Sustainable Growth Rate and Firm Performance : Evidence From Iran Stock Exchange

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Abstract

Sustainable Growth Rate and Liquidity and Firm Performance Our paper aims to examine the relation between for a sample of 54 firms listed in the Iran financial market during 2006-2009 . We use a linear regression analysis to examine the association between the deviation of actual growth rate from sustainable growth rate and Return on Assets(ROA) , Price to Book value(P/B), Current and Acid ratios . The study shows that the deviation of actual growth rate from sustainable growth rate is having relationship with ROA and P/B ratios.Also , we find no significant association the deviation of actual growth rate from sustainable growth rate and Current and Acid ratios .

Keywords: Sustainable Growth Rate – Actual Growth Rate –Return on Assets – Price to Book ratio- Liquidity ratios .

1 . Introduction

As growth requires commensurate increase in assets for support without equity issuance , any asset increases must be funded with added liabilities or from retained earnings . thus if financial policies are unchanged , the rate of shareholder equity growth will limit sales growth . the susutainable growth rate is particulary 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 . (Pandit and Tejani,2011) The concept of Sustainable Growth Rate was originally developed by C. Higgins. He demonstrated that the financial policies of many corporations might be at variance with their growth objective . As a guide for setting compatible financial policies and growth objectives . Sustainable Growth Rate is the maximum rate at which company sales can increase without depletion financial resources (Higgins , 1989) .

The SGR of any company is determined by the following four factors : 1) profit margin . an increase in the profit margin increase the firm's ability to generate funds internally and thereby increase its sustainable growth . 2)net asset turnover . an increase in the firm 's net assets turnover increases the sales generated for each rand in assets ; this decrease the firm 's need for assets as sales grow thereby increase the SGR . 3) financial policy . an increase in the Debt / Equity ratio increase the firm ' s financial leverage ; and since this makes additional debt financing available , it increase the SGR and . 4) dividend policy . A decrease in the percentage of net profit after tax paid out as dividends increase the retention ratio , in turn increasing internally generated equity and thus increasing sustainable growth (Ross et al . 1996 from De Wet,2004) .

The SGR formula is a valuable planning tool because it emphasises the relationship between the four factors described above and the SGR . It is also clear that if a company does not want to issue shares or change its profitability , asset turnover , financial gearing or dividend policy , it has only one SGR (De Wet , 2004) . An actual growth rate in sales different from sustainable growth rate is inconsistent with a fixed financial policy and like it or not , companies will be unable to maintain financial targets under this condition . 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 dividends(Higgins , 1986) .

Our objectives in the present paper are to examine the relationship between the deviation of actual growth rate from sustainable growth rate and Liquidity and firm performance . This framework leads us to address research question: Does the deviation of actual growth rate from sustainable growth rate affect on Liquidity and firm performance ? We address this question using estimation equation based on a sample of Tehran Stock Exchange (TSE) firms from 2006 to 2009 with available annual data. Also we use , Return on Assets and Price to Book value ratios for evaluation firm performance and Current and Acid ratios for measure of liquidity situation .Our results indicate that there is significant relationship between performance variables and the deviation of actual growth rate from sustainable growth rate , while there is no significant relationship between liquidity and the deviation of actual growth rate from sustainable growth rate .

The paper is structured as follows : the next section discusses various Sustainable growth models and theorical background of the research; the third section describe the data , hypothesis and research method ;the results are presented and discussed in the fourth section and the final section is conclusion .

2 . Theorical Framework

Over the past several years , various growth models have been defined. These models can be categorized into two areas : traditional (debt /equity) determined and cash flow – determined models .Traditional growth rate model use the debt : equity or debt : total assets ratio (as determined in the balance sheet) as the limiting factor. The growth rates of capital intensive companies are best determined with a traditional model (Chen et . all, 2011) . Four models have been described in this section :

Van Horne 's Model
Van Horne (1998) has difined Sustainable Growth Rate as the maximum annual percentage increase in sales that can be achieved based on target operating , debt and dividend-payout ratios. Given this definition , a company can determine if their projected sales are a realistic goal . Van Horne 's sustainable growth rate model is the quantitative descriptive of the sustainable growth rate which is the variance of the sale income , i.e. SGR or $\Delta S/S$:
SGR =b(NP/S)(1+D/Eq)/(A/S)-b(NP/S)(1+D/Eq)
Where , A/S is the rate of the total assets and the sales , NP/S is the net profit rate , b is the retained profits (1-b is the dividends ratio) , D/Eq is the ratio of the debt and the equity , S is the sales in the recent year , and ΔS is the absolute variance of the sales in the recent year(Huang , Liu . 2009) .

Higgens 's Model
The model for computing SGR is :
SGR = (P)(1-R)(1+L)/A-(P)(1-R)(1+L)
Where
P=Profit Margin on Sales After Taxes   R=Percent of Profit Returned to Owners
L = Debt to Equity Ratio   A = Asset to Sales Ratio
The SGR is a measure that firms 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) .

Zakon ' s model
A well- known model is that of the Boston Consulting Group ' s Model (BCG) :
SGR = D/E . (R-i).p+R.p
SGR =sustainable growth rate
D/E = debt / equity ratio
R =ROA
 i=interest rate (1- taxation rate) and
p=retention ratio
When one analyses the components of the formula ,it is clear that the SGR is determined in terms of a company's profitability, as well as financial policies regarding financial gearing and dividends. The formula was derived as illustrated below, in a simple ,which is then expanded(De Wet,2004) .

A simple Model

Also a simple formula to measure a firm ' s ability to growth is :

SGR = RR[EP+(EP-K)(D/E)]

This formula shows that a company ' s percentage rate of sustainable growth (SGR) depends upon four factors, namely : a) retention rate (RP) , which is the percentage of earning retained in the business . b) after – tax earning power (EP) , which is calculated as the ratio of after-tax net income to total net assets . c) after – tax cost of borrowing (K) , and : d) the level of utilization , which is calculated as the ratio of total interest- bearing debt to total owner ' s equity .The formula also shows the two source of sustainable growth : 1) sustainable growth from retained earnings (RP times EP) and 2) sustainable growth from borrowing RR times (EP-K)D/E . therefore , sustainable growth can be improved by increasing the retention rate , improving earning power , and / or increased debt utilization . however , increased debt utilization must be approached very carefully because of the possibility that increased borrowing may result in lower sustainable growth . (Geiger and Reyes).

Internal Growth Rate (IGR) and Sustainable growth rate :

The Internal growth rate of a company means a maximum rate per year a company can grow without external financing , while the sustainable growth rate means a maximum rate per year a company can grow without equity financing by maintaining a constant debt equity ratio . the following table shows the formulae (Dhanapal and Ganesan):
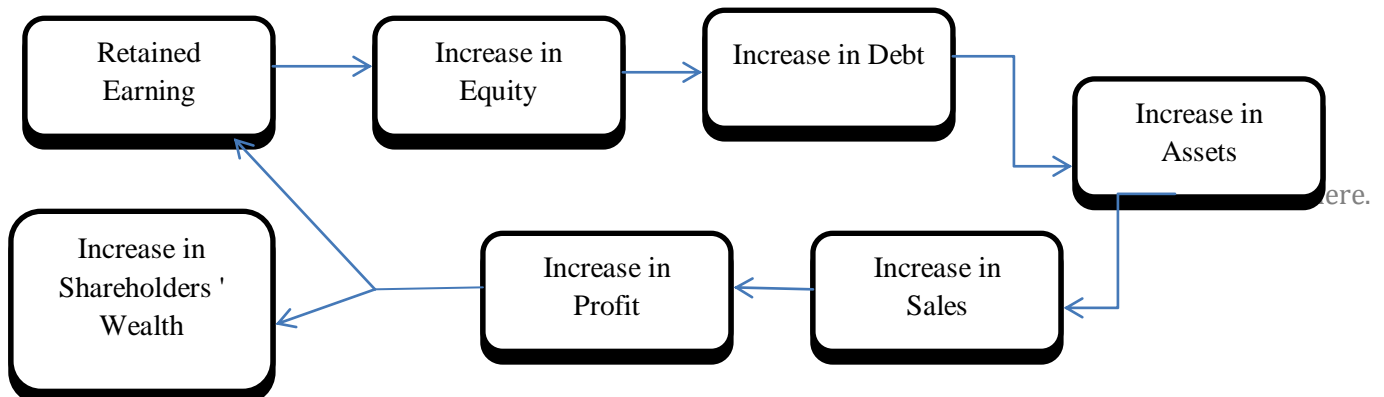
Internal Growth Rate	Sustainable Growth Rate
IGR = (ROA*b)/(1-ROA*b)	SGR = (ROE*b)/(1-ROE*b)

Challenges of sustainable growth rate

Business experts argue that achieving sustainable growth is not possible without paying attention to two important aspects , viz . Growth strategy and growth capability . Companies that fail to give adequate attention to one aspect or the other are doomed to fail in their efforts to establish practices of sustainable growth in the long run . For instance , if a company has an excellent growth strategy in place , but has not taken efforts to increase its infrastructural facilities , long term growth in the long run . Similary , a company that has sufficient resources and infrastructural facilities but a poor growth strategy will also fail in the long run . Achieving the sustainable growth rate is the prime concern of managers of companies , whether small or big . But in a fast changing economic , political and competitive environment , achieving the sustainable growth rate is not an easy task , especially in the present highly complex global environment (Dhanapal and Ganesan) .

3 . Development of hypothesis

According to Higgins , SGR depends upon the change in equity in a financial year divided by opening equity without any additional equity introduced during the year . such a change is possible only through the retained earning . thus , the funds generated through retained earning increase the net worth of the firm and with the increase in the net worth , the firm can borrow more funds which would enables the firm to increase its asset base . the increase in assets results in increase in operation which ultimately results in increase in profit and thereby increase in retained earnings (Raiyani.2011) :

According to above chart and SGR formula ,we expecte there is significant the relationship between the deviation of actual growth rate from sustainable growth rate and liquidity and firm performance. Substantial question of this research is that there is significant the relationship between the deviation of actual growth rate from sustainable growth rate and liquidity and firm performance or no? this is asked within the framework of following hypotheses:

1-There is significant relationship between the deviation of actual growth rate from sustainable growth rate and Liquidity ratio .

2-There is significant relationship between the deviation of actual growth rate from sustainable growth rate and Acid ratio .

3- There is significant relationship between the deviation of actual growth rate from sustainable growth rate and Return on Assets (ROA) .

4- There is significant relationship between the deviation of actual growth rate from sustainable growth rate and Price to Book ratio (P/B).

4 . Methodology of Research

4.1.Sample Selection

The statistical population of research is composed of firms Listed in Tehran Stock Exchange . statistical sample of the research has been gained through applying following conditions :

1.Due to their having a nature of operation different from other corporates,investment and financial corporates have been omitted from sample of research .

2. The firms with fiscal year not ending to 20 march (year-end- in Iran) , were excluded from sample of research .

3 . Loss firms are excluded from our sample .

4. Required information such as financial statements and notes to financial statements ,summary of decisions taken by regular general meeting having been published by stock exchange organization are available .

Finally , a total of 54 companies out of the total population are selected . a minimum sample size of 30 is appropriate for most research (sekaran2003). The same procedure is applied for years 2006 till 2009 with a total of 162 companies out of the total population are chosen .

4 .2. Research method

The correlation analysis is used in this study. correlation researches are researches that researcher try to determine relationship between different variables using with correlation coefficient. In these researches, appointment coefficient is criterion that this criterion describes relationship between independent and dependant variables. Amount of this coefficient states what percentage of changes in dependant variable are described by independent variable.

Also we used descriptive statistics such as central indexes as well as dispersion for data analyzing.

4.3.Variables Definition

The used variables in this study are below :

- ROA: The return on assets is the annual net profit divided by the average book value of assets at the beginning and end of the year .
- P/B : Price To Book value
- deviation f Real growth rate from the Sustaianable growth rate :

Real growth rate: percentage of change in the company's sale in a year in relation to the basic year.

Sustaianable growth rate: Calculation of Sustaianable growth rate is as follows:

SGR=ROE*b/ 1-(ROE*b)

b= retained earning rate

ROE= Return on equity(net income/owner's equity)

5 . Data Analysis

5.1. Descriptive Analysis

Table 1 provides the descriptive statistics for all variables utilized in this study . the table reports the mean , minimum , maximum and standard deviation .

Table 1: descriptive statistics

Standard deviation	observations	Minimum	Maximum	Mean	variables
58.65	162	-9.30	710	5.54	SGR-AGR
.62059	162	.10	5.07	1.14	Current ratio
.4469	162	.030	3.19	.646	Acid ratio
./.92	162	-.16	./53	.088	(ROA)
1.64	162	-.50	11.04	1.69	(P/B)

Based on table 1, the average percentage of Current ratio,Acid ratio, ROA and P/B ratios equal to 1.14 , .646 , ./.88 and 1.69 respectively , while average percentage of SGR-AGR is 5.54 .The table provides some information about SGR-AGR variable , which ranges from -9.30 to 710 and a standard deviation of 58.65 . In relation to Liquidity ratio,the results reveal a range from .10 to 5.07 with a standard deviation of .62059. Also the ROA ratio ranges from -1.6 to ./53 with a standard deviation of ./.92 ,while the P/B ratio ranges from -.50 to 11.04 .

5.2. Correlation Analysis

Table 2,4,6,8 reports Pearson Correlation Analysis and regression for all companies in the sample. Tables 3,5,7,9 contains the results from the linear regression model used to test the respective hypothesis 1,2,3,4 .

Table 2 :results of testing the hypothesis 1

variable	R-squared	Adjusted R-squared	Correlation coefficient	Significant Level
Current ratio	.002	-.007	.039	.665

Table 3 : regression results

Model	Unstandardization Coefficients		Standardized Coefficients	t	Significant
	B	Std.Error	Beta		
Constant	.847	12.046		.070	.944
Current ratio	4.032	9.293	.039	.434	.665

Results in Table 2 have shown that Correlation coefficient is .039 in the entire sample companies' level. It means that there is no significant relationship between the deviation of actual growth rate from sustainable growth rate and Current ratio .

Table 4 :results of testing the hypothesis 2

variable	R-squared	Adjusted R-squared	Correlation coefficient	Significant Level
Acid ratio	.003	-.004	.059	.507

Table 5 : regression results

Model	Unstandardization Coefficients		Standardized Coefficients	t	Significant
	B	Std.Error	Beta		
Constant	-.040	9.773		-.004	.997
Acid ratio	8.212	12.335	.059	.666	.507

Results in Table 2 have shown that Correlation coefficient is .059 in the entire sample companies' level. It means that there is no significant relationship between the deviation of actual growth rate from sustainable growth rate and Acid ratio .

Table 6 :results of testing the hypothesis 3

variable	R-squared	Adjusted R-squared	Correlation coefficient	Significant level
ROA	./.41	./.34	.202	.014

Table 7 : regression results

Model	Unstandardization Coefficients		Standardized Coefficients	t	Significant
	B	Std.Error	Beta		
Constant	-6.824	6.597		-1.034	.303
ROA	125.032	50.301	.202	2.486	.014

Results in Table 3 have shown that Correlation coefficient is ./202 in the entire sample companies' level. It means that there is a significant relationship between the deviation of actual growth rate from sustainable growth rate and ROA .

Table 8 :results of testing the hypothesis 4

variable	R-squared	Adjusted R-squared	Correlation coefficient	Significant level
P/B	.174	.168	.417	.000

Table 9 : regression results

Model	Unstandardization Coefficients		Standardized Coefficients	t	Significant
	B	Std.Error	Beta		
Constant	-20.127	6.280		-3.205	.002
P/B	14.336	2.596	.417	5.522	.000

Results in Table 3 have shown that Correlation coefficient is ./417 in the entire sample companies' level. It means that there is a significant relationship between the deviation of actual growth rate from sustainable growth rate and P/B .

Conclusion

According to Van Horne, the management of growth requires careful balancing of the sales objectives of the firm with its operating efficiency and financial resources(pickett , 2004). Unsustainable growth , if not corrected , could exert tremendous stress on the company' s financial and operating characteristics and may lead to financial distress(Gieger , Reyes) . The relationship between growth , profitability and assets changes have been analysed through the sustainable growth model (Zakon, 1968) . The results of our paper shows that there is significant association between the deviation of actual growth rate from sustainable growth rate and ROA and P/B ratios ,
   while there is no evidence for relationship between the deviation of actual growth rate from sustainable growth rate and current and asid ratios.   Future research shpuld be conducted taking into some financial ratios such as the financial leverage and other profitability ratios . Additional research might also be directed towards the effect
   of deviation of actual growth rate from sustainable growth rate on liquidity and firm performance using larger sampels and longer time series .

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