RISK MANAGEMENT OF VIETNAM CONSTRUCTION MATERIAL SECTOR

GESTÃO DE RISCO DO SETOR DE MATERIAIS DE CONSTRUÇÃO DO VIETNÃ

Trung Van Dinh
Ho Chi Minh National Academy of Politics, Vietnam. Dvtrung.vn@gmail.com

Hien Tha To
Political economic department, Le Quy Don Technical University, Hanoi, Vietnam. (corresponding author) E-mail: thath.th@mta.edu.vn

Trang Thuy Nguyen
Faculty of Hospitality and Tourism, Thuongmai University, Vietnam. Trang.nt@tmu.edu.vn

Trang Thi Nhu Dinh
Political Theory Faculty, Hanoi University of Natural Resources and Environment, Vietnam. Tothak51@gmail.com

ABSTRACT

Objective: To analyze the impacts of external financing on market risk for listed companies in the Vietnam construction material sector, with a focus on leveraging scenarios and policy implications for financial and economic governance.

Methods: The study employs quantitative and analytical methods to estimate equity and asset beta values for 57 listed companies in Vietnam's construction material sector. Scenarios of financial leverage variation (30% increase and 20% decrease) are applied to assess the sensitivity of beta values, supported by empirical data from stock market reports.

Results: The results indicate that leverage variations significantly impact market risk. Equity beta values showed higher sensitivity than asset beta values in scenarios with increased leverage, while reductions in leverage mitigated market volatility. The findings underline the role of financial leverage as a key factor in corporate risk exposure.

Conclusions: The study highlights the importance of balanced financial leverage to manage risk effectively in the construction material sector. Policy recommendations include improving fiscal policies, regulatory frameworks, and financial channels to support sustainable sector growth. Further research is suggested to explore sector-specific impacts in broader economic contexts.

Keywords: Risk management. Financial leverage. Market risk. Construction material Sector. Vietnam

RESUMO

Objetivo: Analisar os impactos do financiamento externo no risco de mercado para empresas listadas do setor de materiais de construção do Vietnã, com foco em cenários de variação de alavancagem financeira e implicações políticas para a governança econômica e financeira.

Métodos: O estudo utiliza métodos quantitativos e analíticos para estimar os valores beta de patrimônio e ativos de 57 empresas listadas no setor de materiais de construção do Vietnã. Cenários de variação de alavancagem financeira (aumento de 30% e redução de 20%) foram aplicados para avaliar a sensibilidade dos valores beta, com base em dados empíricos de relatórios do mercado de ações.

Resultados: Os resultados indicaram que as variações de alavancagem impactam significativamente o risco de mercado. Os valores beta de patrimônio demonstraram maior sensibilidade do que os valores beta de ativos em cenários de aumento de alavancagem, enquanto a redução de alavancagem mitigou a volatilidade do mercado. Os achados ressaltam o papel da alavancagem financeira como um fator chave na exposição ao risco corporativo.

Conclusões: O estudo destaca a importância de uma alavancagem financeira equilibrada para uma gestão eficaz de riscos no setor de materiais de construção. Recomendações políticas incluem o aprimoramento de políticas fiscais, quadros regulatórios e canais financeiros para apoiar o crescimento sustentável do setor. Sugere-se a realização de pesquisas futuras para explorar impactos setoriais específicos em contextos econômicos mais amplos.

Palavras-chave: Gestão de riscos. Alavancagem financeira. Risco de mercado. Setor de materiais de construção, Vietnã

1. INTRODUCTION

What is risk management?

Risk management is a scientific and systematic process of approaching risk to identify, control, prevent and minimize the loss, loss, and adverse effects of risk while seeking to turning risks into opportunities for success.

A. Strategic risks

Strategic risks include giving out the wrong strategy, improperly implementing strategic intentions, not adjusting the strategy in time when the business environment changes.

B. Competitive risk

This is the risk that a competitor will have an advantage over the business and prevent it from achieving its goals. For example competitors have cheaper production costs or better product quality.

C. Risks from the economy

Economic conditions increase a company's costs or reduce sales.

D. Operational risks

Potential risks associated with an organization's day-to-day operations, such as customer care processes. Some argue that operational risks only occur with inefficient and ineffective processes. However, processes that are built to look perfect and are working successfully can still contain risks.

E. Legal risks

There is a risk when new legal regulations are enacted causing difficulties for your business, and the business will face costs and damages arising from legal disputes.

Financial system development has positive effect for the economic growth, throughout many recent years, and Viet Nam construction material industry is considered as one of active economic sectors in local financial markets, which has some positive effects for the economy.

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 and 11 will present discussion and 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 construction material industry companies in Viet Nam stock exchange as following:

Issue 1: Whether the risk level of construction material 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 construction material industry.

3. LITERATURE REVIEW

Goldsmith (1969), Mc Kinnon (1973) and Shaw (1973) pointed a large and active theoretical and empirical literature has related dfinancial development to the economic growth process. Black (1976) proposes the leverage effect to explain the negative correlation between equity returns and

return volatilities. Diamond and Dybvig (1983) said banks can also help reduce liquidity risk and therefore enable long-term investment. Next, Brennan et all (1984) pointed that a firm's capital structure is dynamic. Aghion et all (1999) stated debt instruments can reduce the amount of free cash available to firms and thus managerial slack.

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, Penman et all (2007) documented a negative association between leverage and future returns, after controlling for conventional risk proxies.

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. Marco (2012) found out in Euro region, asset risk, measured as the annualized volatility of the market enterprise value, is the best predictor of observed leverage ratios. Thomas and Fredrik (2012) pointed asset specificity has a negative impact on leverage, but a positive impact on debt maturity.

Then, Ana and John (2013) Binomial Leverage – Volatility theorem provides a precise link between leverage and volatility. Chen et all (2013) supports 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.

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

4. CONCEPTUAL THEORIES

The impact of financial leverage on the economy

In a specific industry such as construction material 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. Financing decisions relate to the growth of investments, which create tax effects for companies.

5. METHODOLOGY

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 construction material industry 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 57 listed firms in the construction material 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 0,458, 0,259 and 0,544 which are negatively correlated with the leverage. Also in 3 scenarios, we find out equity beta mean values (0,959, 0,935 and 0,975) 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 57 listed construction material industry companies on VN stock exchange (HOSE and HNX mainly). 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.

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	3,693	1,807	1,885
MIN	0,129	0,029	0,100
MEAN	0,959	0,428	0,531
VAR	0,2966	0,0986	0,198
Note: Sample size : 57 firms			

Table 5 – Statistical results (FL in case 2)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	3,693	1,242	2,451
MIN	-0,091	-0,320	0,229
MEAN	0,935	0,259	0,675
VAR	0,3166	0,0869	0,230
Note: Sample size : 57 firms			

Table 6- Statistical results (FL in case 3)

| Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	3,693	2,184	1,508
MIN	0,177	0,080	0,097
MEAN	0,975	0,544	0,431
VAR	0,2875	0,1172	0,170
Note: Sample size : 57 firms			

Based on the above results, we find out:

Equity beta mean values in all 3 scenarios are low (< 1) and asset beta mean values are also small (< 0,6) and max equity beta values in just a few cases are higher than (>) 1. In the case of reported leverage in 2011, equity beta value fluctuates in an acceptable range from 0,129 (min) up to 3,693 (max) and asset beta fluctuates from 0,029 (min) up to 1,807 (max). If leverage increases to 30%, equity beta moves in a range from -0,091 to 3,693 (max unchanged) and asset beta moves from -0,32 (min) up to 1,242 (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 moves in a range from 0,177 to 3,693 (max unchanged) and asset beta changes from 0,08 (min) up to 2,184 (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 57 listed firms decreases down to -0,025 while average asset beta value of these 57 firms decreases little to -0,168. Then, when leverage reduces to 20%, average equity beta value of 57 listed firms goes up to 0,015 and average asset beta value of 57 firms up to 0,116.

The below chart 1 shows us : when leverage degree decreases down to 20%, average equity and asset beta values increase slightly (0,975 and 0,544) compared to those at the initial reported leverage (0,959 and 0,428). Then, when leverage degree increases up to 30%, average equity beta decreases little more and average asset beta value also decreases more (0,935 and 0,259). However, the fluctuation of equity beta value (0,317) in the case of 30% leverage up is higher than (>) the results in the rest 2 cases.
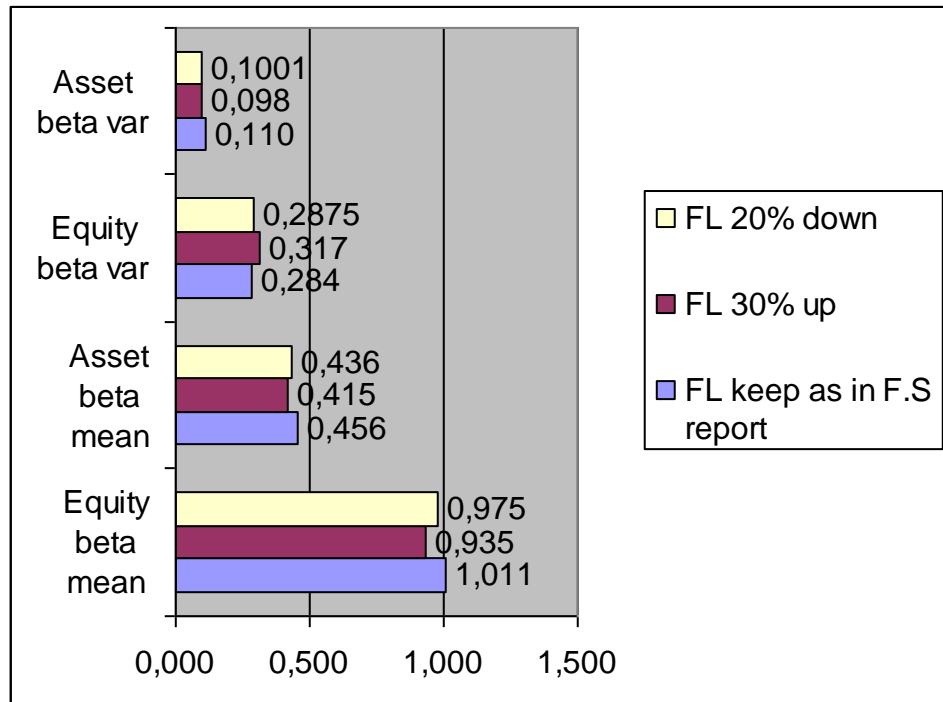
Chart 1 – Comparing statistical results of three (3) scenarios of changing FL
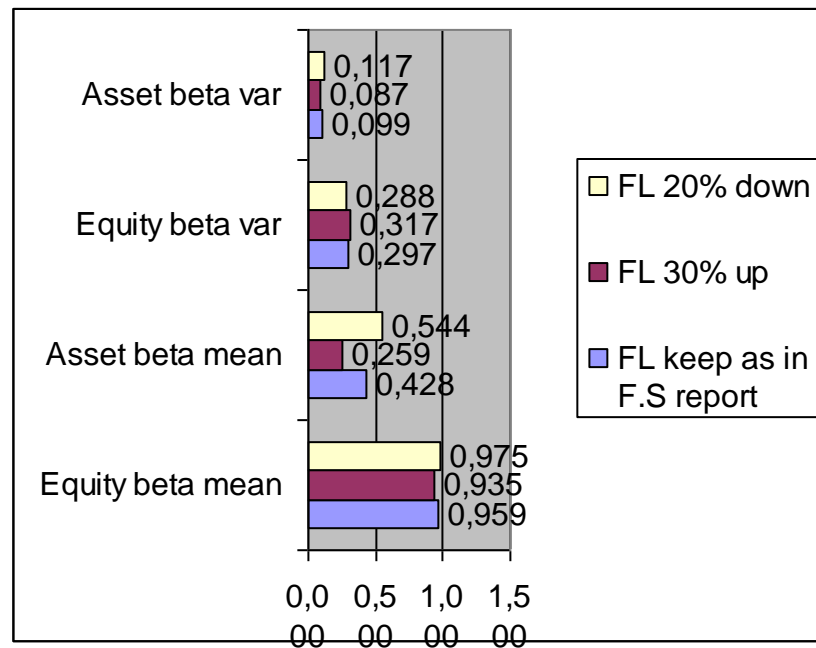
Chart 2 – Comparing statistical results of three (3) scenarios of changing FL
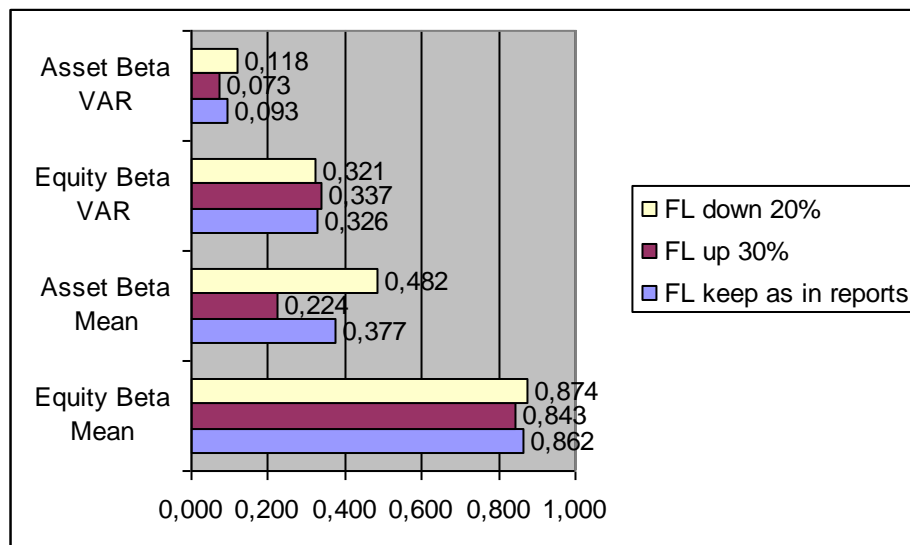
Chart 3 – Comparing statistical results of three (3) scenarios of changing FL

(source: Viet Nam stock exchange 2012)

9. DISCUSSION

Looking at chart 2, it is noted that in case leverage up 30%, during 2007-2009 period, equity beta mean is equal to while asset beta mean (0,259 and 0,935) of construction material industry is lower than those in the period 2007-2011 (0,415 and 0,935). Looking at exhibit 7, we can see asset beta mean is higher and equity beta mean is also higher than those of consumer good industry (0,222 and 0,630). This relatively shows us that financial leverage does affect asset beta values.

10. CONCLUSION AND POLICY SUGGESTION

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 construction material 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 construction material industry as we could note that in this study when leverage is going to increase

up to 30%, the risk level decreases much as well as the asset beta var, 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 survey 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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Appendix

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*)
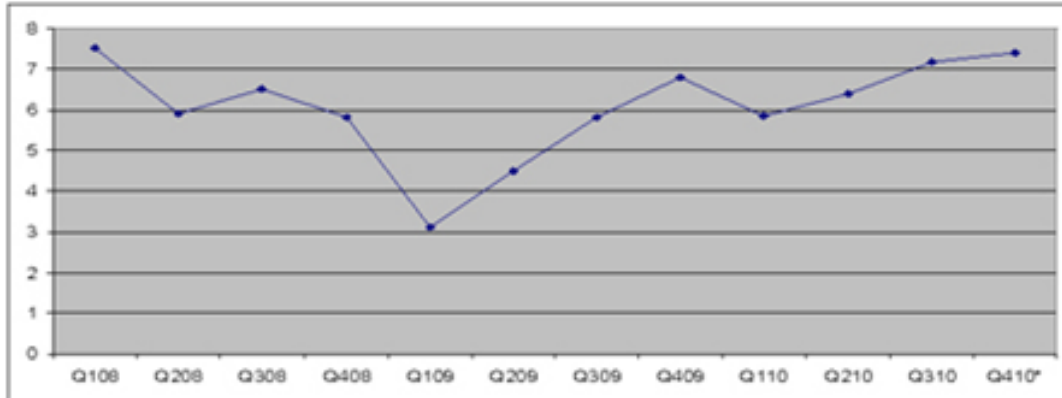
Exhibit 5 – Increase/decrease risk level of listed construction material industry firms under changing scenarios of leverage : in 2011 F.S reports, 30% up, 20% down in the period 2007 - 2009

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	DIC	0,986	0,337	0,000	-0,194	0,000	0,130
2	LBM	1,186	0,783	0,000	-0,121	0,000	0,081
3	NAV	0,895	0,539	0,000	-0,107	0,000	0,071
4	DXV	1,135	0,185	0,000	-0,285	0,000	0,190
5	HT1	0,599	0,087	0,000	-0,154	0,000	0,102
6	CVT	2,504	1,031	0,000	-0,442	0,000	0,294
7	DC4	1,007	0,345	0,000	-0,199	0,000	0,132
8	HPS	0,815	0,697	0,000	-0,036	0,000	0,024
9	KBT	1,019	0,639	-0,156	-0,194	0,099	0,145
10	PPG	0,755	0,354	0,000	-0,120	0,000	0,080
11	SDN	0,533	0,281	0,000	-0,076	0,000	0,050
12	SKS	0,761	0,358	0,000	-0,121	0,000	0,081
13	VXB	0,355	0,141	-0,151	-0,097	0,092	0,091
14	DHA	0,837	0,704	0,000	-0,040	0,000	0,026
15	CTI	0,129	0,041	-0,080	-0,035	0,048	0,039
16	DCT	0,869	0,316	0,000	-0,166	0,000	0,111
17	SCL	0,620	0,338	-0,136	-0,140	0,085	0,110
18	HVX	0,613	0,426	-0,067	-0,097	0,043	0,070
19	NHC	0,717	0,549	0,000	-0,050	0,000	0,034
20	BHV	1,308	0,412	0,000	-0,269	0,000	0,179
21	XMC	1,095	0,211	0,000	-0,265	0,000	0,177
22	ACC	0,484	0,357	-0,091	-0,098	0,063	0,075
23	BBS	0,689	0,358	0,000	-0,099	0,000	0,066
24	BCC	0,851	0,148	0,000	-0,211	0,000	0,141
25	BHC	0,677	0,153	0,000	-0,157	0,000	0,105
26	BHT	0,173	0,029	-0,264	-0,022	0,154	0,080
27	BT6	0,407	0,126	0,000	-0,084	0,000	0,056
28	BTS	0,880	0,188	0,000	-0,208	0,000	0,138
29	CCM	1,095	0,554	0,000	-0,163	0,000	0,108
30	CYC	0,788	0,239	0,000	-0,165	0,000	0,110
31	DAC	1,027	0,559	0,000	-0,140	0,000	0,094
32	DTC	0,816	0,161	0,000	-0,196	0,000	0,131
33	GMX	0,978	0,606	-0,154	-0,189	0,097	0,142
34	HCC	1,022	0,534	0,000	-0,146	0,000	0,097
35	HHL	1,787	0,692	0,000	-0,329	0,000	0,219

36	**HLY**	0,948	0,446	0,000	-0,150	0,000	0,100
37	**HOM**	0,585	0,243	0,000	-0,103	0,000	0,068
38	**MCC**	1,211	1,093	-0,030	-0,061	0,020	0,042
39	**MCL**	0,428	0,226	-0,102	-0,100	0,064	0,080
40	**NNC**	0,659	0,500	-0,051	-0,083	0,033	0,058
41	**QNC**	0,939	0,105	0,000	-0,250	0,000	0,167
42	**SCC**	0,943	0,710	0,000	-0,070	0,000	0,047
43	**SCJ**	1,390	0,703	0,000	-0,206	0,000	0,137
44	**SDY**	1,427	0,479	0,000	-0,284	0,000	0,190
45	**SHN**	3,693	1,807	0,000	-0,566	0,000	0,377
46	**TBX**	0,493	0,248	0,000	-0,073	0,000	0,049
47	**TCR**	0,759	0,376	0,000	-0,115	0,000	0,077
48	**TLT**	1,448	0,088	0,000	-0,408	0,000	0,272
49	**TMX**	1,559	0,568	0,000	-0,297	0,000	0,198
50	**TSM**	1,423	1,061	-0,119	-0,188	0,077	0,134
51	**TTC**	0,708	0,241	0,000	-0,140	0,000	0,093
52	**TXM**	1,013	0,377	0,000	-0,191	0,000	0,127
53	**VCS**	1,177	0,500	0,000	-0,203	0,000	0,135
54	**VHL**	0,538	0,137	0,000	-0,120	0,000	0,080
55	**VIT**	0,541	0,126	0,000	-0,125	0,000	0,083
56	**VTS**	1,078	0,647	0,000	-0,129	0,000	0,086
57	**YBC**	1,310	0,227	0,000	-0,325	0,000	0,217
			Average	-0,025	-0,168	0,015	0,116

Exhibit 6- VNI Index and other stock market index during crisis 2006-2010
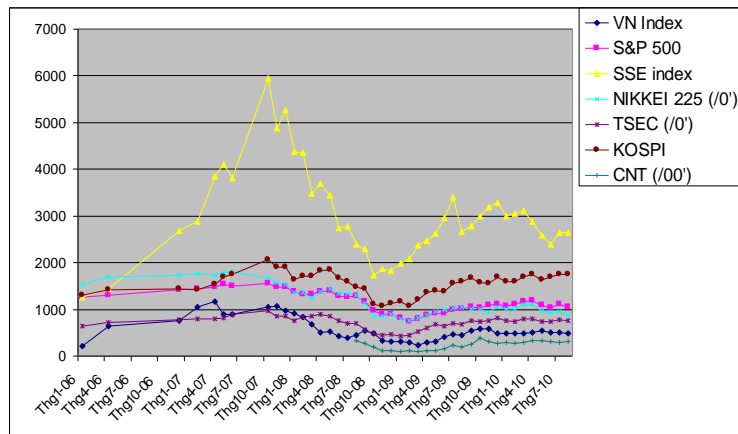
Exhibit 7 – Comparing statistical results of three (3) scenarios of changing FL of 121 listed firms in the consumer good industry