**FINANCIAL LEVERAGE AND FIRM PERFORMANCE DURING AND AFTER
THE FINANCIAL CRISIS**

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Abstract

The objective of this paper is to analyse the relation between a company's leverage and its performance during the financial crisis of 2007-2009. A hypothesis is proposed that leverage would negatively impact abnormal return during the financial crisis. Interestingly, it is found that, at the peak of the crisis, during 2008, firms with higher leverage performed better. The opposite effect is found in 2009, when firms with high leverage under-performed. These results seem somewhat counter-intuitive, so that after taking into account industry effects the results indicate that leverage had a negative effect on companies' performance during the 2008-2009 period.

Keywords: leverage; abnormal return; financial crisis; significance

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1. Introduction

1.1 Leverage level and stock return

There are two main reasons for firms to use leverage. First, it is the debt raised to finance the firms' operation. Second, as a more speculative avenue, leverage may be used by firms as an investment strategy or investment in financial instruments. The objective of both is to increase the return on investment.

The severe economy recession in the fall of 2008 was caused by the tightening of credit as well as the collapse of subprime mortgages and various types of securitized products, both of which had peaked in mid-2007. This collapse tossed financial institutions like Lehman Brothers and Washington Mutual into a serious solvency and liquidity issues in mid- to late-2008. Shortly after, the liquidity and solvency issues of the financial sector were eased-up by a variety of government actions. However, the prices of most asset classes and commodities still fell drastically throughout most of 2009, and there was a high volatility throughout 2007-2009.

Based on the above events, this study is aimed to learn whether a firm's leverage has an impact on its performance. There were numerous researches on the effect of leverage on returns (e.g., Bhandri, 1998; Opler and Titman, 1994; Fama and French, 1992, 1995), but very few studies focused on the 2008 financial crisis. By definition, it would seem that high leverage firms would be more affected

by the financial crisis, as it could have impeded their ability to continue to fund their operation. This study aims to test if that was indeed the case.

This paper examines the effect of different leverage levels on risk-adjusted stock returns (excluding companies in the financial and utility sectors) during the financial crisis. Our hypothesis is that, in 2008, companies with high leverage performance were in a worse condition, compared with those with low leverage, because of the severe liquidity issues forcing them to downsize or sell assets to meet their credit requirement.

Our study result partially proves our hypothesis. According to the test result, there is a significant difference of mean returns among leverage groups. Results also show that there is no significant difference in abnormal return between certain higher leverage and lower leverage firms. This paper proceeds as follows. In section 2, we review the literature. Section 3 describe the data and empirical. Section 4 provides the empirical results. Section 5 gives conclusion based on test results. Section 6 contents the test results in tables and figures.

2. Literature review

2.1 Capital Structure

Capital structure refers to the way in which a firm finances its assets. In essence, it is the interaction between debt and equity financing. The theory of capital structure started with a seminal work of Modigliani and Miller (1958). According to their study, firm value is not influenced by the choice of capital structure, which is irrelevant to both firm value and the weighted average cost of capital (hence, cost of capital). The cost of capital is constant because, according to Modigliani and Miller (1958), the substituting debt for equity changes the risk associated with each of the claims: the claim of shareholders and that of debtholders, which is less risky. Hence, the cost of debt will equivalently reduce and that of equity will rise (the reverse case also holds). According to M & M, firms with higher leverage tend to have a higher return during good times and a lower return during bad ones, simply because they are associated with higher systematic risks. As for risk-adjusted returns, the theory is obviously being silent.

2.2 Debt financing during the financial crisis

During the financial crisis in 2008, banks were the first victim. Intuitively, this would suggest that large corporations that needed to finance their operation with debt were the next to be hit. Firms may have found themselves in a situation where they did not have the funds to roll over existing debt, which would further complicate the situation. Ivashina and Scharfstein (2009) found that new loans to large borrowers fell by 47% during the peak of the financial crisis relative to the

prior quarter and by 79% relative to the peak of the credit boom, which is consistent with this assessment. Furthermore, new lending for real investment fell by only 14% in the last quarter of 2008, but contracted nearly as much as that for restricting relative to the peak of the credit boom. After the failure of Lehman Brothers in September 2008, banks had difficulties rolling over their short-term debt.

Pianeselli and Zaghini (2013) assessed the determinants of the risk premium paid by non-financial corporations on long-term bonds. By looking at 5500 issues over the period 2005-2012, the paper finds that, in comparison with the three-year period of 2005-2007 before the global financial crisis, Italian, Spanish and Portuguese firms paid, on average, 70 to 120 basis points of additional premium during 2010-2012 due to the negative spillovers from the sovereign debt crisis.

Harrison and Widjaja (2014) investigated the difference in capital structure before and after the financial crisis. They found that the coefficients of tangibility and market-to-book ratio exerted a stronger influence on capital structure choices during the 2008 financial crisis than prior to 2008. They also found that the coefficient of profitability exerted less influence on capital structure choices during the crisis than before. Further analyses indicated that, during the 2008 financial crisis, the pecking order theory had more explanatory power than the trade-off or market timing theory.

2.3 Leverage level and performance

This subsection discusses research relating to the long-term effect of leverage on stock return. Bhandri (1998) found a positive correlation between

leverage (measured by non-common equity liabilities to market value of equity ratio) and abnormal stock return of companies trading on the New York Stock Exchange. The expected return is the monthly real return (adjusting nominal return by inflation). The paper also controlled for beta and firm size and excluded the January effect. They ranked samples into 3 groups using beta, divided each into 3 subgroups based on firm size, and further broke down each sub-subgroup into 3 smaller units according to leverage ratios, obtaining a total of 27 groups. There was a high variability (variance on the variables) in the correlation between beta and leverage levels across different periods and industries, mainly due to the large leverage employed by many finance, real estate, and insurance companies. Finally, Bhandri (1998) ran a regression on manufacturing firms only, which have a low variability between beta and leverage levels.

Highly leveraged firms have lower abnormal returns during economic downturns. Opler and Titman (1994) found that highly leveraged firms tend to lose substantial market shares to their more conservatively financed competitors in industry downturns. Moreover, in the industries that experience output contractions, firms at the top leverage level found that the decline in their revenue was 26% more than that in firms with low leverage. Similar declines are also found in the market value of equity. Their research result is consistent with the view that indirect cost of financial distress is significant and positive. They also found that the adverse consequences of leverage are more pronounced in concentrated industries.

The common three-factor model uses book-to-market equity ratio to explain stock return. Fama and French (1992 & 1995) showed that firms with high book-to-market equity ratio tend to make less earnings compared with those with low book-to-market equity ratio, which is similar to the conclusion of the study conducted by Chen and Zhang (1998). Thus, book-to-market equity ratio can affect the stock return, making it necessary to include both the book leverage (long-term debt to total book value of assets) and the market leverage (total debt to market value of equity).

3. Data and Methodology

3.1 Data

All data collected in this research were from the period of 2007-2009 to study the effect of leverage on stock return of firms during the financial crisis.

3.1.1 Data Sample

The data set used in the analysis was obtained from the Wharton Research Data Services (WRDS). The period of the collected data starts from 2007 and ends in 2009, that is, one year before and after the financial crisis in 2008. And the entire data set was downloaded from North America Market, with the data in Financial (SIC code 6) and Utility (SIC code 4) Sectors excluded for their highly regulated capital structure, because this research had taken into consideration the effect of the financial crisis on changes at leverage ratio and its influence on abnormal returns.

3.1.2 Balance Sheet Data

To determine leverage ratio, and classify firms into different industry sectors, 18,781 observations were downloaded from Balance Sheet Data (Compustat Annual File), including AT (Total Asset), DLTT (Long-Term Total Debt), DT (Total Debt), MKVALT (Total Market Value of Equity at Fiscal Year), and SIC (Standard Industry Classification Code).

3.1.3 Stock Data

In order to generate stock return and calculate company return over risk free rate, 2,212,113 observations were obtained from Stock Data (CRSP daily). Data in this category include variables of RET (Returns) and SHROUT (number of shares outstanding).

3.1.4 Fama-French Factors

To regress abnormal return with the Fama-French three-factor model and Carhart momentum factor, 756 daily observations were obtained from Fama-French factors. The downloaded daily data at this category are consistent with the daily return data. Variables include: SMB (Small-Minus-Big Return), HML (High-Minus-Low Return), RF (Risk Free Return Rate measured by One Month Treasure Bill Rate), UMD (Momentum Factor), and MKTRF (Excess Return on the Market).

3.2 Methodology

Leverage Ratio was calculated using data that had been downloaded. Companies were classified into different leverage ratio groups from low level to high level as of 2007. Then abnormal return was measured during 2008-2009. Excess risk-free return of companies was calculated and abnormal return was regressed with the help of Fama-French three-factor model and Carhart Momentum Factor. Regression of abnormal return against leverage was also run to test leverage effect on returns. T-test had been applied to groups of abnormal return, and T-Statistics of Coefficient on leverage had been generated.

3.2.1 Leverage Measurement and Grouping

To ensure robustness, three different measurements of leverage ratio were used:

Book long-term leverage = DLTT / AT

Book leverage groups = DT / AT

Market leverage groups = DLTT / (DLTT + MKVALT)

Then three sets of leverage ratio were used based on the data from 2007 to sort firms into four groups: group 1 has zero Leverage, and groups 2 to 4 are equally divided among the number of observations based on the leverage ratios. From Table 2, it can be seen that there are 12,670 observations of book long-term leverage with standard deviation of 0.339 and a mean of 0.253. And there are 12,670 observations of book leverage ratio with standard deviation of 0.528 and a mean of 0.333. In addition, there are 10,783 observations of market leverage with standard deviation of 0.241 and a mean of 0.223. It can be observed from Table 3 that the range of leverage ratio from group 1 to 4 varies across the three measurements, where group 1 is always 0. Under book long-term leverage, group 2 ranges from 0.000034% to 8.91%, group 3 from 8.92% to 26.42% and group 4 from 26.49% to 178.59%. As of book leverage, group 2 ranges from 0.00004% to 11.06%, group 3 from 11.07% to 30.30% and group 4 from 30.31% to 295.38%. Under Book long-term leverage, group 2 ranges from 0.0000092% to 5.25%, group 3 from 5.26% to 22.00% and group 4 from 22.02% to 89.41%.

Long-term total debt, compared with total debt, shows better and clearer trends of debt level of a firm over the long run. Market asset value of a company offers a more accurate picture of the situation associated with the organization. As

the measurements of book long-term leverage and market leverage are similar to each other, their means of group are very close. However, book long-term leverage has a higher standard deviation. Moreover, the book leverage group presents the highest mean and standard deviation among three measurements.

3.2.2 Abnormal Returns

To measure how each firm over- or under-performs the market, abnormal return was generated for each of them. The equation used for this regression is as follows:

$R(t)-RF(t)=a + b \times MKTRF(t) + s \times SMB(t) + h \times HML(t) + u \times UMD(t) + e(t)$

where

R (t) is the return on a stock portfolio,

RF (t) is the risk-free return rate,

A is a common constant,

MKTRF(t) is the excess market return over the risk-free return rate, with

the market return being the value weighted return on all stocks,

SMB (t) is the difference between small-firms return and big-firms return,

HML (t) is the difference between high book-to-market equity return and

low book-to-market equity return, showing these three stock- market

factors,

UMD (t) is the momentum factor, and

e (t) represents the error term.

3.2.3 Leverage and Abnormal returns

To identify and test the relationship between abnormal return and leverage effect, two sets of regressions were run here on abnormal abnormal return against leverage ratio and leverage groups, one with dummy factor of two-digit SIC code, and one without. The linear equations used for this regression is as follows:

R_Abnormal (t) = a + b x Leverage (ratio / group) + i.SIC2g

where

Leverage ratio represents the three measurements of leverage,

Leverage group represents group number from 1 to 4 associated with each company, and

SIC2g is calculated using four-digit SIC code to divide 100 to widen the range of industry sectors.

12 cross-section regressions were conducted.

Coefficient and t-statistics associated with it on different Leverage ratios and groups were generated to help understand the relationship between dependent and independent variables, as well as the significant level of such relationship. The period of above regression is from 2008 to 2009, the two years of the financial crisis. The leverage group that has been determined here is measured using data from 2007.

3.2.4 T-test

  T-tests of abnormal return in 2008 and from 2008 to 2009 were applied respectively among three sets of different leverage groups. Leverage group in 2007 was used, which is the year before the occurrence of the financial crisis, to avoid the effect of economy depression on leverage.

4. Results:

Table 3 provides the mean difference of abnormal return and t-test result across all leverage groups in the year 2008, where firms in each panel were partitioned to 4 groups based on their leverage at the end of the fiscal year 2007. Group 1 consists of firms with zero leverage, and groups 2-4 are equally divided among the number of observations. Alpha is the intercept of a regression where the dependent variable is the daily excess return, and the independent variables include the three Fama and French (1992) and Carhart (1997) momentum factors. It can be observed from the table that, although the mean of groups 1 and 2 does not show significant difference between the two, the mean differences between Groups 2 and 3, 3 and 4, as well as 4 and 1 are significantly different from the mean of abnormal return. The result does not show a clear monotonic relation, and, even more surprisingly, it is observed from the figures that the most negative abnormal return is for Group 1, indicating that higher leverage firms do better than lower leverage ones.

Table 4 has been structured in the same way as Table 3, which tests the mean difference among leverage level groups in 2009. The results concerning 2009 seem to be more consistent with what one may expect. First, there appears to be a monotonic relationship (more or less) between leverage and abnormal return. It can be observed from the figures that the lower leverage groups tend to have a higher abnormal return, particularly for all three leverage measurements, where the abnormal return for group 1 is significantly higher than that of group 4.

Hence, it is evident that, during the recovery stage of the financial crisis (during 2009), a low leverage would be of benefit for firms.

Next, a regression framework was used to analyze the effect of leverage on abnormal return, which will help control for industry effects. Table 5 provides regression results where the dependent variable is the abnormal return in 2008 and 2009 (intercept of the four-factor model). The independent variables are either a group leverage measure in the form of a number from 1-4, or the leverage ratio measure that is the continuous variable measured in 2007. Specifications (4)-(6) and (10)-(12) also include industry indicators. As can be observed from the table, leverage ratios based on three different measurements are all associated with significant negative coefficients with or without the control variable of SIC code. We found that, compared with the regression result of abnormal return against leverage ratio without control variable of SIC code, the one with the control variable shows a higher R square. Higher R square refers to a closer fit of data and regression line. This result is consistent with the hypothesis in this study that leverage would have a negative impact on abnormal return of firms during economy depression. The coefficient of leverage group does not appear to be significant, implying that the partitioning to groups might also be responsible, to some extent, for the inability to find consistent results in the univariate group analysis of Tables 3 and 4.

5. Conclusion

This study analyzes the effect of leverage on abnormal return during the financial crisis. One of the main effects of leverage is acceleration of the development of a firm in both positive and negative directions. Leverage can lower the initial cash requirement on a company when taking up a project. With the above reasons, leverage will cause firms to grow or decline at a faster rate, when they are able or fail to generate return from projects. The test result partially proves that there is a significant difference of mean returns among different leverage groups, and that the three measurements of leverage ratio can ensure the robustness. Results also show that there is no significant difference in abnormal return between certain higher leverage and lower leverage firms, which can be explained by the possibility that higher leverage firms already have debt in place to cover the negative impact of the financial crisis.

6. Appendix:

Appendix – A: Tables

Table 1. Descriptive statistics of corporate data for the year 2007, 2008 and 2009 taken from Compustat (in millions of dollars). Market value of equity is share price at the end of the year times number of shares outstanding. Total assets are from Compustat

	Observation	Standard Deviation	Mean	p5	p25	p50	p75	p95	min	max
Total Asset	12670	21338.120	4318.695	3.294	51.699	313.831	1689.350	17487	0.001	797769
Total Debt	12670	7737.133	1085.507	0.12	4.007	46.710	428.460	4122	0.001	447427
Long-term Debt	12670	6318.458	938.046	0	1.958	33.098	391.60	3746	0	377138
Market Value of Equity	10783	14204.620	2729.737	2.878	29.814	192.611	1021.183	9495.84	0.001	504239.600

Table 2. Descriptive statistics of three different leverage measures: Book long term leverage = Total Long-term Debt / Total Asset, Book leverage = Total Debt / Total Asset, Market leverage = Total Long-term Debt / (Total Long-term Debt + Total Market Value of equity).

	Observation	Standard Deviation	Mean	p5	p25	p50	p75	p95	min	max
Book Long-term Leverage	12670	0.339	0.252	0	0.034	0.162	0.331	0.771	0	2.184
Book Leverage	12670	0.528	0.333	0.0025	0.073	0.207	0.384	0.954	0.00039	3.830
Market Leverage	10783	0.241	0.223	0	0.0222	0.141	0.344	0.755	0	0.945

*Table 3. This table provides difference of means t-test across different leverage groups in the year 2008, where in each panel we partition firms to 4 groups based on their leverage at end of fiscal 2007. Group 1 are firms with leverage of zero, and groups 2-4 are equally divided based on the number of firms, where group 4 is the highest leverage group. Alpha is the intercept of a regression where the dependent variable is the daily excess return and the independent variables are the three Fama and French (1992) and Carhart (1997) momentum factors. The right column presents difference of mean (t-statistic) in alpha across two consecutive groups. The bottom line presents difference of mean (t-statistic) in alpha between group 4 and group 1. Leverage definition defined in Table 1. *, **, *** represents significance at the 10%, 5%, 1% level respectively.*

Panel A: Book long-term leverage groups

Group	Number of Firms	Mean Alpha	Standard Deviation	Range of Ratio	Difference compare to above group
1	697	-0.093	0.27	0	
2	645	-0.081	0.257	0.00034% to 8.91%	0.012
					-0.8
3	709	-0.024	0.24	8.92% to 26.42%	0.058***
					-4.26
4	548	-0.055	0.264	26.49% to 178.59	-0.031**
					(-2.20)
4 minus 1					0.037***
					-2.47

Panel B: Book leverage groups

Group	Number of Firms	Mean Alpha	Standard Deviation	Range of Ratio	Difference compared to above group
1	628	-0.091	0.273	0	
2	700	-0.075	0.251	0.0004% to 11.06%	0.016
					-1.08
3	734	-0.026	0.242	11.07% to 30.30%	0.049***
					-3.77
4	536	-0.059	0.272	30.31% to 295.38%	-0.032**
					(-2.23)
4 minus 1					0.032**
					-2.01

Panel C: Market leverage groups

Group	Number of Firm	Mean Alpha	Standard Deviation	Range of Ratio	Difference compared to above group
1	697	-0.095	0.269	0	
2	632	-0.078	0.257	0.000092% to 5.25%	0.017
					-1.15
3	700	-0.022	0.232	5.26% to 22.00%	0.056***
					-4.14
4	570	-0.066	0.27	22.02% to 89.41%	-0.044***
					(-3.09)
4 minus 1					0.029**
					-1.87

*Table 4. This table provides difference of means t-test across different leverage groups in the year 2009, where in each panel we partition firms to 4 groups based on their leverage at end of fiscal 2007. Group 1 are firms with leverage of zero, and groups 2-4 are equally divided based on the number of firms, where group 4 is the highest leverage group. Alpha is the intercept of a regression where the dependent variable is the daily excess return and the independent variables are the three Fama and French (1990) and Carhart (1997) momentum factors. The right column presents difference of mean (t-statistic) in alpha across two consecutive groups. The bottom line presents difference of mean (t-statistic) in alpha between group 4 and group 1. Leverage definition defined in Table 1. *, **, *** represents significance at the 10%, 5%, 1% level respectively.*

Panel A: Book long-term leverage groups

Group	Number of Firms	Mean Alpha	Standard Deviation	Range of Ratio	Difference compare to above group
1	656	0.089	0.263	0	
2	628	0.055	0.229	0.00034% to 8.91%	-0.035*** (-2.50)
3	684	0.039	0.206	8.92% to 26.42%	-0.015 (-1.26)
4	522	0.036	0.242	26.49% to 178.59	-0.0038 (-0.29)
4 minus 1					-0.054*** (-3.59)

Panel B: Book leverage groups

Group	Number of Firms	Mean Alpha	Standard Deviation	Range of Ratio	Difference compare to above group
1	595	0.091	0.265	0	
2	676	0.062	0.224	0.0004% to 11.06%	-0.030** (-2.16)
3	710	0.04	0.206	11.07% to 30.30%	-0.021* (-1.84)
4	509	0.036	0.256	30.31% to 295.38%	-0.0045 (-0.33)
4 minus 1					-0.056 *** (-3.52)

Panel C: Market leverage groups

Group	Number of Firms	Mean Alpha	Standard Deviation	Range of Ratio	Difference compare to above group
1	656	0.087	0.261	0	
2	616	0.047	0.219	0.000092% to 5.25%	-0.040*** (-2.91)
3	676	0.035	0.192	5.26% to 22.00%	-0.012 (-1.05)
4	541	0.044	0.262	22.02% to 89.41%	0 .0096 -0.73
4 minus 1					-0. 042*** (-2.76)

Table 5. The table provides regression results where the dependent variable is the alpha in 2008 and 2009 (intercept of the four-factor model). The independent variables are either a group leverage measure (a number, 1-4), or the leverage measure (the continuous variable) as measured in 2007. Half of the specifications include industry indicators as controls. *, **, *** represents significance at the 10%, 5%, 1% level respectively.

Specification number	(1)	(2)	(3)	(4)	(5)	(6)
Long-term leverage group	0.0016 (0.33)			0.0033 (0.65)		
Book leverage group		-0.0015 (-0.32)			-0.00017 (-0.03)	
Market leverage group			-0.000068 (-0.01)			0.0011 (0.21)
Industry indicator	No	No	No	Yes	Yes	Yes
Number of firms (obs)	5089	5088	5088	5089	5088	5088
R-squared	0.0000	0.0000	0.0000	0.014	0.014	0.0142
Specification number	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Long-term leverage	-0.050* (-2.13)			-0.049* (-1.95)		
Book leverage		-0.057** (-2.82)			-0.055* (-2.57)	
Market leverage			-0.176*** (-7.93)			-0.197*** (-8.16)
Industry indicator	No	No	No	Yes	Yes	Yes
Number of firms (obs)	5089	5088	5088	5089	5088	5088
R-squared	0.000	0.0016	0.012	0.015	0.015	0.027

Appendix – B: Figures

Figure 1. Alpha trends from 2007 to 2009 associated with Book long-term leverage group
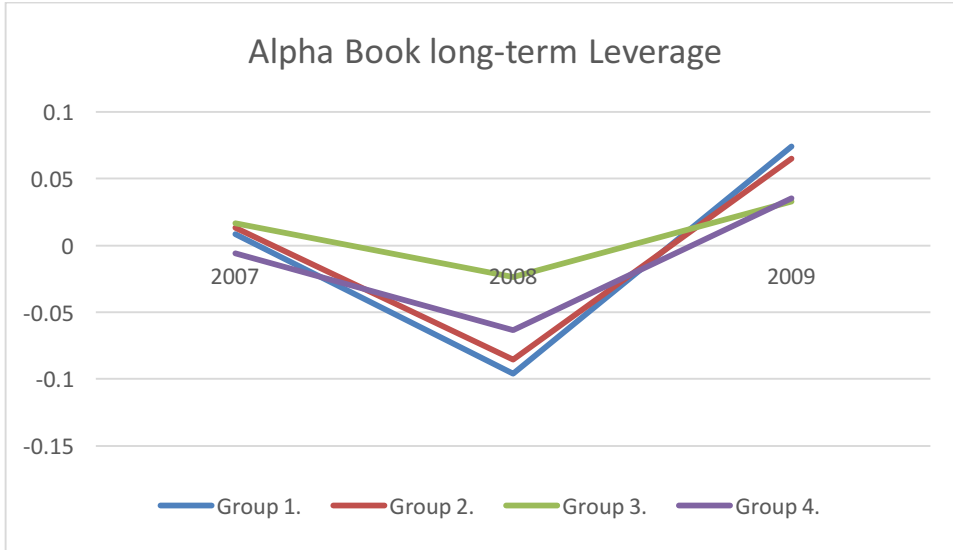

Alpha Book long-term Leverage

Legend: Group 1. — Group 2. — Group 3. — Group 4.

Figure 2. Alpha trends from 2007 to 2009 associated with Book leverage group

Alpha_Book Leverage

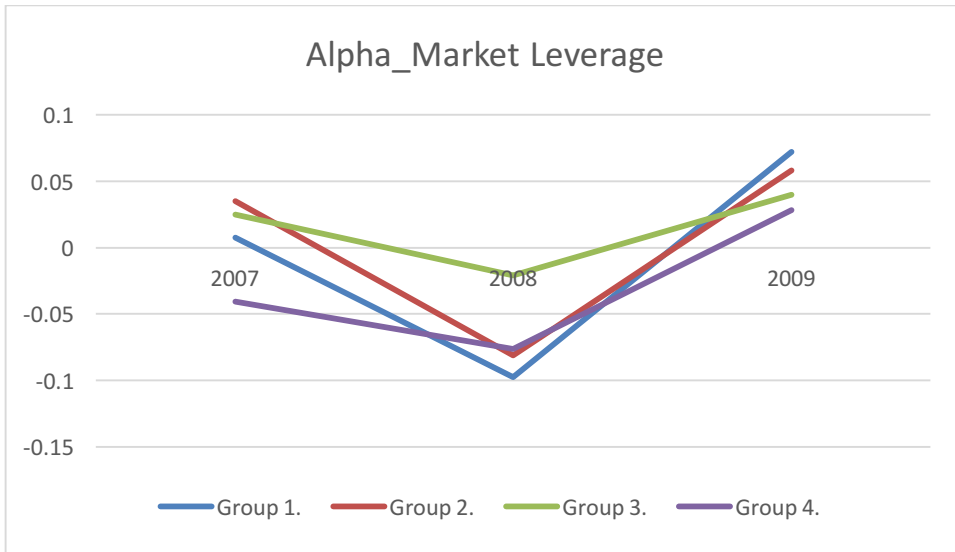Legend: Group 1. — Group 2. — Group 3. — Group 4.
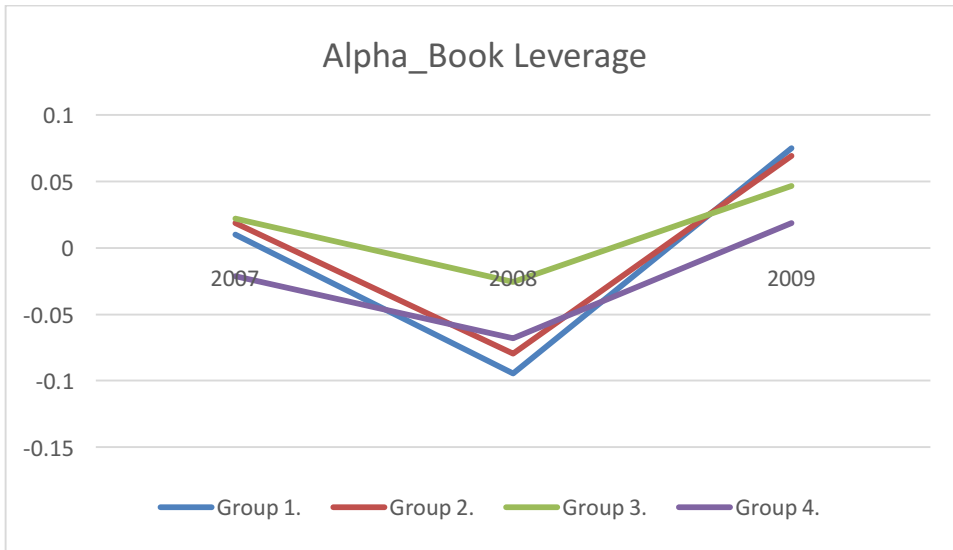
Figure 3. Alpha trends from 2007 to 2009 associated with Market leverage group

Bibliography

Bhandari, L. (1988). Debt/Equity Ratio and Expected Common Stock Returns: Empirical Evidence. The Journal of Finance, 43(2), 507-528. doi:10.2307/2328473

Carhart, M. M. (1997). On persistence in mutual fund performance. The Journal of finance, 52(1), 57-82.

Chen, N. F., & Zhang, F. (1998). Risk and return of value stocks*. The Journal of Business, 71(4), 501-535.

Fama, E. F., & French, K. R. (1992). The cross-section of expected stock returns. the Journal of Finance, 47(2), 427-465.

Fama, E. F., & French, K. R. (1995). Size and book-to-market factors in earning returns. The Journal of Finance, 50(1), 131-155.

Harrison, B., & Widjaja, T. W. (2014). The Determinants of Capital Structure: Comparison between Before and After Financial Crisis. Economic Issues, 19(2), 55-82.

Ivashina, V., & Scharfstein, D. (2009). Bank lending during the financial crisis of 2008. Journal of Financial Economics, 97(2010), 319–338

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporate finance and the theory of investment. American Economic Review, 48 (3), 261-297.

Opler, T. C., & Titman, S. (1994). Financial Distress and Corporate Performance. The Journal of Finance, 49(3), 1015-1040.

Pianeselli, D., & Zaghini, A. (2013). The cost of firms' debt financing and the global financial crisis. Finance Research Letters, 11(2014), 74–83