

A Three Variable Model on The Risk Level of Viet Nam Hardware Industry During and After The Global Crisis

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Abstract - Over recent years, hardware industry in Viet Nam has reached a lot of achievements. Under the volatility of stock price, and changes in macro factors such as inflation and interest rates, the well-established hardware market in Viet Nam has many efforts to recover and grow from the crisis 2008. This study analyzes the impacts of 3 factors: competitor size, tax rate policy and leverage on market risk for the listed firms in the hardware industry as it becomes necessary. First, by using quantitative and analytical methods to estimate asset and equity beta of total 22 listed companies in Viet Nam hardware industry with a proper traditional model, we found out that the beta values, in general, for many companies are acceptable. Second, under 3 different scenarios of changing tax rates (20%, 25% and 28%), we recognized that there is the largest dispersion in equity beta value (0,2), if leverage up to 30% and doubling size competitors. Third, by changing tax rates in 3 scenarios (25%, 20% and 28%), this study identified that the risk dispersion level in this sample study could be minimized in case the competitor size doubling, tax rate up to 28% and financial leverage down to 20% (measured by asset beta var of 0,081). Finally, this paper provides some outcomes that could provide companies and government more evidence in establishing their policies in governance.

Keywords: risk management, asset beta, financial crisis, corporate tax, leverage, competitive firm size

JEL classification numbers: G010, G390

INTRODUCTION

Throughout many recent years, Viet Nam hardware market is evaluated as one of active markets, which has certain positive effect for the economy. There are many components which affect the risk level of these firms including, but not limit to, external factors (tax rates, interest rates, competitors...) and internal factors (management, leverage, technology, strategy,...), in the context of most global stock markets including Vietnam stock market experienced a downturn in the year 2009 (see exhibit 1). The scope of this paperwork covers the influence of 3 factors on the market risk of these listed companies, including: tax rates, financial leverage or external financing, and the competitive firm size.

The organization of paper contents is as following. As our previous series of paper, the research issues and literature review will be covered in next sessions 2.1 and 2.2, for a short summary. Then, methodology and conceptual theories are introduced in session 2.3 and 2.4. Session 3.1 describes the data in empirical analysis. Session 3.2 presents empirical results and findings.

Then, session 4 will conclude with some policy suggestions. This paper also supports readers with references, exhibits and relevant web sources.

Preliminary Notes

Research Issues

Among the research areas of the paperwork are:

Issue 1: Whether the risk level of hardware firms under the different changing scenarios of tax rates increase or decrease so much?

Issue 2: Because Viet Nam is an emerging and immature financial market and the stock market still in the starting stage, whether the dispersed distribution of beta values become large in the different changing scenarios of leverage estimated in the hardware industry.

Issue 3: Whether the risk level of hardware firms under the different changing scenarios of competitive firm size increase or decrease so much?

LITERATURE REVIEW

Fama and French (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.

Next, 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.

Furthermore, 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. And Gunaratha (2013) revealed that in different industries in Sri Lanka, the degree of financial leverage has a significant positive correlation with financial risk.

Beside, Raith (2001) found out the intensity of product market competition increases, principals unambiguously provide stronger incentives to their agents to reduce costs, and hence agents work harder. At the same time, more intense competition also leads to a higher volatility of both firm-level profits and managers' compensation. Gropp et al (2007) constructed the market shares of insured competitor banks for any given bank, and analyze the impact of this variable on banks' margins and risk-taking behavior, using a large sample of banks from OECD countries. Their results suggest that government guarantees to some banks strongly increase the risk-taking of the competitor banks not protected by such guarantees.

Last but not least, Smith (2004) mentions in Chicago, properties located in a designated TIF (tax increment financing) district will exhibit higher rates of appreciation after the area is designated a qualifying TIF district when compared to those properties selling outside TIF districts, and when compared to properties

that sell within TIF district boundaries prior to designation. Anderson (2009) recognized that the user cost tax elasticities are relatively small while the expected house price inflation elasticity is substantially larger and therefore plays a greater role in affecting housing market demand.

David (2009) stated the U.S states can increase the likelihood of using tax rate adjustments to cope with fiscal volatility rather than (more harmful) spending fluctuations. Robert et al (2011) recognized a significant positive relation between changes in intercorporate investment and changes in corporate marginal tax rates on ordinary income.

George and Jot Yau (2012) found that there is a positive relationship between transaction cost and price volatility, suggesting that the imposition of a transaction tax could increase financial market fragility, increasing the likelihood of a financial crisis rather than reducing it. Mark (2012) found in some European countries during the crisis raising tax rates and tax burdens, the trend in which overall revenue levels were broadly stable while marginal rates in corporate and top personal income declined has stopped. Then, Filip (2012) believed low levels of taxation, esp. low levels of taxation on the income or wealth of the so-called productive segments of society are beneficial for economic growth.

In this paperwork, the total combined effect of three (3) factors: tax rates, financial leverage, and competitor size on market risk of listed whole sale and retail companies will be estimated.

Conceptual theories

The impact of competition or the size of competitor, leverage and tax rates on the economy and business

The central bank and government or Ministry of Finance could use two tools: fiscal and monetary policies to perform macro economic goals. Tax rate is one of fiscal policies, either expansion or contraction, can affect quickly the aggregate demand and good market and industry growth.

Beside, 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. On the other hand, using financial leverage and changing capital structure offers firms better economic conditions. Firms can vary the capital structure with leverage and change the structure of fixed costs and variable costs. Although leverage can help a firm to increase return, the firm will prefer to increase debt up to a point to be not so nervous about risk because of too much debt financing. During the firm life, leverage can

contribute to its performance and growth.

Furthermore, Porter's theory shows us the basic unit of analysis for understanding competition is the industry. And Porter stated that the industry is the arena in which the competitive advantage is won or lost. Beside, competition can help to raise the value of a company by eliminating or reducing monopoly. Sources of competition include, but not limit to, training. Increasing training can help competition raising productivity.

METHODOLOGY

We use the data from the stock exchange market in Viet Nam (HOSE and HNX) during the 2007-2011 period to estimate systemic risk results.

In this study, analytical research method and specially, tax rate scenario analysis method is used. Analytical data is from the situation of listed hardware 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.

RESULTS

Data Analysis

The research sample has 22 listed firms in the hardware market with the live date from the stock exchange.

Firstly, we estimate equity beta values of these firms and use financial leverage to estimate asset beta values of them, and the results are estimated under effects of another variable: competitive firm size (changed from approximate size to doubling size and slightly smaller). Secondly, we change the tax rate from 25% to 28% and 20% to see the sensitivity of beta values. In 3 cases (rate = 20%, 25%, and 28%), with current debt financing, asset beta mean is estimated at 0,44, 0,33 and 0,43 which is negatively correlated with competitor size. Also in 3 scenarios, we find out var of asset beta estimated at 0,090 (with doubling size competitors). Tax rate changes almost have little certain effect on asset beta var under financial leverage.

Empirical Research Findings and Discussion

Data used are from total 22 listed hardware industry companies on VN stock exchange (HOSE and HNX mainly). In the scenario 1, current tax rate is kept as 25% then changed from 20% to 30%. Then, three (3) FL scenarios are changed up to 30% and down to 20%, compared to the current FL degree. In short, the below table 1 shows three scenarios used for analyzing the risk level of these listed firms.

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

Table 1. Analyzing market risk under three (3) scenarios (Made by Author)

	Tax rate as current (25%) Competitor size as current, double and slightly smaller	Tax rate up to 30% Competitor size as current, double and slightly smaller	Tax rate down to 20% Competitor size as current, double and slightly smaller
	Scenario 1	Scenario 2	Scenario 3
Leverage as current			
Leverage up 30%			
Leverage down 20%			

a. Scenario 1: current tax rate 25% and leverage kept as current, 20% down and 30% up, under the condition that competitor size kept as current

In this case, all beta values of 22 listed firms on VN hardware industry market as following:

Table 2. Market risk of listed companies on VN hardware industry market under a 3 factors model (case 1)

Order No.	Company stock code	Equity beta			Asset beta		
		Competitor as current	Double	Slightly smaller	Competitor as current	Double	Slightly smaller
1	CMT (FL current)	0,665	0,665	0,665	0,326	0,326	0,326
	CMT (FL up)	0,665	0,665	0,665	0,224	0,224	0,224
	CMT (FL down)	0,665	0,665	0,665	0,394	0,394	0,394
2	SVT	0,860	0,212	0,860	0,651	0,161	0,651
	SVT (FL up)	0,792	-0,059	0,792	0,543	-0,040	0,543
	SVT (FL down)	0,903	0,392	0,903	0,728	0,316	0,728

Table 2 (cont.) Market risk of listed companies on VN hardware industry market under a 3 factors model (case 1)

Order No.	Company stock code	Equity beta			Asset beta		
		Competitor as current	Double	Slightly smaller	Competitor as current	Double	Slightly smaller
3	VIE	0,283	0,263	0,131	0,054	0,050	0,025
	VIE (Fl up)	-0,085	-0,079	-0,022	0,004	0,004	0,001
	VIE (Fl down)	0,498	0,463	0,292	0,176	0,163	0,103
4	HPT	0,238	0,113	0,238	0,063	0,030	0,063
	HPT (Fl up)	0,041	0,019	0,041	0,002	0,001	0,002
	HPT (FL down)	0,356	0,169	0,356	0,146	0,069	0,146
5	NIS	0,347	0,487	0,347	0,165	0,231	0,165
	NIS (FL up)	0,243	0,341	0,243	0,077	0,108	0,077
	NIS (FL down)	0,411	0,577	0,411	0,238	0,335	0,238
6	TST	0,739	0,739	0,739	0,236	0,236	0,236
	TST (FL up)	0,739	0,739	0,739	0,085	0,085	0,085
	TST (FL down)	0,739	0,739	0,739	0,337	0,337	0,337
7	ST8	0,891	0,891	0,891	0,682	0,682	0,682
	ST8 (Fl up)	0,891	0,891	0,891	0,619	0,619	0,619
	ST8 (Fl down)	0,891	0,891	0,891	0,724	0,724	0,724
8	TAG	0,632	0,632	0,632	0,411	0,411	0,411
	TAG (FL up)	0,632	0,632	0,632	0,345	0,345	0,345
	TAG (FL down)	0,632	0,632	0,632	0,455	0,455	0,455
9	POT	1,046	1,046	1,046	0,533	0,533	0,533
	POT (Fl up)	1,046	1,046	1,046	0,379	0,379	0,379
	POT (Fl down)	1,046	1,046	1,046	0,636	0,636	0,636
10	CKV	0,604	0,604	0,604	0,221	0,221	0,221
	CKV (Fl up)	0,604	0,604	0,604	0,106	0,106	0,106
	CKV (FL down)	0,604	0,604	0,604	0,297	0,297	0,297
11	ONE	0,551	0,294	0,551	0,217	0,116	0,217
	ONE (FL up)	0,314	0,167	0,314	0,067	0,036	0,067
	ONE (FL down)	0,695	0,371	0,695	0,358	0,191	0,358
12	PMT	1,234	1,191	1,191	1,056	1,019	1,019
	PMT (FL up)	1,191	1,191	1,191	0,967	0,967	0,967
	PMT (FL down)	1,191	1,191	1,191	1,054	1,054	1,054
13	SMT	0,934	0,369	0,826	0,654	0,258	0,578
	SMT (Fl up)	0,805	0,230	0,738	0,492	0,141	0,450
	SMT (Fl down)	0,963	0,467	0,882	0,732	0,355	0,671
14	UNI	1,186	1,186	1,186	0,732	0,732	0,732
	UNI (FL up)	1,186	1,186	1,186	0,596	0,596	0,596
	UNI (FL down)	1,186	1,186	1,186	0,823	0,823	0,823
15	TLC	1,066	1,066	1,066	0,770	0,770	0,770
	TLC (Fl up)	1,066	1,066	1,066	0,681	0,681	0,681
	TLC (Fl down)	1,066	1,066	1,066	0,829	0,829	0,829
16	KST	0,679	0,168	0,405	0,386	0,095	0,230
	VLA (Fl up)	0,544	-0,040	0,324	0,239	-0,018	0,142
	VLA (FL down)	0,764	0,332	0,455	0,500	0,217	0,298
17	VAT	1,028	1,168	1,168	0,485	0,551	0,551
	VAT (FL up)	1,168	1,168	1,168	0,366	0,366	0,366
	VAT (FL down)	1,168	1,168	1,168	0,675	0,675	0,675

Table 2 (cont.) Market risk of listed companies on VN hardware industry market under a 3 factors model (case 1)

Order No.	Company stock code	Equity beta			Asset beta		
		Competitor as current	Double	Slightly smaller	Competitor as current	Double	Slightly smaller
18	VTC	0,635	0,635	0,635	0,431	0,431	0,431
	VTC (FL up)	0,635	0,635	0,635	0,369	0,369	0,369
	VTC (FL down)	0,635	0,635	0,635	0,471	0,471	0,471
19	ELC	0,200	0,542	0,200	0,100	0,271	0,100
	ELC (Fl up)	0,147	0,397	0,147	0,051	0,139	0,051
	ELC (Fl down)	0,234	0,633	0,234	0,140	0,380	0,140
20	SAM	1,191	1,191	1,191	1,069	1,069	1,069
	SAM (Fl up)	1,191	1,191	1,191	1,033	1,033	1,033
	SAM (FL down)	1,191	1,191	1,191	1,094	1,094	1,094
21	LTC	1,102	1,102	1,102	0,329	0,329	0,329
	LTC (FL up)	1,102	1,102	1,102	0,097	0,097	0,097
	LTC (FL down)	1,102	1,102	1,102	0,483	0,483	0,483
22	ITD	0,351	0,351	0,351	0,132	0,132	0,132
	ITD (FL up)	0,351	0,351	0,351	0,066	0,066	0,066
	ITD (FL down)	0,351	0,351	0,351	0,175	0,175	0,175

Source: VN stock exchange 2012

b. Scenario 2: tax rate increases up to 28% and leverage kept as current, 20% down and 30% up, under the condition that competitor size kept as current

All beta values of total 22 listed firms on VN hardware industry market as below:

Table 3. Market risks of listed hardware industry firms under a 3 factors model (case 2)

Order No.	Company stock code	Equity beta			Asset beta		
		Competitor as current	Double	Slightly smaller	Competitor as current	Double	Slightly smaller
1	CMT (FL current)	0,665	0,665	0,665	0,326	0,326	0,326
	CMT (Fl up)	0,665	0,665	0,665	0,224	0,224	0,224
	CMT (Fl down)	0,665	0,665	0,665	0,394	0,394	0,394
2	SVT	0,866	0,220	0,866	0,656	0,167	0,656
	SVT (FL up)	0,801	-0,062	0,801	0,548	-0,042	0,548
	SVT (FL down)	0,909	0,404	0,909	0,732	0,326	0,732
3	VIE	0,292	0,271	0,139	0,056	0,052	0,026
	VIE (Fl up)	-0,089	-0,082	-0,024	0,005	0,004	0,001
	VIE (Fl down)	0,510	0,474	0,304	0,180	0,167	0,107
4	HPT	0,245	0,116	0,245	0,064	0,031	0,064
	HPT (Fl up)	0,042	0,020	0,042	0,002	0,001	0,002
	HPT (FL down)	0,363	0,172	0,363	0,149	0,071	0,149
5	NIS	0,353	0,496	0,353	0,168	0,235	0,168
	NIS (FL up)	0,249	0,349	0,249	0,079	0,111	0,079
	NIS (FL down)	0,417	0,585	0,417	0,242	0,339	0,242
6	TST	0,739	0,739	0,739	0,236	0,236	0,236
	TST (FL up)	0,739	0,739	0,739	0,085	0,085	0,085
	TST (FL down)	0,739	0,739	0,739	0,337	0,337	0,337
7	ST8	0,891	0,891	0,891	0,682	0,682	0,682
	ST8 (Fl up)	0,891	0,891	0,891	0,619	0,619	0,619
	ST8 (Fl down)	0,891	0,891	0,891	0,724	0,724	0,724
8	TAG	0,632	0,632	0,632	0,411	0,411	0,411
	TAG (FL up)	0,632	0,632	0,632	0,345	0,345	0,345
	TAG (FL down)	0,632	0,632	0,632	0,455	0,455	0,455

Table 3 (cont.). Market risks of listed hardware industry firms under a 3 factors model (case 2)

Order No.	Company stock code	Equity beta			Asset beta		
		Competitor as current	Double	Slightly smaller	Competitor as current	Double	Slightly smaller
9	POT	1,046	1,046	1,046	0,533	0,533	0,533
	POT (Fl up)	1,046	1,046	1,046	0,379	0,379	0,379
	POT (Fl down)	1,046	1,046	1,046	0,636	0,636	0,636
10	CKV	0,604	0,604	0,604	0,221	0,221	0,221
	CKV (Fl up)	0,604	0,604	0,604	0,106	0,106	0,106
	CKV (FL down)	0,604	0,604	0,604	0,297	0,297	0,297
11	ONE	0,563	0,300	0,563	0,222	0,118	0,222
	ONE (FL up)	0,323	0,172	0,323	0,069	0,037	0,069
	ONE (FL down)	0,707	0,377	0,707	0,364	0,194	0,364
12	PMT	1,191	1,191	1,191	1,019	1,019	1,019
	PMT (FL up)	1,191	1,191	1,191	0,967	0,967	0,967
	PMT (FL down)	1,191	1,191	1,191	1,054	1,054	1,054
13	SMT	0,911	0,379	0,834	0,638	0,265	0,584
	SMT (Fl up)	0,816	0,239	0,747	0,498	0,146	0,456
	SMT (Fl down)	0,971	0,477	0,889	0,738	0,363	0,676
14	UNI	1,186	1,186	1,186	0,732	0,732	0,732
	UNI (FL up)	1,186	1,186	1,186	0,596	0,596	0,596
	UNI (FL down)	1,186	1,186	1,186	0,823	0,823	0,823
15	TLC	1,066	1,066	1,066	0,770	0,770	0,770
	TLC (Fl up)	1,066	1,066	1,066	0,681	0,681	0,681
	TLC (Fl down)	1,066	1,066	1,066	0,829	0,829	0,829
16	KST	0,689	0,175	0,411	0,392	0,100	0,233
	VLA (Fl up)	0,555	-0,043	0,331	0,244	-0,019	0,145
	VLA (FL down)	0,773	0,344	0,460	0,506	0,225	0,301
17	VAT	1,168	1,168	1,168	0,551	0,551	0,551
	VAT (FL up)	1,168	1,168	1,168	0,366	0,366	0,366
	VAT (FL down)	1,168	1,168	1,168	0,675	0,675	0,675
18	VTC	0,635	0,635	0,635	0,431	0,431	0,431
	VTC (FL up)	0,635	0,635	0,635	0,369	0,369	0,369
	VTC (FL down)	0,635	0,635	0,635	0,471	0,471	0,471
19	ELC	0,204	0,552	0,204	0,102	0,276	0,102
	ELC (Fl up)	0,150	0,406	0,150	0,053	0,142	0,053
	ELC (Fl down)	0,237	0,641	0,237	0,142	0,385	0,142
20	SAM	1,191	1,191	1,191	1,069	1,069	1,069
	SAM (Fl up)	1,191	1,191	1,191	1,033	1,033	1,033
	SAM (FL down)	1,191	1,191	1,191	1,094	1,094	1,094
21	LTC	1,102	1,102	1,102	0,329	0,329	0,329
	LTC (FL up)	1,102	1,102	1,102	0,097	0,097	0,097
	LTC (FL down)	1,102	1,102	1,102	0,483	0,483	0,483
22	ITD	0,351	0,351	0,351	0,132	0,132	0,132
	ITD (FL up)	0,351	0,351	0,351	0,066	0,066	0,066
	ITD (FL down)	0,351	0,351	0,351	0,175	0,175	0,175

Source: VN stock exchange 2012

c. Scenario 3: tax rate decreases down to 20% and leverage kept as current, 20% down and 30% up, under the condition that competitor size kept as current

All beta values of total 22 listed firms on VN hardware industry market as below:

Table 4. Market risks of listed hardware industry firms under a 3 factors model (case 3)

Order No.	Company stock code	Equity beta			Asset beta		
		Competitor as current	Double	Slightly smaller	Competitor as current	Double	Slightly smaller
1	CMT (FL current)	0,665	0,665	0,665	0,326	0,326	0,326
	CMT (Fl up)	0,665	0,665	0,665	0,224	0,224	0,224
	CMT (Fl down)	0,665	0,665	0,665	0,394	0,394	0,394
2	SVT	0,849	0,199	0,849	0,643	0,151	0,643
	SVT (FL up)	0,779	-0,054	0,779	0,534	-0,037	0,534
	SVT (FL down)	0,894	0,374	0,894	0,721	0,301	0,721
3	VIE	0,269	0,250	0,121	0,051	0,048	0,023
	VIE (Fl up)	-0,079	-0,074	-0,020	0,004	0,004	0,001
	VIE (Fl down)	0,480	0,446	0,274	0,169	0,157	0,096
4	HPT	0,228	0,108	0,228	0,060	0,028	0,060
	HPT (Fl up)	0,038	0,018	0,038	0,002	0,001	0,002
	HPT (FL down)	0,344	0,163	0,344	0,141	0,067	0,141
5	NIS	0,337	0,473	0,337	0,160	0,224	0,160
	NIS (FL up)	0,233	0,327	0,233	0,074	0,104	0,074
	NIS (FL down)	0,402	0,564	0,402	0,233	0,327	0,233
6	TST	0,739	0,739	0,739	0,236	0,236	0,236
	TST (FL up)	0,739	0,739	0,739	0,085	0,085	0,085
	TST (FL down)	0,739	0,739	0,739	0,337	0,337	0,337
7	ST8	0,891	0,891	0,891	0,682	0,682	0,682
	ST8 (Fl up)	0,891	0,891	0,891	0,619	0,619	0,619
	ST8 (Fl down)	0,891	0,891	0,891	0,724	0,724	0,724
8	TAG	0,632	0,632	0,632	0,411	0,411	0,411
	TAG (FL up)	0,632	0,632	0,632	0,345	0,345	0,345
	TAG (FL down)	0,632	0,632	0,632	0,455	0,455	0,455
9	POT	1,046	1,046	1,046	0,533	0,533	0,533
	POT (Fl up)	1,046	1,046	1,046	0,379	0,379	0,379
	POT (Fl down)	1,046	1,046	1,046	0,636	0,636	0,636
10	CKV	0,604	0,604	0,604	0,221	0,221	0,221
	CKV (Fl up)	0,604	0,604	0,604	0,106	0,106	0,106
	CKV (FL down)	0,604	0,604	0,604	0,297	0,297	0,297
11	ONE	0,532	0,284	0,532	0,210	0,112	0,210
	ONE (FL up)	0,299	0,159	0,299	0,064	0,034	0,064
	ONE (FL down)	0,677	0,361	0,677	0,349	0,186	0,349
12	PMT	1,191	1,191	1,191	1,019	1,019	1,019
	PMT (FL up)	1,191	1,191	1,191	0,967	0,967	0,967
	PMT (FL down)	1,191	1,191	1,191	1,054	1,054	1,054
13	SMT	0,887	0,352	0,813	0,621	0,247	0,569
	SMT (Fl up)	0,788	0,217	0,722	0,481	0,132	0,441
	SMT (Fl down)	0,951	0,450	0,871	0,723	0,342	0,662
14	UNI	1,186	1,186	1,186	0,732	0,732	0,732
	UNI (FL up)	1,186	1,186	1,186	0,596	0,596	0,596
	UNI (FL down)	1,186	1,186	1,186	0,823	0,823	0,823
15	TLC	1,066	1,066	1,066	0,770	0,770	0,770
	TLC (Fl up)	1,066	1,066	1,066	0,681	0,681	0,681
	TLC (Fl down)	1,066	1,066	1,066	0,829	0,829	0,829

Table 4 (cont.) Market risks of listed hardware industry firms under a 3 factors model (case 3)

Order No.	Company stock code	Equity beta			Asset beta		
		Competitor as current	Double	Slightly smaller	Competitor as current	Double	Slightly smaller
16	KST	0,663	0,156	0,395	0,377	0,088	0,225
	VLA (FL up)	0,527	-0,036	0,314	0,232	-0,016	0,138
	VLA (FL down)	0,750	0,314	0,447	0,491	0,205	0,293
17	VAT	1,168	1,168	1,168	0,551	0,551	0,551
	VAT (FL up)	1,168	1,168	1,168	0,366	0,366	0,366
	VAT (FL down)	1,168	1,168	1,168	0,675	0,675	0,675
18	VTC	0,635	0,635	0,635	0,431	0,431	0,431
	VTC (FL up)	0,635	0,635	0,635	0,369	0,369	0,369
	VTC (FL down)	0,635	0,635	0,635	0,471	0,471	0,471
19	ELC	0,195	0,527	0,195	0,097	0,264	0,097
	ELC (FL up)	0,141	0,382	0,141	0,049	0,134	0,049
	ELC (FL down)	0,229	0,619	0,229	0,137	0,371	0,137
20	SAM	1,191	1,191	1,191	1,069	1,069	1,069
	SAM (FL up)	1,191	1,191	1,191	1,033	1,033	1,033
	SAM (FL down)	1,191	1,191	1,191	1,094	1,094	1,094
21	LTC	1,102	1,102	1,102	0,329	0,329	0,329
	LTC (FL up)	1,102	1,102	1,102	0,097	0,097	0,097
	LTC (FL down)	1,102	1,102	1,102	0,483	0,483	0,483
22	ITD	0,351	0,351	0,351	0,132	0,132	0,132
	ITD (FL up)	0,351	0,351	0,351	0,066	0,066	0,066
	ITD (FL down)	0,351	0,351	0,351	0,175	0,175	0,175

Source: VN stock exchange 2012

All three above tables and data show that there are just tiny changes in the values of equity beta and there are bigger fluctuations in the values of asset beta in the three (3) cases.

Comparing statistical results in 3 scenarios of changing leverage:

Table 5. Statistical results (FL in case 1) (n= 22 firms)

		Equity beta			Asset beta			Difference		
		Competit or size as current	Double	Slightly smaller	Competit or size as current	Double	Slightly smaller	Competit or size as current	Double	Slightly smaller
1. FL as cur rent	Statistic results									
	MAX	1,234	1,191	1,191	1,069	1,069	1,069	0,165	0,122	0,122
	MIN	0,200	0,113	0,131	0,054	0,030	0,025	0,147	0,083	0,106
	MEAN	0,748	0,678	0,728	0,441	0,393	0,430	0,307	0,285	0,298
	VAR	0,1085	0,1392	0,1226	0,0893	0,0903	0,0894	0,019	0,049	0,033
2. FL up 30%	Statistic results									
	MAX	1,191	1,191	1,191	1,033	1,033	1,033	0,158	0,158	0,158
	MIN	-0,085	-0,079	-0,022	0,002	-0,040	0,001	-0,087	-0,039	-0,024
	MEAN	0,694	0,611	0,684	0,337	0,287	0,330	0,357	0,325	0,353
	VAR	0,1567	0,2036	0,1570	0,0920	0,0985	0,0929	0,065	0,105	0,064
3. FL down 20%	Statistic results									
	MAX	1,191	1,191	1,191	1,094	1,094	1,094	0,097	0,097	0,097
	MIN	0,234	0,169	0,234	0,140	0,069	0,103	0,094	0,100	0,131
	MEAN	0,786	0,721	0,759	0,521	0,476	0,506	0,265	0,245	0,253
	VAR	0,0925	0,1082	0,1036	0,0811	0,0817	0,0847	0,011	0,026	0,019

Source: VN stock exchange 2012

Table 6 – Statistical results (FL in case 2) (n=22 firms)

1. FL as current	Statistic results	Equity beta			Asset beta			Difference		
		Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller
	MAX	1,191	1,191	1,191	1,069	1,069	1,069	0,122	0,122	0,122
	MIN	0,204	0,116	0,139	0,056	0,031	0,026	0,148	0,086	0,112
	MEAN	0,754	0,681	0,731	0,443	0,395	0,432	0,311	0,286	0,299
	VAR	0,1094	0,1371	0,1213	0,0871	0,0897	0,0892	0,022	0,047	0,032
2. FL up 30%	Statistic results	Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller
	MAX	1,191	1,191	1,191	1,033	1,033	1,033	0,158	0,158	0,158
	MIN	-0,089	-0,082	-0,024	0,002	-0,042	0,001	-0,090	-0,040	-0,025
	MEAN	0,696	0,612	0,686	0,338	0,287	0,331	0,358	0,325	0,355
	VAR	0,1561	0,2033	0,1562	0,0921	0,0984	0,0929	0,064	0,105	0,063
3. FL down 20%	Statistic results	Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller
	MAX	1,191	1,191	1,191	1,094	1,094	1,094	0,097	0,097	0,097
	MIN	0,237	0,172	0,237	0,142	0,071	0,107	0,095	0,102	0,130
	MEAN	0,789	0,725	0,762	0,523	0,478	0,507	0,266	0,247	0,254
	VAR	0,0916	0,1063	0,1023	0,0808	0,0809	0,0844	0,011	0,025	0,018

Source: VN stock exchange 2012

Table 7- Statistical results (FL in case 3) (n=22 firms)

1. FL as current	Statistic results	Equity beta			Asset beta			Difference		
		Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller
	MAX	1,191	1,191	1,191	1,069	1,069	1,069	0,122	0,122	0,122
	MIN	0,195	0,108	0,121	0,051	0,028	0,023	0,144	0,080	0,098
	MEAN	0,747	0,673	0,724	0,439	0,391	0,429	0,308	0,282	0,296
	VAR	0,1127	0,1425	0,1248	0,0876	0,0913	0,0898	0,025	0,051	0,035
2. FL up 30%	Statistic results	Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller
	MAX	1,191	1,191	1,191	1,033	1,033	1,033	0,158	0,158	0,158
	MIN	-0,079	-0,074	-0,020	0,002	-0,037	0,001	-0,081	-0,037	-0,021
	MEAN	0,691	0,609	0,681	0,335	0,286	0,329	0,356	0,324	0,352
	VAR	0,1576	0,2043	0,1584	0,0920	0,0987	0,0929	0,066	0,106	0,065
3. FL down 20%	Statistic results	Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller	Competitor size as current	Double	Slightly smaller
	MAX	1,191	1,191	1,191	1,094	1,094	1,094	0,097	0,097	0,097
	MIN	0,229	0,163	0,229	0,137	0,067	0,096	0,092	0,096	0,132
	MEAN	0,782	0,716	0,755	0,519	0,473	0,504	0,263	0,243	0,251
	VAR	0,0941	0,1113	0,1055	0,0816	0,0830	0,0854	0,012	0,028	0,020

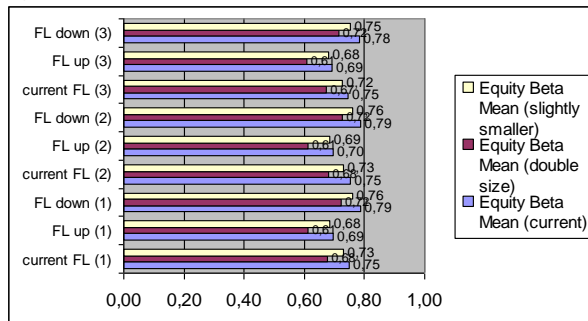
Source: VN stock exchange 2012

The above calculated figures generate some following results when leverage degree decreases down to 20%, with current approximate size competitors, average equity beta value increases maximum (0,79). In addition to, equity beta var reaches 0,2 (maximum), in case doubling size competitors and leverage up 30%. Finally, in scenario 3 (tax rate down 20%), equity beta mean reaches 0,61 (minimum) if leverage up 30% and doubling size competitors.

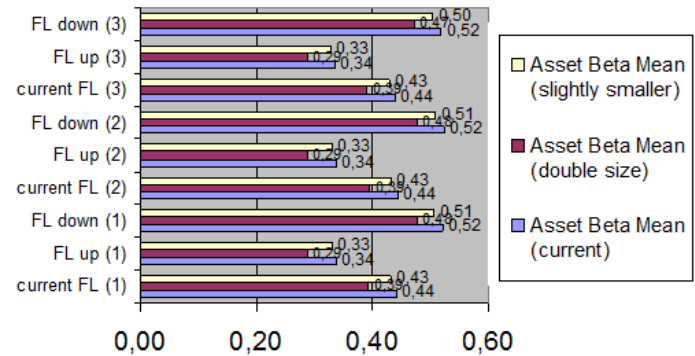
First of all, Equity beta mean values in all 3 scenarios are acceptable ($< 0,8$) and asset beta mean values are also small ($< 0,6$). If competitor size kept as current (approximate size) and FL kept as current, equity beta max value decreases slightly to 1,234 to 1,191 when tax rate is up to 28%. Finally, when leverage decreases down to 20% and competitor size kept as current, equity beta min value increases to 0,200 to 0,229 in case tax rate down to 20%.

Chart 3 – Comparing statistical results of asset beta var and mean in three (3) scenarios of changing FL and tax rate and competitor size (source: VN stock exchange 2012)

Chart 1 – Comparing statistical results of equity beta var and mean in three (3) scenarios of changing FL and tax rate and competitor size (source: VN stock exchange 2012)



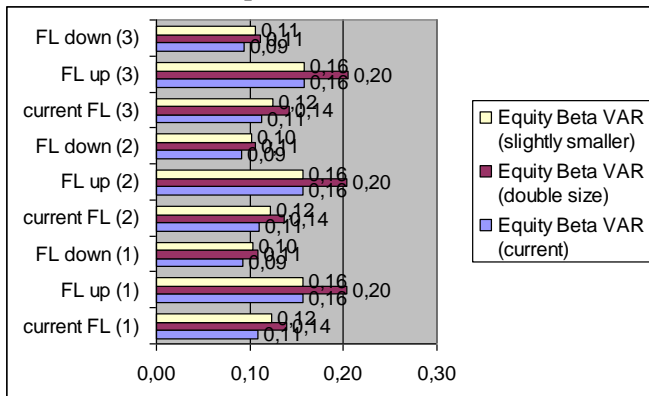
Note: (1) current tax rate; (2): tax rate up 28%; (3): tax rate down 20%



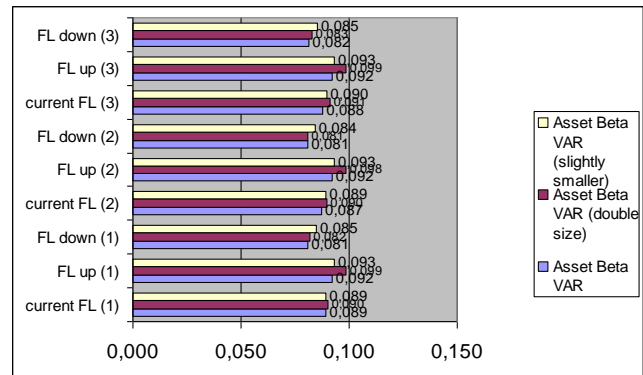
Note: (1) current tax rate; (2): tax rate up 28%; (3): tax rate down 20%

Chart 2 – Comparing statistical results of equity beta var and mean in three (3) scenarios of changing FL and tax rate and competitor size

Chart 4 – Comparing statistical results of asset beta var and mean in three (3) scenarios of changing FL and tax rate and competitor size (source: VN stock exchange 2012)



Source: VN stock exchange 2012



The chart 1 and 2 show: in scenario 1 (current tax rate), when leverage degree as current, with current approximate size competitors, average equity beta value increases maximum (0,75). However, equity beta var reaches 0,14 (maximum), in case doubling size competitors. Then, in scenario 2 (tax rate up to 28%),

The chart 3 and 4 show: in scenario 1 (current tax rate), asset beta mean reaches 0,43 (maximum) if leverage down 20% and current approximate size competitors. And asset beta var reaches 0,44 (maximum) in case current leverage and approximate size competitors. Then, in scenario 2 (tax rate up to 28%), asset beta mean also reaches 0,52 (maximum) if leverage down 20% and current approximate size

competitors. And asset beta var reaches 0,098 (maximum) in case leverage up 30% and doubling size competitors. Finally, in scenario 3 (tax rate down 20%), asset beta mean reaches 0,29 (minimum) in case FL up 30% and doubling size competitors, whereas asset beta var reaches 0,083 (minimum) in case Fl down 20% and competitive firm size doubling.

CONCLUSION AND POLICY SUGGESTION

In summary, the government has to consider the impacts on the movement of market risk in the markets when it changes the macro policies and the legal system and regulation for developing the hardware 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 hardware firms as we might note that in this study when leverage is going to increase up to 30%, the risk level decreases to 0,29 if competitor size doubles (for all 3 cases of various tax rates).

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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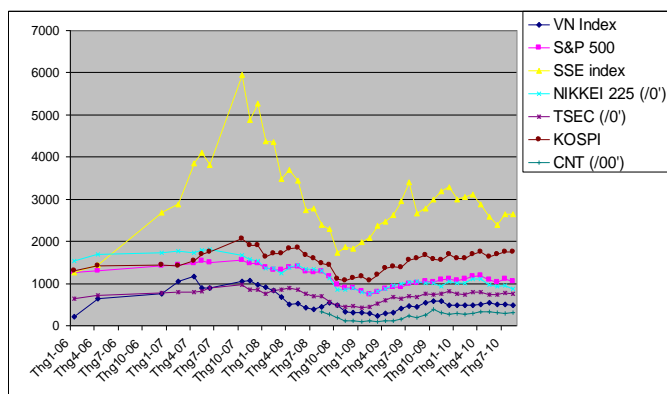
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Exhibit

Exhibit 1- VNI Index and other stock market index during crisis 2006-2010



Source: global stock exchange 2012