

An analysis of the profit sustainability and social responsibility of companies listed in the food and beverage sector in the Stock Exchange of Thailand

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ABSTRACT

This paper attempts to study the sustainability of profit and social responsibility of companies listed in the food and beverage sector of the stock exchange of Thailand. The study aims at three objectives. First, it identifies the best composition between unit profit and expenditure for corporate social responsibility that contributes to sustainability in the long term. Second, it analyzes the status and predicts the direction of profit and expenditure for the corporate social responsibility of companies. Finally, it suggests policies for the companies to achieve sustainable profit and enhance their corporate social responsibility. The study uses the model of Sudtasan and Suriya (2013) to the conceptual framework. For the result, the steady states of all companies are positive. The companies located in the worm glow area include LST, CFRECH and M. The company located in charitable area is SFP. Other companies cannot be analyzed because the calculation of expenditure for social responsibility model is not possible. This is one of the disadvantages of Sudtasan and Suriya model which assumes all positive changes of variable. For the policy suggestion, three companies which are LST, CFRESH and M should reduce their unit profits and corporate social responsibility to achieve the long-run sustainability of both the profit and corporate social responsibility. In contrast, SFP should increase its unit profit but reduce its corporate social responsibility.

Keywords: Theory of the firm, mathematical modeling, phase diagram, sustainable development, corporate social responsibility.

JEL Classification: D21, C62, O12

1. Introduction

Thailand is an agricultural country. It has abundant resources for the production of foods. As a result, there is an increase in the number of food and beverage companies. Many food and beverage manufacturers are listed in the Stock Exchange of Thailand. The target of every company is the sustainability of profit and corporate social responsibility. This research aims at studying about the sustainability of profit and corporate social responsibility of companies listed in the food and beverage sector in the Stock Exchange of Thailand. The study has three objectives. First, it identifies the best composition between unit profit and expenditure for corporate social responsibility that contributes to sustainability in the long term. Second, it analyzes the status and predicts the direction of profit and expenditure for corporate social responsibility of companies. Finally, it suggests policies for the companies to achieve the sustainable profit and enhance their corporate social responsibilities. The study uses the model of sustainable profit and corporate social responsibility originated by Sudtasan and Suriya (2013) to be the conceptual framework with the estimation method suggested by Suriya and Sudtasan (2014).

2. Literature review

Kitsakorn Kinawattanaporn (2009) studied about economic and financial factors that affect the stock price index of food and beverages. The result found that the economic and financial factors that affect stock price index of food and beverages are the percent change in the price index of SET and inflation. Percent change in the price index of SET can be explained by the significant changes in the stock price index of food and beverages in the same direction. Inflation can be explained by the significant change in the direction of stock price index of food and beverages. Other factors not affect to stock price include that interest rate for 12 months, private investment index, and foreign exchange rate, and volume of exports of food and drink. Kittaworn Tangprasertpon (2010) the studies aim to analyze the risk and rates of return of agriculture and food industry. An objectives aim to that determine the true value of the securities (Intrinsic Value) compared to the market price, to analyze about risk and rates of return, to use as a guide in deciding to invest. The result show that the stock of TVO, SSC, GFPT are undervalue mean that a common stock that is trading lower than the real value compute by investors they should to buy the shares of these companies. The price will be adjusted higher. The stock of CPF, TUF, STA, MINT, KSL, OISHI, TF are overvalue mean that a common stock that is trading higher than the real value to be computed by investors and they should sell the shares of these companies. As a result the price of the stock will decrease.

3. Methodology

This paper studied 3 objectives regarding the sustainability of profit and expenditure for social responsibility of companies listed in the food and beverage sector in the stock exchange of Thailand, analyze by model of Sudtasan and Suriya (2013). The formula used in the calculation to determine the profitability and expenditure for social responsibility follows the condition of the sustainability of profit and condition of the expenditure for social responsibility.

The condition of the sustainability of profit is the change of profit over time which is equal zero.

$$\dot{\pi} = 0$$

The equation of profit used to calculation in this study.

$$\dot{\phi} = \frac{(1 + \delta)FX + RD + e^{\ln S} \dot{\ln S} - (\ln S)^\alpha \dot{\phi}}{\alpha (\ln S)^{\alpha-1} \dot{\ln S}}$$

The condition of the expenditure for social responsibility is the change of expenditure for social responsibility over time is zero.

$$\dot{S} = 0$$

The equation of social responsibility used to calculation in this study.

$$\ln S = \left(\frac{\dot{\pi} + (1 + \delta)FX + RD}{\dot{\phi}} \right)^{\frac{1}{\alpha}}$$

Estimation of this study has two methods for calculate the sustainable of profitability and expenditure for social responsibility include that First, ordinary least squares and second, panel data analysis.

Method 1: Ordinary least squares

The ordinary least squares method depends on number of observations must be more than 30 observations and data of this study can be applied. But this method has warning is at the critics of time-invariant parameters such the unit profit. The model can be calculated by the formula

$$B = (X'X)^{-1}(X'Y)$$

Where B represents the parameters to be estimated

X is the matrix of independent variables

Y is the vector of dependent variable.

Method 2: Panel data analysis

The panel data analysis method needs to use observations less than 30 years and data of this study can be applied. Panel data analysis provides two options, the fixed effects model and the random effects model. This econometric method is useful for the analysis of empirical data both collected from the fields and experiments (Suriya, 2013).

From the fixed effect model

Fixed effects model can be written as follows.

$$Y_{it} = (\alpha_0 + \theta_i D_i) + \beta_0 X_{it} + \varepsilon_{it}$$

Where Y_{it} is the dependent variable
 α_0 is the common value in the constant
 θ_i is the firm-specific value in the constant
 D_i is the dummy variable indicate each firm in the group
 β_0 is the parameter of the independent variable
 X_{it} is the independent variable
 ε_{it} is the error term

It can be used when the parameters of all companies in the industry are the same and only different is at the constant of each group and the constant of companies is fixed over time.

From the random effect model
 Random effects model can be written as follows.

$$Y_{it} = \alpha_0 + \beta_0 X_{it} + \varepsilon_{it}$$

Where $\varepsilon_{it} = \lambda_{it} + \gamma_{it}$
 Next $Y_{it} = \alpha_0 + \beta_0 X_{it} + (\lambda_{it} + \gamma_{it})$
 And $Y_{it} = (\alpha_0 + \lambda_{it}) + \beta_0 X_{it} + \gamma_{it}$

Where
 Y_{it} is the dependent variable
 α_0 is the common value in the constant
 β_0 is the parameter of the independent variable
 X_{it} is the independent variable
 ε_{it} is the non-white noise error term
 γ_{it} is the common white noise error term of the group
 λ_{it} is the specific error term of a firm

This model can be used when the constant term of a company can vary from time to time and it can be seen that the value can be different along the company and the time. The selection between Fix effect and Random effect can be done by Hausman test.

4. Data

The data used in this study are the secondary data. Following the form of 56-1 of the listed companies of food and beverage which have to report to the Stock Exchange of Thailand.

5. Results

Objective 1: First, the study identifies the best composition between unit profit and expenditure for social responsibility that contributes to sustainability in the long term. The result is displayed in Table 1 and explained by graph in Figure 1.

TABLE 1: The best composition between unit profit and expenditure for corporate social responsibility.

Company's name	Unit profit	Corporate social responsibility
LST	0.0000538015	10.53
CFRESH	0.0001175908	12.24
M	0.0005243120	10.03
SFP	0.0001423392	11.36

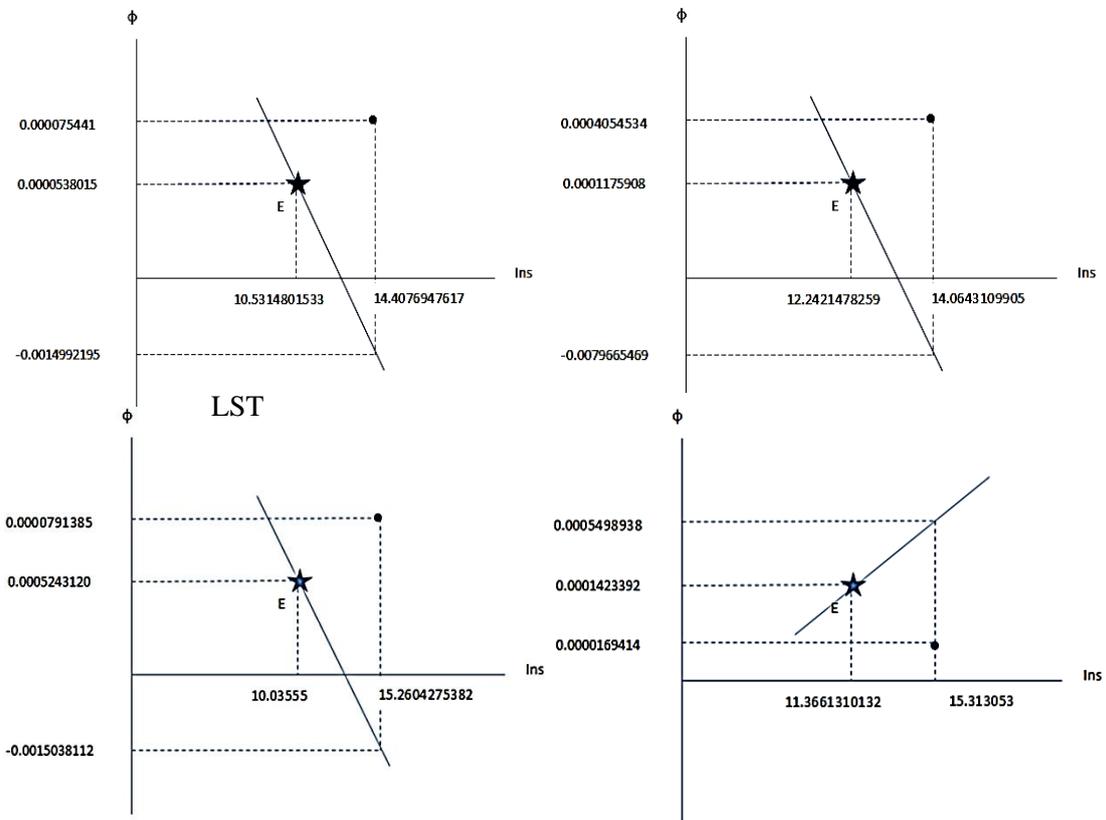


Figure 1: The sustainability of unit profit and expenditure for social responsibility

Figure 1 explains about the best composition between unit profit and expenditure for social responsibility that contributes to the long run sustainability of LST, CFRESH, M and SFP at point E. The steady states of each company are positive.

Objective 2: The study analyzes the status and predicts the direction of profit and expenditure for social responsibility of companies. The result is presented in Table 2 and Table 3, and explained by graph in Figure 2.

TABLE 2: An analysis of the status of companies.

Company's name	Status and position of companies		
	Area	Unit profit	Corporate social responsibility
LST	Warm glow	0.0000754416	14.4076947617
CFRESH	Warm glow	0.0004054534	14.0643109905
M	Warm glow	0.0000791385	15.2604275382
SFP	Charitable	0.0000169414	15.3130532835

TABLE 3: The direction of unit profit and social responsibility of companies.

Direction	Company's name
Unit profit and Social responsibility are in positive direction	LST CFRESH M
Unit profit is in negative direction and social responsibility is in positive direction	SFP

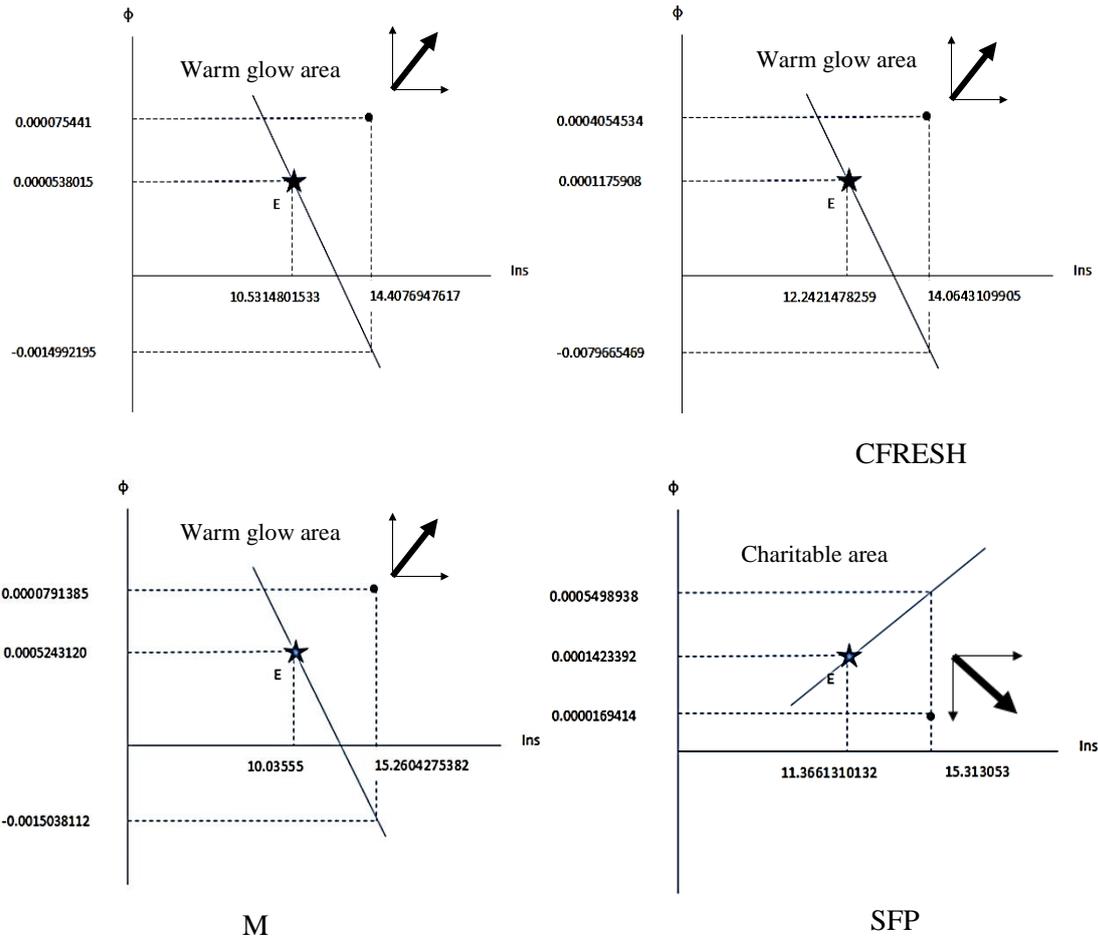


Figure 2: The status and direction of unit profit and expenditure for corporate social responsibility.

Figure 2 explains for the status and direction of unit profit and expenditure for social responsibility. The companies located in the worm glow area include LST, CFRECH and M. The company located in charitable area is SFP.

Objective 3: the study suggests policies for the companies to achieve sustainable profit and to develop and enhance their corporate social responsibility. The result is shown in Table 4 and explained by graph in Figure 3.

TABLE 4: The suggested policies for the companies to achieve the sustainable profit and corporate social responsibility in the long-run.

Company's name	The suggested policies	
	Unit profit	Corporate social responsibility
LST	Negative (reduction)	Negative (reduction)
CFRESH	Negative (reduction)	Negative (reduction)
M	Negative (reduction)	Negative (reduction)
SFP	Positive (increase)	Negative (reduction)

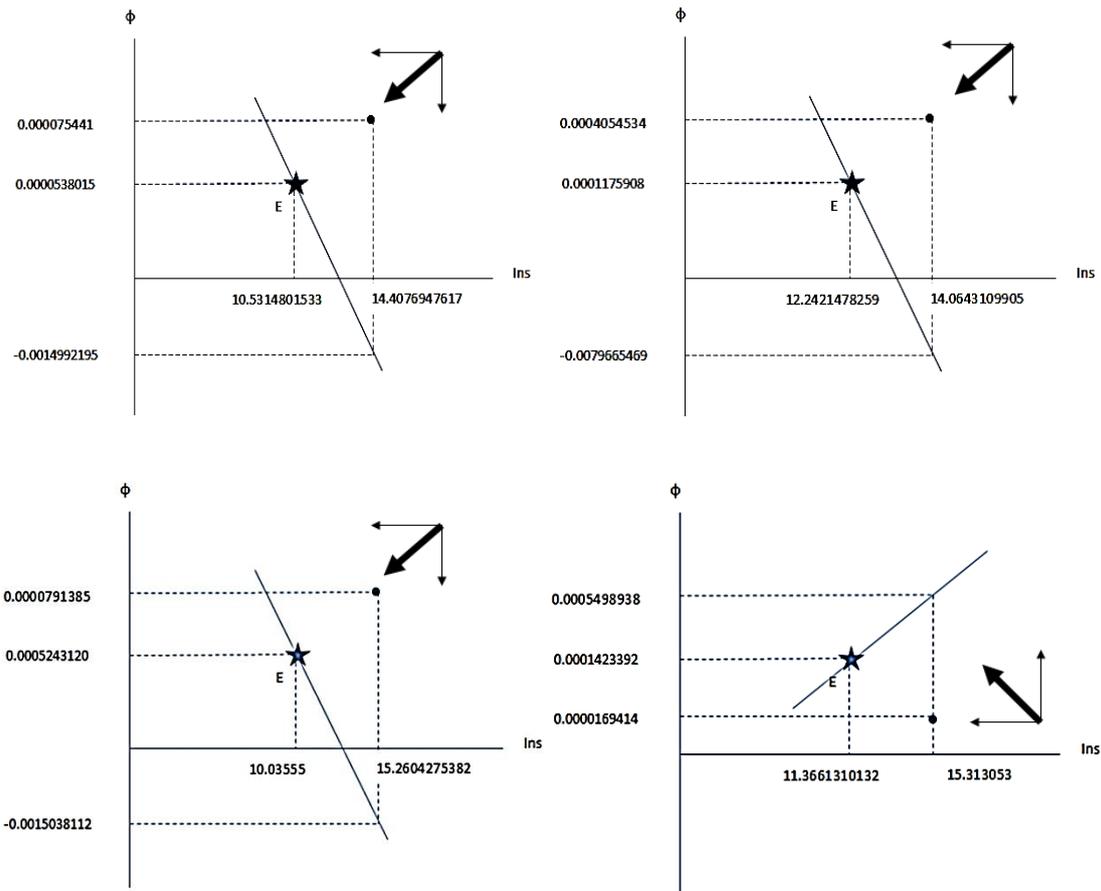


Figure 3: Show the suggestion policies for the companies to achieve sustainability.

Figure 3 explains about the suggestions policies for the companies to achieve a sustainable profit and corporate social responsibility. The companies should reduce their unit profits and corporate social responsibility includes LST, CFRESH and M. In contrast, the companies should rises its unit profit but reduce its corporate social responsibility is SFP.

Other companies cannot be calculated because the terms in the calculation of expenditure for social responsibility model are negative. This is a disadvantage of Sudtasan and Suriya model assumes changes of variable.

The results from stata program are presented in Table 5, Table 6, Table 7 and Table 8.

TABLE 5: The results for m the fixed effects model with panel 1.

fixed - effect regression				Number of obs	56	
Group variable : id				Number of groups	2	
R-sq	within	0.5903		obs per group	min	28
	between	1.0000			avg	28.0
	overall	0.5748			max	28
corr(u_i, Xb)		-0.1230		F(1,53)	76.36	
				Prob>F	0.0000	
lnZ	Coef.	Std.Err.	t	P> t	[95% Conf. Interval]	
lnlnS	11.87081	1.358465	8.74	0.000	9.146073	14.59554
cons	-9.83899	3.709628	-2.65	0.011	-17.2796	-2.39842
sigma_u	0.26076					
sigma_e	0.955409					
rho	0.069327 (fraction of variance due to u_i)					
F test that all u_i=0		F(1, 53) = 0.00		Prob > F = 1.0000		

TABLE 6: The results for m the random effects model with panel 1.

Random - effects GLS regression				Number of obs	56	
Group variable : id				Number of groups	2	
R-sq	within	0.5903		obs per group	min	28
	between	1.0000			avg	28.0
	overall	0.5907			max	28
Random - effects u_i ~ Gaussian				Wald chi2 (2)	76.49	
corr(u_i, X)		0 (assumed)		Prob > chi2	0.0000	
lnZ	Coef.	Std.Err.	z	P> z	[95% Conf. Interval]	
lnlnS	11.87081	1.358465	8.74	0.000	9.208266	14.53335
x3	6.90E-13	4.82E-13	1.43	0.152	-2.54E-13	1.63E-13
cons	-10.3338	3.767661	-2.74	0.006	-17.7183	-2.94931
sigma_u	0					
sigma_e	0.955409					
rho	0 (fraction of variance due to u_i)					
hausman fixed						

From table 5 and table 6, the result of Hausman test fails to compare the goodness of both models. So this study uses the R-squared value to compare the models. The R-squared for the random effects models (0.5907) is higher than that of the fixed effects model (0.5748). Therefore, the results from the random effects model is better.

TABLE 7: The results for m the fixed effects model with panel 2

fixed - effect regression				Number of obs		56
Group variable : id				Number of groups		2
R-sq	within	0.5739		obs per group	min	28
	between	1.0000			avg	28.0
	overall	0.5661			max	28
corr(u_i, Xb)		-0.2154		F(1,53)		71.38
				Prob>F		0.0000
lnZ	Coef.	Std.Err.	t	P> t	[95% Conf. Interval]	
lnlnS	10.91155	1.291497	8.45	0.000	8.321139	13.50197
cons	-7.24953	3.51363	-2.06	0.044	-14.297	-0.20208
sigma_u	0.204699					
sigma_e	0.964731					
rho	0.043082 (fraction of variance due to u_i)					
F test that all u_i =0		F(1, 53) = 0.00		Prob > F = 1.0000		

TABLE 8: The results for m the random effects model with panel 2.

Random - effects GLS regression				Number of obs		56
Group variable : id				Number of groups		2
R-sq	within	0.5739		obs per group	min	28
	between	1.0000			avg	28.0
	overall	0.5758			max	28
Random - effects u_i ~ Gaussian				Wald chi2 (2)		71.93
corr(u_i, X)		0 (assumed)		Prob > chi2		0.0000
lnZ	Coef.	Std.Err.	z	P> z	[95% Conf. Interval]	
lnlnS	10.91155	1.291497	8.45	0.000	8.380266	13.44284
x3	6.96E-12	6.35E-12	1.10	0.273	-5.48E-12	1.94E-11
cons	-10.5252	5.078502	-2.07	0.038	-20.4788	-0.57148
sigma_u	0					
sigma_e	0.964731					
cons	0 (fraction of variance due to u_i)					

From Table 7 and Table 8, the result of Hausman test fails to compare the goodness of both models again. So this study uses the R-squared value to compare the models. The R-squared for the random effects models (0.5758) is higher than that of the fixed effects model (0.5661). Therefore, the results from the random effects model is better.

6. Conclusions

This research analyzes the current status of companies listed in the food and beverage sector in the Stock Exchange of Thailand. It uses the conceptual framework of Sudtasan and Suriya (2013) and estimates the model by the guideline provided by Suriya and Sudtasan (2014). This paper may be concerned as an empirical work for their models. Finally, the paper suggests the companies to be sustainable in long term by finding the best composition between unit profits and expenditures for corporate social responsibility.

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