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Fundamental Analysis and Its Predictive Power in Forecasting Stock Returns: Evidence from Dow Jones Industrial Average (DJIA)

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Abstract

The aim of this paper will be achieved through analysis of data for the 8-year period from 2009 to 2016 for all 30 companies listed on the Dow Jones Industrial Average (DJIA). The analysis utilizes eight indicators aiming to provide information regarding four areas of a company's operations i.e profitability ratios: return on assets (ROA) and return on equity (ROE); liquidity ratios (Current Ratio); Leverage Ratio (Debt to Equity) and Market-based ratios earnings per share (EPS), dividend per share (DPS), price to book ratio (P/B), price-earnings ratio (P/E).

The results from our model indicate that fundamental analysis is weak given that results designate insignificant relationship between most of the explanatory variables and the stock returns.

Keywords: Stock Market, Market Indices, Fundamental Analysis, Financial Ratios

1. Introduction

The stock market has been around for centuries, in fact, the first idea of the stock market dates back to the 1400s in Amsterdam, Netherlands, where merchants would buy goods speculating that the price would eventually rise, enabling them to generate profits. Almost 400 years later the first stock exchange was founded. In 1896 Charles Dow and Edward Jones saw the need to create what is today known as the Dow Jones Industrial Average (DJIA) index, representing 12 companies which were listed on the New York Stock Exchange, all operating in the industrial sector, as at the time manufacturing companies were of a great importance for the U.S Economy. Later on in the 'roaring' 20s it was upgraded to 30 companies. Today, the 30 blue-chip companies with large capitalization represent almost every important sector of the economy except utilities and transportation (Shoven and Clemens, 2000). Although often labeled as a flawed indexes due to its price-weighting method (Shoven and Clemens, 2000), DJIA is of great importance to the U.S economy, enabling for the flow of funds from investors and granting them access to companies which operate in multiple sectors. Furthermore today, most mutual funds and economists use it as a benchmark when it comes to performance-reporting.

Specifically with the recent developments in the economy, the stock market has been booming, the latest liquidity injections have enabled many to bet in the stock market and since the crash in March 2020, the DJIA has recovered in less than a year. Nonetheless, investing in the stock market exposes one to a great risk if done without any previous knowledge or having no understanding of it. Poor investment decisions often lead to great financial losses as we have seen many times in the past, and many new investors often fail to consider the factors involved in stock price movements and returns. Generally speaking, decision making should not be done without incorporating any fundamental and technical analysis, especially in the constantly shifting stock market. Both analyses go hand in hand, although technical analysis is often second to fundamental, and it is mainly used by investors who do not possess the ability to produce their own expectations based on fundamental analysis (Menkhoff, 1997). Fundamentals are excellent in guiding investors to discover potential for growth and prospect in the long-run and find greatly undervalued companies in the short run. However, the main concept of both is the same "buy the securities when the stock prices of the specific securities are undervalued and sell when overvalued" (Muhammad and Ali, 2018, p.84).

1.1. Literature review

The first application of Fundamental Analysis in terms of predicting stock returns however was not until 1936 when Graham and Dodd analyzed the fundamentals of share valuation such as: assets, liabilities, expenses, earnings and management expertise (Graham and Dodd, 1936). Today, many researchers have studied the financial signals and drawn inferences, among which is the 'pioneer work' of Ou and Penman (1989) who discovered that fundamentals are not always reflected in prices concluding that through fundamental analysis investors can achieve abnormal returns as well as predict future earnings. Contrary to this, Abarbanell and Bushee (1996) found that the approach of Ou and Penman (1989) withholds a

significant number of explanatory variables, stating that some do not have any soundness as to why they are good signals in predicting future earnings, however they do not offer any appropriate financial signals. Moreover, Reinganum (1988) researched 222 companies that doubled their returns in a calendar year, finding that all share 9 common characteristics, among which is a high P/E ratio. To further inspect the predictive power of financial ratios, Muhammad and Ali (2018) used five fundamental signals and through multiple statistical models concluded that some of the variables have significant and positive relationship with stock returns in Pakistan. Contrary to this, Iqbal et. al (2018) performed F-SCORE fundamental analysis drawing evidence from non-financial firms on the Pakistani Stock Exchange concluding a positive yet insignificant relationship between signals and stock returns.

Dwiyanto and Hatta (2012) investigated the effects of companies' fundamental factors using evidence from the Indonesian Stock Exchange for the period of 2002 - 2006 concluding that Earnings Per Share (EPS) is positively related to stock prices on the Indonesian market. Likewise, Ebrahimi and Chadegani (2011) studied the companies listed on the Iranian stock market and found a direct relationship between Earnings Per Share (EPS) and stock returns, as well as a direct and significant relationship between current period dividend per share (DPS) and stock returns. Additionally, Twaijry (2006), who tested the relationship between dividends and earnings and the behavior of stock returns concluded that changes in dividend per share are the most powerful indicator in explaining stock returns and relative to the profits, company dividends affect prices of shares 15 times as much. Moreover, Aono and Iwaisako (2010) conclude that (P/E) ratio exerts quite stronger influence when predicting stock return on the U.S market relative to the Japanese stock market.

Fama and French (1992) concluded that book-to-market ratio is among the indicators with predictive ability when it comes to assessing stock returns. Additionally, Donelly (2014) who researched the relationship between book-to-market ratio, earnings expectations and valuation of “BTM ratio has an ability to predict earnings disappointments, at least in the sense that value stocks will have more earnings disappointments and that these disappointments are larger on average than those of growth stocks. They also show that the BTM ratio predicts how the market reacts to an earnings disappointment” (p.26), therefore concluding the association between Book-to-Market Ratio and returns.

However, not all findings show a significant and positive relationship between the financial signals and stock returns. Namely, Current Ratio (CR) and Return on Assets (ROA) have insignificant effect on the stock prices in Indonesia. Dwiyanto and Hatta (2012). Likewise Muhammad and Ali (2018) found negative relationship between Current Ratio (CR) and stock returns in Pakistan, additionally, Dwiyanto and Hatta (2012) also found that Debt to Equity (D/E) ratio, has a negative relationship with stock prices in Indonesia. Lastly, according to the findings of Ahsan (2012), Return on Equity has a significant impact on estimating future stock returns.

1.2. Hypotheses

Based on our literature review we have formed the following hypotheses in order to evaluate any relationships between stock returns and a set of variables.

Hypothesis 1: There is no significant relationship between profitability ratios (ROA and ROE) and stock returns

Hypothesis 2: There is no significant relationship between liquidity measured in (Current Ratio) and leverage ratio (Debt to Equity) and stock returns

Hypothesis 3: There is no significant relationship between market-based ratios (EPS, P/E, BTM and DPS) and stock returns

2. Method

This paper aims at exploring the predictive power of fundamental analysis in stock returns. The secondary data used in the paper is drawn from the 30 companies listed on DJIA for the period of 2009 - 2016. However, since the DOW revises its components from time to time, we continue to work and analyze the companies listed in 2009. Moreover, data from their financial statements will be extracted and analyzed via the eight fundamental signals which were discussed in the previous section. The goal of the signals is to evaluate the four main operational aspects of a company: profitability, liquidity, solvency and market performance. The latter will be achieved by calculating all of the ratios listed below as well as by performing a descriptive statistical analysis (central tendency) and correlational analysis (correlation and multiple regression) of the data using SPSS software.

As mentioned previously, "Fundamental Analysis is a process in which an investor studies accounting information, such as financial signals which in return provide data related to the performance of a company" (Tanevski, 2021). Given this, a possibility exists that a fundamental analyst considers signals which may slightly differentiate. Therefore, in the Appendix we list and define the ratios which will be used in this paper as stated in the book by Reimer (2009, p.75, p.289, p.338, p.388, p.389)

Econometric Model

Basic regression equation:

$$Y = \beta 0 + \beta 1X1 + \varepsilon, \text{ which can be rewritten as follows:}$$

$$SR = \beta 0 + \beta 1*CR + \beta 2*ROA + \beta 3*ROE + \beta 4*DPS + \beta 5*BTM + \beta 6*EPS + \beta 7*P/E + \beta 8*D/E + \varepsilon, \text{ where,}$$

$$SR,i,t = [(P,i,t - Pi,t-1) + Div1/ Pi,t-1] x100\%,$$

SR - stock return, the dependent variable in this model defined as the percentage change due to increase/decrease in stock value (Ending Period Stock Price - Beginning Period Stock Price + Dividends) divided by the Beginning Period Stock Price

***β*0** - (intercept), the stock return when all given variables are equal to 0 - which in this model

would have no practical/economic meaning, as a company cannot have no turnover, assets or any equity on their books.

β**1** - (b1 or beta 1), the change in the independent variable, for a unit change in the variable

ε - 'standard error', other factors omitted and therefore not explained by the regression equation

We estimate the econometric model with ordinary least squares by pooling cross sections.

CR - current ratio

ROA - return on assets

ROE - return on equity

DPS - dividend per share

BTM - book to market

EPS - earnings per share

P/E - price to earnings

D/E - debt to equity

P0 - Initial Stock Price

P1 - Ending Stock Price

3. Results

3.1 Descriptive Statistics

Explanatory variables

Table 1. Descriptive Statistics

		SR	CR	ROA	ROE	DE	EPS	PE	BTM	DPS
N	Valid	240	240	240	240	240	240	240	240	240
	Missing	0	0	0	0	0	0	0	0	0
Mean		,1511	1,3400	,0716	,2441	3,4417	3,9230	14,6872	,4751	1,6306
Median		,1250	1,2800	,0700	,1900	1,5800	3,4100	15,2900	,3400	1,6550
Std. Deviation		,25736	,76413	,05284	,28515	7,50102	3,19200	84,01150	,60112	1,06741
Range		1,98	3,49	,35	2,83	116,69	21,47	1472,23	7,20	5,50
Minimum		-,59	,00	-,11	-,41	-15,07	-6,41	-808,78	-,15	,00
Maximum		1,29	3,49	,24	2,42	101,62	15,06	663,45	7,05	5,50
Percentiles	25	,0100	,9225	,0300	,1100	,9725	1,6450	12,0025	,2325	,8050
	50	,1250	1,2800	,0700	,1900	1,5800	3,4100	15,2900	,3400	1,6550
	75	,2600	1,8100	,1000	,2700	3,8900	5,4725	20,2425	,5675	2,1975

As evident from Table 1, the average short term liquidity is 1,34, however it is important to note that the due to the inclusion of financial entities in our sample minimum current ratio of 0 is present, ergo it can greatly influence the average and is not by any means a true representation of the liquidity of financial institutions. Therefore we have decided to include the median which is not affected by extreme values and it provides a more transparent measure of the short-term liquidity. The results indicate that the median current ratio is 1,28, or 0.28 above the minimum acceptable current ratio of 1. On the other hand, Cisco Systems enjoys a favorable short-term liquidity with a current ratio of 3,49, and hence it can be said that it has solid operations since elevated liquidity is an indicator of such. Last but not least, the standard deviation of 0.76 indicates that 68% of the observed current ratios are clustered between 0.58 and 2,1 (one standard deviation away from the mean). Regarding profitability, on average, companies were able to generate 7.6% return, on assets and 24.41% on equity, respectively. With the most efficient utilization of assets being 24%, yet ranging to -11%.

ROE on the other hand has even higher variation with values ranging from -41% to 242%, thus it should be noted that as in the case of current ratio, the median return on equity would be a more reliable indicator. As for the level of indebtedness, from Table 1, it is evident that only 25% of our observations had a debt to equity ratio lower than or equal to 0.975, however, in light of the data published in the yearly reports it must be noted that many companies were in a continuous share repurchase program which considerably decreased their equity or brought about a negative stockholder's equity (see McDonald's Annual Report 2016), which may interpret the unfavorable indebtedness present in many of our observations.

In the case of the market based explanatory variables, extremely high range in values is noted in P/E ratio as evident per the maximum and minimum values (i.e. lowest and highest values in the dataset) of -808.78 and 663.45 respectively, with an average P/E multiple of 14.68 and a high standard deviation of 84.01 which suggests that 68% of the companies had a PE multiple in the range of -69.33 and 98.69, consequently it is best that investors use P/E multiples in conjunction with other metrics when justifying the financial health of companies. Contrarily, Book to Market does not exhibit such a high deviation from its mean of 0.475 which implies that on average companies are trading below their value, with only 1 out 30 companies trading at 7 times its book value. As for the earnings per share and dividend per share, in both cases substantial range of values was noted, -6.41 to 15,06 and 0 to 5.50 for earnings per share and dividend per share respectively, where the average dividend per share was $1,36 while the average earnings per share was $3.92, however we must consider that earnings per share can be manipulated by share buybacks which was ongoing many companies during the period of 2009-2016, and ergo potentially inflated.

3.2 Correlation Matrix

The correlation matrix (see Table 2) indicates that current ratio (findings are consistent with the available literature, see: (Muhammad and Ali (2018), exhibits negative yet insignificant correlation with the dependent variable stock return, where significance is defined as at a level of 0.05. On the other hand, Return on Assets, Return on Equity exhibit positive yet insignificant correlation with stock returns. Thence, the only variable in this model that demonstrates a significant yet negative correlation with the dependent variable is Price to Earnings ratio, leading to a conclusion that as Price to Earnings ratio increases the Stock Returns decrease and vice versa.

Table 2. Correlation Matrix

		SR	CR	ROA	ROE	DE	EPS	PE	BTM	DPS
SR	Pearson Correlation	1	-,005	,027	,003	-,019	-,048	-,204**	-,160*	-,085
	Sig. (2-tailed)		,935	,674	,968	,772	,463	,001	,013	,187
CR	Pearson Correlation	-,005	1	,459**	,074	-,206**	-,134*	-,024	-,333**	,012
	Sig. (2-tailed)	,935		,000	,251	,001	,039	,711	,000	,855
ROA	Pearson Correlation	,027	,459**	1	,383**	-,202**	,422**	,035	-,365**	,289**
	Sig. (2-tailed)	,674	,000		,000	,002	,000	,585	,000	,000
ROE	Pearson Correlation	,003	,074	,383**	1	,390**	,411**	,023	-,317**	,389**
	Sig. (2-tailed)	,968	,251	,000		,000	,000	,726	,000	,000
DE	Pearson Correlation	-,019	-,206**	-,202**	,390**	1	,105	,009	,047	,143*
	Sig. (2-tailed)	,772	,001	,002	,000		,106	,889	,464	,027
EPS	Pearson Correlation	-,048	-,134*	,422**	,411**	,105	1	,018	-,210**	,662**
	Sig. (2-tailed)	,463	,039	,000	,000	,106		,778	,001	,000
PE	Pearson Correlation	-,204**	-,024	,035	,023	,009	,018	1	,323**	-,179**
	Sig. (2-tailed)	,001	,711	,585	,726	,889	,778		,000	,005
BTM	Pearson Correlation	-,160*	-,333**	-,365**	-,317**	,047	-,210**	,323**	1	-,311**
	Sig. (2-tailed)	,013	,000	,000	,000	,464	,001	,000		,000
DPS	Pearson Correlation	-,085	,012	,289**	,389**	,143*	,662**	-,179**	-,311**	1
	Sig. (2-tailed)	,187	,855	,000	,000	,027	,000	,005	,000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

4. Testing Assumptions

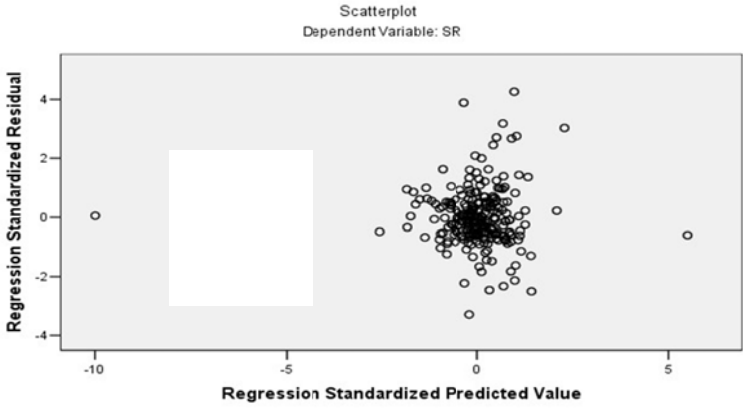

Figure 1. Scatterplot

Multiple regression requires that certain assumptions such as normality, linearity, homoscedasticity, multicollinearity and autocorrelation are tested. If any of the aforementioned the assumptions are violated, interpretation and inference may not be reliable or valid. Given this we have decided to include 30 observations per parameter or a total of 240 observations, which is above the minimum requirement as per the findings in literature (see Schmidt. et. al, 2014).

In regards to the linearity assumption, given that a linear relationship between the dependent and explanatory variables must exist. The results from the scatter plot are shown in (Figure 1, Scatterplot). As evident from our scatterplot, no linear relationship exists, likewise on the Y axis few observations are above the upper limit (i.e., +3). To evaluate whether the deviations

are based on realistically explainable values or errors we proceed to test for Cook's Distance, as data with large deviations can significantly impair the statistical analysis and thus shift the line of best fit, reducing our model's validity. Per Statistics Solutions (2019), Cook's Distance <1 is the maximum acceptable value, and anything above may prevent proper analysis. Our testing indicates that no values greater than 0.635 are observed in our model, thus we can.

The third important assumption is the one of multivariate normality, in all variables. The results in Figure 2, indicate that the assumption of multivariate normality is met. In our model Variance Inflation Factor (VIF) is applied which measures the level of influence on the behavior of an independent variable by interacting with another independent variable. The literature suggests that "VIFs above 10 or tolerances below 0.1 are seen as a cause of concern)" (Landau and Everitt, 2004, p.116).

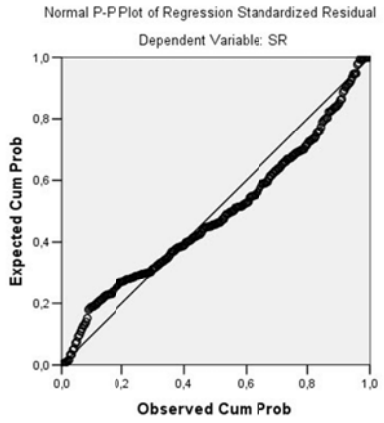

Figure 2. Testing the normal distribution of the error terms.

In (Table 3 Regression Output and Collinearity Statistics) low values for multicollinearity are present, a maximum value of 2.47 and a minimum value of 1.44 for our model, we ascertain that the model is free from multicollinearity. Aside from the Variance Inflation Factor, we performed a Pearson's correlation in order to further prove no existence of multicollinearity. A general rule of thumb for a maximum correlation coefficient of 0.8 is allowed between explanatory variables. As evident from (Table 2, Pearson's Correlation), a correlation of 0.662 is evident between Dividend Per Share and Earnings Per Share. From the latter, it is sufficient to conclude that multicollinearity is not present in our model.

Table 3. Regression output and Collinearity statistics

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	,281	,056		5,060	,000		
	CR	-,031	,027	-,091	-1,120	,264	,604	1,655
	ROA	,352	,452	,072	,779	,437	,461	2,168
	ROE	,004	,076	,004	,049	,961	,553	1,807
	DE	,000	,003	,012	,163	,871	,690	1,449
	EPS	,001	,008	,008	,077	,939	,404	2,473
	PE	-,001	,000	-,193	-2,775	,006	,821	1,217
	BTM	-,069	,033	-,160	-2,064	,040	,657	1,521
	DPS	-,048	,022	-,198	-2,200	,029	,490	2,041

In addition to multicollinearity, we must verify for autocorrelation, which refers to the level of correlation between errors. For the proposed model, the autocorrelation assumption was tested with the Durbin-Watson statistic. The results from (Table 4, Model Summary) show a Durbin-Watson statistic of 1,770. Durbin-Watson produces a statistic in the range of 0 - 4, where values close to 2 suggest less autocorrelation is present. And finally, we checked the assumption of homoscedasticity. From Figure 3 it is evident that the variables are equally scattered across the regression line. Hence, the assumption is fulfilled.

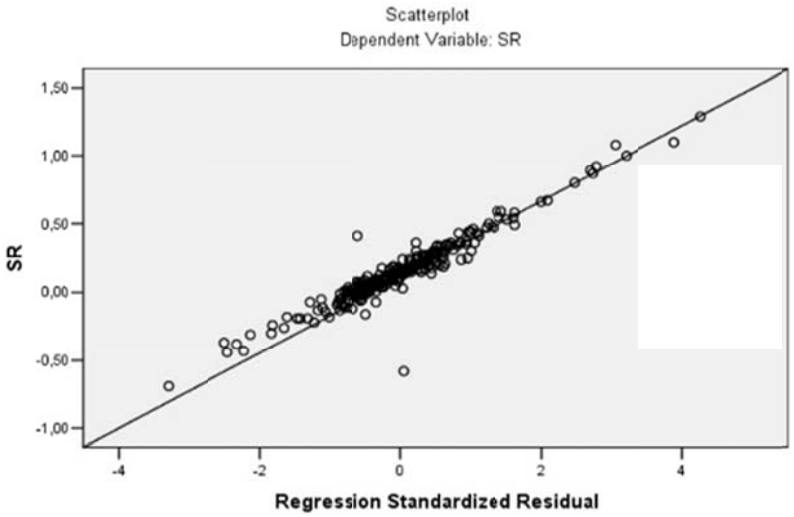

Figure 3. Scatterplot for the homoscedasticity assumption

5. Regression Output

Results related to our statistical sample can be found in Table 3 and Table 4.

Given the data in Table 4, we have sufficient evidence to reject the null hypothesis, (F (8.231) = 2.639, $p<0,05$) and ascertain that at least one of the included explanatory variables is associated with stock returns. The R2 indicates that 8,4% of the variability in stock returns is explained by our model, which is expected given that macroeconomic, behavioral, political

factors are omitted in our regression model.

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,289[a]	,084	,052	,25057	,084	2,639	8	231	,009	1,770

a. Predictors: (Constant), EPS, PE, DE, CR, BTM, ROE, DPS, ROA

b. Dependent Variable: Stock Return (SR)

Furthermore, our results from (Table 4, Regression Output and Collinearity Statistics, p.10) clearly show that certain variables are significantly related to stock returns.

According to the data presented in (Table 4, Regression Output and Collinearity Statistics, p.10) on average for each increase in the short-term liquidity (measured by Current Ratio) by a percentage point, the stock returns decrease by 0,031 percentage points. Furthermore, Return on Assets and Return on Equity, show effective utilization of assets and capital with average increase in stock returns of 0,352 percentage points and 0,004 percentage points for each 1 percentage point increase in profitability respectively. While a percentage point change in the level of indebtedness suggests no effect on stock returns which is in line with the static trade-off theory indicating that financial distress is felt by investors only after a certain point, suggesting that if companies limit leverage below that point, negative effects on stock prices are not likely to be experienced. As for the security performance valuation indicators, a positive association is noted between earnings per share and stock returns, implicating that 1 dollar increase in earnings per share, on average increases stock returns by 0,001 percentage points. Contrarily, companies that increase their dividend payouts on average see a reduction in their stock returns, likewise, companies that noted a percentage point increase in their book to market value or a dollar increase in price to earnings ratio saw a reduction in their stock returns, provided all other variables remain unchanged.

Table 4 further indicates positive yet insignificant association between Return on Assets, Return on Equity and Stock Returns (Sig>5%), given this lack of significance, we have no evidence to reject H0 hence we state that there is insignificant association between profitability ratios and Stock Return. Furthermore, the model suggests no statistical significance between short term liquidity as measured in Current Ratio and Stock Returns. Our finding is in conformity with the existing analyses (Muhammad and Ali, 2018; Dwiyanto and Hatta, 2012). As for the level of company indebtedness, no statistically significant association exists as well, (Sig>5%), on the basis of our evidence we reject H2 and state that no statistically significant relationship exists between short-term liquidity expressed in current ratio, leverage as measured in Debt to Equity and Stock returns. On the other hand, statistical significance is noted between Price to Earnings ratio, Dividend Per Share, Book to Market and Stock Returns, furthermore, our model exhibits insignificant correlation between Earnings per Share and Stock Returns which is contrary to the findings and research of (Muhammad and Ali, 2018 ; Dwiyanto and Hatta, 2012 and Ebrahimi and Chadegani, 2011), given the case we have solid evidence to reject the null hypothesis and ergo accept H3.

5.1 Robustness testing

In addition to the initial model which we tested in the previous section, we believe it is important to demonstrate the robustness of the model by replacing part of the variables and the period of analysis.

For our first robustness test we have performed a multiple regression analysis which contains different short-term liquidity and profitability measure where short-term liquidity is measured in Quick Ratio (QR), while profitability with Return on Capital Employed (ROCE). According to our findings no collinearity is present in the model. The model did not improve relative to our initial regression model, even though it is significant overall ($F = 3.051$, $p<0,05$), R2 remained unchanged (8.3%). Regarding the regression coefficient, the substitution of the new liquidity and profitability variables did not seem improve the model. Furthermore, Quick Ratio and ROCE both showed insignificance (Sig > 5%), as for the other variables no notable changes were present as.

The second robustness test analyzed the period from 2010 to 2016 with a goal to possibly exclude the effects of the financial crisis of 2008. We first tested for multicollinearity, and given no VIF factor greater than 2,5, we concluded that multicollinearity is not present in the model. Further we proceeded with regression testing. As for the overall significance of the model, we can confirm that given ($F = 2.286$, $p<0.05$), with an R2 of 8.3%, yet the only notable change is that relative to our initial model where 3 variables exhibited significance, now only one (Price to Earnings) ratio is significant. Yet P/E still exhibits only 0.001 percentage point of stock returns change for a dollar change in P/E which is quite small. In regards to the other variables no notable changes were present. Hence, we can confirm the robustness of the model

6. Conclusion

This paper aims to assess whether historical financial information can be used to predict future share returns by means of fundamental analysis of the Dow Jones Industrial Index. By testing an eligible sample with 240 observations based on 30 companies listed on the Dow Jones Industrial Average through the utilization of eight indicators which aim to provide information regarding multiple areas of a company's operations i.e. profitability ratios: return on assets (ROA) and return on equity (ROE); liquidity ratios (Current Ratio); Leverage Ratio (Debt to Equity) and Market-based ratios earnings per share (EPS), dividend per share (DPS), price to book ratio (P/B), price-earnings ratio (P/E).

We study the relations between stock returns and a set of variables of companies operating in both financial and non-financial sectors and thus explore what, if any, implications do the aforementioned financial ratios used in this model have on stock returns. We hope that this paper is of further use to financial analysts, and research fellows.

We conclude that there is an insignificant association between profitability ratio and short-term liquidity ratio Return on Assets, Current Ratio and Stock Returns respectively, findings are in coherence with previous research done by Dwiyanto and Hatta (2012) and Muhammad and Ali (2018). Furthermore, unlike previous research (Muhammad and Ali, 2018; Dwiyanto and

Hatta, 2012 and Ebrahimi and Chadegani, 2011), the model fails to show any significant relationship between Earnings per Share and Stock Returns which came to our surprise. As for the level of company indebtedness, it is expected to be negatively correlated with stock returns, however the static trade-off theory indicates that financial distress is felt by investors only after a certain point, thus suggesting that if companies limit leverage below that point, negative effects on stock prices are not likely to be experienced, which explains the positive correlation between leverage ratio and stock returns. Furthermore, we concluded that security-based indicators such as dividend per share, book to market and earnings per share are significantly related to stock returns. Given this we ascertained that companies which increase their dividend payouts on average see a reduction in their stock returns, likewise, companies that noted a point increase in their book to market value or price to earnings ratio saw a reduction in their stock returns.

Overall, based on our model we conclude that fundamental analysis is weak in identifying relationships as it only accounts for approximately 8.4% of variability of stock returns.

We must also point out that this paper has its limitations. Namely, the variables used in this model are subject to change, further substituting them may improve this model and therefore amplify the quality of the findings and conclusions drawn regarding fundamental analysis on stock returns.

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Appendix A

Financial indicators used

Current Ratio	$\frac{Current\ Assets}{Current\ Liabilities}$
Return on Assets	$\frac{Net\ Income}{Average\ Total\ Assets}$
Debt to Equity	$\frac{Total\ Liabilities}{Total\ Shareholder'sEquity}$
Earnings Per Share	$\frac{Net\ Income\ -\ Preferred\ Dividends}{Weighted\ Average\ Number\ of\ Common\ Shares\ Outstanding}$
Return on Equity	$\frac{Net\ Income - Preferred\ Dividends}{Average\ Common\ Shareholder'sEquity}$
Price-Earnings (P/E) ratio	$\frac{Market\ Price\ Per\ Share}{Earnings\ Per\ Share}$
Book to Market Ratio (BTM)	$\frac{Total\ Assets - Total\ Liabilities}{Market\ Capitalization}$
Dividend per share (DPS)	$\frac{Total\ Dividends}{Weighted\ Average\ Number\ of\ Common\ Shares\ Outstanding}$