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The risk level of Viet Nam software industry under the impacts of a two factors model during and after the global crisis 2007-2011

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Abstract
Using a two (2) factors model, this research paper analyzes the impacts of both financial leverage and the size of firms' competitors in the construction industry on the market risk level of 104 listed companies in this category.
This paper founds out that the risk dispersion level in this sample study could be minimized in case financial leverage decreases down to 20% and the competitor size doubles (measured by equity beta var of 0,253).
Beside, the empirical research findings show us that the risk level could be reduced when financial leverage increases up to 30% and the size of competitor doubles (measured by equity beta value of 0,934).
Last but not least, 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, construction industry
JEL Classification: G00, G3, G30

1. Introduction

The global crisis 2007-2009 has some certain impacts on the whole Viet nam economy, and specifically, the Viet Nam construction industry. However, together with financial system development and the economic growth, throughout many recent years, Viet Nam construction industry is considered as one of active economic sectors, which has some positive effects for the economy. Hence, this research paper analyzes market risk under a two factor model of these listed construction firms during this period.
This paper is organized as follow. The research issues and literature review will be covered in next sessions 2 and 3, for a short summary. Then, methodology and conceptual theories are introduced in session 4 and 5. Session 6 describes the data in empirical analysis. Session 7 presents empirical results and findings. Next, session 8 covers the analytical results. Then, session 9 presents analysis of risk. Lastly, session 10 will conclude with some policy suggestions. This paper also supports readers with references, exhibits and relevant web sources.

2. Research Issues

For the estimating of impacts of a two factor model: external financing and the size of competitor on beta for listed construction industry companies in Viet Nam stock exchange, research issues will be mentioned as following:
Issue 1: Whether the risk level of construction industry firms under the different changing scenarios of leverage and 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 leverage and the size of competitor estimated in the construction industry.

3. Literature review

Goldsmith (1969), Mc Kinnon (1973) and Shaw (1973) pointed a large and active theoretical and empirical literature has related dfinancial development to the economic growth process.
Black (1976) proposes the leverage effect to explain the negative correlation between equity returns and return volatilities. Diamond and Dybvig (1983) said banks can also help reduce liquidity risk and therefore enable long-term investment. Aghion et all (1999) stated debt instruments can reduce the amount of free cash available to firms and thus managerial slack.
Peter and Liuren (2007) mentions equity volatility increases proportionally with the level of financial leverage, the variation of which is dictated by managerial decisions on a company's capital structure based on economic conditions. And for a company with a fixed amount of debt, its financial leverage increases when the market price of its stock declines.
Reinhart and Rogoff (2009) pointed the history of finance is full of boom-and-bust cycles, bank failures, and systemic bank and currency crises. Adrian and Shin (2010) stated a company can also proactively vary its financial leverage based on variations on market conditions.
Then, Thorsten (2011) found that there reasing the likelihood of a financial crisis rather than reducing it. arginal rates in corporate and top personal income declined has stopped.
Last but not least, Ana and John (2013) Binomial Leverage – Volatility theorem provides a precise link between leverage and volatility. Chen et al (2013) supports suspicions that over-reliance on short-term funding and insufficient collateral compounded the effects of dangerously high leverage and resulted in undercapitalization and excessive risk exposure for Lehman Brothers.

4. Conceptual theories

The impact of financial leverage and the size of competitor on the economy and business

In a specific industry such as construction industry, on the one hand, using leverage with a decrease or increase in certain periods could affect tax obligations, revenues, profit after tax and technology innovation and compensation and jobs of the industry.

Next, in a competitive market, there raises an issue of choosing a competitive firm as a competitor. 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. So, a company needs a risk management policy to reduce risks coming from competitors, both current and potential.

5. Methodology

In this research, analytical research method is used, philosophical method is used and specially, scenario analysis method is used. Analytical data is from the situation of listed construction industry firms in VN stock exchange and applied current tax rate is 25%.

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

6. General Data Analysis

The research sample has total 104 listed firms in the construction industry market with the live data from the stock exchange.

Firstly, we estimate equity beta values of these firms and use financial leverage to estimate asset beta values of them. Secondly, we change the leverage from what reported in F.S 2011 to increasing 30% and reducing 20% to see the sensitivity of beta values. We found out that in 3 cases, asset beta mean values are estimated at 0,471, 0,389 and 0,539 which are negatively correlated with the leverage. Also in 3 scenarios, we find out equity beta mean values (0,602, 0,512 and 0,664) are also negatively correlated with the leverage. Leverage degree changes definitely has certain effects on asset and equity beta values.

7. Empirical Research Findings and Discussion

In the below section, data used are from total 104 listed construction 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	**FL up 30%**	**FL down 20%**
Competitor size as current	Scenario 1	Scenario 2	Scenario 3
Competitor size slightly smaller			
Competitor size double			

7.1 Scenario 1: current financial leverage (FL) as in financial reports 2011 and competitor size kept as current, slightly smaller and double

In this case, all beta values of 121 listed firms on VN consumer good industry market as following:

Table 2: Market risk of listed companies on VN consumer good industry market under a two factors model (case 1)

Order No.	**Company stock code**	**Competitor size as current**		**Competitor size twice smaller**		**Competitor size double**	
		Equity beta	**Asset beta (assume debt beta = 0)**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Equity beta**	**Asset beta (assume debt beta = 0)**
1	AAM	0,650	0,569	0,650	0,569	0,650	0,569
2	ABT	0,852	0,660	0,852	0,660	0,852	0,660
3	ACL	1,115	0,383	1,115	0,383	1,115	0,383
4	AGC	1,020	0,051	1,020	0,051	1,020	0,051
5	AGD	0,545	0,201	0,545	0,201	0,545	0,201
6	AGF	0,881	0,365	0,881	0,365	0,881	0,365
7	AGM	0,444	0,148	0,444	0,148	0,102	0,034
8	ANV	1,108	0,809	1,108	0,809	1,108	0,809
9	ASA	0,637	0,369	0,064	0,037	0,445	0,258
10	ASM	0,856	0,348	0,856	0,348	0,856	0,348
11	ATA	1,573	0,341	1,573	0,341	1,573	0,341
12	AVF	0,255	0,060	0,255	0,060	0,255	0,060
13	BAS	1,200	0,545	1,200	0,545	1,200	0,545
14	BBC	1,236	0,895	1,236	0,895	1,236	0,895
15	BHS	0,957	0,435	0,957	0,435	0,957	0,435
16	BLF	0,903	0,177	0,903	0,177	0,903	0,177
17	CAD	1,384	-0,023	1,384	-0,023	1,384	-0,023
18	CAN	0,505	0,234	0,505	0,234	0,505	0,234
19	CFC	-0,150	-0,085	-0,150	-0,085	-0,150	-0,085
20	CLC	0,579	0,202	0,579	0,202	0,579	0,202
21	CLP	0,223	0,071	0,014	0,004	0,369	0,118
22	CMC	1,530	1,151	1,530	1,151	1,530	1,151
23	CMX	0,091	0,015	0,254	0,041	0,181	0,029

24	CSM	1,803	0,553	1,803	0,553	1,803	0,553
25	DBC	0,994	0,371	0,994	0,371	0,994	0,371
26	DBF	0,147	0,076	0,734	0,379	0,159	0,082
27	DCS	1,492	1,018	1,492	1,018	1,492	1,018
28	DNF	0,441	0,105	0,141	0,034	0,100	0,024
29	DQC	1,089	0,479	1,089	0,479	1,089	0,479
30	DRC	1,823	1,093	1,823	1,093	1,823	1,093
31	EVE	0,079	0,066	0,114	0,095	0,766	0,639
32	FBA	0,493	0,355	0,049	0,035	0,687	0,495
33	FBT	0,477	0,156	0,477	0,156	0,477	0,156
34	FDG	0,233	0,045	0,108	0,021	0,186	0,036
35	FMC	0,878	0,232	0,878	0,232	0,878	0,232
36	GDT	0,562	0,418	0,562	0,418	0,562	0,418
37	GFC	0,131	0,015	0,131	0,015	0,131	0,015
38	GGG	1,410	0,341	1,410	0,341	1,410	0,341
39	GIL	0,783	0,415	0,783	0,415	0,783	0,415
40	GLT	0,687	0,483	0,687	0,483	0,687	0,483
41	GMC	1,033	0,434	1,033	0,434	1,033	0,434
42	HAD	1,020	0,813	1,020	0,813	1,020	0,813
43	HAT	0,827	0,659	-0,544	-0,434	0,577	0,460
44	HAX	1,115	0,410	1,115	0,410	1,115	0,410
45	HDM	0,534	0,086	0,534	0,086	0,534	0,086
46	HFX	-0,648	0,275	-0,648	0,275	-0,413	0,175
47	HHC	1,023	0,612	1,023	0,612	1,023	0,612
48	HLG	0,762	0,226	0,762	0,226	0,762	0,226
49	HNM	0,840	0,522	0,840	0,522	0,840	0,522
50	HTL	0,734	0,482	0,639	0,420	0,736	0,484
51	HVG	0,626	0,225	0,626	0,225	0,626	0,225
52	ICF	0,916	0,414	0,916	0,414	0,916	0,414
53	IFS	0,889	0,375	0,053	0,023	0,317	0,134
54	KDC	0,477	0,337	0,970	0,685	0,598	0,422
55	KMR	0,670	0,474	0,204	0,144	0,242	0,171
56	KSC	0,420	0,340	0,042	0,034	0,585	0,474
57	KSD	0,265	0,106	0,035	0,014	0,163	0,065
58	KTS	0,387	0,241	0,210	0,131	0,627	0,391
59	LAF	1,248	0,558	1,248	0,558	1,248	0,558
60	LIX	0,346	0,220	0,346	0,220	0,346	0,220
61	LSS	1,327	0,917	1,327	0,917	1,327	0,917
62	MCF	0,094	0,027	0,074	0,022	0,322	0,094
63	MEF	0,325	0,143	0,305	0,134	0,490	0,216
64	MPC	1,140	0,326	1,140	0,326	1,140	0,326
65	MSN	1,503	0,841	1,503	0,841	1,503	0,841
66	NET	0,357	0,246	0,552	0,381	0,253	0,174
67	NGC	0,687	0,113	0,687	0,113	0,687	0,113
68	NHS	0,381	0,190	0,036	0,018	0,503	0,250
69	NPS	0,984	0,427	0,984	0,427	0,984	0,427
70	NSC	0,910	0,578	0,910	0,578	0,910	0,578
71	NST	0,887	0,264	0,887	0,264	0,887	0,264
72	PID	0,316	0,220	0,014	0,010	0,449	0,313
73	PNJ	0,643	0,262	0,643	0,262	0,643	0,262
74	PSL	0,259	0,193	0,475	0,355	0,764	0,571
75	PTB	0,122	0,032	0,086	0,022	0,283	0,074
76	PTG	0,391	0,194	0,353	0,175	0,577	0,287
77	RAL	0,883	0,306	0,883	0,306	0,883	0,306
78	S33	0,267	0,068	0,267	0,068	0,338	0,086
79	SAF	0,888	0,524	0,888	0,524	0,888	0,524
80	SAV	0,820	0,406	0,820	0,406	0,820	0,406
81	SBT	0,855	0,716	0,855	0,716	0,855	0,716
82	SCD	0,738	0,546	0,738	0,546	0,738	0,546
83	SEC	0,738	0,295	0,738	0,295	0,738	0,295
84	SGC	0,596	0,448	0,596	0,448	0,596	0,448
85	SHV	0,199	0,043	0,199	0,043	0,238	0,051
86	SJ1	0,635	0,408	0,635	0,408	0,635	0,408
87	SLS	0,179	0,077	0,370	0,159	0,427	0,183
88	SMB	0,143	0,048	0,148	0,049	0,135	0,045

89	SPD	0,174	0,033	0,063	0,012	0,209	0,039
90	SRC	2,056	0,753	2,056	0,753	2,056	0,753
91	SSC	0,959	0,727	0,959	0,727	0,959	0,727
92	SSF	0,157	0,067	0,019	0,008	0,403	0,172
93	SVC	1,301	0,401	1,301	0,401	1,301	0,401
94	TAC	1,076	0,393	1,076	0,393	1,076	0,393
95	TCM	1,302	0,462	1,302	0,462	1,302	0,462
96	TET	0,346	0,296	0,550	0,469	0,899	0,767
97	THB	0,976	0,608	0,976	0,608	0,976	0,608
98	THV	0,301	0,056	0,302	0,056	0,252	0,047
99	TLG	0,632	0,326	0,666	0,344	0,517	0,267
100	TMT	0,388	0,200	0,388	0,200	0,388	0,200
101	TMW	0,293	0,115	0,374	0,147	0,473	0,185
102	TNA	1,066	0,378	1,066	0,378	1,066	0,378
103	TNG	1,135	0,310	1,135	0,310	1,135	0,310
104	TRI	1,014	0,111	1,014	0,111	1,014	0,111
105	TS4	1,592	0,614	1,592	0,614	1,592	0,614
106	TTG	0,429	0,358	0,098	0,082	0,426	0,356
107	VCF	0,996	0,840	0,978	0,825	0,773	0,651
108	VDL	0,810	0,534	0,810	0,534	0,810	0,534
109	VDN	0,034	0,003	0,094	0,008	0,016	0,001
110	VHC	1,103	0,584	1,103	0,584	1,103	0,584
111	VHF	0,157	0,060	0,157	0,060	0,207	0,080
112	VIA	0,387	0,337	0,113	0,098	0,384	0,335
113	VKC	0,122	0,047	0,072	0,028	0,208	0,080
114	VKD	0,095	0,051	0,038	0,021	0,490	0,262
115	VLF	0,100	0,031	0,024	0,007	0,069	0,021
116	VNH	0,547	0,256	0,051	0,024	0,491	0,230
117	VNM	0,475	0,369	0,475	0,369	0,475	0,369
118	VTF	0,517	0,231	0,507	0,227	0,457	0,204
119	VTI	0,023	0,003	0,023	0,003	0,067	0,008
120	VTL	0,620	0,211	0,620	0,211	0,620	0,211
121	WSB	0,127	0,097	0,281	0,214	0,371	0,283

(source: VN stock exchange 2012)

7.2. Scenario 2: financial leverage increases up to 30% and competitor size kept as current, slightly smaller and double

If leverage increases up to 30%, all beta values of total 121 listed firms on VN consumer good industry market as below:

Table 3: Market risks of listed consumer good industry firms under a two factors model (case 2)

Order No.	Company stock code	Competitor size as current		Competitor size slightly smaller		Competitor size double	
		Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)
1	AAM	0,650	0,544	0,650	0,544	0,650	0,544
2	ABT	0,852	0,603	0,852	0,603	0,852	0,603
3	ACL	1,115	0,164	1,115	0,164	1,115	0,164
4	AGC	1,020	-0,239	1,020	-0,239	1,020	-0,239
5	AGD	0,545	0,098	0,545	0,098	0,545	0,098
6	AGF	0,881	0,210	0,881	0,210	0,881	0,210
7	AGM	0,188	0,025	0,188	0,025	0,001	0,000
8	ANV	1,108	0,719	1,108	0,719	1,108	0,719
9	ASA	0,517	0,234	0,046	0,021	0,361	0,164
10	ASM	0,856	0,196	0,856	0,196	0,856	0,196
11	ATA	1,573	-0,029	1,573	-0,029	1,573	-0,029
12	AVF	0,006	0,000	0,006	0,000	0,006	0,000
13	BAS	1,200	0,348	1,200	0,348	1,200	0,348
14	BBC	1,236	0,793	1,236	0,793	1,236	0,793
15	BHS	0,957	0,279	0,957	0,279	0,957	0,279
16	BLF	0,903	-0,041	0,903	-0,041	0,903	-0,041
17	CAD	1,384	-0,445	1,384	-0,445	1,384	-0,445
18	CAN	0,505	0,152	0,505	0,152	0,505	0,152
19	CFC	-0,150	-0,066	-0,150	-0,066	-0,150	-0,066
20	CLC	0,579	0,089	0,579	0,089	0,579	0,089
21	CLP	0,086	0,010	0,000	0,000	0,142	0,016
22	CMC	1,530	1,038	1,530	1,038	1,530	1,038
23	CMX	-0,023	0,002	-0,151	0,013	-0,107	0,010

24	CSM	1,803	0,178	1,803	0,178	1,803	0,178
25	DBC	0,994	0,184	0,994	0,184	0,994	0,184
26	DBF	0,057	0,021	0,734	0,272	0,089	0,033
27	DCS	1,492	0,876	1,492	0,876	1,492	0,876
28	DNF	0,022	0,000	0,007	0,000	0,001	0,000
29	DQC	1,089	0,296	1,089	0,296	1,089	0,296
30	DRC	1,823	0,873	1,823	0,873	1,823	0,873
31	EVE	-0,019	-0,015	-0,152	-0,119	0,730	0,572
32	FBA	0,361	0,230	0,032	0,020	0,621	0,395
33	FBT	0,477	0,060	0,477	0,060	0,477	0,060
34	FDG	-0,061	0,003	-0,012	0,001	-0,049	0,002
35	FMC	0,878	0,038	0,878	0,038	0,878	0,038
36	GDT	0,562	0,375	0,562	0,375	0,562	0,375
37	GFC	-0,183	0,027	-0,183	0,027	-0,184	0,027
38	GGG	1,410	0,021	1,410	0,021	1,410	0,021
39	GIL	0,783	0,305	0,783	0,305	0,783	0,305
40	GLT	0,687	0,422	0,687	0,422	0,687	0,422
41	GMC	1,033	0,254	1,033	0,254	1,033	0,254
42	HAD	1,020	0,750	1,020	0,750	1,020	0,750
43	HAT	0,776	0,572	-1,230	-0,906	0,542	0,399
44	HAX	1,115	0,199	1,115	0,199	1,115	0,199
45	HDM	0,534	-0,049	0,534	-0,049	0,534	-0,049
46	HFX	-1,559	1,327	-1,559	1,327	-0,839	0,714
47	HHC	1,023	0,488	1,023	0,488	1,023	0,488
48	HLG	0,762	0,066	0,762	0,066	0,762	0,066
49	HNM	0,840	0,427	0,840	0,427	0,840	0,427
50	HTL	0,637	0,353	0,555	0,308	0,639	0,354
51	HVG	0,626	0,105	0,626	0,105	0,626	0,105
52	ICF	0,916	0,263	0,916	0,263	0,916	0,263
53	IFS	0,552	0,137	-0,004	-0,001	0,197	0,049
54	KDC	0,427	0,264	0,870	0,537	0,536	0,331
55	KMR	0,601	0,372	0,025	0,015	0,135	0,083
56	KSC	0,290	0,219	0,026	0,019	0,552	0,417
57	KSD	0,154	0,034	0,003	0,001	0,095	0,021
58	KTS	0,327	0,167	0,115	0,059	0,530	0,270
59	LAF	1,248	0,352	1,248	0,352	1,248	0,352
60	LIX	0,346	0,182	0,346	0,182	0,346	0,182
61	LSS	1,327	0,794	1,327	0,794	1,327	0,794
62	MCF	0,016	0,001	0,012	0,001	0,093	0,007
63	MEF	0,211	0,057	0,198	0,054	0,318	0,086
64	MPC	1,140	0,082	1,140	0,082	1,140	0,082
65	MSN	1,503	0,642	1,503	0,642	1,503	0,642
66	NET	0,317	0,189	0,490	0,293	0,030	0,018
67	NGC	0,687	-0,059	0,687	-0,059	0,687	-0,059
68	NHS	0,249	0,087	-0,001	0,000	0,367	0,127
69	NPS	0,984	0,260	0,984	0,260	0,984	0,260
70	NSC	0,910	0,478	0,910	0,478	0,910	0,478
71	NST	0,887	0,078	0,887	0,078	0,887	0,078
72	PID	0,195	0,118	0,004	0,003	0,400	0,242
73	PNJ	0,643	0,148	0,643	0,148	0,643	0,148
74	PSL	0,154	0,103	0,435	0,292	0,701	0,470
75	PTB	0,013	0,001	0,002	0,000	0,046	0,002
76	PTG	0,284	0,098	0,257	0,089	0,420	0,145
77	RAL	0,883	0,133	0,883	0,133	0,883	0,133
78	S33	0,036	0,001	0,036	0,001	0,045	0,001
79	SAF	0,888	0,414	0,888	0,414	0,888	0,414
80	SAV	0,820	0,282	0,820	0,282	0,820	0,282
81	SBT	0,855	0,674	0,855	0,674	0,855	0,674
82	SCD	0,738	0,488	0,738	0,488	0,738	0,488
83	SEC	0,738	0,162	0,738	0,162	0,738	0,162
84	SGC	0,596	0,404	0,596	0,404	0,596	0,404
85	SHV	-0,019	0,000	-0,019	0,000	-0,022	0,000
86	SJ1	0,635	0,339	0,635	0,339	0,635	0,339
87	SLS	0,100	0,026	0,234	0,061	0,270	0,070
88	SMB	0,054	0,007	0,040	0,005	0,008	0,001

89	SPD	-0,056	0,003	-0,003	0,000	-0,066	0,004
90	SRC	2,056	0,363	2,056	0,363	2,056	0,363
91	SSC	0,959	0,658	0,959	0,658	0,959	0,658
92	SSF	0,061	0,015	0,007	0,002	0,253	0,064
93	SVC	1,301	0,131	1,301	0,131	1,301	0,131
94	TAC	1,076	0,189	1,076	0,189	1,076	0,189
95	TCM	1,302	0,210	1,302	0,210	1,302	0,210
96	TET	0,242	0,196	0,528	0,427	0,862	0,698
97	THB	0,976	0,498	0,976	0,498	0,976	0,498
98	THV	-0,106	0,006	-0,106	0,006	-0,089	0,005
99	TLG	0,473	0,175	0,499	0,185	0,387	0,144
100	TMT	0,388	0,144	0,388	0,144	0,388	0,144
101	TMW	0,166	0,035	0,211	0,044	0,267	0,056
102	TNA	1,066	0,172	1,066	0,172	1,066	0,172
103	TNG	1,135	0,062	1,135	0,062	1,135	0,062
104	TRI	1,014	-0,159	1,014	-0,159	1,014	-0,159
105	TS4	1,592	0,321	1,592	0,321	1,592	0,321
106	TTG	0,300	0,235	0,088	0,069	0,312	0,245
107	VCF	0,952	0,758	0,935	0,744	0,739	0,588
108	VDL	0,810	0,451	0,810	0,451	0,810	0,451
109	VDN	-0,043	0,008	-0,211	0,039	-0,002	0,000
110	VHC	1,103	0,428	1,103	0,428	1,103	0,428
111	VHF	0,086	0,017	0,086	0,017	0,075	0,015
112	VIA	0,261	0,217	0,106	0,088	0,272	0,226
113	VKC	0,009	0,002	0,022	0,004	0,076	0,015
114	VKD	0,028	0,011	0,021	0,008	0,377	0,149
115	VLF	0,005	0,000	0,000	0,000	-0,006	-0,001
116	VNH	0,378	0,116	-0,079	-0,024	0,339	0,104
117	VNM	0,475	0,337	0,475	0,337	0,475	0,337
118	VTF	0,326	0,092	0,320	0,090	0,302	0,085
119	VTI	-0,018	0,003	-0,018	0,003	-0,064	0,010
120	VTL	0,620	0,088	0,620	0,088	0,620	0,088
121	WSB	0,065	0,045	0,260	0,180	0,226	0,157

(source: VN stock exchange 2012)

7.3. Scenario 3: leverage decreases down to 20% and competitor size kept as current, slightly smaller and double

If leverage decreases down to 20%, all beta values of total 121 listed firms on the consumer good industry market in VN as following:

Table 4: Market risk of listed consumer good industry firms under a two factors model (case 3)

Order No.	Company stock code	Competitor size as current		Competitor size slightly smaller		Competitor size double	
		Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)
1	AAM	0,650	0,585	0,650	0,585	0,650	0,585
2	ABT	0,852	0,699	0,852	0,699	0,852	0,699
3	ACL	1,115	0,530	1,115	0,530	1,115	0,530
4	AGC	1,020	0,245	1,020	0,245	1,020	0,245
5	AGD	0,545	0,270	0,545	0,270	0,545	0,270
6	AGF	0,881	0,468	0,881	0,468	0,881	0,468
7	AGM	0,599	0,279	0,599	0,279	0,217	0,101
8	ANV	1,108	0,869	1,108	0,869	1,108	0,869
9	ASA	0,713	0,473	0,076	0,051	0,498	0,331
10	ASM	0,856	0,450	0,856	0,450	0,856	0,450
11	ATA	1,573	0,587	1,573	0,587	1,573	0,587
12	AVF	0,403	0,156	0,403	0,156	0,403	0,156
13	BAS	1,200	0,676	1,200	0,676	1,200	0,676
14	BBC	1,236	0,964	1,236	0,964	1,236	0,964
15	BHS	0,957	0,540	0,957	0,540	0,957	0,540
16	BLF	0,903	0,322	0,903	0,322	0,903	0,322
17	CAD	1,384	0,258	1,384	0,258	1,384	0,258
18	CAN	0,505	0,288	0,505	0,288	0,505	0,288
19	CFC	-0,150	-0,098	-0,150	-0,098	-0,150	-0,098
20	CLC	0,579	0,277	0,579	0,277	0,579	0,277
21	CLP	0,306	0,139	0,059	0,027	0,505	0,230

22	CMC	1,530	1,227	1,530	1,227	1,530	1,227
23	CMX	0,238	0,078	0,490	0,162	0,349	0,115
24	CSM	1,803	0,803	1,803	0,803	1,803	0,803
25	DBC	0,994	0,496	0,994	0,496	0,994	0,496
26	DBF	0,201	0,123	0,734	0,450	0,209	0,128
27	DCS	1,492	1,113	1,492	1,113	1,492	1,113
28	DNF	0,689	0,270	0,220	0,086	0,236	0,092
29	DQC	1,089	0,601	1,089	0,601	1,089	0,601
30	DRC	1,823	1,239	1,823	1,239	1,823	1,239
31	EVE	0,213	0,185	0,280	0,243	0,790	0,685
32	FBA	0,586	0,454	0,063	0,049	0,730	0,566
33	FBT	0,477	0,220	0,477	0,220	0,477	0,220
34	FDG	0,406	0,144	0,254	0,090	0,323	0,115
35	FMC	0,878	0,361	0,878	0,361	0,878	0,361
36	GDT	0,562	0,447	0,562	0,447	0,562	0,447
37	GFC	0,312	0,091	0,312	0,091	0,313	0,092
38	GGG	1,410	0,555	1,410	0,555	1,410	0,555
39	GIL	0,783	0,489	0,783	0,489	0,783	0,489
40	GLT	0,687	0,524	0,687	0,524	0,687	0,524
41	GMC	1,033	0,554	1,033	0,554	1,033	0,554
42	HAD	1,020	0,854	1,020	0,854	1,020	0,854
43	HAT	0,859	0,720	-0,167	-0,140	0,600	0,503
44	HAX	1,115	0,551	1,115	0,551	1,115	0,551
45	HDM	0,534	0,176	0,534	0,176	0,534	0,176
46	HFX	-0,191	0,027	-0,191	0,027	-0,134	0,019
47	HHC	1,023	0,694	1,023	0,694	1,023	0,694
48	HLG	0,762	0,334	0,762	0,334	0,762	0,334
49	HNM	0,840	0,586	0,840	0,586	0,840	0,586
50	HTL	0,795	0,577	0,693	0,503	0,797	0,579
51	HVG	0,626	0,305	0,626	0,305	0,626	0,305
52	ICF	0,916	0,514	0,916	0,514	0,916	0,514
53	IFS	1,096	0,589	0,154	0,083	0,391	0,210
54	KDC	0,509	0,389	1,035	0,791	0,638	0,488
55	KMR	0,714	0,547	0,329	0,252	0,318	0,243
56	KSC	0,517	0,439	0,055	0,047	0,606	0,515
57	KSD	0,332	0,173	0,084	0,043	0,205	0,107
58	KTS	0,424	0,297	0,280	0,195	0,688	0,481
59	LAF	1,248	0,696	1,248	0,696	1,248	0,696
60	LIX	0,346	0,245	0,346	0,245	0,346	0,245
61	LSS	1,327	0,999	1,327	0,999	1,327	0,999
62	MCF	0,168	0,073	0,141	0,061	0,459	0,199
63	MEF	0,394	0,218	0,370	0,204	0,596	0,329
64	MPC	1,140	0,489	1,140	0,489	1,140	0,489
65	MSN	1,503	0,973	1,503	0,973	1,503	0,973
66	NET	0,382	0,287	0,592	0,445	0,410	0,308
67	NGC	0,687	0,228	0,687	0,228	0,687	0,228
68	NHS	0,475	0,284	0,113	0,067	0,587	0,352
69	NPS	0,984	0,539	0,984	0,539	0,984	0,539
70	NSC	0,910	0,644	0,910	0,644	0,910	0,644
71	NST	0,887	0,389	0,887	0,389	0,887	0,389
72	PID	0,417	0,315	0,026	0,020	0,480	0,364
73	PNJ	0,643	0,338	0,643	0,338	0,643	0,338
74	PSL	0,331	0,264	0,500	0,399	0,805	0,642
75	PTB	0,228	0,093	0,194	0,079	0,424	0,173
76	PTG	0,457	0,273	0,412	0,246	0,674	0,403
77	RAL	0,883	0,422	0,883	0,422	0,883	0,422
78	S33	0,405	0,164	0,405	0,164	0,511	0,207
79	SAF	0,888	0,597	0,888	0,597	0,888	0,597
80	SAV	0,820	0,489	0,820	0,489	0,820	0,489
81	SBT	0,855	0,744	0,855	0,744	0,855	0,744
82	SCD	0,738	0,584	0,738	0,584	0,738	0,584
83	SEC	0,738	0,384	0,738	0,384	0,738	0,384
84	SGC	0,596	0,478	0,596	0,478	0,596	0,478
85	SHV	0,327	0,122	0,327	0,122	0,391	0,146
86	SJ1	0,635	0,453	0,635	0,453	0,635	0,453

87	SLS	0,235	0,128	0,453	0,246	0,523	0,284
88	SMB	0,206	0,096	0,244	0,114	0,275	0,128
89	SPD	0,309	0,108	0,169	0,059	0,370	0,130
90	SRC	2,056	1,014	2,056	1,014	2,056	1,014
91	SSC	0,959	0,773	0,959	0,773	0,959	0,773
92	SSF	0,254	0,138	0,032	0,017	0,495	0,268
93	SVC	1,301	0,581	1,301	0,581	1,301	0,581
94	TAC	1,076	0,530	1,076	0,530	1,076	0,530
95	TCM	1,302	0,630	1,302	0,630	1,302	0,630
96	TET	0,415	0,367	0,564	0,498	0,922	0,815
97	THB	0,976	0,682	0,976	0,682	0,976	0,682
98	THV	0,540	0,188	0,541	0,188	0,453	0,157
99	TLG	0,730	0,447	0,770	0,472	0,597	0,366
100	TMT	0,388	0,238	0,388	0,238	0,388	0,238
101	TMW	0,371	0,190	0,474	0,243	0,598	0,307
102	TNA	1,066	0,516	1,066	0,516	1,066	0,516
103	TNG	1,135	0,475	1,135	0,475	1,135	0,475
104	TRI	1,014	0,292	1,014	0,292	1,014	0,292
105	TS4	1,592	0,810	1,592	0,810	1,592	0,810
106	TTG	0,526	0,456	0,106	0,092	0,503	0,436
107	VCF	1,025	0,896	1,006	0,880	0,795	0,695
108	VDL	0,810	0,589	0,810	0,589	0,810	0,589
109	VDN	0,123	0,034	0,269	0,073	0,091	0,025
110	VHC	1,103	0,688	1,103	0,688	1,103	0,688
111	VHF	0,200	0,102	0,200	0,102	0,319	0,162
112	VIA	0,484	0,434	0,118	0,106	0,463	0,416
113	VKC	0,235	0,119	0,116	0,059	0,320	0,163
114	VKD	0,176	0,110	0,053	0,033	0,560	0,352
115	VLF	0,210	0,094	0,088	0,039	0,168	0,075
116	VNH	0,652	0,374	0,173	0,099	0,585	0,336
117	VNM	0,475	0,390	0,475	0,390	0,475	0,390
118	VTF	0,642	0,358	0,631	0,352	0,552	0,308
119	VTI	0,071	0,021	0,071	0,021	0,195	0,057
120	VTL	0,620	0,293	0,620	0,293	0,620	0,293
121	WSB	0,170	0,138	0,294	0,239	0,470	0,381

(source: VN stock exchange 2012)

All three above tables and data show that values of equity and asset beta in the case of increasing leverage up to 30% or decreasing leverage degree down to 20% have certain fluctuation.

8. Comparing statistical results in 3 scenarios of changing leverage

Table 5: Statistical results (FL in case 1)

	Competitor size as current			**Competitor size slightly smaller**			**Competitor size double**		
Statistic results	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**
MAX	2,056	1,151	0,905	2,056	1,151	0,905	2,056	1,151	0,905
MIN	-0,648	-0,085	-0,562	-0,648	-0,434	-0,214	-0,413	-0,085	-0,327
MEAN	0,694	0,336	0,358	0,652	0,311	0,341	0,716	0,349	0,366
VAR	0,2142	0,0659	0,148	0,2556	0,0772	0,178	0,1931	0,0643	0,129
Note: Sample size : 121 firms									

(source: VN stock exchange 2012)

Table 6: Statistical results (FL in case 2)

	Competitor size as current			**Competitor size slightly smaller**			**Competitor size double**		
Statistic results	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**
MAX	2,056	1,327	0,729	2,056	1,327	0,729	2,056	1,038	1,018
MIN	-1,559	-0,445	-1,114	-1,559	-0,906	-0,652	-0,839	-0,445	-0,394
MEAN	0,630	0,222	0,408	0,595	0,203	0,392	0,655	0,230	0,424
VAR	0,2886	0,0722	0,216	0,3398	0,0854	0,254	0,2543	0,0649	0,189
Note: Sample size : 121 firms									

(source: VN stock exchange 2012)

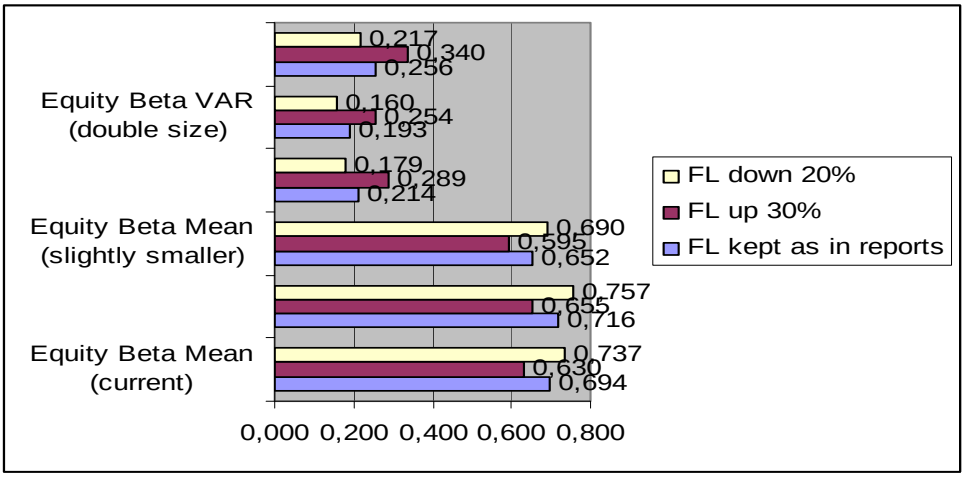
Table 7: Statistical results (FL in case 3) *(source: VN stock exchange 2012)*

	Competitor size as current			Competitor size slightly smaller			Competitor size double		
Statistic results	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**
MAX	2,056	1,239	0,817	2,056	1,239	0,817	2,056	1,239	0,817
MIN	-0,191	-0,098	-0,093	-0,191	-0,140	-0,051	-0,150	-0,098	-0,052
MEAN	0,737	0,428	0,309	0,690	0,397	0,294	0,757	0,442	0,315
VAR	0,1795	0,0719	0,108	0,2172	0,0850	0,132	0,1601	0,0676	0,092
Note: Sample size : 121 firms									

Based on the calculated results, we find out:

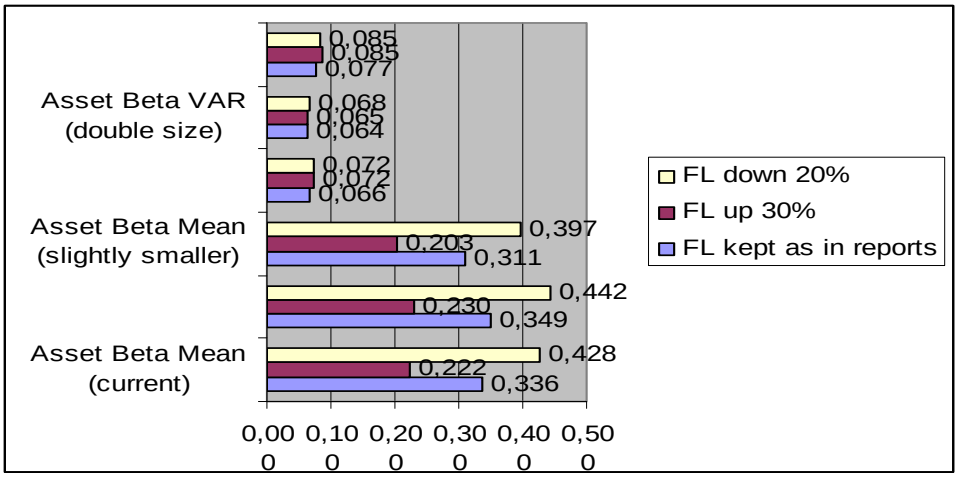
First of all, Equity beta mean values in all 3 scenarios are acceptable (< 1,1) and asset beta mean values are also small (< 0,4). In the case of reported leverage in 2011, equity and asset beta min values increase when the competitor size changed from current to slightly smaller and to double size (0,077 and 0,008). If leverage increases to 30%, equity and asset beta min values are the highest when competitor size kept as current (-0,366 and -0,031). Finally, when leverage decreases down to 20%, equity and asset beta min values reach maximum values in case compmetitor size doubles (0,156 and 0,023).

The below chart 1 shows us : when leverage degree decreases down to 20%, average equity beta values increase slightly (1,046 and 1,041) compared to those at the initial reported leverage (0,944). Then, when leverage degree increases up to 30%, average equity beta decreases little more (to 0,934 and 0,947). However, in case the competitor size doubles, the risk level of the selected firm is higher. Next, the fluctuation of equity beta value (0,150) in the case of 30% leverage up is higher than (>) the results in the rest 2 leverage cases. And we could note that in the case competitor size doubles, the risk is more dispersed. Last but not least, from chart 2, under financial leverage, in case competitor size doubles, asset beta mean (0,312) is lower than the rest 2 cases whereas the risk dispersion is almost the same (0,069).



(source: VN stock exchange 2012)

Chart 1: Comparing statistical results of equity beta var and mean in three (3) scenarios of changing FL and competitor size *x*



(source: VN stock exchange 2012)

Chart 2: Comparing statistical results of asset beta var and mean in three (3) scenarios of changing FL and competitor size

9. Risk analysis

During and after financial crises such as the 2007-2009 crisis, there raises concerns about the role of financial leverage of many countries, in both developed and developing markets. On the one hand, lending programs and packages might support the business sectors. On the other hand, it might create more risks for the business and economy.

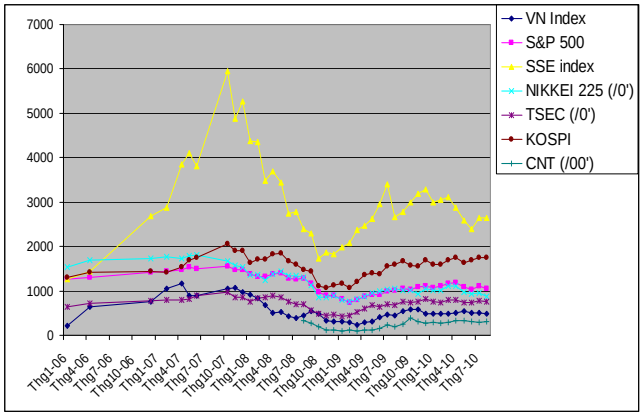
10. Conclusion and Policy Suggestion

In general, the government has to consider the impacts on the mobility of capital in the markets when it changes the macro policies and the legal system and regulation for developing the construction market. The Ministry of Finance continues to increase the effectiveness of fiscal policies and tax policies which are needed to combine with other macro policies at the same time. The State Bank of Viet Nam continues to increase the effectiveness of capital providing channels for construction companies as we could note that in this study when leverage is going to increase up to 30%, the risk level decreases much (asset beta mean values are the smallest: 0,293 and 0,289), and the asset beta var values are the same in changing competitor size cases, compared to the case it is going to decrease down to 20%.

Furthermore, the entire efforts among many different government bodies need to be coordinated.

Finally, this paper suggests implications for further research and policy suggestion for the Viet Nam government and relevant organizations, economists and investors from current market conditions.

Exhibit



(source: global stock exchange 2012)

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

Exhibit 2: Inflation, GDP growth and macroeconomics factors

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		

(source: Viet Nam commercial banks and economic statistical bureau)

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