	0.03
EXPERIENCE2	0.001	0.31	0.000	-0.19	0.001	0.40	0.000	-0.06
NOTFINIHS2	0.023	0.14	-0.047	-0.41	0.012	0.08	-0.069	-0.61
HIGHSCHDIP2	-0.073	-1.57	-0.026	-0.56	-0.077	-1.65	-0.030	-0.64
BACHELOR2	-0.009	-0.25	0.009	0.22	-0.004	-0.11	0.015	0.37
POSTGRAD2	-0.020	-0.45	-0.012	-0.26	0.001	0.02	-0.004	-0.08
OWNHOME	-0.112 *	-1.76	-0.184 ***	-2.64	-0.096	-1.41	-0.180 **	-2.40
Constant	0.408 **	2.04	0.305	1.47	0.363 *	1.67	0.289	1.29
Industry Dummies	Yes		Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes		Yes	
N	371		367		344		340	
F-value	2.43 ***		2.56 ***		2.20 ***		2.35 ***	
Adj R-square	0.136		0.152		0.122		0.141	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.



Variables	Model (3.3.1)		Model (3.3.2)		Model (3.4.1)		Model (3.4.2)	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
FBVM	-0.052	-0.91	-0.037	-0.67	-0.018	-0.30	-0.003	-0.05
NONFBVM	0.112	0.72	0.157	1.15	0.131	0.85	0.171	1.28
NONFBNONVM	0.063 *	1.72	0.082 **	2.11	0.062 *	1.70	0.081 **	2.11
OWNMANAGE	0.001	0.02	0.021	0.52	0.001	0.01	0.016	0.40
OWNERSHARE2	-		0.001	1.32	-		0.001	1.33
USEOWNERCC	0.008	0.26	0.002	0.06	-0.007	-0.21	-0.013	-0.43
FINSTATEMENT	-0.007	-0.21	-0.017	-0.52	0.002	0.05	-0.009	-0.28
RELATION	0.000 *	-1.90	0.000 **	-2.24	0.000 **	-2.21	0.000 **	-2.53
DISTANCE	0.000	0.44	0.000	0.37	0.000	0.41	0.000	0.41
FIRMAGE	-0.002	-1.49	-0.002	-1.12	-0.003	-1.60	-0.002	-1.38
EMPLOYEES	0.000	-0.32	0.000	0.13	0.000	-0.74	0.000	-0.29
OWNERS	0.000	0.17	-0.001	-0.85	0.000	0.22	-0.001	-0.64
SOLEPROP	-0.098	-1.54	-0.115 *	-1.80	-		-	
PARTNERSHIP	-0.117 **	-2.06	-0.119 **	-2.10	-0.126 **	-2.24	-0.128 **	-2.30
METROPOLITAN	0.006	0.17	0.011	0.31	0.008	0.22	0.013	0.37
SITES	0.002	0.50	0.004	1.06	0.002	0.42	0.004	0.96
SAMESITES	-0.014 *	-1.80	-0.016 **	-2.03	-0.013 *	-1.77	-0.015 **	-2.02
LNASSETS	0.035 ***	3.00	0.036 ***	3.13	0.036 ***	2.93	0.037 ***	3.02
DBSCORE	-0.028 **	-2.58	-0.029 ***	-2.68	-0.029 ***	-2.62	-0.029 ***	-2.66
FEMALE	-0.005	-0.10	-0.012	-0.29	-0.035	-0.73	-0.039	-0.92
OWNERAGE2	-0.001	-0.56	0.001	0.26	0.000	-0.04	0.002	0.75
EXPERIENCE2	0.000	-0.24	-0.002	-0.83	-0.001	-0.27	-0.002	-0.81
NOTFINIHS2	0.017	0.11	0.013	0.10	0.012	0.08	-0.008	-0.07
HIGHSCHDIP2	-0.092 *	-1.93	-0.063	-1.34	-0.096 **	-2.02	-0.068	-1.44
BACHELOR2	-0.017	-0.48	-0.012	-0.31	-0.011	-0.31	-0.005	-0.14
POSTGRAD2	-0.040	-0.84	-0.032	-0.69	-0.018	-0.36	-0.028	-0.57
OWNHOME	-0.107	-1.60	-0.194 **	-2.60	-0.092	-1.27	-0.195 **	-2.40
Constant	0.419 **	2.08	0.350	1.65	0.359 *	1.66	0.319	1.42
Industry Dummies	Yes		Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes		Yes	
N	348		344		323		319	
F-value	2.19 ***		2.32 ***		2.00 ***		2.15 ***	
Adj R-square	0.124		0.139		0.111		0.129	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Table 7. Direct Effects of Family and Visible Minority on the Cost of Debt**

Results presented in this table are based on Model (4). The dependent variable measures the fixed nominal interest rate that the firm paid at the time of issue of its most recent loan in the past three years (COST OF DEBT). Model (4.1) presents the results for the full sample regressions. Model (4.2) is estimated with the condition that there is no sole proprietorship firm (SOLEPROP=0). Model (4.3) is estimated with the demand constraints in credit market (FULLAPPROVED=1). Model (4.4) is estimated with our full specifications (SOLEPROP=0 & FULLAPPROVED=1).

Variables	Model (4.1)		Model (4.2)		Model (4.3)	
	Coef.	t	Coef.	t	Coef.	t
FAMILY	-0.425 *	-1.81	-0.386 *	-1.73	-0.504 **	-2.04
MINORITY	0.542 **	1.99	0.572 *	1.90	0.621 **	2.16
DISTANCE	0.000 *	1.67	0.001 **	2.22	0.000	1.02
FIRMAGE	-0.021 **	-2.36	-0.011	-1.15	-0.022 **	-2.38
EMPLOYEES	-0.002	-1.32	-0.003 *	-1.92	-0.002	-1.12
SOLEPROP	0.142	0.64	-		0.306	1.32
PARTNERSHIP	-0.372	-1.13	-0.308	-1.00	-0.406	-1.17
METROPOLITAN	-0.043	-0.23	0.012	0.05	-0.046	-0.23
SITES	-0.003	-0.09	-0.011	-0.33	0.008	0.22
SAMESITES	0.044	0.80	0.034	0.65	-0.017	-0.18
LNASSETS	-0.219 ***	-4.36	-0.151 ***	-2.61	-0.212 ***	-4.06
FEMALE	-0.603 **	-2.55	-0.538 **	-1.98	-0.637 **	-2.58
OWNERAGE	-0.013	-1.22	-0.025 **	-2.06	-0.013	-1.19
EXPERIENCE	0.000	-0.04	0.003	0.27	0.000	-0.03
NOTFINIHS	0.321	0.56	0.305	0.37	0.266	0.46
HIGHSCHDIP	0.051	0.22	0.057	0.21	0.082	0.33
BACHELORDEG	0.198	0.89	0.265	1.12	0.290	1.24
POSTGRAD	-0.479 *	-1.75	-0.339	-1.13	-0.610 **	-2.12
OWNHOME	-0.893 **	-2.41	-0.521	-1.04	-0.976 **	-2.46
Constant	14.160 ***	15.99	12.990 ***	13.05	14.121 ***	15.18
Year Dummies	Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes	
N	981		718		909	
F-value	9.53 ***		7.10 ***		9.13 ***	
Adj R-square	0.239		0.229		0.244	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

Variables	Model (4.4)					
	Coef.	t	Coef.	t	Coef.	t
FAMILY	-0.460 **	-1.98	-0.073	-0.21	-0.055	-0.16
MINORITY	0.632 **	1.99	0.697 *	1.74	0.684 *	1.70
DISTANCE	0.000	1.11	0.000	-0.45	0.000	-0.53
FIRMAGE	-0.012	-1.26	-0.004	-0.26	-0.004	-0.27
EMPLOYEES	-0.003	-1.64	-0.003	-1.36	-0.003	-1.27
SOLEPROP	-		-		-	
PARTNERSHIP	-0.330	-1.02	-0.166	-0.35	-0.091	-0.19
METROPOLITAN	0.061	0.26	0.107	0.33	0.114	0.35
SITES	0.003	0.09	0.030	0.66	0.029	0.66
SAMESITES	-0.023	-0.26	-0.115	-1.06	-0.115	-1.05
LNASSETS	-0.148 **	-2.47	-0.299 ***	-2.93	-0.302 ***	-2.71
FEMALE	-0.616 **	-2.20	-0.615 *	-1.67	-0.639 *	-1.73
OWNERAGE	-0.022 *	-1.83	-0.018	-1.00	-0.017	-0.97
EXPERIENCE	0.000	0.00	-0.011	-0.59	-0.011	-0.62
NOTFINIHS	0.329	0.39	0.203	0.19	0.170	0.16
HIGHSCHDIP	0.186	0.67	0.126	0.32	0.075	0.19
BACHELORDEG	0.344	1.40	0.250	0.73	0.213	0.62
POSTGRAD	-0.468	-1.48	-0.320	-0.73	-0.367	-0.83
OWNHOME	-0.598	-1.10	-0.154	-0.19	-0.087	-0.11
OWNMANAGE			0.461	1.27	0.470	1.29
OWNERSHARE			0.002	0.39	0.002	0.46
USEOWNERCC			0.130	0.46	0.115	0.41
FINSTATEMENT			0.010	0.03	0.012	0.04
RELATION			0.000	-0.04	0.000	-0.05
OWNERS			0.001	0.84	0.001	0.85
DBSCORE			-0.103	-1.01	-0.096	-0.94
PROFASSETS					0.038	1.20
SALEASSETS					-0.010	-0.40
Constant	12.898 ***	12.19	13.672 ***	7.68	13.580 ***	7.11
Year Dummies	Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes	
N	665		380		380	
F-value	6.61 ***		3.49 ***		3.36 ***	
Adj R-square	0.228		0.216		0.215	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Table 8. Second Order Effects of Family and Visible Minority on the Cost of Debt**

Results presented in this table are based on Model (5). The dependent variable measures the fixed nominal interest rate that the firm paid at the time of issue of its most recent loan in the past three years (COST OF DEBT). Model (5.1) presents the results for the full sample regressions. Model (5.2) is estimated with the condition that there is no sole proprietorship firm (SOLEPROP=0). Model (5.3) is estimated with the demand constraints in credit market (FULLAPPROVED=1). Model (5.4) is estimated with our full specifications (SOLEPROP=0 & FULLAPPROVED=1).

Variables	Model (5.1)		Model (5.2)		Model (5.3)	
	Coef.	t	Coef.	t	Coef.	t
FBVM	0.587 **	2.02	0.581 *	1.76	0.680 **	2.22
NONFBVM	0.689	0.95	0.920	1.34	0.763	1.01
NONFBNONVM	0.454 *	1.86	0.390 *	1.67	0.543 **	2.12
DISTANCE	0.000	1.63	0.001 **	2.20	0.000	0.98
FIRMAGE	-0.021 **	-2.35	-0.011	-1.15	-0.022 **	-2.36
EMPLOYEES	-0.002	-1.33	-0.003 *	-1.92	-0.002	-1.13
SOLEPROP	0.141	0.64	-		0.303	1.31
PARTNERSHIP	-0.354	-1.07	-0.305	-0.98	-0.385	-1.10
METROPOLITAN	-0.042	-0.22	0.012	0.05	-0.044	-0.22
SITES	-0.003	-0.10	-0.011	-0.33	0.008	0.21
SAMESITES	0.044	0.80	0.034	0.65	-0.018	-0.19
LNASSETS	-0.219 ***	-4.36	-0.150 ***	-2.60	-0.212 ***	-4.06
FEMALE	-0.601 **	-2.54	-0.538 **	-1.98	-0.633 **	-2.57
OWNERAGE	-0.013	-1.19	-0.025 **	-2.04	-0.013	-1.14
EXPERIENCE	-0.001	-0.07	0.003	0.27	-0.001	-0.06
NOTFINIHS	0.318	0.56	0.307	0.37	0.260	0.45
HIGHSCHDIP	0.048	0.20	0.057	0.21	0.077	0.31
BACHELORDEG	0.190	0.85	0.264	1.11	0.279	1.19
POSTGRAD	-0.484 *	-1.76	-0.340	-1.13	-0.618 **	-2.14
OWNHOME	-0.906 **	-2.43	-0.524	-1.04	-0.998 **	-2.51
Constant	13.733 ***	15.84	12.603 ***	12.87	13.623 ***	14.94
Year Dummies	Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes	
N	981		718		909	
F-value	9.27 ***		6.89 ***		8.89 ***	
Adj R-square	0.238		0.228		0.243	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

Variables	Model (5.4)					
	Coef.	t	Coef.	t	Coef.	t
FBVM	0.666 *	1.92	0.906 **	2.09	0.898 **	2.06
NONFBVM	0.951	1.33	-0.228	-0.24	-0.277	-0.29
NONFBNONVM	0.477 *	1.96	0.198	0.54	0.183	0.50
DISTANCE	0.000	1.08	0.000	-0.62	0.000	-0.70
FIRMAGE	-0.012	-1.26	-0.003	-0.23	-0.003	-0.24
EMPLOYEES	-0.003	-1.65	-0.004	-1.40	-0.003	-1.30
SOLEPROP	-		-		-	
PARTNERSHIP	-0.322	-0.99	-0.119	-0.25	-0.041	-0.09
METROPOLITAN	0.062	0.27	0.116	0.36	0.123	0.38
SITES	0.003	0.09	0.030	0.67	0.030	0.67
SAMESITES	-0.023	-0.26	-0.115	-1.05	-0.114	-1.05
LNASSETS	-0.147 **	-2.46	-0.302 ***	-2.96	-0.306 ***	-2.75
FEMALE	-0.615 **	-2.19	-0.596	-1.62	-0.620 *	-1.68
OWNERAGE	-0.022 *	-1.79	-0.015	-0.87	-0.015	-0.84
EXPERIENCE	0.000	-0.02	-0.012	-0.67	-0.013	-0.70
NOTFINIHS	0.336	0.40	0.269	0.25	0.238	0.22
HIGHSCHDIP	0.185	0.66	0.111	0.28	0.058	0.14
BACHELORDEG	0.340	1.38	0.211	0.62	0.173	0.50
POSTGRAD	-0.473	-1.49	-0.395	-0.90	-0.444	-1.00
OWNHOME	-0.614	-1.12	-0.276	-0.34	-0.210	-0.26
OWNMANAGE			0.465	1.28	0.474	1.31
OWNERSHARE			0.002	0.32	0.002	0.38
USEOWNERCC			0.156	0.55	0.141	0.50
FINSTATEMENT			0.064	0.20	0.067	0.21
RELATION			0.000	-0.05	0.000	-0.05
OWNERS			0.001	0.76	0.001	0.76
DBSCORE			-0.105	-1.03	-0.098	-0.96
PROFASSETS					0.039	1.23
SALEASSETS					-0.011	-0.43
Constant	12.437 ***	11.92	13.723 ***	7.69	13.662 ***	7.17
Year Dummies	Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes	
N	665		380		380	
F-value	6.41 ***		3.45 ***		3.33 ***	
Adj R-square	0.227		0.218		0.217	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Table 9. Second Order Effects of Family and Visible Minority  
on the Cost of Debt in 2003 sub-sample**

Results presented in this table are based on Model (6). The dependent variable measures the fixed nominal interest rate that the firm paid at the time of issue of its most recent loan in the past three years (COST OF DEBT). By using the 2003 data set only, Model (6.4) is estimated with our full specifications (SOLEPROP=0 & FULLAPPROVED=1). Model (6.4.1) presents the results in the owners' firm level, and Model (6.4.2) presents the results in the owner individual level.

Variables	Model (6.4.1)					
	Coef.	t	Coef.	t	Coef.	t
FBVM	0.387	0.76	1.683	1.58	1.911 *	1.82
NONFBVM	1.444	1.33	-0.393	-0.11	-0.475	-0.14
NONFBNONVM	0.689 **	2.01	0.206	0.23	0.077	0.08
DISTANCE	0.001 ***	2.91	0.002	1.41	0.002	1.21
FIRIMAGE	-0.014	-1.15	-0.013	-0.41	-0.003	-0.11
EMPLOYEES	-0.003	-1.03	-0.019 **	-2.27	-0.009	-0.95
SOLEPROP	-		-		-	
PARTNERSHIP	-0.245	-0.54	-1.573	-0.95	-0.659	-0.39
METROPOLITAN	0.254	0.85	0.797	1.16	0.835	1.22
SITES	-0.009	-0.21	0.043	0.55	0.044	0.58
SAMESITES	-0.002	-0.02	-0.108	-0.69	-0.095	-0.62
LNASSETS	-0.035	-0.47	-0.033	-0.13	-0.338	-1.20
FEMALE	-0.168	-0.41	-0.307	-0.34	-0.259	-0.28
OWNERAGE2	-0.028 *	-1.66	-0.002	-0.05	0.000	-0.01
EXPERIENCE2	0.006	0.33	-0.002	-0.05	-0.003	-0.07
NOTFINIHS2	-0.738	-0.49	-5.041	-1.09	-0.255	-0.03
HIGHSCHDIP2	0.123	0.35	-0.334	-0.41	-0.415	-0.52
BACHELOR2	0.381	1.19	0.488	0.68	0.394	0.56
POSTGRAD2	-0.571	-1.36	-1.320	-1.19	-1.256	-1.15
OWNHOME	-1.067	-1.41	-1.657	-0.51	-4.197	-1.24
OWNMANAGE			0.374	0.47	0.523	0.66
OWNERSHARE2			-		-	
USEOWNERCC			-0.657	-0.94	-0.674	-0.98
FINSTATEMENT			0.145	0.23	0.010	0.02
RELATION			-0.002	-0.74	-0.002	-0.75
OWNERS			0.015	0.32	0.005	0.12
DBSCORE			-0.085	-0.41	-0.051	-0.25
PROFASSETS					0.177	0.39
SALEASSETS					-0.361 **	-2.25
Constant	9.377 ***	6.940	9.875 *	1.820	16.564 ***	2.710
Industry Dummies	Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes	
N	409		122		122	
F-value	1.90 ***		0.81		0.92	
Adj R-square	0.070		-0.067		-0.028	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

Variables	Model (6.4.2)					
	Coef.	t	Coef.	t	Coef.	t
FBVM2	0.321	0.65	1.248	1.23	1.464	1.45
NONFBVM2	1.171	1.25	0.547	0.23	0.192	0.08
NONFBNONVM2	0.702 **	2.03	0.605	0.62	0.435	0.45
DISTANCE	0.001 ***	3.12	0.002	1.56	0.002	1.41
FIRMAGE	-0.015	-1.25	-0.011	-0.35	0.003	0.11
EMPLOYEES	-0.003	-1.00	-0.020 **	-2.48	-0.009	-0.95
SOLEPROP	-		-		-	
PARTNERSHIP	-0.325	-0.72	-1.977	-1.19	-1.043	-0.62
METROPOLITAN	0.252	0.84	0.648	0.96	0.675	1.02
SITES	0.001	0.02	0.042	0.56	0.036	0.49
SAMESITES	-0.021	-0.21	-0.130	-0.84	-0.120	-0.79
LNASSETS	-0.050	-0.68	-0.009	-0.04	-0.352	-1.23
FEMALE2	-0.090	-0.25	0.364	0.47	0.278	0.36
OWNERAGE	-0.015	-0.91	0.016	0.39	0.015	0.38
EXPERIENCE	-0.001	-0.07	-0.011	-0.31	-0.021	-0.58
NOTFINIHS	0.073	0.06	-0.096	-0.03	2.030	0.65
HIGHSCHDIP	0.073	0.20	-0.807	-0.96	-0.631	-0.75
BACHELORDEG	0.391	1.18	0.508	0.66	0.568	0.75
POSTGRAD	-0.682	-1.62	-1.146	-1.07	-1.050	-1.00
OWNHOME	-0.604	-0.79	1.188	0.44	-3.141	-0.96
OWNMANAG2			0.406	0.55	0.340	0.46
OWNSHARE			0.022 *	1.67	0.018	1.35
USEOWNERCC			-0.667	-0.97	-0.673	-1.00
FINSTATEMENT			0.192	0.30	-0.039	-0.06
RELATION			-0.003	-1.21	-0.003	-1.26
OWNERS			0.044	0.95	0.034	0.74
DBSCORE			-0.073	-0.35	-0.042	-0.20
PROFASSETS					0.061	0.20
SALEASSETS					-0.328 **	-2.02
Constant	8.507 ***	6.420	4.542	0.980	14.384 **	2.330
Industry Dummies	Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes	
N	407		122		122	
F-value	1.77 ***		0.81		0.93	
Adj R-square	0.061		-0.069		-0.025	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.



**Table 10. Direct Effects of Family and Visible Minority on the Cost of Debt by Default Risk Measurement**

Results presented in this table are based on Model (4). The dependent variable measures default risk. For Models (4.3A) and (4.4A), the dependent variable is calculated by the fixed nominal interest rate that the firm paid at the time of issue of its most recent loan minus 90 day T-bill rate over the same period (COST OF DEBT2). For Models (4.3B) and (4.4B), it is defined as above, but only measures the positive default risk. Models (4.3A) and (4.3B) are estimated with the demand constraints in credit market (FULLAPPROVED=1). Models (4.4A) and (4.4B) are estimated with our full specifications (SOLEPROP=0 & FULLAPPROVED=1).

Variables	Model (4.3A)			Model (4.4A)			Model (4.3B)			Model (4.4B)		
	Coef.	t		Coef.	t		Coef.	t		Coef.	t	
FAMILY	-0.511	**	-2.02	-0.460	*	-1.91	-0.461	*	-1.90	-0.440	*	-1.92
MINORITY	0.655	**	2.22	0.673	**	2.05	0.538	*	1.89	0.572	*	1.82
DISTANCE	0.000		0.97	0.000		1.10	0.000		1.18	0.000		1.38
FIRMAGE	-0.023	**	-2.44	-0.013		-1.37	-0.025	***	-2.75	-0.018	*	-1.93
EMPLOYEES	-0.002		-1.01	-0.003		-1.51	-0.002		-0.86	-0.002		-1.23
SOLEPROP	0.293		1.23				0.288		1.26			
PARTNERSHIP	-0.538		-1.51	-0.462		-1.37	-0.524		-1.52	-0.472		-1.47
METROPOLITAN	-0.106		-0.52	-0.036		-0.15	0.077		0.39	0.124		0.55
SITES	0.004		0.09	-0.002		-0.04	-0.003		-0.07	-0.009		-0.26
SAMESITES	-0.016		-0.17	-0.017		-0.19	-0.030		-0.33	-0.041		-0.48
LNASSETS	-0.195	***	-3.64	-0.127	**	-2.05	-0.206	***	-4.02	-0.149	**	-2.54
FEMALE	-0.594	**	-2.34	-0.500	*	-1.72	-0.376		-1.53	-0.227		-0.81
OWNERAGE	-0.013		-1.16	-0.025	*	-1.95	-0.006		-0.56	-0.015		-1.21
EXPERIENCE	-0.001		-0.12	0.001		0.05	0.003		0.29	0.004		0.30
NOTFINIHS	0.284		0.48	0.406		0.47	0.116		0.21	0.230		0.28
HIGHSCHDIP	0.052		0.20	0.213		0.74	0.040		0.16	0.182		0.66
BACHELORDEG	0.233		0.97	0.268		1.05	0.301		1.31	0.324		1.33
POSTGRAD	-0.632	**	-2.13	-0.479		-1.47	-0.449		-1.57	-0.321		-1.03
OWNHOME	-0.924	**	-2.27	-0.454		-0.81	-1.032	***	-2.64	-0.315		-0.59
Constant	9.065	***	9.48	7.816	***	7.13	8.913	***	9.74	7.663	***	7.37
Year Dummies	Yes			Yes			Yes			Yes		
Industry Dummies	Yes			Yes			Yes			Yes		
Region Dummies	Yes			Yes			Yes			Yes		
N	909			665			886			648		
F-value	5.210 ***			3.780 ***			4.770 ***			3.320 ***		
Adj R-square	0.143			0.128			0.133			0.111		

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.



**Table 11. Second Order Effects of Family and Visible Minority on the Cost of Debt by Default Risk Measurement**

Results presented in this table are based on Model (5). The dependent variable measures default risk. For Models (5.3A) and (5.4A), the dependent variable is calculated by the fixed nominal interest rate that the firm paid at the time of issue of its most recent loan minus 90 day T-bill rate over the same period (COST OF DEBT2). For Models (5.3B) and (5.4B), it is defined as above, but only measures the positive default risk. Models (5.3A) and (5.3B) are estimated with the demand constraints in credit market (FULLAPPROVED=1). Models (5.4A) and (5.4B) are estimated with our full specifications (SOLEPROP=0 & FULLAPPROVED=1).

Variables	Model (5.3A)		Model (5.4A)		Model (5.3B)		Model (5.4B)	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
FBVM	0.712 **	2.26	0.707 *	1.97	0.601 **	1.98	0.626 *	1.82
NONFBVM	0.812	1.04	0.991	1.34	0.615	0.83	0.791	1.14
NONFBNONVM	0.550 **	2.08	0.477 *	1.89	0.503 **	1.99	0.467 *	1.95
DISTANCE	0.000	0.93	0.000	1.07	0.000	1.13	0.000	1.33
FIRMAGE	-0.023 **	-2.42	-0.013	-1.36	-0.025 ***	-2.74	-0.018 *	-1.92
EMPLOYEES	-0.002	-1.02	-0.003	-1.52	-0.002	-0.88	-0.002	-1.24
SOLEPROP	0.291	1.22			0.285	1.24		
PARTNERSHIP	-0.518	-1.44	-0.454	-1.34	-0.501	-1.45	-0.459	-1.42
METROPOLITAN	-0.105	-0.51	-0.035	-0.15	0.079	0.4	0.126	0.56
SITES	0.003	0.09	-0.002	-0.04	-0.003	-0.08	-0.009	-0.26
SAMESITES	-0.017	-0.18	-0.017	-0.19	-0.030	-0.33	-0.042	-0.49
LNASSETS	-0.195 ***	-3.64	-0.127 **	-2.04	-0.206 ***	-4.02	-0.148 **	-2.52
FEMALE	-0.591 **	-2.33	-0.499 *	-1.72	-0.372	-1.51	-0.226	-0.81
OWNERAGE	-0.013	-1.11	-0.024 *	-1.91	-0.006	-0.5	-0.014	-1.16
EXPERIENCE	-0.002	-0.15	0.000	0.03	0.003	0.25	0.003	0.27
NOTFINIHS	0.278	0.47	0.414	0.48	0.109	0.19	0.241	0.3
HIGHSCHDIP	0.047	0.19	0.212	0.73	0.035	0.14	0.181	0.66
BACHELORDEG	0.222	0.92	0.264	1.03	0.290	1.26	0.318	1.31
POSTGRAD	-0.640 **	-2.16	-0.484	-1.48	-0.458	-1.6	-0.330	-1.05
OWNHOME	-0.946 **	-2.31	-0.470	-0.83	-1.056 ***	-2.69	-0.339	-0.64
Constant	8.559 ***	9.13	7.356 ***	6.8	8.456 ***	9.44	7.220 ***	7.04
Year Dummies	Yes		Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes		Yes	
N	909		665		886		648	
F-value	5.070 ***		3.670 ***		4.650 ***		3.230 ***	
Adj R-square	0.142		0.127		0.132		0.110	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Table 12. Effects of Family and Visible Minority on the Use of Debt  
with the comparison between corporations and the others**

Results presented in this table are based on Models (1) and (2), respectively, with the demand constraints in credit market (FULLAPPROVED=1). Models (1) present the results for the direct effects of family and visible minority on the use of debt, whereas Models (2) present for the second order effects. The dependent variable measures the level of debt in businesses (USE OF DEBT). Models (1.3.1) and (2.3.1) are estimated for corporations, and Models (1.3.2) and (2.3.2) are estimated for sole proprietorships and partnerships.

Variables	Model (1.3.1)		Model (1.3.2)		Model (2.3.1)		Model (2.3.2)	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
FAMILY	-0.056 **	-2.08	-0.024	-0.28				
MINORITY	0.011	0.33	-0.084	-1.36				
FBVM					0.010	0.29	-0.116 *	-1.81
NONFBVM					0.070	0.84	0.232	1.13
NONFBNONVM					0.056 **	2.00	-0.015	-0.17
OWNMANAGE	0.003	0.11	-0.010	-0.12	0.003	0.11	-0.026	-0.30
OWNERSHARE	0.001	1.23	0.001	0.49	0.001	1.23	0.001	0.66
USEOWNERCC	-0.041 *	-1.91	-0.154 ***	-3.41	-0.041 *	-1.91	-0.165 ***	-3.64
FINSTATEMENT	-0.005	-0.20	-0.075	-1.22	-0.005	-0.21	-0.094	-1.51
RELATION	0.000 **	-2.48	0.000	-0.53	0.000 **	-2.47	0.000	-0.50
DISTANCE	0.000	1.00	0.000 **	-2.17	0.000	1.00	0.000 **	-1.99
FIRMGAGE	-0.002 *	-1.86	-0.002	-0.78	-0.002 *	-1.86	-0.002	-0.72
EMPLOYEES	0.000	-0.08	-0.001	-1.02	0.000	-0.08	-0.001	-1.13
OWNERS	0.000	-1.17	-0.003	-0.57	0.000	-1.17	-0.002	-0.37
METROPOLITAN	-0.006	-0.25	0.004	0.08	-0.006	-0.25	0.011	0.23
SITES	-0.001	-0.18	0.028	0.99	-0.001	-0.18	0.027	0.93
SAMESITES	0.000	0.09	-0.012	-0.26	0.000	0.09	-0.003	-0.06
LNASSETS	0.028 ***	3.34	0.040 ***	2.93	0.028 ***	3.33	0.041 ***	3.05
DBSCORE	-0.032 ***	-3.92	-0.015	-0.72	-0.032 ***	-3.91	-0.017	-0.83
FEMALE	-0.048	-1.47	0.056	1.02	-0.048	-1.47	0.043	0.78
OWNERAGE	0.001	0.97	0.000	-0.02	0.001	0.97	-0.001	-0.45
EXPERIENCE	-0.001	-0.49	0.003	0.98	-0.001	-0.50	0.004	1.24
NOTFINIHS	-0.023	-0.25	0.138	1.36	-0.024	-0.25	0.147	1.45
HIGHSCHDIP	-0.060 *	-1.76	0.033	0.53	-0.060 *	-1.76	0.039	0.64
BACHELORDEG	-0.018	-0.68	0.054	0.87	-0.018	-0.68	0.061	0.99
POSTGRAD	-0.018	-0.54	0.082	1.21	-0.018	-0.53	0.097	1.42
OWNHOME	0.009	0.14	-0.218 ***	-2.87	0.009	0.14	-0.206 ***	-2.71
Constant	0.373 **	2.53	0.232	0.86	0.317 **	2.15	0.221	0.78
Year Dummies	Yes		Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes		Yes	
N	650		235		650		235	
F-value	2.54 ***		1.52 **		2.48 ***		1.57 **	
Adj R-square	0.089		0.084		0.087		0.092	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Table 13. Effects of Family and Visible Minority on the Cost of Debt  
with the comparison between corporations and the others**

Results presented in this table are based on Models (4) and (5), respectively, with the demand constraints in credit market (FULLAPPROVED=1). Models (4) present the results for the direct effects of family and visible minority on the cost of debt, whereas Models (5) present for the second order effects. The dependent variable measures the fixed nominal interest rate that the firm paid at the time of issue of its most recent loan in the past three years (COST OF DEBT). Models (4.3.1) and (5.3.1) are estimated for corporations, and Models (4.3.2) and (5.3.2) are estimated for sole proprietorships and partnerships.

Variables	Model (4.3.1)		Model (4.3.2)		Model (5.3.1)		Model (5.3.2)	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
FAMILY	-0.454 *	-1.78	0.363	0.59				
MINORITY	0.595 *	1.79	0.873	1.49				
FBVM					0.692 *	1.94	0.854	1.37
NONFBVM					0.465	0.53	0.616	0.42
NONFBNONVM					0.507 *	1.92	-0.389	-0.57
DISTANCE	0.000	1.04	0.000	0.60	0.000	0.98	0.000	0.60
FIRMAGE	-0.013	-1.34	-0.052 **	-2.35	-0.013	-1.32	-0.053 **	-2.35
EMPLOYEES	-0.003 *	-1.70	-0.006	-0.57	-0.003 *	-1.72	-0.006	-0.57
METROPOLITAN	-0.109	-0.45	0.019	0.05	-0.102	-0.42	0.018	0.05
SITES	0.002	0.05	-0.196	-0.40	0.001	0.04	-0.194	-0.39
SAMESITES	-0.017	-0.18	0.178	0.30	-0.017	-0.19	0.179	0.30
LNASSETS	-0.122 *	-1.81	-0.358 ***	-3.84	-0.121 *	-1.80	-0.358 ***	-3.84
FEMALE	-0.646 **	-2.10	-0.882 *	-1.90	-0.646 **	-2.10	-0.885 *	-1.90
OWNERAGE	-0.014	-1.04	-0.011	-0.52	-0.013	-1.02	-0.012	-0.53
EXPERIENCE	-0.009	-0.64	0.019	0.73	-0.009	-0.67	0.019	0.73
NOTFINIHS	0.371	0.41	-0.026	-0.03	0.430	0.48	-0.017	-0.02
HIGHSCHDIP	0.098	0.33	0.044	0.09	0.096	0.32	0.049	0.10
BACHELORDEG	0.378	1.45	0.122	0.23	0.367	1.41	0.128	0.24
POSTGRAD	-0.382	-1.17	-1.091 *	-1.81	-0.394	-1.20	-1.087 *	-1.79
OWNHOME	-0.692	-1.16	-0.829	-1.37	-0.691	-1.16	-0.817	-1.32
Constant	12.566 ***	10.78	15.363 ***	9.17	12.089 ***	10.66	15.727 ***	9.85
Year Dummies	Yes		Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes		Yes	
Region Dummies	Yes		Yes		Yes		Yes	
N	599		310		599		310	
F-value	5.79 ***		3.58 ***		5.64 ***		3.47 ***	
Adj R-square	0.214		0.221		0.214		0.219	

Significant level: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

**Figure 1. Interactive Effects of Family and Minority Ownership  
on Small Business Debt Financing**

