

## Financial Sustainable Growth Rate and Financial Ratios: A Research on Borsa İstanbul Manufacturing Firms

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### Extensive Summary

#### Introduction

While sales growth is one of the performance indicators for a business (Momčilović, Begović, Tomašević & Ercegovac 2015: 63), it does not have to be maximized at all cases. Despite positive reaction from managers, shareholders and market, rapid growth brings with it the risk of bankruptcy if the need for financial resources cannot be managed well. Slow-growing companies face with problems such as growth pressures from shareholders as well as management of excess funds. The "financial sustainable growth rate" (SGR) proposed by Robert C. Higgins (1977), under certain assumptions, represents the maximum rate of growth that firms can realize in their sales without exhausting their financial resources (Higgins, 2012: 123). Comparing the actual growth rate (AGR) of a firm to the sustainable growth rate reveals important information on the key financial issues that are relevant to management. (Higgins, 2012: 141). The problem of AGR being higher than SGR may be expressed as the problem of over-growth (or rapid growing), and the vice versa may be referred as the problem of under-growth (or slow growing).

The SGR may be used as a device to identify potential growth problems of sectors or firms and to evaluate financial performance in a holistic approach that focuses on growth management. Examining the SGR's sub-components that reveal the firm's financing and operating strategy may also guide the searching for determinants of problems stemming from the inability of growth management. In the literature review, it has been observed that SGR has been used as an instrument for managing and measuring performance at the firm and industry level. These studies are international studies that develop the SGR model, assess the growth according to SGR level and analyse the impact of SGR and deviations from SGR (as the difference between AGR and SGR) on firm performance.

It was observed that there had been inadequate research, except Mubeen (2017), which calculated SGR for the Turkish sector and firms. With this study, it was aimed to determine Higgins (1977) SGR, to identify over-growth and under-growth companies, to analyse the effect of deviations from SGR (by taking the difference AGR and SGR) on some financial ratios for the data sets selected among the publicly traded companies in Turkey.

### **Meterial and Method**

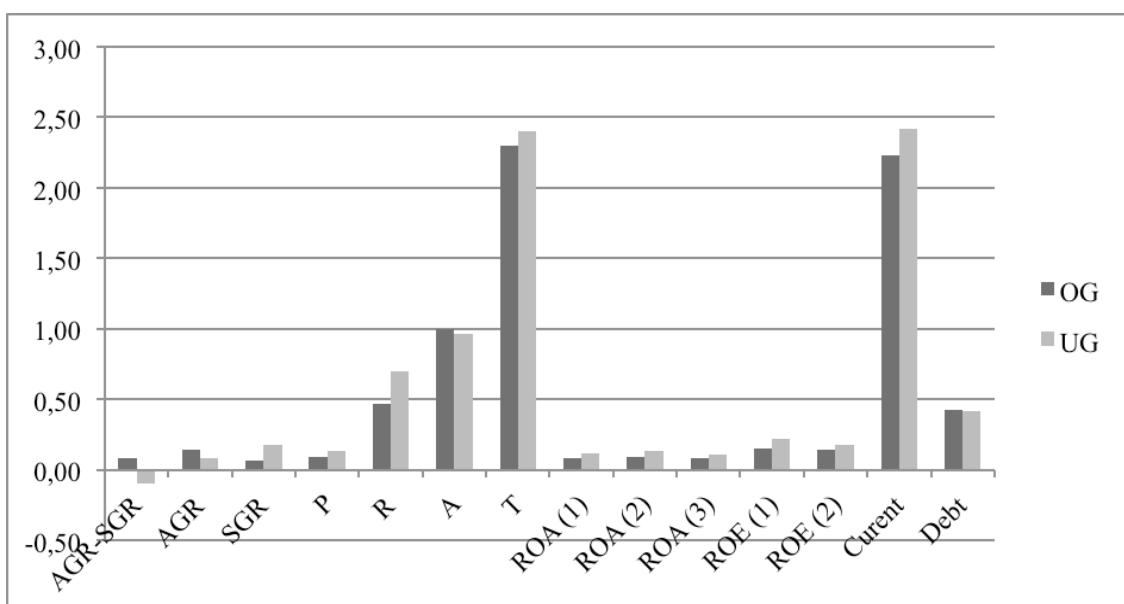
In this study, the widely used SGR model developed by Higgins (1977) as the optimal sales growth rate consistent with operating and financing policies was employed. Higgins (1977) SGR were calculated over the 3-year average of 2013-2015 period of 69 publicly traded manufacturing companies listed on the Borsa İstanbul (BIST). The Higgins (1977) SGR model was based on an analysis of the manufacturing industry. As of 2015, compared to the sales volume of 18 sectors, the share of manufacturing industry in Turkey was about 50% (TCMB, 2016: 6, [www.tcmb.gov.tr](http://www.tcmb.gov.tr)). Therefore, the dataset consisted of 69 manufacturing firms that met some criteria (group A, net income, data for all period ...etc.), among the 181 BIST manufacturing firms. Variables based on the financial data of 69 companies were obtained from financial statements and footnotes published on the Public Disclosure Platform (Kamu Aydınlatma Platformu, [www.kap.org.tr](http://www.kap.org.tr)).

Correlation analysis and univariate cross-section regression analysis methods were utilized to investigate the effect of AGR-SGR difference on the return on assets (ROA), return on equity (ROE), price/earnings ratio (P/E), debt ratio (Debt), current ratio (Current) and to determine the most effective component of SGR. The relationships between the independent variable of AGR-SGR and dependent variables covering ROA, ROE, P/E, Debt, and Current ratios were investigated in 9 of the the 11 equations established. Remaining 2 regression equations regress the SGR on sub-components of SGR to determine the main component.

The SGR ( $SGR=R \times ROE_{bop}$ ) was calculated by multiplying return on equity ( $ROE_{bop}$ ) with retention rate (R) as in some other studies (Pandit & Tejani, 2011; Hartono & Utami, 2016; Amouzesh vd. 2011, Momčilović vd. 2015; Jagadish, 2011). Being in the compliance with the assumption that there is no new equity issuance, the equity value at the beginning of the period (bop) was used. AGR was the sales growth rate among two year. ROA was entered to the analysis as three alternatives taking into account the average of beginning and ending assets (ROA1), the beginning assets (ROA2) and ending assets (ROA3). Two ROE ratios were measured both with the equity amounts at beginning of the period (ROE1) and the ending of the period (ROE2). One of the Price/Earnings (P/E) ratios covered the three year average (P/E1) while other P/E ratio reflected the last year-end value (P/E2). Other two dependent variables, current ratio and debt ratio, were calculated on current year accounts. Besides, PRAT variables were identified to examine the components of SGR ( $SGR=PRAT$ ). P denoted profit margin (net profit/revenue) while R refered to retention ratio (1-divident rate). A was used to express the asset turnover rate (revenue/total asset). T is the financial leverage (total asset/beginning equity).

## Conclusion and Discussion

According to the 3 year averages, SGR that is compatible with existing financial resources and earning potential for the 69 manufacturing companies in Turkey is 10%. Companies were experienced 2% over-growth with 12% AGR. Under-growth companies have been growing slowly at a rate of 8% AGR than their potential SGR of 18%. Under-growth companies had higher operating and financial performance and therefore higher SGR than over-growing firms. These firms, which turned their high profitability into high equity returns with retention rates and financial leverage, did not reach their growth potential. While actual sales growth rate for firms that were in over-growth category was 14%, their SGR was 6%. The over-growth companies that had lower growth potential without additional financial resources achieved high sales increases in spite of their lower profitability. Graph 1 show that the SGR, PRAT components (except A), ROA's, ROE's and current ratio all were higher for under-growing group than that of the overly growing group. In addition, the sub-sector's SGR was between 4.5% (basic metal industries) and 15. 3% (food, beverage and tobacco) and over-growth rate got the highest value in non-metallic mineral products sub-sector.



Graph 1. Means of Variables for Over-Growth and Under-Growth Firms

Note: The P/E ratio is not included in the Graph 1 generated by the means data of Over-Growth (OG) and Under-Growth (UG) companies.

Interpretations made with descriptive statistics of variables were confirmed by regression and correlation analyses. According to the findings of the analysis, the relationships between profitability variables, ROA and ROE, and AGR-SGR were negative and statistically significant. This negative relationship indicated that as the AGR-SGR increased, the ROA and ROE decreased. AGR-SGR was a variable with a mean of 2% and values ranging from -27% to 58%. The value of this variable less than zero means under-growth and greater than zero means over-growth. In other words, increase of AGR-SGR is an indicator of over-growth level, decrease of AGR-SGR indicates deepness of under-growth level. The negative relationship between AGR-SGR variables and profitability variables can be interpreted as the fact that over-growing firms have lower profitability, while under-growing firms operate with high asset and

equity profitability. The relations of AGR-SGR with other financial ratios (P/E, Current and Debt) were not statistically significant. This findings is consistent with some of the previous studies (Amouzesh et al. 2011; Saputro & Purwanto, 2013) offering evidence about a negative relationship between AGR-SGR and ROA. There are also similarities with the findings of two studies (Rahim & Saad, 2014; Hartono & Utami, 2016) confirming that SGR is positively related to ROA. Examining the related regressions coefficients, The PRAT variables could be listed in order of importance as profit margin, the retention rate, the asset turnover rate and the equity multiplier. Findings suggesting that the most important two components were profit margins and retention rate are similar to the results of some other studies (Seens, 2013; Xiyuan and Jingui, 2015; Lockwood and Prombutr, 2010; Jagadish, 2011) conducted in foreign markets.

For the over-growing firms whose rapid growth are not supported by their existing operating and financial structures, raising profitability, retention rate or debt usage to be able to improve SGR might be recommended. According to the TCMB data, the average borrowing rate of the manufacturing industry for the analysis period was 62.7% ([www.tcmb.gov.tr](http://www.tcmb.gov.tr)) and it could be said that the over-growing firms examined in this study had the potential to benefit from the financial leverage. Under-growing firms that are growing slowly than the rate supported by their operational performance and financial structures had the possibility to use the excess funds in high growth potential investments or in dividend payment or debt repayment.

The SGRs of the Turkish firms and sectors can also be studied employing expanded forms of basic Higgins SGR model by allowing for new equity issuance or by modelling debt growth up to the target debt ratio or by focusing on cash flow. Industry specific growth problems, long-term solutions, the impact of growth rates on stock returns and financial failures and quantitative and qualitative determinants of being overgrowth or undergrowth are among the issues that may require further investigation in Turkey.