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The Risk Level of Viet Nam Water Industry under Financial Leverage during and After the Global Crisis 2007-2011

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Abstract

This paper evaluates the impacts of external financing on market risk for the listed firms in the Viet nam water industry as it becomes necessary, esp. after the financial crisis 2007-2009. First, by using quantitative and analytical methods to estimate asset and equity beta of total 10 listed companies in Viet Nam water 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% and it increases 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 if the leverage increases to 30%. 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, water industry

1. Introduction

Financial development has positive effect for the economic growth, throughout many recent years, Viet Nam water industry is considered as one of active economic sectors, which has some positive effects for the economy.

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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

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

Issue 1: Whether the risk level of water 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 water industry.

3. Literature Review

Goldsmith (1969), Mc Kinnon (1973) and Shaw (1973) pointed a large and active theoretical and empirical literature has related financial development to the economic growth process. Black (1976) proposes the leverage effect to explain the negative correlation between equity returns and return volatilities. 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 raising the likelihood of a financial crisis rather than reducing it. Marginal rates in corporate and top personal income declined has stopped. Finally, financial leverage can be considered as one among many factors that affect business risk of consumer good firms.

4. Conceptual Theories

4.1 The Impact Of Financial Leverage On The Economy

A sound and effective financial system has positive effect on the development and growth of the economy. 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 consumer good 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.

5. Methodology

For estimating systemic risk resultleverage impacts, in this study, we use the live data during the crisis period 2007-2011 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 water industry firms in VN stock exchange and 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 10 listed firms in the water 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 have certain effects on asset and equity beta values.

7. Empirical Research Findings and Discussion

In the below section, data used are from total 10 listed water 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.

7.1 Scenario 1: Current Financial Leverage (FL) As In Financial Reports 2011

In this case, all beta values of 10 listed firms on VN water industry market as following:

Table 1 – Market risk of listed companies on VN water industry market

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage (F.S reports)
1	BTW	1,042	0,895	PJS as comparable	14,1%
2	BWA	0,551	0,509	LKW as comparable	7,6%
3	CLW	0,430	0,279	NBW as comparable	35,0%
4	GDW	0,790	0,555	BTW as comparable	29,8%
5	LKW	0,585	0,501	NTW as comparable	14,3%
6	NBW	0,603	0,413	SFC as comparable	31,5%
7	NNT	0,131	0,021	PCG as comparable	84,0%
8	NTW	0,658	0,516	HFC as comparable	21,6%
9	PJS	1,170	0,998	VMG as comparable	14,7%
10	TDW	0,057	0,021	NNT as comparable	63,3%
				Average	31,60%

7.2. Scenario 2: Financial Leverage Increases Up To 30%

If leverage increases up to 30%, all beta values of total 10 listed firms on VN water industry market as below:

Table 2 – Market risks of listed water industry firms (case 2)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage (30% up)
1	BTW	0,960	0,784	PJS as comparable	18,4%
2	BWA	0,485	0,436	LKW as comparable	9,9%
3	CLW	0,328	0,179	NBW as comparable	45,5%
4	GDW	0,652	0,399	BTW as comparable	38,7%
5	LKW	0,525	0,427	NTW as comparable	18,6%
6	NBW	0,534	0,315	SFC as comparable	40,9%
7	NNT	-0,081	0,007	PCG as comparable	109,1%
8	NTW	0,614	0,442	HFC as comparable	28,1%
9	PJS	1,123	0,907	VMG as comparable	19,2%
10	TDW	-0,018	-0,003	NNT as comparable	82,3%
				Average	41,09%

7.3. Scenario 3: Leverage Decreases Down To 20%

If leverage decreases down to 20%, all beta values of total 10 listed firms on the water industry market in VN as following:

Table 3 – Market risk of listed water industry firms (case 3)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage (20% down)
1	BTW	1,097	0,973	PJS as comparable	11,3%
2	BWA	0,597	0,561	LKW as comparable	6,1%
3	CLW	0,501	0,361	NBW as comparable	28,0%
4	GDW	0,888	0,677	BTW as comparable	23,8%
5	LKW	0,626	0,555	NTW as comparable	11,4%
6	NBW	0,648	0,485	SFC as comparable	25,2%
7	NNT	0,254	0,083	PCG as comparable	67,2%
8	NTW	0,687	0,568	HFC as comparable	17,3%
9	PJS	1,202	1,060	VMG as comparable	11,8%
10	TDW	0,144	0,071	NNT as comparable	50,7%
				Average	25,28%

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. In case 1, average FL is 31% is somewhat acceptable, compared to 41% in case 2 and reducing to 25% in case 3. Reducing FL causes the firm to reduce risks in business and pressure in cash flows.

8. 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	1,170	0,998	0,1726
MIN	0,057	0,021	0,0361
MEAN	0,602	0,471	0,1310
VAR	0,1230	0,1015	0,0215
Note: Sample size : 10			

Table 5 – Statistical results (FL in case 2)

Statistic results	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**
MAX	1,123	0,907	0,2152
MIN	-0,081	-0,003	-0,0778
MEAN	0,512	0,389	0,1227
VAR	0,1413	0,0867	0,0546
Note: Sample size : 10			

Table 6- Statistical results (FL in case 3)

Statistic results	**Equity beta**	**Asset beta (assume debt beta = 0)**	**Difference**
MAX	1,202	1,060	0,1417
MIN	0,144	0,071	0,0727
MEAN	0,664	0,539	0,1252
VAR	0,1110	0,1046	0,0064
Note: Sample size : 10			

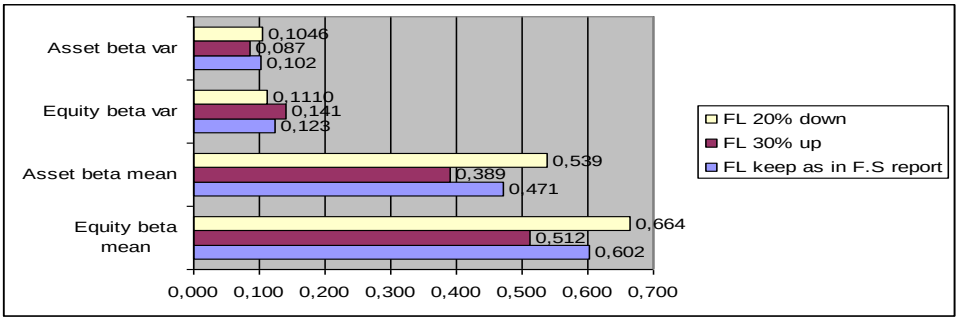
Based on the above results, we find out:

Equity beta mean values in all 3 scenarios are low (< 0,7) and asset beta mean values are also small (< 0,6) although max equity beta values in some cases might be higher than (>) 1. In the case of reported leverage in 2011, equity beta value fluctuates in an acceptable range from 0,057 (min) up to 1,170 (max) and asset beta fluctuates from 0,021 (min) up to 0,998 (max). If leverage increases to 30%, equity beta moves from -0,081 (min) up to 1,123 (max) and asset beta moves from -0,003 (min) up to 0,907 (max). Hence, we note that there is a decrease in equity /asset beta min and max values if leverage increases. When leverage decreases down to 20%, equity beta value changes from 0,144 (min) up to 1,202 (max) and asset beta changes from -0,071 (min) up to 1,060 (max). So, there is a small increase in equity beta min value and small increase in asset beta min when leverage decreases in scenario 3.

Beside, Exhibit 5 informs us that in the case 30% leverage up, average equity beta value of 10 listed firms decreases down to 0,090 while average asset beta value of these 10 firms decreases little less to 0,081. Then, when leverage reduces to 20%, average equity beta value of 10 listed firms goes up to 0,063 and average asset beta value of 10 firms up to 0,068.

The below chart 1 shows us : when leverage degree decreases down to 20%, average equity and asset beta values increase slightly (0,664 and 0,539) compared to those at the initial reported leverage (0,602 and 0,471). Then, when leverage degree increases up to 30%, average equity beta decreases little more and average asset beta value also decreases more (to 0,512 and 0,389). However, the fluctuation of equity beta value (0,141) in the case of 30% leverage up is higher than (>) the results in the rest 2 leverage cases. And we could note that the using of leverage in the case of 30% leverage up causes a decrease in asset beta var down to 0,087.

Chart 1 – Comparing statistical results of three (3) scenarios of changing FL



9. 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).

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. Beside, it continues to increase the effectiveness of building the legal system and regulation supporting the plan of developing consumer good market. The Ministry of Finance continue 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 consumer good companies as we could note that in this study when leverage is going to increase up to 30%, the risk level decreases much as well as the asset beta var, 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.

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Exhibit

Exhibit 1 – Interest rates in banking industry during crisis
(source: Viet Nam commercial banks)

Year	Borrowing Interest rates	Deposit Rates	Note
2011	18%-22%	13%-14%	
2010	19%-20%	13%-14%	Approximately
2009	9%-12%	9%-10%	(2007: required reserves ratio at SBV is changed from 5% to 10%)
2008	19%-21%	15%-16,5%	(2009: special supporting interest rate is 4%)
2007	12%-15%	9%-11%	

Exhibit 2 – Basic interest rate changes in Viet Nam
(source: State Bank of Viet Nam and Viet Nam economy)

Year	Basic rate	Note
2011	9%	
2010	8%	
2009	7%	
2008	8,75%-14%	Approximately, fluctuated
2007	8,25%	
2006	8,25%	
2005	7,8%	
2004	7,5%	
2003	7,5%	
2002	7,44%	
2001	7,2%-8,7%	Approximately, fluctuated
2000	9%	

Exhibit 3 – Inflation, GDP growth and macroeconomics factors
(source: Viet Nam commercial banks and economic statistical bureau)

Year	Inflation	GDP	USD/VND rate
2011	18%	5,89%	20.670
2010	11,75% (Estimated at Dec 2010)	6,5% (expected)	19.495
2009	6,88%	5,2%	17.000
2008	22%	6,23%	17.700
2007	12,63%	8,44%	16.132
2006	6,6%	8,17%	
2005	8,4%		
Note	approximately		

Exhibit 4: GDP growth Việt Nam 2006-2010 (*source: Bureau Statistic*)

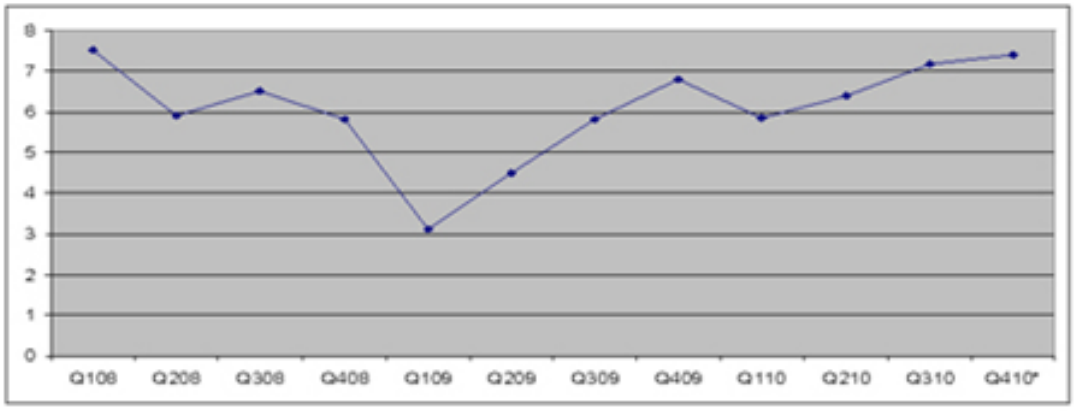


Exhibit 5 – Increase/decrease risk level of listed water industry firms under changing scenarios of leverage : in 2011 F.S reports, 30% up, 20% down in the period 2007 - 2011

Order No.	Company stock code	FL keep as in F.S report		FL 30% up		FL 20% down	
		Equity beta	Asset beta	Increase /Decrease (equity beta)	Increase /Decrease (asset beta)	Increase /Decrease (equity beta)	Increase /Decrease (asset beta)
1	BTW	1,042	0,895	-0,081	-0,111	0,055	0,078
2	BWA	0,551	0,509	-0,066	-0,072	0,046	0,052
3	CLW	0,430	0,279	-0,102	-0,100	0,072	0,082
4	GDW	0,790	0,555	-0,139	-0,156	0,098	0,122
5	LKW	0,585	0,501	-0,061	-0,074	0,041	0,053
6	NBW	0,603	0,413	-0,070	-0,098	0,044	0,071
7	NNT	0,131	0,021	-0,212	-0,014	0,123	0,062
8	NTW	0,658	0,516	-0,044	-0,074	0,028	0,052
9	PJS	1,170	0,998	-0,048	-0,090	0,031	0,062
10	TDW	0,057	0,021	-0,075	-0,024	0,087	0,050
			Average	-0,090	-0,081	0,063	0,068

Exhibit 6- VNI Index and other stock market index during crisis 2006-2010

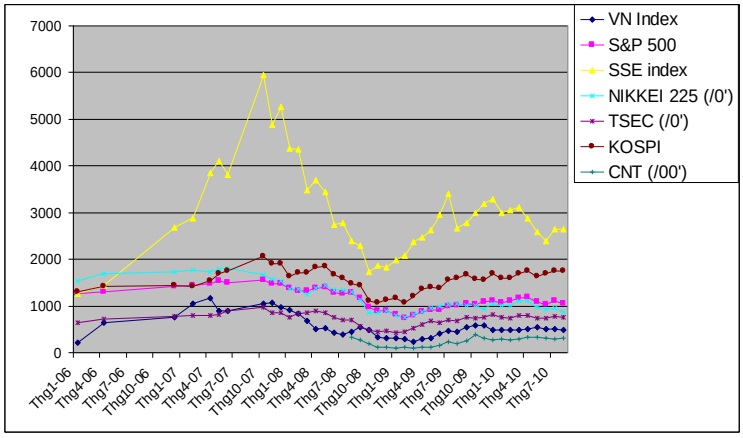
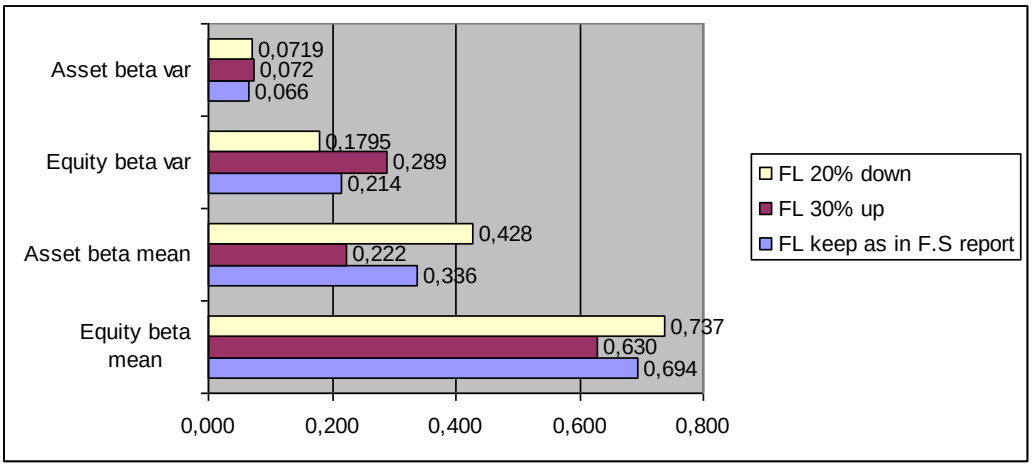


Exhibit 7 – Comparing statistical results of three (3) scenarios of changing FL of 121 listed firms in the consumer good industry



Author note: My sincere thanks are for the editorial office and Lecturers/Doctors at Banking University and International University of Japan. Through the qualitative analysis, please kindly email me if any error found.