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Do Valuation (P/E, ROE and P/BV) Ratios Drive Stock Values? A Case of GCC Countries

Arindam Banerjee

Associate Professor & Deputy Director (MBA programs)

SP Jain School of Global Management, Dubai

E-mail: arin_006@yahoo.com

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Abstract

Do valuation ratios predict the future stock prices? Over the decades, researchers have explored data across various global financial markets and across different timelines to seek its unique answer. The results though were not universal, resulted in generating greater interest in the subject. Using valuation ratios as a stock price predictor gained further momentum after Campbell and Shiller's seminal work involving a century of data sets. In spite of its practical relevance, not much effort was being made to establish the correlation between valuation ratios and stock price of GCC listed companies. This paper attempts to bridge the existing gap by studying 140 publicly listed companies in the six GCC countries namely Qatar, Kuwait, Bahrain, Saudi Arabia, Oman and United Arab Emirates (UAE) using the multiple regression model. The period of study was between 2013-2017. Correlation is established for each of the countries individually, followed by an integrated approach. The independent variables used in the study are Price Earnings Ratio (P/E), Return on Equity (ROE), Price to Book Ratio (P/BV) and Stock Returns being the dependent variable.

Keywords: GCC Countries, Price Earnings Ratio (P/E), Return on Equity (ROE), Price to Book Ratio (P/BV), Regression

JEL Classification: C32, G14, G17, G15

1. Introduction

1.1 Problem Statement

Over the years, a significant section of literature found that it is possible to forecast excess stock returns on overall stock market indexes. Shiller (1981), Fama and French (1988),

Campbell and Shiller (1989), Campbell (1991), and Hodrick (1992) find that price to dividends or earnings ratios have predictive power for excess returns. Harvey (1991) found that similar financial ratios predict stock returns in many different countries. Similarly, the Beaver (2000) found the ability of book-to-market ratios to predict future book return on equity. Danielson, Hirt & Block (2009) observed that long term stock returns are influenced by variables such as P/E ratio, past returns, dividend yields and, book to market ratios. This clearly contrasted earlier studies that believed that future stock returns cannot be predicted. In their work, Fama & French (1992) observed that these variables post market risks adjustments have predictive capability. Studies conducted on P/E ratio have indicated mixed views in regard to relationship between P/E ratio and stock return.

But most of the work has remained concentrated to the developed western markets and in spite of its practical relevance, not much effort was being made to study the correlation between valuation ratios and its subsequent impact of their predictive ability of future stock returns of GCC listed companies. This paper addresses the much needed gap by studying 140 publicly listed companies in the six GCC countries namely Qatar, Kuwait, Bahrain, Saudi Arabia, Oman and United Arab Emirates (UAE) using the multiple regression model. The period of study was between 2013-2017. Correlation is established for each of the countries individually, followed by an integrated approach. The independent variables used in the study are Price Earnings Ratio (P/E), Return on Equity (ROE), Price to Book Ratio (P/BV) and Stock Returns being the dependent variable.

2. Literature Review

Fluegel (1968) revisited the work of Nicholas Molodovsky (1967) that analyzed the idea that the return on investment for low PE Ratio stocks was better than high PE Ratio stocks. Molodovsky showed that this amplified any overpricing or undervaluing in an explicit group.

Beaver and Morse (1978) revealed that by looking at the way earnings have grown over the years, it is difficult to explain differences in PE Ratio based upon their past performance. The past or present cannot be a predictor of future performance. The authors suggest that PE ratios influence earnings growth in the following year which is an indicator for the investors that their forecasting and assessment is only short-lived earnings misinterpretation. PE Ratios tend to fluctuate with market risk depending on the market stature of a given year, so market risk is not much of a reliable factor in analyzing the observed tenacity in PE Ratios for a time period more than two to three years.

Aggarwal et.al (1990) studied the trends in risk adjusted returns for securities quoted in the Tokyo Stock Exchange (TSE). They found a substantial level of PE Ratio effect for the first time for a non-U.S. market. Considerable link was recorded among PE Ratio effect and the size and seasonal effects recorded earlier.

Bartholdy (1998) examines the possibility of earnings-price ratios anticipating future stock returns using evidences from Toronto Stock Exchange. The result of the study suggested a positive correlation between investor behaviour and PE ratio which in turn can be used for predicting stock performance.

Shen (2000) explored the association between PE Ratios and stock market development and analyzed reasons to why past examples may not replicate in the present. The examination searches for strong established confirmation that high PE Ratios have been trailed by varied stock market performance and execution in the short and long term.

Trevino and Robertson (2002) examined the connection between current PE Ratios and the accompanying securities exchange average returns and conclude that there is little connection between current PE Ratios levels and resulting momentary normal returns.

Bhargava and Malhotra (2006) examined the link between PE ratios and stock values by taking the closing price and next day opening price along with PE ratios and consecutive earnings yield of S&P 500, EAFE index, MSCI world index and MSCI Europe index. The study validated the significance of PE ratios to be used as a valuation measure.

Aras and Yilmaz (2008) assessed the uniformity and monotony of stock returns in the twelve emerging markets by employing price earnings ratio, market to book ratio and dividend yield ratio as determining factors for the period 1997 to 2003 and ascertained that predictability of stock returns in emerging markets is different.

Truong (2009) suggested that value investing approach that has been adopted by several successful investors such as Warren Buffett (Berkshire Hathaway) provides consistently superior return with low Price-to-Earnings stocks. But research done proves that this cannot be explained by conventional risk measures and may indicate a mispricing phenomenon in the New Zealand market.

Ogello (2012) scrutinized how price earnings ratio affect stock returns of companies listed in the Nairobi Securities Exchange, between 2008 and 2013 of sixty-one firms. The research established a considerable depth of link among price earnings ratio and stock returns for the firms listed in NSE. Most of the companies with low PE Ratio resulted in higher stock returns and firms with lower reinvestment rates had higher price earnings ratios than firms with higher reinvestment needs.

Fun and Basana (2012) examined a samples of 45 Stocks Listed in Indonesia Stock Exchange for a five-year time frame from 2005 to 2010. Contrary to the popular belief that of analysts and investors largely relying upon PE Ratios as determining factors for choice of stock they want to invest in, their study found an inverse correlation between PE Ratio and stock returns; stocks with low PE Ratio are anticipated as holding more economical current price therefore they end up promoting higher returns in the following period. In conclusion, there is no link or any sort of correlation that defines a relationship between stock return and trailing PE Ratio.

Penman and Reggiani (2013) suggested that earnings to price ratios and book to price ratios forecast both variables earnings growth and the risk associated to that; the risk instilled in this form of accounting is coordinated with market pricing of earnings and book values in these ratios.

Mburu (2014) conducted a study on evaluating the correlation between PE ratio and stock returns of firms listed in the Nairobi Securities Exchange (NSE) 2009 to 2013. The study

concluded that constructive relationship resided among stock returns with ROE and MBV and minimal link prevailed between stock returns and PE Ratio.

3. Aims

The main objective of this study is to determine the relationship between Price Earnings Ratio and Stock Returns within GCC context. For this purpose, a sample of 20 companies was taken from each of the seven stock exchanges functioning in the countries constituting GCC. Secondary data of these companies pertaining to 4yrs from 2014-17 were collected and analyzed. Two other variables, i.e., Return on Equity and Price to Book Ratio, were also taken along with Price Earnings Ratio as determinants of Stock Returns for the analysis purpose. Correlation tests followed by regression analysis.

4. Methods

4.1 Qatar / Doha Securities Market (DSM)

The Doha Securities Market (DSM) was set up in 1995 and formally began its functioning from 1997. The Exchange plays a crucial role in helping Qatar economy as a primary capital raising platform for companies in Qatar. The following tables shows us the results of Correlation and Regression tests using the data collected from Doha Securities Market to understand the relationship between the dependent **'y'** variable - Stock Returns, and the independent **'x'** variables – Price Earnings Ratio (P/E), Return on Equity (ROE) and Price to Book Ratio (P/B).

4.1.1 Analysis

Table 2 shows the result of correlation test between the variables. Correlation measures the direction and degree of relationship between the dependent variable and independent variable. The result shows that P/E has a negative correlation of **(-0.3888)** while ROE and P/B has a positive correlation of **0.0785** & **0.2492** with the dependent variable Stock Returns. Regardless of the direction of correlation, the degree of correlation between all the independent variables and the dependent variable is weak. This means that none of the determinants has a major impact on Stock Returns.

Table 3 shows the regression statistics of the regression test. This table gives us the value of R square which is also known as the coefficient of determination. It explains the percentage of variability in the dependent variable explained by the variability in the independent variables. The coefficient of determination of the sample taken from Doha Securities Market is **0.1548**. This means that only a mere **15.48%** of the variance in Stock Returns is explained by the variance in P/E, ROE and P/B.

Table 4 is an ANOVA table which explains the reliability of the whole regression test done. The result shows that the significance value of the regression test is **0.4281** which is way more than the minimum significance level (0.05). This indicates that the regression test is not very significant and the values so obtained through the test may be obtained by mere chance.

Table 5 shows the regression coefficients of the independent variables which are the predictors of the dependent variables along with their significance. It also shows the y intercept, i.e., the point where the regression line touches the y axis. Regression coefficient of an input variable simply tells us the change in units of the output variable resulting from the change of one unit of the input variable.

Using the data in the table, we can deduce a regression equation as follows,

$$\mathbf{Y = 0.1130 + (-0.0042)\ X_1 + 0.2588\ X_2 + 0.0005\ X_3}$$

Where,

Y: Stock Returns (dependent variable)

X_1: Price Earnings Ratio (independent variable)

X_2: Return on Equity (independent variable)

X_3: Price to Book Ratio (independent variable)

The regression line meets y axis at **0.1130**. **(-0.0042)**, **0.2588** & **0.0005** shows the impact of P/E, ROE and P/B on Stock Returns. None of the predictors have a strong influence on the dependent variable – Stock Returns. Among the variables, ROE is the greatest influencer **(0.2588)**. This value shows that for every unit increase in ROE results in increase of **0.2588** units in Stock Returns. P/E has a negative influence on Stock Returns. As shown in the table, the corresponding p-values of the regression coefficients are **0.2041**, **0.8073** and **0.9950** none which are significant (< 0.05). This indicates that there is a high probability that the coefficient values were a result of chance.

4.1.2 Summary Results

1. P/E has the highest correlation with Stock Returns but is negative **(-0.3888)**

2. The coefficient of determination is **0.1548**

3. ANOVA table reveals the significance of the test to be **0.4281** which is not less than the minimum significance level of 0.05

4. The regression equation is $\mathbf{Y = 0.1130 + (-0.0042)\ X_1 + 0.2588\ X_2 + 0.0005\ X_3}$ in which none of the values are statistically significant.

4.2 Kuwait Stock Exchange (KSE)

The Kuwait Stock Exchange was established in 1962 and in 1983 it was named as the Kuwait Stock Exchange (KSE). It is one among the first and largest stock exchange in the region. The following tables shows us the results of Correlation and Regression tests using the data collected from Kuwait Stock Exchange to understand the relationship between the dependent **'y'** variable - Stock Returns, and the independent **'x'** variables – Price Earnings Ratio (P/E), Return on Equity (ROE) and Price to Book Ratio (P/B).

4.2.1 Analysis

Table 7 shows the result of correlation test between the variables. The result shows that P/E has a positive but weak correlation of **0.130** while ROE and P/B has a strong positive correlation of **0.7099** & **0.7809** with the dependent variable Stock Returns. This indicates the strong correlation of ROE and P/B, i.e., there is a strong impact on Stock Returns.

Table 8 shows the regression statistics of the regression test. The coefficient of determination of the sample taken from Kuwait Stock Exchange is 0.6993. This means that 69.93% of the variance in Stock Returns is explained by the variance in P/E, ROE and P/B. The regression model has a strong predictive strength.

Table 9 is an ANOVA table which explains the reliability of the whole regression test done. The result shows that the significance value of the regression test is **0.0002** which is even lower than the than the third significance level (0.001). This indicates that the regression test is very significant and the values so obtained through the test are 99% true and not a result of chance.

Table 10 shows the regression coefficients of the independent variables which are the predictors of the dependent variables along with their significance.

Using the data in the table, we can deduce a regression equation as follows,

$$\mathbf{Y = (-0.2090) + 0.0000\ X_1 + 0.6389\ X_2 + 0.0002\ X_3}$$

Where,

Y: Stock Returns (dependent variable)

X_1: Price Earnings Ratio (independent variable)

X_2: Return on Equity (independent variable)

X_3: Price to Book Ratio (independent variable)

The regression line meets y axis at **(-0.2090). 0.0000**, **0.6389** & **0.0002** shows the impact of P/E, ROE and P/B on Stock Returns. None of the predictors have a strong influence on the dependent variable – Stock Returns. Among the variables, ROE is the greatest influencer **(0.6389)**. This value shows that for every unit increase in ROE results in increase of **0.6389** units in Stock Returns. P/E has a minimal/no influence on Stock Returns.

As shown in the table, the corresponding p-values of the regression coefficients are **0.9764**, **0.0709** and **0.0093** among which the only value which is significant is **0.0093** as it is less than 0.01 level of significance giving 99% confidence. This indicates that even though P/B has a low influence on Stock Returns, it is statistically significant.

4.2.2 Summary Results

1. P/B has the highest correlation with Stock Returns and is positive **(0.7809)**
2. The coefficient of determination is **0.6993**

3. ANOVA table reveals the significance of the test to be **0.0002** which is lower than 0.001 level of significance, i.e., the model is highly significant.

4. The regression equation is $\mathbf{Y = (-0.2090) + 0.0000\ X_1 + 0.6389\ X_2 + 0.0002\ X_3}$ in which the value **0.0002** is significant.

4.3 Oman / Muscat Securities Market (MSM)

Muscat Securities Market (MSM) was set up as a public establishment with lawful entity and established by the Royal Decree (53/88) issued on 21 June 1988. MSM permits securities trading of public business entities, government securities, corporate securities, investment funds and monetary instruments. The following tables shows us the results of Correlation and Regression tests using the data collected from Muscat Securities Market to understand the relationship between the dependent **'y'** variable - Stock Returns, and the independent **'x'** variables – Price Earnings Ratio (P/E), Return on Equity (ROE) and Price to Book Ratio (P/B).

4.3.1 Analysis

Table 12 shows the result of correlation test between the variables. The result shows that P/E has a negative correlation of **(-0.2936)** while ROE and P/B has a positive correlation of **0.2137** & **0.1968** with the dependent variable Stock Returns. Regardless of the direction of correlation, the degree of correlation between the independent variables and the dependent variable are weak. This means that none of the determinants has a major impact on Stock Returns.

Table 13 shows the regression statistics of the regression test. The coefficient of determination of the sample taken from Muscat Securities Market is **0.1292**. This means that only a mere **12.92%** of the variance in Stock Returns is explained by the variance in P/E, ROE and P/B. The regression model is weak.

Table 14 is an ANOVA table which explains the reliability of the whole regression test done. The result shows that the significance value of the regression test is **0.5163** which is way more than the minimum significance level (0.05). This indicates that the regression test is not very significant and the values so obtained through the test may be obtained by mere chance.

Table 15 shows the regression coefficients of the independent variables which are the predictors of the dependent variables along with their significance.

Using the data in the table, we can deduce a regression equation as follows,

$$\mathbf{Y = (-0.0382) + (-0.0015)\ X_1 + (-0.0034)\ X_2 + 0.0223\ X_3}$$

Where,

Y: Stock Returns (dependent variable)

X_1: Price Earnings Ratio (independent variable)

X_2: Return on Equity (independent variable)

X_3: Price to Book Ratio (independent variable)

The regression line meets y axis at **(-0.382)**. **(-0.0015)**, **(-0.0034)** & **0.0223** shows the impact of P/E, ROE and P/B on Stock Returns. None of the predictors have a strong influence on the dependent variable – Stock Returns. Among the variables, P/B is the greatest influencer **(0.0223)**. This value shows that for every unit increase in P/B results in increase of **0.0223** units in Stock Returns. P/E as well as ROE has a negative influence on Stock Returns.

As shown in the table, the corresponding p-values of the regression coefficients are **0.2369**, **0.9951** and **0.6313** none which are significant (< 0.05). This indicates that there is a high probability that the coefficient values in the regression model were a result of chance.

4.3.2 Summary Results

1. P/E has the highest correlation with Stock Returns but is negative **(-0.2936)**

2. The coefficient of determination is **0.1292**

3. ANOVA table reveals the significance of the test to be **0.5163** which is not less than the minimum significance level of 0.05

4. The regression equation is $\mathbf{Y = (-0.0382) + (-0.0015)\ X_1 + (-0.0034)\ X_2 + 0.0223\ X_3}$ in which none of the values are statistically significant.

4.4 Bahrain Stock Exchange (BHB)

The Bahrain Stock Exchange was established in 1987. Its officially transactions began from June 17, 1989 with around 30 companies listed on it. It was dissolved in 2010 and recreated as a shareholding organization with the new name of Bahrain Bourse.

The following tables shows us the results of Correlation and Regression tests using the data collected from Bahrain Stock Exchange to understand the relationship between the dependent 'y' variable - Stock Returns, and the independent 'x' variables – Price Earnings Ratio (P/E), Return on Equity (ROE) and Price to Book Ratio (P/B).

4.4.1Analysis

Table 17 shows the result of correlation test between the variables. Correlation measures the direction and degree of relationship between two variables – dependent variable and independent variable. The result shows that P/E has a negative correlation of **(-0.2354)** while ROE and P/B has a positive correlation of **0.4706** & **0.2805** with the dependent variable Stock Returns. Among the variables, ROE has the highest correlation with Stock Returns – positive and moderate. This means that ROE has a moderate impact on Stock Returns.

Table 18 shows the regression statistics of the regression test. The coefficient of determination of the sample taken from Bahrain Stock Exchange is **0.2403**. This means that only a mere **24.03%** of the variance in Stock Returns is explained by the variance in P/E, ROE and P/B.

Table 19 is an ANOVA table which explains the reliability of the whole regression test done. The result shows that the significance value of the regression test is **0.2098** which is way more than the minimum significance level (0.05). This indicates that the regression test is not very significant and the values so obtained through the test may be obtained by mere chance.

Table 20 shows the regression coefficients of the independent variables which are the predictors of the dependent variables along with their significance.

Using the data in the table, we can deduce a regression equation as follows,

$$\mathbf{Y = (-0.0462) + (-0.0006)\ X_1 + 1.0342\ X_2 + 0.0407\ X_3}$$

Where,

Y: Stock Returns (dependent variable)

X_1: Price Earnings Ratio (independent variable)

X_2: Return on Equity (independent variable)

X_3: Price to Book Ratio (independent variable)

The regression line meets y axis at **(-0.0462)**. **(-0.0006)**, **1.0342** & **0.00407** shows the impact of P/E, ROE and P/B on Stock Returns. The result shows that P/E has a negative influence while ROE and P/B has a positive influence on the dependent variable – Stock Returns. Among the variables, ROE is the greatest influencer **(1.0342)**. This value shows that for every unit increase in ROE results in increase of **1.0342** units in Stock Returns.

As shown in the table, the corresponding p-values of the regression coefficients are **0.6128**, **0.1758** and **0.6362** none which are significant (< 0.05). This indicates that there is a high probability that the coefficient values were a result of chance.

4.4.2 Summary Results

1. ROE has the highest correlation with Stock Returns and is positive **(0.4706)**

2. The coefficient of determination is **0.2403**

3. ANOVA table reveals the significance of the test to be **0.2098** which is not less than the minimum significance level of 0.05

4. The regression equation is $\mathbf{Y = (-0.0462) + (-0.0006)\ X_1 + 1.0342\ X_2 + 0.0407\ X_3}$ in which none of the values are statistically significant.

4.5 Tadawul / Saudi Stock Exchange

Way back in 1970, only 14 companies were listed in Tadawul. In 1984, a ministerial committee was created by the government to further develop and take control the market. Presently, 200 companies are listed in Tadawul. The Tadawul All Share index (TASL) is the main stock index guide that helps to keep track of the performance of the companies listed in Tadawul.

The following tables shows us the results of Correlation and Regression tests using the data collected from Tadawul Stock Exchange to understand the relationship between the dependent 'y' variable - Stock Returns, and the independent 'x' variables – Price Earnings Ratio (P/E), Return on Equity (ROE) and Price to Book Ratio (P/B).

4.5.1 Analysis

Table 22 shows the result of correlation test between the variables. The result shows that both P/E and P/B has negative weak correlation of **(-0.1905)** & **(-0.2687)** while ROE has a positive but weak correlation of **0.0234** with the dependent variable - Stock Returns. Among the variables, P/B has the highest correlation but is negative.

Table 23 shows the regression statistics of the regression test. The coefficient of determination of the sample taken from Tadawul Stock Exchange is **0.0758**. This means that only a mere **7.58%** of the variance in Stock Returns is explained by the variance in P/E, ROE and P/B.

Table 24 is an ANOVA table which explains the reliability of the whole regression test done. The result shows that the significance value of the regression test is **0.7294** which is way more than the minimum significance level (0.05). This indicates that the regression test is not very significant and the values so obtained through the test may be obtained by mere chance.

Table 25 shows the regression coefficients of the independent variables which are the predictors of the dependent variables along with their significance.

Using the data in the table, we can deduce a regression equation as follows,

$$\mathbf{Y = 0.0457 + (-0.0003)\ X_1 + (-0.0359)\ X_2 + (-0.0359)\ X_3}$$

Where,

Y: Stock Returns (dependent variable)

X_1: Price Earnings Ratio (independent variable)

X_2: Return on Equity (independent variable)

X_3: Price to Book Ratio (independent variable)

The regression line meets y axis at **0.0457**. **(-0.0003)**, **(-0.0359)** & **(-0.0351)** shows the impact of P/E, ROE and P/B on Stock Returns. None of the predictors have a strong influence on the dependent variable – Stock Returns. Among the variables, ROE is the greatest influencer **(-0.0359)**. All the variables have a negative influence on Stock Returns. This means that every unit increase in the variables will result in a decrease in the units of Stock Returns.

As shown in the table, the corresponding p-values of the regression coefficients are **0.8096**, **0.9315** and **0.4224** none which are significant (< 0.05). This indicates that there is a probability that the coefficient results were by chance.

4.5.2 Summary

1. P/B has the highest correlation with Stock Returns but is negative **(-0.2687)**

2. The coefficient of determination is **0.0758**

3. ANOVA table reveals the significance or p-value of the test to be **0.7294** which is not less than the minimum significance level of 0.05

4. The regression equation is $\mathbf{Y = 0.0457 + (-0.0003)\ X_1 + (-0.0359)\ X_2 + (-0.0359)\ X_3}$ in which none of the values are statistically significant.

4.6 Dubai Financial Market (DFM)

Dubai Financial Market (DFM) became the first financial market to offer its shares through an IPO in the Middle East. It is governed by the Securities and Commodities Authority. There are around 67 companies listed under the Dubai Financial Market. Sharia standards is used by Dubai financial market that clearly replicates the determined vision of His Highness Sheik Mohammed bin Rashid Al Maktoum, Vice-President of the UAE, Prime Minister and Ruler of Dubai. The following tables shows us the results of Correlation and Regression tests using the data collected from Dubai Financial Market to understand the relationship between the dependent **'y'** variable - Stock Returns, and the independent **'x'** variables – Price Earnings Ratio (P/E), Return on Equity (ROE) and Price to Book Ratio (P/B).

4.6.1 Analysis

Table 27 shows the result of correlation test between the variables. The result shows that P/E has a positive but weak correlation of **0.1901** with Stock Returns just like ROE whose r is **0.2064**. However, P/B has a weak negative correlation of **(-0.0597)**. Regardless of the direction of correlation, the degree of correlation between all the independent variables and the dependent variable is weak. This means that none of the determinants has a major impact on Stock Returns.

Table 28 shows the regression statistics of the regression test. The coefficient of determination of the sample taken from Dubai Financial Market is **0.0730**. This means that only a mere **7.30%** of the variance in Stock Returns is explained by the variance in P/E, ROE and P/B.

Table 29 is an ANOVA table which explains the reliability of the whole regression test done. The result shows that the significance value of the regression test is **0.7413** which is way more than the minimum significance level (0.05). This indicates that the regression test is not very significant and the values so obtained through the test may be obtained by mere chance.

Table 30 shows the regression coefficients of the independent variables which are the predictors of the dependent variables along with their significance

Using the data in the table, we can deduce a regression equation as follows,

$$\mathbf{Y = (-0.0094) + 0.0021\ X_1 + 0.0762\ X_2 + 0.0217\ X_3}$$

Where,

Y: Stock Returns (dependent variable)

X_1: Price Earnings Ratio (independent variable)

X_2: Return on Equity (independent variable)

X_3: Price to Book Ratio (independent variable)

The regression line meets y axis at **(-0.0094)**. **0.0021**, **0.0762** & **0.0217** shows the impact of P/E, ROE and P/B on Stock Returns. None of the predictors have a strong influence on the dependent variable – Stock Returns. Among the variables, ROE is the greatest influencer **(0.0762)**. This value shows that for every unit increase in ROE results in increase of **0.0762** units in Stock Returns. P/E has a positive but very little influence on Stock Returns **(0.0021)**.

As shown in the table, the corresponding p-values of the regression coefficients are **0.4871**, **0.4375** and **0.7782** none which are significant (< 0.05). This indicates that there is a high probability that the coefficient values were a result of chance.

4.6.2 Summary Results

1. ROE has the highest correlation with Stock Returns **(0.2064)**

2. The coefficient of determination is **0.0730**

3. ANOVA table reveals the significance of the test to be **0.7413** which is not less than the minimum significance level of 0.05

4. The regression equation is $\mathbf{Y = (-0.0094) + 0.0021\ X_1 + 0.0762\ X_2 + 0.0217\ X_3}$ in which none of the values are statistically significant.

4.7 Abu Dhabi Securities Exchange (ADX)

Abu Dhabi Securities Exchange (ADX) was set up on 15th of November 2000. From the end of 2005 through until mid-2006 ADSM recorded a fall in trading volumes but still it trades more stocks both in volume and price compared to DFM.

The following tables shows us the results of Correlation and Regression tests using the data collected from Abu Dhabi Securities Exchange to understand the relationship between the dependent **'y'** variable - Stock Returns, and the independent **'x'** variables – Price Earnings Ratio (P/E), Return on Equity (ROE) and Price to Book Ratio (P/B).

4.7.1 Analysis

Table 32 shows the result of correlation test between the variables. The result shows that P/E has a negative correlation of **(-0.3597)** while ROE and P/B has a positive correlation of 0.5267 & **0.3528** with the dependent variable Stock Returns. Among the variables, ROE has the highest correlation with Stock Returns – positive and moderate. This means that ROE has a moderate impact on Stock Returns.

Table 33 shows the regression statistics of the regression test. The coefficient of determination of the sample taken from Doha Securities Market is **0.3753**. This means that only **37.53%** of the variance in Stock Returns is explained by the variance in P/E, ROE and P/B.

Table 34 is an ANOVA table which explains the reliability of the whole regression test done. The result shows that the significance value of the regression test is **0.0515** is very close to the minimum significance level (0.05). This indicates that the regression test is not significant but is very near to it.

Table 35 shows the regression coefficients of the independent variables which are the predictors of the dependent variables along with their significance.

Using the data in the table, we can deduce a regression equation as follows,

$$\mathbf{Y = (-0.0537) + (-0.0004)\ X_1 + 0.4223\ X_2 + 0.0444\ X_3}$$

Where,

Y: Stock Returns (dependent variable)

X_1: Price Earnings Ratio (independent variable)

X_2: Return on Equity (independent variable)

X_3: Price to Book Ratio (independent variable)

The regression line meets y axis at **(-0.0537)**. **(-0.0004)**, **0.4223** & **0.0444** shows the impact of P/E, ROE and P/B on Stock Returns. None of the predictors have a strong influence on the dependent variable – Stock Returns. Among the variables, ROE is the greatest influencer **(0.4223)**. This value shows that for every unit increase in ROE results in increase of **0.4223** units in Stock Returns. P/E has a negative influence on Stock Returns.

As shown in the table, the corresponding p-values of the regression coefficients are **0.2067**, **0.0831** and **0.3720** none of which are significant (< 0.05). This indicates that there is a probability that the coefficient values were a result of chance.

4.7.2 Summary Results

1. ROE has the highest correlation with Stock Returns and is positively moderate **(0.5267)**.
2. The coefficient of determination is **0.3753**
3. ANOVA table reveals the significance of the test to be **0.0515** which is not less than the minimum significance level of 0.05
4. The regression equation is $\mathbf{Y = (-0.0537) + (-0.0004)\ X_1 + 0.4223\ X_2 + 0.0444\ X_3}$ in which none of the values are statistically significant.

4.8 Cross Country Analysis - Gulf Cooperation Council (GCC)

GCC or the Gulf Cooperation Council is a union between the governments of various Arab countries. Its member countries are as follows:

1. Bahrain
2. Kuwait
3. Oman
4. Qatar
5. Saudi Arabia
6. United Arab Emirates

The following tables shows us the results of Correlation and Regression tests using the data collected from the seven stock exchanges functioning in the GCC to understand the relationship between the dependent **'y'** variable - Stock Returns, and the independent **'x'** variables - Price Earnings Ratio (P/E), Return on Equity (ROE) and Price to Book Ratio (P/B).

4.8.1 Analysis

Table 37 shows the result of correlation test between the variables. The result shows that P/E has a negative correlation of **(-0.0169)** while ROE and P/B has a positive correlation of **0.1386** & **0.1631** with the dependent variable Stock Returns. Regardless of the direction of correlation, the degree of correlation between all the independent variables and the dependent variable is weak. This means that none of the determinants has a major impact on Stock Returns.

Table 38 shows the regression statistics of the regression test. The coefficient of determination of the all the samples taken from the stock exchanges is **0.0474**. This reveals the regression accuracy to be merely **4.74%**. In other words, the regression model with P/E, ROE and P/B as independent variables explains about **4.74%** of the variance or change in the dependent variable – Stock Returns.

Table 39 is an ANOVA table which explains the reliability of the whole regression test done. The result shows that the significance value of the regression test is **0.0000** which is below the third level of significance (0.001). This indicates that the regression test is highly significant and gives about 99.9% confidence.

Table 40 shows the regression coefficients of the independent variables which are the predictors of the dependent variables along with their significance.

Using the data in the table, we can deduce a regression equation as follows,

$$\mathbf{Y = 0.0016 + 0.0000\ X_1 + 0.1713\ X_2 + 0.0001\ X_3}$$

Where,

Y: Stock Returns (dependent variable)

X_1: Price Earnings Ratio (independent variable)

X_2: Return on Equity (independent variable)

X_3: Price to Book Ratio (independent variable)

The regression line meets y axis at **0.0016**. **0.0000**, **0.1713** & **0.0001** shows the impact of P/E, ROE and P/B on Stock Returns. All the predictors have a positive but not a strong influence on the dependent variable – Stock Returns. Among the variables, ROE is the greatest influencer **(0.1713)**. This value shows that for every unit increase in ROE results in increase of **0.1713** units in Stock Returns. P/E has a regression coefficient of **0.000**, which means that it has no influence over Stock Returns.

As shown in the table, the corresponding p-values of the regression coefficients are **0.1046**, **0.0021** and **0.0001**. The coefficient value of PE is not significant as it is more than the minimum significance level (0.05). The coefficient value of ROE is significant at 99% confidence level (0.0021 < 0.01) and the coefficient value of P/B is significant at 99.9% confidence level (0.0001 < 0.001)

4.8.2 Results

1. P/B has the highest correlation with Stock Returns and is positive **(0.1386)**

2. The coefficient of determination is **0.0474**

3. ANOVA table reveals the significance of the test to be **0.000** which is significant at 99.99% confidence level (0.0000 < 0.001)

4. The regression equation is $\mathbf{Y = 0.0016 + 0.0000\ X_1 + 0.1713\ X_2 + 0.0001\ X_3}$ in which none of the values are statistically significant.

5. Conclusion

The main objective of this paper was to define the relationship between Price Earnings Ratio and Stock Returns and for this purpose data were collected from seven stock exchanges in GCC and were analyzed both individually as well as collectively. There is a total of 8 cases in this study.

Price Earnings Ratio has a positive correlation with Stock Returns only in two out of eight cases, i.e., it has a negative effect with Stock Returns except in the stock exchanges of Kuwait and Dubai. Therefore, on an average a higher P/E would mean lower Stock Returns.

In all the cases, the regression coefficient of P/E is very low. This shows that in all the stock exchanges, P/E has only a negligible or zero influence on their Stock Returns which makes P/E a bad predictor.

It is also found that Return on Equity and Price to Book Ratio are better connected with Stock Returns and are better predictors than P/E with ROE being the best among them on an average.

This study shows that the investors should not solely rely on the P/E ratio as a predictor of stock price as there is no significant relationship between P/E and Stock Returns and in some cases a high P/E would even mean low Stock Returns.

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Appendix

Summary Results - Qatar

Table 1. Correlation

	Stock Returns	*Price Earning*	*Return on Equity*	*Price to Book Ratio*
Stock Returns	1			
Price Earning	-0.3888	1		
Return on Equity	0.0785	-0.0470	1	
Price to Book Ratio	0.2492	-0.6002	0.2715	1

Table 2

Variables	r value	Interpretation
Price Earning (P/E)	-0.3888	Negative weak correlation
Return on Equity (ROE)	0.0785	Positive weak correlation
Price to Book Ratio (P/BV)	0.2492	Positive weak correlation

Table 3. Regression statistics

Multiple R	0.3935
R Square	**0.1548**
Adjusted R Square	-0.0036
Standard Error	0.1961
Observations	20

Table 4. ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	0.1127	0.0376	0.9770	**0.4281**
Residual	16	0.6155	0.0385		
Total	19	0.7282			

Table 5. Regression

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	**0.1130**	0.1746	0.6475	**0.5265**	-0.2571	0.4831	-0.2571	0.4831
Price Earning	**-0.0042**	0.0032	-1.3241	**0.2041**	-0.0109	0.0025	-0.0109	0.0025

Return on Equity	**0.2588**	1.0437	0.2480	**0.8073**	-1.9537	2.4714	-1.9537	2.4714
Price to Book Ratio	**0.0005**	0.0736	0.0063	**0.9950**	-0.1555	0.1565	-0.1555	0.1565

Summary Results Kuwait

Table 6. Correlation

	Stock Returns	*Price Earning*	*Return on Equity*	*Price to Book Ratio*
Stock Returns	1			
Price Earning	0.0130	1		
Return on Equity	0.7099	0.2585	1	
Price to Book Ratio	0.7809	-0.1581	0.6038	1

Table 7

Variables	r value	Interpretation
Price Earning	0.0130	Positive weak correlation
Return on Equity	0.7099	Positive strong correlation
Price to Book Ratio	0.7809	Positive strong correlation

Table 8. Regression statistics

Multiple R	0.8362
R Square	**0.6993**
Adjusted R Square	0.6429
Standard Error	0.1947
Observations	20

Table 9. ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	1.4099	0.4700	12.4015	**0.0002**
Residual	16	0.6063	0.0379		
Total	19	2.0163			

Table 10. Regression

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.2090	0.0985	-2.1220	0.0498	-0.4178	-0.0002	-0.4178	-0.0002
Price Earning	0.0000	0.0000	0.0300	0.9764	0.0000	0.0000	0.0000	0.0000
Return on Equity	0.6389	0.3302	1.9351	0.0709	-0.0610	1.3388	-0.0610	1.3388
Price to Book Ratio	0.0002	0.0001	2.9548	0.0093	0.0000	0.0003	0.0000	0.0003

Summary Results - Oman

Table 11. Correlation

	Stock Returns	*Price Earning*	*Return on Equity*	*Price to Book Ratio*
Stock Returns	1			
Price Earning	-0.2936	1		
Return on Equity	0.2137	-0.1447	1	
Price to Book Ratio	0.1968	0.0354	0.8242	1

Table 12

Variables	r value	Interpretation
Price Earning	**-0.2936**	Negative weak correlation
Return on Equity	**0.2137**	Positive weak correlation
Price to Book Ratio	**0.1968**	Positive weak correlation

Table 13. Regression statistics

Multiple R	0.3594
R Square	**0.1292**
Adjusted R Square	-0.0341
Standard Error	0.1079
Observations	20

Table 14. ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	0.0277	0.0092	0.7913	**0.5163**
Residual	16	0.1864	0.0117		
Total	19	0.2141			

Table 15. Regression

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	**-0.0382**	0.0458	-0.8342	**0.4165**	-0.1352	0.0588	-0.1352	0.0588
Price Earning	**-0.0015**	0.0012	-1.2290	**0.2369**	-0.0041	0.0011	-0.0041	0.0011
Return on	**-0.0034**	0.5358	-0.0063	**0.9951**	-1.1391	1.1324	-1.1391	1.1324

Equity								
Price to Book Ratio	**0.0223**	0.0457	0.4892	**0.6313**	-0.0745	0.1191	-0.0745	0.1191

Summary Results - Bahrain

Table 16. Correlation

	Stock Returns	*Price Earning*	*Return on Equity*	*Price to Book Ratio*
Stock Returns	1			
Price Earning	-0.2354	1		
Return on Equity	0.4706	-0.3229	1	
Price to Book Ratio	0.2805	0.0765	0.4470	1

Table 17

Variables	**r value**	**Interpretation**
Price Earning	-0.2354	Negative weak correlation
Return on Equity	0.4706	Positive moderate correlation
Price to Book Ratio	0.2805	Positive weak correlation

Table 18. Regression statistics

Multiple R	0.4902
R Square	**0.2403**
Adjusted R Square	0.0979
Standard Error	0.1624
Observations	20

Table 19. ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	0.1335	0.0445	1.6871	**0.2098**
Residual	16	0.4221	0.0264		
Total	19	0.5557			

Table 20. Regression

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-0.0462	0.0853	-0.5417	0.5955	-0.2271	0.1347	-0.2271	0.1347
Price Earning	-0.0006	0.0011	-0.5162	0.6128	-0.0029	0.0018	-0.0029	0.0018
Return on Equity	1.0342	0.7301	1.4164	0.1758	-0.5136	2.5820	-0.5136	2.5820
Price to Book Ratio	0.0407	0.0844	0.4821	0.6362	-0.1382	0.2195	-0.1382	0.2195

Summary Results - Saudi Arabia

Table 21. Correlation

	Stock Returns	*Price Earning*	*Return on Equity*	*Price to Book Ratio*
Stock Returns	1			
Price Earning	-0.1905	1		
Return on Equity	0.0234	-0.2160	1	
Price to Book Ratio	-0.2687	0.5324	-0.1268	1

Table 22

Variables	r value	Interpretation
Price Earning	-0.1905	Negative weak correlation
Return on Equity	0.0234	Positive weak correlation
Price to Book Ratio	-0.2687	Negative weak correlation

Table 23. Regression statistics

Multiple R	0.2753
R Square	**0.0758**
Adjusted R Square	-0.0975
Standard Error	0.1049
Observations	20

Table 24. ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	0.0144	0.0048	0.4372	**0.7294**
Residual	16	0.1761	0.0110		
Total	19	0.1905			

Table 25. Regression

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	**0.0457**	0.0791	0.5782	**0.5712**	-0.1220	0.2135	-0.1220	0.2135
Price Earning	**-0.0003**	0.0013	-0.2449	**0.8096**	-0.0030	0.0024	-0.0030	0.0024
Return on	**-0.0359**	0.4111	-0.0873	**0.9315**	-0.9074	0.8357	-0.9074	0.8357

Equity								
Price to Book Ratio	**-0.0351**	0.0427	-0.8234	**0.4224**	-0.1256	0.0553	-0.1256	0.0553

Summary Results - Dubai Financial Markets

Table 26. Correlation

	Stock Returns	*Price Earning*	*Return on Equity*	*Price to Book Ratio*
Stock Returns	1			
Price Earning	0.1901	1		
Return on Equity	0.2064	0.1549	1	
Price to Book Ratio	-0.0597	-0.2617	-0.4303	1

Table. 27

Variables	**r value**	**Interpretation**
Price Earning	0.1901	Positive weak correlation
Return on Equity	0.2064	Positive weak correlation
Price to Book Ratio	-0.0597	Negative weak correlation

Table 28. Regression statistics

Multiple R	0.2701
R Square	**0.0730**
Adjusted R Square	-0.1008
Standard Error	0.2080
Observations	20

Table 29. ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	0.0545	0.0182	0.4198	**0.7413**
Residual	16	0.6922	0.0433		
Total	19	0.7467			

Table 30. Regression

	Coefficients	*Standard Error*	*T Stat*	*P-Value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	**-0.0094**	0.1354	-0.0692	**0.9457**	-0.2963	0.2776	-0.2963	0.2776
Price Earning	**0.0021**	0.0029	0.7114	**0.4871**	-0.0041	0.0083	-0.0041	0.0083
Return on Equity	**0.0762**	0.0957	0.7964	**0.4375**	-0.1266	0.2790	-0.1266	0.2790
Price to Book Ratio	**0.0217**	0.0758	0.2864	**0.7782**	-0.1390	0.1824	-0.1390	0.1824

Summary Results - Abu Dhabi Stock Exchange

Table 31. Correlation

	Stock Returns	*Price Earning*	*Return on Equity*	*Price to Book Ratio*
Stock Returns	1			
Price Earning	-0.3597	1		
Return on Equity	0.5267	-0.2097	1	
Price to Book Ratio	0.3528	-0.0496	0.3618	1

Table 32

Variables	r value	Interpretation
Price Earning	-0.3597	Negative weak correlation
Return on Equity	0.5267	Positive moderate correlation
Price to Book Ratio	0.3528	Positive weak correlation

Table 33. Regression statistics

Multiple R	0.6126
R Square	**0.3753**
Adjusted R Square	0.2582
Standard Error	0.1261
Observations	20

Table 34. ANOVA

	df	***SS***	***MS***	***F***	***Significance F***
Regression	3	0.1528	0.0509	3.2040	0.0515
Residual	16	0.2544	0.0159		
Total	19	0.4072			

Table 35. Regression

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	**-0.0537**	0.0602	-0.8922	**0.3855**	-0.1814	0.0740	-0.1814	0.0740
Price Earning	**-0.0004**	0.0003	-1.3162	**0.2067**	-0.0010	0.0002	-0.0010	0.0002
Return on	**0.4223**	0.2284	1.8487	**0.0831**	-0.0620	0.9066	-0.0620	0.9066

Equity								
Price to Book Ratio	**0.0444**	0.0483	0.9184	**0.3720**	-0.0580	0.1467	-0.0580	0.1467

Summary Results - Cross Country Analysis

Table 36. Correlation

	Stock Returns	*Price Earning*	*Return on Equity*	*Price to Book Ratio*
Stock Returns	1			
Price Earning	-0.0169	1		
Return on Equity	0.1386	0.0399	1	
Price to Book Ratio	0.1631	0.2789	0.0696	1

Table 37

Variables	**r value**	**Interpretation**
Price Earning	-0.0169	Negative weak correlation
Return on Equity	0.1386	Positive weak correlation
Price to Book Ratio	0.1631	Positive weak correlation

Table 38. Regression statistics

Multiple R	0.2178
R Square	**0.0474**
Adjusted R Square	0.0422
Standard Error	0.3727
Observations	553

Table 39. ANOVA

	df	***SS***	***MS***	***F***	***Significance F***
Regression	3	3.7994	1.2665	9.1156	**0.0000**
Residual	549	76.2739	0.1389		
Total	552	80.0733			

Table 40. Regression

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	**0.0016**	0.0169	0.0941	**0.9250**	-0.0317	0.0349	-0.0317	0.0349
Price Earning	**0.0000**	0.0000	-1.6257	**0.1046**	0.0000	0.0000	0.0000	0.0000
Return On Equity	**0.1713**	0.0553	3.0970	**0.0021**	0.0626	0.2799	0.0626	0.2799
Price To Book Ratio	**0.0001**	0.0000	3.9977	**0.0001**	0.0000	0.0001	0.0000	0.0001