

# Where is Beta going? A Case in Vietnam's Commercial Electricity Industry during the Post Low Inflation Period 2015-2017

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The Vietnam economy and commercial electricity industry have gained lots of achievements after the financial crisis of 2007-2011, until it reached a low inflation rate of 0.6% in 2015. Software companies face challenges in an expanding Vietnam market such as pricing policy and supporting services. This paper measures the volatility of market risk in the Vietnam electricity industry after this period. The main reason is the vital role of the software company group in Vietnam. In recent years they always go with risk potential and risk control policies for economic development and growth. . This research paper aims to examine the increase or decrease in market risk of Vietnam's commercial electricity firms during the post low inflation period of 2015-2017. Firstly, by using quantitative combined with comparative data analysis methods, we find out the risk level measured by equity beta mean in the commercial electricity industry is acceptable, i.e. it is less than ( $<$ ) 1. One of the major findings was the comparison between the risk levels of the electricity industry during the financial crisis 2007-2009 compared to the post low inflation time of 2015-2017. In fact, the research showed market risk fluctuation, measured by asset and equity beta VAR, during the post low inflation time has decreased slightly. Finally, this paper provides some ideas that could provide companies and government with more evidence for establishing their governance policies. This was a complex task but the research results give us a warning that the market risk volatility might be higher during the post low inflation period of 2015-2017. Our conclusion recommends some policies and plans to deal with it.

Finding new potential markets and credit and financing policies are among the directions for electricity companies.

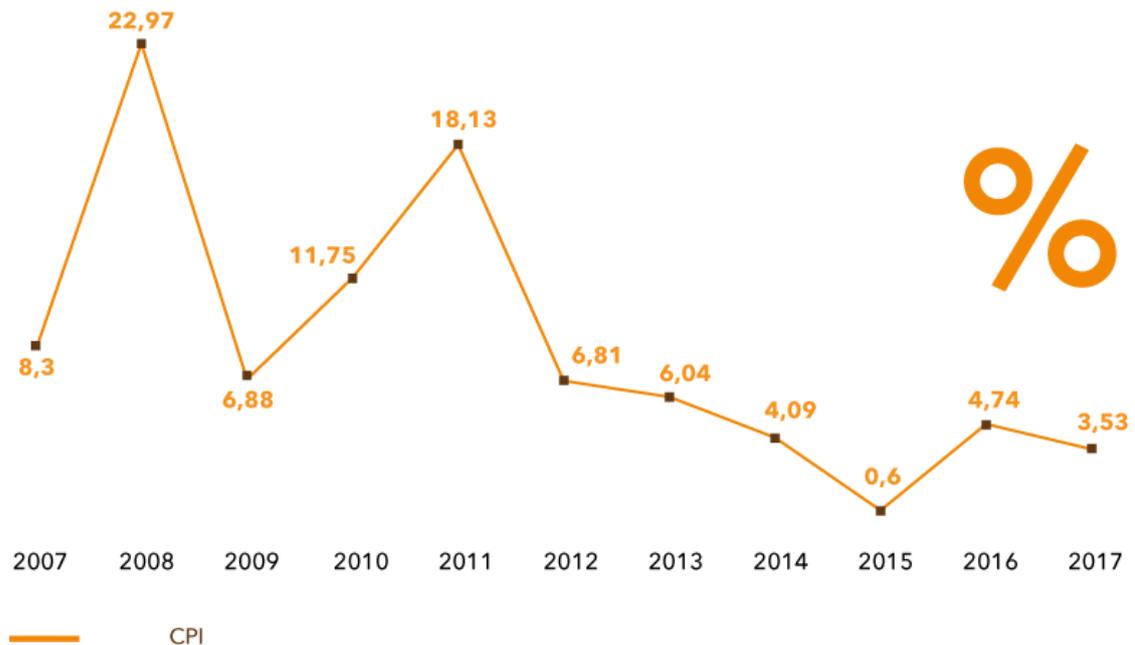
**Key words:** *Risk Management, Asset Beta, Financial Crisis, Commercial Electricity Industry, Policy.*

## Introduction

For many recent years, the Vietnam commercial electricity market is evaluated as one of the active markets, which have a positive effect for the economy. The development of the commercial electricity industry parallels the financial market and economic growth. Electrical product quality is trying to be achieved through effectiveness, durability and easy to use.

Generally speaking, central banks aim to maintain inflation around 2% to 3%. Increases in inflation significantly beyond this range can lead to possible hyperinflation; a devastating scenario in which inflation rises rapidly out of control. Looking at Exhibits 1 and 2 we can see the Vietnam economy has controlled inflation well. High inflation might lead to a higher lending rate and harm the commercial electricity industry because of a rising material price (Yusup, 2019).

**Exhibit 1:** Inflation, CPI over 10 years from 2007 to 2017 in Vietnam



**Exhibit 2:** GDP growth rate over 10 years from 2007 to 2018 in Vietnam



This study will calculate and consider whether the market risk level during the post low inflation time of 2015 to 2017 has increased or decreased in the commercial electricity industry, compared to those statistics in the financial crisis time of 2007 to 2009.

The paper is organised as follows: introduction, research issues, literature review, conceptual theories and methodology. Next, section 3 covers the main research findings/results and section 4 is discussion and conclusion. Policy suggestions are in the section 5 (Mardani & Fallah, 2018).

## **Body of Manuscript**

### ***Research Issues***

The scope of this study is as follows.

Issue 1: Whether the risk level of commercial electricity firms under the different changing scenarios of post low inflation period of 2015 to 2017 compared to the financial crisis of 2007 to 2009 increases or decreases.

Issue 2: Because Vietnam is an emerging and immature financial market and the stock market is still in the starting stage, whether the dispersed distribution of beta values increase in the different changing periods for the commercial electricity industry.

This paper also tests three hypotheses:

Hypothesis 1: Comparing two periods, during the impact of the financial crisis, when the beta or risk level of listed companies in the commercial electricity industry was relatively higher than those in the post low inflation environment.

Hypothesis 2: Because Vietnam is an emerging and immature financial market and the stock market is still in the recovery stage, there will be an increased disperse distribution in beta values estimated in the commercial electricity industry.

Hypothesis 3: With the above reasons, the mean equity and asset beta values of these listed commercial electricity firms tend to impose a high risk level, i.e., beta greater than ( $>$ ) 1. This hypothesis is based on the context of emerging markets including Vietnam, where there is a lack of sufficient information and data disclosure, although it might have high growth rate.

### ***Literature Review***

Eugene & French, (2004) indicated through 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 capitalisation beta. 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.

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 undercapitalisation and excessive risk exposure for the Lehman Brothers. The model reinforces the importance of the relationship between capital structure and risk management. Gunaratha (2013) revealed that in different industries in Sri Lanka, the degree of financial leverage has a significant positive correlation with financial risk.

During the financial crisis of 2007 to 2009 in Vietnam and global financial markets, high inflation causing high lending rates created risks for many industries such as real estate and the whole economy. Mohamad et al. (2014) showed that financial risk is vital for both return on asset and return on equity in the performance equation. This result also implied that we cannot avoid the inverse relation of financial risk and performance; therefore the bank system would be better to make a trade-off between risk and performance.

Wang et al. (2014) presented results showing that firms with long-term institutional investors receive significantly positive abnormal returns around the offer announcement.

Gunarathna (2016) revealed that whereas firm size negatively impacts on financial risk, financial leverage and financial risk have a positive relationship.

Hami (2017) showed that financial depth has been affected negatively by inflation in Iran during the observation period.

Park et al (2019) found that sentiment caused by investors' inattentiveness mainly drives the underlying potent relationship between investor sentiment and aggregate stock returns. The results accord with the notion that investor attention generally improves market efficiency.

### ***Conceptual Theories***

The positive sides of low inflation: Low (not negative) inflation reduces the potential of economic recession by enabling the labour market to adjust more quickly in a downturn, and reduces the risk that a liquidity trap will prevent monetary policy from stabilising the economy. This explains why many economists nowadays prefer a low and stable rate of inflation. It will help investment, encourage exports and prevent a boom economy.

The negative side of low inflation: Low inflation leads to low aggregate demand and economic growth, recession potential and high unemployment. Production becomes less vibrant. Low inflation makes real wages higher. Workers can therefore reduce the supply of labour and increase rest time. On the other hand, low product prices reduce production motivation.

The central bank can use monetary policies, for instance to: increase interest rates to reduce lending; control money supply; or the Ministry of Finance and the government can use tight fiscal policy (high tax) to achieve low inflation.

Financial and credit risk in the bank system can increase when the financial market becomes more active and increases, especially with more international linkage influence. This has the effect of risk increasing in the software sector. Hence, central banks, commercial banks,

commercial electricity firms and the government need to organise data to analyse and control these risks, including market risk.

## **Methodology**

For this research the data used was from the stock exchange market in Vietnam (HOSE and HNX) during the financial crisis 2007 to 2009 period and the post low inflation time 2015 to 2017; to estimate systemic risk results. Both fundamental data analysis and financial techniques were performed to calculate equity and asset beta values.

In this study, analytical research and comparative analysis methods were used combined with quantitative data analysis. Analytical data is from the listed commercial electricity firms in the Vietnam stock exchange.

Specifically, stock price data is from live data on the HOSE stock exchange during the 3 years of 2015 to 2017, which presents the low inflation environment. Then, we used both the analytical and summary method to generate results from the data calculations.

Finally, we used the results to suggest policies for relevant organisations and government.

## **Main Results**

### ***General Data Analysis***

We got analytical results from the research sample with 10 listed firms in the commercial electricity market using live data from the stock exchange.

### ***Empirical Research Findings and Discussion***

In the below section, the data was from 10 listed commercial electricity companies on Vietnam stock exchange (HOSE and HNX). Different scenarios are created by comparing the calculation risk data between the post low inflation period and the financial crisis.

Market risk (beta) under the impact of tax rate, includes: equity beta and asset beta. We modelled our data analysis as shown in Figure 1.

**Figure 1:** Analysing market risk under two scenarios: post low inflation period 2015-2017 compared to the financial crisis 2007-2009

	Risk level (equity beta)	Risk level (asset beta)	Other measures	Gap
Post low inflation period	Scenario ...	Scenario ...	Scenario ...	Analysis
Financial crisis period				

**Table 1:** The volatility of market risk (beta) of commercial electricity industry in the post low inflation period 2015-2017

Order No.	Company stock code	2015-2017 (post - low inflation)		Financial leverage	Note
		Equity beta	Asset beta (assume debt beta = 0)		
1	<a href="#">TSB</a>	-1.044	-0.529	49.3%	assume debt beta = 0; debt ratio as in F.S 2015; FL calculated as total debt/total capital
2	<a href="#">BTH</a>	0.021	0.015	28.2%	
3	<a href="#">DZM</a>	0.027	0.013	53.9%	
4	<a href="#">DVH</a>	0.061	0.000	99.9%	
5	<a href="#">LGC</a>	0.444	0.166	62.6%	
6	<a href="#">CJC</a>	0.282	0.000	74.0%	
7	<a href="#">TYA</a>	0.448	0.224	50.0%	
8	<a href="#">PPS</a>	0.399	0.022	94.4%	
9	<a href="#">GLT</a>	0.074	0.036	51.7%	
10	<a href="#">NAG</a>	-0.004	-0.002	41.6%	

**Table 2:** The statistics of volatility of market risk (beta) of commercial electricity industry in the post low inflation period 2015-2017

Statistic results	2015-2017 (post - low inflation)	
	Equity beta	Asset beta (assume debt beta = 0)
MAX	0.448	0.224
MIN	-1.044	-0.529
MEAN	0.071	-0.006
VAR	0.1874	0.0399

Note: Sample size: 10

**Table 3:** The comparison of volatility of market risk (beta) of commercial electricity industry in the post low inflation period 2015-2017 and the financial crisis 2007-2009

Order No.	Company stock code	2007-2009 (financial crisis)		2015-2017 (post low inflation)		Note
		Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)	
1	<a href="#">TSB</a>	0.376	0.102	-1.044	-0.529	assume debt beta = 0; debt ratio as in F.S 2015 and 2008
2	<a href="#">BTH</a>	0.701	0.465	0.021	0.015	
3	<a href="#">DZM</a>	1.372	0.551	0.027	0.013	
4	<a href="#">DVH</a>	0.136	0.041	0.061	0.000	
5	<a href="#">LGC</a>	0.890	0.361	0.444	0.166	
6	<a href="#">CJC</a>	0.587	0.091	0.282	0.000	
7	<a href="#">TYA</a>	1.145	0.359	0.448	0.224	
8	<a href="#">PPS</a>	0.092	0.007	0.399	0.022	
9	<a href="#">GLT</a>	0.687	0.482	0.074	0.036	
10	<a href="#">NAG</a>	1.220	0.472	-0.004	-0.002	

**Table 4:** The difference between volatility of market risk (beta) of commercial electricity industry in the post low inflation period 2015-2017 and the financial crisis 2007-2009

Order No.	Company stock code	GAP (+/-) 2015-17 compared to 2007-09		Note
		Equity beta	Asset beta (assume debt beta = 0)	
1	<a href="#">TSB</a>	-1.420	-0.631	values (2015-17) minus (-) 2007-09
2	<a href="#">BTH</a>	-0.680	-0.450	
3	<a href="#">DZM</a>	-1.345	-0.538	
4	<a href="#">DVH</a>	-0.075	-0.041	
5	<a href="#">LGC</a>	-0.446	-0.195	
6	<a href="#">CJC</a>	-0.305	-0.091	
7	<a href="#">TYA</a>	-0.697	-0.135	
8	<a href="#">PPS</a>	0.307	0.015	
9	<a href="#">GLT</a>	-0.613	-0.446	
10	<a href="#">NAG</a>	-1.224	-0.474	

**Table 5:** Statistics of volatility of market risk (beta) of commercial electricity industry in the post low inflation period 2015-2017 compared to those in the financial crisis 2007-2009

Statistic results	2007-2009 (crisis)		2015-2017 (post low inflation)		GAP (+/-) 2015-17 compared to 2007-09	
	Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)	Equity beta	Asset beta (assume debt beta = 0)
MAX	1.372	0.551	0.448	0.224	-0.924	-0.327
MIN	0.092	0.007	-1.044	-0.529	-1.136	-0.536
MEAN	0.721	0.293	0.071	-0.006	-0.650	-0.299
VAR	0.1953	0.0439	0.187	0.040	-0.008	-0.004

Note: Sample size: 10

Based on the above calculation result table, we analysed the data as follows.

Firstly, we see in Table 1 that more commercial electricity firms (8 out of 10) have equity beta values lower ( $<$ ) than 1, which means the risk level is acceptable. No firm has an equity beta  $>$  1. There are 2 firms with negative equity beta ( $<$  0).

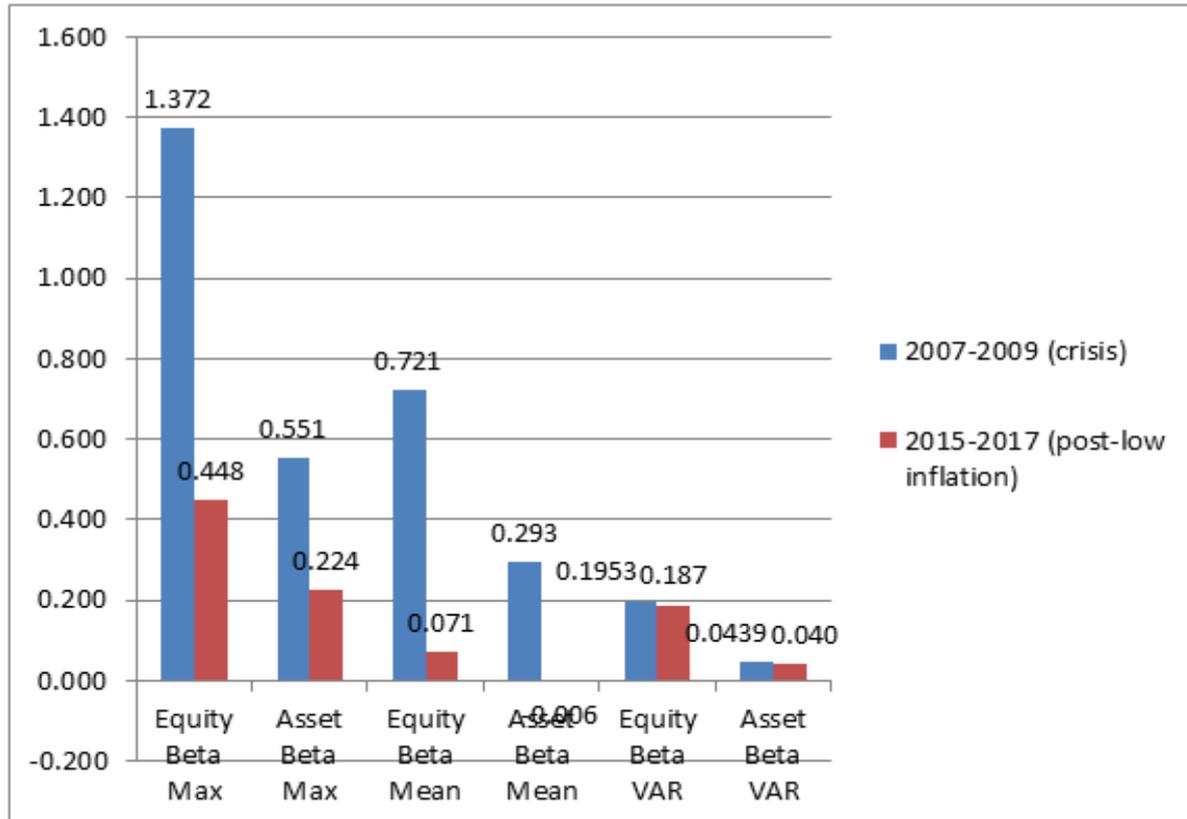
Table 2 shows that the equity beta mean of the sample is 0.071, much lower than ( $<$ ) 1. It is acceptable.

Then, looking at the Table 3, we recognise that there are no firms with equity beta values  $>$  1 in the post low inflation period of 2015-2017, while there are 3 firms with equity beta values  $>$  1 in the financial crisis period of 2007-2009.

Table 5 shows that both equity beta VAR and equity beta mean in the post low inflation period are lower ( $>$ ) than those in the financial crisis period 2007-2009.

More clearly, the value of equity beta VAR and asset beta VAR in the post low inflation period are smaller ( $>$ ) than those in the financial crisis. Also the equity beta mean and asset beta mean are smaller ( $<$ ) than those in the financial crisis. This means that the level of risk in the post low inflation period is lower and the fluctuation in risk level measured by asset and equity beta VAR is lower during the post-low inflation time.

**Chart 1:** Statistics of market risk (beta) in Vietnam commercial electricity industry in the post low inflation period 2015-2017 compared to the financial crisis 2007-2009



### *Discussion for Further Researchers*

We can continue to analyse risk factors and fluctuations shown by equity beta VAR in order to recommend suitable policies and plans to better control market risk.

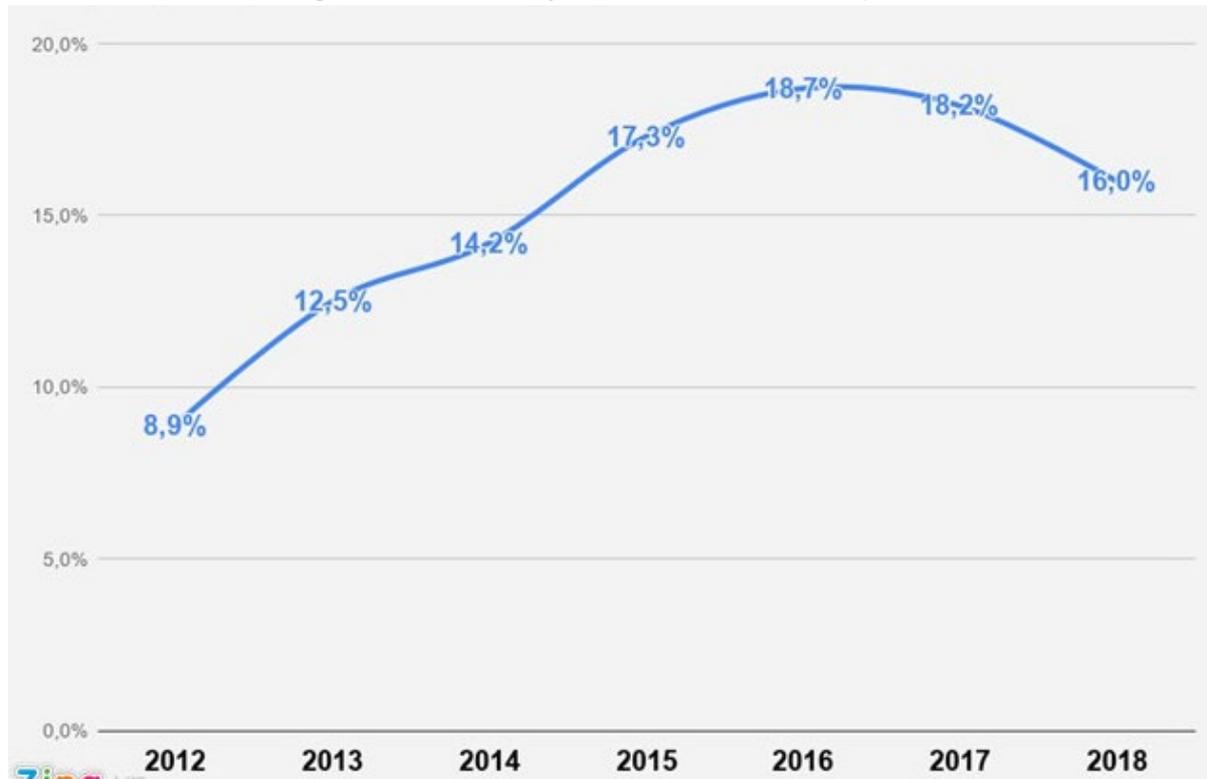
### *Conclusion and Policy Suggestions*

In general, the commercial electricity company group in Vietnam has been contributing significantly to economic development and GDP growth rate of more than 6-7% in recent years. The research analysis shows us that despite market risk decreasing, risk volatility (equity beta VAR) is not decreasing much during the post low inflation period. Commercial electricity firms in Vietnam need to continue enhancing their corporate governance system, structure and mechanisms, as well as their competitive advantage to better control risk. Also, they need to reduce the risk of quality of products and reputation risk of electricity companies. Commercial electricity companies need to identify demand from the 4.0 technology era to enhance quality of labourers for a higher level of automation and offer better products for business management. Risk management through highly qualified human

resource and technology investment are two of vital conditions for electricity industry development.

This research provides evidence that the market risk potential is lower in post low inflation period, while the credit growth rate increased in 2016 and slightly decreased in later years (2017-2018). It means that the local economy is trying to control credit growth reasonably, however we need to analyse risk factors more carefully to reduce more market risk.

**Exhibit 3:** Loan/Credit growth rate in the years from 2012 to 2018) in Vietnam



Looking at Chart 1, the results rejects hypothesis 3 which states that the mean of equity and asset beta values of these listed electricity firms impose a higher risk level, i.e., beta should be higher than ( $>$ ) 1, because the equity beta mean is lower in the post low inflation period. However it supports hypothesis 1 that states when comparing two periods, during the financial crisis impact, the beta or risk level of listed companies in the electricity industry will be relatively higher than those in the post low inflation environment. Additionally, the results reject hypothesis 2 stating that because Vietnam is an emerging and immature financial market and the stock market is still in the recovery stage, there will be an increased disperse distribution in beta values estimated in the electricity industry.

Lastly it generates a warning that as risk fluctuation might be slightly lower in the post low inflation period, the government and relevant bodies such as Ministry of Finance and State



Bank of Vietnam need to consider proper policies. These include a combination of fiscal, monetary, exchange rate and price control policies aiming to reduce risk volatility and hence, help the electricity company group as well as the whole economy become more stable in the next development stage. The Ministry of Finance continue to increase the effectiveness of fiscal policies and tax policies which are needed in combination with other macro policies. The State Bank of Vietnam continues to increase the effectiveness of capital by providing channels for electricity companies, as was noted in this study that debt leverage has impacts on reducing the risk level.

Finally, this study opens new directions for further researchers in risk control policies in the electricity company system as well as in the whole economy. Commercial electricity companies need to do a better pricing strategy and provide extra services to help Vietnam enterprises to build a standardised process.

### **Acknowledgements**

I would like to take this opportunity to express my warm thanks to the Board of Editors of this journal and colleagues at Citibank – HCMC, SCB and BIDV-HCMC, Dr Chen and Dr Yu Hai-Chin at Chung Yuan Christian University for class lectures, also Dr Chet Borucki, Dr Jay and my ex-Corporate Governance sensei, Dr Shingo Takahashi at International University of Japan. My sincere thanks to the editorial office for their support during my research. Also, my warm thanks to Dr Ngo Huong, Dr Ho Dieu, Dr Ly H. Anh, Dr Nguyen V. Phuc, Dr Le Si Dong and my lecturers at Banking University – HCMC Vietnam for their help.

Lastly, thank you very much to my family, colleagues and brother for assistance with providing convenient conditions for my research paper. This is a gift to my grandmothers, Mrs Man and Mrs Ut, and my close friend, Ms Do Thi Sang.



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