

## SCIENTIFIC RESEARCH CENTER

International Journal of Social Science and Humanities Research  
Vol. 6, No. 2, 2018, pp. 1-12.

ISSN 2348-2990

---

---

International  
Journal of  
Social Science  
and  
Humanities Research

---

---

www.scientificrc.com

# The Risk Level of Viet Nam Non-Banking Investment and Financial Service Industry under Financial Leverage during and After the Global Crisis 2009-2011

Dinh Tran Ngoc Huy

Banking University HCMC Viet Nam – GSIM, International University of Japan, Japan

---

## Abstract

This paperwork evaluates the impacts of external financing on market risk for the listed firms in the Viet nam non-banking investment and financial service industry, esp. during and after the financial crisis 2009-2011.

First of all, by using quantitative and analytical methods to estimate asset and equity beta of total 10 listed companies in Viet Nam non-banking investment and financial service 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, increases when leverage increases to 30% and increases more if leverage decreases down to 20%.

Third, by changing leverage in 3 scenarios, we recognized the dispersion of risk level, measured by equity beta var, decreases from 0,265 to 0,226 if the leverage increases to 30% whereas decreases more to 0,215 if leverage decreases to 20%. And the dispersion measured by asset beta var decreases to 0,164 (leverage up 30%), showing leverage efficiency.

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

**Keyword:** equity beta, financial structure, financial crisis, risk, external financing, non-banking financial service industry

**JEL Classification :** G010, G100, G390

---

## INTRODUCTION

Financial leverage has certain effects on the risk level of listed companies on stock exchange. Flifel (2012) stated today, the assumption of efficient capital markets is very controversial, especially in these times of crisis, and is challenged by research showing that the pricing was distorted by detection of long

memory. Gabrijelcic et al (2013) find a significant negative effect of leverage on firm performance. And firms that had some foreign debt financing performed better than their counterparts.

Measuring beta is a popular method used in many models such as the famous CAPM model. The Viet Nam non-banking investment and financial service industry is selected for the research because until now there is no research published with the same scope and because Viet Nam non-banking investment and financial service industry is considered as one of active economic sectors in local financial markets, which has some positive effects for the economy. The purpose of this study, therefore, to find out how much market risk for this industry in changing contexts of financial leverage.

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

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

Issue 2: Whether the disperse distribution of beta values become large in the different changing scenarios of leverage estimated in the non-banking investment and financial service industry.

Beside, we also propose some hypotheses for the above issues:

Hypothesis 1: because using leverage may strongly affect business returns, changing leverage scenarios could strongly affect firm risk.

Hypothesis 2: as external financing is vital for the business development, there will be large disperse in beta or risk values estimated.

This paper is organized as follow. The research issues and literature review and methodology will be covered in next sessions 2 and 3, for a short summary. Next session presents empirical results and findings. The last session shows discussion and will conclude with some policy suggestions. This paper also supports readers with references, exhibits and relevant web sources.

## **THEORETICAL BACKGROUND**

### **A. Conceptual theories**

#### **The impact of financial leverage on the economy**

Financial development and economic growth are positively interrelated. The interaction between these two (2) fields can be considered as a circle, in which good financial development causes economic growth and vice versa. A sound and effective financial system has positive effect on the development and growth of the economy. Financial institutions and markets can enable corporations to solve liquidity needs and enhance long-term investments. This system include many channels for a firm who wants to use financial leverage or FL, which refers to debt or to the borrowing of funds to finance a company's assets.

In a specific industry such as non-banking financial service 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.

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.

### **B. Methodology**

For calculating systemic risk results and leverage impacts, in this study, we use the live data during the crisis period 2009-2011 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 financial service industry firms in VN stock exchange and current tax rate is 25%.

Generally speaking, quantitative method is mainly used in this study with a note that risk measure asset beta is mainly derived from equity beta and financial leverage.

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

### **C. Previous Studies**

Fama, Eugene F., and French, Kenneth R., (2004) also indicated in the three factor model that “value” and “size” are significant components which can affect stock returns. They also mentioned that a stock’s return not only depends on a market beta, but also on market capitalization beta. The market beta is used in the three factor model, developed by Fama and French, which is the successor to the CAPM model by Sharpe, Treynor and Lintner.

Dimitrov (2006) documented a significantly negative association between changes in financial leverage and contemporaneous risk-adjusted stock returns. Aydemir et al (2006) identified in an economy with more realistic variation in interest rates and the price of risk, there is significant variation in stock return volatility at the market and firm level. In such an economy, financial leverage has little effect on the dynamics of stock return volatility at the market level. Financial leverage contributes more to the dynamics of stock return volatility for a small firm. Then, Maia (2010) stated the main determinants of firms' capital structures are related to firms' sensitivities to these systematic sources of risk and they affect asymmetrically low and high leverage firms. And temporary shocks are relatively more important for low leverage firms, and that financial distress risk seems to be captured by the sensitivity of firms' cash flow innovations to market discount rate news.

Umar (2011) found that firms which maintain good governance structures have leverage ratios that are higher (forty-seven percent) than those of firms with poor governance mechanisms per unit of profit. Chen et al (2013) supported regulators' suspicions that over-reliance on short-term funding and insufficient collateral compounded the effects of dangerously high leverage and resulted in undercapitalization and excessive risk exposure for Lehman Brothers. The model reinforces the importance of the relationship between capital structure and risk management. Then, Alcock et al (2013) found evidence that leverage cannot be viewed as a long-term strategy to enhance performance, but in the short term, managers do seem to add significantly to fund excess returns by effectively timing leverage choices to the expected future market environment. And Gunaratha (2013) revealed that in different industries in Sri Lanka, the degree of financial leverage has a significant positive correlation with financial risk.

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

## **EMPIRICAL ANALYSIS**

### **A. General Data Analysis**

The research sample has total 10 listed firms in the tourism industry 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 0,524, 0,560 and 0,573 which are sensitive and increase with the leverage. Also in 3

scenarios, we find out equity beta mean values (0,965, 1,036 and 1,053) also increase with the leverage. Leverage degree changes definitely has certain effects on asset and equity beta values.

## **B. Empirical Research Findings and Discussion**

In the below section, data used are from total 10 listed non-banking investment and financial service industry 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.

### **B.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 service industry market as following:

**Table 1 – Market risk of listed companies on VN non-banking investment and financial service industry market**

<b>Order No.</b>	<b>Company stock code</b>	<b>Equity beta</b>	<b>Asset beta (assume debt beta = 0)</b>	<b>Note</b>	<b>Financial leverage</b>
1	AGR	1,370	0,313		61,7%
2	APG	0,648	0,630	CLS as comparable	2,2%
3	APS	0,895	0,382		45,9%
4	AVS	0,546	0,425	CLS as comparable	17,7%
5	BSI	1,125	0,873	AGR as comparable	18,0%
6	BVS	2,025	1,493		21,0%
7	CLS	0,662	0,331		40,0%
8	CTS	0,812	0,546		26,2%
9	PVF	1,334	0,116		73,0%
10	VNR	0,230	0,131		43,0%
				Average	34,87%

*(source: Viet Nam stock exchange 2012)*

### **B.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 service industry market as below:

**Table 2 – Market risks of listed non-banking investment and financial service industry firms (case 2)**

<b>Order No.</b>	<b>Company stock code</b>	<b>Equity beta</b>	<b>Asset beta (assume debt beta = 0)</b>	<b>Note</b>	<b>Financial leverage (30% up)</b>
1	AGR	1,370	0,313		100,3%
2	APG	0,644	0,626		3,6%

3	APS	0,895	0,382		74,6%
4	AVS	0,519	0,404	SHB as comparable	28,7%
5	BSI	1,068	0,829	STB as comparable	29,2%
6	BVS	2,025	1,493	HBB as comparable	34,1%
7	CLS	0,662	0,331		65,0%
8	CTS	0,812	0,546		42,6%
9	PVF	1,334	0,116		118,7%
10	VNR	0,230	0,131		
Average					56%

*(source: Viet Nam stock exchange 2012)*

### B.3. Scenario 3: leverage decreases down to 20%

If leverage decreases down to 20%, all beta values of total 10 listed firms on the non-banking investment and financial service industry market in VN as following:

**Table 3 – Market risk of listed non-banking investment and financial service industry firms (case 3)**

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage (20% down)
1	AGR	1,370	0,313		61,7%
2	APG	0,651	0,633		2,2%
3	APS	0,895	0,382		45,9%
4	AVS	0,566	0,441	SHB as comparable	17,7%
5	BSI	1,167	0,905	STB as comparable	18,0%
6	BVS	2,025	1,493	HBB as comparable	21,0%
7	CLS	0,662	0,331		40,0%
8	CTS	0,812	0,546		26,2%
9	PVF	1,334	0,116		73,0%
10	VNR	0,230	0,131		
Average					34%

*(source: Viet Nam stock exchange 2012)*

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.

### C. 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	2,025	1,493	0,532
MIN	0,230	0,116	0,113
MEAN	0,965	0,524	0,441
VAR	0,265	0,167	0,098
Note: Sample size : 10			

*(source: Viet Nam stock exchange 2012)*

**Table 5 – Statistical results (FL in case 2)**

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,025	1,493	0,5318
MIN	0,519	0,116	0,4022
MEAN	1,036	0,560	0,4765
VAR	0,2263	0,1642	0,0620
Note: Sample size : 10			

*(source: Viet Nam stock exchange 2012)*

**Table 6- Statistical results (FL in case 3)**

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,025	1,493	0,5318
MIN	0,566	0,116	0,4493
MEAN	1,053	0,573	0,4802
VAR	0,2215	0,1688	0,0527
Note: Sample size : 10			

*(source: Viet Nam stock exchange 2012)*

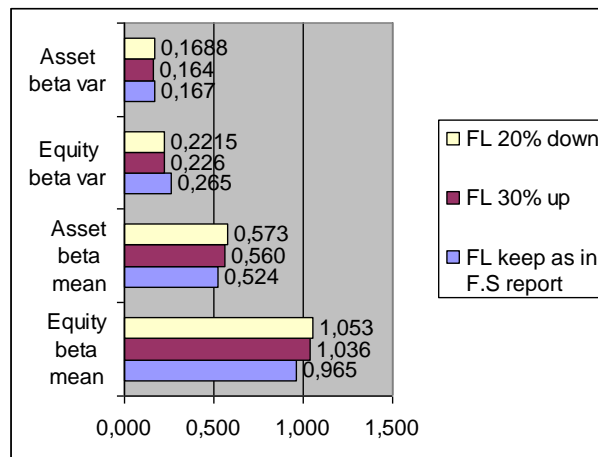
Based on the above results, we find out:

Equity beta mean values in all 3 scenarios are acceptable ( $< 1,1$ ) and asset beta mean values are also small ( $< 0,6$ ). In the case of reported leverage in 2011, equity beta value fluctuates in an acceptable range from 0,230 (min) up to 2,025 (max) and asset beta fluctuates from 0,116 (min) up to 1,493 (max). If leverage increases to 30%, equity beta moves in a range from 0,519 to 2,025 and asset beta moves in an unchanged range. Hence, we note that there is an increase in equity beta min value if leverage increases. When leverage decreases down to 20%, equity beta value moves in a range between 0,566 and 2,025 and asset beta fluctuates in an unchanged range. So, there is an increase in equity beta min value when leverage decreases in scenario 3.

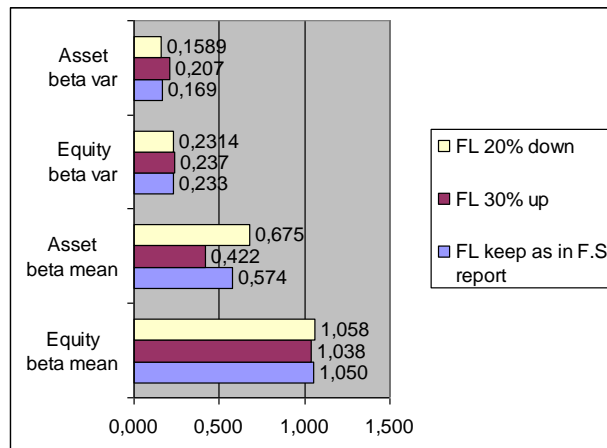
Beside, Exhibit 4 informs us that in the case 30% leverage up, average equity beta value of 10 listed firms decreases down to -0,01 while average asset beta value of these 10 firms decreases little less to -0,008. Then, when leverage reduces to 20%, average equity beta value of 10 listed firms goes up little more to 0,007 and average asset beta value of 10 firms up to 0,006.

The below chart 1 shows us : when leverage degree decreases down to 20%, average equity and asset beta values increase to 1,053 and 0,573 compared to those at the initial reported leverage (0,965 and 0,524). Then, when leverage degree increases up to 30%, average equity beta decreases little less and average asset beta value also increases little less (to 1,036 and 0,560). However, the fluctuation of equity beta value (0,221) in the case of 20% leverage down is lower than (<) the results in the rest 2 leverage cases. And we could note that the using of leverage in the case of 30% leverage up causes a decrease in asset beta var down to 0,164 (compared to 0,167).

**Figure 1 – Comparing statistical results of three (3) scenarios of changing FL (period 2009-2011)**



**Figure 2 – Comparing statistical results of three (3) scenarios of changing FL (period 2007-2011)**



(source: Viet Nam stock exchange 2012)

#### **D. Empirical results**

In scenario 1 (current FL), asset and equity beta mean reach the lowest values (0,524 and 0,965) whereas asset beta var also reaches medium (0,167), compared to the rest 2 cases.

In scenario 2 (FL 30%), asset and equity beta mean reach medium values (0,56 and 1,036) whereas equity beta var reaches maximum (0,265), compared to the rest 2 cases.

And finally, in scenario 3 (FL down 20%), asset and equity beta mean reach maximum values while asset beta var reaches maximum value also (0,168), compared to the rest 2 cases.

#### **E. 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. Beside, the increasing interest on loans might drive the earning per share (EPS) lower.

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).

#### **F. Discussion**

Looking at figure 2, it is noted that in case leverage up 30%, during 2009-2011 period, asset and equity beta mean (0,524 and 0,965) of non-banking investment and financial service industry are lower than those in the period 2007-2011 (0,574 and 1,050). Looking at exhibit 6, we can see asset beta mean is higher while equity beta mean is also higher than those of consumer good industry (0,336 and 0,694). This relatively shows us that financial leverage does have certain impacts on beta values.

### **CONCLUSION**

In general, 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 non-banking investment and financial service market. The Ministry of Finance continues 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 investment and financial service companies as we could note that in this study when leverage is going to increase up to 30%, the risk level increases little less as well as the asset beta var, compared to the case it is going to decrease down to 20%. And for the corporations, figure 2 tells us that increasing leverage in the period 2009-2011 can increase risk more than that in the 2007-2011 period.

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.

### **REFERENCES**

- Alcock J, Baum A, Colley N, Steiner E, The Role of Financial Leverage in the Performance of Private Equity Real Estate Funds, *SSRN Working Paper*, 2013.
- Bijlsma MJ, Boone J, Zwart G, Competition for Traders and Risk, *CEPR Discussion Paper No.DP8816*, 2012.
- Chen RR, Chidambaran NK, Imerman MB, Sopranzetti BJ, Liquidity, Leverage, and Lehman: A Structural Analysis of Financial Institutions in Crisis, *Fordham School of Business Research Paper No.2279686*, 2013.



- Dimitrov V, Jain PC, The Value Relevance of Changes in Financial Leverage, *SSRN Working Paper*, 2006.
- Eugene FF, French KR, The Capital Asset Pricing Model: Theory and Evidence, *Journal of Economic Perspectives*, 2004.
- Flifel, Kaouther, Financial Markets between Efficiency and Persistence : Empirical Evidence on Daily Data, *Asian Journal of Finance and Accounting*, Vol.4, No.2, pp.379-400, 2012.
- Gabrijelcic M, Herman U, and Lenarcic A, Debt Financing and Firm Performance Before and During the Crisis: Micro-Financial Evidence from Slovenia, *SSRN Working Paper*, 2013.
- Gunaratha V, The Degree of Financial Leverage as a Determinant of Financial Risk: An Empirical Study of Colombo Stock Exchange in Sri Lanka, *2nd International Conference on Management and Economics Paper*, 2013.
- Huy DTN, Estimating Beta of Viet Nam Listed Public Utilities, Natural Gas and Oil Company Groups During and After The Financial Crisis 2007-2011. *Economic and Business Review*. (15)1 : 57-71, 2013.
- Maia MV, Cash-Flow Risks, Financial Leverage and the Cross Section of Equity Returns, *SSRN Working Paper*, 2010.
- Mamun MAA, Performance Evaluation of Prime Bank Limited in Terms of Capital Adequacy, *Global Journal of Management and Business Research*. (13)9: 26-29, 2013.
- Ovat OO, Liquidity Constraints and Entrepreneurial Financing in Nigeria: The Fate of Fresh Graduate Entrepreneurs, *Global Journal of Management and Business Research*, (13)9 : 49-57, 2013.
- Umar, Profits, Financial Leverage and Corporate Governance, *SSRN Working Paper*, 2011.

Appendix 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%)

Appendix 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%	

Appendix 3. Inflation, GDP growth and macroeconomics factors  
*(source: Viet Nam commercial banks and economic statistical bureau)*

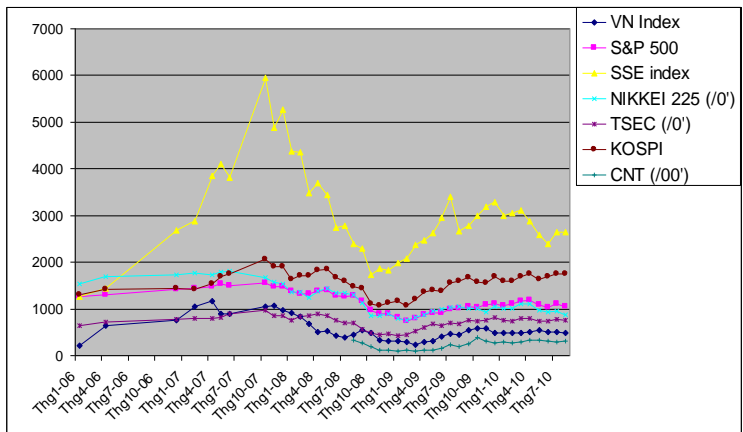
Year	Inflation	GDP	USD/VND rate
2011	18%	5,89%	20.670
2010	11,75%	6,5%	19.495
	(Estimated at Dec 2010)	(expected)	
2009	6,88%	5,2%	17.000
2008	22%	6,23%	17.700
2007	12,63%	8,44%	16.132
2006	6,6%	8,17%	
2005	8,4%		
Note		approximately	

Appendix 4. Increase/decrease risk level of listed hotel and entertainment industry firms under changing scenarios of leverage : in 2011 F.S reports, 30% up, 20% down in the period 2009 - 2011

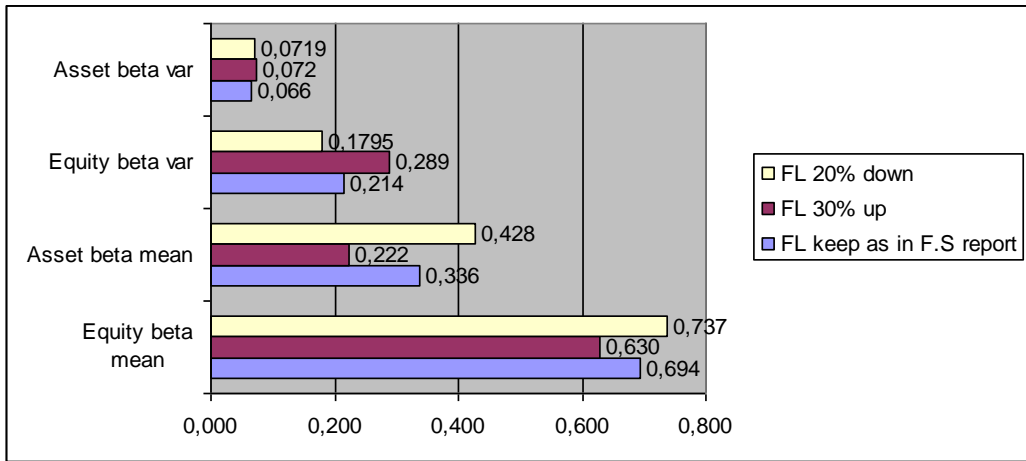
Order No.	Company stock code	FL keep as in F.S report		FL 30% up		FL 20% down	
		Equity beta	Asset beta	Increase /Decrease (equity beta)	Increase /Decrease (asset beta)	Increase /Decrease (equity beta)	Increase /Decrease (asset beta)
1	AGR	1,370	0,313	0,000	0,000	0,000	0,000
2	APG	0,648	0,630	-0,004	-0,004	0,003	0,003
3	APS	0,895	0,382	0,000	0,000	0,000	0,000
4	AVS	0,546	0,425	-0,027	-0,021	0,020	0,015
5	BSI	1,125	0,873	-0,057	-0,044	0,042	0,032
6	BVS	2,025	1,493	0,000	0,000	0,000	0,000
7	CLS	0,662	0,331	0,000	0,000	0,000	0,000
8	CTS	0,812	0,546	0,000	0,000	0,000	0,000
9	PVF	1,334	0,116	0,000	0,000	0,000	0,000
10	VNR	0,230	0,131	0,000	0,000	0,000	0,000
			<b>Average</b>	-0,010	-0,008	0,007	0,006

*(source: Viet Nam stock exchange 2012)*

Appendix 5. VNI Index and other stock market index during crisis 2006-10



Appendix 6. Comparing statistical results of three (3) scenarios of changing FL of 121 listed firms in the consumer good industry



(source: Viet Nam stock exchange 2012)

**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.

---

---