Beta of Viet Nam Stock Investment Industry Under Leverage Impact During and After The Global Crisis 2007-2011

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ABSTRACT

This paper estimates the impacts of external financing on market risk for the listed firms in the Viet nam non-banking stock investment industry, esp. after the financial crisis 2007-2009.

First, by using quantitative and analytical methods to estimate asset and equity beta of total 10 listed companies in Viet Nam non-banking stock investment industry with a proper traditional model, we found out that the beta values, in general, for many institutions are acceptable.

Second, under 3 different scenarios of changing leverage (in 2011 financial reports, 30% up and 20% down), we recognized that the risk level, measured by equity and asset beta mean, decreases when leverage increases to 30% and vice versa.

Third, by changing leverage in 3 scenarios, we recognized the dispersion of risk level increases (measured by equity beta var) if the leverage increases up to 30%.

Finally, this paper provides some outcomes that could provide companies and government more evidence in establishing their policies in governance.

KEYWORDS : *equity beta, financial structure, financial crisis, risk, external financing, stock investment industry*

JEL CLASSIFICATION : *G010, G100, G390*

1. Introduction

Financial system development has positively related to the economic growth, throughout many recent years, and Viet Nam non-banking stock investment industry is considered as one of active economic sectors.

This paper is organized as follow. The research issues and literature review will be covered in next sessions 2 and 3, for a short summary. Then, methodology and conceptual theories are introduced in session 4 and 5. Session 6 describes the data in empirical analysis. Session 7 presents empirical results and findings. Next, session 8 covers the analytical results. Then, session 9 presents analysis of risk. Lastly, session 10 will conclude with some policy suggestions. This paper also supports readers with references, exhibits and relevant web sources.

2. Research Issues

We mention some issues on the estimating of impacts of external financing on beta for listed non-banking stock investment companies in Viet Nam stock exchange as following:

Issue 1: Whether the risk level of non-banking stock investment firms under the different changing scenarios of leverage increase or decrease so much.

Issue 2: Whether the dispersed distribution of beta values become large in the different changing scenarios of leverage estimated in the non-banking stock investment industry.

3. Literature review

Scott (1976) indicated that the value of tax benefit is a major factor in capital structure. Black (1976) proposes the leverage effect to explain the negative correlation between equity returns and return volatilities. Mishkin (1983) analysis suggests that the negative relation between excess leverage and future returns can be explained by the market's failure to react promptly to the information in excess leverage about the firm's probability of distress and future asset growth. Levine (1991) said liquid markets can enable investment in long-term investment projects while at the same time allowing investors to have access to their savings at short-term notice. King and Levine (1993) stated financial institutions and markets allow cross-sectional diversification across projects, allowing risky innovative activity. Valentin and Prem (2006) found out that there is a significantly negative association between changes in financial leverage and contemporaneous risk-adjusted stock return.

Next, Peter and Liuren (2007) mentions equity volatility increases proportionally with the level of financial leverage, the variation of which is dictated by managerial decisions on a company's capital structure based on economic conditions. And for a company with a fixed amount of debt, its financial leverage increases when the market price of its stock declines. Then, Chava and Purnanandam (2009) mentioned leverage is positively correlated with financial distress and distress intensity is negatively related to future returns.

Reinhart and Rogoff (2009) pointed the history of finance is full of boom-and-bust cycles, bank failures, and systemic bank and currency crises. Adrian and Shin (2010) stated a company can also proactively vary its financial leverage based on variations on market conditions. Tobias and Nina (2012) stated that relative to an economy with constant leverage, financial intermediaries generate higher output and consumption growth and lower consumption volatility in normal times, but at the cost of systemic solvency and liquidity risks.

Then, Harry and Rene (2013) pointed that because debt-equity neutrality assigns zero way to the social value of liquidity, it is an inappropriately equity-biased baseline for assessing whether the high leverage ratios of real-world banks are excessive or socially destructive.

Finally, financial leverage can be considered as one among many factors that affect business risk of consumer good firms.

4. Conceptual theories

The impact of financial leverage on the economy

A sound and effective financial system has positive effect on the development and growth of the economy. Financial institutions not only help businesses to reduce agency problems but also enable them to enhance liquidity capacity and long-term capital. And financial innovation also reduces the cost of diversification. So, finance and growth has interrelated.

In a specific industry such as stock investment industry, on the one hand, using leverage with a decrease or increase in certain periods could affect tax obligations, revenues, profit after tax and technology innovation and compensation and jobs of the industry. Furthermore, using financial leverage gives firms a stronger financial flexibility and stronger ability to manage various risks including exchange rate risk.

During and after financial crises such as the 2007-2009 crisis, there raises concerns about the role of financial leverage of many countries, in both developed and developing markets. On the one hand, lending programs and packages might support the business sectors. On the other hand, it might create more risks for the business and economy.

5. Methodology

In order to calculate systemic risk results and leverage impacts, in this study, we use the live data during the crisis period 2007-2011 from the stock exchange market in Viet Nam (HOSE and HNX and UPCOM).

In this research, analytical research method is used, philosophical method is used and specially, leverage scenario analysis method is used. Analytical data is from the situation of listed non-banking stock investment firms in VN stock exchange and curent tax rate is 25%.

Finally, we use the results to suggest policy for both these enterprises, relevant organizations and government.

6. General Data Analysis

The research sample has total 6 listed firms in the non-banking stock investment market with the live data from the stock exchange.

Firstly, we estimate equity beta values of these firms and use financial leverage to estimate asset beta values of them. Secondly, we change the leverage from what reported in F.S 2011 to increasing 30% and reducing 20% to see the sensitivity of beta values. We found out that in 3 cases, asset beta mean values are estimated at 0,455, 0,444 and 0,463 which are negatively correlated with the leverage. Also in 3 scenarios, we find out equity beta mean values (0,477, 0,469 and 0,482) are also negatively correlated with the leverage. Leverage degree changes definitely has certain effects on asset and equity beta values.

7. Empirical Research Findings and Discussion

In the below section, data used are from total 6 listed non-banking stock investment companies on VN stock exchange (HOSE and HNX mainly). In the scenario 1, current financial leverage degree is kept as in the 2011 financial statements which is used to calculate market risk (beta). Then, two (2) FL scenarios are changed up to 30% and down to 20%, compared to the current FL degree.

Market risk (beta) under the impact of tax rate, includes: 1) equity beta; and 2) asset beta.

7.1 Scenario 1: current financial leverage (FL) as in financial reports 2011

In this case, all beta values of 10 listed firms on VN non-banking investment and financial servies market as following:

Table 1 – Market risk of listed companies on VN stock investment markett

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage (F.S reports)
1	ASIAGF	0,326	0,213	MAFPF1 as comparable	34,6%
2	MAFPF1	0,455	0,453		0,4%
3	PRUBF1	0,247	0,246		0,3%
4	VFMVF1	0,713	0,704		1,2%
5	VFMVF4	0,671	0,669		0,4%
6	VFMVFA	0,450	0,444	MAFPF1 as comparable	1,4%
				Average	6,4%

7.2. Scenario 2: financial leverage increases up to 30%

If leverage increases up to 30%, all beta values of total 10 listed firms on VN non-banking investment and financial servies market as below:

Table 2 – Market risks of listed stock investment firms (case 2)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage (30% up)
1	ASIAGF	0,282	0,155	MAFPF1 as comparable	45,0%
2	MAFPF1	0,455	0,452		0,6%
3	PRUBF1	0,247	0,246		0,4%
4	VFMVF1	0,713	0,701		1,5%
5	VFMVF4	0,671	0,668		0,5%
6	VFMVFA	0,449	0,440	MAFPF1 as comparable	1,8%
				Average	8,3%

7.3. Scenario 3: leverage decreases down to 20% stock investment market in VN as following:

Table 3 – Market risk of listed stock investment firms (case 3)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage (20% down)
1	ASIAGF	0,353	0,255	MAFPF1 as comparable	27,7%
2	MAFPF1	0,455	0,453		0,4%
3	PRUBF1	0,247	0,246		0,3%
4	VFMVF1	0,713	0,706		1,0%
5	VFMVF4	0,671	0,669		0,3%
6	VFMVFA	0,451	0,446	MAFPF1 as comparable	1,1%
				Average	5,1%

All three above tables and data show that values of equity and asset beta in the case of increasing leverage up to 30% or decreasing leverage degree down to 20% have certain fluctuation.

8. **Comparing statistical results in 3 scenarios of changing leverage:**

Table 4 - Statistical results (FL in case 1)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	0,713	0,704	0,0085
MIN	0,247	0,213	0,0342
MEAN	0,477	0,455	0,0221
VAR	0,0341	0,0420	-0,0080
Note: Sample size : 6			

Table 5 – Statistical results (FL in case 2)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	0,713	0,701	0,0110

MIN	0,247	0,155	0,0920
MEAN	0,469	0,444	0,0255
VAR	0,0370	0,0479	-0,0108
Note: Sample size : 6			

Table 6- Statistical results (FL in case 3)

Statistic results	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**
MAX	0,713	0,706	0,0068
MIN	0,247	0,246	0,0007
MEAN	0,482	0,463	0,0190
VAR	0,0325	0,0384	-0,0059
Note: Sample size : 6			

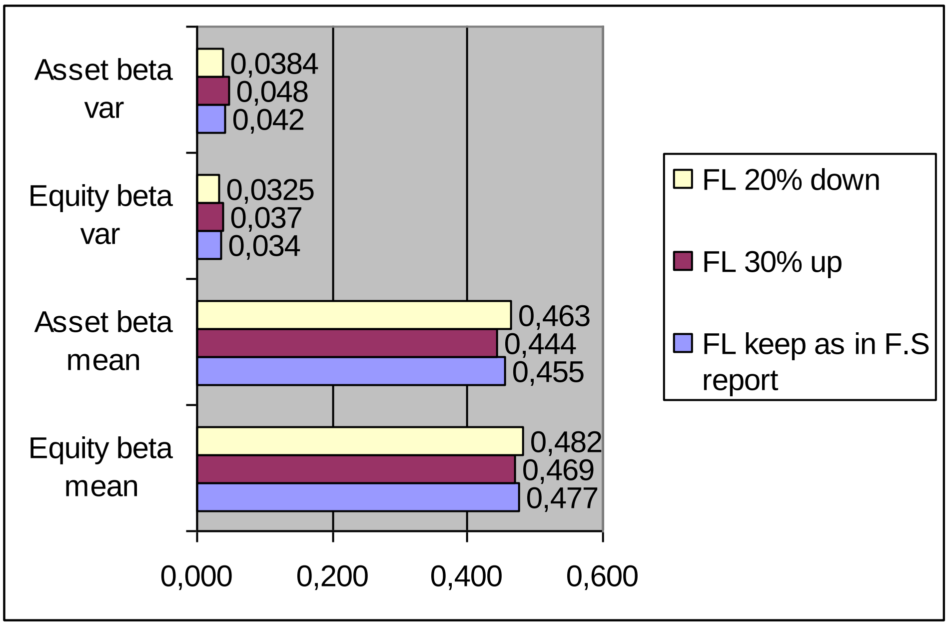
Based on the above results, we find out:

Equity beta mean values in all 3 scenarios are low (< 0,5) and asset beta mean values are also small (< 0,5) and max equity beta values are lower than (<) 0,8. In the case of reported leverage in 2011, equity beta value fluctuates in an acceptable range from 0,247 (min) up to 0,713 (max) and asset beta fluctuates from 0,213 (min) up to 0,704 (max). If leverage increases to 30%, equity beta moves in an unchanged range and asset beta moves from 0,155 (min) up to 0,701 (max). Hence, we note that there is a decrease in asset beta min value if leverage increases. When leverage decreases down to 20%, equity beta value still fluctuates in an unchanged range and asset beta changes from 0,246 (min) up to 0,706 (max). So, there is a small increase in asset beta min value when leverage decreases in scenario 3.

Beside, Exhibit 5 informs us that in the case 30% leverage up, average equity beta value of 6 listed firms decreases down to 0,008 while average asset beta value of these 6 firms decreases little more up to 0,011. Then, when leverage reduces to 20%, average equity beta value of 6 listed firms goes up to 0,005 and average asset beta value of 6 firms up to 0,008.

The below chart 1 shows us : when leverage degree decreases down to 20%, average equity and asset beta values increase slightly (0,482 and 0,463) compared to those at the initial rate as in reports (0,477 and 0,455). Then, when leverage degree increases up to 30%, average equity beta decreases little more and average asset beta value also decreases more (to 0,469 and 0,444). However, the fluctuation of equity beta value (0,037) in the case of 30% leverage up is higher than (>) the results in the rest 2 leverage cases.

Chart 1 – Comparing statistical results of three (3) scenarios of changing FL



9. Risk analysis

In short, the using of financial leverage could have both negatively or positively impacts on the financial results or return on equity of a company. The more debt the firm uses, the more risk it takes. And FL is a factor that causes financial crises in many economies and firms. Using leverage too much indicates the firm met financial distress. Many firms plan to increase financial leverage for their investments with a purpose of reducing the tax, but in reality, expanding business and earnings becomes a major result.

On the other hand, in the case of increasing leverage, the company will expect to get more returns. The financial leverage becomes worthwhile if the cost of additional financial leverage is lower than the additional earnings before taxes and interests (EBIT). FL has become a positive factor linking finance and growth in many companies. Beside, leverage choice could also become a determinant of firms' capital structure and financial risk.

10. Conclusion and Policy suggestion

In summary, the government has to consider the impacts on the mobility of capital in the markets when it changes the macro policies. Beside, it continues to increase the effectiveness of building the legal system and regulation supporting the plan of developing consumer good market. The Ministry of Finance continue to increase the effectiveness of fiscal policies and tax policies which are needed to combine with other macro policies at the same time. The State Bank of Viet Nam continues to increase the effectiveness of capital providing channels for non-banking stock investment companies as we could note that in this study when leverage is going to increase up to 30%, the risk level decreases much (even though the asset beta var increases slightly), compared to the case it is going to decrease down to 20%.

Furthermore, the entire efforts among many different government bodies need to be coordinated.

Finally, this paper suggests implications for further research and policy suggestion for the Viet Nam government and relevant organizations, economists and investors from current market conditions.

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Exhibit

Exhibit 1 – Interest rates in banking industry during crisis
(source: Viet Nam commercial banks)

Year	Borrowing Interest rates	Deposit Rates	Note
2011	18%-22%	13%-14%	
2010	19%-20%	13%-14%	Approximately
2009	9%-12%	9%-10%	(2007: required reserves ratio at SBV is changed from 5% to 10%)
2008	19%-21%	15%-16,5%	
2007	12%-15%	9%-11%	(2009: special supporting interest rate is 4%)

Exhibit 2 – Basic interest rate changes in Viet Nam
(source: State Bank of Viet Nam and Viet Nam economy)

Year	Basic rate	Note
2011	9%	
2010	8%	
2009	7%	
2008	8,75%-14%	Approximately, fluctuated
2007	8,25%	
2006	8,25%	
2005	7,8%	
2004	7,5%	
2003	7,5%	
2002	7,44%	
2001	7,2%-8,7%	Approximately, fluctuated
2000	9%	

Exhibit 3 – Inflation, GDP growth and macroeconomics factors
(source: Viet Nam commercial banks and economic statistical bureau)

Year	Inflation	GDP	USD/VND rate
2011	18%	5,89%	20.670
2010	11,75% (Estimated at Dec 2010)	6,5% (expected)	19.495
2009	6,88%	5,2%	17.000
2008	22%	6,23%	17.700
2007	12,63%	8,44%	16.132
2006	6,6%	8,17%	
2005	8,4%		
Note	approximately		

Exhibit 4: GDP growth Việt Nam 2006-2010 (*source: Bureau Statistic*)

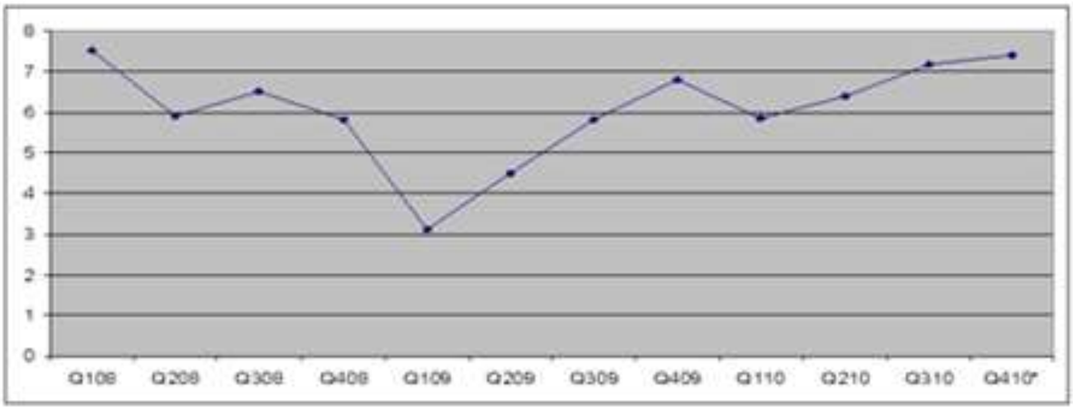


Exhibit 5 – Increase/decrease risk level of listed non-banking stock investment firms under changing scenarios of leverage : in 2011 F.S reports, 30% up, 20% down in the period 2007 - 2011

Order No.	**Company stock code**	**FL keep as in F.S report**		**FL 30% up**		**FL 20% down**	
		Equity beta	**Asset beta**	**Increase /Decrease (equity beta)**	**Increase /Decrease (asset beta)**	**Increase /Decrease (equity beta)**	**Increase /Decrease (asset beta)**
1	ASIAGF	0,325548	0,212884	-0,044	-0,058	0,028	0,043
2	MAFPF1	0,454765	0,452769	0,000	-0,001	0,000	0,000
3	PRUBF1	0,247041	0,246193	0,000	0,000	0,000	0,000
4	VFMVF1	0,712517	0,704033	0,000	-0,003	0,000	0,002
5	VFMVF4	0,671426	0,668907	0,000	-0,001	0,000	0,001
6	VFMVFA	0,449975	0,443678	-0,001	-0,003	0,001	0,002
			Average	-0,008	-0,011	0,005	0,008

Exhibit 6- VNI Index and other stock market index during crisis 2006-2010

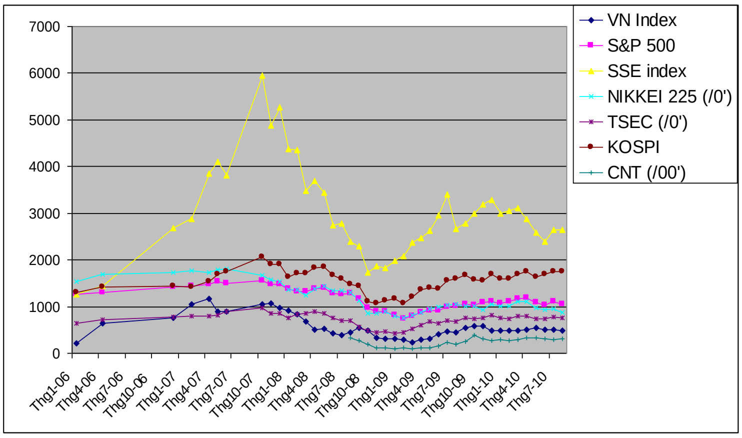
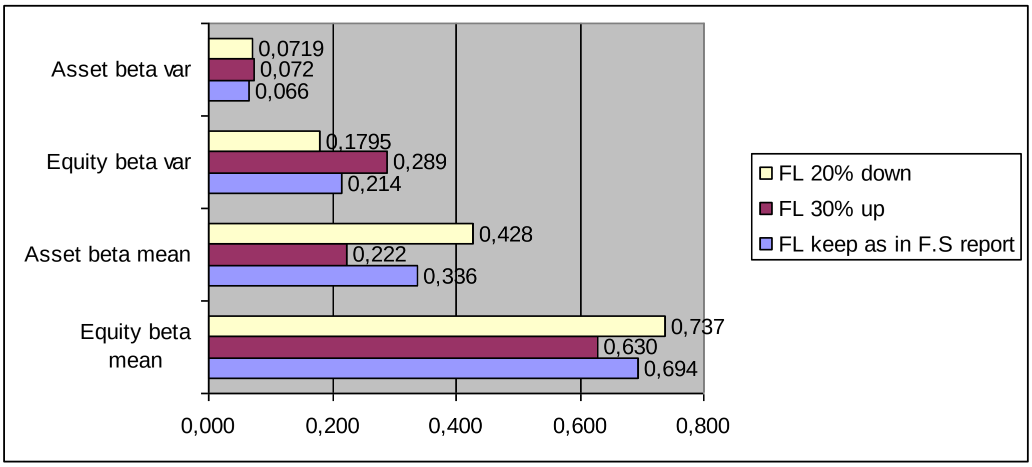


Exhibit 7 – Comparing statistical results of three (3) scenarios of changing FL of 121 listed firms in the consumer good industry



Author note: My sincere thanks are for the editorial office and Lecturers/Doctors at Banking University and International University of Japan. Through the qualitative analysis, please kindly email me if any error found.