



Sustainable Growth Rate: A Flexible Performance Measurement Tool for Changing Business Environment

M. Rajesh¹

Abstract

The Purpose of this study is to analyze the Actual Growth Rate (AGR) as well as Sustainable Growth Rate (SGR) and to investigate the overall effect of selected independent variables on sustainable growth rate (SGR). Simple random sampling technique is used to select the companies that are performing well in the Indian Stock market preferably stocks traded on Bombay Stock Exchange (BSE). Selected five companies belong to oil refineries industry in India.

From the analysis, it is observed that out of five independent variables, the dependent variable (SGR) is having a significant relationship at 5% level of significance with three variables namely DE, ATR, and LNA. Remaining two variables namely CR and TR are having an insignificant relationship with SGR and also found that AGR values of selected companies are less than the SGR values throughout the study period. The results of this study also enable the company to manage its financial and operating policy towards healthy growth without having an additional financial problem. Study results are suitable for companies to manage their solid performance to sustain firm's growth in the future undertakings.

Keywords: Actual Growth Rate, Capital structure, Leverage, Liquidity, Sustainable Growth Rate.

Introduction

Growth for business is very important particularly for achieving company's objective. As growth requires proportionate increase in assets without equity issuance; any asset increase must be funded with added liabilities or from retained earnings. If financial policies are unchanged, the rate of shareholders equity growth will limit sales growth because the company can maintain their performance without running into financial problems. So, monitoring firm performance is essential and be able to solve company's financial problems to sustain the growth of the company. Monitoring the current situation and company's activities by mapping sustainable growth rate can help managers to do financial planning efficiently. The sustainable growth rate is particularly valuable because it combines operating (profit margin and asset efficiency) and financial (capital structure and retention rate) elements into one comprehensive measure. Using SGR, managers and investor can begin to gauge whether the firm's future growth plans are realistic based on their current performance and policy or not. In this way, SGR can provide managers and investors with insight into the levers of corporate growth. The concept of Sustainable Growth Rate was originally developed by C. Higgins. He demonstrated that Sustainable Growth Rate (SGR) is the maximum rate at which company sales can increase without depletion

1. VIT BS, Vellore Institute of Technology, Vellore, Tamilnadu, India
Email: rajesh.mamilla@vit.ac.in

financial resources (Higgins, 1989). Handling Company's firm performance such as financial leverage, liquidity, asset efficiency, size and tax become the important factors that can influence the sustainable growth of company. Some companies with high growth rates will cause the company to have financial pressures. This will cause the company to face problems such as financial loss, face the high costs, have higher debt, bankruptcy and engage in the decline in market share (Fonseka, Ramos, & Tian, 2012). The company can maintain their growth by determining the factors that affecting sustainable growth. Johnson & Soenen (2003) stated that company's strategic planning over handle with essential restrictions of policy on dividend pay-out and leverage could sustain company's growth. Sustainable growth affected the company's structure changes, for example, financial leverage increased, the sustainable growth tend to increase and financial decreased, the sustainable growth also decreased (Srinivasa, 2011). The decision in managing the financial and operating activities towards the growth of the company is related to the pecking order theory, trade of theory and agency theory. The prosperity of companies is much related on how manager manage their capital structure. The use of debt is limited as companies will face the case of bankruptcy. Under pecking order theory, the company required funding financial resources by retained earnings at the beginning, but, if still having some financial problem it's necessary for the company to raise their fund on debt and followed by equity. Based on trade-off theory, growth causes firms to shift financing from new equity to debt to reduce agency problem. This also related whether manager borrows money under long-term debt, short-term or equity in addition to improve companies' growth. Moreover, the used of debt can give impact to the company earnings. To increase sustainable growth rate, the company will reduce the payment of dividend to their shareholder when real growth is higher than the sustainable growth rate. Then, the reduction of dividend payment can affect stock prices. Aligned with signaling hypothesis, the effect of dividend policy will make changes the stock prices whether stock prices will go up or down. Based on agency cost, companies that investing in asset might generate higher growth in the future and faced difficulties in borrowing against such asset. An actual growth rate below from sustainable growth rate implies that the company has more than enough capital to meet its investment needs and calls for an increase in liquid assets, a reduction in leverage, or an increase in dividend.

Literature Review

Based on Higgins (1977), sustainable growth in the business context is the maximum platform or benchmark for the company to grow their revenue without reducing its financial resources. The combinations of a company's operating element (i.e. profit margin and asset efficiency) and financial elements (i.e. capital structure and retention ratio) into a single measurement become a very valuable financial performance for every company. In order to demonstrate the interdependencies between growth and financial policy, the increasing in annual sales adequate to supported by annual sources of corporate capital. Then, to calculate the firm's SGR, the calculation needs to focus only on the observation that the addition of assets must equal the addition to liabilities and owners' equity. In other words, the new assets must be financed by new debt and an increase in equity can finance new assets through retained earnings. This research will discuss the determinants of sustainable growth rate and what are the factors that associated with a sustainable growth rate of the firm. Fonseka et al. (2012) concluded that higher leverage is given higher sustainable growth rate in Van Horne model compare with Higgins model and, Korteweg (2010) found that the company's market would rise in the future and could benefit leverage. Contrary to Anderson & Nyborg (2011) opinion that leverage would have a negative effect on the profitability and performance of the company's growth position. Subsequently, Ross (1977) through his findings shows that debt leverage has a positive influence on the growth of the company where this decision is supported by the signal impact theory. In

*Sustainable Growth Rate: A Flexible Performance Measurement Tool for
Changing Business Environment*

addition, leverage amplifies to the losses or gains in business activities (Ilie & Olaru, 2013). The leverage busts the gains and supports economic growth when it is good during the good times. As such, government and firms are using leverage at large scale. However, government and firms will deleverage during the bad times because leverage busts losses and does not support the economic growth. Therefore, financial crises happen because of the high degree of leverage and usually, deleveraging will follow a financial crisis. This can be noted that firms deleverage because they face risks; actually, not only risks but also the situations where they also want to strengthen their financial stability. In addition to the financial leverage, Wu & Chau Kin Au Yeung (2012) found that firm's asset tangibility and initial market book ratios that were the growth types of companies able to determine and predict different future leverage and, the authors say that a low-growth company will tend to issue new debt than equity during improved market and economic conditions while for high-growth companies will be more likely to raise debt and equity. Hence, most companies will invest and use their financial resources in line with their growth type. Empirical results produced by Chen, Gupta, Lee, & Lee (2013) in their study stated that they support the importance of covariance as well as the process of raising the average growth rate between growth and profit rates to determine in the company's dividend payment. In the study, 31,255 sample data were collected from 1969 to 2011 to examine the inter temporal behavior of covariance which might be a little more prominent than facts about the loss of a company's dividend. In addition, Chung, Na, & Smith (2013) has found that there is no significant evidence that capital structure will influence the probability of failure and acquisition. They used data from the oil industry and stated that firms are inclined to increase their leverage when they face attractive growth opportunities. Another reason to increase firm leverage is when these firms face poor operating performance and they increase firm leverage to reduce equity value or when they require borrowing. In addition to that, firms acquired when they face rapid growth and this can reduce financial slack. They claim that firms can survive and operate with persistently low leverage without being focused for acquisition including getting potential financing sources which this supports the pecking-order theory by using internal financing (retained earnings). This research is expected that financial leverage is associated with the sustainable growth rate. As regards to sustainable growth rate, Amouzesh et al. (2011) in his study examined the relationship between sustainable growth rates, firm performance and liquidity. To get the results of the study, they have used the linear regression method to analyze the relationship between each variable and have used 54 companies listed in the Iranian financial market as a sample of the study. Their research results show that the actual deviation of the growth rate from the sustainable growth rate is related to book price ratio and return of assets. Subsequently, Bivona (2000) in its study examined the relationship between the sustained growth policy in the changing market and profitability. In this study, the authors have found that sustainable corporate establishments have three main elements, namely the structure of resources, operational activities and management activities. This has shown that feedback approaches are useful for supporting small entrepreneurs in planning a business growth strategy for a company. In addition, this feedback approach can fulfill the profitability level, external key factors' requirements, and a desired balanced financial structure. Also, Obstfeld (2012) discussed global financial stability and some effect for individual countries' external adjustment process and recorded the liability positions and proliferation of gross international asset. In planning a company, one will consider continuous net financial flows if a company faces serious risks and the rapid growth of global financial flows. The author of this study finds that the global imbalances of indefinitely remain an important target for financial motivation, macroeconomics, and policy checks. At the same time, this is especially important for policymakers to quickly develop gross liabilities and rate asset structures. The Guariglia, Liu, & Song (2011) study has used data panels of 79,842 for companies in China during the period 2000 to 2007 have found that

the liquidity constraints have affected the growth of the company's assets. They found that the availability of internal finance for private firms and state-owned enterprises not affected by stand for a necessary constraint for the growth. Private firms refer to those operating in coastal regions, with negligible foreign ownership. However, these companies have grown very rapidly regardless of discrimination by financial institutions. Hence, a robust external capital market may not be used and needed for rapid economic growth. This research is expected that liquidity and asset efficiency will associate with the sustainable growth rate. The study by Sánchez-Vidal (2014) in Spain, a country that has a critical debt extends that problem to the public and private firms one of the factors influencing the firm's leverage in the country is that when these companies have disclosed important company information, especially those with high debt. The results of this study have shown that many factors are no longer important for high-end leveraged companies as well as critical companies in cash flow as those companies think about to reduce their debt levels. This study has used the OLS method in quantitative regression to analyze the determinant of leverage for large sample size companies for the period from 2001 to 2011 and depending on the level of corporate debt. Furthermore, this study has also found that problems with high leverage are not only important to new companies but also for older and larger companies. This is because, age and size will also give a positive and negative impact to the highest quantity. Also, companies that have tangible assets still cannot solve the high debt problem because tangible asset is not seen as a determinant. This research is expected that firm's size and asset efficiency will associate with the sustainable growth rate. Fonseka et al. (2012) has used 15,377 in its study and found that the firm's financial characteristics had a higher impact on sustainable growth. (Higgins, 1977) mentioned that more profitable firms have a higher sustainable growth rate due to an effective investment in fixed assets, efficient working capital management, and higher taxes. Johnson & Soenen (2003) found that profitable companies, having a certain degree of uniqueness in the business and having efficient capital management are the most successful companies in high sustainable growth. In addition, successful companies also have policy constraints and restraints on leverage and dividend policies are one of the key issues in corporate planning for a successful future growth. The study has anticipated that the tax rate will be linked to the company's sustainable growth rate. Hence in the present study an attempt is made to analyze the Actual Growth Rate (AGR) as well as Sustainable Growth Rate (SGR) and compare the differences between Actual and Sustainable Growth Rate of the selected companies. Examine the relationship between financial leverage, liquidity, and asset efficiency with sustainable growth rate (SGR). To see how the changes in firm size can affect sustainable growth rate (SGR); to measure the covariance between tax rate and sustainable growth rate (SGR); Lastly, to investigate the overall effect of all variables on sustainable growth rate (SGR).

Research Methodology

Simple random sampling technique is used to select the companies that are performing well in the Indian Stock market preferably stocks traded on Bombay Stock Exchange (BSE). Selected five companies belonging to oil refineries industry in India.

Name of the selected companies

1. Bharat Petroleum Corporation Ltd (BPCL)
2. Chennai Petroleum Corporation Ltd (CPCL)
3. Hindustan Petroleum Corporation Ltd (HPCL)
4. Indian Oil Corporation Limited (IOCL)
5. Reliance Industries Limited (RIL)

Objectives

The main objectives of the study are

1. To analyze the Actual Growth Rate (AGR) as well as Sustainable Growth Rate (SGR) of the selected companies.
2. To examine the relationship between financial leverage, liquidity, and asset efficiency with sustainable growth rate (SGR) and
3. To investigate the overall effect of selected variables on sustainable growth rate (SGR).

Hypotheses

H₁: There is a significant relationship between AGR and SGR.

H₂: There is a significant relationship between SGR and financial leverage.

H₃: There is a significant relationship between SGR and Asset efficiency.

H₄: There is a significant relationship between SGR and Liquidity.

H₅: There is a significant relationship between SGR and firm size.

H₆: There is a significant relationship between SGR and Tax rate.

Tools of Analysis

Internal or Actual Growth Rate (AGR) = ROA (1-DPR)

Where,

ROA = Return on Assets

DPR = Dividend Payout Ratio.

Sustainable Growth Rate (SGR) = ROE(1-DPR)

Where

ROE = Return on equity,

DPR = Dividend payout Ratio.

The SGR is a measure that firms use for different purposes, such as to evaluate the creditworthiness of companies. If the actual growth rate in the sales of a company is greater than the SGR, financial institutions are prepared to advance loans to the company or to assist in the issue of shares in order to provide the capital needed. If the actual growth rate of sales is consistently lower than the SGR, the cumulative cash surpluses would need to be invested and the financial institution may offer investment products to the company (De Wet, 2004).

Model Specification

This study has used a linear regression method to find reliable empirical results. Thus, model equation used in this study is as follows:

$$\text{SGR}(Y) = a_0 + b_1(\text{DE}) + b_2(\text{CR}) + b_3(\text{ATR}) + b_4(\text{LNA}) + b_5(\text{TR}) + e$$

Table 1: Measurements of dependent and independent variables

Type	Variable	Indicator	Measurement
Dependent Variables	Sustainable Growth Rate (Y)	SGR	SGR = ROE (1 – DPR) ROE = Return on equity, DPR = Dividend payout ratio
Independent Variables	<u>Financial Leverage (X₁)</u>	D/E	Total Debt / Total Equity
	Debt Equity Ratio		
	<u>Liquidity (X₂)</u>	CA/CL	Current Assets / Current Liabilities
	Current Ratio		
Asset Efficiency (X ₃) Total Asset Turnover	S/TA	Sales / Total Assets	
Control Variables	Firm Size (X ₄)	LNA	Natural log of Assets
	Tax Rate (X ₅)	Tax	Effective tax rate

Analysis**Table 1.1: AGR and SGR values of selected companies during the study period 2007-08 to 2016-17**

Year	BPCL		CPCL		HPCL		IOCL		RIL	
	AGR	SGR	AGR	SGR	AGR	SGR	AGR	SGR	AGR	SGR
2007-08	3.33	12.27	8.24	25.10	2.48	9.78	5.38	15.35	11.90	22.65
2008-09	1.00	3.98	0.00	0.00	0.84	3.70	1.56	4.63	5.45	11.70
2009-10	1.90	7.88	4.01	12.26	1.73	7.74	4.83	13.97	5.63	11.02
2010-11	1.86	7.40	2.71	8.84	1.75	8.48	2.95	9.28	6.28	12.25
2011-12	1.39	6.12	0.21	0.84	0.88	4.75	1.30	4.73	5.92	10.74
2012-13	2.75	11.10	0.00	0.00	0.80	4.49	1.56	5.73	5.76	10.26
2013-14	3.90	14.55	0.00	0.00	1.55	8.05	1.95	7.44	5.22	9.73
2014-15	4.96	15.39	0.00	0.00	2.81	11.88	1.66	5.40	4.97	9.15
2015-16	6.83	19.11	6.89	30.96	3.82	14.68	3.08	9.46	5.30	10.12
2016-17	3.78	11.74	8.43	29.27	4.17	16.08	3.30	8.58	0.00	0.00
r	0.975		0.978		0.991		0.985		0.994	

Interpretation: From the above Table 1.1, it is observed that the AGR values of selected companies are less than the SGR values throughout the study period. An Actual Growth Rate (AGR) below from Sustainable Growth Rate (SGR) implies that the company has more than enough capital to meet its investment needs and calls for an increase in liquid assets, a reduction in leverage, or an increase in dividend. During 2012-13 to 2014-15, the AGR and SGR values of CPCL are showing zero. This is happened because of no retained earnings out of profits during the study period. In case of RIL, in the year 2016-17 also observed retention ratio as zero. The coefficient of correlation between AGR and SGR of selected companies are more than 0.95 and nearer to 1. It indicates both AGR and SGR are having a strong positive relationship. Hence from Table 1, it can be concluded that all the selected companies are having sufficient capital to meet their growth opportunities in near future. These companies are no need to think about equity issuance or collecting debt from outside.

Sustainable Growth Rate: A Flexible Performance Measurement Tool for Changing Business Environment

Table 2: Co-efficient of Correlation between SGR and related variables of selected companies during the study period 2007-08 to 2016-17

	SGR	DE	CR	ATR	LNA	TR
SGR	1.000					
DE	-0.278*	1.000				
CR	0.086	-0.337	1.000			
ATR	-0.165*	0.522	-0.329	1.000		
LNA	-0.079*	-0.436	0.193	-0.708	1.000	
TR	0.029	0.020	-0.365	0.295	0.029	1.000

Interpretation: From the above Table 2, it is observed that out of five independent variables, the dependent variable (SGR) is having a significant relationship at 5% level of significance with three variables namely DE, ATR, and LNA. Remaining two variables namely CR and TR is having an insignificant relationship with SGR. These results comply with other researchers (Lang, Ofek, & Stulz, 1996; Rajan & Zingales, 1998) found that there is a negative relationship between Sustainable Growth Rate (SGR) and Leverage (DE).

Table 3: Regression analysis between SGR and related variables of selected companies during the study period 2007-08 to 2016-17

$$SGR(Y) = 57.731 - 0.273(DE)^{**} + 0.017(CR) - 0.436(ATR)^{**} - 0.516(LNA)^{**} + 0.185(TR) + e$$

R Square	Adjusted R Square	Std. Error of the Estimate	F-statistic	Sig.
0.196	0.133	7.13907	0.196	0.014

	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
(Constant)	57.731	15.461		3.734	0
DE	-2.747	1.392	-0.273	-1.973	0.053
CR	0.555	4.099	0.017	0.135	0.893
ATR	-0.039	0.017	-0.436	-2.296	0.025
LNA	-3.31	1.092	-0.516	-3.032	0.004
TR	0.094	0.068	0.185	1.379	0.173

a. Dependent Variable: SGR b. Predictors: (Constant), TR, DE, LNA, CR, ATR

Interpretation

From Table 3, it is observed that the relationship between DE, ATR, and size (LNA) with SGR has a significant relationship at the 5% level of significant (as the p-value< 0.05). However, CR and TR have an insignificant relationship with SGR (as the p-value> 0.01, 0.05 and 0.10).

The determination coefficient (R2) shows that only 13.3% of the relationship between the variance of sustainable growth rate and the variance of independent variable is liquidity, financial leverage, and management efficiency. In this case, there will be some more factors that can contribute to the effect on sustainable growth rate such as profitability and economic conditions (e.g. GDP and inflation rate). In F-test statistics, the null hypothesis for all regression coefficients less than 5% may be rejected at the 5% level of significant. These results comply with Fonseka et al.

Table 4: Hypothesis Analysis

Hypothesis	Statement	Impact	Decision
H ₁	There is a significant relationship between AGR and SGR.	Positive	Accepted at 5% level of significance
H ₂	There is a significant relationship between SGR and financial leverage.	Negative	Accepted at 5% level of significance
H ₃	There is a significant relationship between SGR and Asset efficiency.	Negative	Accepted at 5% level of significance
H ₄	There is a significant relationship between SGR and Liquidity.	Positive	Rejected at 5% level of significance
H ₅	There is a significant relationship between SGR and firm size.	Negative	Accepted at 5% level of significance
H ₆	There is a significant relationship between SGR and Tax rate.	Positive	Rejected at 5% level of significance

Interpretation: From Table 4 of hypothesis analysis it is clearly understood that financial leverage, Asset turn over and firm size is having asignificant relationship but affecting negatively. It means the more and more leverage, as well as Asset turnover, will affectcompany growth rate adversely. Hence it is inferred that all the selected companies are having sufficient capital to meet their growth opportunities in near future. These companies are no need to think about equity issuance or collecting debt from outside. It is already proved from Table 1.

Conclusion

From the analysis of the study, it is found that Debt-Equity ratio is having asignificant negative relationship with Sustainable growth rate. Too high leverage will cause the company to face problems especially in managing their debt. Chung et. al.(2013) in their study also proved and they claim that firms can survive and operate with persistently low leverage without being focused for acquisition including getting potential financing sources which this supports the pecking-order theory by using internal financing (retained earnings).SGR and firm size are also having asignificant negative relationship. Sánchez-Vidal (2014) study found that problems with high leverage are not only important to new companies but also for older and larger companies. This is because age and size will also give a positive and negative impact to the highest quantity. Therefore, companies are recommended to monitor and plan the level of leverage in managing their business as an important strategy so that their business grows sustainable in achieving bright future goals.

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Appendix

(a): Debt-Equity ratio of selected companies during the study period 2007-08 to 2016-17

Year	BPCL	CPCL	HPCL	IOCL	RIL
2008	1.29	0.71	0.71	0.86	0.46
2009	1.75	0.5	0.5	1.02	0.65
2010	1.7	1.18	1.18	0.88	0.49
2011	1.17	1.06	1.06	0.91	0.43
2012	1.42	0.9	0.9	1.22	0.36
2013	1.42	2.82	2.82	1.28	0.3
2014	1.03	3.17	3.17	1.22	0.43
2015	0.52	2.66	2.66	0.73	0.41
2016	0.5	1.55	1.55	0.57	0.38
2017	0.71	1.36	1.36	0.51	0.35

(b): Current ratio of selected companies during the study period 2007-08 to 2016-17

Year	BPCL	CPCL	HPCL	IOCL	RIL
2008	0.8	1.33	1.16	0.94	1.32
2009	0.55	1.21	1.05	0.73	1.3
2010	0.92	1.17	0.79	0.86	1.35
2011	0.82	1.03	0.85	1.01	1.36
2012	0.85	1.05	0.86	1.01	1.92
2013	0.9	0.91	0.88	1.03	1.73
2014	1.03	0.97	1.13	0.99	1.42
2015	0.93	0.72	1.16	0.99	1.27
2016	0.89	0.74	1.03	0.91	0.72
2017	0.79	0.82	0.95	0.86	0.7

(c): Assets turnover ratio of selected companies during the study period 2007-08 to 2016-17

Year	BPCL	CPCL	HPCL	IOCL	RIL
2008	255.91	267.05	250.88	211.22	89.11
2009	279.35	385.99	265.17	235.39	57.71
2010	221.32	236.83	207.65	184.28	76.45
2011	271.38	270.38	219.99	188.9	87.16
2012	323.09	272.64	250.79	189.87	111.77
2013	358.44	304.11	271.14	199.6	113.11
2014	359.06	353.9	287.8	188.11	106.13
2015	341.44	382.17	305.88	199.01	82.72
2016	249.11	252.27	254.81	154.71	50.93
2017	219.81	240.88	238.35	138.83	44.26

*Sustainable Growth Rate: A Flexible Performance Measurement Tool for
Changing Business Environment*

(d): Firm size of selected companies during the study period 2007-08 to 2016-17

Year	BPCL	CPCL	HPCL	IOCL	RIL
2008	10.67	9.26	10.64	11.67	11.92
2009	10.78	9.03	10.76	11.78	12.41
2010	10.90	9.27	10.85	11.89	12.43
2011	10.93	9.41	11.01	12.06	12.56
2012	11.09	9.61	11.17	12.25	12.60
2013	11.11	9.55	11.24	12.32	12.67
2014	11.19	9.54	11.26	12.44	12.81
2015	11.15	9.30	11.12	12.30	12.89
2016	11.24	9.24	11.16	12.33	13.03
2017	11.43	9.35	11.27	12.47	13.21

(e): Tax rate of selected companies during the study period 2007-08 to 2016-17

Year	BPCL	CPCL	HPCL	IOCL	RIL
2008	35.76	0.33	0.15	0.31	0.14
2009	48.86	0.00	0.32	0.37	0.06
2010	46.54	0.09	0.26	0.29	0.15
2011	25.48	0.28	0.18	0.15	0.17
2012	14.86	0.00	0.33	0.26	0.20
2013	29.07	0.00	0.18	0.15	0.20
2014	38.24	0.00	0.28	0.28	0.21
2015	27.11	0.00	0.24	0.16	0.21
2016	25.20	0.02	0.25	0.24	0.22
2017	20.01	0.23	0.25	0.28	0.20