# Financial Statement Analysis to Predict Stock Returns of Listed Consumer Goods Firms in Nigeria

**Clement C. M. Ajekwe, Adzor Ibiamke**[*]

Department of Accounting, Benue State University, Makurdi
*Corresponding author: nickibiamke@yahoo.com

**Abstract**  This study examines whether the application of an accounting fundamental strategy to select stocks of a portfolio can systematically yield significant and positive excess market buy-and-hold returns after one year of portfolio formation. Using financial statement information and the "direct approach", multiple logit models were developed to predict the year-ahead returns. The coefficient estimates of these models were used to generate Pr measures which were used to formulate investment strategies. Specifically, the investment strategy involved buying stocks with high Pr values and selling stocks with low Pr values was examined. The study found that eleven accounting ratios predict stock returns accurately in 76.6% of the cases. This robust ability to accurately predict stock returns is evidence that conducting fundamental analysis and taking investment positions on the basis of Pr values can be a fruitful strategy for investors in Nigeria. Thus, the study recommends that investors evaluate their investments in equity for 12 months before making a buy or sell decision using a Pr strategy to avoid loses or missing opportunities.

*Keywords: financial statement analysis, future returns, investment strategy, Logit regression, Nigeria*

**Cite This Article:** Clement C. M. Ajekwe, and Adzor Ibiamke, "Financial Statement Analysis to Predict Stock Returns of Listed Consumer Goods Firms in Nigeria." *Journal of Finance and Accounting*, vol. 6, no. 1 (2018): 27-33. doi: 10.12691/jfa-6-1-4.

## 1. Introduction

The Efficient Market Hypothesis (EMH) assumes that a large number of rational, profit-seeking investors react quickly to the release of new information. As new information about stocks is released, the market re-assesses the intrinsic value of stocks and adjusts the price accordingly. Therefore, at any point in time a stock price is an unbiased reflection of all available information and represents the best estimate of the stock's true value [1]. Thus, nobody can detect mispriced securities and consistently beat the market for a long time by analyzing published financial statements. However, for emerging markets, the EMH does not always consistently hold [2,3,4,5]. Investors do not completely incorporate the information disclosed in the fundamental accounting measures [6]. Several explanations are advanced for this finding: a) investors do not always behave rationally, b) investors do not weigh in with the same magnitude of a gain versus a loss, c) the number of speculative investors is increasing, and d) the quality of reported financial statements in the last decade is decreasing. If these arguments hold for emerging markets, then it is likely that prices do not efficiently incorporate all available information into stock prices in a timely and accurate manner; accounting fundamental analysis should be the more valuable and relevant tool to use to identify temporary mispriced securities. Fundamental analysis, which dovetails with valuation theory, uses information in current and historical financial statements along with industry and macroeconomic information to estimate a firm's intrinsic value [7]. Valuation theory suggests that the value of the firm is the present value of future free cash flows that the firm is expected to generate. In order to estimate these cash flows, it is necessary to estimate future earnings. To estimate future earnings, one must examine present and past financial statements, which form the components from which earnings are calculated. It is assumed that earnings are, with time, converted into free cash flow from which investors can be paid dividends.

However, in Nigeria, an emerging market, there is little evidence of the use of fundamental analysis to better understand financial markets. The scarcity of research on this topic in Nigeria motivated the authors to examine this phenomenon in the third most important African markets: the Nigerian Stock Exchange. This paper contributes to a demonstration that an analysis of financial statements could potentially be used by investors in Nigeria. Valuation theory posits that accounting earnings are converted over time into free cash flow to investors, creditors and the firm, which constitute the main components for estimating the intrinsic value of the firm, as reflected in the stock price. Analysis of financial statements improves understanding of how efficiently and effectively a firm generates earnings over time, as well as its potential to grow and convert these earnings into free

cash flows. However, the way outcomes of financial analysis can be used and how this is related to future earnings and future stock returns in Nigeria is still not completely understood. Besides the contribution to the existing literature on capital markets in Nigeria, the findings of this paper can help investors not only to identify possible abnormal returns to an investment strategy, but also to increase the expected utility by using accounting data to construct hedge portfolios. As such, an optimal balance between expected return and market and country risk can be achieved

This study assesses the ability of financial statement ratios to predict stocks that would earn abnormal returns across a number of time intervals up to one-year-ahead. The predictions so generated were then used to rank and assign companies to five portfolios: the top two stocks are assigned to a long position and the bottom two portfolios were assigned to a short position. From the analyses, an investment strategy was proposed.

The remainder of the paper proceeds as follows: the second section provides a brief review of the relevant literature followed by methodology in the third section. The fourth section presents the results relating to the returns generated by the investment strategy. The last section offers the summary and conclusion.

## 2. Review of Relevant Literature

Ou and Penman [8] hypothesised that current years' financial statements contain reliable information that can be used to predict future years' earnings of a company which in turn, drive future stock prices and stock returns. Ou and Penman [8] selected 68 accounting variables and modelled their relationships in year t on the one hand with the increase of earnings realized (indicated by a 1) or the decrease of earnings realized (indicated by a 0) in the following year (t+1). Through univariate analyses and stepwise logistic regressions, the authors developed a statistical model that could be used to predict an increase or decrease in earnings (profits) of a forthcoming new fiscal year (e.g. year t+2) for each company. This probability was called "Pr": "the estimated probability of an earnings increase in the subsequent year that is indicated jointly by descriptors in the financial statements and the logit model" [8]. Ou and Penman [8] sorted the companies based on their predicted Pr measure. It is assumed that investors buy the companies with a high Pr of increase in earnings and sell the companies with a high probability of a decrease in earnings. Based on this principle, the authors classified stocks into those with high (Pr ≥0.6) probability of an increase of earnings and those with high (Pr ≤ 0.4) probability of a decrease in earnings within the next three months after the fiscal year end. They go long on stocks with the highest probability of an increase in profits and short on companies with the lowest probability of an increase in profits. In other words, they go on an investment strategy that involves buying stocks with high Pr values and selling stocks with low Pr values. This buy-and-hold investment strategy yielded a cumulative return of 16.84 % over a 24-month holding period for the period of 1973-1983.The biggest part of the hedge return originated from stocks bought with the

intention to hold for a short period (the short position). Long portfolios (intended to be held for a long period) are characterized by a significantly higher debt ratio and consequently more risky compared to short portfolios. Arising from this, they conclude that information published in financial statements does indeed make possible the prediction of future earnings and by extension, excess returns.

Other studies reported similar findings as Ou and Penman in and outside the USA including, in the UK [9], [10], in Finland [11], in New Zealand [12] and in Mexico [13]. Setiono and Strong [9] employed both the indirect and direct approaches in the UK market and showed that a UK investor could earn a significant excess return of 17.38% for a 24-month holding period using the Ou and Penman's [8] indirect method strategy but an insignificant return using the direct approach. Charitou and Panagiotides [10] empirically examined whether fundamental analysis in the UK identifies equity values not reflected in stock prices and thus predicts excess returns. Similar to Ou and Penman [8], the fundamental analysis undertaken combined a large set of financial statement information into one summary measure (i.e., Pr.) which indicates the direction of one-year-ahead earnings changes. The results of the study indicated that an earnings-based trading strategy earned higher excess returns than a cash flow-based trading strategy. Goslin, Chai and Gunasekarage [12] examined whether financial statement information can be used to implement an investment strategy in order to earn abnormal returns. Using published financial statement information, the authors developed multiple logit models that predict either the year-ahead earnings changes (earnings-based approach) or the direction of stock returns (returns-based approach). The coefficient estimates of these models were used to generate Pr measures which are used to formulate investment strategies involving buying stocks with high Pr values and selling stocks with low Pr values. It was found that both approaches generate positive returns for holding periods between six to eighteen months. However, when the influence of stock characteristics was analysed, only the Pr measures generated by the direct method demonstrated a significant influence on the stock returns. Dosamantes and Alberto [13] examined whether the application of an accounting fundamental strategy to select stocks of a portfolio can systematically yield significant and positive excess market buy-and-hold returns after one and two years of portfolio formation on the Mexican Stock Exchange (BMV). Using quarterly financial and market data from 196 BMV stocks from 1991 to 2011, it was shown that after controlling for earnings, book-to-market ratio and firm size, the proposed fundamental strategy provided information of value relevant to investors. The relationship between the accounting fundamental signals proposed and the buy-and-hold market future return (one-year and two-year returns) were significant and positive for the 1991-2011 periods. Portfolios formed with high scores of these signals showed an average of 1.62% market excess annual return between 1991 and 2011, and about 9% between 1997 and 2011. The overriding assumption of these and subsequent studies is that markets are not efficient and that accounting fundamentals are indeed value relevant with regard to abnormal stock return predictions. On the other hand, Caneghan and Campenhout [14] reported that financial statement analysis failed to

predict any abnormal returns systematically during the study period in the Belgian stock market.

Holthausen and Larcker [15] proposed an alternative approach; rather than filter the information through an earnings-based change prediction model as in Ou and Penman [8], adopted the returns-based approach and correlated financial statement data directly with abnormal returns. The authors report that their "overall results support the contention of Ou and Penman that financial statement items can be combined into one summary measure to yield insight into the subsequent movement of stock prices" [15]. Upon comparing the returns of their strategy and that of Ou and Penman using data from a new time period Holthausen and Larcker [15] found that 1) their own returns prediction model outperformed Ou and Penman's earnings prediction model, and 2) Ou and Penman's trading strategy did not predict stock returns very well after 1983, implying therefore that their strategy may have been specific for the time period examined. The investment strategies from the Holthausen and Larcker's [15] direct approach yielded annual excess returns that were smaller than those documented by Ou and Penman's [8] indirect approach, nevertheless, they were significantly different from zero. For a 12-month holding period, their strategy generated an excess return that ranged between 4.26 per cent and 7.97 per cent depending on whether the excess return was based on market-risk (beta) or size-effects (i.e. the smaller the market value of equity, the larger the expected rate of return on a stock, other things being equal). However, when they replicated the Ou and Penman [8] "indirect" approach, they found that an earnings-based strategy for a 24-month holding period return was much lower (between 2.23 per cent and 3.74 per cent) than that reported by Ou and Penman [8].

Greig [16] replicated Ou and Penman [8] and found similar results (i.e., a positive association between the Pr measure and subsequent stock returns). However, when Greig [16] regressed the monthly returns for the Pr hedge portfolio against the market risk premium, he found that at the portfolio level, the long position (high Pr firms) was significantly riskier than the short position (low Pr firms), even after controlling for size-effects. Greig [16] concluded that the Ou and Penman [8] results are a manifestation of the size effect rather than new evidence of market inefficiency. Greig's [16] conclusions suggest that controlling for size-effect or market-risk effect alone is not adequate; rather the control should be for both simultaneously; - a view supported by Ball [17] who strongly advocates that "size be used in addition to estimated beta as a control for expected returns."

Abarbanell and Bushee [6] examined whether the application of fundamental analysis can yield significant abnormal returns using a sample of firms on NYSE. They used a collection of signals that reflect traditional rules of fundamental analysis related to contemporaneous changes in selected accounting ratios and formed portfolios that earned on average abnormal returns of 13.2% over a 12- month cumulative period; providing evidence of the fundamental signals' future returns being associated with future earnings. However, Abarbanell and Bushee [6] identify three important issues with the use of excessive data in the Ou and Penman's [8] indirect approach: (i) Ou and Penman [8] did not attempt *a priori* to identify conceptual arguments for studying any of their 68 accounting variables. (ii) the Ou and Penman [8] approach retains a large number of accounting variables, many of which fail to inspire any obvious business-economic logic as to why they would be good predictors of the change in one-year-ahead earnings and (iii) the set of accounting predictors change from one short estimation period to the next, making it both difficult to identify the business-economic forces reflected in these variables and failure to exploit a consistent fundamentals-based investment strategy across time. Also, Piotroski [18] considered the use of complex methodologies and a vast amount of historical accounting information to make the necessary predictions to be serious shortcomings of the Pr measure.

It is noted that most of these researches on accounting fundamental analysis as demonstrated by the literature review in the capital markets is the use of archival data and econometric models based on multiple regression models; sometimes this has been complemented with time-series analysis for forecasting. The main independent variables of these models have been accounting ratios, usually based on percentage changes from one period to another. The main dependent variables of these models have been contemporary earnings and returns, future earnings and future returns, and analyst forecasting of returns. The main theoretical perspectives of the literature reviewed have been valuation theory and market efficient hypothesis.

## 3. Methodology

There are two approaches to implementing an investment strategy in order to earn abnormal returns: One approach predicts year-ahead earnings per share (EPS) changes (earnings-based approach) and then uses such changes to assign stocks into long and short positions. The other approach uses financial information to predict year-ahead stock returns (returns-based approach) and then assigns stocks into long and short positions. The earnings-based approach is known as the "indirect method"; while the returns-based approach is known as the "direct method". Holthausen and Larcker [15] and [12] use both methods in their studies; in both studies, the direct method predicted future stock returns better than the indirect method. In the case of [12], when the influence of stock characteristics was analysed, only the Pr measures generated by the direct method demonstrated a significant influence on the stock returns. Considering the criticisms of the indirect method and the robustness of the direct method highlighted above, this study adopts the direct method to predict the direction of stock returns one year ahead.

The study employed a sample of 15 out of 28 consumer goods firms listed on the Nigerian Stock Exchange (NSE). The procedure for arriving at the sample firms is stated in Table 1.

Data in this study is obtained from the companies' annual reports and daily stock prices from the Nigerian Stock Exchange. In choosing the relevant accounting ratios for analysis, the study was guided by the motto of 'let the data speak' [12] instead of making a conscious effort to select the ratios that were used in the study. On the basis of "let the data speak" philosophy, 33 accounting ratios for the ten-year period (2005 – 2014) were employed to build multiple logit models that would predict the direction of future returns.

**Table 1. Sample Size and the Sampling Procedure**

| | |
|---|---|
| Population of all listed consumer goods firms in Nigeria | 28 |
| The following firms are excluded from the sample | |
| Firms whose share price is unchanged for more than 12-months | (6) |
| Firms without data for at least five consecutive years | (8) |
| A company without a complete set of accounts in the annual reports | (1) |
| Sample size | 15 |

The procedure followed in the analysis is highlighted below:

i. Calculate the buy and hold cumulative raw return for each company in every year from 2005 to 2014 based on the following equation
ii. Use a buy and hold cumulative raw return to create a binary variable; this variable takes the value of '1' if equity return is positive and '0' if it is negative. This variable acts as the dependent variable in the logit model.
iii. Estimate univariate logit models on pooled data using each of the 33 accounting ratios as the sole explanatory variable and identify descriptors whose slope coefficients are significant at the 10 % level
iv. Estimate a multiple logit model using the variables that were found to be significant in the previous step (ii). This was done in a step-by-step process by dropping insignificant explanatory variables until the final return prediction model was developed.

The coefficient estimates of these logit models together with the relevant accounting ratios are used to generate $P_r$ values for each company in each year for the ten-year period from 2005 to 2014 as follows:

$$Pr. = \frac{1}{1 + e^{-(\alpha + \beta_1 X_{1,t} + \beta_2 X_{2,t} + \dots + \beta_j X_{j,t})}} \qquad (1)$$

Where

$X_{1,t}$ to $X_{j,t}$ - The accounting ratios used in the logit model are independent variables calculated for firm i at the end of year t. $\beta_1$ to $\beta_j$ -The coefficients generated by the logit model.

The Pr values were used to rank firms from the lowest to the highest; firms were then assigned to one of five equally-sized portfolios in each year. A "long position" was taken on firms in the top two portfolio investments and a "short position" was taken on the bottom two portfolio investments. In the next stage, the return performances of these long and short position investments are examined for a 3-month, 6-month and 12-month holding periods. The following formula was used to generate market-adjusted buy-and-hold returns:

$$\text{Stock Return} = \frac{Pt - (Pt - 1)}{Pt - 1} X \, 100 \qquad (2)$$

Where,
$P_t$= Price at the $_t$ year
$P_{t-1}$= Price at the $_{t-1}$ year.

## 4. Analysis and Result

Table 2 reports descriptive statistics about the ratios employed in the study based on the sample's firm-year observations (N = 111).

**Table 2. Descriptive Statistics**

| N = 111 Observations | | | | |
|---|---|---|---|---|
| | Minimum | Maximum | Mean | Std. Deviation |
| Cumulative Returns | -112.740 | 103.060 | 11.748 | 42.355 |
| Current Ratio | .000 | 3.181 | 1.219 | .550 |
| Quick Ratio | -2.065 | 1.979 | .682 | .507 |
| Cash Ratio | .001 | 1.980 | .279 | .327 |
| Operating Cash Flow Ratio | -2.421 | 1.841 | .421 | .455 |
| Inventory Turnover | 1.911 | 12.891 | 5.012 | 1.899 |
| Debtors Turnover | 1.953 | 44.393 | 13.757 | 10.122 |
| Creditors Turnover | 2.227 | 142.067 | 16.733 | 24.205 |
| Working Capital Turnover | -191.199 | 371.321 | 16.186 | 63.630 |
| Fixed Assets Turnover | .690 | 388.148 | 6.759 | 36.568 |
| Total Assets Turnover | .007 | 2.268 | 1.312 | .430 |
| Debt Equity Ratio | .001 | 7.864 | 1.430 | 1.237 |
| Total Debt Ratio | .000 | 2.041 | .491 | .331 |
| Interest Coverage | -5.104 | 83177.916 | 1666.189 | 9287.678 |
| Gross Profit Margin | .021 | .841 | .307 | .148 |
| Change in Gross Margin | -.441 | .714 | .039 | .157 |
| Return on Sales | -.278 | .271 | .089 | .074 |
| Change in Return on Sales | -.240 | .240 | .008 | .057 |
| Return on Assets | -.116 | .404 | .121 | .094 |
| Change in Return on Assets | -.211 | .355 | .009 | .075 |
| Return on Equity | -.622 | .928 | .298 | .251 |
| Change in Return on Equity | -.638 | .887 | .021 | .189 |
| Dividend Per Share | .000 | 32.934 | 2.346 | 4.480 |
| Earnings Per Share | -1.390 | 28.081 | 3.665 | 5.634 |
| Change in Earnings Per Share | -2.473 | 10.035 | .537 | 1.683 |
| Book Value Per Share | .860 | 62.568 | 10.772 | 11.433 |
| Change in Book Value Per Share | -17.227 | 19.440 | 1.899 | 4.563 |
| Market to Book Ratio | .881 | 37.634 | 7.774 | 7.554 |
| Price Earnings Ratio | -35.337 | 193.828 | 25.851 | 34.209 |
| % Change in Net Income | -4.487 | 8.318 | .285 | 1.358 |
| Price Earnings Growth | -35460.333 | 5182.486 | -250.851 | 3479.116 |
| Dividend Yield | .000 | .145 | .033 | .029 |
| Log Sales Turnover | 9.287 | 11.429 | 10.644 | .498 |
| % Change in Sales Turnover | -.489 | .598 | .129 | .163 |
| Future Returns Direction | 0 | 1 | .61 | .489 |

**Source:** Researcher's computation.

Table 2 presents the measures of mean, minimum, maximum values and standard deviation for each of the thirty three (33) variables used in the study. Table 2 confirms that the mean daily cumulative return of the sampled consumer goods firms in Nigeria from 2005 to 2014 was 11.75%.

Table 3 present results of the entire thirty three (33) models wherein each predictor was included as the sole explanatory variable in a logit model to predict equity returns. The results of univariate logit estimation are shown in Table 3.

**Table 3. Coefficients of Univariate Logit Regression Model and the associated P-value**

| Accounting Variables | Estimation parameters | p-value |
|---|---|---|
| Current Ratio | -2.790 | .093* |
| Quik Ratio | 2.401 | .118 |
| Cash Ratio | .443 | .670 |
| Operating Cash Flow Ratio | 1.232 | .239 |
| Inventory Turnover | .320 | .295 |
| Debtors Turnover | .052 | .145 |
| creditors Turnover | .030 | .180 |
| Working Capital Turnover | .007 | .409 |
| Fixed Assets Turnover | -.016 | .393 |
| Total Assets Turnover | .888 | .582 |
| Debt Equity Ratio | 2.596 | .046* |
| Debt Ratio | -12.234 | .020* |
| Interest Coverage | .000 | .222 |
| Gross Profit Margin Ratio | -9.210 | .048* |
| Change in Gross Profit Margin Ratio | 4.300 | .344 |
| Return on Sales | 68.633 | .019* |
| Change in Return on Sales | -76.063 | .005* |
| Return on Assets | 3.527 | .893 |
| Change in Return on Assets | 30.635 | .075* |
| Return on Equity | -20.696 | .025* |
| Change in Return on Equity | 9.104 | .179 |
| Dividend per Share | .471 | .098* |
| Earnings per Share | -.087 | .765 |
| Change in Earnings per Share | .448 | .349 |
| Book Value per Share | -.007 | .921 |
| Change in Book Value per Share | -.056 | .708 |
| Market to Book Ratio | .496 | .018* |
| Price Earnings Ratio | -.091 | .023* |
| Percentage Change in Net income | -.815 | .105 |
| Price Earnings Growth | .001 | .078* |
| Dividend Yield | -70.384 | .002* |
| Log of Sales Turnover | 2.076 | .036* |
| Percentage Change in Sales Turnover | 3.058 | .347 |
| Constant | -19.212 | .057* |

**Source**: Researcher's Computation.

When the univariate logit models were estimated using the direct method, fourteen (14) accounting ratios emerged as influential variables with associated p-values of < 0.10, the critical level. These fourteen significant (p< 0.10) accounting ratios were included in multiple logit models simultaneously.

From the analysis the chi-square value (Omnibus Tests of Model Coefficients) is significant ($\chi^2 = 46.821$, df= 14, N= 111, p < .01); this indicates a significant fit of the predicted model, better than the null model without predictors. The Hosmer and Lemeshow test $\chi^2 = 5.061$,

p=0.751 is not significant, a further complement that the data significantly fits the model. Furthermore, the Cox and Snell $R^2$ and the Nagelkere $R^2$ indicate that about 34.4% to 46.7% variations in the equity returns can be predicted by the combination of 14 accounting ratios. Using the coefficients of the correlations, these results can be said to accurately explain 45.43% of the direction of future returns. Classification accuracy of the model is tested in Table 3.

**Table 4. Out of Sample Correct Classification of Returns Direction using the LOGIT Model**

| Observed | | Predicted | | Percentage Correct |
|---|---|---|---|---|
| | | RETURNS | | |
| | | NEGATIVE | POSITIVE | |
| RETURNS | NEGATIVE | 29 | 14 | 67.4 |
| | POSITIVE | 12 | 56 | 82.4 |
| Overall Percentage | | | | 76.6 |

a. The cut-off value is .500
**Source**: Researcher's Computation.

From the test of classification accuracy, the analysis indicted 26 misclassifications of returns and 85 accurate classifications. In terms of percentages, the model has correctly classified returns by 76.6% (85/111) and wrongly classified returns by 23.4% (25/111). Compared to the null model, there is an increase in the predictive accuracy by 15.3% (76.6% - 61.3%). Overall the model suggests that financial ratios have the ability to predict future equity returns in Nigeria.

Table 5 identifies the specific ratios that predict future equity returns.

**Table 5. Summary of Multivariate LOGIT equity returns model**

| Accounting Variables | Estimation Parameters | p-value | Exp(B) |
|---|---|---|---|
| Debt Equity Ratio | 1.212** | .032 | 3.264 |
| Debt Ratio | -4.861** | .026 | .009 |
| Gross Profit Margin Ratio | -4.700* | .054 | .011 |
| Return on Sales | 35.371*** | .001 | .000 |
| Change in Return on Sales | -41.671*** | .003 | .000 |
| Change in Return on Assets | 25.608*** | .006 | .000 |
| Return on Equity | -8.247*** | .006 | .000 |
| Market to Book Ratio | .297*** | .003 | 1.349 |
| Price Earnings Ratio | -.038* | .052 | .962 |
| Dividend Yield | -38.963*** | .003 | .000 |
| Log of Sales Turnover | 1.710*** | .008 | 5.354 |
| Constant | -16.188 | .014 | .000 |

**Source**: Researcher's Computation
*** Significant at 1% ** Significant at 5% * Significant at 10%.

From Table 5 the β coefficients are interpreted to indicate the total change in the dependent variable arising from a unit increase in the given predictor variable holding all other predictors constant. The table shows that seven (7), two (2) and two (2) accounting ratios significantly predict equity returns at 1%, 5% and 10% respectively.

The profitability of the investment strategy on the basis of Pr is presented in Table 6.

The investment strategies taken by this paper are divided into two on the basis of Pr values. Portfolios 4 and 5 are assigned to a long position, while portfolios 1 and 2

are assigned to a short position. According to the analysis presented in Table 6 the cumulative return by the end of the 3, 4 and 9, 12 months after the year end increases as the companies Pr value for that year end increases. Conversely, the cumulative quarterly returns decreases as the Pr value decreases. This is better explained by the bar chart in Figure 1.

**Table 6. Cumulative Quarterly Returns from Investment in Shares on the Basis of Pr Strategy**

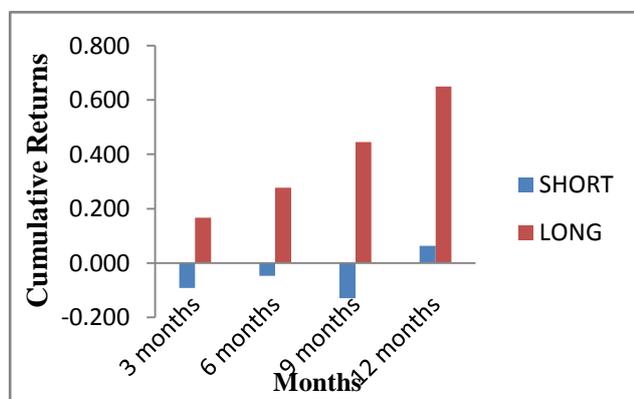| Portfolio | Pr values | 3-months | 6-months | 9-months | 12- months |
|---|---|---|---|---|---|
| 1 | 0.00-0.20 | -0.108 | -0.055 | -0.141 | 0.043 |
| 2 | 0.21-0.40 | -0.076 | -0.039 | -0.117 | 0.084 |
| 3 | 0.41-0.60 | 0.105 | 0.146 | 0.339 | 0.312 |
| 4 | 0.61-0.80 | 0.182 | 0.200 | 0.395 | 0.550 |
| 5 | 0.81-1.00 | 0.151 | 0.354 | 0.495 | 0.751 |
| SHORT | (1)- (2) | -0.092 | -0.047 | -0.129 | 0.063 |
| LONG | (4) - (5) | 0.166 | 0.277 | 0.445 | 0.650 |

**Source:** Researcher's Computation.



**Figure 1**. Quarterly Cumulative Return for Short and Long Positions on the Basis of Pr Values

From the Figure 1 and Table 6 the general conclusion is that as Pr value increases the realizable returns as an investment increases. On the other hand, with a decrease of a company's Pr value, the returns from the company also fall. Pr values in the range of 0.4 – 0.59 are in the region of uncertainty. Pr values less than or equal to 0.4 have a negative return while Pr values higher than 0.6 have positive returns. From the analysis, a Pr value investment strategy can generate equity returns of 75.1% for a 12-month period or 15.1% after a 3-month appraisal period. This result is consistent with Holthausen and Larcker [15] and [12].

# 5. Discussion

In general, financial statement analysis has the ability to accurately predict equity/stock returns particularly as it relates to the long position. However, short and long position stocks reacted differently in the holding periods. For the short position, returns are negative for the 3-month, 6-month, and 9-month holding periods but positive for the 12-month holding period. As expected, positive returns for the long position are positive for all the holding periods (i.e., the 3-month, 6-month, 9-month and 12-month holding periods). As the holding period elongated, the expected returns on the long position increased. In

previous studies, stocks in short portfolios generated negative returns, on average, during respective holding periods. However, in this study, the short position generated a marginally positive return for a 12-month holding period which could be interpreted that in Nigeria, either a holding period for a short period beyond the 9-month period is untenable or the stocks performed relatively well compared to the market.

A limitation of this study is the small sample size Ou and Penman [8] used more than 11,000 observations in developing their prediction models; Setiono and Strong [9] used more than 2,000 observations; and [12] used about 400 observations. By contrast, our models are based on a sample of 111 observations. However, it can be argued that an analytical procedure of this nature is not adversely affected by the size of the sample.

# 6. Conclusion and Recommendation

This study provides empirical evidence that equity returns are predictable with the aid of a multiple logit regression model using data from Nigeria. The study found that eleven ratios: debt to equity ratio, total debt ratio, gross profit margin ratio, return on sales ratio, change in return on sales ratio, change in return on assets ratio, return on equity ratio, market to book ratio, price-earnings ratio, dividend yield, and logarithm of sales-constitute the "full" set of accounting information that can explain equity returns in Nigeria. Each is linked to a particular aspect of the firm's operations and plays a unique role in depicting a specific aspect of change in equity value. The study found that financial statement analysis can predict accurately stock returns by 76.6%. This result is substantially higher than other return models adopted in the prior empirical literature like Ou and Penman [8] in the USA. The study also found that for a 12-month holding period, proper financial statement analysis and the use of Pr model can generate up to 75.1% returns in Nigeria. This suggests that conducting a fundamental analysis and taking investment positions on the basis of Pr values can be a fruitful strategy for investors in Nigeria. The study thus recommends that investors evaluate their investments in equity for 12 months before making a buy or sell decision using Pr strategy to avoid loses or missing opportunities.

# References

[1] Cleary, S. (2001). *Canadian Securities Exam: Fast-Track Study Guide.* Ontario: John Wiley and Sons Canada.

[2] Aggarwal, N. and Gupta, M. (2009). Do high book-to-market stocks offer returns to fundamental analysis in India? *Decision*, 36(2), 155-175.

[3] Richardson, S., Tuna, I. and Wysocki, P. (2010). Accounting anomalies and fundamental analysis: A review of recent research advances. *Journal of Accounting & Economics*, 50(2-3), 410-454.

[4] Sloan, R. G. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review*, 71(3), 289-315.

[5] Xie, H. (2001). The mispricing of abnormal accruals. *The Accounting Review*, 76(3), 357-373.

[6] Abarbanell, J. S. and Bushee, B. J. (1998). Abnormal Returns to a Fundamental Analysis Strategy. *The Accounting Review*, 73, 19-45.

[7]    Kothari, S. P. (2001). Capital market research in accounting. *Journal of Accounting and Economics*, 31(1), 105-231.

[8]    Ou, J. A. and Penman, S. H. (1989). Financial Statement Analysis and the Prediction of Stock Returns. *Journal of Accounting and Economics,* 11, 295-329.

[9]    Setiono, B. and Strong, N. (1998). Predicting Stock Returns using Financial Statement Information. *Journal of Business and Accounting*, 25, 631-657.

[10]   Charitou, A. and Panagiotides, G. (1999). Financial analysis, future earnings and cash flows, and the prediction of stock returns: evidence for the UK. *Accounting and Business Research*, 29:4, 281-298.

[11]   Kallunki,J., Martikainen, M., Martikainen, T. & Yli-Olli, P. (1997). The Finnish Stock Market: A Survey of Some Empirical Evidence and its Practical Relevance. Retrieved from http://lta.lib.aalto.fi/1997/4/lta_1997_04_s5.pdf on 27/06/2018.

[12]   Goslin, J., Chai, D. and Guasekarage, A. (2012). The Use of Financial Statement Information in Predicting Stock Returns: New Zealand Evidence. *Australian Accounting, Business and Finance Journal*, 6(2): 51-70.

[13]   Dosamantes, C. A. and Alberto, C. (2013). The Relevance of using Accounting Fundamentals in Mexican Stock Market. *Journal of Economics, Finance and Administrative Science*, 18, 2-10.

[14]   Caneghan, T. and Campenhout, G. (2002). Financial Statement Information and the Prediction of Stock Returns in a Small Capital Market: The Case of Belgium. *Brussels Economic Review*, 43(3): 65-90.

[15]   Holthausen, R. W. and Larcker, D. F. (1992). The Prediction of Stock Returns using Financial Statement Information. *Journal of Accounting and Economics*, 15, 373-411.

[16]   Greig A. (1992). Fundamental Analysis and Subsequent Stock Returns. *Journal of Accounting and Economics*, 15, 413-442.

[17]   Ball, R. (1992). The Earnings-price Anomaly. *Journal of Accounting and Economics*, 15, 319-345.

[18]   Piotroski, J. (2000). Value Investing: The Use of Historical Financial Statement Information to Separate Winners from Losers. *Journal of Accounting Research*, 38, 1-41.