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Risk-Return Relationship in Equities: Evidence from the Automobile and Sector of the Nigerian Stock Exchange

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Abstract

The purpose of this study is to ascertain from empirical data the risk-return relationship that exist in the Automobile and Tyre sector of the Nigerian Stock Exchange(NSE) with particular reference to Dunlop and R. T. Briscoe. To achieve the objective, the researcher collected the daily equity prices of the stocks from the NSE Daily Official List from which capital gain yields of various months of each year under study were computed. Dividends were extracted from the companies' annual reports and accounts of each year under study from which dividend yields were computed. The standard deviation is the model used to determine the risk, while simple percentage analyses were used to determine returns. The study discovered that there was low positive linear relationship and marginal negative linear relationship between risks and returns in the Dunlop and R.T. Briscoe stocks respectively. Only 16.68 percent of the variations in the return from Dunlop can be explained by systematic risk and only 4.67 percent of the variations in R.T. Briscoe return were accounted for by systematic risk. Hence unsystematic risk accounted for at least 83.32 percent of the variations of returns in this sector.

Keywords: Risk, Return, Risk-Return relationship, Dividend yield, Capital gain yield, Market return.

1. Introduction

The thought of risk can give investors sleepless nights. However, through careful planning of financial future, risk can be managed. Risk is something we encounter every day. Even crossing a busy street involves some risk. With investments, balancing risk and return can be a tricky operation. All investors want to maximize their return, while minimizing risk. Putting hard earned Naira on the line can be downright frightening. Some investments are certainly more "risky" than others, but no investment is risk free. Trying to avoid risk by not investing at all can be the riskiest move of all. That would be like keeping idle cash which is barren of income generation. In investing, just like crossing the street with heavy traffic, one need to carefully consider the situation, accept a comfortable level of risk, and proceed to the destination. From the foregoing, it can be seen that risk can never be eliminated, but it can be managed. Any investment venture contains an element of risk and return. Risk is the possibility of the expected return not being realized. That is the possibility that the actual return from an investment will fall below the expected return. The greater the magnitude of deviation below the expected returns the greater the risk of the investment. Whereas risk is a situation where investor has a probability knowledge of the outcome of return on investment, uncertainty is a situation in which one has no knowledge at all (zero probability) of the future outcome of the return on investment. A situation where investor can predict the future outcome with 100 percent assurance is called certainty. Since no one has perfect knowledge of the future, investors attempt to capture uncertainties in the future through risk specification. Investors need to be quite sure of what risks they are taking. What risks are associated with each investment option? They should also know how to forecast and evaluate risk exposure. Risk Hedgers take position to reduce exposure to risk while speculators take position to increase risk exposure. Investors are interested

in wealth maximization but the lower the risk the lower the return. So investors would not run away from risk completely.

However, most, if not all, investors are risk averse. To get them to take more risk, firms would have to offer higher expected returns. Conversely, if investors want higher expected returns, they have to be willing to take more risk. Most investors do not have a quantitative measure of how much risk that they want to take. Investors given a choice between two investments with the same expected returns but different variances will normally pick the one with the lower variance. In practice, the expected returns and variances are calculated using historical data and are used as proxies for future returns. In a bid to show investors how to find out the level of risk and return in financial asset investment, this study becomes necessary.

Return is a percentage measure of investment gain or loss relative to the amount invested. For example, if you buy stock for N20,000 and sell it for N22,500, your return is a N2,500 gain. Or, if you buy stock for N20,000 and sell it for N19,500, your return is a N500 loss. Of course, you don't have to sell to figure return on the investments in your portfolio. You simply subtract what you paid from their current value to get a sense of where you stand. Long-term investors are interested in total return, which is the amount your investment increases or decreases in value, plus any income you received. Using the same example, if you sold a stock investment for a N2,500 gain after you had collected N150 in dividends, your total return would be N2,650. If you want to compare total return on two or more investments that you bought at different prices, you need to figure percent return. You do that by dividing the total return by your purchase price. For example, a N2,650 total return on an investment of N20,000 is 0.1325, or a 13.25% return. In contrast, a N2,650 total return on an investment of N30,000 is an 8.84% return. So while each investment has increased your wealth by the same amount, the performance of the first is more than twice as strong as the performance of the second.

The risk/return relationship is a fundamental concept in not only financial analysis, but in every aspect of life. If decisions are to lead to benefit maximization, it is necessary that individuals/institutions consider the combined influence on expected (future) return or benefit as well as on risk/cost. Understanding the relationship between risk and return is essential to understanding why people make some of the investment decisions they do. First is the principle that risk and return are directly related. The greater the risk that an investment may lose money the greater its potential for providing a substantial return. By the same token, the smaller the risk an investment poses, the smaller the potential return it will provide. For example, a startup business could become bankrupt, or it could become a multimillion-Naira company. If one invests in the stock of this company, he could lose everything or make a fortune. In contrast, a blue chip company is less likely to go bankrupt, but the investor is also less likely to get rich by buying stock in a company with millions of shareholders. The second principle is that if you can get a better-than-average return on an investment with less risk, you may be willing to sacrifice potentially greater return to avoid greater risk. That is sometimes the case when interest rates go up. Investors pull their money out of stocks, which are more risky, and put it in bonds, which are less risky, because they are not giving up much in the way of potential return and they are gaining more safety. The third principle is that you can balance risk and return in your overall portfolio by making investments along the spectrum of risk, from the most to the least.

The problem on ground is that people have been investing over the years, placing their money in various stocks without knowing their rate of return and risk on such stocks. The study of risk and return continues to be an area of vital importance for researchers; however, the theorizing and empirical findings in this area continue to present a series of problems. Consequently, this study is an attempt to address the issue. Therefore the objective of the study is to establish and demonstrate the nature of relationship that exists between risk and return in equity securities quoted under the Automobile/Tyre Sector of the Nigerian Stock Exchange (NSE) with particular reference to the Dunlop and R. T. Briscoe. The study becomes imperative as the findings would guide investors in selecting equity stocks in the NSE especially now that the two companies under study remain the only performing equities in the Automobile and Tyre sector. The study covered a ten-year period, 2000-2009. This paper has five major sections. Section one introduced the motives that propelled the research while section two reviewed the literatures relevant to the work. Section three showcased the research methodology while section four presents the empirical results from the research. Section five simply concludes the paper.

2. Literature Review

2.1The Concept of Return

Return is the rate at which an investment generates cash flows above the purchase cost of the investment. According to Fischer and Jordan (1995:67), the correct measure of total return on any security must incorporate both income and price change. The income is the periodic cash receipts from the investment either in the form of interest or dividends. For example, interest payments on most bonds are paid semi-annually where as dividends on common stocks are usually paid annually but sometimes are paid quarterly. The term, yield is often used in connection with this component of return. Yield refers to the income component in relation to the purchase price of a security. The price change of the investment asset over the holding period is the difference between the beginning (or purchase) price and the ending (or sales) price at which the asset can be sold. The price change can be either positive (capital gain) where sales price exceeds purchase price, or negative (capital loss) where purchase price exceeds sales price. Therefore the conceptual definition of total return of an investment across time or from different securities is that it is the sum of income and price change(+/-) and either component can be zero for a given security over any given time period. Also the return across time or from different securities can be measured and compared using the total return concept. And the total return for a given holding period relates all the cash flows received by an investor during any designated time period to the amount of money invested in the asset. Mathematically, Total Return (R_i) is defined thus $(D_t + P_t – P_{t-1})/P_{t-1.}$

Total return = $\frac{\text{Cash payments received + Price change over the holding period}}{\text{Purchase price of the asset}}$

Pandian(2005:149) states that the today's security return is (today's price – yesterday's price)/yesterday's price)x100 and today's market return is (today's index – yesterday's index)/yesterday's index)x100. Likely daily returns, weekly returns can be calculated by using this week's and last week's prices instead of today's and yesterday's prices in the above mentioned formula. Monthly returns also can be calculated. Nwude(2004) opines that the rate of return on investment could be defined as the benefit that accrues to the investor in excess of the total amount invested, expressed as a percentage of the total amount invested on the investment. Based on the above definitions of return, the return on equity is the sum of dividend yield and capital gain/loss yield(whether realized or unrealized).

Mean return can be obtained by Arithmetic Mean(AM) or Geometric Mean(GM). AM is a simple average of a number of returns calculated for a particular time as a measure of central tendency. GM is a compound average of a number of returns calculated for a particular time as a measure of cumulative rate of return over multiple periods. GM is used in investment to reflect the realized change in wealth over multiple periods. The GM model is $[(1+r_1)(1+r_2)(1+r_3)\ldots\ldots\ldots(1+r_n)]^{1/n}-1$, and that of AM is $(\sum r)/n$.

2.2 The Concept of Risk

Risk is the probability that possible future outcome may deviate from the expected outcome. The greater the magnitude of deviation the greater the risk. The possibilities of the various possible future outcomes can be predicted with some degree of confidence from the past knowledge of the event. This view is supported by Samuelson (1937), the Nobel Laureate when he says that we have but one sample of history and one must start analyzing the past in order to understand the future. This calls for use of historical data to look into the future. Relative to return, risk is the possibility that realized returns will be less than the returns that were expected. The source of such risk is the failure of dividends or interest and for the asset price to materialize as expected.

Some schools of thought have defined risk as volatility. Thus the price of a stock which tends to rise or fall more than the average stock price is considered risky. They even propound a quantitative measure of this risk known as beta. This beta is as well called the systematic risk. The systematic risk (or beta) is that portion of the total risk caused by factors affecting all the securities in the market. The factors include among others, economic, political, sociological changes in the country involved. For example, nearly all the stocks on the New York Stock Exchange (NYSE) recorded declining prices after the September 11, 2001 terrorist attack, in a similar fashion to the NYSE index. Fischer and Jordan (1999) note that on the average, 50% of the variation in common stocks price can be explained by variation in the market index. In other words, about one-half of the total risk in an average common stock is systematic risk. The portion of the total risk that is unique to a firm or industry as a result of factors such as management capability, consumer preferences, labour strikes etc is called the unsystematic risk (or alpha).

Understanding the nature of risk is not adequate unless it is expressed in some quantitative terms. Expressing the risk of a stock in quantitative terms makes it comparable with other stocks. The statistical tool often used to measure and used as a proxy for risk is the standard deviation. This measure of variability in return includes both systematic (β) and unsystematic (α) risks. The systematic (beta coefficient) and unsystematic (alpha coefficient) can be calculated from $\beta = (n\sum xy - \sum x\sum y)/(n\sum x^2 - (\sum x)^2)$ and $\alpha = (\sum y)/n - \beta(\sum x)/n$, where x represents market index, y represents the stock price and n represents the number of observations. When β=+1.00, it means that one percent change in market index return causes exactly one percent change in the stock return. It indicates that the stock moves in tandem with the market. When β=+0.5, it means that one percent change in market index return causes 0.5 percent change in the stock return. It indicates that the stock is less volatile compared to the market. β=+2.0 means that one percent change in market index return causes 1 percent change in the stock return. It indicates that the stock return is more volatile compared to the market. When there is a decline of 10% in the market return, the stock with a beta of +2.0 would give a negative return of 20%. The stock with more than 1 beta value is considered to be risky. Negative beta value indicates that the stock return moves in the opposite direction to the market return. A stock with a negative beta

of -1 would provide a return of 10% if the market return declines by 10% and vice versa. Stocks with negative beta resist the decline in the market return.

While the slope of the characteristic line(where the stock return{Y} is plotted against the market return{X}) is called the beta, the intercept of the line is alpha(α), which is the distance between the point of intersection and the horizontal X axis. It indicates that the stock return is independent of the market return up to that level of intersection. A positive α value is a healthy sign as it means the stock would yield profitable return. The correlation coefficient(r) measures the nature and the extent of relationship between the stock market index return and the stock return in a particular period. The $r = (n\sum xy - \sum x\sum y)/\sqrt{(n\sum x^2 - (\sum x)^2).\sqrt{(n\sum y^2 - (\sum y)^2)}}$. The square of the r is the coefficient of determination (r^2) which gives the percentage of variation in the stock return explained by the variation in the market return.

2.3 Risk- Return relationship

Different researchers have conceptualized the risk-return relationship as being positive, negative or curvilinear. The risk-return relationship has been presented in the literature in two distinct ways. One is the discussion on whether the relationship between risk and return is positive, negative, or curvilinear (Fiegenbaum, Hart, & Schendel, 1996). The second involves empirical anomalies that researchers are confronted with when examining the numerous studies in this area (Gooding, Goel, & Wiseman, 1996; Wiseman & Catanach, 1997). There have been relatively few explanations that have satisfactorily reconciled these differences.

The existing differences in theories and the contradictory empirical findings can be explained by suggesting that different groups of researchers may have addressed specific domains of the risk-return relationship. Within the confines of a particular domain in the risk-return relationship, each theoretical approach and its associated empirical findings may appear consistent; however, as different theoretical approaches are somewhat narrow, no one approach is possibly sufficient to explain the contradictions that arise when domains are enlarged, associated assumptions changed, or situational variables are introduced.

Positive Relationship: An important foundation of the risk-return relationship is the notion that managers are generally risk averse. This approach is well accepted in formalist theories of decision making that are based on notions of individual rationality and maximization of utility. Agency theory, a formalist theory, is based on assumptions of rational behavior and economic utilitarianism (Ross et al, 1996), and assumes a linear positive relationship between risk and return. Risk behavior has been associated with assumptions of rational behavior, outcome weighing, and utility maximization. Financial theory posits that risk averse behavior is manifest when low risk is associated with low return, as well as when high risk is rewarded by high return (Fisher & Hall, 1969). This risk averse outlook also assumes that for each strategic alternative, firms and managers will choose that alternative which maximizes utility (Cyert and March, 1963). Aaker and Jacobson (1987) found support for a positive association between performance and both systematic and unsystematic risk, when risk was defined using accounting data. A number of other studies have also found support for a positive risk-return relationship (Bettis, 1981; Tiegen and Brun, 1997).

Negative Relationship: It was, however, the work of Bowman (1980, 1982) and the 'Bowman's Paradox' which suggested that his findings were at considerable variance with classical finance theory. Bowman (1980) found a distinct and significant negative relationship between risk and return. Examining a large sample of firms from 85 industries, Bowman found a negative relationship between risk and return among firms that were performing well, as well as a negative return between risk and return for firms performing poorly. Bowman's (1980, 1982) interpretations of his findings were that managers may be risk seekers under certain circumstances. Well-managed firms, according to Bowman (1980,1982), appeared to be able to increase their returns and reduce risk simultaneously (suggesting an apparent paradox on account of the negative relationship), and in contradiction with the positive risk-return relationship postulated by the formal theorists. The paradox in the risk-return association, the negative relationship found by Bowman (1980, 1982), where there is one cluster of high risk and low return firms (the inferior performers), and another cluster of low risk and high return firms (the superior performers), was also supported by other researchers (Fiegenbaum & Thomas, 1986; Cool & Dierickx, 1987).

Curvilinear Relationship: A third body of research, using Kahneman and Tversky's (1986) prospect theory explanations, found a curvilinear relationship between risk and return. Prospect theory suggests that people outweigh outcomes that are probable compared with outcomes that are certain. As a consequence, people prefer sure gains to likely gains, and prefer likely losses to sure losses. The concept of a reference point is central to prospect theory explanations. Many researchers assume that a reference point is typically the industry average or the performance of referent other firms. Performing below or above the reference point affects managers' assessment of risk and consequent risk taking. The major prediction of prospect theory is that managers are both risk seeking and risk averse, depending on whether managers consider themselves to be in the domain of (relative) gains or (relative) losses. A fundamental argument of prospect theory is that managers use reference points in evaluating risky choices, and adopt risk seeking behaviors when operating below the reference point, and risk averse behaviors when operating above the reference point (Kahneman and Tversky, 1986). There is also considerable research support for a curvilinear relationship (Chang and Thomas, 1989; Fiegenbaum and Thomas, 1986 and 1988; Singh, 1994). Prospect theory explains how the same manager may exhibit different types of risky behaviors that are predicated by relative performance and other feedback. Fiegenbaum et al. (1996) have argued for a linkage between reference points and a firm's strategic realignment.

In addition to these three theoretical approaches -- positive, negative, and curvilinear, there are some intriguing anomalies and contradictions that are worth pointing out. Prospect theory suggests that managers adopt risk seeking behaviors when their expected outcomes from actions are below their reference point, and risk averse behavior when expected outcomes are above their reference point. There are, however, some empirical findings that are contrary to the predictions of prospect theory (Highouse & Yüce, 1996, Lopes, 1987, March, 1988, March and Shapira, 1987 and 1992, Markku and Jani, 2007). Studies in decision making have found that past success increases the willingness to take risks (Staw, 1981; Staw and Ross, 1980; Thaler & Johnson, 1990), or that past failures lead to rigidity and risk averse behavior (Staw and Dutton, 1981). There exists a range of risk-related behaviors to which there is no clear and composite theory or unifying explanation.

3. Research Methodology

The population of the study is made up of all the quoted firms in the Agricultural/Agro-Allied sector of the Nigerian Stock Exchange (NSE). The sample of the study consists of all the quoted firms in the sector that maintains active presence in the NSE from 2000-2009. In this study the dependent variable is *Rate of Return* (denoted by Y) while the independent variable is *Risk* (denoted by X). The numerical values of the dependent and independent variables were computed for each of the years 2000-2009 using the model for computing each. Afterward, we compute the correlation coefficient between the two variables using the Pearson's(product moment) coefficient of correlation formula. Correlation coefficient is a measure of the degree of co-variability of the variables X and Y. Return is the measure of the gains or losses in an investment. The study involved quoted firms on the Automobile/Tyre sector. The NSE daily official list provided the stock prices we used to compute the capital gain while the dividends used to compute the dividend yield were extracted from the banks' annual reports and accounts of the relevant years. Follow-up figures were computed by the researcher. The central bank of Nigeria statistical bulletins provided the rates of return on the FGN Treasury bills. The average for each year, made up of four quarters is adopted as the risk-free rate of return for each year. The rate of return on common stock is the sum of the dividend yield and capital gain yield. That is, Rate of Return = $(Dt + P_t - P_{t-1})/ P_{t-1}$, where D/ P_{t-1} is the dividend yield, $(P_t - P_{t-1})/ P_{t-1}$ is the capital gain yield. The yearly average rate of return for each firm is obtained from the geometric mean of the monthly(January-December of each year) rates of return multiplied by the twelve months that make a year. The risk for each year is obtained from the standard deviation of the monthly (January-December of each year) rates of return.

The model employed for undertaking an investigation into the nature of the relationship between risk and return in Nigerian banking sector is coefficient of correlation(r) and coefficient of determination (r^2). The annual returns on the Nigerian Stock Exchange All –Share Index was used to proxy the market portfolio returns. **Next we apply the simple linear regression formula to derive estimates of the parameter of the relationship between X and Y. To find the equation of the best straight line that established the relationship between X and Y, we use the regression formula Y = a + bX, where a = y-bx and b(i.e beta) = [∑(X- x)(Y-y)]/[∑(X- x)2] or [n∑XY - ∑X∑Y]/[n∑X2 - (∑X)2]. We then resort to the use of descriptive statistics to interpret data gathered in order to comprehend the risk/return relationship involve in investing in the capital market, most especially our subject firms.**

4.0 Data Presentation and Analysis

Table 4.1: Risk-Return Data

Dunlop												
Item	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	R	r^2
Annual Return(**Ri**)	-5.28	-25.80	-23.28	-20.16	-30.00	37.32	47.88	-26.64	-138.36	-65.45		
Annual Risk (σ_i)	8.33	6.56	13.94	9.13	19.18	13.22	14.79	19.54	24.92	78.49	-0.41	0.1668
Rm	**37.91**	**38.28**	**7.09**	**51.82**	**17.13**	**4.06**	**31.44**	**53.06**	**-58.56**	**-36.60**		
R_f	**12.00**	**12.95**	**18.88**	**15.02**	**14.21**	**7.00**	**8.80**	**6.91**	**7.28**	**2.45**		
Ri-R_f	-17.28	-38.75	-42.16	-35.18	-44.21	30.32	39.08	-33.55	-145.64	-67.90		
Rm-R_f	**25.91**	**25.33**	**-11.79**	**36.8**	**2.92**	**-2.94**	**22.64**	**46.15**	**-65.84**	**-39.05**		
Ri/σ_i	**-0.63**	**-3.93**	**-1.67**	**-2.21**	**-1.56**	**2.82**	**3.24**	**-1.36**	**-5.55**	**-0.83**		
σ_m	4.24	5.36	4.01	5.65	7.76	4.49	5.32	4.87	8.20	11.15		
Rm/σ_m	8.94	7.14	1.77	9.15	2.23	0.88	5.91	10.89	-7.14	-3.28		
β= Ri-R_f/ /Rm-R_f	**-0.67**	**-1.53**	**3.58**	**-0.96**	**-15.14**	**-10.31**	**1.73**	**-0.73**	**2.21**	**1.74**		
α	**9.00**	**8.09**	**10.36**	**10.09**	**34.32**	**23.53**	**13.06**	**20.27**	**22.71**	**76.75**		
β/σ	**-8.04**	**-23.32**	**25.68**	**-10.51**	**-78.94**	**-77.99**	**11.70**	**-3.74**	**8.87**	**2.22**		
α/σ	**108.04**	**123.32**	**74.32**	**110.51**	**178.94**	**177.99**	**88.30**	**103.74**	**91.13**	**97.78**		
RT Briscoe												
Item	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	R	r^2
Annual Return(R)	-41.76	122.04	-22.08	113.64	-2.52	-17.16	43.32	69.36	-58.08	-90.34		
Annual Risk (**α**)	2.09	20.11	16.10	18.65	30.73	12.90	17.53	12.58	10.27	21.17	0.21	0.0467
Rm	**37.91**	**38.28**	**7.09**	**51.82**	**17.13**	**4.06**	**31.44**	**53.06**	**-58.56**	**-36.60**		
R_f	**12.00**	**12.95**	**18.88**	**15.02**	**14.21**	**7.00**	**8.80**	**6.91**	**7.28**	**2.45**		
Ri-R_f	**-53.76**	**109.09**	**-40.96**	**98.62**	**-16.73**	**-24.16**	**34.52**	**62.45**	**65.36**	**-92.79**		
Rm-R_f	**25.91**	**25.33**	**-11.79**	**36.8**	**2.92**	**-2.94**	**22.64**	**46.15**	**-65.84**	**-39.05**		
Ri/σ_i	**-19.98**	**6.07**	**1.37**	**6.09**	**-0.08**	**1.33**	**2.47**	**5.51**	**-5.66**	**-4.27**		
σ_m	4.24	5.36	4.01	5.65	7.76	4.49	5.32	4.87	8.20	11.15		
Rm/σ_m	8.94	7.14	1.77	9.15	2.23	0.88	5.91	10.89	-7.14	-3.28		
β= Ri-R_f/ /Rm-R_f	**-2.07**	**4.31**	**3.47**	**2.68**	**-5.73**	**8.22**	**1.52**	**1.35**	**-0.99**	**2.38**		
α	**4.16**	**15.80**	**12.63**	**15.97**	**36.46**	**4.68**	**16.01**	**11.23**	**11.26**	**18.79**		

β/σ	**-99.04**	**21.43**	**21.55**	**14.37**	**-18.65**	**63.72**	**8.67**	**10.73**	**-9.64**	**11.24**		
α/σ	**199.04**	**78.57**	**78.45**	**85.63**	**118.65**	**36.28**	**91.33**	**89.27**	**109.64**	**88.76**		

Source: Computed by E. Chuke-Nwude 2010

Return per unit risk in the market ranged between -7.14 percent in 2008 and 9.15 percent in 2003, while that of Dunlop ranged between -5.55 percent in 2008 and 3.24 percent in 2006 and R.T. Briscoe between -19.98 percent in 2000 and 6.09 percent in 2003. These figures show that the market led the best two stocks in the Automobile and Tyre sector in terms of return per unit risk. Within the period under study, on the average, the market returned 3.65 percent per unit risk while Dunlop and R.T. Briscoe returned -1.17 percent and -0.72 percent respectively.

While the annual return from the market ranged between -58.56 percent in 2008 and 51.82 percent in 2003, Dunlop returned between -138.36 percent in 2008 and 47.88 percent in 2006, and R.T. Briscoe delivered between -90.34 percent in 2009 and 122.04 percent in 2001. On the average for the study period, the market returned annually 20.36 percent while Dunlop and R.T. Briscoe returned -24.98 percent and 11.34 percent respectively. Here again the market is a clear leader in this respect followed by R.T. Briscoe.

Annual risk of the market ranged between 4.01 in 2002 and 11.15 in 2009 while that of Dunlop ranged between 6.56 in 2001 and 78.49 in 2009, and R.T. Briscoe between 2.09 in 2000 and 30.73 in 2004. Obviously the market should have less risk than the sector because of its diversified nature.

While the market risk premium ranged between -65.84 percent in 2008 and 46.15 percent in 2007, that of Dunlop was between -145.64 percent in 2008 and 39.08 percent in 2006, and R.T. Briscoe between -92.79 percent in 2009 and 98.62 percent in 2003. The systematic risk(beta) accounted for between -78.94 percent in 2004 and 25.68 percent in 2002 of the variations in the return of Dunlop and between -99.04 percent in 2000 and 63.72 percent in 2005 in that of R.T. Briscoe. The unsystematic risk and other idiosyncratic factors accounted for between 199.04 percent in 2000 and 36.28 percent in 2005 in R.T. Briscoe and between 178.94 percent in 2004 and 74.32 percent in 2002 in Dunlop. Obviously, trading on these two stocks was being powered by noise trading.

On the risk-return relationship, the return from Dunlop was marginally negatively correlated with the risk and the coefficient of determination of 16.68 percent confirmed this. Therefore, it means that only 16.68 percent of the variations in the return from Dunlop can be explained by risk and idiosyncratic factors accounted for as high as 83.32 percent. The return from R.T. Briscoe had low positive correlation with the risk and this is also confirmed by the very low coefficient of determination of 4.67 percent. That is, only 4.67 percent of the variations in R.T. Briscoe return was accounted for by risk and idiosyncratic factors had a field day up to 93.33 percent.

5.0 Conclusions

In this study, an attempt was made to evaluate the nature of the relationship between risk and return in Nigerian Automobile/Tyre sector. The results of empirical analysis showed that the unsystematic risk accounted significantly for the variations in the returns of the quoted firms. The best two stocks in the Automobile and Tyre sector of the Nigerian Stock Exchange (NSE) underperformed the market in all respects during the period of study. Dunlop Plc displayed low positive risk-return relationship while the R.T. Briscoe showed marginal negative risk-return relationship. The implication is that even during the superior performance of the market the investors in Dunlop are bound to receive very poor returns for the years 2001, 2003-2005, 2007, 2009 and appreciable returns for years 2002, 2006, 2008, 2009 as the systematic risk levels indicate. Similarly investors in R.T.Briscoe receive very low returns in years 2000, 2004, 2008 and significant returns in years 2001-2003, 2005-2007 and 2009.

Based on the findings and conclusions of the study, it is hereby recommended that the investors in the Nigerian Stock Exchange(NSE) will find the betas helpful in assessing systematic risk and understanding the impact market movements can have on the return expected from a share of Nigerian automobile/tyre stocks. For example, if the market is expected to provide a 10% rate of return over the next year, Dunlop and R.T Briscoe stocks with average beta of -2.01 and 1.51 respectively would be expected to experience a decrease (in Dunlop) and an increase (in RT Briscoe) in return of approximately -20.1% and 15.1% respectively over the same period. Decreases in market returns are also translated into decreasing security returns, and this is where the risk lies. In the preceding example, if the market is expected to experience a negative return of 10%, then the Dunlop with a beta of -2.01 should experience 20.1% decrease in its return. Stocks having less than 1 will, of course, be less responsive to changing returns in the market, and therefore are considered less risky.

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