

**SUSTAINABLE GROWTH OF NON-FINANCIAL
FIRMS: EVIDENCE FROM EMERGING
ECONOMIES**

A Master's Thesis

by

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Graduate School of Economics and Social Sciences
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by
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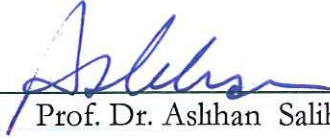
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(Supervisor)

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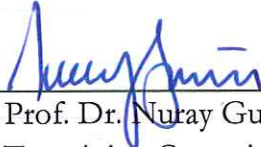
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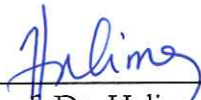
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ABSTRACT

SUSTAINABLE GROWTH OF NON-FINANCIAL FIRMS: EVIDENCE FROM EMERGING ECONOMIES

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Higgins' (1977, 1981, 2008) model of Sustainable growth has been widely used in corporate finance application. This research investigates whether Higgins' model of sustainable growth is underestimated as suggested by the theoretical paper of Chen (2013). For this purpose, data of seven emerging economies between the years 2000 and 2015 have been used. Firms issuing secondary equity were identified from the data set. An independent t-test was used to test the difference of mean of growth for firms issuing secondary equity and firms not issuing secondary equity. Additionally, a panel regression model with random effect model is employed to identify the factors causing difference in sustainable growth and actual realized growth. The results show that Higgins model of sustainable growth is underestimated. While identifying the possible factor of underestimation, secondary equity issue is a significant factor in five emerging economies (Pakistan, India, Korea, Indonesia and Brazil) and insignificant in two emerging economies (China and Turkey). Moreover, while exploring firm-specific factors as a reason of underestimation of SGR model, we found that in the case of nonfinancial firms, leverage and size are playing important roles whereas profitability and dividend policy yield mixed results.

Keywords: Emerging Economies, Panel Data, Sustainable Growth

ÖZET

FİNANSAL OLMAYAN FİRMALARIN SÜRDÜRÜLEBİLİR BÜYÜMESİ: GELEN EKONOMİ KANITLARI

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Higgins'in (1977, 1981, 2008) sürdürülebilir büyüme modeli, kurumsal finans uygulamalarında yaygın bir şekilde kullanılmıştır. Bu araştırma, Chen'in teorik belgesi (2013) tarafından önerilen Higgins'in sürdürülebilir büyüme modelinin önemsenmediğini veya araştırmadığını araştırıyor. Bu amaçla, 2000 ve 2015 yılları arasında yedi yükselen ekonominin verileri kullanılmıştır. Veri setinden, ikincil eşitlik düzenleyen firmalar tespit edildi. İkincil öz sermaye veren şirketler ile ikincil öz sermaye çıkarmayan şirketler için büyüme ortalamasının farkını test etmek için bağımsız bir t testi kullandım. Ayrıca, sürdürülebilir büyümenin ve gerçekleşen gerçek büyümenin farklılığına neden olan faktörleri belirlemek için rasgele etki modeli olan bir panel regresyon modeli kullanılmıştır. Sonuçlar, Higgins'in sürdürülebilir büyüme modelinin önemsenmediğini göstermektedir. Az tahmini olası faktörü belirlerken, ikincil hisse senedi ihracatı, gelişen beş ekonomide (Pakistan, Hindistan, Kore, Endonezya ve Brezilya) önemli bir faktördür ve gelişmekte olan iki ekonomide (Çin ve Türkiye) önemsizdir. Ayrıca SGR modelinin hafife alınmasının bir nedeni olan firma bazlı faktörleri araştırırken, finansal olmayan firmalarda kaldıraç ve büyüklüklerin önemli rol oynadığını, karlılık ve temettü politikasının karışık sonuçlar verdiğini tespit ettik.

Anahtar Kelimeler: Gelişen Ekonomiler, Panel Verileri, Sürdürülebilir Büyüme

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CHAPTER 1

INTRODUCTION

Financial planning helps us to set the financial goals of firm where a policy is set regarding what is to be done in the future. Long term financial planning deals with sustainability and growth of the firms, where decisions taken now will give results in future. Existing finance literature has established a direct link between a firm's growth and financial planning (Faboozi and Peterson, 2003). How to set policies which help to grow the firm is always a critical decision to be taken by finance managers. While most finance managers have a tendency to feel that a higher growth rate will be better, but it may also result in financial distress to firms if firms' growth rate will be excessive. Unmanageable growth rate may result in financial losses, high cost and debt burdens, which in turn may result in decrease of share prices in the market due to bad outlook of the firm (Fonseka et al, 2012). So, growth is fruitful up to a certain level, but after that level it will not be beneficial for business/firms (Higgins, 1977).

In finance, growth rate estimation of dividends, earning and price per share are important factors in determining the value of an investment or a firm. For this estimation, the Gordon (1962) Model is mostly used in assets price perspective where price is set by market participants whereas Higgin's (1977, 1981) model is widely used in corporate finance perspective, which deals with financial performance such as return on equity and retention rate, which are resultant due to internal decision making within the firm.

Higgins (1977, 1981) developed a sustainable growth rate model where he assumes that firms can only generate new funds by either using retained earnings (internal financing) or issuing debt (external financing) but not by issuing new equity. However, he also assumes the constant leverage ratio which was criticized by many researchers, such as Ulrich and Arlow (1980), Clark (1985), Bivona (2000) and Ashta (2008). Platt et al (1995) partially supported Higgins constant leverage assumption, saying that in a situation where firms are in financial distress having restriction of issuing new debt due to existing debt burden, Higgin's Model can be applied. According to Higgins' (2008) Model of sustainable growth, where he opened the theoretical debate of how debt as external financing can be used to finance growth, he discusses that when a firm is not issuing new equity to raise funds, the cash to finance growth must come from internal sources, i.e. retained earnings and new borrowings. As a company wants to maintain a constant leverage ratio, each dollar added into owners' equity will enable the firm to increase the debts by dollars into leverage ratio. Hence, Higgins (1977, 1981, 2008) demonstrates that one can estimate the growth rate as equal to the growth of sales, assuming constant leverage ratio and no external financing via equity issue.

$$g = \frac{\Delta S}{S} = \frac{b \times RoE}{1 - b \times RoE} = P \times T \times L \times (1 - D)$$

where g = sustainable growth rate, S = Sales, b = fraction of retained earning not distributed as dividend, P is profit margin, T is Asset turnover, L is Asset/Equity and D is Dividend payout ratio.

Hence Higgins' sustainable growth rate allows only internal source and external debt financing. Chen et al. (2013) incorporate Higgins (1977) and Lee et al (2011)

frameworks, allowing a company to use both external debt and equity and derive a generalized sustainable growth rate as

$$g(t) = \frac{b \times RoE}{1 - b \times RoE} + \frac{\gamma \times \Delta n \times \frac{P}{E}}{1 - b \times RoE}$$

Where γ is the degree of market imperfection, Δn is the number of shares of new equity issued, P is price per share of new equity issued and E represents the total equity. Hence, the revised sustainable growth rate model derived by Chen et al (2013) has an additional positive term which considers the new equity issue in to account. Therefore, Chen et al (2013) show that Higgins (1977, 1980, 2008) sustainable growth rate is underestimated due to his not considering the new equity issue as a source of growth. However, Chen et al (2013) do not empirically test whether Higgin's sustainable growth is underestimated empirically or not. Chen et al (2013)'s main focus was to identify the optimal growth rate in presence of dividend payout policy, so they worked on joint optimization of optimal growth rate and optimal payout ratio. In addition, Chen et al (2013) theoretically show the existence of specification error of dividend per share when introducing stochastic growth rate. Hence, this research will mainly focus on empirical testing of understatement of Higgins' model for Emerging economies.

In the next part, a detailed literature review is presented in the section "Literature Review". The following section, "Methodology", outlines the empirical model and the section "Data and Results" provides details of the data employed, along with results. Finally, discussions of the results as well as conclusions are presented in the section "Conclusions "

CHAPTER 2

LITERATURE REVIEW

Higgins (1977) discussed “How much growth a firm can afford?” in discrete time period environment. He mathematically derived growth model which is as follow:

$$g(t) = \frac{b \times RoE}{1 - b \times RoE}$$

this can be reduced to $g(t) = P \times T \times L \times (1 - D)$ where g = sustainable growth rate, S = Sales, b = fraction of retained earning not distributed as dividend, P is profit margin, T is Asset turnover, L is Asset/Equity and D is Dividend payout ratio. For this purpose, he used US Manufacturing firms for the year of 1974. He concluded that estimation of growth rate will require i) long run appropriate target of Dividend and Leverage policy, ii) estimating values of Profit and Assets Turnover. However, while concluding the above he assumes that growth can only be financed by internally generated funds where we should have constant leverage, constant dividend policy, constant profit margins and no external financing.

Johnson (1981) extended Higgin’s (1977) work by distinguishing between the behavior of current liabilities and long term liabilities under inflation. She looked at a case where, due to management constraint of long term liabilities to be a constant fraction of the book value of equity, current liabilities vary with nominal sales. Johnson (1981) finds that in general the real sustainable growth rate under the above situations will exceed Higgin’s (1977) Model. She also showed that there are the possibilities that real sustainable growth rate can be independent of the rate of inflation or it can even vary inversely with it.

In reply to Johnson (1981), Higgins (1981) replied in the same issue on the request of editor and pointed out the differences between their views. Higgins (1981) mainly answers the question of what impact inflation may have on real sustainable growth when leverage is measured in an economically meaningful way. He explained why, in the presence of inflation, use of historical cost debt to equity ratio as a measure of leverage is illogical. He furthermore suggested that uniform inflation has no effect on real sustainable growth.

Ulrich and Arlow (1980) included the issue of beginning and ending assets and equity to their analysis. They showed that maximum capacity of assets turnover is directly linked with sales and indirectly linked with debt to equity ratio. Clark et al (1985) contradicts from Ulrich and Arlow (1980) and include only the balance sheet ending figure for their analysis.

Platt et al (1995) supported Higgins constant leverage assumption, saying that, in a situation where firms are in financial distress having restriction of issuing new debt due to existing debt burden, Higgin's Model can be applied. Apart from Higgins (1977, 1981) model, their paper showed two more different versions of sustainable growth model in case of financial distress. They derived the SGR model, which determines how a firm can grow without depleting financial resources when it is unconditionally shut out of both the equity and debt markets which put the firms in financial distress. They supported Higgins' (1977, 1981) model of SGR, claiming that it is for normal firms where $g = SGR = P \times T \times L \times (1 - D)$. Their first version of the SGR model for financially distressed firms was $g = SGR = P \times T \times (1 - D)$. Here, they concluded as financially distress firm already have debt burden so L (Leverage)

should not be touched to manage growth. Their second version of the SGR model was for severe financially distressed firms which was $g = SGR = P \times T$. They concluded when a firm is facing such a severe financial distress situation that creditors put restriction on dividend disbursement, then dividend policy becomes irrelevant to manage growth, so not only leverage but dividend related decisions were also constraint to manage growth. They used industry averages for three main Industries of USA for the year of 1995.

According to Higgins' (2008) Model of sustainable growth, where he opened the theoretical debate of how debt as external financing can be used to finance growth, he claims that when a firm is not issuing new equity to raise funds, the cash to finance growth must come from internal sources, i.e. retained earnings and new borrowings. As the company wants to maintain a constant leverage ratio, each dollar added into owner's equity will enable the firm to increase the debts by dollar into leverage ratio. Hence, Higgins (1977, 1981, 2008) demonstrates that one can estimate the growth rate as equal to the growth of sales, assuming constant leverage ratio and no external financing via equity issue.

$$g = \frac{\Delta S}{S} = \frac{b \times RoE}{1 - b \times RoE} = P \times T \times L \times (1 - D)$$

Here g = sustainable growth rate, S = Sales, b = fraction of retained earning not distributed as dividend, P is profit margin, T is Asset turnover, L is Asset/Equity and D is Dividend payout ratio. Hence for discrete time frameworks, sustainable growth rate can be described as a product of four ratios: the profit margin, the asset turnover, the financial leverage ratio and the retention ratio. Here financial leverage ratio suggested by Higgins was calculated as dividing closing total assets by opening equity.

Ashta (2008) agreed with the components of the Higgin's Model of SGR, but he suggested a slight modification. He said that leverage ratio should use the figures of the same date. He suggested that while calculating the SGR, we should use opening total assets divided by opening equity. However, mathematically, the above modification will require adjusting the total assets turnover ratio as dividing sales by opening total assets and not by dividing ending total assets as used by Higgins' Model. He claimed it to be more intuitive since sales are being created by existing opening assets, and if new assets are being purchased most of the time they will give sales benefit in coming years. However, he showed the ultimate yearly growth rate will be consistent even if we use opening assets in assets turnover and financial leverage ratio.

Hence Higgins' sustainable growth rate allows only internal source and external debt financing. Chen et al. (2013) incorporate Higgins (1977) and Lee et al (2011) frameworks, allowing company to use both external debt and equity and derive a generalized sustainable growth rate as

$$g(t) = \frac{b \times RoE}{1 - b \times RoE} + \frac{\gamma \times \Delta n \times P/E}{1 - b \times RoE}$$

where γ is the degree of market imperfection, Δn is the number of shares of new equity issued, P is price per share of new equity issued and E represents the total Equity. Hence, revised sustainable growth rate model derived by Chen et al (2013) has an additional positive term which takes the new equity issue into account. Therefore, Chen et al (2013) show that Higgins (1977, 1980, 2008) sustainable growth rate is underestimated due to his not considering the new equity issue as a source of growth. However, Chen et al (2013) do not empirically tested whether Higgin's sustainable growth is underestimated in the case of new equity issues. As Chen et al (2013)'s main

focus was to identify the optimal growth rate in the presence of dividend payout policy, they worked on joint optimization of optimal growth rate and optimal payout ratio. In addition, Chen et al (2013) theoretically show the existence of specification error of dividend per share when introducing stochastic growth rate. Their empirical results support the mean-reverting process of the growth rate, and they also concluded that covariance between profitability and the growth rate is main determinant in dividend payout policies.

Hence, this research will mainly focus on empirical testing of understatement of Higgins' model for emerging economies. Sustainable growth rate gives guideline regarding what should be the firm's growth rate in long run. Wherever, emerging economies are the economies, which are assumed to be growing at larger/greater pace than other economies. So, testing growth at micro level will be beneficial for the finance professionals so that they can adjust their inside decision making and policies in such a way which help them to achieve sustainable growth. The main objectives of this research are; first to test empirically whether Higgins' model of sustainable growth is underestimated in case of new equity issues, second to find that what are the internal factors which affect sustainable growth of firms?. While exploring for internal factors affecting sustainable growth of firms I will be comparing the firms which issue New Equity with firms which does not issue New Equity as well as comparing the nonfinancial firms with financial firms.

Chapter 3

Data and Methodology

This chapter will explain the data and methodology used to answer our research question which is whether Higgins' Model of Sustainable Growth is underestimated for emerging economies. In this chapter, first I will explain the conceptual Framework, and then Data, Sampling Framework and Variables will be explained. In the last part of this chapter the econometric model and research hypothesis will be explained.

3.1 Conceptual Framework

Figure 3.1 explains the conceptual framework of this thesis. Through this figure we are trying to understand the relation between Sustainable growth and Secondary Issue offerings by controlling of firm specific factors such as size, leverage, profitability and dividend policy.

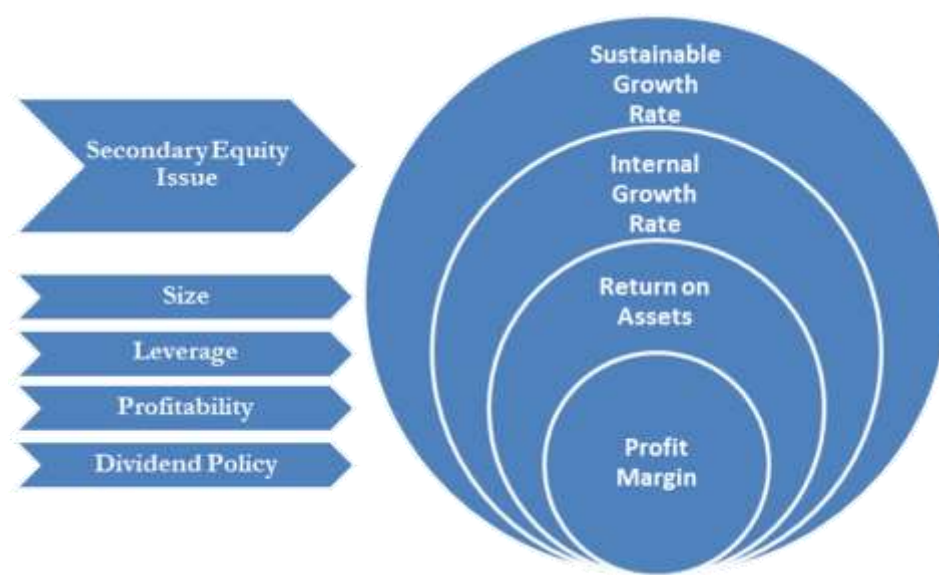


Figure 3.1: Conceptual Framework

Sources: Self Created

However, apart from firm-specific factors there may be country- or market-specific factors which might affect firm-specific growth. Additionally, as the extended version of this conceptual framework, profit margin, return on assets and internal growth rate are sub-components of Sustainable growth which may also be used to identify which component of Sustainable growth rate has been affected by Secondary equity issue for future research. However, the focus of this research is to investigate the relationship between Sustainable growth and Secondary issue offerings.

3.2 Data

In my analysis, I used yearly financial data from Datastream: more specifically, prices, sales, net income, total assets, total debt (long term), total liabilities, common shareholders' equity, cash dividend paid and common shares outstanding of all the available listed firms of selected emerging economies. The selection process followed the Morgan Stanley Capital International classification of emerging economies. The financial figures of shortlisted firms have been used to obtain the financial ratios of net profit margin, asset turnover, return on equity, return on assets, equity multiplier, dividend payout ratio, internal growth rate, sustainable growth rate, leverage and size. These financial ratios have been calculated. Moreover, actual growth in sales, actual growth in earnings per share and the dummy for the firms which have issued secondary equity in sample period, have been generated. To find out the impact of secondary equity issue on growth, difference of actual growth and sustainable growth calculated as per Higgins model was used as a dependent variable and the dummy variable of secondary equity issue firm is an independent variable. Size, leverage, profit margin and dividend policy have been used as control variables.

3.3 Population and Sampling Framework

The population of this research consists all the listed firms of emerging economies, as emerging economies are the economies which are assumed to be growing at larger pace than other economies. So exploring sustainable growth in such economies will be beneficial for the finance professional so that they can adjust their inside decision making and policies in such a way that can help them to achieve growth in the long run.

Table 3.1: Sampling Framework and Data

Economies Firm Type	Panel A		Panel B		Panel C	
	1990 - 2015		1990 - 2015		2000 - 2015	
	All firms	Financial firms	All firms	Financial firms	All firms	Financial firms
Turkey	376	95	347	88	55	14
Pakistan	321	45	315	43	73	13
China	2850	179	2786	176	58	7
India	2676	353	2586	275	180	14
South Korea	1869	159	1845	153	356	24
Indonesia	504	135	501	134	215	56
Brazil	345	74	334	72	109	24
Russia	484	43	457	19	11	1
Mexico	154	42	135	36	36	5
Saudia Arabia	174	63	171	60	-	-
Nigeria	125	32	122	31	-	-

This table presents the availability of firm level annual data of sample economies. Panel A shows available firms' data collected from DataStream. Panel B shows available firms data after considering filtering criteria of missing figures. Panel C show the final sample ready for analysis after tradeoff between survival bias and Sustainability.

The sample emerging economies were selected on the basis of Morgan Stanley Capital International (MSCI) Classification. Data of all available firms in selected

emerging economies were collected from DataStream Thomson Reuter Database. The sample economies consist of India, China, Brazil, Turkey, Indonesia, Pakistan, Korea, Russia, Mexico, Saudia Arabia and Nigeria.

Table 3.1 describes the data related with sample emerging economies. Panel A of Table 3.1 shows the available data collected from datastream. Following filtering criteria were applied to finalize sample of firms. First, the years 1990 to 2015 were selected as the time dimension due to availability of individual stock data in the respective countries. Second, any firm which has missing data in 2015 was excluded. Lastly, any firm which does not have sales, net income, assets, debt, common equity, cash dividend and common shares outstanding data was also excluded.

After applying the above filtering criteria, we were left with unbalanced panel data with reduced number of firms of our selected emerging economies. Panel B of Table 3.1 shows the number of firms of selected emerging economies available as an unbalanced panel. As sustainable growth is a long term phenomenon, so in Panel B some economies were having firms with data available only for 3 or 4 years, as they were newly started firms in their respective economies or there were no data available for any of the firm in some economies. In Saudia Arabia and Nigeria there were no firm data available before 2002 and 2003 respectively. Also, in China, there were 561 firms whose data was available before 2012 but if I were to restrict my time dimension from 2012 to 2015 then I would have more than 2,470 firms¹. Similarly, for India there were around 1,700 firms whose data is available from 2006 and onward but if I want to have data from 2005 to 2015 then around 1,100 firms will be dropped from the sample. So, on the one side I was facing the survival bias issue, in many emerging economies such

¹ The details of available maximum firms at each year end are not presented here in Table 3.1 and made separately available in Table 5.1 in appendix.

as China and India mentioned above. On the other side, if I include all such newly founded firms in my data, they will not allow me to give true picture of sustainable growth. However, as a tradeoff between Survival Bias and Sustainability, I decided to have a 16-year period for my time dimension. This makes the time dimension from 2000 to 2015. Panel C of Table 3.1 shows the number of firms when time dimension of 16 years (2000 – 2015) was used. Now after applying the last mentioned filtering criteria, the data from Russia and Mexico were reduced to 11 and 36 firms respectively. Similarly, there was no firm data available for economies like Nigeria and Saudia Arabia. As Russia and Mexico had less than 40 firms, they were also excluded.

Table 3.2: Variables and Formulae

Variables	Descriptions/Factors	Formulae
Dependent Variable[⊥]		
SGR	Sustainable Growth Rate	Return on Equity * Retention Rate
AGR	Actual Growth in Sales ^Ψ	$(Sale_t - Sale_{t-1})/Sale_{t-1}$
Diff in Growth	Difference in Growth Rate	$AGR_t - SGR_{t-1}$
Independent Variables		
Dum	Dummy Variable: Whether	0 if Common Shares Outstanding(2000)
<i>(Equity Issue)</i>	they have issued	= Common Shares Outstanding(2015)
	Secondary Equity or not	1 if Common Shares Outstanding(2000)
		< Common Shares Outstanding(2015)
Control Variables		
LEV	Leverage	T. Debt / T. Assets
SZ	Size	Log of Total Assets
PM	Profit Margin	Net Income / Sales
DPO	Dividend Payout Ratio	Cash Dividend/Net Income

[⊥] In my analysis, hyper growth rate (i.e. three digits growth rate) for any year in any firm was treated as an outlier and discarded. Thus all our analysis did not include any of the three digit growth, assuming it as outlier.

^Ψ For Robustness Dividend, Assets, Price was also used.

This table gives all details of all the variables used in this research along with their formulae

3.4 Variables

The annual accounting figures of prices, sales, net income, total assets, total debt (long term), total liabilities, common shareholder's equity, cash dividend paid, common shared outstanding² and market capitalization of all the available listed firms of emerging economies is used to calculate financial ratios of net profit margin, asset turnover, return on equity, return on asset, equity multiplier, dividend payout ratio, internal growth rate, sustainable growth rate, leverage and size. Table 3.2 gives the descriptions of all the variables used in the analysis.

3.5 Methodology

In this part of the chapter, first, I tested whether Higgins Model is underestimated through independent t-tests and simple panel regressions. Second, to identify the internal factors of firms affecting sustainable growth rate, multiple panel regression model technique is used. The specific details are given below.

3.5.1 Is Higgins' Model of sustainable growth underestimated?

Firstly, I use independent t-tests on Sustainable growth rate as well as difference of actual growth rate and Sustainable growth rate of Higgins Model. The independent t-tests will allow for unequal variance. The two groups of the firms are: one group of firms that have not issued secondary equity in the sample period and other group of firms have issued the secondary equity during sample period. The hypotheses for this will be as follows:

H1a: Sustainable growth of firms with no Secondary equity issue is less than Sustainable growth of firms with Secondary equity issue

² Common Shares Outstanding data has been taken from world scope and appears after adjustment of stock dividend and stock splits.

SGR (No Secondary Issue) < SGR (Secondary Issue)

H1b: Difference between Actual Growth of Firm and Sustainable Growth Rate of firms with no Secondary Equity Issue is less than Difference between Actual Growth of Firm and Sustainable Growth of firms with Secondary Equity Issue

Diff (AGR – SGR) (No Secondary Issue) < Diff (AGR – SGR) (Secondary Issue)

Both of above hypotheses has been tested by using independent t-tests allowing for unequal variances for all firms, nonfinancial firms and financial firms.

Next, I used panel regression analysis for Sustainable growth (Equation 1) and for the difference of Actual growth rate and Sustainable growth rate of Higgins (Equation 2). In both equations, Secondary equity issue is a dummy variable and firm-specific factors are controlled. Panel Regression approach is a more powerful method that allows for the control of firm-specific factors. To identify which panel data model is better among Fixed Effect model, Random Effect model and Pooled regression, It is necessary whether models assumptions are aligned with data characteristics as well as the nature of the research question. I want to estimate the effect of time invariant variable (dummy variable) of firms which issue secondary equity. Fixed Effect Model cannot estimate the effect of the time invariant variable. My main variable is a dummy variable of firms which issue secondary equity, so I cannot apply fixed effect model for my analysis. Additionally, my data mostly consists of short panels, and we cannot use Fixed effects models in short panels, due to the incidental parameters problem (Cameron and Trivedi, 2008). As a result of this, I have to select from Random Effect model and Pooled OLS. However, due to heterogeneity in my panel data structure, I have to apply Random Effect Model in my final analysis. To check heterogeneity in my panel data, I used Breusch and Pagan (1980) Lagrange multiplier test for random

effects. My initial results were in favor of the Random Effect model, which follows GLS estimations³. However, I have included results of Pooled OLS allowing for cluster robust standard errors for firm-specific heterogeneity along with results of Random effect models, which allow for GLS estimation. The following are the equations used in Panel Regressions.

$$SGR_{it} = \alpha_0 + \beta_1 Dum_i + \varepsilon_{it} \quad (\text{Eq. 1})$$

$$Diff(AGR - SGR)_{it} = \alpha_0 + \beta_1 Dum_i + \varepsilon_{it} \quad (\text{Eq. 2})$$

where SGR = Sustainable growth rate (Higgins Model), Dum = Dummy variable for the firms issuing Secondary equity and AGR = Actual growth rate in Sales.

In Equation 1, if β_1 is negative, it means that the growth of secondary equity issue is less than the growth of firms not issuing secondary equity and vice versa for positive β_1 . In Equation 2, if β_1 is positive this means the Actual growth rate is higher than Higgins growth rate for Secondary Issuing equity, showing Higgins' model is underestimated.

3.5.2 Internal Factors affecting Sustainable Growth

To identify internal factors affecting Sustainable growth rate, extended panel regression technique is used. Equation 3 uses Sustainable growth rate as a dependent variable and Equation 4 uses difference of Actual growth rate and Sustainable growth rate as a dependent variable.

Equation 3

$$SGR_{it} = \alpha_0 + \beta_1 Dum_i + \beta_2 Size_{it} + \beta_3 LEV_{it} + \beta_4 PM_{it} + \beta_5 DPO_{it} + \varepsilon_{it} \quad (\text{Eq. 3})$$

Equation 4

$$Diff(AGR - SGR)_{it} = \alpha_0 + \beta_1 Dum_i + \beta_2 Size_{it} + \beta_3 LEV_{it} + \beta_4 PM_{it} + \beta_5 DPO_{it} + \varepsilon_{it} \quad (\text{Eq. 4})$$

³ See Appendix Table 5.2 and Table 5.3

In both Equation 3 and Equation 4, dummy variable of secondary equity issue is used as an independent variable incorporating controlling factors of Size, Leverage, profitability and dividend policy of the firm.

The following hypotheses are tested for both Equation 3 and Equation 4.

H2a: Secondary Equity Issue has significant positive relation with Growth of Firms

$$\beta_1 > 0$$

H2b-H2e: Size, Leverage, Profitability and Dividend policy have significant relation with Growth of Firms

$$\beta_2 \neq 0, \beta_3 \neq 0, \beta_4 \neq 0, \beta_5 \neq 0$$

Moreover, the above factors will be identified for all firms, financial firms and nonfinancial firms separately.

CHAPTER 4

RESULTS AND ANALYSIS

The aim of this research is to empirically analyze whether Higgins' model of Sustainable growth is underestimated. Higgins' Model of Sustainable Growth has been compared with Actual Realized Growth of Firms in different ways.

First, Sustainable Growth of Higgins has been compared with Actual Realized Growth of Firms for all the sample emerging economies. Secondly, Chen et al (2013) showed theoretically that Higgins' Model of Sustainable Growth of firms is underestimated and secondary equity issue also contributes towards the growth of the firms, which is not included in Higgins Model. Hence, the Sustainable growth of firms calculated by Higgins' model was analyzed for two groups of firm via Independent t-statistics. Firms issuing Secondary equity as first group and firms not issuing secondary equity, as a second group. Lastly, the factors responsible for difference between Sustainable growth and Actual realized growth were identified via Panel Regression analysis. Apart from the Secondary equity issue, other factors tested here were profitability, size, leverage, and dividend policy.

4.1 Summary Statistics of SGR and AGR

The first part of this chapter shows summary statistics for Sustainable growth and Actual growth for emerging economies as presented in Table 4.1. Around 55% to 70% of firms in our sample are seconding equity issuing firms⁴. From Table 4.1, it is visible that mean of Higgins' SGR is consistently lower than mean of Actual Growth rate of Sales in all the economies. If Higgins model of SGR is a good model, then there must

⁴ See Appendix Table 5.4 for detailed classification of firms in this regard.

not be significant difference between Higgins' Sustainable growth and Actual Growth. These consistently lower SGR results are allowing us more to investigate thoroughly what may be the reason behind that.

For example, in the case of Turkey, we can see that the mean of the Sustainable growth for all 55 firms is 3.43%, whereas Actual realized growth in sales has a mean of 16.69%. However, the mean of the sustainable growth rate of 41 nonfinancial firms' is just 1.79%, whereas Actual realized growth changes little, and is 16.79%. Also, the mean of sustainable growth rate of 14 financial firms in Turkey is 8.51% and Actual Realized growth rate is 15.81%.

For Pakistan, we can see that the mean of the Sustainable growth for all 73 firms is 8.63%. However, for 60 nonfinancial firms, the SGR is 7.97%, which is slightly less as compared to mean of the SGR of 13 financial firms, which is 11.58%. Similarly, the same situation can be seen for Actual growth rate where all 73 firms have a mean of 15.35%, 60 nonfinancial firms have the mean AGR of 15.07% and 13 financial firms have mean AGR of 16.61%.

For South Korea, mean actual realized growth rate is 5% to 6% more than sustainable growth rate for all cases of all firms (356 firms), nonfinancial firms (333 firms) and financial firms (23 firms). Similarly for Indonesia the mean of actual realized growth rate is 14.43% for all 215 firms as compared to the mean of Sustainable growth rate of 6.22%. In the case of nonfinancial firms (159 firms) the difference is 7% as the mean of actual growth rate is 12.18%, and the mean of Sustainable growth rate is 5.48%. Even the 56 financial firms have the highest difference between mean AGR and mean SGR of 12.5%, 8.33% being mean of SGR and 20.87% being mean of AGR.

Table 4.1: Summary Statistics of SGR and AGR for Sample Economies

Country	All Firms					Nonfinancial Firms					Financial Firms				
	No. of firm	Higgins' SGR		AGR(Sales)		No. of firm	Higgins' SGR		AGR(Sales)		No. of firm	Higgins' SGR		AGR(Sales)	
		Mean	S.D	Mean	S.D		Mean	S.D	Mean	S.D		Mean	S.D	Mean	S.D
Turkey	55	3.43%	21.12%	16.69%	35.01%	41	1.79%	21.73%	16.79%	31.58%	14	8.51%	18.25%	15.81%	44.24%
Pakistan	73	8.63%	17.23%	15.35%	28.40%	60	7.97%	17.83%	15.07%	28.76%	13	11.58%	13.91%	16.61%	27.64%
South Korea	356	3.04%	15.75%	8.18%	25.58%	333	2.93%	15.68%	8.02%	23.98%	23	4.63%	16.79%	10.62%	42.93%
Indonesia	215	6.22%	18.70%	14.43%	30.11%	159	5.48%	19.31%	12.18%	27.88%	56	8.33%	16.71%	20.87%	34.94%
India	180	10.71%	14.84%	16.12%	24.17%	166	10.66%	15.24%	16.01%	24.62%	14	11.30%	8.86%	17.46%	17.88%
China	58	3.34%	16.18%	12.63%	36.54%	51	2.80%	16.86%	11.67%	35.49%	7	7.22%	9.26%	19.47%	42.89%
Brazil	109	4.78%	18.39%	13.01%	26.41%	85	4.61%	19.34%	12.80%	24.55%	24	5.40%	14.55%	13.79%	32.25%

This table⁵ shows mean and standard deviation of both Sustainable growth rates calculated by Higgins' model and Actual realized growth rate of all the sample firms from sample emerging economies.

⁵ The same table is generated in Appendix as Table 5.4 where Mean SGR and Mean AGR is calculated for all firms, nonfinancial firms and financial firms as well as all firms, secondary equity issuing firms and no secondary equity issuing firms, thus making a total of 21 rows for the same Table 4.1

In the case of India for all 180 firms, the mean SGR, is 10.71% whereas the mean Actual growth rate is 16.12%. Similarly, mean growth rates of 10.66% (SGR) and 16.01% (AGR) are for 166 nonfinancial firms of India. However, the mean of 14 financial firms' is 1% higher than nonfinancial firms, being 11.3% (SGR) and 17.46% (AGR)

For China, the mean SGR for all 58 firms is 3.34% whereas mean actual realized growth is 12.63%. The means of 51 nonfinancial firms are 2.8% (SGR) and 11.67% (AGR) and financial firms have means of 7.22% (SGR) and 19.47% (AGR).

For Brazil, the mean SGR for all 109 firms is 4.78% whereas mean AGR for the same is 13.01%. Brazil also have similar mean rates of SGR and AGR, being 4.61% and 12.80% respectively. However, their 85 financial firms have slighter higher growth rates of (70 to 80 basis point) which are 5.40% (SGR) and 13.79% (AGR).

Cross Country analysis from Table 4.1 shows that on average India and Pakistan have highest growth rates for almost all of the cases whether its SGR or AGR. South Korea and China have lowest growth rates among sample economies. However, in terms of differences between SGR and AGR, Turkey and China have the highest differences.

4.2 Summary of Univariate analysis via t-tests

In this section the Hypotheses H1a and H1b have been analyzed via Table 4.2 and 4.3 respectively.

Table 4.2 shows the t-tests of difference in means of independent groups for hypothesis H1a, which is "Sustainable Growth of firms with no Secondary equity issue is less than Sustainable growth of firms with Secondary equity issue"

$$\text{SGR (No Secondary Issue)} < \text{SGR (Secondary Issue)}$$

Table 4.2: Summary of Univariate Analysis via T-Test Mean of Independent Groups**H1a: SGR (No Secondary Issue) < SGR (Secondary Issue)**

	SGR(NSEI) A	SGR(SEI) B	Both C	Difference A – B	T-Statistics
Panel A: All Firms					
Turkey	5.52%	2.48%	3.43%	3.05%	2.2143**
Pakistan	8.33%	8.86%	8.64%	-0.53%	-0.4761
South Korea	4.98%	1.47%	3.04%	3.51%	8.5111***
Indonesia	7.13%	5.86%	6.22%	1.27%	1.8475*
India	11.39%	10.42%	10.71%	0.97%	1.6733*
China	0.91%	4.25%	3.34%	-3.34%	-2.453**
Brazil	6.05%	3.80%	4.78%	2.24%	2.4311**
Panel B: Nonfinancial Firms					
Turkey	4.91%	0.02%	1.79%	4.89%	3.0107***
Pakistan	8.32%	7.65%	7.97%	0.68%	0.5539
South Korea	4.86%	1.38%	2.93%	3.48%	8.2414***
Indonesia	6.88%	4.73%	5.48%	2.15%	2.7103***
India	11.39%	10.31%	10.66%	1.08%	1.7871*
China	0.62%	3.61%	2.80%	-2.98%	1.9437*
Brazil	4.98%	4.34%	4.61%	0.63%	0.5658
Panel C: Financial Firms					
Turkey	9.88%	8.25%	8.51%	1.64%	0.5811
Pakistan	8.45%	12.16%	11.58%	-3.71%	-1.0014
South Korea	6.54%	2.80%	4.63%	3.74%	2.02**
Indonesia	9.77%	8.18%	8.33%	1.60%	1.1358
India	No Indian Financial firms in the sample were found which has issued secondary equity in the sample period				
China	2.88%	8.91%	7.22%	-6.02%	3.5086***
Brazil	9.12%	1.49%	5.40%	7.63%	4.916**

Note: SGR(NSEI) means Sustainable Growth of No Secondary Equity Issue and SGR(SEI) means Sustainable Growth of Secondary Equity Issue

*** p<0.01, ** p<0.05, * p<0.1

Table 4.3: Summary of Univariate Analysis via T-Test Mean of Independent Groups**H1b: Diff (AGR – SGR) (No Secondary Issue) < Diff(AGR – SGR) (Secondary Issue)**

	Group(NSEI) A	Group (SEI) B	All Firms C	Difference A – B	T-Statistics
Panel A: All Firms					
Turkey	12.90%	13.71%	13.46%	-0.81%	-0.2768
Pakistan	4.04%	8.69%	6.73%	-4.65%	-2.3383**
South Korea	2.74%	7.09%	5.15%	-4.35%	-5.4181***
Indonesia	5.48%	9.29%	8.21%	-3.81%	-2.9659***
India	1.50%	7.03%	5.39%	-5.54%	-5.0015***
China	7.47%	9.94%	9.27%	-2.47%	-0.7536
Brazil	5.65%	10.12%	8.17%	-4.47%	-2.7296***
Panel B: Nonfinancial Firms					
Turkey	13.82%	15.99%	15.21%	-2.17%	-0.6838
Pakistan	3.91%	10.10%	7.11%	-6.20%	-2.7818***
South Korea	2.52%	7.15%	5.09%	-4.63%	-5.9513***
Indonesia	4.73%	7.75%	6.69%	-3.02%	-2.1991**
India	1.50%	7.14%	53.22%	-5.64%	-4.937***
China	6.13%	9.86%	8.85%	-3.74%	-1.1271
Brazil	6.48%	9.40%	8.19%	-2.92%	-1.6125
Panel C: Financial Firms					
Turkey	6.34%	8.23%	7.93%	-1.88%	-0.2842
Pakistan	5.90%	4.87%	5.03%	1.03%	0.1645
South Korea	5.74%	6.23%	5.99%	-0.50%	-0.0929
Indonesia	13.48%	12.45%	12.54%	1.03%	0.2148
India	No Indian Financial firms in the sample were found which has issued secondary equity in the sample period				
China	16.72%	10.51%	12.25%	6.22%	0.5101
Brazil	3.26%	13.24%	8.07%	-9.99%	-2.5826***

Note: Group(NSEI) means Difference (AGR – SGR) of No Secondary Equity Issue and Group(SEI) means Difference (AGR – SGR) of Secondary Equity Issue

*** p<0.01, ** p<0.05, * p<0.1

In Hypothesis H1a (Table 4.2), if the difference is significantly positive, it means the Sustainable Growth calculated by Higgins for the firms which issue Secondary Equity is less than the Sustainable Growth of firms which do not issue equity. It indicates that Higgins model is underestimating the Sustainable growth of the firms which issues Secondary equity. Table 4.2 shows that apart from China all other emerging economies have positive differences indicating that Higgins model of SGR is underestimated. The only exception is Pakistan, with an insignificant co-efficient. In the case of industry classification of financial firms and nonfinancial firms, we can see that South Korea, China and Brazil have significant results.

Table 4.3 shows the t-test results for the difference in mean of AGR minus SGR for firms with secondary equity issue and no secondary equity issues. For this, I hypothesized that difference of AGR minus SGR for firms having secondary equity issue is higher than difference of AGR minus SGR for firms not having secondary equity issue. Alternatively,, the hypothesis of this is H1b, which is “Difference between Actual growth of firms and Sustainable growth rate of firms with no Secondary equity issue is less than difference between Actual growth of firms and Sustainable growth of firms with Secondary equity issue”

$$\text{Diff (AGR - SGR) (No Secondary Issue) < Diff(AGR - SGR) (Secondary Issue)}$$

As Table 4.1 already has shown, for all our sample economies, we have found that AGR is higher than SGR. Here, we are comparing the growth in the framework of secondary equity issue, so in both the cases whether firms are issuing Seconding equity or not, Diff (AGR-SGR) must be positive, which is documented in column A, B and C. However, as our claim is to test whether Higgins Sustainable Growth Rate model is underestimated, we need

to test whether that difference is larger in the case of firms with Secondary Equity Issues. So Column of Difference between (A – B) is expected to be negative. We can see that for all firms (Panel A) and for nonfinancial firms (Panel B), the mentioned column is negative, which is significant also in the cases of five out of seven sample emerging economies of Pakistan, South Korea, Indonesia, India and Brazil, and the same results apply to nonfinancial firms. In the case of financial firms we can see significant results, only for the case of Brazil where secondary equity issue may not be influencing growth in financial sectors firms, as in the other economies apart from Brazil, secondary equity issue is not influencing the growth of financial sector, as firstly the difference is around 1%, and secondly it is also insignificant.

4.3 Panel based Regression / Multivariate Analysis

In this section, panel based regressions⁶ with Random effect model as well as Pooled OLS allowing for cluster robust standard error are used for testing Equation 2 and Equation 4. Regression results of every sample emerging economy have been shown in separate tables⁷, where Equation 2 and Equation 4 have been calculated for both Random effect Model and Pooled OLS.. The results are presented in three different panels, where Panel A will cover all firms, Panel B nonfinancial firms, and Panel C, financial firms.

4.3.1 Turkey

Table 4.4 shows the regression results for Turkey, where as a balanced panel we have 55 firms reported in Panel A, out of which 41 firms are nonfinancial (Panel B) and 14 firms are financial (Panel C). In the case of Turkey, the secondary equity issue in any of the cases is not significant at all, in any panel. However, control variables of Size and Leverage

⁶ The robust methodology is presented in Appendix 5.5, where cross-sectional regression for every emerging economy has been used instead of panel regression along with their results.

⁷ The separate tables of every emerging economy under robust methodology are also presented in Appendix 5.6

are significant factors that contribute to the growth in nonfinancial firms for both estimations of Pooled OLS and Random Effect Model. Size having a significant negative sign means the larger the firm, the slower the growth will be. Overall, Turkey's regression' results are not very supportive of my hypotheses. A similar finding is reported in Table 4.3, where the difference of SGR and AGR was not significantly different in the case of secondary equity issues of firms.

4.3.2 Pakistan

Table 4.5 shows the regression results of Pakistan, where as a balanced panel we have 73 firms reported in Panel A, out of which 60 firms are nonfinancial (Panel B) and 13 firms are financial (Panel C). In the case of Pakistan, the secondary equity issue in all cases is significant, which indicates that Pakistan is an economy where we can say that secondary equity issue is contributing to growth of firms. According to test of heterogeneity⁸, Random Effect Model should be followed. In our REM estimation, control variables of Size, Leverage and Dividend policy are insignificant factors in growth rate of firms in Pakistan. Profitability having a positive sign is significant, which indicates that Profit margins in Pakistan are contributing towards growth rate of firms. However, Leverage is also significant in all firms, but it disappears when firms are classified as financial firms and non-financial firms. Moreover, secondary equity issue is not significant in case of financial firms.

⁸ To find out which estimation technique from Pooled OLS and Random Effect is better, I carried out a Breusch and Pagan (1980) Lagrange multiplier test. Results of this test are shown in Appendix Table 5.2 and Table 5.3.

Table 4.4: Multivariate Regression Analysis –Turkey

This table shows panel regression for the difference of AGR – SGR with Pooled OLS and random effect model for the Turkish firms. First column refers to Equation 2 whereas Second refers to Equation 4.

	Pooled OLS		Random Effect Model	
Panel A: All Firms – 55 Firms				
Dum	0.00807 (0.0318)	-0.00768 (0.0309)	0.00824 (0.0382)	-0.00955 (0.0380)
Leverage		0.221** (0.105)		0.244*** (0.0738)
Size		-0.0207** (0.00919)		-0.0233*** (0.00884)
Profitability		-0.0257 (0.0359)		-0.0192 (0.0217)
Dividend Payout Ratio		-0.000283 (0.00470)		-0.000183 (0.00957)
Constant	0.129*** (0.0231)	0.352*** (0.113)	0.128*** (0.0318)	0.380*** (0.112)
Observations	754	754	754	754
Panel B: Nonfinancial Firms only – 41 Firms				
Dum	0.0218 (0.0325)	-0.00158 (0.0285)	0.0218 (0.0359)	-0.00109 (0.0348)
Leverage		0.396*** (0.141)		0.395*** (0.0863)
Size		-0.0289** (0.0133)		-0.0299*** (0.0110)
Profitability		0.0156 (0.0382)		0.0161 (0.0251)
Dividend Payout Ratio		-0.000121 (0.00460)		2.27e-05 (0.00917)
Constant	0.138*** (0.0234)	0.422** (0.159)	0.138*** (0.0288)	0.433*** (0.134)
Observations	573	573	573	573
Panel C: Financial Firms only – 14 Firms				
Dum	0.0188 (0.0883)	0.0293 (0.0994)	0.0204 (0.131)	0.0116 (0.137)
Leverage		0.0368 (0.130)		0.101 (0.154)
Size		-0.000751 (0.0147)		-0.00283 (0.0188)
Profitability		-0.0802 (0.0624)		-0.0611 (0.0439)
Dividend Payout Ratio		-0.0257 (0.0269)		-0.0278 (0.0524)
Constant	0.0634 (0.0736)	0.0687 (0.239)	0.0617 (0.120)	0.0890 (0.294)
Observations	181	181	181	181

Standard errors in parentheses [*** p<0.01, ** p<0.05, * p<0.1]

4.3.3 South Korea

Table 4.6 shows the regression results of South Korea, where as a balanced panel we have 356 firms reported in Panel A, out of which 333 firms are nonfinancial (Panel B) and 23 firms are financial (Panel C). In the case of South Korea, the secondary equity issue in all model, is significant, which indicates that South Korea is an economy where we can say that secondary equity issue contributes towards growth of firms. Moreover, the control variables of Size and Leverage are significant firm-specific factors which contribute towards growth rate of firms in South Korea.. However, profitability and dividend policy in the case of South Korea are insignificant, so do not contribute towards growth of firms. Also Panel C of Table 4.6 shows insignificant results for Secondary Equity Issue, which indicates that we cannot draw the conclusions about nonfinancial firms as for the financial firms in South Korea.

4.3.4 Indonesia

Table 4.7 shows the regression results of Indonesia, where as a balanced panel we have 215 firms reported in Panel A, out of which 159 firms are nonfinancial (Panel B) and 56 Firms are financial (Panel C). In the case of Indonesia, the secondary equity issue in all model, is significant, which indicates that secondary equity issue is an important factor which contributes towards the growth of firms, especially for nonfinancial firms. In Panel C of financial firms, we can see the secondary equity is insignificant. However, apart from Size, all other control variables of Leverage, Profitability and Dividend Policy are significant factors, which contribute towards the growth of firms in Indonesia.

Table 4.5: Multivariate Regression Analysis – Pakistan

This table shows panel regression for the difference of AGR – SGR with Pooled OLS and random effect model for the Pakistani firms. First column refers to Equation 2 whereas Second refers to Equation 4.

	Pooled OLS		Random Effect Model	
Panel A: All Firms – 73 Firms				
Dum	0.0465** (0.0179)	0.0444** (0.0213)	0.0465** (0.0199)	0.0444** (0.0212)
Leverage		0.0752 (0.0460)		0.0752* (0.0449)
Size		-0.000404 (0.00612)		-0.000404 (0.00551)
Profitability		0.0407 (0.0274)		0.0407* (0.0233)
Dividend Payout Ratio		0.00106 (0.00354)		0.00106 (0.00558)
Constant	0.0404*** (0.0120)	0.0253 (0.100)	0.0404*** (0.0151)	0.0253 (0.0907)
Observations	1,048	1,048	1,048	1,048
Panel B: Nonfinancial Firms only – 60 Firms				
Dum	0.0620*** (0.0202)	0.0565** (0.0232)	0.0620*** (0.0223)	0.0565** (0.0236)
Leverage		0.0756 (0.0500)		0.0756 (0.0490)
Size		0.00134 (0.00745)		0.00134 (0.00674)
Profitability		0.0468 (0.0300)		0.0468* (0.0244)
Dividend Payout Ratio		0.00177 (0.00360)		0.00177 (0.00574)
Constant	0.0391*** (0.0127)	-0.00338 (0.122)	0.0391** (0.0160)	-0.00338 (0.109)
Observations	855	855	855	855
Panel C: Financial Firms only – 13 Firms				
Dum	-0.0103 (0.0395)	-0.0263 (0.0645)	-0.0103 (0.0554)	-0.0261 (0.0686)
Leverage		0.00254 (0.156)		0.0317 (0.142)
Size		0.000646 (0.0111)		0.00171 (0.0111)
Profitability		-0.0290 (0.231)		-0.0318 (0.118)
Dividend Payout Ratio		-0.0721* (0.0374)		-0.0774 (0.0602)
Constant	0.0590 (0.0331)	0.0871 (0.178)	0.0590 (0.0509)	0.0652 (0.203)
Observations	193	193	193	193

Standard errors in parentheses [*** p<0.01, ** p<0.05, * p<0.1]

Table 4.6: Multivariate Regression Analysis – Korea

This table shows panel regression for the difference of AGR – SGR with Pooled OLS and random effect model for the Korean firms. First column refers to Equation 2 whereas Second refers to Equation 4.

	Pooled OLS		Random Effect Model	
Panel A: All Firms – 356 Firms				
Dum	0.0435*** (0.00811)	0.0317*** (0.00855)	0.0436*** (0.00879)	0.0317*** (0.00860)
Leverage		0.116*** (0.0299)		0.116*** (0.0234)
Size		-0.00586* (0.00306)		-0.00586** (0.00275)
Profitability		-0.00442 (0.0422)		-0.00442 (0.0124)
Dividend Payout Ratio		0.000178 (0.000174)		0.000178 (0.000335)
Constant	0.0274*** (0.00526)	0.122** (0.0593)	0.0275*** (0.00655)	0.122** (0.0543)
Observations	5,131	5,131	5,131	5,131
Panel B: Nonfinancial Firms only – 333 Firms				
Dum	0.0463*** (0.00809)	0.0347*** (0.00820)	0.0464*** (0.00882)	0.0347*** (0.00844)
Leverage		0.104*** (0.0307)		0.104*** (0.0234)
Size		-0.00745** (0.00306)		-0.00745** (0.00296)
Profitability		0.000347 (0.0400)		0.000347 (0.0122)
Dividend Payout Ratio		0.000400*** (0.000136)		0.000400 (0.000478)
Constant	0.0252*** (0.00518)	0.152*** (0.0584)	0.0253*** (0.00659)	0.152*** (0.0581)
Observations	4,810	4,810	4,810	4,810
Panel C: Financial Firms only – 23 Firms				
Dum	0.00496 (0.0462)	-0.0159 (0.0490)	0.00496 (0.0534)	-0.0159 (0.0540)
Leverage		0.278** (0.120)		0.278** (0.124)
Size		-0.00713 (0.0131)		-0.00713 (0.0145)
Profitability		-0.0773 (0.183)		-0.0773 (0.0764)
Dividend Payout Ratio		2.41e-05 (4.21e-05)		2.41e-05 (0.000726)
Constant	0.0574* (0.0300)	0.165 (0.292)	0.0574 (0.0382)	0.165 (0.314)
Observations	321	321	321	321

Standard errors in parentheses [*** p<0.01, ** p<0.05, * p<0.1]

Table 4.7: Multivariate Regression Analysis – Indonesia

This table shows panel regression for the difference of AGR – SGR with Pooled OLS and random effect model for the Indonesian firms. First column refers to Equation 2 whereas Second refers to Equation 4.

	Pooled OLS		Random Effect Model	
Panel A: All Firms – 215 Firms				
Dum	0.0381*** (0.0136)	0.0438*** (0.0142)	0.0384** (0.0153)	0.0442*** (0.0152)
Leverage		-0.0750*** (0.0165)		-0.0769*** (0.0158)
Size		-0.00546 (0.00357)		-0.00573 (0.00352)
Profitability		-0.00422*** (0.000491)		-0.00419*** (0.00126)
Dividend Payout Ratio		-0.00839 (0.00695)		-0.00895* (0.00487)
Constant	0.0548*** (0.0109)	0.190** (0.0767)	0.0546*** (0.0130)	0.196*** (0.0738)
Observations	3,041	3,041	3,041	3,041
Panel B: Nonfinancial Firms only – 159 Firms				
dum	0.0302** (0.0149)	0.0346** (0.0154)	0.0307* (0.0168)	0.0352** (0.0165)
Leverage		-0.0600*** (0.0177)		-0.0635*** (0.0164)
Size		-0.00159 (0.00458)		-0.00176 (0.00436)
Profitability		-0.00398*** (0.000772)		-0.00390** (0.00154)
Dividend Payout Ratio		-0.00961** (0.00469)		-0.0112** (0.00561)
Constant	0.0473*** (0.0109)	0.100 (0.0972)	0.0469*** (0.0135)	0.105 (0.0907)
Observations	2,252	2,252	2,252	2,252
Panel C: Financial Firms only – 56 Firms				
dum	-0.0103 (0.0375)	0.0350 (0.0419)	-0.0103 (0.0472)	0.0350 (0.0490)
Leverage		-0.131** (0.0548)		-0.131** (0.0600)
Size		-0.0193*** (0.00504)		-0.0193*** (0.00666)
Profitability		-0.00508*** (0.000338)		-0.00508** (0.00226)
Dividend Payout Ratio		-0.00586 (0.0202)		-0.00586 (0.00980)
Constant	0.135*** (0.0352)	0.539*** (0.112)	0.135*** (0.0449)	0.539*** (0.142)
Observations	789	789	789	789

Standard errors in parentheses [*** p<0.01, ** p<0.05, * p<0.1]

4.3.5 India

Table 4.8 shows the regression results of India, where as a balanced panel we have 180 firms reported in Panel A, out of which 166 firms are nonfinancial (Panel B) and 14 Firms are financial (Panel C). In the case of India, the secondary equity offering in all of model is significant for nonfinancial firms. The 14 financial firms from India in our sample had not issued secondary equity from 2000 to 2015, due to which we cannot comment on Panel C of Table 4.8. In the case of India we can see that apart from secondary equity issue, the control variable of Leverage is also contributing towards growth of firms. Other control variables such as size, profitability and dividend policy are insignificant, thus not contributing towards growth of firms.

4.3.6 China

Table 4.9 shows the regression results of China, where as a balanced panel we have 58 firms reported in Panel A, out of which 51 firms are nonfinancial (Panel B) and only 7 firms are financial (Panel C). In the case of China we encountered an extreme survival bias issue, as most of the listed firms there were started around 2012. This issue has already been discussed in Table 3.1. In the case of China, the secondary equity offering, in all of model are insignificant, and only size as a control variable is significant, indicating that in China size of the firms is playing a key role in growth of firms, and not the other factors.

4.3.7 Brazil

Table 4.10 shows the regression results of Brazil, where as a balanced panel we have 109 firms showing results in Panel A, out of which 85 firms are nonfinancial (Panel B) and only 24 firms are financial (Panel C).

Table 4.8: Multivariate Regression Analysis – India

This table shows panel regression for the difference of AGR – SGR with Pooled OLS and random effect model for the Indian firms. First column refers to Equation 2 whereas Second refers to Equation 4.

	Pooled OLS		Random Effect Model	
Panel A: All Firms – 180 Firms				
Dum	0.0554*** (0.0119)	0.0377*** (0.0123)	0.0554*** (0.0130)	0.0377*** (0.0127)
Leverage		0.169*** (0.0453)		0.170*** (0.0284)
Size		0.00176 (0.00243)		0.00137 (0.00272)
Profitability		-0.000837*** (8.82e-05)		-0.000815 (0.000813)
Dividend Payout Ratio		0.00384 (0.00479)		0.00377 (0.00486)
Constant	0.0150 (0.00930)	-0.0451 (0.0420)	0.0149 (0.0109)	-0.0389 (0.0461)
Observations	2,640	2,640	2,640	2,640
Panel B: Nonfinancial Firms only – 166 Firms				
Dum	0.0565*** (0.0123)	0.0366*** (0.0129)	0.0565*** (0.0134)	0.0366*** (0.0130)
Leverage		0.185*** (0.0508)		0.186*** (0.0311)
Size		0.00122 (0.00283)		0.000765 (0.00317)
Profitability		-0.000836*** (8.91e-05)		-0.000820 (0.000827)
Dividend Payout Ratio		0.00415 (0.00482)		0.00407 (0.00494)
Constant	0.0150 (0.00930)	-0.0393 (0.0475)	0.0149 (0.0110)	-0.0320 (0.0529)
Observations	2,435	2,435	2,435	2,435
Panel C: Financial Firms only – 14 Firms				
dum = 0,	-	-		
Leverage		0.109 (0.101)		0.141* (0.0746)
Size		0.0128*** (0.00418)		0.0169* (0.00922)
Profitability		0.120 (0.0770)		0.175** (0.0833)
Dividend Payout Ratio		-0.241* (0.131)		-0.224** (0.113)
Constant	0.0616*** (0.0171)	-0.185* (0.0873)	0.0619*** (0.0174)	-0.286 (0.190)
Observations	205	205	205	205

Standard errors in parentheses [*** p<0.01, ** p<0.05, * p<0.1]

Table 4.9: Multivariate Regression Analysis – China

This table shows panel regression for the difference of AGR – SGR with Pooled OLS and random effect model for the Chinese firms. First column refers to Equation 2 whereas Second refers to Equation 4.

	Pooled OLS		Random Effect Model	
Panel A: All Firms – 58 Firms				
dum	0.0247 (0.0345)	-0.00914 (0.0362)	0.0242 (0.0321)	-0.0105 (0.0345)
Leverage		0.000652 (0.00783)		0.000786 (0.0113)
Size		0.0169*** (0.00602)		0.0174*** (0.00670)
Profitability		-0.000370*** (6.72e-05)		-0.000361 (0.000534)
Dividend Payout Ratio		-9.39e-05 (0.00168)		-9.32e-05 (0.00241)
Constant	0.0747** (0.0315)	-0.167* (0.0963)	0.0748*** (0.0274)	-0.174* (0.100)
Observations	813	813	813	813
Panel B: Nonfinancial Firms only – 51 Firms				
dum	0.0373 (0.0361)	0.00898 (0.0376)	0.0369 (0.0338)	0.00701 (0.0364)
Leverage		0.00102 (0.00854)		0.00124 (0.0112)
Size		0.0164** (0.00765)		0.0173** (0.00774)
Profitability		-0.000374*** (6.45e-05)		-0.000362 (0.000527)
Dividend Payout Ratio		-0.000155 (0.00166)		-0.000159 (0.00238)
Constant	0.0613* (0.0331)	-0.174 (0.119)	0.0614** (0.0288)	-0.186 (0.115)
Observations	713	713	713	713
Panel C: Financial Firms only – 7 Firms				
dum	-0.0622 (0.0921)	-0.203 (0.131)	-0.0635 (0.108)	-0.203 (0.126)
Leverage		-0.387* (0.177)		-0.387 (0.384)
Size		0.0289* (0.0134)		0.0289 (0.0182)
Profitability		-0.0186 (0.0547)		-0.0186 (0.0533)
Dividend Payout Ratio		0.0547 (0.0874)		0.0547 (0.116)
Constant	0.167* (0.0766)	-0.160 (0.201)	0.167* (0.0913)	-0.160 (0.276)
Observations	100	100	100	100

Standard errors in parentheses [*** p<0.01, ** p<0.05, * p<0.1]

Table 4.10: Multivariate Regression Analysis – Brazil

This table shows panel regression for the difference of AGR – SGR with Pooled OLS and random effect model for the Brazilian firms. First column refers to Equation 2 whereas Second refers to Equation 4.

	Pooled OLS		Random Effect Model	
Panel A: All Firms – 109 Firms				
dum	0.0447*** (0.0165)	0.0388** (0.0164)	0.0446** (0.0186)	0.0388** (0.0180)
Leverage		0.0644 (0.0567)		0.0614 (0.0397)
Size		0.00721* (0.00413)		0.00729 (0.00469)
Profitability		0.00189 (0.00253)		0.00192** (0.000869)
Dividend Payout Ratio		-0.00322*** (0.00120)		-0.00318* (0.00166)
Constant	0.0565*** (0.0108)	-0.0606 (0.0581)	0.0567*** (0.0140)	-0.0608 (0.0671)
Observations	1,545	1,545	1,545	1,545
Panel B: Nonfinancial Firms only – 85 Firms				
dum	0.0292 (0.0178)	0.0227 (0.0182)	0.0288 (0.0197)	0.0224 (0.0194)
Leverage		-0.0218 (0.0353)		-0.0257 (0.0424)
Size		0.00993** (0.00456)		0.00983* (0.00521)
Profitability		0.0652 (0.0632)		0.0659* (0.0346)
Dividend Payout Ratio		-0.00629*** (0.00169)		-0.00652** (0.00285)
Constant	0.0648*** (0.0127)	-0.0649 (0.0634)	0.0649*** (0.0151)	-0.0620 (0.0727)
Observations	1,208	1,208	1,208	1,208
Panel C: Financial Firms only – 24 Firms				
dum	0.0999** (0.0430)	0.0331 (0.0459)	0.103** (0.0476)	0.0329 (0.0416)
Leverage		0.445*** (0.122)		0.450*** (0.101)
Size		-0.00179 (0.00678)		-0.00169 (0.0103)
Profitability		0.00232 (0.00268)		0.00235** (0.000946)
Dividend Payout Ratio		-0.00197 (0.00166)		-0.00189 (0.00217)
Constant	0.0326 (0.0196)	-0.0287 (0.111)	0.0329 (0.0333)	-0.0312 (0.154)
Observations	337	337	337	337

Standard errors in parentheses [*** p<0.01, ** p<0.05, * p<0.1]

In the case of Brazil, the secondary equity issue is significant in Panel A along with other control variables of profitability and dividend policy, but that significance disappears in Panel B and Panel C for secondary equity Issue. Results show that for nonfinancial firms in Brazil, profitability and dividend policy play a key role in growth of firms whereas in financial firms of Brazil, size and dividend policy are insignificant, but leverage and profitability being significant matters.

4.4 Cross Country Analysis

Here, cross country analysis⁹ is reported in Table 4.11 to summarize the analyses done in Table 4.4 to Table 4.10 under Random Effect model estimation. In Table 4.11, secondary equity issue is significant for Pakistan, South Korea, Indonesia, India and Brazil (but not for Turkey and China) for all firms. Secondary equity issue is also insignificant in the case of Brazil for nonfinancial firms. Furthermore, not a single economy indicates secondary equity issue as a significant factor of sustainable growth for financial firms.

Firm-specific factors were also examined. Size was not significant in India and Pakistan in any of the financial firms as well as in nonfinancial firms. Size was only significant in the case of financial firms in Indonesia and India. Except China, Leverage was significant in all emerging economies, for all type of firms. For nonfinancial firms, leverage was not significant for Pakistan, China and Brazil whereas it was highly significant in the cases of India, Indonesia, South Korea and Turkey. Profitability was only significant in the cases of Indonesia, Pakistan and Brazil. Dividend Policy was only significant in the cases of Brazil and Indonesia. Thus overall cross country analysis shows mixed results. Table 4.12 replicates the results of Table 4.11 but under Pooled OLS; however, results are robust, as apart from minor changes in control variables, secondary equity results are same.

⁹ Cross-country analysis of Equation 3 under Pooled OLS and REM, Equation 4 using AGR of EPS and Equation 7 and Equation 8 of robust methodology for cross-sectional regressions are presented in Appendix Table 5.14 to Table 5.19.

Table 4.11: Cross Country Significance of Firm Specific Inside Factors (Random Effect Model)

This table shows the the significance level of all the economies along with respective variables for all firms, nonfinancial firms and financial firms under Random Effect Model for Equation 4.

Factors\Economies		Turkey	Pakistan	South Korea	Indonesia	India	China	Brazil
Secondary Equity Issue	All		**	***	***	***		**
	Nonfinancial Financial		**	***	**	***		
Size	All	***		**	*		***	*
	Nonfinancial Financial	***		**	***	*	**	*
Leverage	All	***	*	***	***	***		*
	Nonfinancial Financial	***		***	***	***		***
Profitability	All		*		***			**
	Nonfinancial Financial		*		**	**		*
Dividend Policy	All				*			*
	Nonfinancial Financial				**	**		**

Table 4.12: Cross Country Significance of Firm Specific Inside Factors (Pooled OLS)

This table shows the significance level of all the economies along with respective variables for all firms, nonfinancial firms and financial firms under Pooled regression with allowing for cluster robust standard errors for Equation 4.

Factors\Economies		Turkey	Pakistan	South Korea	Indonesia	India	China	Brazil
Secondary Equity Issue	All		**	***	***	***		**
	Nonfinancial Financial		**	***	**	***		
Size	All	**		*	*		***	*
	Nonfinancial Financial	**		**	***	***	**	**
Leverage	All	**		***	***	***		*
	Nonfinancial Financial	***		***	***	***		***
Profitability	All				***	***	***	
	Nonfinancial Financial				***	*	*	**
Dividend Policy	All			***	**			***
	Nonfinancial Financial		*			*		***

CHAPTER 5

CONCLUSION AND FURTHER RESEARCH

In corporate finance, Higgins model of Sustainable growth has been widely used whereas Gordon's model of growth has been mostly used for Assets pricing. Both models of growth have been revised and modified over the years. Recently, Chen et al. (2013) incorporates Higgins (1977) and Lee et al (2011) frameworks, allowing a company to use both external debt and equity and derive a generalized sustainable growth rate. This revised sustainable growth rate model has an additional positive term which takes the new equity issue into account. Ultimately, Chen et al (2013) showed that Higgins' (1977, 1980, 2008) sustainable growth rate is underestimated due to neglecting his assumption of the new equity issue as a source of growth. Chen et al (2013) do not empirically test whether Higgins' model of sustainable growth rate is underestimated in the case of new equity issues, as their focus was to identify optimal growth rate in the presence of dividend payout policy, and joint optimization of optimal growth rate and optimal payout ratio.

The aim of this research is to empirically determine whether Higgins' model of Sustainable growth is underestimated. Sustainable growth rate gives guidelines regarding the firm's growth rate in the long run. Emerging economies are economies, which are assumed to grow at greater pace than other economies, so testing growth at micro level will be beneficial for finance professionals so that they can adjust their decision making and policies in such a way as to help them achieve sustainable growth.

My results showed that Higgins' model of Sustainable growth is underestimated, and a revised model by Chen et al (2013) can be preferred if the firms are involved in new equity issue during their life. As the Chen et al (2013) model involves a degree of market

imperfection where secondary equity has been issued, so it is crucial for finance managers to consider market dynamics before issuing new equity to get desired sustainable growth. My results also showed that a firm's policy regarding leverage and size may be important in attaining sustainable growth, especially for nonfinancial firms.

In addition to above, from the results of robust methodology, Secondary Equity Issue is significant but not the control variable. The possible reason might be in revised robust methodology, by taking average across time, the effect of firm specific factors such as size, leverage, profitability and dividend have vanished as decisions related to these factors might vary in long run, so to capture growth in the long run, short run decisions of size, leverage, profitability and dividend policy might be important and getting mean of 16 years for sample period does not allow us to capture the effect of short run decision making. Thus short run decisions are important for the long run sustainability. Also, in cross country analysis, mixed results indicate that apart from firms' policy of leverage, size, profitability and dividend, there may be some other factors i.e. market-specific factors or country-specific factors, which may be the reason for firm-specific growth. Consequently, as an area of future research, I plan to investigate what country-specific factors, such as inflation, GDP, import exports, FDI, monetary policy, could determine firm specific growth.

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APPENDIX

Table 5.1: Availability of Firm level data year wise for every economy

Years	Turkey	Pakistan	China	India	South Korea	Indonesia	Brazil	Russia	Mexico	KSA	Nigeria
1990	7	2			7		5		2		
1991	5	14		3	6	57	12		6		
1992	15	40	5	8	10	63	14		10		
1993	20	54	19	14	58	68	16		18		
1994	18	56	27	12	85	71	24		27		
1995	20	55	69	25	104	114	38	1	28		
1996	33	58	85	211	140	122	41	5	33		
1997	55	77	91	223	181	131	44	11	40		
1998	70	80	101	238	260	135	52	9	57		
1999	96	86	743	255	458	175	158	14	61		
2000	116	107	927	284	493	244	172	18	63		
2001	129	112	670	327	563	261	184	20	67		
2002	152	105	651	321	664	272	187	20	65	3	
2003	171	108	549	413	723	278	200	23	71	52	6
2004	187	112	551	504	797	305	206	39	71	66	11
2005	251	207	202	609	1,256	318	212	83	70	88	57
2006	264	235	215	1,702	1,293	335	220	132	74	104	74
2007	282	252	310	1,846	1,331	379	274	202	84	112	78
2008	302	259	447	2,014	1,431	409	278	283	86	139	76
2009	314	272	488	2,095	1,493	427	298	218	83	149	69
2010	326	283	523	2,190	1,568	454	320	267	91	163	67
2011	338	296	561	2,319	1,642	473	327	308	95	168	63
2012	343	286	2,477	2,344	1,721	484	331	306	101	168	82
2013	340	288	2,828	2,279	1,783	489	331	304	99	168	86
2014	338	290	2,831	2,291	1,802	496	319	248	106	171	90
2015	318	285	2,839	2,190	1,815	477	295	182	114	172	87

This table shows the year-wise available data for number of firms which can be used as analysis. However, due to tradeoff between sustainability and survival bias issue discussed in “3.3 Population and Sampling Framework” Full dataset was not utilized. See Structural Change in available number of firms in 2012 for China, in 2006 for India, in 2005 for South Korea.

Table 5.2: BP Langrange Multiplier Test (@ 95% Significance Level)

Ho: Var(u) = 0	Equation 2			Equation 4		
P>chibar2	All firms	Nonfinancial firms	Financial firms	All firms	Nonfinancial firms	Financial firms
Brazil	REM	REM	REM	REM	REM	REM
China	REM	REM	REM	REM	REM	REM
India	Pooled	Pooled	REM	REM	REM	REM
Indonesia	REM	Pooled	REM	REM	Pooled	REM
Korea	REM	REM	REM	REM	REM	REM
Pakistan	REM	REM	REM	REM	REM	REM
Turkey	REM	REM	REM	REM	REM	REM

This table shows the test of heterogeneity via Breusch and Pagan (1980) Lagrange multiplier. It shows that in most of the cases, Random Effect Model was suitable for analysis. Equation 2 and Equation 4 have been used for this test. The above results are based on significance level of 95%.

Table 5.3: BP Langrange Multiplier Test (@ 90% Significance Level)

Ho: Var(u) = 0	Equation 2			Equation 4		
P>chibar2	All firms	Nonfinancial firms	Financial firms	All firms	Nonfinancial firms	Financial firms
Brazil	REM	REM	REM	REM	REM	REM
China	REM	REM	REM	REM	REM	REM
India	Pooled	Pooled	REM	REM	REM	REM
Indonesia	REM	Pooled	REM	REM	Pooled	REM
Korea	REM	REM	REM	REM	REM	REM
Pakistan	REM	REM	REM	REM	REM	REM
Turkey	Pooled	REM	REM	REM	REM	REM

This table shows the test of heterogeneity via Breusch and Pagan (1980) Lagrange multiplier. It shows that in most of the cases, Random Effect Model was suitable for analysis. Equation 2 and Equation 4 have been used for this test. The above results are based on significance level of 90%.

Table 5.4: Summary Statistics of SGR and AGR for Sample Economies by classification of Secondary Equity Issue

Country	Types of Firms	All Firms					Nonfinancial Firms					Financial Firms				
		No. of firm	Higgins' SGR		AGR(Sales)		No. of firm	Higgins' SGR		AGR(Sales)		No. of firm	Higgins' SGR		AGR(Sales)	
			Mean	S.D	Mean	S.D		Mean	S.D	Mean	S.D		Mean	S.D	Mean	S.D
Turkey	All	55	3.43%	21.12%	16.69%	35.01%	41	1.79%	21.73%	16.79%	31.58%	14	8.51%	18.25%	15.81%	44.24%
	No SEI	16	5.52%	13.96%	18.43%	29.73%	14	4.92%	14.04%	18.74%	30.48%	2	9.88%	12.71%	16.23%	23.98%
	SEI	39	2.48%	23.63%	15.90%	37.19%	27	0.02%	24.93%	15.97%	32.19%	12	8.25%	19.12%	15.73%	45.19%
Pakistan	All	73	8.63%	17.23%	15.35%	28.40%	60	7.97%	17.83%	15.07%	28.76%	13	11.58%	13.91%	16.61%	27.64%
	No SEI	31	8.33%	18.78%	12.37%	28.07%	29	8.32%	18.75%	12.23%	28.02%	2	8.45%	19.55%	17.35%	29.20%
	SEI	42	8.86%	16.00%	17.54%	28.46%	31	7.65%	16.94%	17.73%	28.87%	11	12.16%	12.60%	17.03%	27.42%
South Korea	All	356	3.04%	15.75%	8.18%	25.58%	333	2.93%	15.68%	8.02%	23.98%	23	4.63%	16.79%	10.62%	42.93%
	No SEI	155	4.98%	9.67%	7.72%	22.57%	144	4.86%	9.39%	7.38%	20.29%	11	6.54%	12.81%	12.27%	42.78%
	SEI	201	1.47%	19.18%	8.56%	27.78%	189	1.38%	19.14%	8.53%	26.56%	12	2.80%	19.74%	9.03%	43.13%
Indonesia	All	215	6.22%	18.70%	14.43%	30.11%	159	5.48%	19.31%	12.18%	27.88%	56	8.33%	16.71%	20.87%	34.94%
	No SEI	59	7.13%	16.00%	12.61%	27.17%	54	6.88%	16.39%	11.61%	25.76%	5	9.77%	10.83%	23.25%	37.72%
	SEI	156	5.86%	19.68%	15.16%	31.18%	105	4.73%	20.69%	12.49%	28.97%	51	8.18%	17.21%	20.62%	34.65%
India	All	180	10.71%	14.84%	16.12%	24.17%	166	10.66%	15.24%	16.01%	24.62%	14	11.30%	8.86%	17.46%	17.88%
	No SEI	53	11.39%	12.71%	12.89%	22.37%	53	11.39%	12.71%	12.89%	22.37%	0	N/A	N/A	N/A	N/A
	SEI	127	10.42%	15.65%	17.49%	24.77%	113	10.31%	16.29%	17.49%	25.50%	14	11.30%	8.86%	17.46%	17.88%
China	All	58	3.34%	16.18%	12.63%	36.54%	51	2.80%	16.86%	11.67%	35.49%	7	7.22%	9.26%	19.47%	42.89%
	No SEI	16	0.91%	17.99%	8.46%	40.27%	14	0.62%	19.07%	6.84%	36.42%	2	2.88%	6.85%	19.61%	60.26%
	SEI	42	4.25%	15.36%	14.19%	34.96%	37	3.61%	15.90%	13.47%	35.00%	5	8.91%	9.55%	19.41%	34.41%
Brazil	All	109	4.78%	18.39%	13.01%	26.41%	85	4.61%	19.34%	12.80%	24.55%	24	5.40%	14.55%	13.79%	32.25%
	No SEI	47	6.05%	16.74%	11.69%	26.97%	35	4.98%	18.80%	11.46%	24.86%	12	9.12%	7.63%	12.38%	32.35%
	SEI	62	3.80%	19.53%	14.04%	25.94%	50	4.34%	19.72%	13.75%	24.30%	12	1.49%	18.55%	15.29%	32.16%

This table is similar to Table 4.1 but shows Mean SGR and Mean AGR is calculated for not only all firms, nonfinancial firms and financial firms but also for all firms, secondary equity issuing firms and no secondary equity issuing firms. This table was suggested by thesis examining committee at the time of thesis defense.

Appendix 5.5: Methodology for Robustness

In chapter 3, all my panel regression equations show that I am using SGR_{it} and $Diff(AGR - SGR)_{it}$ which has been calculated annually for my main analysis of chapter 4. However, calculating sustainable growth and actual growth in sales annually will give better results for the short run phenomenon due to changing time effect on a yearly basis. Additionally, using annual sustainable growth and actual growth may increase the variation of data. Also, as sustainable growth rate is a long term phenomenon so SGR and AGR calculated on the basis of one year may not give better picture for growth of long run. To overcome this issue, instead of using panel regression on one year observation, one can use cross sectional regression to be run on time-based average of data. The average across the time period can be treated as a long run representation of that variable. For this purpose, the following four equations were used for cross sectional regression.

$$\overline{SGR}_i = \alpha_0 + \beta_1 SEI_i + \beta_2 FIN_i + \beta_3 (FIN * SEI)_i + \varepsilon_i \quad \text{(Eq. 5)}$$

$$\overline{Diff(AGR - SGR)}_i = \alpha_0 + \beta_1 SEI_i + \beta_2 FIN_i + \beta_3 (FIN * SEI)_i + \varepsilon_i \quad \text{(Eq. 6)}$$

where $\overline{SGR}_i$ = Mean Sustainable growth rate (Higgins Model) across time for every i firm

and calculated as $\overline{SGR}_i = \frac{\sum_{t=2000}^{2015} SGR_{it}}{16}$.

$\overline{Diff(AGR - SGR)}_i$ is Mean Difference of Actual Growth in Sales and Sustainable Growth

across time for every i firm and calculated as $\overline{Diff(AGR - SGR)}_i = \frac{\sum_{t=2000}^{2015} Diff(AGR - SGR)_{it}}{16}$,

SEI = Dummy variable for the firms issuing secondary equity, FIN is a dummy variable for firms from the financial sector and (FIN * SEI) is the dummy variable for the firms from financial sector which have issued secondary equity during the sample period.

(Eq. 7)

$$\overline{SGR}_i = \alpha_0 + \beta_1 SEI_i + \beta_2 \overline{Size}_i + \beta_3 \overline{LEV}_i + \beta_4 \overline{PM}_i + \beta_5 \overline{DPO}_i + \beta_6 FIN_i + \beta_7 (FIN * SEI)_i + \varepsilon_i$$

(Eq. 8)

$$\overline{Diff(AGR - SGR)}_i = \alpha_0 + \beta_1 SEI_i + \beta_2 \overline{Size}_i + \beta_3 \overline{LEV}_i + \beta_4 \overline{PM}_i + \beta_5 \overline{DPO}_i + \beta_6 FIN_i + \beta_7 (FIN * SEI)_i + \varepsilon_i$$

where $\overline{SGR}_i$, $\overline{Diff(AGR - SGR)}_i$, SEI_i , FIN_i and $(FIN * SEI)_i$ is same as Equation 5 and Equation 6. Additionally, $\overline{Size}_i$ is Mean Size of firm i across time, and calculated as $\overline{Size}_i = \frac{\sum_{t=2000}^{2015} Size_{it}}{16}$, $\overline{LEV}_i$ is Mean Leverage of firm i across time, and calculated as $\overline{LEV}_i = \frac{\sum_{t=2000}^{2015} LEV_{it}}{16}$, $\overline{PM}_i$ is Mean Profitability of firm i across time, and calculated as $\overline{PM}_i = \frac{\sum_{t=2000}^{2015} PM_{it}}{16}$, and $\overline{DPO}_i$ is Mean Dividend payout ratio of firm i across time, and calculated as $\overline{DPO}_i = \frac{\sum_{t=2000}^{2015} DPO_{it}}{16}$. In part 4.3 of Chapter 4, I have shown regression results of Equation 1 to Equation 4 in Table 4.4 to Table 4.10 for all firms in Panel A, for nonfinancial firms in Panel B, and for financial firms in Panel C. In my main analysis, I had the advantage of number of observations, but in getting averages across time, numbers of observation are reduced. For some emerging economies, I do not have enough data where I can justify running regression. So, instead of running separate regression, I introduced dummy variable FIN and Interaction of Dummy variable of $(FIN * SEI)$ by which I can run regression without losing degree of freedom.

Appendix 5.6 Results of Cross Sectional Regression

In this section, cross sectional regression results for every sample emerging economy are presented. Instead of stratifying data into financial firms and nonfinancial firms, the dummy for them along with interaction of secondary equity issue dummy has been included in every table. Every table from Table 5.7 to 5.13 has four models of Equation 5 to Equation 8 mentioned in an earlier section. Equation 5 and Equation 7 are run on Higgin's SGR and Equation 6 and Equation 8 are on Difference of AGR and SGR.

Table 5.7: Cross Sectional Multivariate Regression Analysis – Turkey

This table shows the cross sectional multivariate regression for 55 firms of Turkey. Instead of running separate regression for all firms, nonfinancial firms and financial firms, dummy variable technique has been used to capture financial sector effect. Eq. 5 and Eq. 7 are using SGR as dependent variable and Eq. 6 and Eq. 8 are using Difference of AGR and SGR as dependent variable.

	Eq. 5	Eq. 7	Eq. 6	Eq. 8
Secondary Equity Issue	-0.0493 (0.0333)	-0.0296 (0.0342)	0.0219 (0.0431)	-0.00944 (0.0444)
Leverage		-0.0811 (0.0798)		0.139 (0.103)
Size		0.0114 (0.00820)		-0.00121 (0.0106)
Profitability		0.134** (0.0556)		-0.199*** (0.0721)
Dividend Policy		0.0443 (0.0607)		-0.0234 (0.0787)
Financial	0.0500 (0.0764)	0.0441 (0.0792)	-0.0768 (0.0988)	-0.0894 (0.103)
Financial * SEI	0.0293 (0.0840)	0.0187 (0.0839)	0.00341 (0.109)	0.0248 (0.109)
Constant	0.0490* (0.0270)	-0.0995 (0.0988)	0.137*** (0.0349)	0.156 (0.128)
Observations	55	55	55	55
R-squared	0.115	0.289	0.060	0.242

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5.8: Cross Sectional Multivariate Regression Analysis – Pakistan

This table shows the cross sectional multivariate regression for 73 firms of Pakistan. Instead of running separate regression for all firms, nonfinancial firms and financial firms, dummy variable technique has been used to capture financial sector effect. Eq. 5 and Eq. 7 are using SGR as dependent variable and Eq. 6 and Eq. 8 are using Difference of AGR and SGR as dependent variable.

	Eq5	Eq7	Eq6	Eq8
Secondary Equity Issue	-0.00764 (0.0173)	-0.0142 (0.0185)	0.0648*** (0.0210)	0.0619** (0.0239)
Leverage		-0.0822* (0.0461)		0.00583 (0.0595)
Size		0.00802 (0.00483)		0.00230 (0.00623)
Profitability		-0.0209 (0.0683)		-0.0368 (0.0881)
Dividend Policy		-0.0374 (0.0293)		-0.000271 (0.0378)
Financial	0.000867 (0.0491)	0.00282 (0.0480)	0.0223 (0.0596)	0.0253 (0.0619)
Financial * SEI	0.0455 (0.0544)	0.0181 (0.0535)	-0.0743 (0.0661)	-0.0752 (0.0690)
Constant	0.0836*** (0.0125)	-0.000815 (0.0779)	0.0367** (0.0151)	0.00159 (0.100)
Observations	73	73	73	73
R-squared	0.054	0.167	0.128	0.132

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5.9: Cross Sectional Multivariate Regression Analysis – South Korea

This table shows the cross sectional multivariate regression for 356 firms of South Korea. Instead of running separate regression for all firms, nonfinancial firms and financial firms, dummy variable technique has been used to capture financial sector effect. Eq. 5 and Eq. 7 are using SGR as dependent variable and Eq. 6 and Eq. 8 are using Difference of AGR and SGR as dependent variable.

	Eq. 5	Eq. 7	Eq. 6	Eq. 8
Secondary Equity Issue	-0.0359*** (0.00733)	-0.00587 (0.00635)	0.0475*** (0.00916)	0.0243*** (0.00907)
Leverage		-0.101*** (0.0204)		0.0443 (0.0291)
Size		0.0110*** (0.00221)		-0.00350 (0.00315)
Profitability		0.282*** (0.0271)		-0.306*** (0.0387)
Dividend Policy		0.00716 (0.0135)		-0.00911 (0.0192)
Financial	0.0167 (0.0207)	-0.0175 (0.0169)	0.0363 (0.0259)	0.0571** (0.0241)
Financial * SEI	-0.000496 (0.0286)	0.000114 (0.0227)	-0.0526 (0.0357)	-0.0594* (0.0324)
Constant	0.0484*** (0.00552)	-0.161*** (0.0425)	0.0258*** (0.00690)	0.101* (0.0607)
Observations	356	356	356	356
R-squared	0.072	0.428	0.071	0.254

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5.10: Cross Sectional Multivariate Regression Analysis – Indonesia

This table shows the cross sectional multivariate regression for 215 firms of Indonesia. Instead of running separate regression for all firms, nonfinancial firms and financial firms, dummy variable technique has been used to capture financial sector effect. Eq. 5 and Eq. 7 are using SGR as dependent variable and Eq. 6 and Eq. 8 are using Difference of AGR and SGR as dependent variable.

	Eq. 5	Eq. 7	Eq. 6	Eq. 8
Secondary Equity Issue	-0.0232* (0.0128)	-0.0140* (0.0083)	0.0320* (0.0167)	0.0280* (0.0165)
Leverage		0.0457*** (0.0167)		-0.0825*** (0.0225)
Size		0.00373 (0.00308)		-0.000873 (0.00414)
Profitability		0.186*** (0.0354)		-0.213*** (0.0476)
Dividend Policy		0.0176 (0.0246)		0.0290 (0.0331)
Financial	0.0285 (0.0358)	0.00976 (0.0334)	0.0891* (0.0467)	0.104** (0.0449)
Financial * SEI	0.00685 (0.0381)	0.0142 (0.0353)	-0.0428 (0.0497)	-0.0530 (0.0476)
Constant	0.0693*** (0.0104)	-0.0324 (0.0617)	0.0456*** (0.0136)	0.0883 (0.0831)
Observations	215	215	215	215
R-squared	0.043	0.210	0.078	0.188

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5.11: Cross Sectional Multivariate Regression Analysis – India

This table shows the cross sectional multivariate regression for 180 firms of India. Instead of running separate regression for all firms, nonfinancial firms and financial firms, dummy variable technique has been used to capture financial sector effect. Eq. 5 and Eq. 7 are using SGR as dependent variable and Eq. 6 and Eq. 8 are using Difference of AGR and SGR as dependent variable.

	Eq. 5	Eq. 7	Eq. 6	Eq. 8
Secondary Equity Issue	-0.0106 (0.0112)	0.00403 (0.0104)	0.0567*** (0.0134)	0.0382*** (0.0133)
Leverage		-0.117*** (0.0309)		0.126*** (0.0396)
Size		0.00644** (0.00264)		0.00860** (0.00337)
Profitability		0.177*** (0.0440)		-0.0844 (0.0563)
Dividend Policy		-0.0608** (0.0258)		0.0238 (0.0330)
Financial	0.00926 (0.0191)	-0.0391** (0.0191)	-0.00861 (0.0227)	-0.0170 (0.0244)
Financial * SEI = 0,	-	-	-	-
Constant	0.113*** (0.00924)	0.0304 (0.0434)	0.0145 (0.0110)	-0.148*** (0.0555)
Observations	180	180	180	180
R-squared	0.006	0.246	0.093	0.208

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5.12: Cross Sectional Multivariate Regression Analysis - China

This table shows the cross sectional multivariate regression for 58 firms of China. Instead of running separate regression for all firms, nonfinancial firms and financial firms, dummy variable technique has been used to capture financial sector effect. Eq. 5 and Eq. 7 are using SGR as dependent variable and Eq. 6 and Eq. 8 are using Difference of AGR and SGR as dependent variable.

	Eq. 5	Eq. 7	Eq. 6	Eq. 8
Secondary Equity Issue	0.0312* (0.0172)	0.00925 (0.0161)	0.0316 (0.0346)	0.00857 (0.0370)
Leverage		0.00594 (0.00786)		-0.0148 (0.0181)
Size		0.0136*** (0.00404)		0.0120 (0.00930)
Profitability		0.0723 (0.0445)		0.0592 (0.103)
Dividend Policy		-0.0336 (0.0299)		-0.0130 (0.0689)
Financial	0.0239 (0.0415)	0.0243 (0.0361)	0.105 (0.0833)	0.0993 (0.0832)
Financial * SEI	0.0258 (0.0490)	-0.00549 (0.0448)	-0.0996 (0.0984)	-0.124 (0.103)
Constant	0.00492 (0.0147)	-0.185*** (0.0592)	0.0623** (0.0294)	-0.0980 (0.137)
Observations	58	58	58	58
R-squared	0.135	0.401	0.035	0.119

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5.13: Cross Sectional Multivariate Regression Analysis – Brazil

This table shows the cross sectional multivariate regression for 109 firms of Brazil. Instead of running separate regression for all firms, nonfinancial firms and financial firms, dummy variable technique has been used to capture financial sector effect. Eq. 5 and Eq. 7 are using SGR as dependent variable and Eq. 6 and Eq. 8 are using Difference of AGR and SGR as dependent variable.

	Eq. 5	Eq. 7	Eq. 6	Eq. 8
Secondary Equity Issue	-0.0229* (0.0131)	-0.0203* (0.0137)	0.0442** (0.0188)	0.0370* (0.0191)
Leverage		0.0270 (0.0424)		0.0812 (0.0551)
Size		-0.00157 (0.00439)		0.00944* (0.00562)
Profitability		0.0783 (0.0662)		-0.0315 (0.0862)
Dividend Policy		-0.00563 (0.0261)		-0.0127 (0.0339)
Financial	0.0405* (0.0241)	0.0380 (0.0270)	-0.0325 (0.0322)	-0.0330 (0.0354)
Financial * SEI	-0.0750** (0.0334)	-0.0757** (0.0351)	0.0844* (0.0447)	0.0759* (0.0441)
Constant	0.0606*** (0.0107)	0.0723 (0.0595)	0.0577*** (0.0142)	-0.0883 (0.0775)
Observations	109	109	109	109
R-squared	0.024	0.039	0.049	0.101

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 5.14: Cross Country Significance of Firm Specific Inside Factors (Random Effect Model)

This table shows the significance level of all the economies along with respective variables for all firms, nonfinancial firms and financial firms under Random Effect Model for Equation 3. Here Actual Growth of Sales has been used.

Factors\Economies		Turkey	Pakistan	South Korea	Indonesia	India	China	Brazil
Secondary Equity Issue	All			***	**			
	Nonfinancial			**	**			
	Financial				*			***
Size	All			***	***		***	
	Nonfinancial			***	***		**	
	Financial		**	**	***		***	
Leverage	All	***	*	***		***		
	Nonfinancial	***		***		***		
	Financial	*	**	***	**		*	
Profitability	All	***		***			***	
	Nonfinancial	*		***			***	
	Financial	***	***			***	***	
Dividend Policy	All	***			***	***		*
	Nonfinancial				***	***		
	Financial	***	***		**	***	***	**

Table 5.15: Cross Country Significance of Firm Specific Inside Factors (Pooled OLS Model)

This table shows the significance level of all the economies along with respective variables for all firms, nonfinancial firms and financial firms under Pooled OLS, allowing for cluster robust standard errors for Equation 3. Here Actual Growth of Sales has been used.

Factors\Economies		Turkey	Pakistan	South Korea	Indonesia	India	China	Brazil
Secondary Equity Issue	All			***	**			
	Nonfinancial			**	**			
	Financial	*	**		**			***
Size	All	**		***	***		***	
	Nonfinancial			***	***		**	
	Financial		**	***	***		***	
Leverage	All		*	***		***		
	Nonfinancial	***		***		***		
	Financial	***	***	*				*
Profitability	All			*				***
	Nonfinancial			*				
	Financial	**	**	**	***	**	**	***
Dividend Policy	All	***		***	***	***	**	
	Nonfinancial				***	***	**	**
	Financial	***	***	***	***	***		

Table 5.16: Cross Country Significance of Firm Specific Inside Factors (Random Effect Model)

This table shows the significance level of all the economies along with respective variables for all firms, nonfinancial firms and financial firms under Random Effect Model for Equation 4. Here Actual Growth of EPS has been used instead of Sales.

Factors\Economies		Turkey	Pakistan	South Korea	Indonesia	India	China	Brazil
Secondary Equity Issue	All							
	Nonfinancial		*					
Size	Financial							
				***	**	***		***
Leverage	All			*				
	Nonfinancial			*				
Profitability	Financial			***	*	***		*
				***	***	***		*
Dividend Policy	All	***	*			***		***
	Nonfinancial	*				***		***
	Financial		***			***		***
		**	***	*	**	***	***	***
	All	***	***	***	***	***	**	***
	Nonfinancial	*	***	***	***	***		***
	Financial		***	***	***	***		***

Table 5.17: Cross Country Significance of Firm Specific Inside Factors (Pooled OLS)

This table shows the significance level of all the economies along with respective variables for all firms, nonfinancial firms and financial firms under Pooled regression, allowing for cluster robust standard errors for Equation 4. Here Actual Growth of EPS has been used instead of Sales.

Factors\Economies		Turkey	Pakistan	South Korea	Indonesia	India	China	Brazil
Secondary Equity Issue	All							
	Nonfinancial		***					
Size	Financial							
	All			***	**	***		***
Leverage	Nonfinancial			**	**	***		**
	Financial							
Profitability	All			***	*	***		*
	Nonfinancial			***		***		*
Dividend Policy	Financial				***		*	
	All	***	*			***		***
Dividend Policy	Nonfinancial	***	*			***		***
	Financial		*			*		***
Dividend Policy	All	**	***	*	**	***	***	
	Nonfinancial	**	***	*		***	***	***
	Financial	***	***	***	***	***	***	

Table 5.18: Cross Country Significance of Cross Sectional Regression

This table shows the significance level of all the economics along with respective variables under robust methodology suggested in Appendix 5.5 for Equation 8.

Factors\Economies	Turkey	Pakistan	South Korea	Indonesia	India	China	Brazil
Secondary Equity Issue		**	***	*	***		*
Size					**		*
Leverage			*	***	***		
Profitability	***		***	***			
Dividend Policy							
Financial			**	**			*
Financial * SEI			*				

*** p<0.01, ** p<0.05, * p<0.1

Table 5.19: Cross Country Significance of Cross Sectional Regression

This table shows the significance level of all the economics along with respective variables under robust methodology suggested in Appendix 5.5 for Equation 7.

Factors\Economies	Turkey	Pakistan	South Korea	Indonesia	India	China	Brazil
Secondary Equity Issue				*			*
Size			***		**	***	
Leverage		*	***	***	***		
Profitability	**		***	***	***		
Dividend Policy					**		
Financial					**		*
Financial * SEI							

*** p<0.01, ** p<0.05, * p<0.1