

A One Factor Model Affects the Risk Level of Viet Nam Hardware Industry During and After the Global Crisis 2007-2011

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ABSTRACT

Using a one factor model, this paperwork estimates the impacts of the size of firms' competitors in the hardware industry on the market risk level, measured by equity and asset beta, of 22 listed companies in this category. This study identified that the risk dispersion level in this sample study could be minimized in case the competitor size doubles (measured by equity beta var of 0,678). Besides, the empirical research findings show us that asset beta min value decreases from 0,054 to 0,030 when the size of competitor doubles. Last but not least, most of beta values are acceptable. Ultimately, this paper illustrates calculated results that might give proper recommendations to relevant governments and institutions in re-evaluating their policies during and after the financial crisis 2007-2011.

Keywords: Risk Management, Competitive Firm Size, Market Risk, Asset and Equity Beta, Hardware Industry

I. INTRODUCTION

Studies reveal that competition has affected business risk and return. 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. Pagano and Mao (2007) stated that An intermediated market can therefore remain viable in the face of competition from a possibly faster, non-intermediated market as long as the specialist can generate revenue for the above services that covers his/her costs associated with asymmetric information, order processing, and inventory management. As Luis E. Peirero (2010) pointed, the task of estimating cost of equity in emerging markets is more difficult because of problems such as collecting data in short periods.

Together with financial system development and the economic growth, throughout many recent years, Viet Nam hardware industry is considered as one of active

economic sectors, which has some positive effects for the economy. Additionally, financial risk and reactions has become an issue after the global crisis 2007-2009 which has some certain impacts on the whole Viet nam economy, and specifically, the Viet Nam hardware industry. Hence, this research paper analyzes market risk under a one factor model of these listed firms during this period. The purpose of this study is to find out how much market risk for this industry in changing contexts of competitors.

Therefore, this paperwork will explain not only the relationship between risk and competitor size, but also presents how much risk for the hardware industry in each competitor scenario. It finds out competition or competitor size definitely has certain effects on market risk of listed hardware firms.

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



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

II. METHODS AND MATERIAL

Research Issues

For the estimating of impacts of a one factor model: the size of competitor on beta for listed hardware industry companies in Viet Nam stock exchange, research issues will be mentioned as following:

Issue 1: Whether the risk level of hardware industry firms under the different changing scenarios of the size of competitor increase or decrease so much.

Issue 2: Whether the disperse distribution of beta values become large in the different changing scenarios of the size of competitor in the hardware industry.

Issue 3: What is the relationship between competitor size and risk minimization?

3. Literature review

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, Kim et al (2002) noted that the nature of competitive interaction in an industry is important in assessing the effect of corporate product strategies on shareholder value. Jimenez et al (2005) pointed As market power is the primary source of franchise value, reduced competition in banking markets has been seen as promoting banking stability.

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. Daly and Hanh Phan (2013) investigated the competitive structure of the banking industries in five emerging asian countries including Viet Nam and showed that the global financial crisis affected dramatically the competition of banking system in emerging Asian countries.

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.

4. Conceptual theories

The impact of competition or the size of competitor on the economy and business

In a competitive hardware market, there are many firms offering the similar products and services and this helps customers select a variety of qualified goods that meet their demand. Competitors could affect price and customer service policies; hence, affect revenues and profits of a typical company. Sources of competition include, but not limit to, training. Increasing training can help competition raising productivity.

Different kinds of market contain various types of risks. And different organizational structure can offer various competition degrees.

5. Methodology

In this study, analytical research method is used, philosophical method is used and especially, scenario analysis method is used. Analytical data is from the situation of listed hardware material industry firms in VN stock exchange and applied current tax rate is 25%. Risk here is assumed understood as fluctuations and volatility of beta which is sometimes higher than 1 or more or lower than that. We use historical and real data on the HNX and HOSE stock exchange in the period 2007-2011 for estimating risk. This is a part of our quantitative analysis method used combined with financial analytical method.

Scenario analysis method is applied in three (3) cases of changing size of competitors under changing competitive strategy. We estimate how much risk in case the firm selects competitor with doubling size, smaller size and approximate size. And beta results can be used for CAPM model to estimate WACC or cost of capital if readers want to go to further steps. In later sessions, we will explain the relationship between competitor size and beta. When we mention the competitor selecting strategy, we stand from the point of view of firm management, although the calculated results can be used for various stakeholders including investors.

In the below table 1, 2, 3 and others, the symbols such as “VTC” will represent for stock code of each listed firm on the stock exchange.

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

III. RESULTS AND DISCUSSION

6. General Data Analysis

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

Firstly, we estimate equity and asset beta values of these firms, as well as the risk dispersion. Secondly, we change the competitor size from approxiamte size to doubling size and slightly smaller size to see the sensitivity of beta values. We figure out that in 3 cases, asset beta mean values are estimated at 0,441, 0,393 and 0,430 which are negatively correlated with the size of competitors. Also in 3 scenarios, we find out equity beta mean values (0,748, 0,678 and 0,728) are also negatively correlated with the competitive firm size. Various competitors selected definitely have certain effects on asset and equity beta values.

7. Empirical Research Findings and Discussion

In the below section, data used are from total 22 listed hardware 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) whereas competitor size is kept as current, then changed from double size to slightly smaller size. Then, two (2) 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)

	FL as current
Competitor size as current	Scenario 1
Competitor size slightly smaller	Scenario 2
Competitor size double	Scenario 3

7.1 Scenario 1: current financial leverage and 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 one factor model (case 1) (source: VN stock exchange 2012)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage (F.S reports)
1	CMT	0,665	0,326		51,1%
2	SVT	0,860	0,651	TLC as comparable	24,2%
3	VIE	0,283	0,054	UNI as comparable	81,0%
4	HPT	0,238	0,063	TST as comparable	73,7%
5	NIS	0,347	0,165	VTC as comparable	52,5%
6	TST	0,739	0,236		68,1%
7	ST8	0,891	0,682		23,5%
8	TAG	0,632	0,411		35,0%
9	POT	1,046	0,533		49,0%
10	CKV	0,604	0,221		63,5%
11	ONE	0,551	0,217	UNI as comparable	60,6%
12	PMT	1,234	1,056		14,4%
13	SMT	0,934	0,654	PMT as comparable	30,0%
14	UNI	1,186	0,732		38,3%
15	TLC	1,066	0,770		27,8%

16	KST	0,679	0,386	TLC as comparable	43,1%
17	VAT	1,028	0,485		52,8%
18	VTC	0,635	0,431		32,2%
19	ELC	0,200	0,100	ITD as comparable	50,0%
20	SAM	1,191	1,069		10,2%
21	LTC	1,102	0,329		70,2%
22	ITD	0,351	0,132		62,5%
Average					46,1%

7.2. Scenario 2: competitor size double

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 one factor model (case 2) (source: VN stock exchange 2012)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note
1	CMT	0,665	0,326	
2	SVT	0,212	0,161	VIE as comparable
3	VIE	0,263	0,050	LTC as comparable
4	HPT	0,113	0,030	ITD as comparable
5	NIS	0,487	0,231	ST8 as comparable
6	TST	0,739	0,236	
7	ST8	0,891	0,682	
8	TAG	0,632	0,411	
9	POT	1,046	0,533	
10	CKV	0,604	0,221	
11	ONE	0,294	0,116	TAG as comparable
12	PMT	1,191	1,019	
13	SMT	0,369	0,258	NIS as comparable
14	UNI	1,186	0,732	
15	TLC	1,066	0,770	
16	KST	0,168	0,095	VIE as comparable
17	VAT	1,168	0,551	
18	VTC	0,635	0,431	
19	ELC	0,542	0,271	CMG as comparable
20	SAM	1,191	1,069	
21	LTC	1,102	0,329	
22	ITD	0,351	0,132	

7.3. Scenario 3: Competitor size slightly smaller

All beta values of total 22 listed firms on the hardware industry market in VN as following:

Table 4 – Market risk of listed hardware industry firms under one factor model (case 3) (source: VN stock exchange 2012)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note
1	CMT	0,665	0,326	
2	SVT	0,860	0,651	TLC as comparable
3	VIE	0,131	0,025	ONE as comparable
4	HPT	0,238	0,063	TST as comparable
5	NIS	0,347	0,165	VTC as comparable
6	TST	0,739	0,236	
7	ST8	0,891	0,682	
8	TAG	0,632	0,411	
9	POT	1,046	0,533	
10	CKV	0,604	0,221	
11	ONE	0,551	0,217	UNI as comparable
12	PMT	1,191	1,019	
13	SMT	0,826	0,578	HTP as comparable
14	UNI	1,186	0,732	
15	TLC	1,066	0,770	
16	KST	0,405	0,230	VTC as comparable
17	VAT	1,168	0,551	
18	VTC	0,635	0,431	
19	ELC	0,200	0,100	ITD as comparable
20	SAM	1,191	1,069	
21	LTC	1,102	0,329	DTL as comparable
22	ITD	0,351	0,132	BVG as comparable

All three above tables and data show that values of equity and asset beta in the three cases of changing competitor size have certain fluctuation.

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

Table 5 - Statistical results (FL in case 1) (source: VN stock exchange 2012)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	1,234	1,069	0,165
MIN	0,200	0,054	0,147
MEAN	0,748	0,441	0,307
VAR	0,1085	0,0893	0,019

Note: Samle size 22 firms

Table 6 – Statistical results (FL in case 2) (source: VN stock exchange 2012)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	1,191	1,069	0,1217
MIN	0,113	0,030	0,0833
MEAN	0,678	0,393	0,2846
VAR	0,1392	0,0903	0,0489

Note: Sample size : 22

Table 7- Statistical results (FL in case 3) (source: VN stock exchange 2012)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	1,191	1,069	0,1217
MIN	0,131	0,025	0,1064
MEAN	0,728	0,430	0,2980
VAR	0,1226	0,0894	0,0332

Note: Sample size : 22

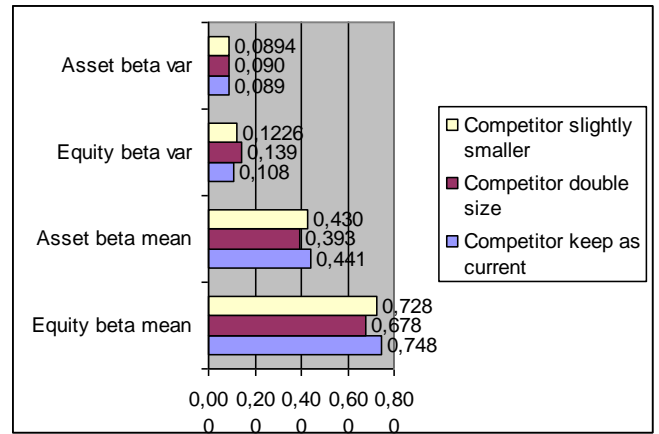
Based on the calculated results, we find out:

First of all, Equity beta mean values in all 3 scenarios are acceptable ($< 0,8$) and asset beta mean values are also small ($< 0,5$). In the case of reported leverage in 2011, equity beta max is 1,234 which is somewhat acceptable. If competitor size doubles, equity beta min decreases from 0,200 to 0,113. Finally, when competitor size is slightly smaller, asset beta min decreases from 0,054 to 0,025.

The below chart 1 shows us : when competitive firm size decreases slightly, average equity beta value decrease slightly (0,728) compared to that at the initial selected competitor (0,748). Next, average asset beta decreases little (to 0,430). However, in case the competitor size doubles, the risk level of the selected firms decreases little more (0,393). Last but not least, the fluctuation of equity beta value (0,139) in the case of doubling size competitors is higher than ($>$) the results in the rest 2

cases. And we could note that in the case competitor size slightly smaller, the risk is less dispersed (0,089).

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



IV. CONCLUSION

In conclusion, the government has to consider the impacts on the mobility of capital 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 companies as we could note that in this study when competitive firm size doubles, the risk level decreases (equity beta mean value is estimated at: 0,678), and the equity beta var value (0,139) is little higher than that in case competitor size as current (0,108).

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 (for example, they can do research on tax effects on the market risk of these firms).

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Exhibit

Exhibit 1 – 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 2 – Comparing statistical results of equity beta var and mean in three (3) scenarios of changing competitor size in the commercial electric industry

(source: VN stock exchange 2012)

