

The Volatility of Market Risk in Groups of Viet Nam Listed Hotel & Tourism Company Groups during the Financial Crisis 2007-2009

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Abstract- *The financial crisis 2007-2009 with certain impacts on the Viet Nam economy and especially, the stock exchange, has affected systematic risk in the whole hotel and tourism industries. Hence, it is the reason to perform the risk re-estimation for the listed firms in these industries.*

First of all, by using a proper traditional estimating model to estimate asset and equity beta of three (3) groups of listed companies in Viet Nam entertainment, tourism, and hotel industries, we found out that the beta values, in general, for most companies are acceptable, excluding just a few cases. There are 77% of listed firms with lower risk, among total 22 firms, whose beta values vary in a range from 0 to 1.

Secondly, through comparison of beta values among three (3) above industries, we recognized there are still 18% of total listed firms in the above group companies with beta values higher than ($>$) 1 and have stock returns moving more than the market benchmark.

Last but not least, this paper generates some results that could provide both internal and external investors, financial institutions, companies and government more evidence in establishing their policies in investments and in governance.

Keywords- equity beta; financial structure; financial crisis; risk; asset beta; tourism industry

JEL Classification : G010, G100, G390

1. INTRODUCTION

Beta or market risk is a kind of systematic risk which is different from un-systematic risk and which could be estimated by using various research methods. In this study, we perform a risk analysis based on asset and equity beta of 22 listed firms in the category of hotel and tourism firms. This paper, hence, emphasizes on analyzing systematic risk in the above industry in the Vietnam stock market during the financial crisis 2007-2009. After the previous published research article on estimated beta for listed construction company groups, as well as computer/electrical groups, now we will compare the estimated beta results of listed Viet Nam entertainment companies to those in its supply chain activities such as hotel and tourism companies to make a relative risk re-evaluation after global crisis. No research, so far, has been done on the same topic.

This paper is structured as describing follow. The research issues and literature review will be covered in next sessions 2 and 3, for a summary. Next, methodology and conceptual theories are introduced in session 4 and 5. Then, session 6 describes the data in empirical analysis. Session 7 presents empirical results and findings. Then, session 8 gives analysis of risk. Lastly, session 9 will conclude with some policy suggestions. This paper also

provides readers with references, exhibits and relevant web sources.

2. RESEARCH ISSUES

We mention a couple of issues on the estimating of beta for listed hotel and tourism companies in Viet Nam stock exchange as following:

Hypothesis/Issue 1: Among the three (3) companies groups, under the financial crisis impact and high inflation, the beta or risk level of listed companies in the tourism industry will relatively higher than those in the rest two (2) industries.

Hypothesis/Issue 2: Because Viet Nam is an emerging and immature financial market and the stock market still in the recovering stage, there will be a large disperse distribution in beta values estimated in these three (3) industries.

Hypothesis/Issue 3: With the above reasons, the mean of equity and asset beta values of these 3 listed group companies tend to impose a high risk level, i.e., beta should higher than ($>$) 1.

3. LITERATURE REVIEW

Beta, a financial and risk measure, is used widely in risk management in either a typical firm, so-called firm beta or a single industry, so-called industrial beta. As Sharpe,

Lintner (1964), and Black. (1972) with CAPM model identified the expected stock return is linearly proportional to its market beta. Damodaran (2003) said firms that reduce systematic risk exposure will see no effect on value. Fama, Eugene F., and French, Kenneth R., (2004) also indicated in the three factor model that “value” and “size” are significant components which can affect stock returns. They also mentioned that a stock’s return not only depends on a market beta, but also on market capitalization beta. Vuolteenaho (2006) said beta arbitrage is the idea that as CAPM does not work, high risk stocks does the same as low risk stocks. Jonathan and Haifeng (2010) found out that beta estimated with a constant model using data from past 12 months are the most accurate results and dominates the autoregressive time series forecasts. Xiaowei Kang (2012) found that combining weighted or alternative beta strategies can gain significant traction in investment community and reduce risk. And Ethan et. all (2013) stated hedge fund managers preferentially seek to maintain low beta risk across market states.

4. CONCEPTUAL THEORIES

Determinants of Equity and Asset Beta

Beta is a risk measure that can be used for every industry in either developed or developing economies in order to provide a reference for investors and experts in financial markets. Beta is also a fundamental number to estimate cost of equity and cost of capital in the CAPM model; hence, it can be used to calculate discount factor or discount rate in cash flow model. In emerging markets, beta calculation becomes difficult because there is insufficient number of listed companies in the industry. Additionally, market data is not sufficient enough to support the estimation.

Beta is used in cost of equity formula and from it, financial analysts can estimate WACC or weighted average cost of capital.

Beta can be varied upon to many factors or conditions of the market or economy. Beta also varies depending on various industries such as: real estate, banking, tourism, transportation, computer, etc.

In theory, market risk can not be eliminated through diversification. However, to some extent, our researches on various groups of industries of listed companies in the Viet Nam stock exchange could generate the viewpoint that different industries have different impacts from the crisis on the business and hence, beta measure, which include equity and asset beta.

Last but not least, when estimating beta using regression, analysts can calculate it by plotting the volatility of a stock’s return against the market return over a period of time and drawing a line through the data points, then beta is the slope of the line.

5. METHODOLOGY

In order to estimate systemic risk results during the period 2007-2009 - the time with impacts from financial crisis, we use the data from the stock exchange market in Viet Nam (HOSE and HNX) during the 2 years period.

First of all, we use the market stock price of 22 listed companies in the hotel, entertainment and tourism industries in Viet Nam stock exchange market to calculate the variability in monthly stock price in the same period; second, we estimate the equity beta for these 3 listed groups of companies and make a comparison. Third, we perform a comparative analysis between equity and asset beta values of these 3 companies groups in Viet Nam. Finally, we use the results to suggest policy for both these enterprises, financial services institutions and relevant organizations.

The below table gives us the number of hotel and tourism firms used in the research of estimating beta:

Market	Airlines & tourism companies (1)	Hotel companies (2)	Entertainment companies (4)	Note (4)
Viet Nam	2	1	3	Estimating by traditional method
	8	6	2	Estimating by comparative method
Total	10	7	5	Total firms in groups: 22

(Note: The above data is at the December 12th, 2009, from Viet Nam stock exchange)

6. GENERAL DATA ANALYSIS

This study uses data of 22 firms in 3 categories of industries: hotel, entertainment and tourism companies groups, and the mean of equity beta is valued at 0,512 while that of asset beta is about 0,345. These data are acceptable values despite of difficulties during the crisis. Next, the asset beta variance is low (0,1855) which is a good number, while that of equity beta is a little bit higher (0,2651). This shows us that the systemic risk for the whole industry has declined due to the effectiveness of using financial leverage.

Additionally, the max and min values of beta are still somewhat fine. Max equity beta value is up to 1,509, compared to max asset beta value is just 1,216 that is acceptable. Looking at the table 2 (below), we can see there is 18%, or only 4 listed firms still have beta values larger than (>) 1, whereas there is 77% or 17 firms whose beta values lower than (<) 1 and higher than (>) 0.

Value of equity beta varies in a range from 1,509 (max) to -1,072 (min) and that of asset beta varies in a range from 1,216 (max) to -0,819 (min). Only a few companies still has larger risk exposure than most of the others. There are just one listed companies whose beta is lower than ($<$) 0.

Then, Asset beta max value is 1,216 and min value is 0,819 which show us that if beta of debt is assumed to be zero (0), the company's financial leverage contributes to a decrease in the market risk level. The below table also shows us that only 14% of total firms has asset beta values > 1 whereas 82% of total firms has beta < 1 .

Last but not least, we can see the relatively small difference between max equity and max asset beta values, which is around 0,2929, whereas there is a smaller difference between equity and asset beta variance values which is just 0,0795; so, there is certain impact on systemic risk of certain firms in term of using leverage while it indicates for most of firms that financial leverage can enable them to reduce market risk.

Table 1 – Estimating beta results for Three (3) Viet Nam Listed Tourism, Hotels and Entertainment Companies Groups (as of Dec 2009) (source: Viet Nam stock exchange data)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	1,509	1,216	0,2929
MIN	-1,072	-0,819	0,2525
MEAN	0,512	0,345	0,1673
VAR	0,2651	0,1855	0,0795
Note: Sample size : 22			

Table 2 – The number of companies in research sample with different beta values and financial leverage

Equity Beta	No. of firms	Financial leverage (average)	Ratio
< 0	1	18,66%	5%
$0 < \text{beta} < 1$	17	35,69%	77%
Beta > 1	4	13,64%	18%
total	22	37,9%	100%

Table 3 – Estimating beta results for Viet Nam Listed Tourism Companies (as of Dec 2009)
(Source: Viet Nam stock exchange data)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage
1	CTC	0,206	0,066		70,8%
2	DLC	0,339	0,201	DLV as comparable	48,4%
3	DLV	0,578	0,212	PGT as comparbale	54,6%
4	FDT	0,655	0,257	PGT as comparbale	47,4%
5	HOT	1,071	0,904	TCT as comparable	14,5%

Asset Beta	No. of firms	Financial leverage (average)	Ratio
< 0	1	23,56%	5%
$0 < \text{beta} < 1$	18	34,51%	82%
Beta > 1	3	13,35%	14%
total	22	21,3%	100 %

7. EMPIRICAL RESEARCH FINDINGS AND DISCUSSION

7.1 Tourism listed companies group

The market for these firms has been affected because of the crisis affects many countries but it is still potential.

The table 3 below shows us the research of 10 listed firms in this category during the above period. In general, the mean of equity beta and asset beta are 0,605 and 0,430, accordingly. These values are good numbers in term of showing a low un-diversifiable risk.

Beside, the variance of equity and asset beta of the sample group equals to **0,157** and **0,164** accordingly which are lower than the variance of the entire sample equity and asset beta of **0,265** and **0,185**. The effect from financial leverage makes these beta values fluctuate a little bit less than the sample beta mean.

Then, we may note that equity and asset beta mean values of 10 firms in this material category are the highest and 2nd highest among those of firms in the rest three groups. This might be considered as one characteristic of these industries. Among three industries, the systemic risk of tourism group companies is a bit higher than those of the rest groups.

Besides, the estimated equity beta mean is **0,605** and variance is **0,157**, which is not supporting our 2nd research hypothesis or issue that there would be a large disperse distribution in beta values estimated in this industry as well as our 3rd research hypothesis or issue that the mean of equity and asset beta values of these listed companies tend to impose a high risk level or beta should higher than ($>$) 1.

6	PDC	0,530	0,338	HOT as comparable	57,6%
7	PGT	1,098	1,021	TCT as comparable	11,6%
8	TCT	1,207	1,084		9,0%
9	TTR	0,171	0,143	MAS as comparable	13,8%
10	MAS	0,191	0,071	DLC as comparable	50,8%

Table 4 – Statistical results for Vietnam listed Tourism companies

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	1,207	1,084	0,1224
MIN	0,171	0,066	0,1052
MEAN	0,605	0,430	0,1748
VAR	0,1579	0,1648	- 0,0069

Note: Sample size : 10

7.2 Hotel listed companies group

In Viet Nam, because of the development of tourism industry, the market for hotel firms is definitely established and potential. However, the number of listed firms is still limited.

The Table 5 below shows us the equity and asset beta mean of 7 listed hotel companies, with values of 0,402 and 0,270, accordingly. This result, which means the risk is low and acceptable and the equity/asset beta values are lower than those of the tourism firms.

Please refer to Exhibit 2 for more information.

Table 5 – Statistical results for Vietnam listed Hotel companies

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	0,978	0,415	0,5625
MIN	0,207	0,148	0,0589
MEAN	0,402	0,270	0,1325
VAR	0,0671	0,0091	0,0580

Note: Sample size : 7

7.3 Entertainment listed companies group

Among 3 groups, this is the group with the lowest number of listed firms (sample size = 5) and with the average equity/asset beta values of about 0,608 and 0,423. Besides, the asset and equity beta var of about 0,131 and 0,125 are average values in 3 groups. The values of market risk generally are higher than that of hotel industries. The using of leverage has influenced these firms' risk, relatively, a bit less than the hotel groups.

Although max asset beta value is 1,167 that is higher than that of hotel industry, the equity and asset beta values are distributed in an acceptable range, from 0,156 to 1,167,

and from 0,050 to 0,940, indicating the effectiveness of using financial leverage.

Please refer to Exhibit 3 for more information.

Table 6 – Statistical results for Vietnam listed Entertainment companies

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	1,167	0,940	0,2265
MIN	0,156	0,050	0,1058
MEAN	0,608	0,423	0,1856
VAR	0,1315	0,1254	0,0061

Note: Sample size : 5

Comparison among 3 groups of tourism, hotel and entertainment companies

The below chart one (1) compares among the 3 groups, equity and asset beta values of the hotel group are the lowest (0,40 and 0,27 accordingly). With the assumption of debt beta is 0, financial leverage has helped many listed firms in these industries lower the un-diversifiable risk.

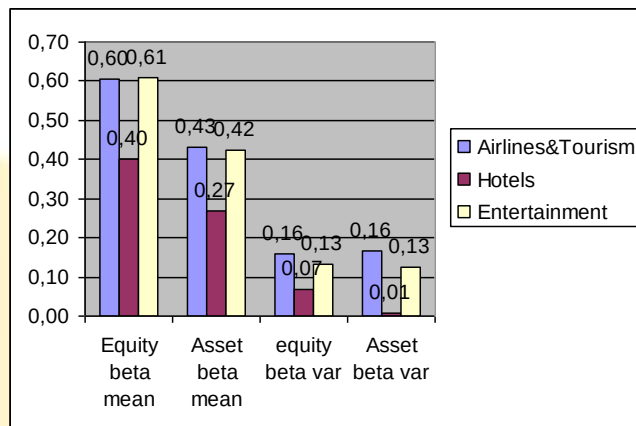
Additionally, we see the asset beta mean values of two (2) groups, tourism and entertainment, have not big difference and acceptable. Therefore, it also rejects our 3rd hypothesis that the mean values of equity/asset beta of all 3 groups impose higher risks.

Then, we recognize that during the crisis period, there is a gap b.t the above 2 groups with the hotel group, in term of beta mean. And the tourism industry has the highest values of equity and asset beta var (0,16 for both). These results could be characteristics of the whole industry.

Next, we can recognize from the chart that, the risk in the tourism and entertainment industries higher than the rest and higher than the sample risk while in number, it shows the same results for both these industries. So, it also rejects our 1st hypothesis.

Finally, if we compare beta values of 3 industries to those of construction group companies, we see the asset beta mean values in the hotel, entertainment and tourism industries are lower (see exhibit 4).

Chart 1 – Statistical results of three (3) groups of 22 listed VN tourism, hotel and entertainment firms during/after the crisis period 2007-2009



8. RISK ANALYSIS

Even though Viet Nam is a tourism destination because of safety and peace, tourists visiting the country still need a higher security and will not accept thieves or robbers. The connection among hotel and tourism companies is not tight enough and there are certain troubles in pricing. There are good aspects of transportation in traveling cities, but there is too much traffic in big cities. The traffic jams tend to fall into the same phenomenon as Bangkok city.

And the market for tourism is still potential although it is affected by the global crisis. Despite of difficulties in the crisis period such as high inflation and rising fuel prices, the number of visitors from overseas tends to increase because of the unemployment in many developed economies, as well as the increasing number of foreign businesses and businessman.

9. CONCLUSION AND POLICY SUGGESTION

Tourism (and Airline) industry

Although beta mean values are fine, this is the industry which has the lowest equity/asset beta mean values (0,47 and 0,25). During the crisis, this industry has lower market risk and beta values of firms in the group are less fluctuated than those of software and hardware groups.

After increasing rates period (see exhibit 1), financial services institutions, the government and central banks have certain proper policies to support businesses and internal investors.

Hotel industry

This is the industry which has the lowest values of equity and asset beta mean, 0,4 and 0,27, among 3 groups. In the same trend, it also has the lowest values of equity and asset beta var (0,07 and 0,01) and its values are quite small. The using of financial leverage can be a reason to reduce market risk, and the market risk is less dispersed.

Entertainment industry

This is the industry whose equity beta mean has the highest value of 0,61 while equity and asset beta var have

the 2nd highest values (0,13). It indicates a higher market risk concentration, compared to the tourism industry.

In general, our empirical findings state that they are not in favor of our 1st and 2nd and 3rd hypotheses or research issues.

In summary, though Viet Nam is an emerging market, the beta values estimated are at acceptable level with 77% firms in the research sample while just a few companies' beta values are risky (about 18% firms).

Additionally, it indicates the higher the using of financial leverage, the lower the beta values. In reality, there are 77% of computer and electrical firms (17 among 22 firms) which has $0 < \text{equity beta} < 1$ in this research sample and 82% with $0 < \text{asset beta} < 1$ (18 among 22 firms). If used effectively, using leverage can be good for risk management.

Furthermore, if we compare these data and values to those of construction and real estate firms in our previous research (see exhibit 4), we might see that in here, both the equity and asset beta mean can be lower while the impacts from the crisis happens on the overall market. So, the crisis might have less influence on the firms in this research.

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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EXHIBIT

Exhibit 1 – Interest rates, Inflation, GDP growth and macroeconomics factors
(source: Viet Nam commercial banks and economic statistical bureau)

Year	Basic rates	Lending rates	Deposit rates	Inflation	GDP	USD/VND rate
2012	n/a	12% - 15%	9%	6,81%	5,03%	20.828
2011	9%	18%-22%	13%-14%	18%	5,89%	20.670
2010	8%-9%	19%-20%	13%-14%	11,75% (Estimated at Dec 2010)	6,5% (expected)	19.495
2009	7%	9%-12%	9%-10%	6,88%	5,2%	17.000
2008	8,75%-14%	19%-21%	15%-16,5%	22%	6,23%	17.700
2007	8,25%	12%-15%	9%-11%	12,63%	8,44%	16.132
2006	8,25%			6,6%	8,17%	
2005	7,8%			8,4%		
Note	Approximately (2007: required reserves ratio at SBV is changed from 5% to 10%) (2009: special supporting interest rate is 4%)					

Exhibit 2 – Estimating beta results for Viet Nam Listed Hotel Companies (as of Dec 2009)
(Source: Viet Nam stock exchange data)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage
1	DLD	0,284	0,184	VIR as comparable	21,6%
2	DXL	0,297	0,214	SGH as comparable	21,3%
3	MTC	0,349	0,340	SGH as comparable	2,9%
4	OCH	0,978	0,415	RIC as comparable	20,5%
5	SGH	0,357	0,329		10,6%
6	VIR	0,342	0,256	MTC as comparable	2,6%
7	VNG	0,207	0,148	DLD as comparable	32,9%

Exhibit 3 – Estimating beta results for Viet Nam Listed Entertainment Companies (as of Dec 2009)
(Source: Viet Nam stock exchange data)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage
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1	DNT	0,529	0,404	DSN as comparable	20,7%
2	DSN	0,632	0,567	FDT as comparable	4,6%
3	GTT	0,156	0,050	RIC as comparable	89,6%
4	RIC	1,167	0,940		19,8%
5	VPL	0,557	0,151		77,3%

Exhibit 4 – Statistical results of three (3) groups of 103 listed construction firms during crisis period

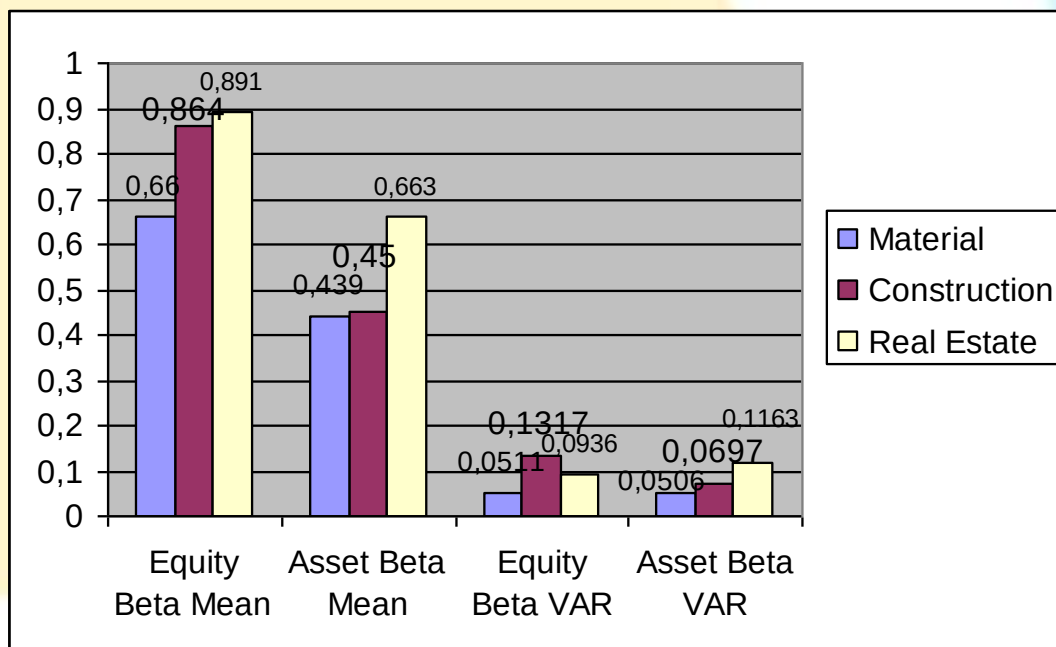


Exhibit 5- VNI Index and other stock market index during crisis 2006-2010

