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The risk level of Viet Nam construction industry under financial leverage during and after the global crisis 2009-2011

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Abstract
This paperwork evaluates the impacts of external financing on market risk for the listed firms in the Viet nam construction industry, esp. during and after the financial crisis 2009-2011.
First of all, by using quantitative and analytical methods to estimate asset and equity beta of total 104 listed companies in Viet Nam construction industry with a proper traditional model, we found out that the beta values, in general, for many institutions are acceptable.
Second, under 3 different scenarios of changing leverage (in 2011 financial reports, 30% up and 20% down), we recognized that the risk level, measured by equity and asset beta mean, decreases when leverage increases to 30% but increases more if leverage decreases down to 20%.
Third, by changing leverage in 3 scenarios, we recognized the dispersion of risk level, measured by equity beta var, increases from 0,301 to 0,408 if the leverage increases to 30% whereas decreases to 0,252 if leverage decreases to 20%. But the dispersion measured by asset beta var decreases to 0,078 (leverage down 20%), showing leverage impact.
Finally, this paper provides some outcomes that could provide companies and government more evidence in establishing their policies in governance.

Keywords: equity beta, financial structure, financial crisis, risk, external financing, construction industry

Introduction

Financial leverage has certain effects on the risk level of listed companies on stock exchange. Flifel (2012) stated today, the assumption of efficient capital markets is very controversial, especially in these times of crisis, and is challenged by research showing that the pricing was distorted by detection of long memory. Gabrijelcic *et al.* (2013) find a significant negative effect of leverage on firm performance. And firms that had some foreign debt financing performed better than their counterparts.

Measuring beta is a popular method used in many models such as the famous CAPM model. The Viet Nam construction industry is selected for the research because until now there is no research published with the same scope and because Viet Nam construction industry is considered as one of active economic sectors in local financial markets, which has some positive effects for the economy. The purpose of this study, therefore, to find out how much market risk for this industry in changing contexts of financial leverage.

We mention some issues on the estimating of impacts of external financing on beta for listed construction industry companies in Viet Nam stock exchange as following:

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

Issue 2: Whether the disperse distribution of beta values become large in the different changing scenarios of leverage estimated in the construction industry.

Beside, we also propose some hypotheses for the above issues:

Hypothesis 1: because using leverage may strongly affect business returns, changing leverage scenarios could strongly affect firm risk.

Hypothesis 2: as external financing is vital for the business development, there will be large disperse in beta or risk values estimated.

This paper is organized as follow. The research issues and literature review and methodology will be covered in next sessions 2 and 3, for a short summary. Next session presents empirical results and findings. The last session shows discussion and will conclude with some policy suggestions. This paper also supports readers with references, exhibits and relevant web sources.

Theoretical background

A. Conceptual theories

The impact of financial leverage on the economy

Financial development and economic growth are positively interrelated. The interaction between these two (2) fields can be considered as a circle, in which good financial development causes economic growth and vice versa. A sound and effective financial system has positive effect on the development and growth of the economy. Financial institutions and markets can enable corporations to solve liquidity needs and enhance long-term investments. This system include many channels for a firm who wants to use financial leverage or FL, which refers to debt or to the borrowing of funds to finance a company's assets.

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.

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.

B. Methodology

For calculating systemic risk results and leverage impacts, in this study, we use the live data during the crisis period 2009-2011 from the stock exchange market in Viet Nam (HOSE and HNX and UPCOM).

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

Generally speaking, quantitative method is mainly used in this study whith a note that risk measure asset beta is mainly derive from equity beta and financial leverage.

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

C. Previous Studies

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.

Dimitrov (2006) documented a significantly negative association between changes in financial leverage and contemporaneous risk-adjusted stock returns. Aydemir *et al.* (2006) identified in an economy with more realistic variation in interest rates and the price of risk, there is significant variation in stock return volatility at the market and firm level. In such an economy, financial leverage has little effect on the dynamics of stock return volatility at the market level. Financial leverage contributes more to the dynamics of stock return volatility for a small firm. Then, Maia (2010) stated the main determinants of firms' capital structures are related to firms' sensitivities to these systematic sources of risk and they affect asymmetrically low and high leverage firms. And temporary shocks are relatively more important for low leverage firms, and that financial distress risk seems to be captured by the sensitivity of firms' cash flow innovations to market discount rate news.

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. 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.

Finally, financial leverage can be considered as one among many factors that affect business risk of construction firms.

Empirical analysis

A. 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 0,306, 0,092 and 0,465 which are sensitive and negatively correlated with the leverage. Also in 3 scenarios, we find out equity beta mean values (1,013, 0,945 and 1,055) are negatively correlated with the leverage. Leverage degree changes definitely has certain effects on asset and equity beta values.

B. 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). Then, two (2) FL scenarios are changed up to 30% and down to 20%, compared to the current FL degree.

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

B.1 Scenario 1: current financial leverage (FL) as in financial reports 2011

In this case, all beta values of 104 listed firms on VN construction industry market as following:

Table 1: Market risk of listed companies on VN construction industry market

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage
1	**CNT**	1,242	0,157		90,8%
2	**DCC**	1,402	0,624		57,7%
3	**DIG**	1,772	0,964		68,6%
4	**FPC**	0,484	0,229		66,9%
5	**HBC**	1,113	0,299		79,1%
6	**L10**	1,026	0,218		72,2%
7	**MCG**	1,595	0,543		88,8%
8	**VNE**	1,700	0,606		54,6%

9	**L35**	0,295	0,095	SKS as comparable	64,2%
10	**LM3**	0,337	0,040		99,8%
11	**LO5**	0,745	0,179		64,7%
12	**L62**	0,859	0,242		79,9%
13	**L61**	0,867	0,265		78,9%
14	**L43**	0,745	0,228		79,8%
15	**L44**	1,277	0,252		76,0%
16	**B82**	0,873	0,149		71,8%
17	**BCE**	0,891	0,480	SIC as comparable	96,0%
18	**C92**	0,738	0,112		83,4%
19	**CIC**	0,913	0,246		57,5%
20	**CID**	0,934	0,443		83,2%
21	**CSC**	1,023	0,217		74,3%
22	**CT6**	0,435	0,122	L44 as comparable	95,2%
23	**CTD**	0,950	0,574		86,7%
24	**CTM**	2,869	1,458		74,2%
25	**CVN**	1,084	0,659	VE1 as comparable	64,8%
26	**CX8**	0,180	0,034	LHC as comparable	82,2%
27	**DC2**	0,323	0,116	LHC as comparable	50,9%
28	**DLR**	0,168	0,044	MCO as comparable	70,2%
29	**HUT**	1,354	0,178		86,4%
30	**L18**	1,286	0,187		39,3%
31	**LCS**	0,141	0,037	CT6 as comparable	74,8%
32	**LHC**	0,755	0,358		70,9%
33	**LIG**	0,471	0,098	SD6 as comparable	67,2%
34	**LUT**	0,841	0,428		70,2%
35	**MCO**	0,521	0,088		64,4%
36	**NSN**	0,079	0,009	MCO as comparable	96,8%
37	**PHC**	1,667	0,409		86,2%
38	**QTC**	0,259	0,110		88,5%
39	**TV2**	0,822	0,207		53,4%
40	**TV4**	0,873	0,315		74,0%
41	**VE1**	1,607	0,846		30,2%
42	**VE2**	0,624	0,375	CID as comparable	92,7%
43	**VE3**	0,625	0,421	HPS as comparable	71,2%
44	**VE9**	0,631	0,385		54,2%
45	**VHH**	0,440	0,226	LHC as comparable	86,4%
46	**SNG**	1,215	0,465		79,2%
47	**SSS**	1,221	0,437		74,1%
48	**STL**	1,892	0,076		70,9%
49	**SJM**	0,845	0,319		69,0%
50	**SJE**	1,378	0,320		84,0%
51	**SJC**	0,944	0,228		86,0%
52	**SIC**	1,462	0,341		89,4%
53	**SEL**	0,288	0,078	TV4 as comparable	91,6%
54	**SDT**	1,306	0,404		65,3%
55	**SDS**	1,149	0,088		94,0%
56	**SDJ**	1,394	0,276		73,9%
57	**SDH**	2,884	1,290		85,5%
58	**SDB**	0,217	0,043	L61 as comparable	87,9%
59	**SD9**	1,290	0,368		89,1%
60	**SD8**	1,234	0,105		77,4%
61	**SD7**	1,228	0,204		80,3%
62	**SD6**	1,804	0,517		92,7%
63	**SD5**	1,176	0,444		83,9%
64	**SD4**	1,347	0,282		91,2%
65	**SD3**	1,393	0,711		93,1%
66	**SD2**	1,520	0,493		83,8%
67	**SD1**	0,245	0,041	SDS as comparable	54,5%
68	**S99**	1,283	0,798		53,1%
69	**S96**	1,750	0,492		64,6%
70	**S91**	1,270	0,404		66,1%
71	**S74**	1,250	0,443		68,8%

72	**S64**	1,155	0,376		70,5%
73	**S55**	0,989	0,376		50,3%
74	**S27**	0,114	0,008	S91 as comparable	72,3%
75	**S12**	1,115	0,191		56,9%
76	**MEC**	0,266	0,040	SDP as comparable	65,8%
77	**ICG**	1,634	0,795		67,6%
78	**PHH**	0,451	0,130	L18 as comparable	68,5%
79	**PIV**	0,478	0,339	VE3 as comparable	59,5%
80	**PVA**	1,932	0,209		61,8%
81	**PVE**	1,536	0,485		71,3%
82	**PVR**	0,993	0,475	SD6 as comparable	64,5%
83	**PVV**	0,251	0,042	SD5 as comparable	70,1%
84	**PVX**	1,304	0,311		71,6%
85	**PXI**	0,088	0,025	PVV as comparable	64,5%
86	**PXS**	0,501	0,159	SDT as comparable	68,2%
87	**PXT**	0,613	0,206	V12 as comparable	66,4%
88	**SDP**	1,410	0,271		80,8%
89	**CTN**	0,956	0,166		82,7%
90	**V11**	1,148	0,161		86,0%
91	**V12**	1,521	0,181		88,1%
92	**V15**	1,566	0,582		62,8%
93	**V21**	0,120	0,012	VCC as comparable	90,4%
94	**VC1**	1,815	0,525		71,1%
95	**VC2**	1,015	0,180		82,3%
96	**VC3**	1,162	0,180		84,5%
97	**VC5**	1,140	0,163		85,7%
98	**VC6**	1,272	0,325		74,4%
99	**VC7**	1,097	0,250		77,2%
100	**VC9**	1,140	0,124		89,1%
101	**VCC**	0,971	0,188		80,6%
102	**VCG**	1,455	0,179		87,7%
103	**VCH**	0,174	0,018	S99 as comparable	89,5%
104	**VMC**	1,136	0,221		80,6%

(**Source:** Viet Nam stock exchange 2012)

B.2. Scenario 2: financial leverage increases up to 30%

If leverage increases up to 30%, all beta values of total 104 listed firms on VN construction industry market as below:

Table 2: Market risks of listed construction industry firms (case 2)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage
1	**CNT**	1,242	-0,168		113,6%
2	**DCC**	1,402	0,391		72,1%
3	**DIG**	1,772	0,722		59,2%
4	**FPC**	0,484	0,153		68,4%
5	**HBC**	1,113	0,055		95,1%
6	**L10**	1,026	-0,025		102,4%
7	**MCG**	1,595	0,227		85,7%
8	**VNE**	1,700	0,277		83,7%
9	**L35**	0,116	0,014	SKS as comparable	88,1%
10	**LM3**	0,337	-0,049		114,5%
11	**LO5**	0,745	0,009		98,8%
12	**L62**	0,859	0,057		93,4%
13	**L61**	0,867	0,084		90,3%
14	**L43**	0,745	0,072		90,3%
15	**L44**	1,277	-0,056		104,4%
16	**B82**	0,873	-0,069		107,9%
17	**BCE**	0,689	0,276	SIC as comparable	59,9%
18	**C92**	0,738	-0,076		110,3%
19	**CIC**	0,913	0,046		95,0%
20	**CID**	0,934	0,296		68,3%
21	**CSC**	1,023	-0,025		102,5%
22	**CT6**	0,105	0,007	L44 as comparable	93,7%

23	**CTD**	0,950	0,462		51,4%
24	**CTM**	2,869	1,034		64,0%
25	**CVN**	0,904	0,443	VE1 as comparable	50,9%
26	**CX8**	-0,054	0,003	LHC as comparable	105,3%
27	**DC2**	0,160	0,027	LHC as comparable	83,2%
28	**DLR**	0,028	0,001	MCO as comparable	95,9%
29	**HUT**	1,354	-0,175		112,9%
30	**L18**	1,286	-0,142		111,0%
31	**LCS**	0,006	0,000	CT6 as comparable	95,6%
32	**LHC**	0,755	0,239		68,3%
33	**LIG**	-0,068	0,002	SD6 as comparable	102,8%
34	**LUT**	0,841	0,305		63,8%
35	**MCO**	0,521	-0,042		108,1%
36	**NSN**	-0,107	0,016	MCO as comparable	114,6%
37	**PHC**	1,667	0,031		98,1%
38	**QTC**	0,259	0,066		74,5%
39	**TV2**	0,822	0,023		97,3%
40	**TV4**	0,873	0,148		83,0%
41	**VE1**	1,607	0,617		61,6%
42	**VE2**	0,517	0,249	CID as comparable	51,8%
43	**VE3**	0,549	0,316	HPS as comparable	42,5%
44	**VE9**	0,631	0,312		50,6%
45	**VHH**	0,328	0,120	LHC as comparable	63,4%
46	**SNG**	1,215	0,240		80,2%
47	**SSS**	1,221	0,202		83,4%
48	**STL**	1,892	-0,468		124,8%
49	**SJM**	0,845	0,161		80,9%
50	**SJE**	1,378	0,002		99,9%
51	**SJC**	0,944	0,013		98,7%
52	**SIC**	1,462	0,004		99,7%
53	**SEL**	0,058	0,003	TV4 as comparable	95,0%
54	**SDT**	1,306	0,133		89,8%
55	**SDS**	1,149	-0,230		120,0%
56	**SDJ**	1,394	-0,059		104,3%
57	**SDH**	2,884	0,812		71,9%
58	**SDB**	-0,047	0,002	L61 as comparable	104,0%
59	**SD9**	1,290	0,092		92,9%
60	**SD8**	1,234	-0,234		118,9%
61	**SD7**	1,228	-0,103		108,4%
62	**SD6**	1,804	0,131		92,8%
63	**SD5**	1,176	0,224		80,9%
64	**SD4**	1,347	-0,038		102,8%
65	**SD3**	1,393	0,506		63,7%
66	**SD2**	1,520	0,185		87,8%
67	**SD1**	-0,126	0,010	SDS as comparable	108,0%
68	**S99**	1,283	0,653		49,1%
69	**S96**	1,750	0,115		93,4%
70	**S91**	1,270	0,145		88,6%
71	**S74**	1,250	0,200		84,0%
72	**S64**	1,155	0,142		87,7%
73	**S55**	0,989	0,193		80,5%
74	**S27**	-0,383	0,081	S91 as comparable	121,0%
75	**S12**	1,115	-0,087		107,8%
76	**MEC**	-0,208	0,022	SDP as comparable	110,7%
77	**ICG**	1,634	0,543		66,7%
78	**PHH**	0,126	0,009	L18 as comparable	92,5%
79	**PIV**	0,377	0,235	VE3 as comparable	37,8%
80	**PVA**	1,932	-0,307		115,9%
81	**PVE**	1,536	0,170		89,0%
82	**PVR**	0,700	0,225	SD6 as comparable	67,8%
83	**PVV**	-0,130	0,010	SD5 as comparable	108,1%
84	**PVX**	1,304	0,013		99,0%
85	**PXI**	-0,013	-0,001	PVV as comparable	92,6%

86	**PXS**	0,191	0,022	SDT as comparable	88,6%
87	**PXT**	0,266	0,037	V12 as comparable	86,3%
88	**SDP**	1,410	-0,071		105,0%
89	**CTN**	0,956	-0,072		107,5%
90	**V11**	1,148	-0,136		111,8%
91	**V12**	1,521	-0,221		114,5%
92	**V15**	1,566	0,287		81,7%
93	**V21**	-0,241	0,042	VCC as comparable	117,5%
94	**VC1**	1,815	0,138		92,4%
95	**VC2**	1,015	-0,070		106,9%
96	**VC3**	1,162	-0,114		109,8%
97	**VC5**	1,140	-0,130		111,4%
98	**VC6**	1,272	0,041		96,7%
99	**VC7**	1,097	-0,005		100,4%
100	**VC9**	1,140	-0,180		115,8%
101	**VCC**	0,971	-0,047		104,8%
102	**VCG**	1,455	-0,203		114,0%
103	**VCH**	-0,296	0,048	S99 as comparable	116,3%
104	**VMC**	1,136	-0,054		104,7%

(**Source:** Viet Nam stock exchange 2012)

B.3. Scenario 3: leverage decreases down to 20%

If leverage decreases down to 20%, all beta values of total 104 listed firms on the construction industry market in VN as following:

Table 3: Market risk of listed construction industry firms (case 3)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage
1	**CNT**	1,242	0,374		90,8%
2	**DCC**	1,402	0,780		57,7%
3	**DIG**	1,772	1,126		76,1%
4	**FPC**	0,484	0,280		81,9%
5	**HBC**	1,113	0,462		68,6%
6	**L10**	1,026	0,380		66,9%
7	**MCG**	1,595	0,753		79,1%
8	**VNE**	1,700	0,824		72,2%
9	**L35**	0,403	0,185	SKS as comparable	66,6%
10	**LM3**	0,337	0,099		90,3%
11	**LO5**	0,745	0,292		88,8%
12	**L62**	0,859	0,366		76,4%
13	**L61**	0,867	0,385		54,6%
14	**L43**	0,745	0,331		82,2%
15	**L44**	1,277	0,457		51,0%
16	**B82**	0,873	0,294		86,5%
17	**BCE**	1,017	0,642	SIC as comparable	91,7%
18	**C92**	0,738	0,237		78,5%
19	**CIC**	0,913	0,380		59,6%
20	**CID**	0,934	0,541		77,8%
21	**CSC**	1,023	0,378		66,4%
22	**CT6**	0,632	0,268	L44 as comparable	49,3%
23	**CTD**	0,950	0,650		41,4%
24	**CTM**	2,869	1,740		34,0%
25	**CVN**	1,197	0,822	VE1 as comparable	40,5%
26	**CX8**	0,317	0,112	LHC as comparable	50,7%
27	**DC2**	0,422	0,206	LHC as comparable	64,2%
28	**DLR**	0,251	0,103	MCO as comparable	66,8%
29	**HUT**	1,354	0,413		99,8%
30	**L18**	1,286	0,407		64,7%
31	**LCS**	0,305	0,126	CT6 as comparable	79,9%
32	**LHC**	0,755	0,437		78,9%
33	**LIG**	0,787	0,289	SD6 as comparable	79,8%
34	**LUT**	0,841	0,511		76,0%
35	**MCO**	0,521	0,175		71,8%
36	**NSN**	0,186	0,055	MCO as comparable	96,0%

37	**PHC**	1,667	0,661		83,4%
38	**QTC**	0,259	0,140		57,5%
39	**TV2**	0,822	0,330		83,2%
40	**TV4**	0,873	0,427		74,3%
41	**VE1**	1,607	0,998		95,2%
42	**VE2**	0,691	0,471	CID as comparable	86,7%
43	**VE3**	0,674	0,498	HPS as comparable	74,2%
44	**VE9**	0,631	0,434		64,8%
45	**VHH**	0,510	0,311	LHC as comparable	82,2%
46	**SNG**	1,215	0,615		50,9%
47	**SSS**	1,221	0,594		70,2%
48	**STL**	1,892	0,440		86,4%
49	**SJM**	0,845	0,424		39,3%
50	**SJE**	1,378	0,531		74,8%
51	**SJC**	0,944	0,371		70,9%
52	**SIC**	1,462	0,565		67,2%
53	**SEL**	0,425	0,176	TV4 as comparable	70,2%
54	**SDT**	1,306	0,584		64,4%
55	**SDS**	1,149	0,300		96,8%
56	**SDJ**	1,394	0,500		86,2%
57	**SDH**	2,884	1,609		88,5%
58	**SDB**	0,372	0,134	L61 as comparable	53,4%
59	**SD9**	1,290	0,552		74,0%
60	**SD8**	1,234	0,331		30,2%
61	**SD7**	1,228	0,409		92,7%
62	**SD6**	1,804	0,774		71,2%
63	**SD5**	1,176	0,590		54,2%
64	**SD4**	1,347	0,495		86,4%
65	**SD3**	1,393	0,848		79,2%
66	**SD2**	1,520	0,699		74,1%
67	**SD1**	0,462	0,155	SDS as comparable	70,9%
68	**S99**	1,283	0,895		69,0%
69	**S96**	1,750	0,744		84,0%
70	**S91**	1,270	0,577		86,0%
71	**S74**	1,250	0,604		89,4%
72	**S64**	1,155	0,532		91,6%
73	**S55**	0,989	0,499		65,3%
74	**S27**	0,398	0,102	S91 as comparable	94,0%
75	**S12**	1,115	0,376		73,9%
76	**MEC**	0,542	0,173	SDP as comparable	85,5%
77	**ICG**	1,634	0,963		87,9%
78	**PHH**	0,646	0,278	L18 as comparable	89,1%
79	**PIV**	0,549	0,421	VE3 as comparable	77,4%
80	**PVA**	1,932	0,554		80,3%
81	**PVE**	1,536	0,695		92,7%
82	**PVR**	1,174	0,684	SD6 as comparable	83,9%
83	**PVV**	0,473	0,158	SD5 as comparable	91,2%
84	**PVX**	1,304	0,510		93,1%
85	**PXI**	0,237	0,102	PVV as comparable	83,8%
86	**PXS**	0,687	0,312	SDT as comparable	54,5%
87	**PXT**	0,822	0,386	V12 as comparable	53,1%
88	**SDP**	1,410	0,499		64,6%
89	**CTN**	0,956	0,324		66,1%
90	**V11**	1,148	0,358		68,8%
91	**V12**	1,521	0,449		70,5%
92	**V15**	1,566	0,779		50,3%
93	**V21**	0,328	0,091	VCC as comparable	72,3%
94	**VC1**	1,815	0,783		56,9%
95	**VC2**	1,015	0,347		65,8%
96	**VC3**	1,162	0,376		67,6%
97	**VC5**	1,140	0,359		68,5%
98	**VC6**	1,272	0,515		59,5%
99	**VC7**	1,097	0,419		61,8%

100	**VC9**	1,140	0,327		71,3%
101	**VCC**	0,971	0,345		64,5%
102	**VCG**	1,455	0,434		70,1%
103	**VCH**	0,444	0,126	S99 as comparable	71,6%
104	**VMC**	1,136	0,404		64,5%

(**Source:** Viet Nam 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.

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

Table 4: Statistical results (FL in case 1)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,884	1,458	1,427
MIN	0,079	0,008	0,071
MEAN	1,013	0,306	0,707
VAR	0,3012	0,0633	0,238
Note: Sample size : 104 firms			

(**Source:** Viet Nam stock exchange 2012)

Table 5: Statistical results (FL in case 2)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,884	1,034	1,850
MIN	-0,383	-0,468	0,085
MEAN	0,945	0,092	0,853
VAR	0,4081	0,0530	0,355
Note: Sample size : 104 firms			

(**Source:** Viet Nam stock exchange 2012)

Table 6: Statistical results (FL in case 3)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,884	1,740	1,144
MIN	0,186	0,055	0,132
MEAN	1,055	0,465	0,590
VAR	0,2523	0,0779	0,174
Note: Sample size : 104 firms			

(**Source:** Viet Nam stock exchange 2012)

Based on the above results, we find out:
Equity beta mean values in all 3 scenarios are low (< 1,1) and asset beta mean values are also small (< 0,5). In the case of reported leverage in 2011, equity beta value fluctuates in an acceptable range from 0,079 (min) up to 2,884 (max) and asset beta fluctuates from 0,008 (min) up to 1,458 (max). If leverage increases to 30%, equity beta moves in a range from -0,383 (min) up to 2,884 and asset beta moves from -0,468 (min) up to 1,034 (max). Hence, we note that there is a decrease in asset beta min value if leverage increases. When leverage decreases down to 20%, equity beta value moves in a range from 0,186 to 2,884 and asset beta changes from 0,055 (min) up to 1,74 (max). So, there is an increase in asset beta min when leverage decreases in scenario 3.
Beside, Exhibit 4 informs us that in the case 30% leverage up, average equity beta value of 104 listed firms decreases down to -0,068 while average asset beta value of these 104 firms decreases little more to -0,214. Then, when leverage reduces to 20%, average equity beta value of 104 listed firms goes up little to 0,042 and average asset beta value of 104 firms up to 0,159.
The below chart 1 shows us : when leverage degree decreases down to 20%, average equity and asset beta values increase to 1,055 and 0,465 compared to those at the initial reported leverage (1,013 and 0,306). Then, when leverage degree increases up to 30%, average equity beta decreases little less and average asset beta value also decreases less (to 0,945 and 0,092). However, the fluctuation of equity beta value (0,408) in the case of 30% leverage up is higher than (>) the results in the rest 2 leverage cases. And we could note that the decrease of leverage in the case of 20% leverage down causes an increase in asset beta var up to 0,078 (compared to 0,063).

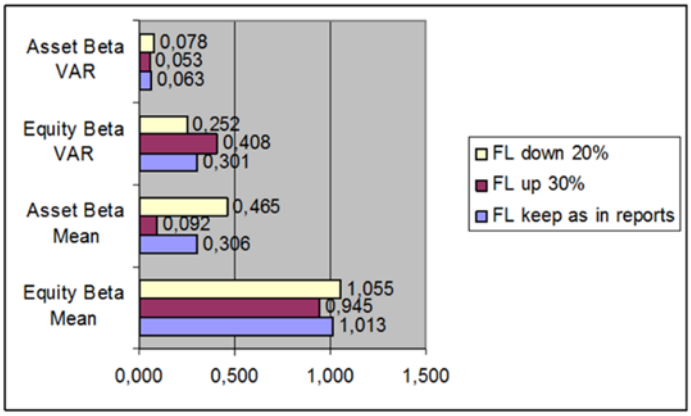

Fig 1: Comparing statistical results of three (3) scenarios of changing FL (period 2009-2011)

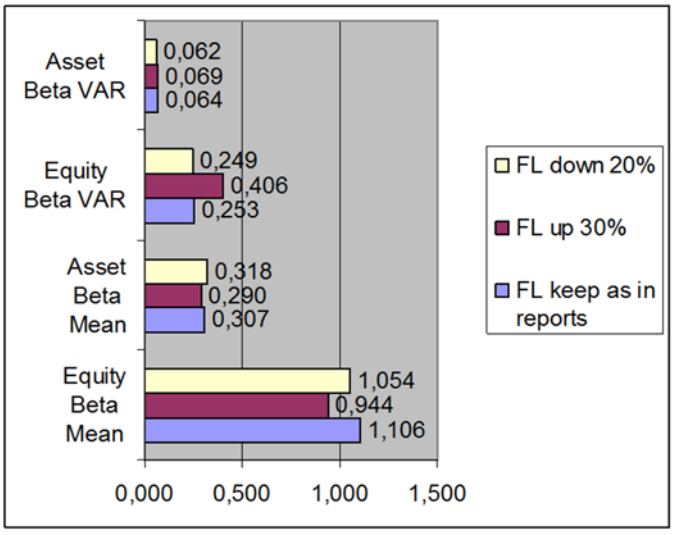

Fig 2: Comparing statistical results of three (3) scenarios of changing FL (period 2007-2011)

(**Source:** Viet Nam stock exchange 2012)

D. Empirical results

In scenario 1 (current FL), asset and equity beta mean reach the medium values (0,306 and 1,013) whereas asset beta var also reaches medium (0,063), compared to the rest 2 cases.

In scenario 2 (FL 30%), asset and equity beta mean reach minimum values (0,092 and 0,945) whereas equity beta var reaches maximum (0,408), compared to the rest 2 cases.

And finally, in scenario 3 (FL down 20%), asset and equity beta mean reach maximum values while asset beta var reaches maximum value (0,078), compared to the rest 2 cases.

E. Risk analysis

In short, the using of financial leverage could have both negatively or positively impacts on the financial results or return on equity of a company. The more debt the firm uses, the more risk it takes. Beside, the increasing interest on loans might drive the earning per share (EPS) lower.

On the other hand, in the case of increasing leverage, the company will expect to get more returns. The financial leverage becomes worthwhile if the cost of additional financial leverage is lower than the additional earnings before taxes and interests (EBIT). Considering risk vs. return, FL becomes a decisional variable for managers. And the maximum risk that a firm accepts will ask for the maximum financial leverage.

F. Discussion

Looking at figure 2, it is noted that in case leverage up 30%, during 2009-2011 period, asset beta mean is lower while equity beta mean of construction industry is higher than those in the period 2007-2011, (0,092 and 0,945) compared to (0,290 and 0,944). Looking at exhibit 6, we can see asset beta mean is lower while equity beta mean is higher than those of consumer good industry (0,336 and 0,694). This relatively shows us that financial leverage does affect asset beta values.

Conclusion

In general, the government has to consider the impacts on the mobility of capital in the markets when it changes the macro policies. Beside, it continues to increase the effectiveness of building the legal system and regulation supporting the plan of developing 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 as well as the asset beta var, compared to the case it is going to decrease down to 20%. And for the corporations, figure 2 tells us that increasing leverage can reduce risk both in the period 2009-2011 and in the 2007-2011 period.

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.

References

1. Alcock J, Baum A, Colley N, Steiner E. The Role of Financial Leverage in the Performance of Private Equity Real Estate Funds, SSRN Working Paper. 2013.
2. Bijlsma MJ, Boone J, Zwart G. Competition for Traders and Risk, CEPR Discussion Paper No. DP8816, 2012.
3. Chen RR, Chidambaran NK, Imerman MB, Sopranzetti BJ. Liquidity, Leverage, and Lehman: A Structural Analysis of Financial Institutions in Crisis, Fordham School of Business Research Paper No.2279686, 2013.
4. Dimitrov V, Jain PC. The Value Relevance of Changes in Financial Leverage, SSRN Working Paper, 2006.
5. Eugene FF, French KR. The Capital Asset Pricing Model: Theory and Evidence, Journal of Economic Perspectives, 2004.
6. Flifel, Kaouther, Financial Markets between Efficiency and Persistence : Empirical Evidence on Daily Data, Asian Journal of Finance and Accounting. 2012; 4(2):379-400.
7. Gabrijelcic M, Herman U, Lenarcic A. Debt Financing and Firm Performance Before and During the Crisis: Micro-Financial Evidence from Slovenia, SSRN Working Paper. 2013.
8. Gunaratha V. The Degree of Financial Leverage as a Determinant of Financial Risk: An Empirical Study of Colombo Stock Exchange in Sri Lanka, 2nd International Conference on Management and Economics Paper. 2013.
9. Huy DTN. Estimating Beta of Viet Nam Listed Public Utilities, Natural Gas and Oil Company Groups During and After The Financial Crisis 2007-2011. Economic and Business Review. 2013; (15)1:57-71.
10. Maia MV, Cash-Flow Risks. Financial Leverage and the Cross Section of Equity Returns, SSRN Working Paper, 2010.
11. Mamun MAA, Performance Evaluation of Prime Bank Limited in Terms of Capital Adequacy, Global Journal of Management and Business Research. 2013; (13)9:26-29,
12. Ovat OO. Liquidity Constraints and Entrepreneurial Financing in Nigeria: The Fate of Fresh Graduate Entrepreneurs, Global Journal of Management and Business Research. 2013; (13)9:49-57.
13. Umar, Profits, Financial Leverage and Corporate Governance, SSRN Working Paper, 2011.