Published in the Russian Federation
European Journal of Economic Studies
Has been issued since 2012.
ISSN: 2304-9669
E-ISSN: 2305-6282
Vol. 10, No. 4, pp. 211-224, 2014

DOI: 10.13187/es.2014.4.211
www.ejournal2.com


# The Risk Level of Viet Nam Construction Material Industry Under Financial Leverage During and After The Global Crisis 2009-2011

Dinh Tran Ngoc Huy

Banking University HCMC Viet Nam – GSIM, International University of Japan, Japan
E-mail: dtnhuy2010@gmail.com

## Abstract

This paperwork evaluates the impacts of external financing on market risk for the listed firms in the Viet nam construction material 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 57 listed companies in Viet Nam construction material 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 0,326 to 0,337 if the leverage increases to 30 % whereas decreases to 0,321 if leverage decreases to 20 %. But the dispersion measured by asset beta var increases to 0,118 (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 material industry.

JEL CLASSIFICATION: G010, G100, G390

## 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 all (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 material industry is selected for the research because until now there is no research published with the same scope and because Viet Nam construction material 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 material industry companies in Viet Nam stock exchange as following:

Issue 1: Whether the risk level of construction material 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 material 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 material 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 material 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 all (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 all (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 all (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 material firms.

## Empirical analysis

### A. General Data Analysis

The research sample has total 57 listed firms in the construction material 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 0,377, 0,224 and 0,482 which are sensitive and negatively correlated with the leverage. Also in 3 scenarios, we find out equity beta mean values (0,862, 0,843 and 0,874) 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 57 listed construction material 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 57 listed firms on VN construction material industry market as following:

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

| Order No. | Company stock code | Equity beta | Asset beta (assume debt beta = 0) | Note | Financial leverage |
|---|---|---|---|---|---|
| 1 | **DIC** | 1,253 | 0,429 | | 52,6% |
| 2 | **LBM** | 0,861 | 0,569 | | 27,2% |
| 3 | **NAV** | 0,743 | 0,448 | | 31,8% |
| 4 | **DXV** | 1,083 | 0,176 | | 67,0% |
| 5 | **HT1** | 0,529 | 0,077 | | 68,4% |
| 6 | **CVT** | 2,504 | 1,031 | | 47,0% |
| 7 | **DC4** | 1,098 | 0,376 | | 52,6% |
| 8 | **HPS** | 0,853 | 0,728 | | 11,6% |
| 9 | **KBT** | 1,110 | 0,696 | VE1 as comparable | 29,9% |

| | | | | | |
|---|---|---|---|---|---|
| 10 | **PPG** | 0,780 | 0,366 | | 42,5% |
| 11 | **SDN** | 0,595 | 0,313 | | 37,9% |
| 12 | **SKS** | 0,761 | 0,358 | | 42,4% |
| 13 | **VXB** | 0,355 | 0,141 | SKS as comparable | 48,3% |
| 14 | **DHA** | 0,914 | 0,770 | | 12,6% |
| 15 | **CTI** | 0,129 | 0,041 | LM3 as comparable | 54,6% |
| 16 | **DCT** | 0,918 | 0,334 | | 50,9% |
| 17 | **SCL** | 0,676 | 0,369 | DC4 as comparable | 36,3% |
| 18 | **HVX** | 0,258 | 0,179 | DTC as comparable | 24,4% |
| 19 | **NHC** | 0,581 | 0,445 | | 18,7% |
| 20 | **BHV** | 0,933 | 0,294 | | 54,8% |
| 21 | **XMC** | 1,160 | 0,223 | | 64,6% |
| 22 | **ACC** | 0,204 | 0,150 | HVX as comparable | 21,0% |
| 23 | **BBS** | 0,746 | 0,388 | | 38,4% |
| 24 | **BCC** | 0,793 | 0,138 | | 66,1% |
| 25 | **BHC** | 0,677 | 0,153 | | 61,9% |
| 26 | **BHT** | 0,073 | 0,012 | DTC as comparable | 66,6% |
| 27 | **BT6** | 0,601 | 0,187 | | 55,2% |
| 28 | **BTS** | 0,851 | 0,182 | | 62,9% |
| 29 | **CCM** | 1,464 | 0,740 | | 39,6% |
| 30 | **CYC** | 0,497 | 0,151 | | 55,7% |
| 31 | **DAC** | 0,542 | 0,295 | | 36,5% |
| 32 | **DTC** | 0,344 | 0,068 | | 64,2% |
| 33 | **GMX** | 0,792 | 0,491 | SDY as comparable | 30,4% |
| 34 | **HCC** | 0,760 | 0,397 | | 38,2% |
| 35 | **HHL** | 1,787 | 0,692 | | 49,0% |
| 36 | **HLY** | 0,652 | 0,307 | | 42,3% |
| 37 | **HOM** | 0,585 | 0,243 | | 46,8% |
| 38 | **MCC** | 0,863 | 0,780 | BHV as comparable | 7,7% |
| 39 | **MCL** | 0,347 | 0,183 | NHC as comparable | 37,9% |
| 40 | **NNC** | 0,277 | 0,211 | DTC as comparable | 19,3% |
| 41 | **QNC** | 0,890 | 0,100 | | 71,1% |
| 42 | **SCC** | 0,576 | 0,434 | | 19,8% |
| 43 | **SCJ** | 0,931 | 0,471 | | 39,5% |
| 44 | **SDY** | 1,156 | 0,388 | | 53,1% |
| 45 | **SHN** | 3,693 | 1,807 | | 40,8% |
| 46 | **TBX** | 0,517 | 0,261 | | 39,7% |
| 47 | **TCR** | 0,828 | 0,410 | | 40,4% |
| 48 | **TLT** | 1,569 | 0,095 | | 75,1% |
| 49 | **TMX** | 1,559 | 0,568 | | 50,8% |
| 50 | **TSM** | 1,423 | 1,061 | HHL as comparable | 20,4% |
| 51 | **TTC** | 0,622 | 0,212 | | 52,8% |

| | | | | | |
|---|---|---|---|---|---|
| 52 | **TXM** | 1,025 | 0,382 | | 50,2% |
| 53 | **VCS** | 1,021 | 0,433 | | 46,0% |
| 54 | **VHL** | 0,538 | 0,137 | | 59,6% |
| 55 | **VIT** | 0,541 | 0,126 | | 61,4% |
| 56 | **VTS** | 0,609 | 0,365 | | 32,0% |
| 57 | **YBC** | 0,697 | 0,121 | | 66,1% |

*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 57 listed firms on VN construction material industry market as below:

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

| **Order No.** | **Company stock code** | **Equity beta** | **Asset beta (assume debt beta = 0)** | **Note** | **Financial leverage** |
|---|---|---|---|---|---|
| 1 | **DIC** | 1,253 | 0,181 | | 85,5% |
| 2 | **LBM** | 0,861 | 0,481 | | 44,2% |
| 3 | **NAV** | 0,743 | 0,359 | | 51,7% |
| 4 | **DXV** | 1,083 | -0,096 | | 108,8% |
| 5 | **HT1** | 0,529 | -0,059 | | 111,1% |
| 6 | **CVT** | 2,504 | 0,590 | | 76,4% |
| 7 | **DC4** | 1,098 | 0,160 | | 85,5% |
| 8 | **HPS** | 0,853 | 0,691 | | 18,9% |
| 9 | **KBT** | 0,941 | 0,484 | VE1 as comparable | 48,6% |
| 10 | **PPG** | 0,780 | 0,242 | | 69,0% |
| 11 | **SDN** | 0,595 | 0,229 | | 61,6% |
| 12 | **SKS** | 0,761 | 0,237 | | 68,9% |
| 13 | **VXB** | 0,204 | 0,044 | SKS as comparable | 78,5% |
| 14 | **DHA** | 0,914 | 0,726 | | 20,5% |
| 15 | **CTI** | 0,049 | 0,006 | LM3 as comparable | 88,7% |
| 16 | **DCT** | 0,918 | 0,158 | | 82,8% |
| 17 | **SCL** | 0,528 | 0,216 | DC4 as comparable | 59,0% |
| 18 | **HVX** | 0,230 | 0,139 | DTC as comparable | 39,7% |
| 19 | **NHC** | 0,581 | 0,405 | | 30,4% |
| 20 | **BHV** | 0,933 | 0,102 | | 89,1% |
| 21 | **XMC** | 1,160 | -0,058 | | 105,0% |
| 22 | **ACC** | 0,166 | 0,109 | HVX as comparable | 34,1% |
| 23 | **BBS** | 0,746 | 0,280 | | 62,4% |
| 24 | **BCC** | 0,793 | -0,059 | | 107,4% |
| 25 | **BHC** | 0,677 | -0,004 | | 100,5% |
| 26 | **BHT** | -0,038 | 0,003 | DTC as comparable | 108,1% |
| 27 | **BT6** | 0,601 | 0,062 | | 89,6% |
| 28 | **BTS** | 0,851 | -0,019 | | 102,2% |

| | | | | | |
|---|---|---|---|---|---|
| 29 | **CCM** | 1,464 | 0,522 | | 64,3% |
| 30 | **CYC** | 0,497 | 0,047 | | 90,5% |
| 31 | **DAC** | 0,542 | 0,221 | | 59,2% |
| 32 | **DTC** | 0,344 | -0,015 | | 104,4% |
| 33 | **GMX** | 0,668 | 0,338 | SDY as comparable | 49,4% |
| 34 | **HCC** | 0,760 | 0,288 | | 62,0% |
| 35 | **HHL** | 1,787 | 0,363 | | 79,7% |
| 36 | **HLY** | 0,652 | 0,203 | | 68,8% |
| 37 | **HOM** | 0,585 | 0,140 | | 76,0% |
| 38 | **MCC** | 0,842 | 0,736 | BHV as comparable | 12,6% |
| 39 | **MCL** | 0,264 | 0,102 | NHC as comparable | 61,5% |
| 40 | **NNC** | 0,256 | 0,176 | DTC as comparable | 31,3% |
| 41 | **QNC** | 0,890 | -0,138 | | 115,5% |
| 42 | **SCC** | 0,576 | 0,391 | | 32,1% |
| 43 | **SCJ** | 0,931 | 0,333 | | 64,3% |
| 44 | **SDY** | 1,156 | 0,158 | | 86,4% |
| 45 | **SHN** | 3,693 | 1,242 | | 66,4% |
| 46 | **TBX** | 0,517 | 0,184 | | 64,5% |
| 47 | **TCR** | 0,828 | 0,285 | | 65,6% |
| 48 | **TLT** | 1,569 | -0,347 | | 122,1% |
| 49 | **TMX** | 1,559 | 0,271 | | 82,6% |
| 50 | **TSM** | 1,304 | 0,873 | HHL as comparable | 33,1% |
| 51 | **TTC** | 0,622 | 0,089 | | 85,7% |
| 52 | **TXM** | 1,025 | 0,189 | | 81,6% |
| 53 | **VCS** | 1,021 | 0,257 | | 74,8% |
| 54 | **VHL** | 0,538 | 0,017 | | 96,9% |
| 55 | **VIT** | 0,541 | 0,001 | | 99,8% |
| 56 | **VTS** | 0,609 | 0,292 | | 52,0% |
| 57 | **YBC** | 0,697 | -0,052 | | 107,5% |

*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 57 listed firms on the construction material industry market in VN as following:

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

| **Order No.** | **Company stock code** | **Equity beta** | **Asset beta (assume debt beta = 0)** | **Note** | **Financial leverage** |
|---|---|---|---|---|---|
| 1 | **DIC** | 1,253 | 0,593 | | 52,6% |
| 2 | **LBM** | 0,861 | 0,627 | | 27,2% |
| 3 | **NAV** | 0,743 | 0,507 | | 31,8% |
| 4 | **DXV** | 1,083 | 0,358 | | 67,0% |
| 5 | **HT1** | 0,529 | 0,167 | | 68,4% |

| | | | | | |
|---|---|---|---|---|---|
| 6 | **CVT** | 2,504 | 1,326 | | 47,0% |
| 7 | **DC4** | 1,098 | 0,520 | | 52,6% |
| 8 | **HPS** | 0,853 | 0,753 | | 11,6% |
| 9 | **KBT** | 1,218 | 0,854 | VE1 as comparable | 29,9% |
| 10 | **PPG** | 0,780 | 0,449 | | 42,5% |
| 11 | **SDN** | 0,595 | 0,369 | | 37,9% |
| 12 | **SKS** | 0,761 | 0,438 | | 42,4% |
| 13 | **VXB** | 0,448 | 0,231 | SKS as comparable | 48,3% |
| 14 | **DHA** | 0,914 | 0,799 | | 12,6% |
| 15 | **CTI** | 0,177 | 0,080 | LM3 as comparable | 54,6% |
| 16 | **DCT** | 0,918 | 0,451 | | 50,9% |
| 17 | **SCL** | 0,769 | 0,490 | DC4 as comparable | 36,3% |
| 18 | **HVX** | 0,276 | 0,209 | DTC as comparable | 24,4% |
| 19 | **NHC** | 0,581 | 0,473 | | 18,7% |
| 20 | **BHV** | 0,933 | 0,421 | | 54,8% |
| 21 | **XMC** | 1,160 | 0,410 | | 64,6% |
| 22 | **ACC** | 0,230 | 0,182 | HVX as comparable | 21,0% |
| 23 | **BBS** | 0,746 | 0,459 | | 38,4% |
| 24 | **BCC** | 0,793 | 0,269 | | 66,1% |
| 25 | **BHC** | 0,677 | 0,258 | | 61,9% |
| 26 | **BHT** | 0,138 | 0,046 | DTC as comparable | 66,6% |
| 27 | **BT6** | 0,601 | 0,269 | | 55,2% |
| 28 | **BTS** | 0,851 | 0,316 | | 62,9% |
| 29 | **CCM** | 1,464 | 0,884 | | 39,6% |
| 30 | **CYC** | 0,497 | 0,220 | | 55,7% |
| 31 | **DAC** | 0,542 | 0,345 | | 36,5% |
| 32 | **DTC** | 0,344 | 0,123 | | 64,2% |
| 33 | **GMX** | 0,871 | 0,606 | SDY as comparable | 30,4% |
| 34 | **HCC** | 0,760 | 0,470 | | 38,2% |
| 35 | **HHL** | 1,787 | 0,911 | | 49,0% |
| 36 | **HLY** | 0,652 | 0,376 | | 42,3% |
| 37 | **HOM** | 0,585 | 0,311 | | 46,8% |
| 38 | **MCC** | 0,878 | 0,810 | BHV as comparable | 7,7% |
| 39 | **MCL** | 0,399 | 0,248 | NHC as comparable | 37,9% |
| 40 | **NNC** | 0,291 | 0,235 | DTC as comparable | 19,3% |
| 41 | **QNC** | 0,890 | 0,258 | | 71,1% |
| 42 | **SCC** | 0,576 | 0,462 | | 19,8% |
| 43 | **SCJ** | 0,931 | 0,563 | | 39,5% |
| 44 | **SDY** | 1,156 | 0,542 | | 53,1% |
| 45 | **SHN** | 3,693 | 2,184 | | 40,8% |
| 46 | **TBX** | 0,517 | 0,312 | | 39,7% |
| 47 | **TCR** | 0,828 | 0,494 | | 40,4% |
| 48 | **TLT** | 1,569 | 0,390 | | 75,1% |

| | | | | | |
|---|---|---|---|---|---|
| 49 | **TMX** | 1,559 | 0,766 | | 50,8% |
| 50 | **TSM** | 1,500 | 1,195 | HHL as comparable | 20,4% |
| 51 | **TTC** | 0,622 | 0,294 | | 52,8% |
| 52 | **TXM** | 1,025 | 0,510 | | 50,2% |
| 53 | **VCS** | 1,021 | 0,551 | | 46,0% |
| 54 | **VHL** | 0,538 | 0,217 | | 59,6% |
| 55 | **VIT** | 0,541 | 0,209 | | 61,4% |
| 56 | **VTS** | 0,609 | 0,414 | | 32,0% |
| 57 | **YBC** | 0,697 | 0,236 | | 66,1% |

*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 | 3,693 | 1,807 | 1,885 |
| MIN | 0,073 | 0,012 | 0,061 |
| MEAN | 0,862 | 0,377 | 0,485 |
| VAR | 0,3260 | 0,0928 | 0,233 |
| Note: Sample size : 57 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 | 3,693 | 1,242 | 2,451 |
| MIN | -0,038 | -0,347 | 0,308 |
| MEAN | 0,843 | 0,224 | 0,619 |
| VAR | 0,3369 | 0,0733 | 0,264 |
| Note: Sample size : 57 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 | 3,693 | 2,184 | 1,508 |
| MIN | 0,138 | 0,046 | 0,092 |
| MEAN | 0,874 | 0,482 | 0,392 |
| VAR | 0,3214 | 0,1183 | 0,203 |
| Note: Sample size : 57 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 (< 0,9) 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 0,073 (min) up to 3,693 (max) and asset beta fluctuates from 0,012 (min) up to 1,807 (max). If leverage increases to 30 %, equity beta moves in an unchanged range and asset beta moves from 0,138 (min) up to 1,693 (max). Hence, we note that there is an increase in asset beta min value if leverage increases. When leverage decreases down to 20 %, equity beta value moves in an unchanged range and asset beta changes from 0,046 (min) up to 1,284 (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 57 listed firms decreases down to -0,019 while average asset beta value of these 57 firms decreases little more to -0,153. Then, when leverage reduces to 20 %, average equity beta value of 57 listed firms goes up little to 0,012 and average asset beta value of 57 firms up to 0,105.

The below chart 1 shows us : when leverage degree decreases down to 20 %, average equity and asset beta values increase to 0,874 and 0,482 compared to those at the initial reported leverage (0,862 and 0,377). Then, when leverage degree increases up to 30 %, average equity beta decreases little less and average asset beta value also decreases less (to 0,843 and 0,224). However, the fluctuation of equity beta value (0,337) 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 0,118 (compared to 0,093).

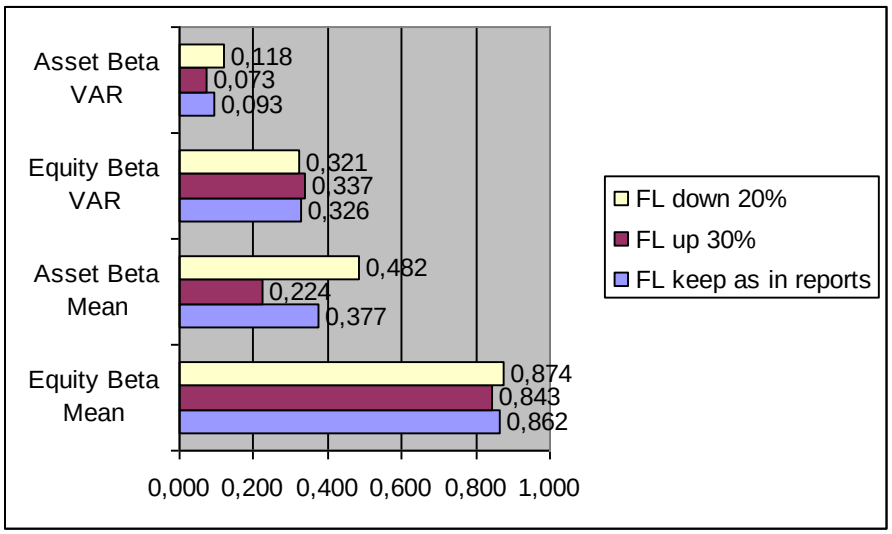



Figure 1. Comparing statistical results of three (3) scenarios of changing FL (period 2009-2011)

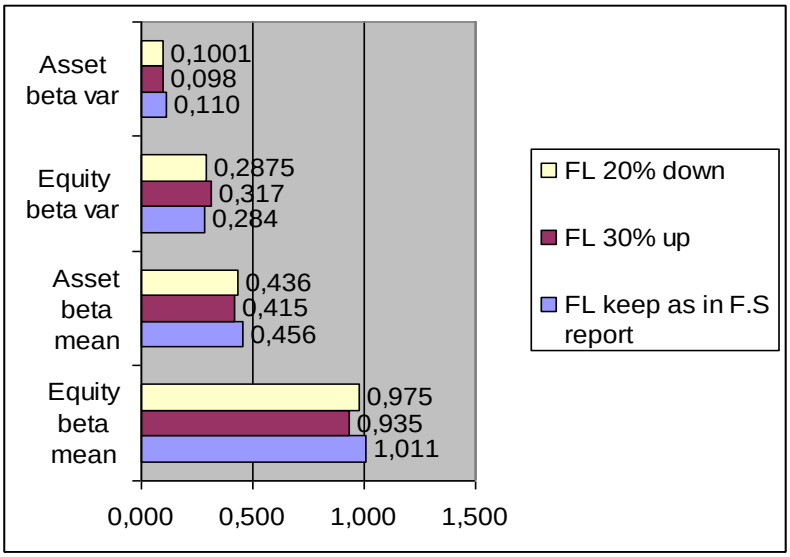



Figure 2. Comparing statistical results of three (3) scenarios of changing FL (period 2007-2011)
*Source: Viet Nam stock exchange 2012*

### D. Empirical results

In scenario 1 (current FL), asset and equity beta mean reach the medium values (0,377 and 0,862) whereas asset beta var also reaches medium (0,093), compared to the rest 2 cases.

In scenario 2 (FL 30 %), asset and equity beta mean reach minimum values (0,224 and 0,843) whereas equity beta var reaches maximum (0,337), 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 (0,118), 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 and equity beta mean (0,224 and 0,843) of construction material industry are lower than those in the period 2007-2011 (0,415 and 0,935). Looking at exhibit 6, we can see asset beta mean is lower while equity beta mean is higher than those of consumer good industry (0,222 and 0,630). 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 material 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 material 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. (2013). The Role of Financial Leverage in the Performance of Private Equity Real Estate Funds, *SSRN Working Paper*.

*2.* Bijlsma MJ, Boone J, Zwart G. (2012). Competition for Traders and Risk, *CEPR Discussion Paper N DP8816.*

*3.* Chen R.R., Chidambaran N.K., Imerman M.B., Sopranzetti B.J. (2013). Liquidity, Leverage, and Lehman: A Structural Analysis of Financial Institutions in Crisis, *Fordham School of Business Research Paper N 2279686.*

*4.* Dimitrov V, Jain PC, (2006). The Value Relevance of Changes in Financial Leverage*, SSRN Working Paper*.

*5.* Eugene F.F., French K.R. (2004). The Capital Asset Pricing Model: Theory and Evidence, *Journal of Economic Perspectives.*

*6.* Flifel, Kaouther (2012). Financial Markets between Efficiency and Persistence : Empirical Evidence on Daily Data, *Asian Journal of Finance and Accounting, Vol.4, No.2, pp. 379-400.*

*7.* Gabrijelcic M, Herman U, and Lenarcic A. (2013). Debt Financing and Firm Performance Before and During the Crisis: Micro-Financial Evidence from Slovenia, *SSRN Working Paper.*

*8.* Gunaratha V. (2013). 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.*

9. Huy DTN (2013). 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*. Vol. (15)1, P. 57-71.

*10.* Maia M.V. (2010). Cash-Flow Risks, Financial Leverage and the Cross Section of Equity Returns, *SSRN Working Paper.*

11. Mamun MAA (2013). Performance Evaluation of Prime Bank Limited in Terms of Capital Adequacy, *Global Journal of Management and Business Research*. Vol(13)9. P. 26-29.

12.Ovat OO (2013). Liquidity Constraints and Entrepreneurial Financing in Nigeria: The Fate of Fresh Graduate Entrepreneurs, *Global Journal of Management and Business Research*, Vol(13)9. P. 49-57.

13.Umar (2011). Profits, Financial Leverage and Corporate Governance, *SSRN Working Paper.*

Appendix 1. Interest rates in banking industry during crisis

| 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% | |
| 2007 | 12%-15% | 9%-11% | (2009: special supporting interest rate is 4 %) |

*Source: Viet Nam commercial banks*

Appendix 2. Basic interest rate changes in Viet Nam

| 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% | |

*Source: State Bank of Viet Nam and Viet Nam economy*

Appendix 3. 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*

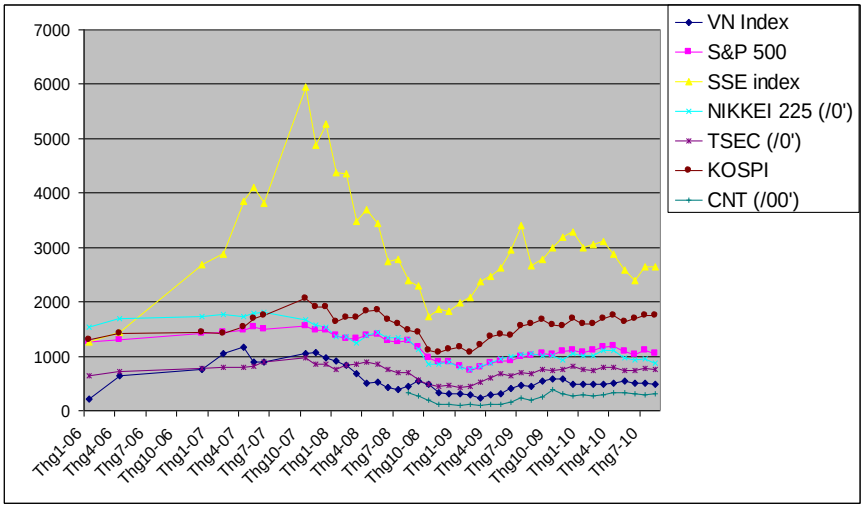
Appendix 4. Increase/decrease risk level of listed construction material industry firms under changing scenarios of leverage: in 2011 F.S reports, 30 % up, 20 % down in the period 2009 - 2011

| | | **FL as reported** | | **FL increases 30 %** | | **FL decreases 20 %** | |
|---|---|---|---|---|---|---|---|
| **Order No.** | **Company stock code** | **Equity beta** | **Asset beta** | **Increase /Decrease (equity beta)** | **Increase /Decrease (asset beta)** | **Increase /Decrease (equity beta)** | **Increase /Decrease (asset beta)** |
| 1 | **DIC** | 1,253 | 0,429 | 0,000 | -0,247 | 0,000 | 0,165 |
| 2 | **LBM** | 0,861 | 0,569 | 0,000 | -0,088 | 0,000 | 0,059 |
| 3 | **NAV** | 0,743 | 0,448 | 0,000 | -0,089 | 0,000 | 0,059 |
| 4 | **DXV** | 1,083 | 0,176 | 0,000 | -0,272 | 0,000 | 0,181 |
| 5 | **HT1** | 0,529 | 0,077 | 0,000 | -0,136 | 0,000 | 0,090 |
| 6 | **CVT** | 2,504 | 1,031 | 0,000 | -0,442 | 0,000 | 0,294 |
| 7 | **DC4** | 1,098 | 0,376 | 0,000 | -0,216 | 0,000 | 0,144 |
| 8 | **HPS** | 0,853 | 0,728 | 0,000 | -0,037 | 0,000 | 0,025 |
| 9 | **KBT** | 1,110 | 0,696 | -0,170 | -0,212 | 0,107 | 0,158 |
| 10 | **PPG** | 0,780 | 0,366 | 0,000 | -0,124 | 0,000 | 0,083 |
| 11 | **SDN** | 0,595 | 0,313 | 0,000 | -0,084 | 0,000 | 0,056 |
| 12 | **SKS** | 0,761 | 0,358 | 0,000 | -0,121 | 0,000 | 0,081 |
| 13 | **VXB** | 0,355 | 0,141 | -0,151 | -0,097 | 0,092 | 0,091 |
| 14 | **DHA** | 0,914 | 0,770 | 0,000 | -0,043 | 0,000 | 0,029 |
| 15 | **CTI** | 0,129 | 0,041 | -0,080 | -0,035 | 0,048 | 0,039 |
| 16 | **DCT** | 0,918 | 0,334 | 0,000 | -0,175 | 0,000 | 0,117 |
| 17 | **SCL** | 0,676 | 0,369 | -0,148 | -0,153 | 0,093 | 0,120 |
| 18 | **HVX** | 0,258 | 0,179 | -0,028 | -0,041 | 0,018 | 0,029 |
| 19 | **NHC** | 0,581 | 0,445 | 0,000 | -0,041 | 0,000 | 0,027 |
| 20 | **BHV** | 0,933 | 0,294 | 0,000 | -0,192 | 0,000 | 0,128 |
| 21 | **XMC** | 1,160 | 0,223 | 0,000 | -0,281 | 0,000 | 0,187 |
| 22 | **ACC** | 0,204 | 0,150 | -0,038 | -0,041 | 0,027 | 0,032 |
| 23 | **BBS** | 0,746 | 0,388 | 0,000 | -0,107 | 0,000 | 0,072 |
| 24 | **BCC** | 0,793 | 0,138 | 0,000 | -0,197 | 0,000 | 0,131 |
| 25 | **BHC** | 0,677 | 0,153 | 0,000 | -0,157 | 0,000 | 0,105 |

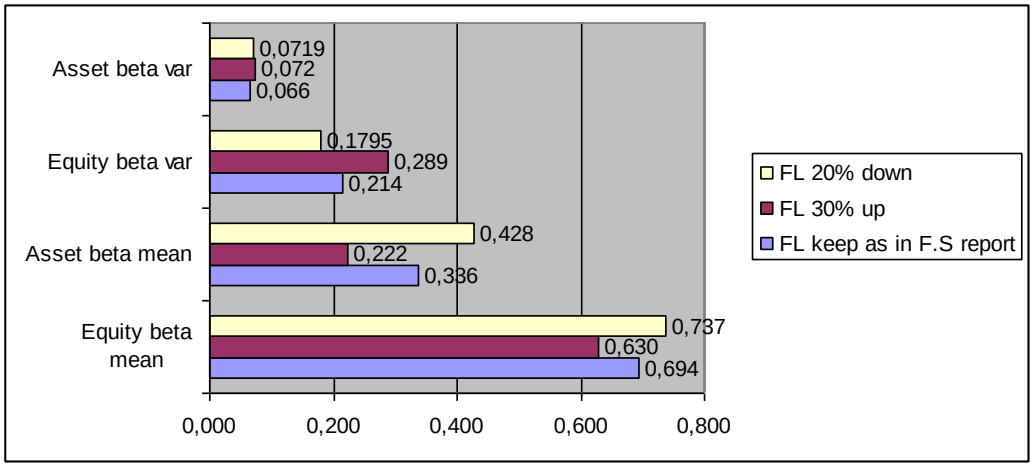
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 26 | **BHT** | 0,073 | 0,012 | -0,111 | -0,009 | 0,065 | 0,034 |
| 27 | **BT6** | 0,601 | 0,187 | 0,000 | -0,124 | 0,000 | 0,083 |
| 28 | **BTS** | 0,851 | 0,182 | 0,000 | -0,201 | 0,000 | 0,134 |
| 29 | **CCM** | 1,464 | 0,740 | 0,000 | -0,217 | 0,000 | 0,145 |
| 30 | **CYC** | 0,497 | 0,151 | 0,000 | -0,104 | 0,000 | 0,069 |
| 31 | **DAC** | 0,542 | 0,295 | 0,000 | -0,074 | 0,000 | 0,049 |
| 32 | **DTC** | 0,344 | 0,068 | 0,000 | -0,083 | 0,000 | 0,055 |
| 33 | **GMX** | 0,792 | 0,491 | -0,124 | -0,153 | 0,079 | 0,115 |
| 34 | **HCC** | 0,760 | 0,397 | 0,000 | -0,109 | 0,000 | 0,072 |
| 35 | **HHL** | 1,787 | 0,692 | 0,000 | -0,329 | 0,000 | 0,219 |
| 36 | **HLY** | 0,652 | 0,307 | 0,000 | -0,103 | 0,000 | 0,069 |
| 37 | **HOM** | 0,585 | 0,243 | 0,000 | -0,103 | 0,000 | 0,068 |
| 38 | **MCC** | 0,863 | 0,780 | -0,021 | -0,044 | 0,014 | 0,030 |
| 39 | **MCL** | 0,347 | 0,183 | -0,083 | -0,081 | 0,052 | 0,065 |
| 40 | **NNC** | 0,277 | 0,211 | -0,022 | -0,035 | 0,014 | 0,025 |
| 41 | **QNC** | 0,890 | 0,100 | 0,000 | -0,237 | 0,000 | 0,158 |
| 42 | **SCC** | 0,576 | 0,434 | 0,000 | -0,043 | 0,000 | 0,028 |
| 43 | **SCJ** | 0,931 | 0,471 | 0,000 | -0,138 | 0,000 | 0,092 |
| 44 | **SDY** | 1,156 | 0,388 | 0,000 | -0,230 | 0,000 | 0,154 |
| 45 | **SHN** | 3,693 | 1,807 | 0,000 | -0,566 | 0,000 | 0,377 |
| 46 | **TBX** | 0,517 | 0,261 | 0,000 | -0,077 | 0,000 | 0,051 |
| 47 | **TCR** | 0,828 | 0,410 | 0,000 | -0,125 | 0,000 | 0,084 |
| 48 | **TLT** | 1,569 | 0,095 | 0,000 | -0,442 | 0,000 | 0,295 |
| 49 | **TMX** | 1,559 | 0,568 | 0,000 | -0,297 | 0,000 | 0,198 |
| 50 | **TSM** | 1,423 | 1,061 | -0,119 | -0,188 | 0,077 | 0,134 |
| 51 | **TTC** | 0,622 | 0,212 | 0,000 | -0,123 | 0,000 | 0,082 |
| 52 | **TXM** | 1,025 | 0,382 | 0,000 | -0,193 | 0,000 | 0,129 |
| 53 | **VCS** | 1,021 | 0,433 | 0,000 | -0,176 | 0,000 | 0,118 |
| 54 | **VHL** | 0,538 | 0,137 | 0,000 | -0,120 | 0,000 | 0,080 |
| 55 | **VIT** | 0,541 | 0,126 | 0,000 | -0,125 | 0,000 | 0,083 |
| 56 | **VTS** | 0,609 | 0,365 | 0,000 | -0,073 | 0,000 | 0,049 |
| 57 | **YBC** | 0,697 | 0,121 | 0,000 | -0,173 | 0,000 | 0,115 |
| | | | **Average** | -0,019 | -0,153 | 0,012 | 0,105 |

*Source: Viet Nam stock exchange 2012)*

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




Appendix 6. Comparing statistical results of three (3) scenarios of changing FL of 121 listed firms in the consumer good industry




*Source: Viet Nam stock exchange 2012*

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.