

RISK MANAGEMENT OF VIETNAM CONSTRUCTION MATERIAL SECTOR

GESTÃO DE RISCO DO SETOR DE MATERIAIS DE CONSTRUÇÃO DO VIETNÃ

Cited as: Van Dinh, T., Tha To, H., Thuy Nguyen, T., & Dinh, T. (2024). Gestão de risco do setor de materiais de construção do vietnã. *Revista Gestão & Tecnologia*, 24(1), 91-111.

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ABSTRACT

After the financial crisis, this paper evaluates the impacts of external financing on market risk for the listed firms in the Viet nam construction material industry. First, by using quantitative and analytical methods to estimate asset and equity beta of total 57 listed companies in Viet Nam construction material industry with a proper traditional model, we found out that the beta values, in general, for many institutions are acceptable. 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. Then, by changing leverage in 3 scenarios, we recognized the dispersion of risk level, measured by equity beta var, increases if the leverage increases to 30%. And the asset beta var value is quite small, showing leverage efficiency. Finally, this paper provides some outcomes that could provide companies and government more evidence in establishing their policies in governance.

keywords: Financial structure, Financial crisis, Risk, External Financing, Construction Material Industry.

Editor Científico: José Edson Lara
Organização Comitê Científico
Double Blind Review pelo SEER/OJS
Recebido em 12.04.2022
Aprovado em 29.01.2024

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RESUMO

Após a crise financeira, este artigo avalia os impactos do financiamento externo no risco de mercado para as empresas cotadas na indústria de materiais de construção do Vietname. Primeiro, ao utilizar métodos quantitativos e analíticos para estimar o beta dos activos e do capital próprio de um total de 57 empresas cotadas na indústria de materiais de construção do Vietname com um modelo tradicional adequado, descobrimos que os valores beta, em geral, para muitas instituições são aceitáveis. A gestão de riscos é um processo científico e sistemático de abordagem do risco para identificar, controlar, prevenir e minimizar as perdas, perdas e efeitos adversos do risco, ao mesmo tempo que procura transformar os riscos em oportunidades de sucesso. Então, alterando a alavancagem em 3 cenários, reconhecemos que a dispersão do nível de risco, medido pelo beta var do patrimônio, aumenta se a alavancagem aumentar para 30%. E o valor da variável beta do ativo é bastante pequeno, mostrando eficiência de alavancagem. Finalmente, este artigo fornece alguns resultados que poderiam fornecer às empresas e ao governo mais evidências no estabelecimento das suas políticas de governação.

PALAVRAS-CHAVE: estrutura financeira, crise financeira, risco, financiamento externo, indústria de materiais de construção.

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 financial 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 al (1984) pointed that a firm's capital structure is dynamic. Aghion et al (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 al (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 al (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 current 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

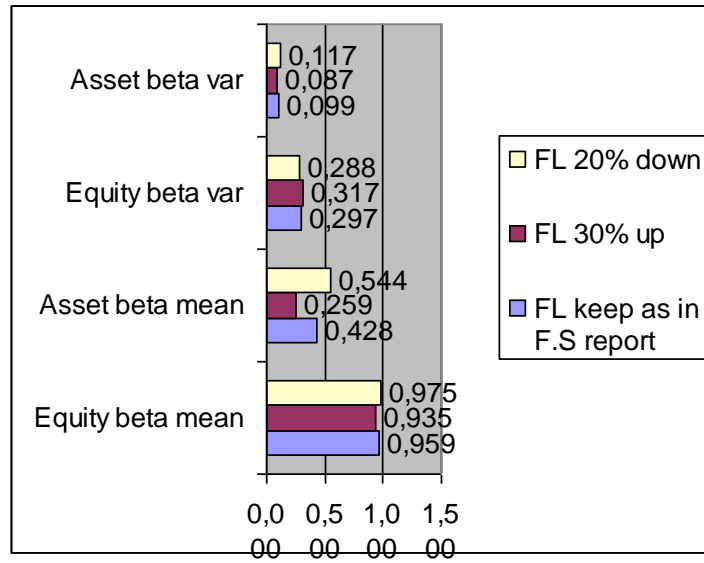


Chart 2 – Comparing statistical results of three (3) scenarios of changing FL

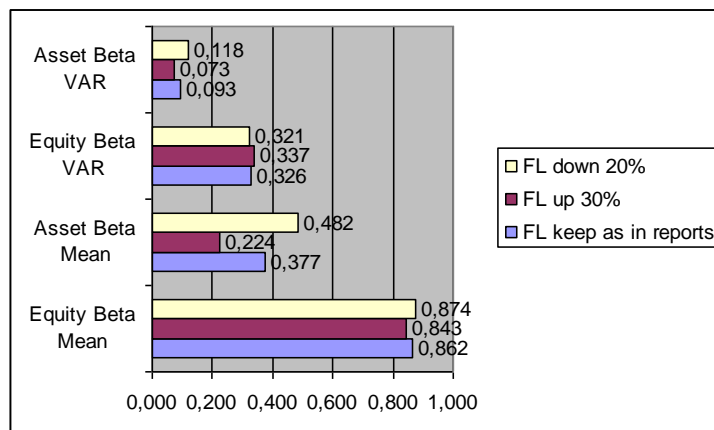
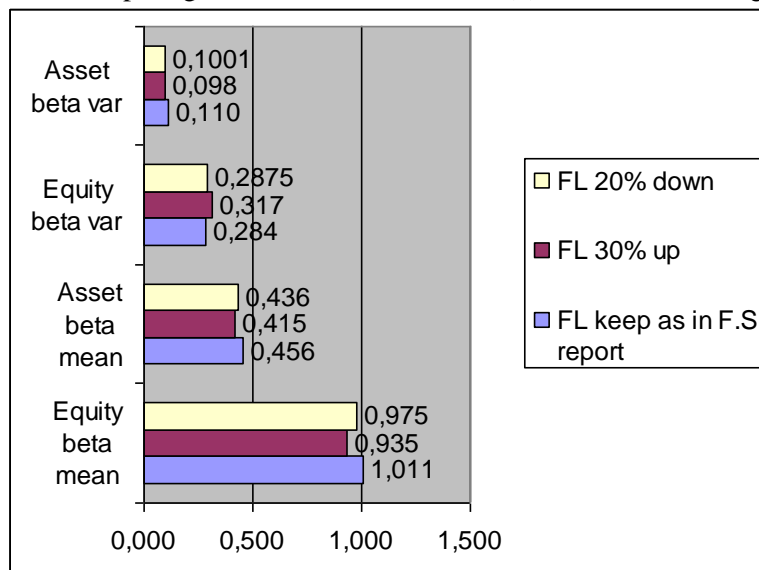


Chart 3 – Comparing statistical results of three (3) scenarios of changing FL



(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.

REFERENCES

- Abidin, Sazali., Reddy, Krishna., and Chen, Liehui., (2012), Determinants of Ownership Structure and Performance of Seasoned Equity Offerings : Evidence From Chinese Stock Market, *International Journal of Managerial Finance*
- Birt, Jacqueline., Rankin, Michaela., and Song, Chen L., (2013), Derivatives Use and Financial Insutrument Disclosure in The Extractives Industry, *Acocunting & Finance*
- Eugene, Fama F., and French, Kenneth R., (2004), The Capital Asset Pricing Model: Theory and Evidence, *Journal of Economic Perspectives*
- Flifel, Kaouther., (2012), Financial Markets between Efficiency and Persistence : Empirical Evidence on Daily Data, *Asian Journal of Finance and Accounting*

- Gupta, Kartick., Locke, Stuart., and Scrimgeour, Fraank., (2013), Profitability of Momentum Returns Under Alternative Approaches, *International Journal of Managerial Finance*
- Hogan, Teresa., and Hutson, Elaine., (2005), Capital Structure in New Technology – Based Firms: Evidence From The Irish Software Sector, *Global Finance Journal*
- Hac, L.D.; et al. (2021). Enhancing risk management culture for sustainable growth of Asia commercial bank -ACB in Vietnam under mixed effects of macro factors. *Entrepreneurship and Sustainability Issues*, 8(3).
https://econpapers.repec.org/article/ssijouesi/v_3a8_3ay_3a2021_3ai_3a3_3ap_3a291-307.htm
- Hansen, H. and Tarp, H. (2001), Aid and growth regressions, *Journal of Development Economics*, 2001, 64, 547-570.
- Hang, T.T.B.; Nhung, D.T.H.et al. (2020). Where beta is going - case of Vietnam hotel, airlines and tourism company groups after the low inflation period. *Entrepreneurship and Sustainability Issues*, 7(3). 2282-2298.
<https://ideas.repec.org/a/ssi/jouesi/v7y2020i3p2282-2298.html>
- Huy, Dinh T.N., (2012), Estimating Beta of Viet Nam listed construction companies groups during the crisis, *Journal of Integration and Development*
- Kimberly, Clausing A., (2012), In Search of Corporate Tax Incidence, *Tax Law Review During the Financial Crisis*
- Ling, Amy., (2013), Tax Issues Relating to Intangibles, *Asia-Pacific Tax Bulletin*
- Lu, Wenling., and Whidbee, David A., (2013), Bank Structure and Failure, *Journal of Financial Economic Policy*
- Maria, Ana POPA (2012)., The Impact of Social Factors on Economic Growth: Empirical Evidence for Romania and European Union Countries, *Romanian Journal of Fiscal Policy*
- Szyszk, Adam., (2011), The Genesis of The Global Financial Crisis 2008 and The Challenges to The Neoclassical Paradigm of Finance, *Global Finance Journal*
- TDT Vu et al. (2021). Human Education And Educational Issues For Society And Economy- Case In Emerging Markets Including Vietnam, *Elementary Education Online*, 20 (2)
- Vu, H.T. (2013). The Research on Arabica coffee cultivation technical toward sustainable development for Northwest ecological region. In national conference on Crop Science I, 897-906.
- Vu Quynh Nam et al. (2021). Historical Sites and Architectures in Thai Nguyen City and Ha Giang Province in Vietnam - Sources for Tourism Development, *International Journal of Contemporary Architecture-The New Arch*, 8(2)
- Van Tuan, P. et al. (2021). Impacts of Competitor Selection Strategy on Firm Risk-Case in Vietnam Investment and Finance Industry. *Revista Geintec-Gestao Inovacao E Tecnologias*, 11(3), 127-135.

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 (2007: required reserves ratio at SBV is changed from 5% to 10%) (2009: special supporting interest rate is 4%)
2009	9%-12%	9%-10%	
2008	19%-21%	15%-16,5%	
2007	12%-15%	9%-11%	

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)

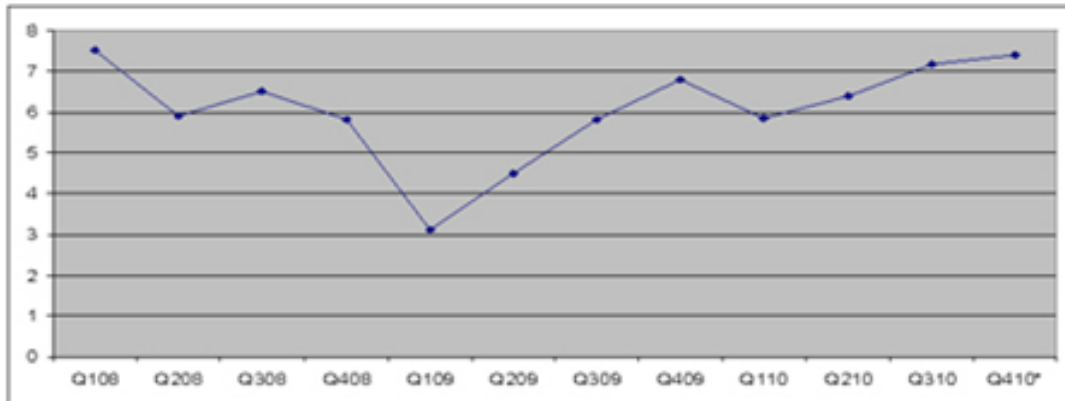


Exhibit 5 – Increase/decrease risk level of listed construction material industry firms under changing scenarios of leverage : in 2011 F.S reports, 30% up, 20% down in the period 2007 - 2009

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

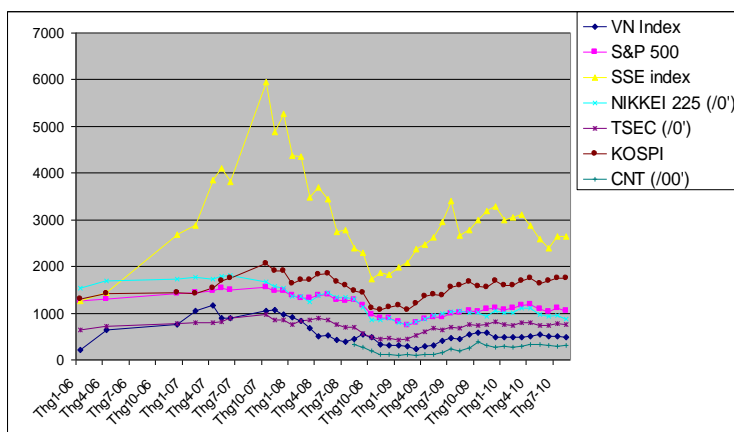


Exhibit 7 – Comparing statistical results of three (3) scenarios of changing FL of 121 listed firms in the consumer good industry

