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Sustainable Growth Rate and ROE Analysis: An Applied Study on Saudi Banks Using the PRAT Model

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Abstract: This study aims at testing the effect of the components of the PRAT model and the basic model developed by Robert Higgins on the rate of sustainable growth by applying them to a sample of Saudi banks during the period of 2010–2019. Regarding the PRAT model, as Higgins explained, it is that detailed model measuring the sustainable growth rate by profit margin (P), retention rate (R), asset turnover (A), and leverage (T). To test the relation between the study variables, multiple regression analyses were conducted using the Pooled Model (PEM), the Fixed Effect Model (FEM), and the Random Effect Model (REM). The results showed that all the variables of the PRAT model affect sustainable growth (profitability margin, retained earnings, asset turnover, and financial leverage). Moreover, the application of the basic model of Higgins shows that the rate of return on equity and retained earnings affect sustainable growth. When drawing a comparison among statistical measurement models and checking the validity of these models, the validity of the fixed effect model for measuring the relation between the variables of the PRAT model and Higgins basic model is seen.

Keywords: PRAT model; ROE; pooled effect model; fixed effect model; random effect model

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1. Introduction

Growth management plays a vital role in financial planning and companies' performance assessment. In recent years, great focus has been placed upon the Sustainable Growth Rate, known as "SGR" within finance literature and management studies (Subbaredy and Reddy 2017).

It has previously been observed that managers and executives always opt for maximizing their company growth bearing in mind that growth may lead to an increase in market share; thus, it may lead to a rise in profits regardless of the company's financial health.

However, there is an increasing concern regarding the disadvantages of both rapid growth and slow growth, as they can lead to bankruptcy. Arora et al. (2018) indicated that there is an urgent need to address the financial consequences caused by rapid and slow growths, which heightened the importance of growth management considering the financial health or the target capital structure of a firm.

The idea of sustainable growth was developed by Robert Higgins in 1977. He defined it as the maximum rate at which a company can increase its sales without straining all its financial resources. He also defined it as the annual increase in the sales that are consistent with the financial policies of the enterprise, and Olson and Pagano (2005) have explained that the sustainable growth rate is a rate that varies from year to year because the ratios that its calculation depends on are also not fixed. Moreover, although this growth is described as "sustainable", it is not actually continuous from year to another.

Mukherjee and Sen (2018) explain it as one of the valuable gears for long term financial planning and for analyzing the growth of a company. Also, it helps managers determine

the appropriate growth rate in sales so that it can be consistent with the company's actual operational performance and financial policy (Nastiti et al. 2019).

Sustainable growth rate (SGR) must be evaluated through specific measurements of a company's performance. These measurements can be explained by determining the factors that affect the firm's SGR to help stakeholders (either internal or external management or customers) make the right decisions. In this case, it must be taken into consideration that profitability, asset efficiency, and financial constraints are important factors that can influence the company's sustainable growth. According to Lockwood and Prombutr (2010), sustainable growth rate is a metric multifaceted that can be divided into separate components reflecting the company's retention policy (retention rate), its capability of retaining fees (net profit margin), its efficiency of the use of assets (asset turnover), and its financing strategy (financial leverage).

A valuable financial performance measurement for any company includes a combination of its operating elements, which includes profit margin, asset efficiency, and financial elements, and the latter include capital structure and retention ratio. Higgins (1977, 2018) and Amouzesh et al. (2011) emphasize that the combination of operating and financial elements in one of the comprehensive measurements is of great importance when it comes to sustainable growth because it can increase the firm's value.

Higgins developed an equation to measure sustainable growth through the basic Higgins equation, which consists of the return on equity and the retention rate. He formulated an expanded equation to measure sustainable growth, which was called the PRAT model, through which the return on equity is separated into its basic components, according to the DuPont model, in addition to the retention rate, so the PRAT model to measure sustainable growth includes the profit margin, the retention rate, assets turnover, and financial leverage.

Both of the profit margin and assets turnover assess the operating performance of a firm. On the other hand, retention rate and financial leverage capture the dividend policy and financing decisions of a firm's (Pinto et al. 2015).

From this model, Return on Equity (ROE) can be derived. ROE is one of the measures of profitability that is defined as the return (net income) generated on the equity invested in a company (Altahtamouni et al. 2018). This ratio can be broken into three components: profit margin, total asset turnover, and equity multiplier. The first term is the company's profit margin, and a higher profit margin will result in a higher ROE. The second term measures the total asset turnover, which is the company's efficiency, and a higher turnover will result in higher ROE. The last term is equity multiplier, which measures the extent of leverage. This relation is widely known as the DuPont model, which was developed by DuPont Company in 1920 in the United States. It has given a lot of explanations to measure the profitability of companies as a measure of corporate performance (Gitayuda Boy 2020).

Therefore, by combining DuPont model and retention rate, it can be seen that the SGR is equal to the retention rate multiplied by ROE. Thus, the growth rate in dividends can be viewed in accordance with the company's ROE and financial policies. Rahim et al. (2019) illustrate that the four main factors influencing the sustainable growth rate are financial leverage, dividend policy, profitability, and asset efficiency.

Recently, there have been several studies investigating the relation between financial leverage, dividend policy, and asset efficiency on one side and the performance of share price or profitability on the other. However, no particular study has examined the relation between sustainable growth rate and its determinants, especially in Saudi Arabia.

The importance of this study lies in its adding to previous studies new evidence of the importance of the PRAT model by applying it in Saudi Arabia, a market which is considered an emerging market and a new environment in which that model has not been previously applied. Saudi Arabia is considered one of the Group of 20 countries (G20), meaning that it one of the largest economies in the world, which makes this study of great importance. Also, this study helps finance professionals and policymakers modify policies and decisions according to their surroundings and achieve the goal of sustainable growth in the long run. This study aims to analyze the relation between the sustainable growth rate and PRAT

model (profit margin, retention rate, assets turnover, and financial leverage) in addition to the relation between sustainable growth rate and basic Higgins model components (ROE and retention rate) as expressed by Higgins (1977, 2018). Specifically, is there a relationship between the rate of sustainable growth and its determinants?

In addition to the first section, which contains the introduction to the study, which consists an explanation of the study's content, objectives and importance of the study, the paper has been organized into several sections as follows: The second section contains the relevant studies and literature review. The third section contains the study methodology. The fourth section contains the results and discussion. Finally, the fifth section contains the conclusions of the paper.

2. Literature Review

The DuPont Analysis has been very common as a financial performance measure and is still one of the preferred options among researchers (Altahtamouni et al. 2018; Bunea et al. 2019; Burja and Mărginean 2014; Gitayuda Boy 2020). Mangiero (2004) points out that the DuPont Analysis benefits firms in three ways. Firstly, the components of return on equity are useful in understanding what drives a firm's profitability and in evaluating the performance overtime. The second is that the DuPont Analysis helps determine how fast a firm grows through analyzing sustainable growth, which is considered a crucial part of business valuation process. As for the third way, it is through forecasting earnings by estimating expected future earnings growth. Moreover, DuPont is a reliable model when testing the variability of return on equity (ROE) and estimating its future value (Altahtamouni et al. 2018). It is to be noted here that ROE is one of the comprehensive measures of a firm's financial performance on which operating, investing, and financing decisions depend (Burja and Mărginean 2014; Kim 2016; Sheela and Karthikeyan 2012). The main determinants of return on equity are the price-to-earnings ratio (PE), the total assets turnover (TAT), and the equity multiplier (Bunea et al. 2019; Kharatyan et al. 2017).

However, the possible limitation of the DuPont Analysis is that it depends on the firm's financial statements that could be manipulated by the firm's management to give a false positive financial performance (Mangiero 2004). However, this possibility does not affect its popularity. For instance, Pouraghajan et al. (2012) used ROE to study the financial performance of firms from different industries in the market and found significant inverse correlation between debt to asset ratio and ROE. Furthermore, Pouraghajan et al. (2012) documented a significant direct relation between tangible assets to equity ratio, firm size, and total assets turnover on one side and firm growth opportunities with ROE on the other. Additionally, Almaqtari et al. (2019) found a significant positive relation between asset management ratio and ROE. Similarly, Anarfi et al. (2016) showed that total asset turnover and profit margin have a positive impact on ROE, while equity multiplier has a negative correlation with ROE.

Other studies have found a positive effect of TAT and profit margin on ROE and no effect caused by financial leverage (Raza and Farooq 2017; Warrad and Nassar 2017). On the other hand, Vintila and Duca (2012) focused on the effect of financial leverage on ROE and concluded that an increase in financial leverage leads to an increase in the profitability of a firm represented by ROE. In spite of the variety of literatures on the impact of ROE components on ROE, Warrad and Nassar (2017) found a joint impact of ROE components on the DuPont model of ROE.

In the same vein, the relation between ROE components and the sustainable growth rate (SGR) has been a fertile area for research in the past decade (Alberto et al. 2019; Manaf et al. 2018; Nastiti et al. 2019; Wahyuni and Dino 2016). For instance, some studies have found a significant positive correlation between sustainable growth rate (SGR) and ROE components (Hafid 2016; Rahim 2017; Mukherjee and Sen 2017, 2018). The determinates of SGR are the firm's profitability (Arora et al. 2018; Haung and Zhang 2015; Mukherjee and Sen 2017, 2018; Nastiti et al. 2019), financial leverage and liquidity (Manaf et al. 2018; Mukherjee and Sen 2017, 2018), and asset management efficiency (Rahim 2017; Subbaredy

and Reddy 2017; Mukherjee and Sen 2017, 2018). Moreover, SGR has a significant positive relation with retention rate, and both rates indicate the efficiency of business operations (Al-Nasser and Al-Jubouri 2020). Another important determinant of SGR is the firm's intellectual capital (Wahyuni and Dino 2016; Xu and Wang 2018). To estimate the SGR and investigate the factors affecting it, research like that of Wahyuni and Dino (2016) and Gardner et al. (2011) uses the DuPont model, which includes profit margin, total assets turn over, and equity multiplier, in addition to rate of retention.

After reviewing previous studies, it can be said that some studies have examined the relation between the components of the DuPont model with profitability, which is the important component of sustainable growth in addition to retained earnings according to the main model for measuring sustainable growth. It can also be said that other studies have shown the relation between the components of that model with sustainable growth. As for this study, it covers an important gap in the previous related literature, as it works on demonstrating and comparing both models for measuring sustainable growth: the main model of Higgins and the PRAT model. In this study, these models have been tested in a new environment, where they have not been tested before.

3. Methodology

3.1. Population and Sampling Framework

The current study has concentrated on the population of banks listed in the Saudi banking sector. For the study sample, all 11 banks were selected without exception. All the data used in the study are extracted from the financial statements of Saudi banks for the period from 2010 to 2019. The Saudi banking sector was chosen because it is considered one of the largest publicly traded companies in terms of market capitalization. In addition, it is considered a major component of the leading stock index MT30.

3.2. Research Variables

Table 1 explains the variables utilized in the research analysis according to the basic Higgins model and PRAT model.

Table 1. Variables and Formulas.

Variable	Descriptions	Formula
	Dependent Variable	
SGR	Sustainable Growth Rate	Return on Equity × Retention Rate
	Independent Variables	
P	Profit Margin	Net Income/Sales
R	Retention Rate	(1—Dividend payout ratio)
A	Assets Turnover	Sales/Total Assets
T	Financial Leverage	Total Assets/Equity
ROE	Return on Equity	Net Income/Equity

3.3. Hypotheses

The study relied on the following hypotheses to test the relation between the sustainable growth rate and the components of PRAT model and Higgins basic model.

Hypothesis 1 (H1). *There is no statistically significant effect of the profit margin (P), retention rate (RR), assets turnover (A), and financial leverage (T) on SGR.*

Hypothesis 2 (H2). *There is no statistically significant effect of ROE and RR on SGR.*

3.4. Statistical Models and Methods

In order to look at the impact of the components of the PRAT model and the components of the basic Higgins equation on sustainable growth, this study followed multiple regression analysis (OLS). In multiple regression, the SGR was regressed on all variables to

examine their impact, where the first equation measures the sustainable growth regression on the components of PRAT model, and the second equation measures the sustainable growth regression on the components of the Higgins basic model.

To find out the effect of independent variables on the dependent variable, three models were used. This study used the methods of panel analysis by estimating the pooled regression OLS model (PRM), the fixed effects model (FEM), and the random effects model (REM).

3.4.1. Pooled Regression Model (PRM)

In this model, it is assumed that regressors are non-stochastic. However, even if they are stochastic, they are uncorrelated with the error term (Higgins 1977, 2018)

$$SGR_{it} = \alpha + \beta_1 P_{it} + \beta_2 R_{it} + \beta_3 A_{it} + \beta_4 T_{it} + \mu_{it} \text{ (PRAT model)} \quad (1)$$

$$SGR_{it} = \alpha + \beta_1 ROE_{it} + \beta_2 R_{it} + \mu_{it} \text{ (Higgins basic model)} \quad (2)$$

where α is the individual effect, which is supposed to be constant over time and is specific to each particular bank. If α is the same across all sectional units, the model is treated as a classic pooled regression model.

3.4.2. Fixed Effects Model (FEM)

In this model, 110 observations are pooled as above, but the model allows each cross-section unit (in this case each bank) to have its own (intercept) dummy variable. The subscript i and β_1 suggest that the intercepts of the 11 banks may be different, but each bank's intercept does not vary over time. The model can be written as follows:

$$SGR_{it} = \beta_{1i} + \beta_2 P + \beta_3 R + \beta_4 A + \beta_5 T + \mu_{it} \text{ (PRAT model)} \quad (3)$$

$$SGR_{it} = \beta_{1i} + \beta_2 ROE + \beta_3 R + \mu_{it} \text{ (Higgins basic model)} \quad (4)$$

3.4.3. Random Effects Model (REM)

In this model, it is assumed that the intercept values form a random drawing from a bigger population of banks. In this case, the 11 banks are drawn from the universe of such banks; thus, there is here a common mean value for the intercept (β_1). The individual difference in the intercept value of each bank is reflected in the error term (ε_i).

Hence, the model can be represented thus:

$$Y_{it} = \beta_1 + \beta_2 X_{1it} + \beta_3 X_{2it} + \beta_4 X_{3it} + \beta_5 X_{4it} + \mu_{it} + \varepsilon_i$$

$$SGR_{it} = \beta_1 + \beta_2 P_{it} + \beta_3 R_{it} + \beta_4 A_{it} + \beta_5 T_{it} + w_{it} \text{ (PRAT model)} \quad (5)$$

$$SGR_{it} = \beta_1 + \beta_2 ROE_{it} + \beta_3 R_{it} + w_{it} \text{ (Higgins basic model)} \quad (6)$$

where $w_{it} = \mu_{it} + \varepsilon_i$. Here, ε_i is the individual specific or cross-sectional specific error component and μit is the combined time series and cross-sectional error component.

3.4.4. Choosing the Appropriate Form for the Panel Data

The first thing to do when using panel forms is to check the property homogeneity or heterogeneity of the model used or studied at the standard level means. This test is equal to the coefficients of the studied model at the level of banks, i.e., the coefficients of the independent variables are equal, and the constant between all banks is equal. As for the economic level, under the premise of homogeneity, this test indicates that the model studied is a model shared by all banks and, thus, the results obtained become general and apply to all the banks examined by the study. Therefore, the main objective of using several statistical methods to measure the relationship between the study variables is to clarify which of these models can explain that relation.

To determine the most suitable model, two tests are used. To choose between PRM and FEM, F-Test is used, while to choose between FEM and REM, Hausman Test is used, which was suggested by Hausman (1978).

The F-test or Wald test is used to determine which of the PRM or FEM is more appropriate to analyze the data. The hypotheses of this test are as follows:

(H0): PRM is appropriate.
(H1): FEM is appropriate.

If *p*-value is larger than 0.05, H0 is not rejected and it is concluded that PRM is appropriate. Yet, if *p*-value is less than 0.05, H0 should be rejected, indicating that FEM is appropriate.

The Hausman test is used to determine whether the FEM model or the REM model is more appropriate to analyze the data. The hypotheses of this test are as follows.

H0: Random effects model is appropriate.
H1: Fixed effects model is appropriate.

If *p*-value is larger than 0.05, H0 should not be rejected and this means that REM is appropriate. Yet, if *p*-value is less than 0.05, H0 should be rejected, indicating that FEM is appropriate.

4. Empirical Results and Analysis

4.1. Descriptive Analysis

Table 2 reports descriptive statistics for selected banks including mean, standard deviation, minimum value, and maximum value for variables. The results indicate that when it comes to the sustainable growth of Saudi banks, the maximum value is 0.22, the minimum value is zero, and the average value is 0.0760. Moreover, the results indicate that the maximum values for profit margin, retention rate, assets turnover, and financial leverage are 0.68, 1, 0.06, and 10.81 respectively.

Table 2. Descriptive Statistics.

Variables	Observations	Minimum	Maximum	Mean	St. Deviation
P	110	0.02	0.68	0.4642	0.14644
R	110	0.00	1.00	0.6340	0.25441
A	110	0.02	0.06	0.0377	0.00705
T	110	1.71	10.81	6.8433	1.42086
ROE	110	0.00	0.22	0.1194	0.04547
SGR	110	0.00	0.22	0.0760	0.04158

4.2. Results and Discussion

4.2.1. Results of Pooled Regression Model, Fixed Effect Model and Random Effect Model for PRAT Model

Table 3 (part 1) shows the results of the regression analysis using the pooled regression model, which indicate that there is a statistically significant effect of all the model variables on sustainable growth. The value of R-squared, which is 0.887334, refers to the model variables that explain about 89% of the changes in sustainable growth. Also, the results show that the asset turnover variable is the most influential variable on sustainable growth, as the value of the asset turnover factor is 1.696594. It is noteworthy that the F-Value of the regression table signifies whether the overall model is statistically significant or not. Accordingly, the model is statistically significant, as the value of F is 206.7398 at a significant level of 5%.

Table 3. PRM, FEM, and REM results (PRAT model).

Part 1	**PRM**					
Variable	**Coefficient**	***p*-value**	**Collinearity Statistics VIF**	**S.E of regression**	**R-squared**	**F-value**
P	0.159077	0.0000	1.015			
R	0.092786	0.0000	1.092	0.014837	0.887334	206.7398 *
A	1.696594	0.0000	1.030	**Durbin-Watson**		
T	0.010250	0.0000	1.100	**1.40**		
Part 2	**FEM**					
Variable	**Coefficient**	***p*-value**	**S.E of regression**	**R-squared**	**F-value**	**Durbin-Watson**
P	0.168334	0.0000				
R	0.082508	0.0000	0.013727	0.912750	70.98787 *	1.6336
A	1.527496	0.0004				
T	0.007543	0.0000				
Part 3	**REM**					
Variable	**Coefficient**	***p*-value**	**S.E of regression**	**R-squared**	**F-value**	**Durbin-Watson**
P	0.158870	0.0000				
R	0.092453	0.0000	0.014757	0.886458	204.9418 *	1.41
A	1.697078	0.0000				
T	0.010208	0.0000				

* Statistically significant at 5%.

In Table 3 (part 2), the results of the regression analysis using the Fixed Effect model indicate that there is a statistically significant effect of all the model variables on sustainable growth. The value of R-squared, which is 0.912750, refers to the model variables that explain about 90% of the changes in sustainable growth. Furthermore, the results show that the asset turnover variable is the most influential variable on sustainable growth, as the value of the asset turnover factor is 1.527496. The results also indicate that the model is statistically significant, as the value of F is 70.98787 at a significant level of 5%.

In Table 3 (part 3), the results of the regression analysis using the Random Effect model indicate that there is a statistically significant effect of all the model variables on sustainable growth. The value of R-squared, which is 0.886458, refers to the model variables that explain about 89% of the changes in sustainable growth. In addition, the results show that the asset turnover variable is the most influential variable on sustainable growth, as the value of the asset turnover factor is 1.697078. Moreover, the results indicate that the model is statistically significant, as the value of F is 204.9418 at a significant level of 5%.

Based on these results, it is possible to reject the null hypothesis for all variables in the three models (PRM, FEM and REM); thus, there is a statistically significant effect of PM, RR, AT, and financial leverage (T) on sustainable growth.

4.2.2. Wald Test (F-Test) for PRAT Model

To test the validity of used models and choose between the PRM and FEM, the F-test was used. The results in Table 4 show that the *p*-value is statistically significant at a significance level of 5%. Therefore, it is possible to reject the null hypothesis indicating that the PRM is appropriate and to accept the alternative hypothesis indicating that it is the FEM that is appropriate for this study.

Table 4. Wald test results.

Wald Test			
Test Statistic	**Statistic**	**d.f.**	**Probability**
F-statistic	2.767399	(10.95)	0.0048
Chi-square	28.121879	10	0.0017

4.2.3. Hausman Test for PRAT Model

The Hausman test was applied to check whether to focus on FEM or REM results. Since the *p*-value of Hausman test in Table 5 is less than 5%, FEM results have been chosen for the interpretation.

Table 5. Hausman test results.

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
Cross-section random	20.353800	4	0.0004

4.2.4. Results of Pooled Regression Model, Fixed Effect Model and Random Effect Model for Higgins Basic Model

In Table 6 (part 1), the results of the regression analysis using the pooled regression mode indicate that there is a statistically significant effect of all the model variables on sustainable growth. The value of R-squared, which is 0.903774, refers to the model variables that explain about 90% of the changes in sustainable growth. Also, the results show that the ROE variable is the most influential variable on sustainable growth, as the value of the asset turnover factor is 0.665152. Additionally, the results indicate that the model is statistically significant, as the value of F is 502.4838 at a significant level of 5%.

Table 6. PRM, FEM, and REM results (Higgins basic model).

Part 1	**PRM**					
Variable	**Coefficient**	***p*-value**	**Collinearity Statistics VIF**	**S.E of regression**	**R-squared**	**F-value**
ROE	0.665152	0.0000	1.001	0.903774	0.901976	502.4838 *
R	0.091079	0.0000	1.001	Durbin-Watson 1.40		
Part 2	**FEM**					
Variable	**Coefficient**	***p*-value**	**S.E of regression**	**R-squared**	**F-value**	**Durbin-Watson**
ROE	0.731573	0.0000				
R	0.073311	0.0000	0.011094	0.941806	130.8201 *	1.5125
Part 3	**REM**					
Variable	**Coefficient**	***p*-value**	**S.E of regression**	**R-squared**	**F-value**	**Durbin-Watson**
ROE	0.690619	0.0000				
R	0.081748	0.0000	0.011869	0.907071	522.2092 *	1.41

* Statistically significant at 5%.

In Table 6 (part 2), the results of the regression analysis using the Fixed Effect model indicate that there is a statistically significant effect of all the model variables on sustainable growth. Furthermore, the value of R-squared, which is 0.941806, refers to the model variables that explain about 94% of the changes in sustainable growth. The results also show that the ROE variable is the most influential variable on sustainable growth, as the

value of the ROE factor is 0.731573. In addition, the results indicate that the model is statistically significant, as the value of F is 103.8201 at a significant level of 5%.

Table 6 (part 3) shows the results of the regression analysis using the Random Effect model. These results indicate that there is a statistically significant effect of all the model variables on sustainable growth. The value of R-squared, which is 0.907071, refers to the model variables that explain about 90% of the changes in sustainable growth. Moreover, the results show that the ROE variable is the most influential variable on sustainable growth, as the value of the ROE factor is 0.690619. The results also indicate that the model is statistically significant, as the value of F is 522.2092 at a significant level of 5%.

Based on the analysis' results of basic Higgins model, it is possible to reject the null hypothesis for all variables in the three models (PRM, FEM, and REM). Accordingly, there is a statistically significant effect of ROE and RR on sustainable growth.

4.2.5. Wald Test (F-Test) for Higgins Basic Model

The F-test was used to examine the validity of used models and to choose between PRM and FEM. The results in Table 7 indicate that the *p*-value is statistically significant at a significance level of 5%. As a result, it is possible to reject the null hypothesis indicating that PRM is appropriate and to accept the alternative hypothesis stating that FEM is appropriate for this study.

Table 7. Wald test results.

Wald Test			
Test Statistic	**Statistic**	**d.f.**	**Probability**
F-statistic	6.339313	(10.97)	0.0000
Chi-square	55.320859	10	0.0000

4.2.6. Hausman Test for Higgins Basic Model

The Hausman test was applied to check whether to focus on FEM or REM results. Because the *p*-value of Hausman test in Table 8 is less than 5%, FEM results were chosen for the interpretation.

Table 8. Hausman test results.

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
Cross-section random	17.477014	2	0.0002

5. Conclusions

Growth is a metric used by management to assess a company's operational success as well as its potential in terms of managing available financial resources. There is no doubt that a certain level of growth is required for businesses to survive and perform well in the long run, but excessive expansion is dangerous.

The central intention of this study was to investigate the PRAT model, which is a detailed model of the sustainable growth equation according to Higgins (1977, 2018), alongside the Higgins basic model. This study is considered a new contribution to the related literature because it tackles a very important topic that has not been tested by many studies, especially in the Saudi market, which is considered one of the emerging markets. Using the panel data of pooled regression model, fixed effect model, and random effect model, the study has shown that the best model to test the effect of the PRAT model on sustainable growth rate is the fixed effect model. The results have shown that all variables explain 90% of the changes in sustainable growth. Moreover, it was found that the operational elements (profit margin and asset turnover) and financing (retained earnings and financial leverage) are very important factors that affect the sustainable growth for Saudi banks, and this result is consistent with what Higgins (1977, 2018) has

stated. Furthermore, based on the results of the basic Higgins model, it was also found that there is an effect of ROE and RR according to the fixed effect model after comparing it with the pooled regression model and random effect model, as the fixed effect model turned out to be the best statistical measurement model after testing the validity of the three standard models. The results showed that the return on equity has a greater impact on sustainable growth in the basic model compared to the retained earnings; this shows that when the return on the money of Saudi bank owners, which measures investment profitability, increases, the sustainable growth of Saudi banks will increase.

With regard to the relation between return on equity and sustainable growth, the result of this study is in agreement with other studies (Hafid 2016; Rahim 2017; Mukherjee and Sen 2017, 2018). As for the relation between retention rate, the result of this study is in agreement with the study of Al-Nasser and Al-Jubouri (2020).

Regarding the results of PRAT model, the results indicate the following:

1. There is an effect of profitability. This result confirms that the profitability of sales for Saudi banks, which contributes to increasing the profitability of investment, has contributed to increasing their sustainable growth. This result agrees with other studies (Arora et al. 2018; Haung and Zhang 2015; Mukherjee and Sen 2017, 2018; Nastiti et al. 2019).
2. Through the analysis, it was found that the least influential factor in the sustainable growth of Saudi banks is the retention rate. This indicates that Saudi banks depend on the profits achieved now for their sustainable growth more than the profits that are being retained. This result agrees with Al-Nasser and Al-Jubouri (2020).
3. The results indicate that the most influential variable in the PRAT model is the assets turnover, as the sustainable growth of Saudi banks increases with the increase in banks' efficiency in managing their operational elements, which generates more revenues. This result agrees with other studies (Rahim 2017; Subbaredy and Reddy 2017; Mukherjee and Sen 2017, 2018).
4. Financial leverage has an effect on sustainable growth, as other studies have shown (Manaf et al. 2018; Mukherjee and Sen 2017, 2018), but that effect is weak. This result, in addition to the result of the retention rate, confirms that the financing elements are less influential on the sustainable growth of Saudi banks than the operational elements.

It is clear from these results that the sustainable growth of Saudi banks depends heavily on their profitability and efficiency in managing their assets; therefore attention must be paid to the sustainability of that efficiency in managing the assets that generate those profits to ensure their sustainable growth. Since the retained earnings did not have a significant impact on the growth of Saudi banks, the profitability factor is the most important and influential factor in the investment decision of investors in the banking sector.

We suggest that researchers re-test the study models by applying them to similar markets, using the same statistical methods used or other methods, comparing the results and recognizing the clear differences between those markets.

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