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The Volatility of Market Risk in Viet Nam Listed Consumer Good, Wholesale and Retail Company Groups during and after the Financial Crisis

Dinh Tran Ngoc Huy

Banking University, HCMC – GSIM, Intl. University of Japan, Japan

E-mail: dtnhuy2010@gmail.com

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Abstract

The Viet Nam economy and especially, the stock exchange has been influenced by the global crisis during the period 2007-201. For specific industries, such as consumer good and wholesale/retail industries, the risk re-analysis and estimation for the listed firms in these industries become necessary.

First, by using quantitative and analytical methods to estimate asset and equity beta of three (3) groups of sub-trading listed companies in Viet Nam material, consumer good, wholesale and retail industries with a proper traditional model, we found out that the beta values, in general, for most companies are acceptable, excluding a few cases. There are 72% of listed firms with lower risk, among total 229 firms, whose beta values lower than (<) 1.

Second, through comparison of beta values among three (3) above industries, we recognized there are still 26% of total listed firms in the above group companies with beta values higher than (>) 1and have stock returns fluctuating more than the market index.

Finally, this paper generates some outcomes that could provides 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, Consumer good industry

JEL Classification: G010, G100, G390

1. Introduction

Risk evaluation can be estimated by using various research methods. Here, we perform a market risk analysis based on asset and equity beta of 229 listed companies in the category of materials, consumer goods, and wholesale/retail firms. This paper emphasizes on analyzing un-diversifiable risk in the above industry in one of emerging markets: Vietnam stock market during the financial crisis 2007-2011. After the previous published article on estimated beta for listed construction company groups, we will compare the estimated beta results of listed Viet Nam consumer goods companies to those in its supply chain activities such as materials, wholesale and retail companies to make a comparative analysis and risk evaluation after financial crisis impacts. No research, so far, has been done on the same topic.

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. 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 computer and electrical 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 wholesale/retail industries 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 the consumer goods and wholesale/retail industries.

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

3. Literature review

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. 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. 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. Then, Velez-Pareja (2011) referred to the lack of inadequate information on the stock market in emerging countries may undermine beta and relevant formulas. Marcin, Mariusz, Marek, and Karol (2012) mentioned that the reliability and fitness of calculated betas are relevant to the

valuation and investment of investors in merging markets. And Xiaowei Kang (2012) found that combining weighted or alternative beta strategies can gain significant traction in investment community and reduce risk.

Next, Pablo Fernandez (2013) also stated that industry betas are very unstable.

Finally, a portfolio beta can be calculated by taking market capitalization of each stock in the portfolio and then, average beta of each company security.

4. Conceptual theories

Determinants of Equity and Asset Beta

In financial markets, systematic risk relates to the overall risk of the whole market, is affected by some factors such as: interest rate fluctuations or economic crisis, can not be avoided by diversification, and is measured by a financial metric, beta which is also called systemic risk. Billio, Getmansky, Lo, and Pelizon (2010) defined systemic risk as any circumstance that threatens the stability of or public confidence in the financial system. Additionally, The European Central Bank (2010) mentioned it as a risk of financial instability with so widespread.

Several factors affecting beta include, but not limit to, the volatility of expected return of a single stock, or the volatility of the expected return of the entire stock market index.

Generally, beta values may vary from 0 to 2 with a few values < 0 in some specific cases and most values fall within a range from 0 to 1. In special cases, beta values can be higher than (>) 2, which means that the stock returns fall or rise doubling the values of the market returns. They are called higher-beta stocks and become riskier with the potential for higher return. And firms with beta > 1 will have the movement of stock price higher than the market benchmark.

Then, beta can affects the outcomes of valuation of listed firms under cost of capital and CAPM model.

5. Methodology

The period 2007-2011 is the time highlighting impacts from financial crisis. Therefore, we use the data from the stock exchange market in Viet Nam (HOSE and HNX) during the four or five years to estimate systemic risk results.

Firstly, we use the market stock price of 229 listed companies in the materials, consumer goods, wholesale/retail industries in Viet Nam stock exchange market to calculate the variability in monthly stock price in the same period; secondly, we estimate the equity beta for these three (3) listed groups of companies and make a comparison. Thirdly, from the equity beta values of these listed companies, 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 material, wholesale and retail firms used in the research of estimating beta:

Market	Listed Material companies (1)	Listed Consumer Good companies (2)	Listed Wholesale and Retail companies (3)	Note (4)
Viet Nam	55	70	3	Estimating by traditional method
	44	51	6	Estimating by comparative method
Total	**99**	**121**	**9**	**Total firms in groups: 229**

(Note: The above data is at the December 12th, 2012, from Viet Nam stock exchange)

6. General Data Analysis

There is a sample of 229 firms in 3 categories of industries: materials, consumer goods, wholesale and retail companies groups, and the mean of equity beta is valued at 0,715 while that of asset beta is about 0,352. These data are acceptable values during the crisis. Furthermore, the sample variance of asset beta is quite low (0,0896) which is a good number, while that of equity beta is a little bit higher (0,2476). This shows us that the effectiveness of using financial leverage has decreased the systemic risk for the whole industry.

However, the max and min values of beta are still somewhat large. Max equity beta value is up to 2,089 that is a little bit high, compared to max asset beta value is just 1,162 that is acceptable. Looking at the table 2 (below), we can see there is 26%, or 60 listed firms still have beta values larger than (>) 1, whereas there is 72% or 166 firms whose beta values lower than (<) 1 and higher than (>) 0.

Value of equity beta varies in a range from 2,089 (max) to -1,712 (min) and that of asset beta varies in a range from 1,162 (max) to -1,377 (min). Some companies still has larger risk exposure than most of the others. There are 3 listed companies whose betas are lower than (<) 0, which means the stock return moves in a opposite direction to the market index.

Next, Asset beta max value is 1,162 and min value is -1,377 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.

Lastly, we can see the relatively high difference between max equity and max asset beta values, which is about 0,9268, whereas there is a smaller difference between equity and asset beta variance values which is just 0,158; 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 . And there is not quite big effect from financial leverage

on the gap between company's beta variance values.

Table 1. Estimating beta results for Three (3) Viet Nam Listed Consumer Good, Wholesale and Retail Companies Groups (as of Dec 2012) *(source: Viet Nam stock exchange data)*

Statistic results	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**
MAX	2,089	1,162	0,9268
MIN	-1,712	-1,377	-0,3354
MEAN	0,715	0,352	0,3631
VAR	0,2476	0,0896	0,1580
Note: Sample size : 229			

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	3	68,41%	1%
0<beta<1	166	50,13%	72%
Beta > 1	60	51,03%	26%
total	229	51,9%	100%

7. Empirical Research Findings and Discussion

A-Material listed companies group

During the crisis 2007-2011, the market for these companies still exists, but has certain difficulties. The rising inflation and rising lending interest rates and higher opportunity costs makes input materials or production costs increasing. So, the market for these firms has been affected because selling prices increase.

The table 3 below shows us the research of 99 listed firms in this category during the above period. In general, the mean of equity beta and asset beta are 0,747 and 0,371, accordingly. These values are good numbers in term of indicating a low and acceptable un-diversifiable risk. The market demand for such products as steel, plastic,… is still high.

Besides, the variance of equity and asset beta of the sample group equals to **0,303 and 0,1246 accordingly** which are higher than the variance of the entire sample equity and asset beta of **0,2476** and **0,0896**. The effect from financial leverage makes these beta values fluctuate a little bit more from the sample beta mean.

We might note that equity beta values of 99 firms in this material category are a little higher than those of firms in the rest two (2) groups. This might be considered as one characteristic of these industries. Among three (3) industries, the systemic risk of material group companies is a bit higher than those of the rest two groups.

Besides, the estimated equity beta mean is **0,626** and sample variance is **0,1749**, 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.

Table 3. Estimating beta results for Viet Nam Listed Material Companies (as of Dec 2012) *(source: Viet Nam stock exchange data)*

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note
1	COM	0,604	0,473	
2	AAA	0,403	0,186	VID as comparable
3	ALV	0,890	0,618	MMC as comparable
4	AMC	0,781	0,450	CPC as comparable
5	APP	0,799	0,474	CPC as comparable
6	BGM	0,719	0,672	GTA as comparable
7	BKC	1,339	0,928	
8	BMC	1,433	1,036	
9	BMJ	-1,712	-1,377	
10	BRC	0,835	0,587	TPP as comparable
11	BVG	0,197	0,053	COM as comparable
12	BVN	0,531	0,163	BMC as comparable
13	CAP	0,543	0,205	CPC as comparable
14	CMI	0,875	0,384	KKC as comparable
15	CPC	1,211	0,937	
16	CTM	0,350	0,178	DTT as comparable
17	CZC	0,090	0,028	HVT as comparable
18	DAG	0,435	0,134	DHC as comparable
19	DHC	1,170	0,461	
20	DHM	0,432	0,240	HGM as comparable
21	DLG	0,055	0,014	SQC as comparable
22	DNS	0,076	0,025	BVG as comparable
23	DNY	0,063	0,018	SQC as comparable
24	DPM	0,785	0,686	
25	DPR	1,043	0,808	
26	DTL	0,027	0,011	DLG as comparable
27	DTT	0,605	0,517	
28	GER	0,746	0,419	MMC as comparable
29	GTA	0,757	0,569	
30	HAI	0,823	0,456	

31	HAP	1,280	1,018	
32	HGM	0,691	0,535	
33	HLA	1,833	0,339	
34	HLC	0,397	0,045	
35	HMC	1,227	0,348	
36	HPG	0,969	0,424	
37	HPP	0,627	0,268	KMT as comparable
38	HRC	0,971	0,750	
39	HSG	1,821	0,587	
40	HSI	0,748	0,154	
41	HVC	0,314	0,083	HRC as comparable
42	HVT	0,238	0,105	
43	KHB	0,550	0,486	DTT as comparable
44	KKC	1,717	0,860	
45	KMT	1,259	0,386	
46	KSA	0,859	0,530	KMT as comparable
47	KSB	1,103	0,705	
48	KSH	1,766	1,162	
49	KSS	2,089	1,049	
50	KTB	0,485	0,366	COM as comparable
51	LAS	0,478	0,185	DPR as comparable
52	LCM	0,542	0,531	KHB as comparable
53	MAX	0,066	0,044	CZC as comparable
54	MDC	0,546	0,126	
55	MDF	0,067	0,057	DNS as comparable
56	MHL	0,482	0,252	
57	MIC	1,417	0,902	
58	MIH	0,068	0,016	HVT as comparable
59	MIM	0,425	0,196	APP as comparable
60	MMC	1,183	0,990	
61	NBC	1,129	0,273	
62	NKG	0,007	0,002	DTL as comparable
63	NSP	0,811	0,719	ALV as comparable
64	NVC	0,353	0,050	
65	PHR	0,471	0,268	
66	PHT	0,912	0,477	
67	PLC	1,338	0,448	
68	POM	0,111	0,038	TIS as comparable
69	PTK	1,368	0,986	KSH as comparable
70	RDP	0,827	0,303	
71	SHA	0,810	0,314	KSH as comparable
72	SHI	1,550	0,476	

73	SMC	1,142	0,266	
74	SPC	0,062	0,015	VCA as comparable
75	SQC	0,174	0,148	
76	SSM	1,402	0,710	
77	TC6	0,678	0,127	
78	TCS	0,900	0,152	
79	TDN	0,587	0,127	
80	TDS	0,398	0,146	PHT as comparable
81	THT	0,927	0,294	
82	TIS	0,268	0,075	DPM as comparable
83	TLH	0,320	0,151	TDN as comparable
84	TNB	0,072	0,054	CZC as comparable
85	TNC	0,949	0,846	
86	TNT	1,085	0,781	SSM as comparable
87	TPC	1,062	0,531	
88	TPP	1,100	0,321	
89	TRC	1,185	0,917	
90	TSC	0,928	0,204	
91	TTF	1,576	0,392	
92	TVD	0,235	0,037	TRC as comparable
93	VCA	0,212	0,044	RDP as comparable
94	VDT	0,665	0,326	MMC as comparable
95	VFG	0,350	0,181	
96	VGS	1,907	0,820	
97	VID	0,757	0,272	
98	VIS	1,289	0,500	
99	VKP	0,877	0,131	
Noted:	*Raw data, not adjusted*			

Table 4. Statistical results for Vietnam listed Material companies

Statistic results	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**
MAX	2,089	1,162	0,9268
MIN	-1,712	-1,377	-0,3354
MEAN	0,747	0,371	0,3752
VAR	0,3030	0,1246	0,1785
Note: Sample size : 99			

B- Consumer Good listed companies group

In an emerging market such as Viet Nam, the market for consumer goods firms is definitely

established and potential because of the public need for such necessary vital products and though it may be affected by impacts from the financial crisis.

The Table 5 below shows us the equity and asset beta mean of 121 listed consumer good companies, with values of 0,694 and 0,336, accordingly. This result, which means the risk is low and acceptable although the equity beta value is higher than that of the wholesale/retail firms, but the asset beta mean is a little lower. This partly, maintains the investor confidence of business operation of the whole industry and partly, indicates the good effect from using financial leverage.

Besides, the variance of beta values among these 121 firms is normal, from 0,2142 to 0,0659 for equity and asset beta, accordingly, whereas there are some special cases with beta higher than (>) 2.

Please refer to Exhibit 2 for more information.

Table 5. Statistical results for Vietnam listed Consumer Good companies

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,056	1,151	0,9046
MIN	-0,648	-0,085	-0,5624
MEAN	0,694	0,336	0,3579
VAR	0,2142	0,0659	0,1484
Note: Sample size : 121			

C- Wholesale and Retail listed companies group

Among 3 groups, this is the group with the smallest number of listed firms (sample size = 9) and with the lowest equity beta value of about 0,653. However, the asset beta mean of about 0,352 is a little higher than those of consumer good and material industries. The using of leverage has influenced these firms' risk a bit more than the other two.

Different from firms in the other industries, 9 listed wholesale/retail firms has lower equity and asset beta var values, estimated at 0,1069 and 0,0307, which implies there is a more concentration in market risks among firms in this industry. The equity and asset beta values are distributed in a smaller range, from 0,391 to 1,273, and from 0,126 to 0,64 which are acceptable, compared to those of 2 previous groups, esp., asset beta values are quite low, indicating the effectiveness of using financial leverage.

Please refer to Exhibit 3 for more information.

Table 6. Statistical results for Vietnam listed Wholesale and Retail companies

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	1,273	0,640	0,6334
MIN	0,391	0,126	0,2657
MEAN	0,653	0,352	0,3002
VAR	0,1069	0,0307	0,0761
Note: Sample size : 9			

Comparison among 3 groups of consumer good, wholesale and retail companies

In the below chart, we can see among the 3 groups, equity beta value of the wholesale/retail group is the lowest (0,65) while asset beta value of the consumer good group is the lowest (0,34). Assuming 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 all 3 groups 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.

Next, we can recognize from the chart that, the risk in the wholesale/retail industries lower than that in the other 2 industries. So, it rejects our 1st hypothesis.

Last but not least, from the calculated results, variance of asset beta in the consumer good and wholesale/retail industries are low while that of equity beta in these industries. In number, equity beta var is from 0,11 -0,3 and asset beta var is from 0,03-0,12 which is not big. This also rejects our 2nd hypothesis.

Finally, if we compare beta values of three (3) above industries to those of computer and electrical group companies, we see the asset beta mean values in the consumer good and wholesale/retail industries are a little bit lower (see exhibit 4).

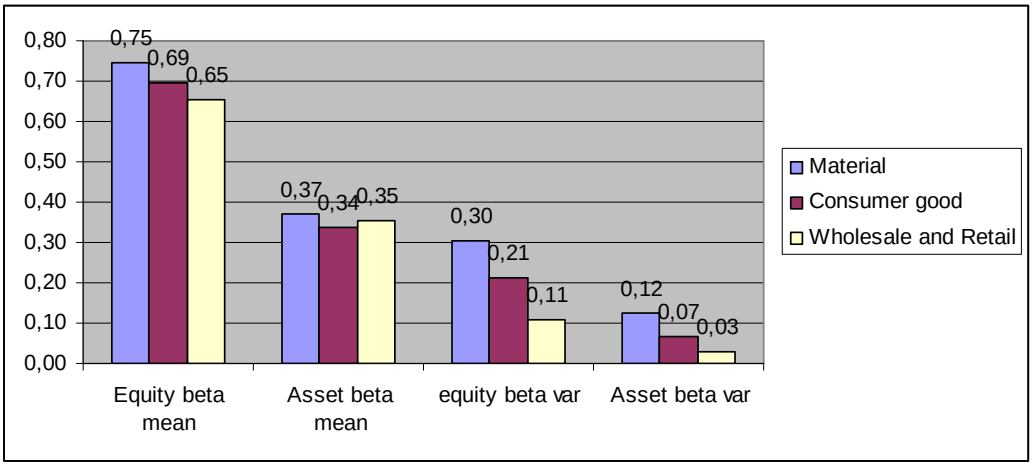

Chart 1. Statistical results of three (3) groups of 229 listed VN consumer good, wholesale and retail firms during/after the crisis period 2007-2011

8. Risk analysis

The consumer good and material industries have certain negative impacts from unexpected increasing price in the materials, selling prices and increasing lending interest rates which are affected by the high inflation of 23% in 2008; Although the inflation and interest rates decrease in later years but the prices can not decrease in a short time; so, they create risks in this period.

Besides, these firms have to face other kinds of risks from competition as there are more and more similar provided goods or products for consumers. These risks can affect the performance and net cash flow of these companies.

9. Conclusion and Policy suggestion

Material industry

Even though beta mean values are fine, this is the industry which has both the highest equity/asset beta mean values and the highest asset /equity beta var (see chart 1). During the crisis, this industry has higher market risk and beta values of firms in the group are more fluctuated.

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

Consumer good industry

Generally speaking, this is the industry which has middle values of equity beta mean and var, among 3 groups. The using of financial leverage can be a reason to reduce market risk, from 0,69 (equity beta mean) to 0,34 (asset beta mean). The market is established.

Wholesale/Retail industry

Through our comparative analysis on asset beta values, this is the industry which has the lower market risk exposure than that of the other two (2) above industries when we consider values of equity beta mean, or asset/equity beta var. Also the beta variance shows a small dispersion and smaller than, esp., material and consumer good firms.

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

In summary, though Viet Nam is an emerging market with imperfect financial system, the beta values estimated are at acceptable level with 72% firms in the research sample while just a few companies' beta values are risky (about 26% firms).

Additionally, it indicates the higher the using of financial leverage, the lower the beta values. In reality, there are 72% of computer and electrical firms (166 among 229 firms) which has 0<beta<1 in this research sample. 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, and to those of computer and electrical companies in our previous research (see exhibit 4 and 5), we might see that in here, the asset beta mean can be a little bit lower while the impacts from the crisis happens on the overall market. So, the leverage becomes more meaningful and the crisis might have less influence on the firms in the above 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 Consumer Good Companies (as of Dec 2012) *(source: Viet Nam stock exchange data)*

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note
1	AAM	0,650	0,569	
2	ABT	0,852	0,660	
3	ACL	1,115	0,383	
4	AGC	1,020	0,051	
5	AGD	0,545	0,201	
6	AGF	0,881	0,365	
7	AGM	0,444	0,148	ACL as comparable
8	ANV	1,108	0,809	
9	ASA	0,637	0,369	NPS as comparable
10	ASM	0,856	0,348	
11	ATA	1,573	0,341	
12	AVF	0,255	0,060	AGF as comparable
13	BAS	1,200	0,545	
14	BBC	1,236	0,895	ACL as comparable
15	BHS	0,957	0,435	
16	BLF	0,903	0,177	

17	CAD	1,384	-0,023	
18	CAN	0,505	0,234	
19	CFC	-0,150	-0,085	
20	CLC	0,579	0,202	
21	CLP	0,223	0,071	CLC as comparable
22	CMC	1,530	1,151	
23	CMX	0,091	0,015	AGM as comparable
24	CSM	1,803	0,553	
25	DBC	0,994	0,371	
26	DBF	0,147	0,076	CLP as comparable, F.S 2010
27	DCS	1,492	1,018	
28	DNF	0,441	0,105	DCS as comparable
29	DQC	1,089	0,479	
30	DRC	1,823	1,093	
31	EVE	0,079	0,066	CMX as comparable
32	FBA	0,493	0,355	ASA as comparable
33	FBT	0,477	0,156	
34	FDG	0,233	0,045	BHS as comparable
35	FMC	0,878	0,232	
36	GDT	0,562	0,418	
37	GFC	0,131	0,015	FMC as comparable
38	GGG	1,410	0,341	
39	GIL	0,783	0,415	
40	GLT	0,687	0,483	
41	GMC	1,033	0,434	
42	HAD	1,020	0,813	
43	HAT	0,827	0,659	NPS as comparable
44	HAX	1,115	0,410	
45	HDM	0,534	0,086	
46	HFX	-0,648	0,275	NPS as comparable
47	HHC	1,023	0,612	
48	HLG	0,762	0,226	
49	HNM	0,840	0,522	
50	HTL	0,734	0,482	HAD as comparable
51	HVG	0,626	0,225	
52	ICF	0,916	0,414	
53	IFS	0,889	0,375	CSM as comparable
54	KDC	0,477	0,337	HVG as comparable
55	KMR	0,670	0,474	FMC as comparable
56	KSC	0,420	0,340	FBA as comparable
57	KSD	0,265	0,106	GDT as comparable

58	KTS	0,387	0,241	GDT as comparable
59	LAF	1,248	0,558	
60	LIX	0,346	0,220	
61	LSS	1,327	0,917	
62	MCF	0,094	0,027	KSD as comparable
63	MEF	0,325	0,143	SJ1 as comparable
64	MPC	1,140	0,326	
65	MSN	1,503	0,841	
66	NET	0,357	0,246	FBT as comparable
67	NGC	0,687	0,113	
68	NHS	0,381	0,190	KMR as comparable
69	NPS	0,984	0,427	
70	NSC	0,910	0,578	
71	NST	0,887	0,264	
72	PID	0,316	0,220	KSC as comparable
73	PNJ	0,643	0,262	
74	PSL	0,259	0,193	MEF as comparable
75	PTB	0,122	0,032	NHS as comparable
76	PTG	0,391	0,194	NGC as comparable
77	RAL	0,883	0,306	
78	S33	0,267	0,068	ABT as comparable
79	SAF	0,888	0,524	
80	SAV	0,820	0,406	
81	SBT	0,855	0,716	
82	SCD	0,738	0,546	
83	SEC	0,738	0,295	
84	SGC	0,596	0,448	
85	SHV	0,199	0,043	SEC as comparable
86	SJ1	0,635	0,408	
87	SLS	0,179	0,077	NET as comparable
88	SMB	0,143	0,048	NET as comparable
89	SPD	0,174	0,033	SEC as comparable
90	SRC	2,056	0,753	
91	SSC	0,959	0,727	
92	SSF	0,157	0,067	PID as comparable
93	SVC	1,301	0,401	
94	TAC	1,076	0,393	
95	TCM	1,302	0,462	
96	TET	0,346	0,296	PTG as comparable
97	THB	0,976	0,608	
98	THV	0,301	0,056	SVC as comparable
99	TLG	0,632	0,326	TAC as comparable

100	TMT	0,388	0,200	
101	TMW	0,293	0,115	SJ1 as comparable
102	TNA	1,066	0,378	
103	TNG	1,135	0,310	
104	TRI	1,014	0,111	
105	TS4	1,592	0,614	
106	TTG	0,429	0,358	FBA as comparable
107	VCF	0,996	0,840	TNG as comparable
108	VDL	0,810	0,534	
109	VDN	0,034	0,003	TMW as comparable
110	VHC	1,103	0,584	
111	VHF	0,157	0,060	LIX as comparable
112	VIA	0,387	0,337	TTG as comparable
113	VKC	0,122	0,047	S33 as comparable
114	VKD	0,095	0,051	SSF as comparable
115	VLF	0,100	0,031	S33 as comparable
116	VNH	0,547	0,256	TRI as comparable
117	VNM	0,475	0,369	
118	VTF	0,517	0,231	VCF as comparable
119	VTI	0,023	0,003	VHF as comparable
120	VTL	0,620	0,211	
121	WSB	0,127	0,097	VHF as comparable

Exhibit 3. Estimating beta results for Viet Nam Listed Wholesale and Retail Companies (as of Dec 2012) *(source: Viet Nam stock exchange data)*

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note
1	HHS	0,728	0,479	PIT as comparable
2	IMT	0,399	0,386	TH1 as comparable
3	TH1	0,409	0,160	
4	BSC	0,420	0,342	FBA as comparable
5	PET	1,273	0,351	
6	BTT	0,829	0,640	PIT as comparable
7	CMV	0,391	0,126	PIT as comparable
8	PIT	1,012	0,514	
9	VT1	0,411	0,175	BTT as comparable

Exhibit 4. Statistical results of four (4) groups of 64 listed VN computer and electrical firms during/after the crisis period 2007-2011

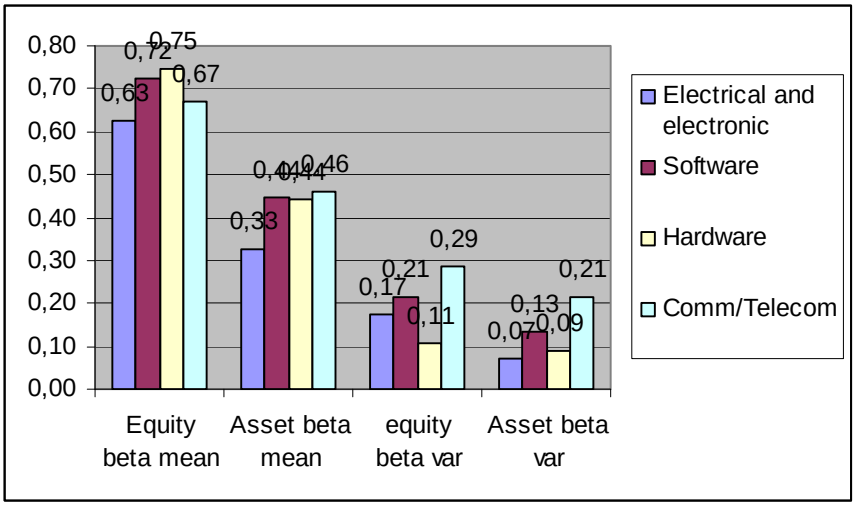

Exhibit 5. Statistical results of three (3) groups of 103 listed construction firms during crisis period

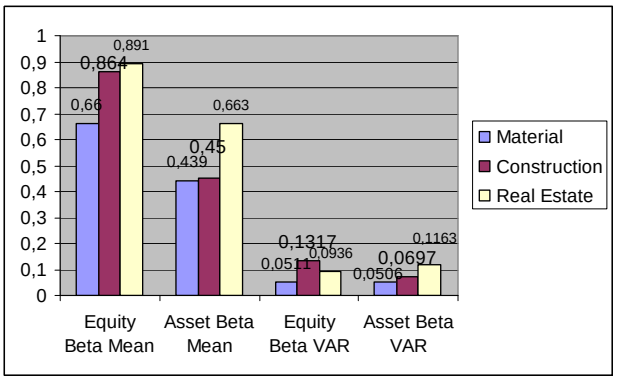

Exhibit6. VNI Index and other stock market index during crisis 2006-2010