The Distribution and Evolution of the Capital Structure of Entrepreneurial Firms: Evidence on the Financial Crisis

Sang Mook Lee*

Yuanzhi Li*

Jose M. Plehn-Dujowich*

Sheryl Winston Smith*

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ABSTRACT

We study the determinants and evolution of the capital structure of entrepreneurial firms in the Kauffman Firm Survey (KFS), and find the following. First, firm characteristics and owner characteristics do not explain well the cross-sectional distribution of initial leverage of entrepreneurial firms in 2004. Second, there is a persistence effect in the evolution of the capital structure for these firms akin to that documented in Lemmon, Roberts, and Zender (2008) for public firms. Third, there is convergence in capital structure across firms over time, as is observed for public firms. Finally, the financial crisis had almost no impact on the capital structure of these entrepreneurial firms.

*Fox School of Business, Temple University. Corresponding author: Jose M. Plehn-Dujowich, Temple University, Fox School of Business, Accounting, 451 Alter Hall, Philadelphia, PA 19122. E-mail: jplehn@temple.edu. Tel: 215-204-8139.

1. Introduction

Among policy makers and academic researchers, there has been widespread concern that small businesses may be affected to a significantly greater degree in many respects by the credit crisis compared to large established corporations. Limited availability of financial capital amidst financial turmoil is an example of difficulties faced by small nascent firms due to their lack of accessibility to public financial markets for either debt or equity. Since the unanticipated nation-wide financial crisis erupted in late 2006, obtaining life-sustaining financial capital such as bank loans, non-bank loans, and credit card loans has been presumably a great challenge for owners of small businesses, especially those who have not established close trustful ties with capital providers due to having a short history of operations. It is not until the most recent July 2010 Senior Loan Officers Opinion Survey[1] on Bank Lending Practices was released by the Federal Reserve that we have seen a sign of easing of lending conditions to small firms for the first time since commercial banks started considerably tightening their lending in late 2006. It follows that this challenge of obtaining financial capital may have prevented owners of small young firms from attaining the capital structure they would have established otherwise.

Scarcity of relevant data has hindered from understanding how entrepreneurial young firms determine their capital structure during their early years of operations and especially how those young firms adapt their capital structure decisions amidst financial turmoil. In this regard, the current credit crisis along with the unique Kauffman Foundation Survey (KFS) dataset provides an unprecedented opportunity to investigate this relatively unexplored topic, specifically the determination and evolution of capital structure for entrepreneurial young firms which have faced a credit crunch during their early years of operations. The KFS survey of new businesses is an ideal dataset for our study of young firms' capital structures for the following reasons. First, the KFS survey collects information on 4,928 firms that started in 2004 and surveys them annually from 2004 to 2008. Second, the KFS dataset provides detailed information on the type and source of financing components (i.e., debt, equity, and internal or external capital) that form the capital structure at the time of startup and then evolves over time. It also provides the socio-demographic characteristics of up to 10 owners, including age, gender, race, ethnicity, education, work experience, and previous startup experience as well as the firm-specific information on

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[1] The purpose of the survey is to provide qualitative and limited quantitative information on credit availability and demand, as well as evolving developments and lending practices in the U.S. loan markets.

innovation, types of business, components of assets and 6-digit NAICS industry code of each business. Third, but not lastly, as part of the continuing effort by the Kauffman Foundation to help better understand difficulties faced by start-up entrepreneurs, new survey questions regarding the current financial crisis were deliberately added to the KFS 2008 Fourth Follow-Up questionnaire. It is found that about 84.6% owners (1,916 out of 2,264) were affected a lot or in some degree by the nation's recent financial crisis.

By utilizing this novel KFS dataset, we successfully broaden our understanding of the determination and evolution of capital structure for entrepreneurial firms which have dealt with credit crunches during their early years of operations. We find the following. First, we show that entrepreneurial young firms tend to have higher initial book leverages when the primary owner works longer working hours and have less working experience, and when the business has less credit risk, more asset tangibility and is not home-based. Second, we find that the cross-sectional distribution of book leverage ratios among entrepreneurial young firms at the first year of operations has an inverted bell shape and maintains its shape in subsequent years. In addition, the inverted bell shape of book leverage is found to follow the inverted bell shape of outside leverage of firms. Third, we infer from panel Multinomial Logit regressions that, during their early years of operations, initial leverage is persistent over time for entrepreneurial young firms and even the random component of initial leverage lasts over time. Moreover, the book leverage of these young firms tends to converge to a certain level over the years. The year by year OLS regressions show that the magnitude of convergence of book leverage is the largest from 2004 to 2005, and the smallest from 2007 to 2008, suggesting that the lack of credit in the economy might leave many of these firms unable to adjust their leverage. However, overall, we find that the current financial crisis exerted a limited impact on the capital structure of these firms.

2. Literature Review
2.1. Overview of Entrepreneurial Finance

In this paper, we examine the evolution of capital structure of new firms. Entrepreneurs incorporate multiple sources and types of capital to launch and grow a new venture (Ballou et al., 2008; Shane, 2008). Agency theory suggests that in the absence of the frictionless market for capital in Modigliani-Miller, capital structure reflects underlying attributes and preferences of the firm. Taking into account the information asymmetries associated with new firms, debt financing

in particular will be related to the information opacity of the firm. Furthermore, information asymmetries should present a greater problem in private relative to public firms; in new relative to established in firms; and in small relative to large firms.

Different classes of outside investors vary in their risk preference profile. A substantial literature explores the differences between banks and venture capitalists in the financing of new ventures. In particular, banks face greater liquidity constraints than VC firm, leading to preference for collateral, transparent valuation, and other lower risk sectors (Berger & Udell, 1998; Ueda, 2004; Winton & Yerramilli, 2008). The information asymmetries associated with new, high tech firms make traditional bank lenders less likely to lend to these firms. Empirical studies support this finding broadly (Cole, 2008; Cosh et al., 2009). Overall, we expect that nascent high tech firms face greater capital market imperfections than new firms in lower technology industries. For high tech firms, the literature on entrepreneurial finance contributes strong theoretical and empirical evidence on the role of venture capital in new ventures and in financing innovation (Gompers, Kovner, Lerner, & Scharfstein, 2006; Gompers & Lerner, 2003; Kortum & Lerner, 2000; Metrick, 2007). For relatively low technology firms, the literature on small business financing indicates that banks are a crucial source of financing for small business (Berger & Udell, 1998; Cole, 2008; Cosh, Cumming, & Hughes, 2009). Debt financing and equity financing (bank loans compared to venture capital) have different implications for entrepreneurs (Schmidt, 2003; Ueda, 2004; Winton & Yerramilli, 2008).

2.2. The Capital Structure of New Firms

Small businesses in the United States rely on a combination debt and equity (Berger and Udell (1998); Haynes and Brown (2009); Robb and Robinson (2010)). Our understanding of the capital structure of firms increasingly addresses the debt and equity choices of private as well as public firms (Brav, 2009; Cole, 2008; James S. Ang, 2000). The capital structure decision of small firms, and new firms in particular, is increasingly being considered with relationship to traditional pecking order theory (Beck, Demirgüç-Kunt, & Maksimovic, 2008; Myers & Majluf, 1984; Robb & Robinson, 2008). Initial focus on larger, publicly traded firms; firms that have been studied are publicly traded, Compustat listed firms, which inherently biases the sample towards survivors. For example, in a sample of high tech firms just prior to and subsequent to IPO Carpenter and Petersen find that small firms have significantly lower debt relative to total

assets than larger high tech firms, and, furthermore, the ratio of secured debt to total long term debt is substantially greater in the smaller firms (Carpenter & Petersen, 2002). These results support the proposition that small high tech firms, with fewer tangible assets and much higher risk, rely less on debt, perhaps due to the constraint related to the demand for secured debt. However, these figures are from firms that go public. Using the National Survey of Small Business Finances, Berger and Udell (Berger & Udell, 1998) find higher use of debt but the sample is largely firms in services or wholesale or retail trade, with few high tech firms.

In principle, nascent high-technology ventures the most information opaque for outside investors. The incomplete contracting literature suggests that it is particularly hard to contract in context of high-tech entrepreneurial firms (De Bettignies, 2008). DeBettignies model suggests preference for debt over equity with aligned interests and lower cost of capital for entrepreneur, but equity contracts dominate when interests of entrepreneur and investor are poorly aligned and as investors' cost of capital increases. Firms also face the related question of financing new projects with internal sources of funds (including inside equity) versus external sources of funds (external debt and external equity). The small firm setting introduces likelihood of greater information asymmetry (not publicly traded, no analyst reports, more high tech, less tangible assets/higher intangible assets, etc) and thus greater cost of capital for debt. Importantly, selection bias will affect entrepreneurs' choice of contract, with important implications for performance (Azoulay & Shane, 2001).

3. Kauffman Firm Survey (KFS) Dataset

The Kauffman Firm Survey (KFS) is a survey of new businesses in the United States. This survey collected information on 4,928 firms that started in 2004 and surveys them annually. In addition to the 2004 baseline year data, there are four years of follow up data (2005, 2006, 2007 and 2008) now available. Additional years are planned. There are two different versions of the KFS dataset available to researchers, (1) a Public-Use microdata set and (2) a more detailed confidential NORC Enclave microdata set. The limitation resulting from using the Public-Use dataset is that most of variables of interest, especially the variables for financing are not continuous, but categorical. For example, debt financing from various sources and equity investments by the CEO/Owner, Spouse, Parents, Venture Capitalists, and any other source are categorical variables. Categorical variables cannot be used to obtain accurate picture on the

capital structure of a firm, such as leverage ratios, which will be used as variables of great importance in our study.

Contrary to the Public-Use dataset, the NORC-Enclave dataset provides more detailed and continuous confidential microdata on the following information. First, the NORC-Enclave dataset provides the socio-demographic characteristics of up to 10 owners, including age, gender, race, ethnicity, education, work experience, and previous startup experience. Secondly, it provides the firm-specific information on innovation, types of business, components of assets and 6 digit NAICS industry code of each business. Third, detailed information including the different components of capital structure used at startup and over time can be obtained from the NORC-Enclave dataset. For debt financing, three (3) debt securities can be identified in the data: (1) bank loans, (2) non-bank loans and (3) credit card loans. Bank loans (including line-of-credit) can be granted to a business either in the name of owners or business itself. Non-bank loans can be extended to a business from non-bank financial institutions, family members, outside individuals, government agencies, employees or owners of a business. Credit card loans can be approved to a business in the name of owners or business itself. Equity financing can be made either internally from owners or family members (e.g., spouse and parents), or externally from other sources including angel investors, other companies, government agencies, and venture capitalists.

One potential issue for the KFS NORC-Enclave dataset is that firms can chose to disclose financial information in a form of range value. For example, firms can only provide "RANGE" value for their financial variables such as amount of bank loans, non-bank loan and credit card loans for each year while many other firms provide exact values for the same variables. In order to make the KFS dataset more complete, we convert these range values into numeric values by mapping the midpoint of the range as a numeric value for those that did not have a continuous value.

3.1. Variables of interest

We construct three leverage ratios: book leverage, inside leverage, and outside leverage. Book leverage is calculated by dividing debt financing by total financing including debt financing and equity financing. Inside leverage is the portion of debt financing provided by insiders such as owners themselves, owners' families or employees over total financing.

Similarly, outside leverage is computed as the portion of debt financing from outsiders over total financing. Therefore, the sum of inside leverage and outside leverage is always equal to book leverage of each firm for each year. In addition to leverage ratios, we consider not only the socio-demographic characteristics of the primary owner, such as gender, race and work experience, but also firm-specific characteristics, such as multiple ownership, being a home-based business, credit risk, type of business, number of innovations (including copyrights, trademark and patents) and PP&E ratio of firms.

3.2. The Socio-Demographic Characteristics of the Primary Owner

The NORC-Enclave dataset provides the socio-demographic information of up to 10 owners. The method for assigning owner demographics at the firm level is to first define a primary owner who presumably has the most influential managerial power over the business. For firms with multiple owners, the primary owner is designated by the largest equity shareholder. In cases where two or more owners owned equal shares, hours worked and a series of other variables are used to create a rank order of owners in order to define a primary owner. Firms with a primary owner that is female are classified as women-owned firms. Multi-race/ethnic owners are classified into one race category: white and non-white. For example, an owner is defined as white, only if he/she is not a Hispanic, Asian or black. As a result, the white category includes only non-Hispanic white. In addition to gender and race, we also consider the primary owner's age and entrepreneurial activities before he/she started the business in 2004. For prior entrepreneurial activities, we employ both start-up experience and years of prior work experience in the same industry as the current business.

3.3. Firm-Specific Characteristics

We include multiple owners in our analysis since, based on the assumption that debt financing increases as the number of owners who have a prior relationship with financial institutions increases, an increase in the number of owners should increase leverage ratios. The primary location of the business is also considered because a home-based business might not be able to provide enough collateral to lenders, thereby depending more on internal equity financing compared to businesses having premises that can be used as collateral for outside loans. In this regard, we also include the ratio of tangible assets over total assets in our analysis in order to

account for firms' overall ability to provide collateral for debt financing. To obtain the book value of tangible assets, we combine book values of equipments, land, vehicles and other business properties together. Besides tangible assets, the number of innovations including copyrights, trademark and patents are included to capture the effect of intangible aspects of the business on its capital structure. The primary owner's belief in the firm's competitive advantage is used to account for differences in capital structure that may be due to variation in the degree of optimism of the entrepreneur. Firms that provide products are treated separately from those that do not.

Table 1. Descriptive Statistics of Key Variables

Variable	Observations	Mean	Std. Dev.
Time invariant Owner Characteristics (2004)			
Female	4920	0.258	0.437
White	4923	0.794	0.405
Log (hours)	4825	3.493	0.922
Age	4860	44.989	10.883
Age^2	4860	2,142.410	1,026.323
Work experience (years)	4907	12.838	10.711
Same Business	4928	0.180	0.384
Time variant Firm Characteristics			
Initial leverage	21920	0.357	0.337
Leverage(Categorical)	13265	1.835	0.710
Debt to Capital Ratio	13265	0.528	0.424
Multiple ownership	24640	0.523	0.499
Credit risk	20793	3.139	0.905
Home based	24640	0.361	0.480
Intellectual Property	17253	1.896	13.434
Comparative Advantage	24640	0.463	0.499
Sells Products	24640	0.363	0.481
PP&E Ratio	16310	0.433	0.367

4. The Distribution and Evolution of Capital Structure

Before conducting an empirical investigation into the key determinants that influence capital structure, and the evolution of the capital structure of entrepreneurial firms over the years, we first plot the cross-sectional distribution and evolution of capital structure during early years of operation.
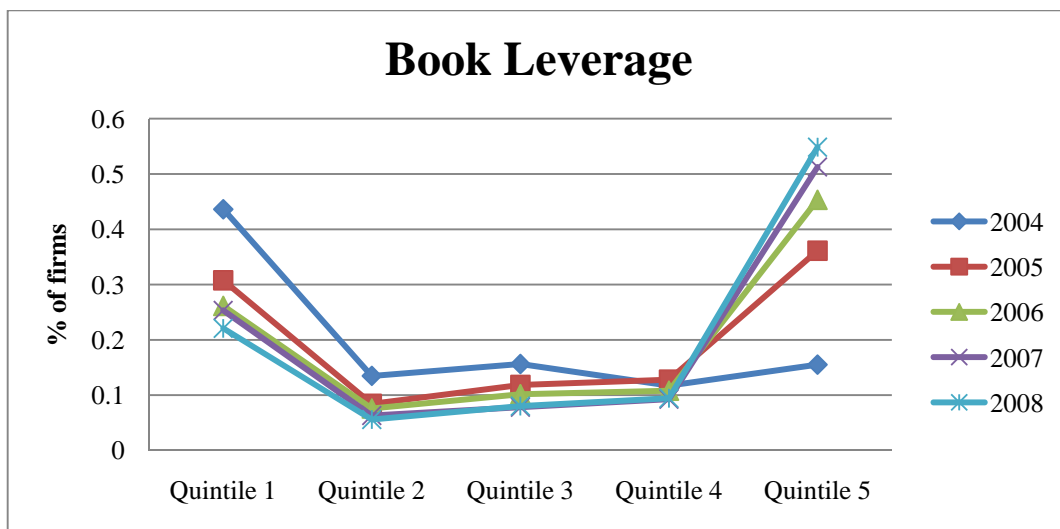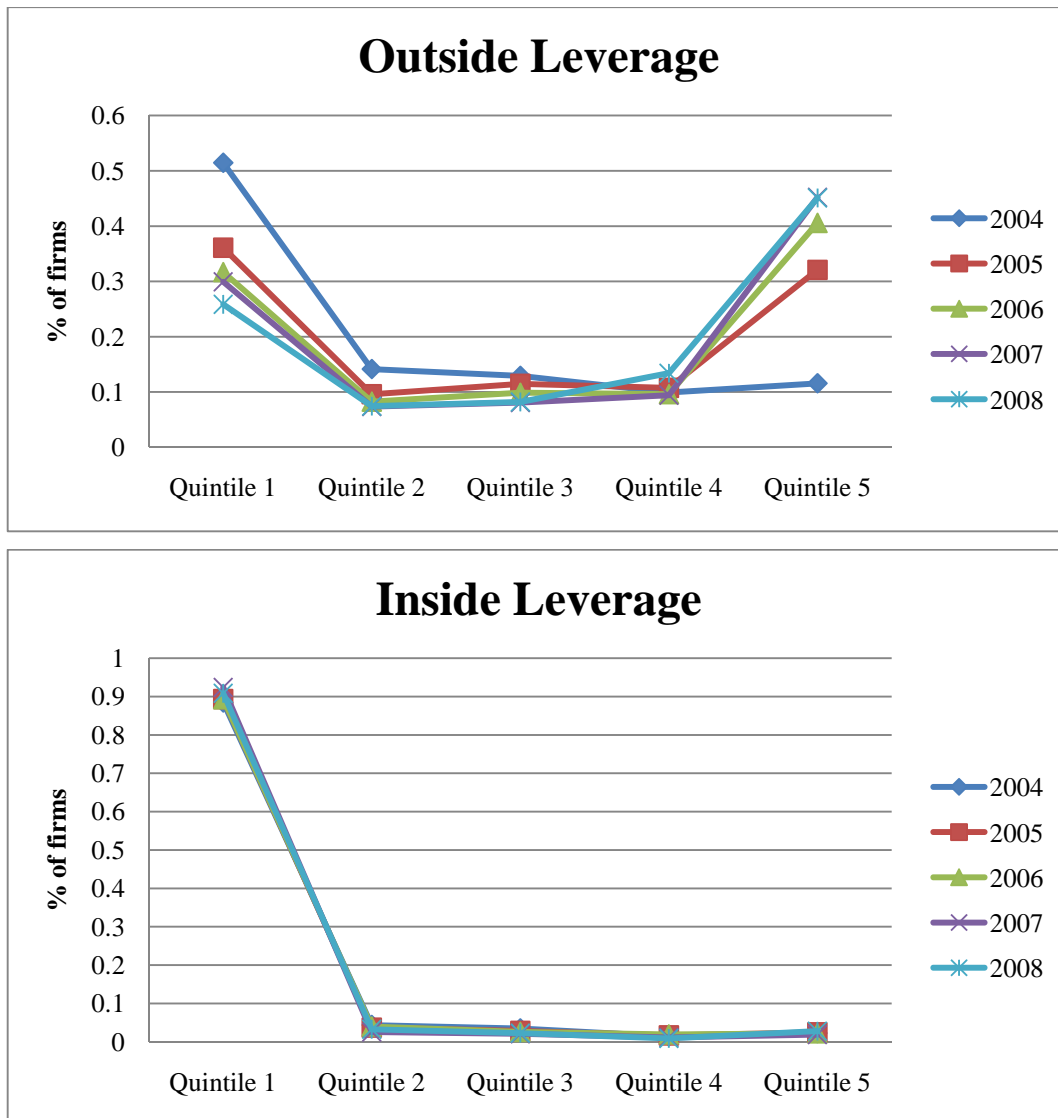
4.1. Distribution of Capital Structure

To understand changes in the cross-sectional distribution of the capital structure spanning the early years of young firms' operations, for every survey year, we divide all firms into quintiles, based on either their year-end industry-adjusted book leverage, industry-adjusted outside leverage or industry-adjusted inside leverage. In other words, each year we re-sort and re-allocate firms into new quintiles, based on firms' year-end industry-adjusted leverage ratios. For example, consider industry-adjusted book leverage. In an effort to account for potential differences in book leverage among different industries, for every survey year, we first calculate the mean book leverage of each industry and then examine the difference between actual book

leverage for each firm and the mean of book leverage of the industry to which the firm belongs, yielding the year-end industry-adjusted book leverage of each firm. To elaborate, firms whose industry-adjusted book leverage ratios fall into the lowest quintile are classified as Quintile 1. Firms with the 2nd lowest quintile of industry-adjusted leverage belong to Quintile 2. Remaining firms which belong to subsequent quintiles are allocated into Quintile 3, 4 and 5, accordingly. We follow the same procedures to obtain 5 sub-samples each by using two other leverage ratios, industry-adjusted outside leverage and industry-adjusted inside leverage. Even though 2-digit NAICS industry classification codes in the NORC-Enclave dataset initially allow us to have 24 different industries, we merge small industries having less than 10 firms with larger industries that share the same 1-digit NAICS industry classification code, resulting in 17 different industries. After constructing quintiles each year, based on firms' industry-adjusted leverage ratios, we plot the percentage of firms that belong to each quintile against the corresponding quintiles in each year.

Figure 1 contains the plots. Surprisingly, Figure 1 clearly shows that the cross-sectional distribution of book leverage ratio at the first year of operations is an inverted bell shape and maintains its shape for the subsequent years. In addition, the inverted bell shape of book leverage seems to originate mainly from the distribution of outside leverage, rather than from inside leverage.

**Figure 1. The Distribution of Capital Structure**

Outside Leverage

(Chart: % of firms vs. Quintile 1–5, series 2004, 2005, 2006, 2007, 2008)

Inside Leverage

(Chart: % of firms vs. Quintile 1–5, series 2004, 2005, 2006, 2007, 2008)

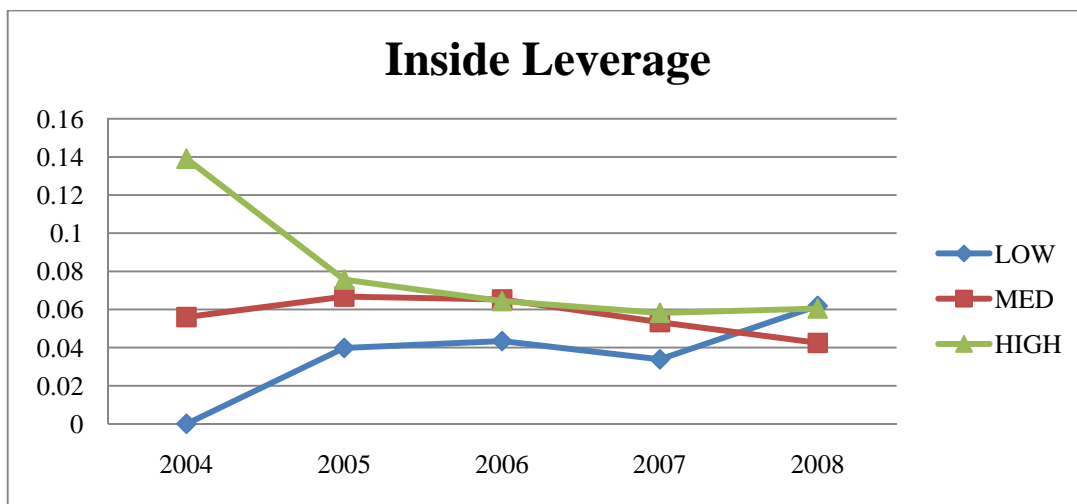### 4.2. The Evolution of Capital Structure

Next, we investigate the time-series evolution of capital structure during the early years of operations. Based on firms' initial industry-adjusted book leverage in 2004, we sort firms into three quantiles (HIGH, MED and LOW)[2] to examine the time-series evolution of these leverage ratios (book leverage, outside leverage and inside leverage) for each quantile. The means of book leverages, outside leverages, and inside leverages of firms that belong to each of the three leverage quantiles (HIGH, MED and LOW) are plotted for 2004-2008. Figure 2 contains the

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[2] Low quantile has more than 41% of firms and Med quantile has less than 25% of firms because about 8% of firms have the same industry-adjusted book leverage ratios in 2004.

figures. Panel A shows that book leverage is persistent over time: the highest (lowest) leverage quantiles in 2004 remain the highest (lowest) over time throughout the sample period. Besides being persistent, book leverage also appears to be converging among the three leverage quantiles. The largest convergence and adjustment in book leverages occurs one year after firms' establishments in 2004. In other words, firms that belong to the highest leverage quantile decrease their book leverage on average, while those that belong to the medium and low leverage quantiles adjust upward their leverages in their first year of operation. Similar to our findings with regards to the cross-sectional distributions of capital structure in sub-section 4.1, both the persistence and convergence of book leverage appear to originate mainly from outside leverage, rather than inside leverage.

Figure 2. The Evolution of Capital Structure

Outside Leverage

Inside Leverage
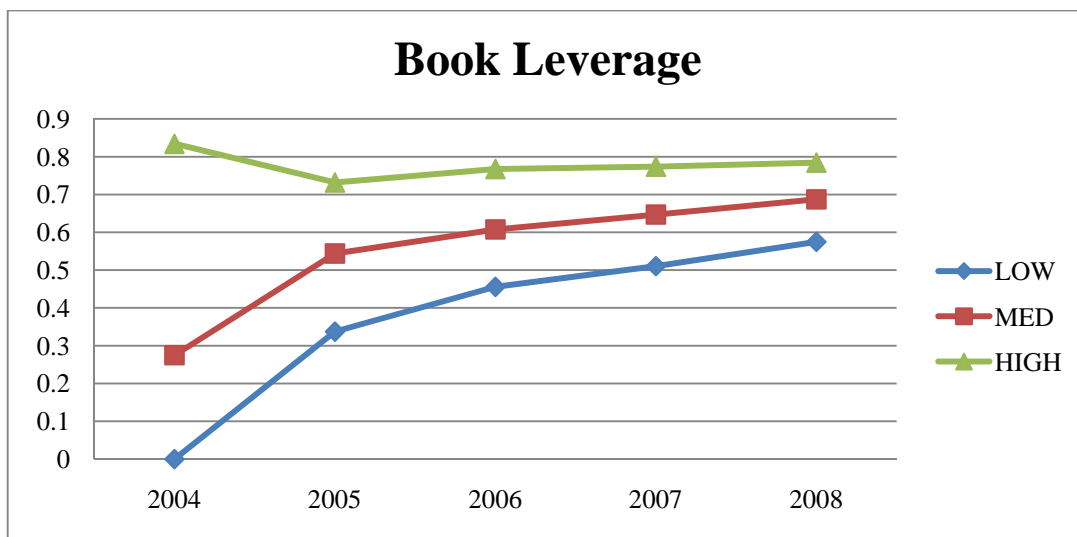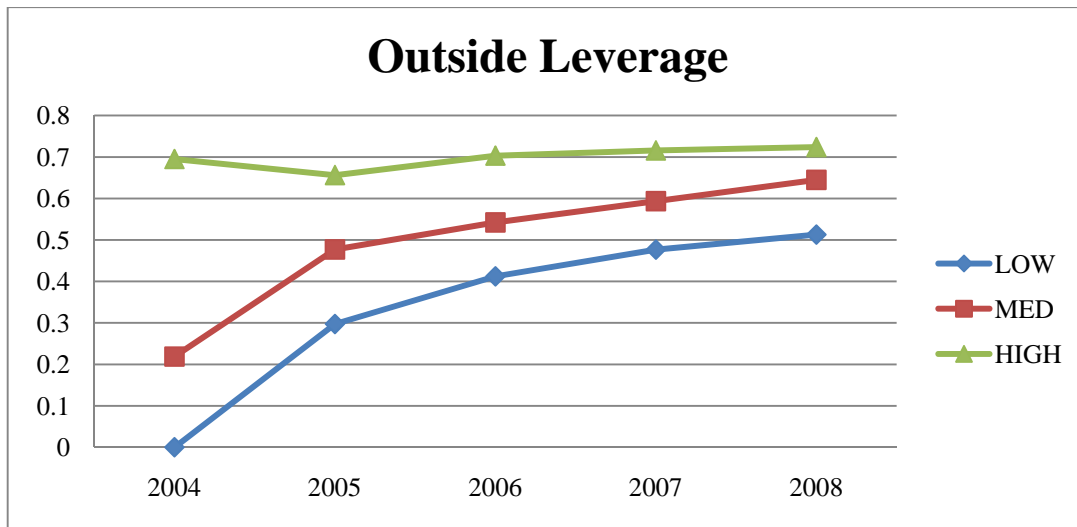
5. Empirical Analysis

Our goal in this paper is not to test a specific theory in capital structure, but rather understand the determinants and evolution of capital structure for entrepreneurial firms. We mainly investigate the following open-ended questions in our empirical analysis: First, how well do firm characteristics and owner characteristics explain the cross-sectional distribution of initial leverage of entrepreneurial firms in 2004? Second, is there a similar persistence effect in the evolution of the capital structure for these firms as is documented in Lemmon, Roberts, and Zender (2008) for public firms? Third, is there convergence in capital structure across firms over time, as is observed for public firms? Finally, what is the impact of the financial crisis on the capital structure of entrepreneurial firms?

5.1. Determinants of Initial Capital Structure

To investigate how the initial leverage of sample firms is determined in 2004, we run a Multinomial Logit regression instead of OLS regressions, given the high frequency of extreme values around 0 and 1 for book leverage. For this Multinomial Logit regression, based on firms' initial book leverages observed in 2004, we first sort firms into three leverage quantiles (HIGH, MED and LOW)[3] and use these quantiles as dependent variables. Given the fact that the KFS used a stratified sampling methodology, which oversamples high-tech firms, we use either cross-sectional or longitudinal weights in all our regressions. The model presents the marginal effect of each explanatory variable for initial book leverage to be in the "MED" quantile vs. the "LOW" quantile, and the "HIGH" quantile vs. the "LOW" quantile. In the explanatory variables, we include both firm-specific characteristics and socio-demographic characteristics of the primary described in Section 3.

The estimation results are presented in Regression (1) of Table 2. We find that firms have higher initial book leverage when the primary owner works longer working hours and has less working experience, and when the business has less credit risk, more asset tangibility and is not home-based. We also run an OLS regression with the same explanatory variables, but actual continuous initial book leverage is used as a dependent variable for this OLS regression. The results look similar to Multinomial Logit regressions as presented in Regression (2) of Table 2. However, the overall ability for these variables to explain book leverage is very low, as R-squared is around 3.60%. There appears to be a large part of the cross-sectional variations not being captured by these variables. This suggests that a large component of leverage is random, or determined by some unobserved factors.

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[3] For this case, low quantile has about 37% of firms and med quantile has less than 30% of firms because about 37% of firms have extreme book leverage of zero (0) in 2004.

Table 2. Determinants of Initial Capital Structure

	(1) Multinomial Regression				(2) OLS Regression	
Initial Leverage(2004)	MED vs LOW		HIGH vs LOW			
	Coef.	P>t	Coef.	P>t	Coef.	P>t
Female	0.024	0.848	-0.084	0.492	-0.005	0.798
White	-0.132	0.343	0.208	0.135	0.051**	0.011
Log(hours)	0.388***	0.000	0.307***	0.000	0.034***	0.003
Age	-0.049	0.131	0.015	0.650	0.006	0.180
Age^2	0.000	0.108	-0.000	0.645	-0.000	0.162
Work experience (years)	-0.016***	0.008	-0.018***	0.002	-0.003***	0.003
Same business	0.029	0.847	0.061	0.676	0.015	0.514
Multiple ownership	-0.007	0.951	0.074	0.515	0.011	0.522
Credit risk	-0.146*	0.055	-0.138*	0.054	-0.017	0.109
Home_based	-0.390***	0.000	-0.512***	0.000	-0.067***	0.000
Intellectual Property	-0.020**	0.033	-0.012*	0.056	-0.002*	0.097
Comparative Advantage	0.174	0.147	-0.023	0.838	-0.022	0.205
Sells Products	0.045	0.695	0.177	0.103	0.012	0.464
PP&E Ratio	0.174	0.254	0.720***	0.000	0.111***	0.000
Year Fixed Effect	NO				NO	
Industry Fixed Effect	NO				NO	
Observations	2,835				2,835	
Population Size	43,747				43,747	
F-Statistics	4.850					
R-Square					0.036	

Notes: Categorical values (HIGH, MED and LOW) are used as a dependent variable in Multinomial Regression (1) while continuous actual book leverages are used as a dependent variable in the OLS regression (2). Cross-sectional survey weights are considered in both Regressions. *** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level,

5.2. Evolution of Capital Structure

To formally investigate the evolution of capital structure over time for these firms, we run panel Multinomial Logit regressions spanning 2005-2008 to test whether there is persistence in capital structure. For this panel analysis, each year we repeat the sorting process, allocating firms into three leverage quantiles (HIGH, MED and LOW), based on firms' year-end book leverage ratios and use those quantiles as dependent variables in our Multinomial Logit regressions. The observations in 2004 are not used in the regression since we need to include the initial book

leverage in 2004 as an explanatory variable to test persistence. From the results in Figure 2, we expect the coefficient of initial book leverage to be significantly positive. The results are shown in Regression (1) of Table 3. As expected, the coefficients for initial book leverage are significantly positive with t-values being 11.04 and 10.29 in the case of "MED" vs. "LOW" and the case of "HIGH" vs. "LOW" respectively. One might be concerned that the relation can be spurious. If leverage is determined by some firm and owner characteristics, and these characteristics are persistent over time, then by construction initial book leverage is able to predict future leverage. We address this concern by constructing a residual leverage measure that is unrelated to those characteristics. This measure is the residual of a first step regression with the initial leverage being explained by firm and owner characteristics. We then include the residual initial leverage in place of the initial book leverage in the panel regression. The result is shown in Regression (2) of Table 3. The residual initial leverage is also significant in determining a firm's leverage later on. Including year fixed effects and industry fixed effects does not change the results. We also find that lagged credit risk is significantly negative in all specifications. This indicates the ability of these firms to borrow is related to their credit worthiness. In summary, we find that leverage is persistent over time for these firms even in the first few years of their lives, and even the random component of initial leverage lasts over time.

Last, we study whether there is convergence in leverage level among firms over time. For this study, the dependent variable is the change of book leverage year by year, and the explanatory variable of interest is the lagged book leverage from the previous year. If there is convergence as shown in Figure 2, we expect the coefficient on lagged book leverage to significantly negative. We first pool all panel observations together and run a pooled OLS regression. To further investigate whether there is difference in magnitude of convergence in each year, we break the observations into four sub-samples by year and run OLS regression for each sub-sample separately. The pooled OLS regression is equivalent to running four separate regressions by imposing the restrictions that the coefficients are the same across all the years. The results are presented in Table 4. Regression (1) shows the pooled OLS regression, while Regression (2) to (5) shows the results of OLS regressions by year. On average, there is convergence in leverage among firms. When lagged leverage is higher, the change is smaller, i.e., the increase is larger or the decrease is smaller. The year by year results show that the magnitude of convergence is the largest from 2004 to 2005, and the smallest from 2007 to 2008. The

financial crisis could play a role in the small convergence in leverage from 2007 to 2008. The lack of credit in the economy might leave many of these firms unable to adjust their leverage flexibly but rather let it stay where it was.

Table 3. Persistence of Capital Structure

Leverage	MED vs LOW		HIGH vs LOW		MED vs LOW		HIGH vs LOW	
	(1)				(2)			
	Coef.	P>z	Coef.	P>z	Coef.	P>z	Coef.	P>z
Lag_credit risk	-0.143***	0.008	-0.267**	0.014	-0.152***	0.007	-0.284***	0.009
Initial Leverage(2004)	1.687***	0.000	2.518***	0.000				
Residual_Initial Leverage(2004)					1.663***	0.000	2.504***	0.000
Female	-0.063	0.592	-0.217	0.254	-0.047	0.701	-0.206	0.283
White	0.165	0.210	0.690***	0.003	0.220	0.109	0.784***	0.001
Log(hours)	0.290***	0.000	0.267**	0.021	0.341***	0.000	0.351***	0.002
Age	0.024	0.405	0.136**	0.014	0.044	0.133	0.152***	0.006
Age^2	-0.000	0.378	-0.002**	0.010	-0.000	0.124	-0.002***	0.004
Work experience (years)	-0.001	0.880	-0.013	0.147	-0.007	0.229	-0.021**	0.020
Same business	-0.065	0.601	-0.023	0.920	-0.063	0.624	0.001	0.995
Multiple ownership	0.017	0.875	0.123	0.496	0.021	0.853	0.135	0.458
Home based	-0.189*	0.074	-0.193	0.285	-0.347***	0.002	-0.387**	0.035
Intellectual Property	-0.001	0.720	-0.009	0.468	-0.004	0.267	-0.014	0.306
Comparative Advantage	-0.041	0.671	0.121	0.480	-0.054	0.585	-0.062	0.719
Sells Products	-0.045	0.660	-0.264	0.152	-0.012	0.910	-0.213	0.269
PP&E Ratio	-0.145	0.265	-0.468**	0.044	0.038	0.777	-0.213	0.356
Year Fixed Effect	YES				YES			
Industry Fixed Effect	YES				YES			
Observations	11,052				10,821			
Population Size	108,299				103,218			
F-Statistics	3,895.74				3,074.53			

Notes: Categorical values (HIGH, MED and LOW) are used as a dependent variable in Multinomial Regression (1) and (2). Longitudinal survey weights are considered in both Regressions.*** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level,

Table 4. Convergence of Capital Structure

	Pooled OLS		Lev2005-Lev2004		Lev2006-Lev2005		Lev2007-Lev2006		Lev2008-Lev2007	
	(1)		(2)		(3)		(4)		(5)	
	Coef.	P>t	Coef.	P>t	Coef.	P>t	Coef.	P>t	Coef.	P>t
Lag_Book Leverage	-0.540***	0.000	-0.601***	0.000	-0.514***	0.000	-0.555***	0.000	-0.458***	0.000
Female	-0.009	0.459	-0.006	0.787	-0.049**	0.019	0.004	0.895	0.037	0.114
White	0.031**	0.017	0.080***	0.001	0.001	0.947	0.022	0.440	-0.002	0.957
Log(hours)	0.030***	0.000	0.044***	0.003	0.032***	0.006	0.032**	0.033	0.010	0.425
Age	0.008**	0.014	0.008	0.174	0.008	0.146	0.012*	0.080	-0.000	0.972
Age^2	-0.000***	0.008	-0.000	0.132	-0.000	0.138	-0.000*	0.072	-0.000	0.869
Work experience	-0.000	0.399	-0.001	0.296	0.001	0.564	-0.002	0.182	0.001	0.570
Same business	-0.013	0.325	-0.015	0.541	-0.033	0.147	0.011	0.698	-0.013	0.636
Multiple ownership	0.018	0.068	0.014	0.478	0.021	0.250	0.004	0.838	0.038*	0.070
Credit risk	-0.022***	0.000	-0.025*	0.050	-0.011	0.347	-0.036***	0.003	-0.008	0.483
Home_based	-0.025**	0.016	0.007	0.715	-0.032*	0.080	-0.041*	0.072	-0.050**	0.023
Intellectual Property	-0.000	0.228	-0.001	0.346	-0.001	0.171	-0.000	0.369	0.000	0.481
Comparative Advantage	0.009	0.406	0.010	0.633	0.027	0.159	0.014	0.561	-0.027	0.211
Sells Products	-0.054***	0.001	-0.073**	0.010	0.005	0.850	-0.104***	0.002	-0.040	0.190
PP&E Ratio	-0.019	0.182	-0.018	0.513	-0.024	0.331	-0.025	0.423	-0.005	0.880
Observations	5555		1715		1660		1174		1006	
Robust R-square	0.2704		0.2546		0.2710		0.2735		0.2416	

Notes: Continuous actual book leverages are used as a dependent variable in all OLS regressions.*** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level,

References

Atanassov, J., Nanda, V. K., & Seru, A. 2007. Finance and Innovation: The Case of Publicly Traded Firms. *SSRN working paper*.

Azoulay, P., & Shane, S. 2001. Entrepreneurs, Contracts, and the Failure of Young Firms *Management Science*, 47(3): 337-358.

Ballou, J., Barton, T., Desroches, D., Potter, F., Reedy, E. J., Robb, A., Shane, S. A., & Zhao, Z. 2008. The Kauffman Firm Survey: Results from the Baseline and First Follow-Up Surveys. *http://ssrn.com/abstract=1098173*

Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. 2008. Financing patterns around the world: Are small firms different? *Journal of Financial Economics*, 89(3): 467-487.

Berger, A. N., & Udell, G. F. 1998. The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking & Finance*, 22(6-8): 613-673.

Black, S. E., & Strahan, P. E. 2002. Entrepreneurship and Bank Credit Availability. *Journal of finance*, 57(6): 2807-2833.

Brav, O. 2009. Access to Capital, Capital Structure, and the Funding of the Firm. *The Journal of Finance*, 64(1): 263-308.

Carpenter, R. E., & Petersen, B. C. 2002. Capital market imperfections, high-tech investment, and new equity financing. *Economic Journal*, 112(477): F54-F72.

Cole, R. A. 2008. What Do We Know About the Capital Structure of Privately Held Firms? Evidence from the Surveys of Small Business Finance, *http://ssrn.com/paper=1013085*.

Cosh, A., Cumming, D. J., & Hughes, A. 2009. Outside Entrepreneurial Capital. *Economic journal*(forthcoming).

De Bettignies, J.-E. 2008. Financing the entrepreneurial venture. *Management Science*, 54(1): 151-166.

Dittmar, A., & Mahrt-Smith, J. 2007. Corporate governance and the value of cash holdings. *Journal of Financial Economics*, 83(3): 599-634.

Eckhardt, J. T., Shane, S., & Delmar, F. 2006. Multistage Selection and the Financing of New Ventures. *Management Science*, 52(2): 220-232.

Evans, D. S., & Jovanovic, B. 1989. An estimated model of entrepreneurial choice under liquidity constraints. *Journal of Political Economy*, 97(4): 808-827.

Gompers, P. A., Kovner, A., Lerner, J., & Scharfstein, D. 2006. Skill vs.luck in entrepreneurship and venture capital: Evidence from serial entrepreneurs. *NBER Working Paper*, 12592.

Gompers, P. A., & Lerner, J. 2003. Equity financing. In Z. J. Acs, & D. B. Audretsch (Eds.), *Handbook of entrepreneurship research*: 267-298: Kluwer Academic Publishers.

Hellmann, T., & Puri, M. 2000. Interaction between product market and financing strategy: The role of venture capital. *Review of Financial Studies*, 13(4): 959-984.

James S. Ang, R. A. C., James Wuh Lin,. 2000. Agency Costs and Ownership Structure. *The Journal of Finance*, 55(1): 81-106.

Kaplan, S., Sensoy, B., & Strömberg, P. 2008. Should Investors Bet on the Jockey or the Horse? Evidence from the Evolution of Firms from Early Business Plans to Public Companies. *Journal of Finance*, forthcoming.

Kortum , S., & Lerner, J. 2000. Assessing the contribution of venture capital to innovation. *RAND Journal of Economics*, 31(4): 674-692.

Landier, A., & Thesmar, D. 2009. Financial contracting with optimistic entrepreneurs. *Review of Financial Studies*, 22(1): 117-150.

Lemmon, M. L., Roberts, M. R., & Zender, J. F. 2008. Back to the beginning: Persistence and the cross-section of Corporate Capital Structure. *Journal of Finance*, 63(4): 1575-1608.

Metrick, A. 2007. *Venture Capital and the Finance of Innovation*: John Wiley & Sons.

Myers, S. C., & Majluf, N. S. 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2): 187-221.

Nanda, R. 2008. Cost of external finance and selection into entrepreneurship, *HBS working paper 08-047*.

O'Brien, J. P. 2003. The capital structure implications of pursuing a strategy of innovation. *Strategic Management Journal*, 24(5): 415-431.

Puri, M., & Robinson, D. T. 2007. Optimism and economic choice. *Journal of Financial Economics*, 86(1): 71-99.

Puri, M., & Zarutskie, R. 2008. On the Lifecycle Dynamics of Venture-Capital- and Non-Venture-Capital-Financed Firms. *EFA 2007 Ljubljana Meetings Paper*, http://ssrn.com/abstract=967841

Reedy, E. J., & Robb, A. 2009. Comparisons between the Kauffman Firm Survey and Other Business Data

Robb, A., & Robinson, D. 2008. Capital structure decisions of new firms, *ssrn abstract 129552*.

Schmidt, K. M. 2003. Convertible Securities and Venture Capital Finance. *Journal of finance*, 58(3): 1139-1166.

Shane, S. 2008. *The Illusions of Entrepreneurship:The Costly Myths That Entrepreneurs, Investors, and Policy Makers Live By*. New Haven: Yale University Press.

Ueda, M. 2004. Banks versus Venture Capital: Project Evaluation, Screening, and Expropriation. *Journal of finance*, 59(2): 601-621.

Winton, A., & Yerramilli, V. 2008. Entrepreneurial finance: Banks versus venture capital. *Journal of Financial Economics*, 88(1): 51-79.