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TAX RATES EFFECTS ON THE RISK LEVEL OF LISTED VIET NAM WATER INDUSTRY FIRM DURING GLOBAL ECONOMIC CRISIS 2007-2009[1]

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Abstract: The emerging stock market in Viet Nam has been developed since 2006 and affected by the financial crisis 2007-2009. This study analyzes the impacts of tax policy on market risk for the listed firms in the water industry as it becomes necessary. First, by using quantitative and analytical methods to estimate asset and equity beta of total 9 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 tax rates (20%, 25% and 28%), we recognized that there is not large disperse in equity beta values, estimated at 0,896, 0,913 and 0,923. Third, by changing tax rates in 3 scenarios (25%, 20% and 28%), we recognized both equity and asset beta mean values have positive relationship with the increasing levels of tax rate. Finally, this paper provides some outcomes that could provide companies and government more evidence in establishing their policies in governance.

Key Words: Beta, Capital Structure, Economic Crisis, Risk, Tax Rate, water industry

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1. Introduction

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

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 tax rates on beta for listed water companies in Viet Nam stock exchange as following:

Issue 1: Whether the risk level of banking firms under the different changing scenarios of tax rates increase or decrease so much.

Issue 2: Whether the disperse distribution of beta values become large in the different changing scenarios of tax rates estimated in the water industry.

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

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

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

3. Literature Review

Smith (2004) mentions in Chicago, properties located in a designated TIF (tax increment financing) district will exhibit higher rates of appreciation after the area is designated a qualifying TIF district when compared to those properties selling outside TIF districts, and when compared to properties that sell within TIF district boundaries prior to designation.

David (2009) stated the U.S states can increase the likelihood of using tax rate adjustments to cope with fiscal volatility rather than (more harmful) spending fluctuations. Robert et all (2011) recognized a significant positive relation between changes in intercorporate investment and changes in corporate marginal tax rates on ordinary income.

George and Jot Yau (2012) found that there is a positive relationship between transaction

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cost and price volatility, suggesting that the imposition of a transaction tax could increase financial market fragility, increasing the likelihood of a financial crisis rather than reducing it. Mark (2012) found in some European countries during the crisis raising taxe rates and tax burdens, the trend in which overall revenue levels were broadly stable while marginal rates in corporate and top personal income declined has stopped. Then, Filip (2012) believed low levels of taxation, esp. low levels of taxation on the income or wealth of the so-called productive segments of society are beneficial for economic growth.

Finally, tax rate can be considered as one among many factors that affect business risk of water firms.

4. Conceptual Theories

The Impact of Fiscal Policy on the Economy

Tax policy is one among major fiscal policies. When the government decides to change the tax policy or tax rates, the mobility of capital in the markets will be affected.

In a specific industry such as water industry, on the one hand, using tax policy with a decrease or increase in tax rate could affect tax revenues, profit after tax and financial results and compensation and jobs of the industry. And it also shows the purpose of fiscal policy: following either contractionary or expansionary directions.

During and after financial crises such as the 2007-2009 crisis, there raises concerns about fiscal policies or public policies of many countries, in both developed and developing markets. The government might choose either lowering the tax rates or cutting the public expenditures while increasing demand stimulating programs to resolve difficulties from the crisis.

5. Methodology

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) to estimate systemic risk results and tax impacts.

In this research, analytical research method is used, philosophical method is used and specially, tax rate scenario analysis method is used. Analytical data is from the situation of listed water firms in VN stock exchange and curent 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 9 listed firms in the water market with the live data from the stock exchange.

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Firstly, we estimate equity beta values of these firms and use financial leverage to estimate asset beta values of them. Secondly, we change the tax rate from 25% to 28% and 20% to see the sensitivity of beta values. We found out that in 3 cases (rate = 20%, 25%, and 28%), asset beta mean is estimated at 0,712, 0,724 and 0,732 which increases if tax rate increases. Also in 3 scenarios, we find out var of asset beta estimated at 0,594, 0,608 and 0,616 (almost the same) which shows acceptable risk dispersion. Tax rate changes almost has certain effect on asset beta var under financial leverage.

7. Empirical Research Findings and Discussion

In the below section, data used are from total 9 listed water companies on VN stock exchange (HOSE and HNX mainly). In the scenario 1, current tax rate is 25% which is used to calculate market risk (beta). Then, two (2) tax rate scenarios are changed up to 28% and down to 20%, compared to the current corporate tax rate.

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

7.1 Scenario 1: current tax rate is 25%

In the case of tax rate of 25%, all beta values of 9 listed firms on VN water market as following:

Table 1. Market risk of Listed Companies on VN Water Market (t = 25%)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage
1	BTW	2,272	1,951	PJS as comparable	14,1%
2	BWA	0,413	0,381	LKW as comparable	7,6%
3	CLW	0,452	0,293	NBW as comparable	35,0%
4	GDW	1,723	1,210	BTW as comparable	29,8%
5	LKW	0,438	0,376	NTW as comparable	14,3%
6	NBW	0,634	0,435	SFC as comparable	31,5%
7	NNT	0,105	0,017	PCG as comparable	84,0%
8	NTW	0,493	0,386	HFC as comparable	21,6%
9	PJS	2,552	2,176	VMG as comparable	14,7%
10	TDW	0,046	0,017	NNT as comparable	63,3%

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7.2. Scenario 2: tax rate increases up to 28%

If corporate tax rates increases up to 28%, all beta values of total 9 listed firms on VN water market as below:

Table 2. Market Risks of Listed Water Firms (t = 28%)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage
1	BTW	2,292	1,968	PJS as comparable	14,1%
2	BWA	0,418	0,386	LKW as comparable	7,6%
3	CLW	0,462	0,300	NBW as comparable	35,0%
4	GDW	1,756	1,233	BTW as comparable	29,8%
5	LKW	0,443	0,380	NTW as comparable	14,3%
6	NBW	0,641	0,439	SFC as comparable	31,5%
7	NNT	0,108	0,017	PCG as comparable	84,0%
8	NTW	0,496	0,389	HFC as comparable	21,6%
9	PJS	2,564	2,186	VMG as comparable	14,7%
10	TDW	0,048	0,018	NNT as comparable	63,3%

7.3. Scenario 3: tax rate decreases down to 20%

If corporate tax rate decreases down to 20%, all beta values of total 9 listed firms on the water market in VN as following:

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Table 3. Market Risk of Listed Water Firms (t = 20%)

Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Note	Financial leverage
1	BTW	2,238	1,922	PJS as comparable	14,1%
2	BWA	0,403	0,373	LKW as comparable	7,6%
3	CLW	0,436	0,283	NBW as comparable	35,0%
4	GDW	1,671	1,173	BTW as comparable	29,8%
5	LKW	0,430	0,369	NTW as comparable	14,3%
6	NBW	0,624	0,427	SFC as comparable	31,5%
7	NNT	0,099	0,016	PCG as comparable	84,0%
8	NTW	0,487	0,382	HFC as comparable	21,6%
9	PJS	2,533	2,159	VMG as comparable	14,7%
10	TDW	0,042	0,015	NNT as comparable	63,3%

All three above tables and data show that values of equity and asset beta in the case of increasing tax rate up to 28% or decreasing rate down to 20% have small fluctuation.

8. Comparing Statistical Results in 3 Scenarios of Changing Tax Rate

Table 4. Statistical Results (tax rate = 25%)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,552	2,176	0,3763
MIN	0,046	0,017	0,0289
MEAN	0,913	0,724	0,1886
VAR	0,8376	0,6080	0,2297
Note: Sample size : 10			

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Table 5. Statistical Results (tax rate = 28%)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,564	2,186	0,3780
MIN	0,048	0,017	0,0309
MEAN	0,923	0,732	0,1913
VAR	0,8501	0,6165	0,2336
Note: Sample size : 10			

Table 6. Statistical Results (tax rate = 20%)

Statistic results	Equity beta	Asset beta (assume debt beta = 0)	Difference
MAX	2,533	2,159	0,3734
MIN	0,042	0,015	0,0265
MEAN	0,896	0,712	0,1844
VAR	0,8176	0,5943	0,2233
Note: Sample size : 10			

Based on the above results, we find out:

Equity beta mean values in all 3 scenarios are low (< 1) and asset beta mean values are also small (< 0,8) although max equity beta values in some cases might be higher than (>) 1. In the case of current tax rate of 25%, equity beta value fluctuates in an acceptable range from 0,046 (min) up to 2,552 (max) and asset beta fluctuates from 0,017 (min) up to 2,176 (max). If corporate tax rate increases to 28%, equity beta moves from 0,048 (min) up to 2,564 (max) and asset beta moves from 0,017 (min) up to 2,186 (max). Hence, we note that there is an increase in equity beta min value if corporate tax increases. When tax rate decreases down to 20%, equity beta value changes from 0,042 (min) up to 2,533 (max) and asset beta changes from 0,015 (min) up to 2,159 (max). So, there is a small decrease in equity beta min value when tax rate decreases in scenario 3.

Beside, Exhibit 6 informs us that in the case 28% tax rate, average equity beta value of 10 listed firms increases up to 0,01 while average asset beta value of these 10 firms increase less slightly up to 0,007. Then, when tax rate reduces to 20%, average equity beta value of 10 listed firms reduce to -0,016 and average asset beta value of 10 firms down to -0,012.

The below chart 1 shows us : when tax rate decreases down to 20%, average equity and

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asset beta values decrease slightly (0,896 and 0,712) compared to those at the initial rate of 25% (0,913 and 0,724). At the same time, when tax rate increases up to 28%, average equity beta increases slightly whereas average asset beta value remains unchanged (to 0,923 and 0,732). However, the fluctuation of equity beta value (0,850) in the case of 28% tax rate is higher than (>) the results in the rest 2 tax rate cases.

Chart 1. Comparing Statistical Results of Three (3) Scenarios of Changing Tax Rate (2007-2009)

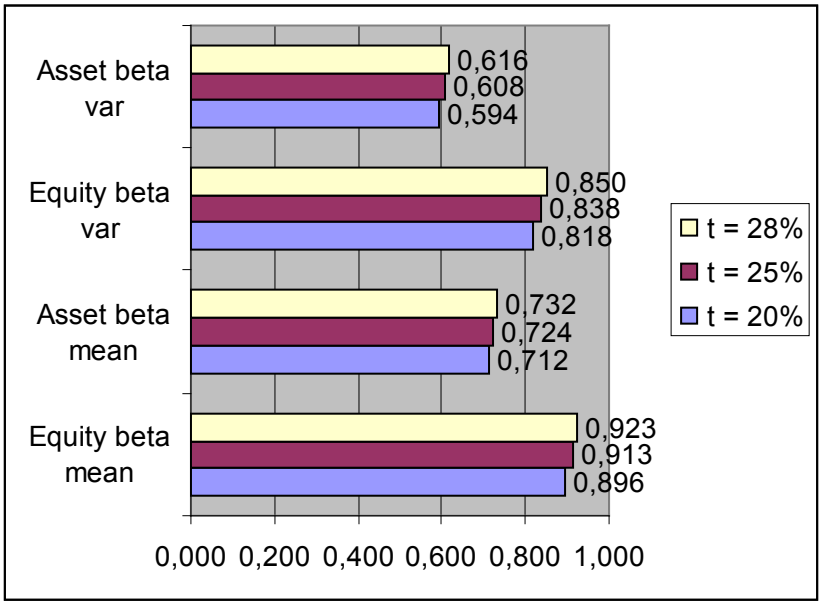
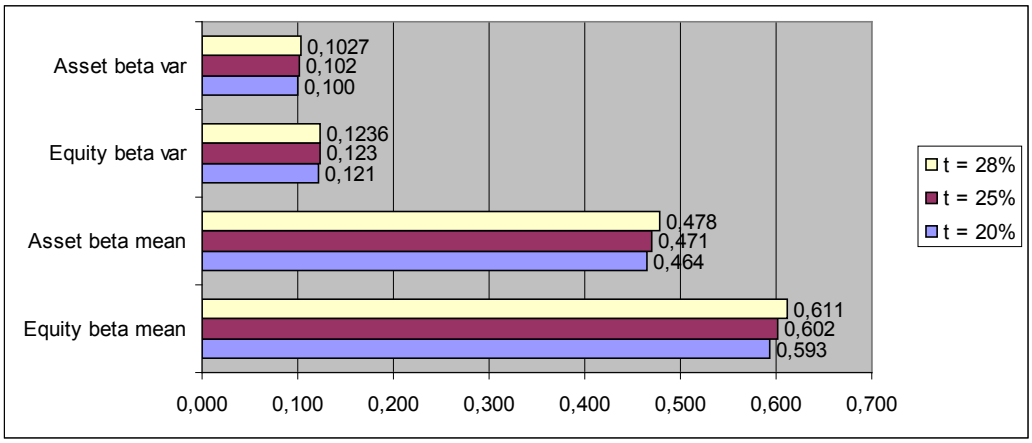


Chart 2. Comparing Statistical Results of Three (3) Scenarios of Changing Tax Rate (2007-2011)



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9. Risk Analysis

On the one hand, in the case of decreasing tax rate, (20%), the market and companies can receive more benefits such as generating more jobs, output and compensation, but the government budget can have deficit and the government has to cut expenditures. Hence, changes in tax rates can have both positive and negative impacts on the local market.

On the other hand, in the case of increasing tax rate (28%), the government will have budget to finance public expenditures but the income tax burden could reduce both demand and supply, as well as the output, jobs and compensation.

10. Conclusion and Policy Suggestion

In summary, the government has to consider the impacts on the mobility of capital in the markets when it changes the tax policy or tax rates. Beside, it continues to increase the effectiveness of building the legal system and regulation and macro policies supporting the plan of developing the water 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, although we could note that in this study when tax rate is going to increase up to 28%, the risk level does not increase so much, compared ot the case it is going to decrease down to 20%. And the risk dispersion during 2007-2009 (asset beta var of 0,608) is higher than that during 2007-2011 (0,102) in case tax 25%.

The State Bank of Viet Nam continues to increase the effectiveness of capital providing channels for water industry companies. 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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2007-2009 KÜRESEL EKONOMİK KRİZDE BELİRTİLEN VİETMAN SU ENDÜSTRİSİ FİRMALARININ RİSK DÜZEYLERİ ÜZERİNDE VERGİ ÜRÜNLARININ ETKİSİ

Öz: Vietnam'da ortaya çıkan borsa 2006'dan bu yana gelişim göstermiş ve 2007-2009 ekonomik krizinden etkilenmiştir. Bu çalışma, gerekli olduğu üzere su endüstrisindeki söz konusu firmalar için vergi politikasının piyasa riski üzerindeki etkilerini incelemektedir. İlk olarak Vietnam su endüstrisinde bulunan toplam 9 şirketin bilanço betasını uygun bir geleneksel model yardımıyla tahmin etmek için nicel ve analitik yöntemleri kullanarak genel bağlamda beta değerlerinin pek çok kurum için kabul edilebilir olduğunu tespit ettik. İkinci olarak ise değişen vergi oranlarına ilişkin 3 farklı senaryo altında (%20, %25 ve %28) 0,896, 0,913 ve 0,923 olarak tahmin edilen öz sermaye beta değerlerinde büyük bir dağılım bulunmadığını fark ettik. Üçüncü bir nokta bu 3 senaryodaki vergi oranlarını değiştirerek (%20, %25 ve %28) hem öz sermaye hem de varlıkların ortalama beta değerlerinin, artan vergi oranları düzeyiyle olumlu bir ilişkiye sahip olduğunu tespit ettik. Son olarak bu çalışma, şirketlerin ve hükümetin yönetim politikalarını belirlemede daha fazla bulgu sağlayabilecek bazı sonuçlar doğurmaktadır. Son yıllarda tüm ekonominin gelişimi ve FDI (dolaysız yabancı yatırım) büyümesiyle birlikte Vietnam su endüstrisi, ekonomi için bazı olumlu etkileri olan aktif ekonomik sektörlerden biri olarak görülmektedir. Bu çalışma aşağıdaki şekilde düzenlenmiştir. Araştırma konuları ve literatür incelemesi, kısa bir özet için 2. Ve 3. Bölümlerde ele alınacaktır. Daha sonra metodoloji ve kavramsal teoriler de 4 ve 5 numaralı bölümlerde açıklanmaktadır. 6. bölüm, deneysel analizdeki verileri betimlemektedir. 7. bölüm ise deneysel sonuçlar ve bulguları ortaya koymaktadır. Ardından 8. bölüm de analitik sonuçlara yer vermektedir. 9 numaralı bölümde risk analizine yer verilmektedir. Son olarak 10. bölümde de bazı politika önerileri yer almaktadır. Bu çalışma aynı zamanda referanslar, sergilenenler ve ilgili internet kaynaklarıyla okuyucularına destek olmaktadır. Sistemsel risk sonuçlarını ve vergi etkilerini tahmin etmek için 2007-2011 kriz dönemi boyunca Vietnam'daki (HOSE ve HNX) menkul kıymetler borsasına ait canlı verileri bu çalışmada kullanıyoruz. Analitik araştırma yöntemi ve felsefi yöntem kullanılmakta olup özellikle de vergi oranı senaryo analizlerinden yararlanılmaktadır. Analitik veriler de Vietnam menkul kıymetler borsasındaki söz konusu su şirketlerinin durumlarından elde edilmektedir ve mevcut vergi oranı %25'tir. Son olarak da bu her iki kuruma, ilgili örgütlere ve hükümete politika önerisinde bulunmak için bu sonuçları kullanmaktayız. Sonuçta vergi politikası veya vergi oranını değiştirdiğinde hükümet, piyasalardaki sermayenin hareketliliği üzerindeki etkileri de

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düşünmek zorundadır. Ayrıca su piyasasının geliştirilmesi planını destekleyen bir yasal sistem, düzenleme ve makro politikalar oluşturmanın etkinliği de artmaya devam etmektedir. Maliye Bakanlığı, aynı zamanda diğer makro politikalarla birleşmesi gereken mali politikalar ile vergi politikalarının etkinliğini arttırmaya devam etmektedir. Fakat bu çalışmada vergi oranı %28'e çıkacağı zaman, %20'ye indiği duruma kıyasla risk düzeyinin o kadar artış göstermediğini de belirtebiliriz. 2007-2009 yıllarında risk dağılımı (0,608 öz kaynak beta) %25'lik vergi durumunda 2007-2011'e kıyasla daha yüksektir (0,102). Vietnam Merkez Bankası, su endüstrisi şirketleri için kanallar sağlamak yoluyla sermayenin etkinliğini arttırmaya devam etmektedir. Ayrıca farklı hükümet organları arasındaki tüm çabaların da koordine olması gerekmektedir. Son olarak bu çalışma, başka araştırmalar için çıkarımlar ve mevcut piyasa koşullarına ilişkin olarak Vietnam hükümeti, ilgili örgütler, ekonomistler ve yatırımcılar için politika önerileri sunmaktadır.

Anahtar Kelimeler: Beta, Sermaye, Yapı, Ekonomik Kriz, Risk, Vergi Oranı, Su Endüstrisi

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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 (2007: required reserves ratio at SBV is changed from 5% to 10%) (2009: special supporting interest rate is 4%)
2009	9%-12%	9%-10%	
2008	19%-21%	15%-16,5%	
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%	

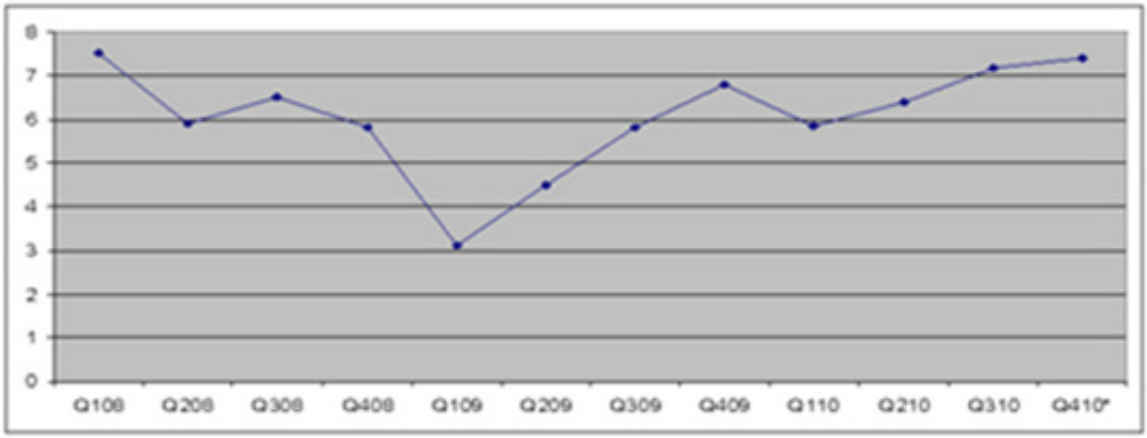
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Exhibit 3. Inflation, GDP growth and macroeconomics factors

(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*)



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Exhibit 5. Risk and financial leverage of 9 listed banking firms on VN stock exchange period 2007-2011

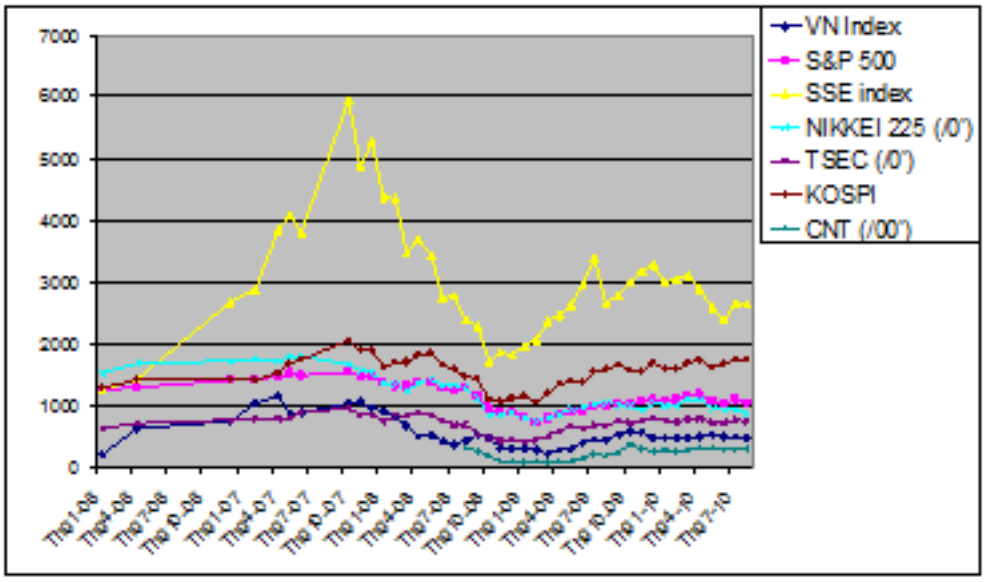
Order No.	Company stock code	Equity beta	Asset beta (assume debt beta = 0)	Financial leverage
1	ACB	0,7874	0,0378	95,2%
2	CTG	0,5540	0,0312	94,4%
3	EIB	0,3847	0,0365	90,5%
4	HBB	0,1335	0,0138	89,7%
5	MBB	0,0722	0,0054	92,5%
6	NVB	0,0211	0,0026	87,7%
7	SHB	1,0038	0,0824	91,8%
8	STB	0,7395	0,0721	90,3%
9	VCB	0,4083	0,0299	92,7%

Exhibit 6. Increase/decrease risk level of listed water industry firms under changing scenarios of tax rates : 25%, 28%, 20% period 2007 - 2009

Order No.	Company stock code	t = 25%		t = 28%		t = 20%	
		Equity beta	Asset beta	Increase / Decrease (equity beta)	Increase / Decrease (asset beta)	Increase / Decrease (equity beta)	Increase / Decrease (asset beta)
1	BTW	2,272	1,951	0,021	0,018	-0,034	-0,029
2	BWA	0,413	0,381	0,006	0,005	-0,009	-0,009
3	CLW	0,452	0,293	0,010	0,006	-0,016	-0,010
4	GDW	1,723	1,210	0,033	0,023	-0,052	-0,037
5	LKW	0,438	0,376	0,005	0,004	-0,008	-0,007
6	NBW	0,634	0,435	0,007	0,005	-0,011	-0,007
7	NNT	0,105	0,017	0,003	0,001	-0,005	-0,001
8	NTW	0,493	0,386	0,003	0,003	-0,006	-0,004
9	PJS	2,552	2,176	0,012	0,010	-0,019	-0,017
10	TDW	0,046	0,017	0,003	0,001	-0,004	-0,001
			Average	**0,0102**	**0,0075**	**-0,0164**	**-0,0122**

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Exhibit 7. VNI Index and other stock market index during crisis 2006-2010



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.***