"Growth versus value investing: a case of Nigerian Stock Market"

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BUSINESS PERSPECTIVES

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GROWTH VERSUS VALUE INVESTING: A CASE OF NIGERIAN STOCK MARKET

Abstract

At a time, the Nigeria Stock Exchange (NSE) is generally undergoing bearish trends; the paper investigated the performance of eighty-eight (88) sampled stocks, which were screened with the modern Price Earnings Growth (PEG) ratio into the Growth and the Value Portfolios. This is to ascertain whether the Value Portfolio outperformed the Growth Portfolio in terms of returns. From the researches in the developed and emerging stock markets, the momentum supports that the Value Portfolio outscored the Growth Portfolio in terms of returns. The paper explored pooled data from the Factbooks of the Nigerian Stock Market and the Annual Reports across different industries from 1990 to 2016. Descriptive methods and Arellano and Generalized Methods of Moment (GMM) xtabond2 were adopted to address the outliers, reverse causality and other related consequences of panel data. Similar to the findings from the developed and emerging stock markets, the study recognized that the Value Portfolio over-performed the Growth Portfolio in terms of returns in the NSE. Therefore, it is recommended that rational investors should show more preferences to invest in low-priced Value Stocks to earn higher returns than the high-priced Growth Stocks, which generated lower returns in the NSE.

INTRODUCTION

Stock investments are paper assets that guarantee claims on the issuer in the future period, investment in stocks promise variable future incomes (Jones, 2010). A stock market offers a window through which stock market instruments are traded (William, 2012; Burns, 2014). The stock market is undergoing a bearish trend consequent upon the recent Nigerian economic recession. That implied that there was a continuous free fall in prices of stocks in the Nigeria Stock Exchange (NSE).

It is not news that stock prices fall during a bearish market. Empirical studies had shown that stocks prices may occasionally reduce in values (Graham & Dodd, 1934; Buffett, 1984; Zakaria & Hashim, 2017). Thus, what is news is how to engage modern Growth and Value Portfolio strategies to construct winner portfolio at a time the prices of stocks are low-priced in the Nigeria Stock Exchange (NSE). Unfortunately, during this period, investors were generally apathetic to investing in the market. Perhaps, this was as a result of the painful experience in 2008 when sudden crash occurred generally in stock prices in the Nigerian market. At that time, many investors lost huge financial resources due to the sudden capital erosion (Ijaiya, Sanni, Amujo, & Suleiman, 2014). Perhaps, with the appropriate Growth and Value Portfolio strategies of Graham and Dodd (1934), Basu (1977, 1983), Buffett (1984), Fama

and French (1998), Zakaria and Hashim (2017), the huge capital loss made in the NSE could have been averted. Now that the NSE appears to be undergoing a general downward movement in the prices of stocks, it means that the prices of stocks are cheap unlike in the early post consolidation years in the banking industry when stock prices were on the high (Nwagu, 2007; Nwidobie, 2015); consequently, this provides a fertile opportunity to the investors to identify and buy cheap Growth or Value Stocks that sold below their intrinsic values so as to anticipate future returns from capital appreciation and dividends.

In recent times, there are growing debates and serious concerns in the developed and emerging stock markets as to whether Growth Stocks underperformed Value Stocks in terms of returns. The academic discoveries from the empirical investigation in the advanced and rapidly growing stock markets provide striking evidence that momentum is much higher in favor of Value Portfolio, which suggests that the Growth Portfolio underperformed the Value Portfolio as a result of high unprecedented returns (Zakaria & Hashim, 2017; Vorwerg, 2015; Wu, 2013). Other evidence includes: Fama and French (1995, 2006), Chan and Lakonishok (2004), Piotroski (2000), Basu (1983), among other studies.

However, few studies asserted that Growth Stocks outperformed the Value Stocks in the advanced and emerging stock markets (Bratland & Mäki, 2014; Hussaini, 2016). In Nigeria, quite a large number of researches had contributed to the traditional areas of finance, for example: money market, financial deregulation, foreign exchange market efficiency, stock market and development, volatility, asset pricing, etc., (Oladeji, Ikpefan, & Alege, 2018; Isibor, Ojo, & Ikpefan, 2018; Ailmen, Akhanolu, & Chibuzor, 2016; Isibor, Ikpefan, Okafor, & Ojeka, 2016; Sanusi, 2015; Oladeji, Ikpefan, & Olokoyo, 2015; Nwidobie, 2015; Nguyen, Oates, & Dunkley, 2014; Naik, 2013; Olokoyo & Ogunaike, 2011, among others). It appears that there are also few number of empirical studies on portfolio selection strategies in the NSE and economic growth, these include: Alile (1999), Eriki (1999), Ekeocha (2008), Ozurumba (2012), Onyeisi, Odo, and Anoke (2016), Osmond (2016), and Ibrahim and Akinbobola (2017); however, unlike in the developed and emerging stock markets where empirical studies had shifted to the discussions on the Growth versus Value investing style, to the best of our knowledge, not too much studies had been embarked upon to investigate the performance of the Growth and the Value Portfolio strategies with a view to ascertaining whether the former outperformed the latter in the NSE. Motivated to contribute to the ongoing discussion in the developed and emerging stock markets, and to improve the frontier of knowledge, the study investigated whether the Growth Portfolio performed better than the Value Portfolio in terms of returns in the NSE.

1. LITERATURE REVIEW

Over the years, prices of stocks quoted on the floor of the Nigerian Stock Market had been generally unstable. The stock market bubbles when investors sensationally react to magnificent financial fundamentals about stocks. Consequently, the reaction from the investors positively influenced prices of stocks in the stock market (Nwagu, 2007; Hirschey & Nofsinger, 2008; Ijaiya, Sanni, Amujo, & Suleiman, 2014; Nwidobie, 2014). According to Hirschey and Nofsinger (2008), the stock market bursts when stock prices suddenly plummet. Similarly, a bearish trend occurs at the start of persistent general fall in prices of stocks in the stock market. Conversely, the trend in the stock market is bullish when there is a continuous and general increase in the stock prices in the stock market. After the bank consolidation in Nigeria in 2004, the stock market witnessed tremendous boom and bubbles. As of 2004, the All Share Index (ASI) of the Nigeria Stock Exchange (NSE) fell slightly from 24,738.65 points to 22,876.72 points in 2005, representing a decrease of –7.52%. However, the bubble started in the NSE when the ASI rose from 22,876.72 points in 2005 to 25,343.55 points in 2006, representing an increase of 10.78%. The ASI was on the high when it almost doubled from 25,343.55 points in 2006 to 48,773.31 points in 2007, constituting an increase of 92.45%. The ASI further increased from 48,773.31 points in 2007 to 50,424.7 points in 2008, signifying an increase of additional 3.39%.

The bearish trends began in 2009 when the ASI suddenly shed weight by more than half from 50,424.7 points in 2008 to 23,091.55 in 2009, this represents a decrease of –54.21%. Over these periods, the downward trend continued, in fact, the ASI fell from 39,409.82 in 2014 to 30,867.2 points in 2015, this corresponds to a decrease of –21.68. The ASI further shed weight from 30,867.2 points in 2015 to 26,624.08 points in 2016; this translates to –13.75%. During the periods, prices of stocks reduced tremendously, investors in the NSE could profit from the market by engaging the Value or Growth Portfolio strategy to invest in stocks that are priced below their intrinsic values. In addition, the investors in the market may diversify or concentrate financial resources to invest on the Growth or Value Stocks in the NSE.

The concentration theory by Graham and Dodd (1934) and Buffett (1984) is increasingly becoming a popular investment philosophy in modern finance. The theory is a by-product of the principle of irrationality behavior of an investor in the stock market. The concentration theorists advocate that all investments be put in one basket and monitor the basket carefully to earn satisfactory returns. Buffettology is a brand of concentration theory named after Warren Buffett, a well-known student of Benjamin Graham. Buffett (1984) selected few stocks, with excellent business philosophies and strong financial base to maximize returns and minimize risk in the stock market. Contrary to the concentration theory is the diversification theory, which explains the principle of rationality of investors by spreading investments in stock across different industries in the stock market to make more returns and lowering risk (Babajide & Adetiloye, 2012; Eriki, 1999). The Growth Stocks are stocks of established firms in the stock market. They are lower odd stocks with high likelihood of purchase by every investor in the stock market. Growth Stocks are overvalued stocks (highly-priced stocks, stocks that are sold above their intrinsic values) with impressive stock fundamentals such as high Price Earnings ratio, high Price Earnings Growth (PEG) ratio and high Price to Book Ratio, higher earnings and lower dividend yields to facilitate speedy expansion. On the contrary, Value Stocks are undervalued stocks (low-priced stocks, stocks that are sold below or close to their intrinsic values). The Value

Stock Portfolio strategy was developed by Graham and Dodd (1934). The theory explains the natural skills and knaps to discover companies with under-reported earnings and secret assets with a view to buying undervalued stocks and averting overvalued stocks. Value Stocks exhibit low stocks fundamental, these include: low earnings and low Price Earnings Ratio, low Price Earnings Growth (PEG) ratio, unimpressive Price to Book Ratio and high dividend yields (Zakaria & Hashim, 2017; Waistell, 2016; Pinkerton, 2015; Hirschey & Nofsinger, 2008; Graham & Dodd, 1934; Buffett, 1984). The study of Hickey, Luongo, and Nielson (2015) confirmed that portfolio with low-priced stocks (Value Stocks) had higher returns than portfolio consisting of the Growth Stocks.

In the mid-1960s, Sharpe (1964) and Litner (1965) developed Capital Asset Pricing Model (CAPM), the academic efforts resulted into a Nobel prize in 1990. The model provides a powerful instrument to evaluate efficient portfolio using risk and returns (Hirschey & Nofsinger, 2008). It assumes the market perfection, no cost of transactions and no taxes, among other assumptions. The limitations of the model, according to Jitendra and Ranjan (2016), include: stock market imperfection, barrier to entry in the stock market, besides, information is not free in the market. Despite some of these limitations, the model continued to demonstrate its relevance: Fama and French (1992, 1995, 1998, 2004, 2006) in the United States, Europe, Japan, Australia and the Far East among other countries in the developed and emerging stock markets. The development of portfolio construction started with the pulsating study of Markowitz (1952) on portfolio selection (Hirschey & Nofsinger, 2008). An extension to the work was Ross (1976a, 1976b) on Arbitrage Pricing Theory (APT), which explains the determinants of assets prices using a set of linear algebra with a multi-risk-factor approach. Just like the CAPM, APT suffers from similar inadequacies, some of these include: market imperfection and how to determine appropriate risk-free rates among other limitations. Regardless of the limitations, the APT is a multi-variable model, consequently, it is quite useful in the study.

Furthermore, the Efficient Market Hypothesis (EMH) theorists in traditional finance maintained that price of stock in the stock market is similar

to a random walk. That implies that variation in the stock prices from one transaction to the other transactions are derived independently of each other. To push for further discussion on the subject, ponder over the footpath followed by a drunk who was emotionally intoxicated to walk home. As a result of drunkenness, the direction and distance of every step he had taken was random and independent of his preceding steps. The drunk walked an exceedingly unpredictable path, which is similar to movement of stock prices. The theory postulates three (3) categories of efficiency: weak form efficiency, current stock price does not reflect all information; semi-strong form hypothesis, stock prices reflect all public information; and strong form hypothesis: stock current prices reflect all public information and non-public information. Even though there is no flawless theory, the bulk of the empirical evidence reviewed, particularly from the developed stock markets, supported the claim that the stock market is efficient, demonstrating semi-strong form hypothesis (Fama, 1965; Nwidobie, 2014; Hirschey & Nofsinger, 2008).

Buttressing the influence of information availability on the behavior of stock prices, Hirschey and Nofsinger (2008) documented generally that the basic requirement for an efficient stock market appears to be easily met by the United States stock market. This is because, on a daily basis, United States stock market had actually thousands of actively bought and sold stocks. This guaranteed the investors in the market wide range of dividends and capital gains opportunity. Besides, the financial and non-financial stock market information is widely circulated and made available to the investors on the Internet every second, television and radio on a daily basis in short intervals. Consequently, stock prices of companies with good fundamentals speedily oscillate or swing to new prices shortly after the information is available and the companies with declining financial and non-financial fundamentals witness immediate collapse in stock prices (Sanusi, 2015).

In the recent time, the Growth and the Value Stock investing strategies are the focus of the debate to ascertain whether the former underperformed the later in the developed and emerging stock markets. Basu (1975, 1977, 1983) investigated the performance of the Value and Growth Stocks in US stock markets, other advanced and emerging stock markets using Price Earnings ratio and other variables deploying descriptive statistics and regression analyses to recognize that Value Portfolio overperformed Growth Portfolio in terms of returns. The Price Earnings ratio had been adjudged to be inappropriate in Francis (2000) and Mayo (2006) where companies operated in dissimilar operations as the case in the sampled companies in the study. Unlike Basu (1975, 1977, 1983), Fama and French (1992) where Price Earnings ratios were engaged to screen stocks in the developed and emerging stock markets into the Growth and the Value Portfolio; this study engaged the modern Price Earnings Growth (PEG) ratio in Francis (2000) and Mayo (2006) to screen the stocks with a view to addressing the inherent limitations in the use of Price Earnings ratio in grouping quoted stocks into the Growth and Value investment wallets.

In the United States stock markets, Fama and French (1992) engaged Book to Market (BTM), Price Earnings ratio, descriptive statistics and regression analyses; the study recognized monthly premium of 1.53% and 0.68% in favor of Value Stocks. Similarly, in Japan, Europe and other developed and emerging stock markets; Fama and French (1995, 1998, 2004) extended the studies to establish that Value Stock over performed Growth Stock. Besides, the study asserted the existence of value premium in the developed and emerging stock markets. Other empirical studies that affirmed that Value Portfolio outscored the Growth Portfolio in the developed and emerging stock markets using Ordinary Least Square (OLS) include: Kalesnik and Kose (2016), Cronqvist, Siegel, and Yu (2015), Leivo, Pätäri, and Kilpiä (2009), Chan and Lakonishok (2004), Piotroski (2000), Bauman, Conover, and Miller (1998), Lakonishok, Shleifer, and Vishny (1994), Chan, Hamao, and Lakonishok (1991), among other empirical studies in the markets.

Moreover, in the developed and emerging stock markets, other empirical studies that recognized that Value Stocks provide higher returns than Growth Stocks include: La Porta (1996), Bauman and Miller (1997, 1998), Lakonishok, Lee, and Poteshman (2004), Kucko (2007), Sareewiwatthana (2011, 2012), Miwa and Ueda (2014). Refer also to

the empirical studies of Sistonen (2014), Vorwerg (2015), Zakaria and Hashim (2017), Addae-Dapaah, Webb, Hin/David, and Hiang (2011), Stråhle (2011), Fama and French (1992, 1995, 2012), Hussaini (2016), Bratland and Mäki (2014), Beneda (2003), Cordeiro and Machado (2013), among other empirical studies. However, most of these empirical studies used Ordinary Least Square (OLS) method except for Addae-Dapaah, Webb, Hin/David, and Hiang (2011) that engaged GMM. In Olusanya, Salisu, and Olofin (2016) and Baltagi (2008), OLS had been proven to be inappropriate to address the consequences of endogeneity related challenges in pooled data (reverse causality between the explained and explanatory variables), that is where the explained variable could also be used as an explanatory variable and vice versa in a dynamic panel.

2. MATERIALS AND METHODS

To achieve the objectives of the study, time series panel data (unbalanced) were obtained from the Nigerian Stock Exchange Factbooks and the Financial Statements across the sampled industries quoted on the floor of the Nigerian Stock Market for the year spanning from 1990 to 2016. The study sampled eighty eight (88) companies out of the one-hundred and seventy-four (174) companies, representing 50.57% of the companies that were quoted on the floor of the Nigeria Stock Exchange as of 31 December, 2017. The case studies were selected based on the availability of sufficient data from 1990 to 2016 for the quoted firms on the floor of the Nigerian Stock Exchange as of the end of December, 2017.

According to Mayo (2006), Francis (2000), Hirschey and Nofsinger (2008), where $peg \geq 2$, the stock should be classified as the Growth Stock and where peg is < 2, the stock is Value Stock. The Nigerian Stock Market which was formed in 1961 had similar characteristics with the developed and emerging stock markets in terms of efficiency, volatility, continuous development, advancement of technology and integration with other stock markets. Thus, the threshold of peg in Mayo (2006) and Francis (2000) was replicated as the basis of constructing the 88 sampled stocks in the Nigeria

Stock Exchange into 34 Growth Stocks and 54 Value stocks. This is to ascertain the better of the two (2) portfolios in terms of returns. To construct the two (2) Portfolios, the case studies (88) were screened using the Price Earnings Growth (peg) threshold of ≥ 2 for the Growth Portfolio and < 2 for the Value Portfolio, (Mayo, 2006; Francis, 2000). Consequently, the case studies were screened into thirty-four (34) Growth Stocks consisting of 784 observations. The remaining fifty-four (54) quoted companies consisting of 1,130 observations were screened into the Value Portfolio. After screening the sampled stocks with the threshold of peg identified above, two (2) related and distinct portfolios emerged. The portfolios consist of 34 Growth Stocks and 54 Value Stocks.

In the studies of Fama and French (1998, 2006), using multiple regression, Price Earnings ratio was engaged to screen the portfolios into the Value and Growth Portfolio to ascertain the existence of Value Premium in United States and other developed stock markets. Firms in similar industries tend to have similar Price Earnings ratios. The Price Earnings ratio (per) had been adjudged to be inappropriate and arbitrary in Francis (2000) and Mayo (2006), where the entities operate in different industries. The sampled firms operated in different industries. Consequently, the Price Earnings Growth (peg) ratio was used instead of Price Earnings ratio to construct the two portfolios. Since sampled companies cut across industries, the characteristics and the performance of the Growth and Value Portfolios may differ over time; Eriki (1999) recognized the use of rotational policy to spread stock investment across various industries, thus, the proxies of financial performance engaged in the study could serve as a basis of rotating investible funds between the Growth and Value Portfolios to maximize returns in a developing stock market like Nigerian Stock Market.

In addition, the study replicated the variables that were used in Zakaria and Hashim (2017), Kalesnik and Kose (2016), Cronqvist, Siegel, and Yu (2015), Otuteye and Siddiquee (2013, 2015a, 2015b), Sareewiwatthana (2011, 2012), Leivo, Pätäri, and Kilpiä (2009), Chan and Lakonishok (2004), Piotroski (2000), La Porta (1996), Bauman, Conover, and Miller (1998), Lakonishok, Shleifer, and Vishny (1994), Fama and French (1992, 1998,

2006), among other empirical studies in the United States, United Kingdom, Japan and other developed and emerging stock markets to measure returns of the Growth and the Value Portfolios.

From the empirical studies and the theories, the study relied on the annual stock market prices averaged from monthly stock prices to measure the dependent (explained) variable of the Growth and the Value Portfolio. In the study, the choice of annual stock price as the explained variable instead of daily stock price was inevitable. This is because the daily stock prices could not be obtained in the early 1990s. Besides, the financial variables obtained from the financial statements of the companies were reported on an annual basis. Furthermore, from the review of empirical studies and theories, the study captured the independent (explanatory) with Growth of EPS (*eps*), Capital Gains (*cag*), Return on Assets (*roa*), Dividend Yield (*dy*), Price Earnings Ratio (*per*) and Log of product of Treasury Bill Rate and Shareholders' Funds (*Lrfsf*). The Log of product of Treasury Bill Rate and Shareholders' Funds (*Lrfsf*) captured the opportunity cost of investing on stocks in the NSE. The opportunity cost is the minimum returns accruable to the investors if the same amount invested in the equity of the selected case studies was invested on Treasury Bill in the economy. Since the Growth and Value Portfolio models were developed independently, therefore, the rates of responses of the explanatory variables to the explained variable were used to determine whether the Value Portfolios outperformed the Growth Portfolio (Fama and French model, 1998, 2006) in the developed and emerging stock markets.

The primary methods of analyses were the Descriptive Statistics, Arellano and Bond xtabond2 Generalized Method of Moments (GMM), which, according to Olusanya, Salisu, and Olofin (2016), is more robust and appropriate in fitting, examining and explaining the behavior of two (2) related dynamic panels with similar variables that were developed independently. The model is more appropriate where N is large and T is small. In the study, the period T, 1990 to 2016, was small, however, the population, N, the sampled eighty eight (88) companies across industries quoted on the floor of the Nigeria Stock Exchange (NSE) was large. Since the sampled companies operated

in different industries with different accounting principles, different behavior of the management, dissimilar characteristics; Arellano and Bond (1991), Baltagi (2008) and Roodman (2009) methods were engaged. The Generalized Method of Moments (GMM) was affirmed to be better, superior, flexible, efficient and robust in Olusanya, Salisu, and Olofin (2016) and Baltagi (2008). The models progressed from the Pooled Ordinary Least Square (POLS), difference Generalized Method of Moments (GMM), and system GMM to the Arellano Generalized Method of Moments xtabond2. This was engaged to point out the proliferations of the coefficients in the study and to sufficiently address the consequences of time series data. The tests embarked upon include the Sagan's Statistics and Hansen's J test of Over-Identifying Restrictions (OIR). In the study, the GMM xtabond2 addressed efficiently the heterogeneity, serial correlation, auto-correlation, heteroskedasticity challenges and disturbances that occurred from the differenced equation. Similar empirical studies that engaged GMM were Cenesizoglu and Timmermann (2008) and Addae-Dapaah, Webb, Hin/David, and Hiang (2011).

3. MODELLING DYNAMIC GROWTH AND VALUE PORTFOLIOS

The dynamic Arellano-Bond GMM model was also engaged in the study of Cenesizoglu and Timmermann (2008), Addae-Dapaah, Webb, Hin/David, and Hiang (2011), however, the dynamic panel framework of Arellano-Bond GMM xtabond2 was applied to analyze and group the Growth and the Value Stock models independently as:

$$gasmp_{it} = \beta_0 + \sum_{j=1}^{6} \beta_j X' + \varepsilon_t, \qquad (1)$$

$$vasmp_{it} = \alpha_0 + \sum_{j=1}^{6} \alpha_j X' + \varepsilon_t. \qquad (2)$$

Expanding Equation 1 and 2 to capture all the variables resulted in Equations 3 and 4 as follows:

$$\Delta gasmp_{it} = \sum_{j=0}^{p} \beta_1 \Delta gasmp_{it-j} +$$

$$\sum_{j=0}^{p} \beta_2 \Delta eps_{it-j} + \sum_{j=0}^{p} \beta_3 \Delta cag_{it-j} +$$

$$+ \sum_{j=0}^{p} \beta_4 \Delta roa_{it-j} + \sum_{j=0}^{p} \beta_5 \Delta dy_{it-j} + \qquad (3)$$

$$+ \sum_{j=0}^{p} \beta_6 \Delta per_{it-j} + \sum_{j=0}^{p} \beta_7 \Delta Lrfsf_{i,t-j} + \Delta \varepsilon_t,$$

$$\Delta vasmp_{it} = \sum_{j=0}^{p} \alpha_1 \Delta vaspm_{it-j} +$$

$$+ \sum_{j=0}^{p} \alpha_2 \Delta eps_{i,t-j} + \sum_{j=0}^{p} \alpha_3 \Delta cag_{it-j} +$$

$$+ \sum_{j=0}^{p} \alpha_4 \Delta roa_{it-j} + \sum_{j=0}^{p} \alpha_5 \Delta dy_{it-j} + \qquad (4)$$

$$+ \sum_{j=0}^{p} \alpha_6 \Delta per_{it-j} + \sum_{j=0}^{p} \alpha_7 \Delta Lrfsf_{it-j} + \Delta \varepsilon_t,$$

$$eps_{it} \geq 2cag_{it} \geq 0, \ roa_{it} \geq 0,$$

$$dy_{it} \geq 0, \ per_{it} \geq 2. \qquad (5)$$

In equations 1 and 2: X' are vectors, such as: $X = \{geps \ cag \ roa \ dy \ per \ lrfsf\}$: the vec-tor represented the explanatory variables, which were used to measure the performance of both the Growth and the Value Portfolios. The variables were fixed in the model stepwise and independently. A priori, it was expected that the proxies of the returns would be positive. The degree of responses and the level of significance of the coefficients determined whether the Growth Portfolio outperformed the Value Portfolio and vice versa.

The coefficients of the six (6) explanatory variables captured the performance index of the Growth and Value Portfolios in the NSE. The explanatory variables obtained were engaged to recognize whether the Growth Portfolio overperformed the Value Portfolio in the market. That was deployed to draw inferences in the study. The two (2) models were developed independently. Thus, the greater the rate of responses and the level of the significance, the better the coefficients reported in equations 1 to 5 of the model and vice versa.

4. RESULTS AND DISCUSSION

4.1. Descriptive statistics of variables

Tables 1 and 2 reported the descriptive analyses of the explanatory variables of Growth and Value Stock Portfolios. From Table 1, there is a wide disparity be-

Table 1. Descriptive statistics (Growth Stock Portfolio)

Source: Computed by the researcher using STATA 13.1.

Stats	N	Mean	Sum	Max	Min	Stan. Dev.	Skewness	Kurtosis	Median
Gasmp	800	23.94015	19152.12	1200	0.02	83.38493	9.130182	104.1596	3.95178
Eps	794	1.286418	1021.416	53.5436	−52.13	4.456756	2.104869	70.4244	0.4337
Cag	800	1.21985	975.8797	673.684	−7.94615	24.18773	27.01624	749.0625	0
Roa	800	0.216462	173.1697	82.815	−0.41283	3.208439	23.23228	571.7052	0.042626
Dy	794	0.060138	47.74974	1.13636	0	0.10611	5.143994	37.77995	0.034327
Per	797	12.50532	9966.739	949.556	−1353.33	70.43268	−6.11999	222.3321	8.22973
Lrfsf	799	5.049138	4034.262	8.49111	−5.59	1.748211	−2.38437	11.79108	5.35839

Table 2. Descriptive statistics (Value Stock Portfolio)

Source: Computed by the researcher using STATA 13.1.

Stats	N	Mean	Sum	Max	Min	Stan. Dev.	Skewness	Kurtosis	Median
Vasmp	1,145	16.54339	18942.18	331.19	0.01	35.84337	4.367994	26.33536	3.9
Eps	1,142	1.390474	1587.921	123	−30.3	5.491553	15.07065	307.7169	0.489234
Cag	1,145	0.171089	195.8964	9	−1	0.831217	4.59367	36.64859	0
Roa	1,145	0.215947	247.259	37.5325	−2.61164	2.305579	13.08799	180.4017	0.017835
Dy	1,145	0.050588	57.92332	13	0	0.495251	20.79978	479.1788	0
Per	1,133	19.5105	22105.4	7608.39	−352.71	228.126	32.53935	1082.828	7.32919
Lrfsf	1,145	3.958165	4532.098	10.0066	−6.525	2.662836	−1.09104	3.552806	4.97002

tween the minimum value (0), approximately and maximum value (1,200) of the average annual stock prices of the Growth Portfolio and minimum value (0), approximately and maximum value (331.19) for the Value Portfolio. The wide disparities between the two portfolios suggest that the annual stock prices significantly differ among the eighty-eight (88) sampled companies from the Nigeria Stock Exchange (NSE). That implies that the maximum average annual stock prices of the Growth Portfolio is 3.62 times more than that of the Value Portfolio. This is supported by the theories and empirical evidence that the Growth Stocks are usually high-priced and Value Stocks are low-priced (Hirschey & Nofsinger; 2008, Fama & French; 1992, 1995, Buffett, 1984). Despite the wide disparities between the maximum values of the Portfolios reported in Tables 1 and 2, the returns of the Value Portfolio captured with earnings per share (eps) of 1.39 and price earnings ratio (19.51) were more than earnings per share (eps) of 1.28 and price earnings ratio (12.51) of the Growth Portfolio. This portends that the returns of the Value Portfolio were greater than the returns of the Growth Portfolio. This suggests that on the average, the Value Portfolio outperformed the Growth Portfolio. However, the descriptive analyses suggest a mixed performance. This is because the Capital gain (cag) of 1.22 of the Growth Portfolio substantially differs from that of the Value Portfolio with cag of 0.17. However, there were insignificant marginal differences between return on assets (roa) of 0.216, dividend yield (dy) of 0.061 for the Growth Portfolio and the roa of 0.2159 and dy of 0.051 for the Value Portfolio, respectively. The Kurtoses of the Growth and Value Portfolios for all the explanatory variables were spread with outliers suggesting that the variables might not be symmetrical in the NSE. The kurtoses of ≥ 3 from Tables 1 and 2 suggest the data had higher tails. That implies that the data clustered towards the mean with the likelihood of outliers.

Table 3. Pairwise Correlation Matrix (Growth Stock Portfolio)

Source: Computed by the researcher using STATA 13.1.

Variables	Eps	Cag	Roa	Dy	Per	Lrfsf
Eps	1.0000	–	–	–	–	–
Cag	–0.0106	1.0000	–	–	–	–
Roa	0.0058	–0.0041	1.0000	–	–	–
Dy	–0.0122	–0.0219	–0.0250	1.0000	–	–
Per	0.0259	0.4502	0.0048	–0.0336	1.0000	–
Lrfsf	0.1253	–0.04011	–0.0458	–0.2527	0.0374	1.0000

Table 4. Variance Inflation Factor (Growth Stock Portfolio)

Source: Computed by the researcher using STATA 13.1.

Variables	VIF	1/VIF
Cag	1.26	0.7931
Per	1.26	0.7935
Lrfsf	1.12	0.8937
Dy	1.08	0.9258
Eps	1.03	0.9686
Roa	1.00	0.9956

Table 5. Pairwise Correlation Matrix (Value Stock Portfolio)

Source: Computed by the researcher using STATA 13.1.

Variables	Eps	Cag	Roa	Dy	Per	Lrfsf
Eps	1.0000	–	–	–	–	–
Cag	0.0283	1.0000	–	–	–	–
Rao	0.0942	–0.0074	1.0000	–	–	–
Dy	–0.0013	–0.0163	–0.0076	1.0000	–	–
Per	0.0016	–0.0129	–0.0033	–0.0009	1.0000	–
Lrfsf	0.1229	–0.0432	–0.0965	0.0516	0.0347	1.0000

Table 6. Variance Inflation Factor (Value Stock Portfolio)

Source: Computed by the researcher using STATA 13.1.

Variables	VIF	1/VIF
Lrfsf	1.03	0.9716
Eps	1.02	0.9771
Roa	1.02	0.9836
Cag	1.00	0.9962
Dy	1.00	0.9970
Per	1.00	0.9986

Tables 3 to 4 and Tables 5 to 6 reported the Pairwise Correlation Matrix and Variance Inflation Factor to examine the existence of multicollinear relationship of the Growth and Value Portfolios models. There is a high multicollinear relationship when the value of Pairwise Correlation Matrix is ≥ 0.80, moderate if the value ranges from 0.50 to 0.79 and low to zero multicollinear relationship if the value of Pairwise Correlation Matrix is ≤ 0.49. The results in Tables 3 and 5 for the Growth and Value Portfolios show that the Pairwise Correlation Matrix is ≤ 0.49. This portends low to zero multi collinear relationships among the explanatory variables. Similarly, there is a high multi collinear relationship if the value of Variance Inflation Factor (VIF) is ≥ 5% and the tolerance (inverse of VIF) is below 0.1. From Tables 4 and 6, the VIF ranges between 1.00 and 1.26, it is ≤ 0.1 and less

than 5% level of significance. These suggest low to zero multi collinear relationships among the explanatory variables. In both portfolios, the pairwise correlation falls below the threshold of 0.12 and VIF ranges from 1.00 to 1.03, therefore, there is zero to low multicollinear relationship among the independent variables.

4.2. Modelling the Growth and the Value Portfolios

The primary estimation technique engaged in the study was Roodman's Arellano xtabond2 of two step option to control proliferation of the instrument vector as shown in the coefficients of fixed and random effects, DGMM and SYSGMM. The System GMM (SYSGMM) was necessary to fix the consequences of violating the assumptions of Best Linear Unbiased Estimators (BLUE). In Table 7, the dependent variable for the Growth Portfolio

is *gasmp,* and *vasmp* captured the dependent variable in Table 8 for the Value Portfolio. Besides, Roodman's Arellano xtabond2 was engaged to address the problems of heterogeneity and to purge the perfectly autocorrelated idiosyncratic errors. Ordinary Least Square (OLS) is not efficient and appropriate to achieve this purpose (Olusanya, Salisu, & Olofin, 2016). In Tables 7 (Growth Portfolio) and 8 (Value Portfolio), the progression of the parameters of the models was reported from the Ordinary Least Square, Pooled OLS (Fixed and Random Effects), and Difference Generalized Method of Moments (DGMM), System GMM (SYSGMM) to the Roodman's Arellano GMM xtabond2. The transitions from one model to the other models were necessary to evaluate how the proliferations of instruments were controlled in the study. The Pooled OLS is a static model. Therefore, it is inappropriate to address heterogeneity problems in a dynamic panel model (Olusanya, Salisu,

Table 7. Regression result modelling (Growth Stock Portfolio)

Source: Computed by the researcher using STATA 13.1.

Variables	(OLS)	(FE)	(RE)	(DGMM)	(SYSGMM)	(Xtabond2)
	Gasmp	*Gasmp*	*Gasmp*	*Gasmp*	*Gasmp*	*Gasmp*
Gasmp	–	–	–	0.873***	0.885***	1.015***
	–	–	–	(0.000658)	(0.000864)	(0.00684)
Eps	12.30***	9.312***	10.13***	2.007***	3.782***	0.640***
	(0.586)	(0.615)	(0.598)	(0.0108)	(0.0405)	(0.188)
Cag	0.296***	0.310***	0.307***	0.412***	0.421***	0.622***
	(0.108)	(0.102)	(0.102)	(0.00455)	(0.00126)	(0.1404)
Roa	–0.0288	0.145	0.106	–0.335***	–0.303***	–0.688***
	(0.727)	(0.684)	(0.687)	(0.0293)	(0.0399)	(0.144)
Dy	–38.16*	–39.93*	–38.57*	–18.64***	–16.76***	–8.112
	(22.93)	(24.14)	(23.39)	(4.864)	(4.058)	(8.155)
Per	0.0511	0.0414	0.0436	–0.00878***	–0.0161***	–0.0395***
	(0.0372)	(0.0348)	(0.0349)	(0.00196)	(0.000329)	(0.00824)
Lrfsf	3.643**	5.322***	4.837***	1.576***	1.847***	0.166
	(1.455)	(1.667)	(1.569)	(0.129)	(0.404)	(0.102)
Constant	–8.037	–12.74	–12.39	–5.283***	–8.823***	0.616
	(8.159)	(9.127)	(9.374)	(0.656)	(1.959)	(0.805)
Observations	784	784	784	715	753	753
R-squared	0.393	0.269	–	–	–	–
Number of id	–	34	34	34	34	34
F-test	0.0000	0.0000	0.0000	–	–	–
Instruments	–	–	–	332	357	18
AR(1)	–	–	–	0.017	0.025	0.024
AR(2)	–	–	–	0.531	0.023	0.007
Sargen	–	–	–	0.054	0.871	0.000
Hansen	–	–	–	0.005	0.761	0.605
Hausman	–	39.78	–	–	–	–

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8. Regression result modelling (Value Stock Portfolio)

Variables	(OLS) Vasmp	(FE) Vasmp	(RE) Vasmp	(DGMM) Vasmp	(SYSGMMM) Vasmp	(xtabond2) Vasmp
LVasmp	–	–	–	0.661***	0.650***	0.821***
	–	–	–	(0.000255)	(0.000548)	(0.0183)
Eps	2.505***	0.480***	1.157***	1.076***	1.375***	1.021***
	(0.171)	(0.148)	(0.150)	(0.00622)	(0.00455)	(0.184)
Cag	3.173***	2.711***	2.753***	5.524***	5.981***	3.776***
	(1.123)	(0.827)	(0.899)	(0.0408)	(0.0626)	(0.817)
Roa	2.980***	0.666	2.395***	0.625***	0.973***	0.299***
	(0.406)	(0.431)	(0.387)	(0.00348)	(0.00463)	(0.0517)
Dy	–1.803	–1.192	–1.360	–1.124**	–0.810*	–0.151
	(1.879)	(1.436)	(1.552)	(0.506)	(0.485)	(0.122)
Per	–0.00134	–0.000114	–0.000612	–0.000809*	–0.00109	–0.000776*
	(0.00410)	(0.00314)	(0.00336)	(0.000422)	(0.00109)	(0.000431)
Lrfsf	1.965***	1.166***	1.467***	0.331***	0.738***	–0.0561
	(0.358)	(0.314)	(0.328)	(0.0155)	(0.0304)	(0.133)
Constant	4.293**	10.86***	7.781***	2.039***	0.315**	1.040**
	(1.713)	(1.452)	(2.166)	(0.0906)	(0.156)	(0.487)
Observations	1,130	1,130	1,130	1,024	1,079	1,079
R-squared	0.244	0.033	–	–	–	–
Number of id	–	54	54	54	54	54
F-test	0.0000	0.0000	0.0000	–	–	–
Instruments	–	–	–	332	357	18
AR(1)	–	–	–	0.543	0.003	0.044
AR(2)	–	–	–	0.224	0.456	0.042
Sargen	–	–	–	0.002	0.812	0.000
Hansen	–	–	–	0.088	0.413	0.310
Hausman	–	39.78	–	–	–	–

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

& Olofin, 2016). Thus, the SYSGMM was invoked to overcome the deficiencies associated with the Pooled OLS and heterogeneity challenges inherent in the model.

The Growth and the Value Portfolio were developed independently. The rate of responses of the explained variables were measured with the coefficients of Earnings Per Share (*eps*), Capital gain (*cag*), Returns on Assets (*roa*), Dividend Yield (*dy*), Price Earnings Ratio (*per*), and opportunity cost captured with the Log of Product of Risk Free Rate and Shareholders' Funds (*lrfsf*). The *F*-statistics in Tables 7 and 8 were small counterparts of the Wald (Chi-Square) statistics. It measured the overall level of significance of the models. The *F*-statistics of 83.92, *p*-value (0.000), Wald Statistics (Chi-Square) of 336.37 with *p*-value of 0.000 for the Growth Portfolio and, comparatively, the *F*-statistics of 60.05 (*p*-value 0.000), Wald test 128.42 (*p*-value 0.000) for the Value Portfolio are

at 1% level of significance. This in effect denoted that the explanatory variables were engaged jointly to explain the path and behavior of the Growth and Value Portfolios across the sample size of the study. Furthermore, the Sargan and Hansen J tests were used to examine and confirm the instrument validity. From Table 7 of the Growth Portfolio and Table 8 of the Value Portfolio, the *p*-value was greater than 0.05. This shows the evidence that the null hypothesis of the population moment condition was valid and it was not rejected. Thus, the Hansen J statistics did not reject the Over-Identifying Restriction (OIR).

Tables 7 and 8 reported the rate of responses of the Growth and the Value Portfolios with a view to ascertaining the better of the two (2) related Portfolios in terms of maximization of returns. The returns (explanatory variables) were captured with Earnings Per Share (*eps*), Capital gain (*cag*), Return on Assets (*roa*), Dividend Yield (*dy*),

Table 9. Summary of features and xtabond2 coefficients of the Growth and Value Stocks

Growth Stocks 34 Firms	Beta	t-stat	Features of Growth Stocks	Value Stocks 54 Firms	Beta	t-stat	Features of Value Stocks
Gasmp	–	–	High-priced and well established Stocks	Vasmp	–	–	Low-priced, penny and unestablished Stocks
Eps	0.64	3.4	High	Eps	1.021	5.55	Low
Cag	0.622	4.43	From the theories and general institutional investors' belief, high capital gain	Cag	3.776	4.62	From the theories and general institutional investors' belief low capital gain
Roa	−0.688	−4.78	High Return on Assets	Roa	0.299	5.78	Low Return on Assets
Dy	−8.112	−0.99	Low dividend yield, high earnings retention for growth	Dy	−0.15	−1.23	High dividend yield, low earnings retention for growth
Per	−0.04	−4.79	High Price Earnings Ratio	Per	−0.0008	−1.8	Low Price Earnings Ratio

Price Earnings Ratio (*per*) and Log of Product of Risk Free Rate and Shareholders' Funds (*lrfsf*) The proxies of explained variables for the two (2) Portfolios were the annual average stock prices represented with *gasmp* and *vasmp*, where *g* denoted Growth Portfolio and *v* captured the Value Portfolio, respectively.

From the results of the two (2) separate models reported in Tables 7 and 8, it appears that the Roodman's Arellano xtabond2 rate of responses of *eps* (1.021) of the Value Portfolio was 1.60 times greater than *eps* (0.640) of the Growth Portfolio. Also, from the Table, the Capital gain (*cag*) 3.78 of the Value Portfolio was 6.08 times more than the *cag* (0.622) of the Growth Portfolio. The relationship was positively significant, because the *z*-statistics of both portfolios were greater 1.96 threshold and the *p*-values of 0.000 (Value Portfolio) and 0.000 (Growth Portfolio) were smaller than 0.05 level of significance. In the same vein, the Return on Assets, *roa* (0.30) of the Value Portfolio was positively significant, whereas the *roa* (−0.69) of the Growth Portfolio was negatively significant, because the probability value and *z*-statistics of both portfolios (0.000, −4.79) were less than 0.05 level of significance and greater than the threshold of 1.96.

This evidence was corroborated by Cronqvist, Siegel, and Yu (2015), Fama and French (1992, 1995, 2006), Piotroski (2000), La Porta (1996), Bauman, Conover, and Miller (1998), Lakonishok, Shleifer, and Vishny (1994), among other empirical studies in the developed and emerging stock markets. The speed of responses of the minimum return of the Value Portfolio (−0.0561) was in-

versely significant, whereas that of the Growth Portfolio (0.17) was positively significant. The investors are worse off if they invested in Treasury Bill, because the proxy of minimum returns of the Value Portfolio (−0.0561) captured with the log of product of risk free rate and shareholder's funds were lesser than the returns of the Value Portfolio from the *eps* (1.021), *cag* (3.78) and *roa* (0.30), respectively. From the foregoing analyses, the returns of the Value Portfolio captured with *eps*, *cag* and *roa* were significantly greater than that of the Growth Portfolio. Comparatively, in Table 9, the *t*-statistics of *eps* (3.40), *cag* (4.43) and *roa* (−4.78) appear to give lesser immediate significant effect and responses to the explained variable (*gasmp*) of Growth Portfolio. Conversely, the *t*-statistics of *eps* (5.55), *cag* (4.62) and *roa* (5.78) appear to give greater immediate significant effect and responses to the explained variable (*vasmp*) of Value Portfolio. However in Table 9, the *t*-statistics, *roa* (−4.78) of the Growth Portfolio demonstrated significant inverse relationship, whereas both the *t*-statistics of the Dividend Yield (*dy*) of the Growth Portfolio (−0.99) and Value Portfolios (−1.23) were inversely insignificant. Also in Table 9, both the *t*-statistics of the Price Earnings Ratio (*per*) of the Growth Portfolio (−4.79) and that of the Value Portfolios (−1.8) were inversely significant.

From the foregoing discussion, it appears that the rate of responses of the *eps*, *cag* and *roa* were more than that of the Growth Portfolio. It may therefore be inferred that the Value Portfolio (lower cap stocks) outperformed the Growth Portfolio (large cap stocks) in the Nigeria Stock Exchange (NSE) in terms of returns. Furthermore, there may be

transition and rotation of investment from the Growth Portfolio to Value Portfolio and vice versa. This is a function of the extent and degree of increase in *eps*, *cag*, *roa* and perhaps *dy* of the two (2) Portfolios. In other words, where the degree of the proxies of return of the Value Stocks are persistently higher than the Growth Stocks and the prices of the Growth Stocks are greater than the prices of the Value Stocks; then the investors in the NSE may engage on rotational strategy by divesting away from the Growth Portfolio and investing more resources on the Value Portfolio. To invest more on the Value Stocks, the intrinsic value of the Value Stock should be more or close to the actual price in the NSE.

The study corroborated the evidence that Value Portfolio over Performed the Growth Portfolio in the NSE as recognized in the Zakaria and Hashim (2017) in the emerging stock markets, Basu (1975), Fama and French (1992, 2006), Cronqvist, Siegel, and Yu (2015) models in the developed stock markets. The evidence from the NSE is further supported by empirical proofs of Addae-Dapaah, Webb, Hin/David, and Hiang (2011) in the developed stock markets, Sareewiwatthana (2011) in Thailand, Piotroski (2000), Basu (1977, 1983), Lakonishok, Shleifer, and Vishny (1994), La Porta (1996), Fama and French (1995, 1998, 2004) in the emerging and advanced stock markets.

CONCLUSION

If investors in the stock market continue to be myopic and become panicky consequent upon the news of drop in the prices of stocks in the NSE; good opportunities might not be taken to pick cheap stocks that sold below or close to their intrinsic values during the bearish market. Thus, investors may not take the advantage of this opportunity to anticipate huge future returns and capital gains in the NSE. There is no time across the stock markets of the world that prices of stocks do not temporarily drop, usually; the prices will rise again in the short term. It appears that with the knowledge of the modern Value and Growth investing portfolio strategies, investors should be in the comfort zone to engage the strategies to earn more returns in the NSE. In the study, the results from the descriptive analyses and Roodman (2009) GMM xtabond2 appear to suggest that the Value Portfolio overperformed the Growth Portfolio in terms of the proxies of the returns captured with Earnings Per Share (*eps*), Capital gain (*cag*) and Returns on Assets (*roa*). Besides, it comes into sight that there may be advantage in rotation of strategy between the Growth and the Value Portfolios, because the *t*-statistics of *eps* and *cag* were positively significant.

RECOMMENDATIONS

From the foregoing, the policy implications and recommendations of the study are as follows:

1. As a result of the elusiveness of the Growth and Value Portfolios in the NSE, the study provides alternative strategies for the investors in the market to be able to group stocks into the Growth and Value Stocks Portfolios using the modern Price Earnings Growth (*peg*) ratios. This gives investors the opportunity to make an efficient and reliable choice among the available stocks to anticipate better future capital gains in the NSE. It appears that the Value Stocks offered higher returns than the Growth Stocks. Therefore, it is prescribed that investors should endeavor to buy cheap Value Stocks that sold below or close to their intrinsic values to maximize returns in the NSE. The policy implication of this is that both individual and institutional investors now have alternative and modern strategies that could be used to earn more returns in the NSE.

2. Also, it appears there could be rotational advantages between the Growth and the Value Portfolio, because the coefficients of the proxies of returns (*eps*, *cag*) from both Portfolios responded significantly and positively to the explained variables. Investors may therefore engage the identified proxies of returns to rotate stock investments between the Growth and the Value Portfolios to maximize returns in the NSE.

3. The measurements criteria in the study are clearly demarcated to show the variables that were appropriate to measure performance index of the Growth and the Value Stocks in the NSE. Because of the higher responses of the identified explanatory variables in the study, it is believed that the individual and institutional investors in the market could deploy the parameters to choose returns-driven stocks in their investment portfolio. Taking into accounts of the results, without much doubt, there could be push by the policy makers, regulatory institutions, government and other stakeholders in the NSE to use evidence from the study as a basis of screening Nigerian stocks into the Growth and the Value Stocks.

4. The study has not exhaustively evaluated whether to concentrate or rotate between the Growth and Value Portfolio in the NSE, therefore as a spring ball; it is recommended that further researches should be undertaken on whether to concentrate investible funds on either of the two (2) Portfolios or rotate financial resources on the Portfolios. Further works could also be done on the riskiness and valuation of the Portfolios in the NSE and other Sub-Saharan stock markets.

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