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Risks of Equities Listed in the Airlines, Automobile, Road and Maritime Sectors of the Nigerian Stock Exchange

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Abstract: This study addresses a very important topic in corporate finance that is not well treated in many developing stock markets, particularly Nigeria. Beta is a major component of the Capital Asset Pricing Model (CAPM) used in the determination of the required rate of return on equity. A very high percentage of the documented works done in this area have been carried out mostly in developed economies such as the stock markets of America, Europe and Asia. Since, we have the need for stock markets, there is also the need to estimate equity betas which will be used to determine the required rate of return on equities traded in our markets in order to guide investors in making investment decisions. Based on this need, we estimated the (historical) betas of the listed stocks in the airlines, automobile, road and maritime sectors of the Nigerian Stock Exchange from 2000-2012 a 13 years period. From the estimation of beta for the listed stocks, it was discovered that the maximum of 17.47% of Airlines services sector's total risk was explained by the market risk which is called beta and therefore non-diversifiable. The <5% of the total volatility in automobile sector was explained by the market fluctuations while that of the road transport sector hung around 15.21% and that of the maritime sector had a maximum of 16% beta content. This implies that the bulk of the risk in these sectors is constituted by unsystematic, idiosyncratic, non-market determined and specific diversifiable risk. Hence, we suggest that some corrective measures have to be embarked upon in order to reduce noise in the rates of return of these stocks.

Key words: Equity beta, total risk, alpha risk, beta risk, market risk, volatility level, airlines services sector, automobile sector, road transport sector, maritime sector, stock exchange.

INTRODUCTION

At the heart of Capital Asset Pricing Model (CAPM) is the fact that the returns on a financial asset increase with risk as it was first expounded by Sharpe (1964). William Sharpe was supported in this opinion by Lintner (1965), Treynor (1965), Mossin (1966) and Black (1972). This financial theory dominated the academic literature and influenced greatly the practical world of finance and business from its inception up to the moment. It gives precise definition of risk and threw off-balance the work of Markowitz and his cohorts on the reliance on standard deviation as a measure of risk. A central tenet of the CAPM is that systematic risk as measured by beta is the only factor affecting the level of return required on a share for a completely diversified investor. The systematic risk controls the extent to which a particular share's returns move when the stock market as a whole moves. The total risk of an investment consists of two components: diversifiable (alpha) and non-diversifiable (beta) risk, otherwise called non-market and market risks or unsystematic and systematic risks, respectively. Diversifiable or unsystematic risk represents the portion of an investment risk that can be eliminated by holding well diversified portfolio. This risk results from controllable but uncontrolled events that tend to be unique to an industry and/or a company such as management changes, labour changes, labour strikes, lawsuits and regulatory actions. Non-diversifiable or systematic risk is external to an industry and/or a company and is attributable to broad natural forces such as war, inflation, political and sociological events. Such forces impact on all investments and therefore are not unique to a given company or sector. Therefore, the

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relationship between total risk, diversifiable risk and non-diversifiable risk is that total risk is equal to diversifiable risk plus non-diversifiable risk. Because any knowledgeable investor can eliminate diversifiable risk by holding a large number of well diversified portfolios of securities, the only relevant risk to be concerned about is non-diversifiable risk. Fischer and Jordan (2005) posit that studies have shown that by carefully selecting as few as fifteen securities for a portfolio, diversifiable risk can almost be entirely eliminated. However, non-diversifiable risk is unavoidable and each security possesses its own level of non-diversifiable risk, measured with the financial metric called beta.

Beta coefficient measures the sensitivity of each of the stocks' returns to movements in the market's return. It shows how the price of a security responds to market forces. That is, it measures the sensitivity of a stock to the market index. In effect, the more responsive the price of a security is to changes in the market, the higher will be its beta. It enables us to state what premium should be paid on each of the firms' shares by comparing the latter with that of the whole market portfolio. Beta is calculated by relating the returns on a security with the returns for the market. The beta for the overall market is equal to 1.00. Other betas are viewed in relation to this value. Beta can be positive or negative. Investors will find beta helpful in assessing systematic risk and understanding the impact that market movements can have on the return expected from a share of stock. For example, if the market is expected to provide a 10% rate of return over the next year, a stock having a beta of 1.50 would be expected to experience an increase in return of approximately, 15% (1.50×10% =15%) over the same period. This particular stock is much more volatile than the market as a whole. Decreases in market returns are translated into decreasing security returns and this is where the risk lies. For example, if the market is expected to experience a negative return of 10% then, the stock with a beta of 1.50 is expected to experience a 15% decrease in its return (1.50×-10% = -15%). Stocks having betas of <1.00 will be less responsive to changing returns in the market and therefore are considered less risky.

In the field of finance there is widespread agreement that the Capital Asset Pricing Model (CAPM) is a good predictor of stock return. To work with CAPM, there is the need for beta coefficient because it is a major component of the Capital Asset Pricing Model (CAPM). While several empirical works have been done in many developed stock markets to capture beta value, few of such works have been done in developing stock markets such as Nigeria. Such studies have now become imperative, given the developments in the Nigerian stock market. In Nigerian Stock Exchange (NSE), the appropriate beta coefficients of the airlines services, automobile, road transport and maritime sector equity stocks have remained in doubt. As it were, there seem to be no definite values for this important component of the CAPM. Besides and specifically, there is the need to re-evaluate the risk level of the Nigerian airlines services, automobile, road transport and maritime sectors.

In emerging markets, measuring betas is a more difficult and complicated job because of insufficient data, quite unlike the developed markets with abundant historical data. This lack of sufficient data on the stock market in emerging countries undermines beta computation and relevant formulas. In addition, there might be no comparable local firms to those that operate in the developed markets. This may cause unreliable beta estimates. The reliability and fitness of calculated betas are relevant to the valuation and investment by investors in emerging markets. Beta is useful in the following cases: Determination of expected rate of return for a risky asset, via $Ri = Rf+\beta (Rm-Rf)$, determination of cost of equity capital, via $Ke = Rf+\beta (Rm-Rf)$, Determination of portfolio risk via Portfolio Beta = $\beta p = \Sigma Wi \beta i$; Stock classification: Stocks can be classified by beta into aggressive stocks = high beta stocks = β = 1.79-1.06, conservative stocks = average beta stocks = β = 1.05-0.93 and defensive stocks = low beta stocks = β = 0.92-0.02. On this fourth application of beta, one can recall that the return on any security varies with the security's beta. Beta measures the sensitivity of a stock's return to changes in the return on the market or the index. That is beta measures the sensitivity of the underlying asset's prospects and investor's assessment thereof to those of the economy as a whole. Beta indicates how a stock is expected to move, up or down, relative to the overall market. Usually, a stock with a higher beta represents a more volatile and riskier investment.

In the light of the problem and needs highlighted above, the major objective of this study is to find out the appropriate beta coefficients for the equity stocks with particular reference to the airlines services, automobile, road transport and maritime sectors. In addressing this specific objective, the study seeks to answer this specific question: What are the appropriate beta values for the listed airlines services, automobile, road transport and maritime sectors' stocks in Nigeria for the period 2000-2012? To hazard a guess, it is hereby proposed that the airlines services, automobile, road transport and maritime sectors' stocks are volatile as their beta values are greater or less than one. On the scope of the study, it is a well known fact that companies quoted on the Nigerian Stock Exchange are segregated into many

sectors. However, the areas of interest of this study are the airlines services, automobile, road transport and maritime sectors. The decision to research only on airlines services, automobile, road transport and maritime sectors' stocks is informed by the fact that airlines services, automobile, road transport and maritime sectors are active sectors in the Exchange. However, the findings and conclusions to be derived from this work are as related to the airlines services, automobile, road transport and maritime sectors stocks in Nigeria. The study covers the period of 13 years (2000-2012), comprising 156 months.

The significance of the study lies in the fact that the findings of the study would assist investors in the Nigerian Stock Exchange in their investment decisions. More importantly, it should be useful in guiding policy makers at the exchange to formulate policies on equity share price movements and by so doing, restore investors' confidence in the market. When the investors' confidence is restored, trading activities can increase. Certainly with an increased trading volume at the exchange, the overall wealth of the society will appreciate. For an investor, it represents a pivotal area around which sensible investment and financing decisions revolve. The profitability of trading on financial instruments depends on proper reference points. Therefore, when deciding on the investment structure of an investor, the findings from this study become helpful. When deciding on which stock to transact in order to have a justifiable reward, the beta value is required. This research will bring to light and remind potential investors about the price movement status of the Nigerian airlines services, automobile, road transport and maritime sectors' stocks. This knowledge will help them to make informed investment and financing decisions that can enhance their investment value. This is a sure way to wealth creation and poverty eradication. Undoubtedly, the study will provide a basis upon which other researchers in the capital market issues can explore other sectors of the market. Finally, this paper provides internal and external investors, financial institutions, companies and government stronger basis while establishing their policies in investments and in governance. It also provides readers with references and exhibits. One major limitation of this study is the unavailability of complete data for 2013. The inclusion of 2013 data would have made the work more current.

Literature review: From conceptual theories in financial markets, systematic risk relates to the overall risk of the whole market which cannot be avoided by diversification and is measured by a financial metric, beta. Unlevered beta measures how much systematic risk a firm has, without debt, compared to the benchmark in the stock market. Equity beta covers systematic risk of a firm's equity while asset beta measures that risk which a firm's asset has. Several factors which can affect beta include but are not limited to, the volatility of expected return of a single stock, or the volatility of the expected return of the entire stock market index. Therefore, the company performance or its management performance, the investor confidence and the economic expectation might influence beta values. For a typical company, its beta can be estimated by using a regression of a stock returns against an overall stock exchange index return. Return is the rate at which an investment generates cash flows above the purchase cost of the investment. Return on a typical investment consists of two components. The first and basic component is the periodic cash receipts (or income) from the investment either in the form of interest or dividends. The second component is the change in the price of the investment asset. This can be positive (capital gain) or negative (capital loss). This element of return is the difference between the purchase price and the price at which the asset can be or was sold. The income from an investment sometimes consists of one or more cash payments paid at specified intervals of time. For example, interest payments on most bonds are paid semi-annually whereas dividends on common stocks are usually paid annually. However, sometimes, they are paid quarterly or semiannually. 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 conceptual statement for total return of an investment consists of the sum of two components, income and price change (Fischer and Jordan, 2005; Pandey, 2009; Fernandez *et al*., 2010; Arnold, 2008; Berk and DeMarzo, 2009; Brealey *et al*., 1995; Copeland *et al*., 2005; Damodaran, 2001; Howells and Bain, 2008; Pandian, 2005; Ross *et al*., 1996; Weston *et al*., 1996). Therefore, the return across time or from different securities can be measured and compared using the total return concept. 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. It is defined as: total return equals cash payments received plus price change over the period divided by Purchase price of the asset. That is total return $(R_t) = (D_t+P_t-P_{t-1})/P_{t-1}$.

Fernandez (2009a) computed historical betas of At and T, Boeing and Coca-Cola during the two-month period of December 2001 and January 2002 with respect to the S&P 500. Each day, betas were calculated using 5 years of monthly data that is on December 18, 2001, the beta was calculated by running a regression of the 60 monthly returns of the company on the 60 monthly

returns of the S&P 500. The returns of each month were calculated on the 18th day of the month. The monthly return of December 18, 2001 = (total return December 18, 2001/total return November 18, 2001)-1.

Fernandez (2009b) also stated that industry betas are very unstable. The researcher also stated that a portfolio beta can be calculated by taking market capitalization of each stock in the portfolio and then, average beta of each company security (Blitz *et al*., 2012; Cont, 2011; Fama and French, 1998, 2004, 2006; Fernandez, 2008; Rogers and Securato, 2008; Fernandez, 2009) while using the return of the S&P 500 as market return, computed the correlations of the annual stock returns (1989-2008) of the Dow Jones companies and discovered on average that the composite stock market with a beta that is equal to one does better than calculated betas. They also discovered that the adjusted betas (i.e., 0.67 calculated beta+0.33) have higher correlation than calculated betas but adjusted betas have lower correlation than beta that is equal to one. They conducted the exercise with four calculated betas every year end versus S&P 500 using: monthly data of last 5 years, monthly data of last 2 years, weekly data of last 5 years, daily data of last 5 years and found similar results with the four betas. Despite this results, Fernandez (2009b) reports that 97.3% of the professors that justify the betas using regressions, webs, databases, textbooks or papers while only 0.9% of the professors justified the beta using exclusively personal judgment (named qualitative betas, common sense betas, intuitive betas, logical magnitude betas and own judgment betas by different professors).

The Capital Assets Pricing Model (CAPM): The CAPM was developed by Sharpe (1964) in an attempt to simplify the individual portfolio theory as it relates to investment in securities. It states that the return on any asset or portfolio is related to the riskless rate of return and the expected return on the market in a linear fashion. It shows the relationship between expected return of a security and its unavoidable systematic risk thus:

$$R = R_f+\beta (R_m-R_f)$$

Where:

R = Expected rate of return on a security or a portfolio
R_f = Risk-free rate of return
R_m = Expected market rate of return
β = Systemic risk of the security (the beta) relative to that of the market

The model submits that it is only the risk which cannot be diversified away, i.e., systemic risk that is worthy of being rewarded with a risk premium for financial valuation purposes. The remaining risk, the unsystemic or diversifiable risk may be reduced to zero by portfolio diversification. Hence, it is not worthy of a risk premium. The line that reflects the combination of systemic risk and return available on alternative investments at a given time is called the Security Market Line (SML). Any security that lies on the SML is being correctly priced. If there is temporary disequilibrium in the market and the return on some assets becomes higher than that given by the SML, then, the security is underpriced. Under this market condition, if the market mechanism is working ideally as investors demand more of such securities as super-good investment, the prices will continue to rise until that higher level of return reaches the SML value. Conversely, if as a result of the market disequilibrium, the level of return is lower than that given by the SML, then, the security is overpriced. Under this market condition, if the market mechanism is working ideally, as investors sell-off more of such securities as super-bad investment, the prices will continue to fall until the level of return rises to that given by the SML value. Therefore, investors should select investments that are consistent with their risk preferences. While some investors consider only low risk investments, others welcome high risk investments. However, investors should sell overpriced securities, buy underpriced securities and hold onto correctly priced securities. The key to this decision is that when actual return-APM required return = +ve alpha, the security is underpriced. When actual return-CAPM required return = zero alpha, the security is correctly priced and when actual return-CAPM required return =-ve alpha, the security is overpriced. The CAPM provides a framework for the valuation of securities.

Akintola-Bello (2004) used 96 months of security returns from Jan 1992 to December 1999 to estimate the betas for 173 firms quoted on the Nigerian Stock Exchange. He used growth rates in the NSE All-share index as the proxy for the market rate of return. It is generally accepted that due to some statistical factors, the estimated betas using the regression analysis are not unbiased estimates of the underlying beta of a firm's securities. The underlying beta of a security is likely to be closer to 1.0 than the sample estimate. To correct for this bias, Merrill Lynch developed an adjustment technique. After using the ordinary least squares to gain a preliminary estimate of beta, using 60 monthly returns, the beta is adjusted as follows: Adjusted Beta = 2/3(Computed Sample Beta)+1/3(1) = 0.67 (Raw beta)+0.33(1). The formula pushes high betas down

toward 1.0 and low betas up toward 1.0. The raw betas computed are adjusted to remove individual security's bias.

Consequently, the conventional approach for estimating betas used by most investment firms, analysts and services is to use historical market data for firms that have been quoted for a long period. One can estimate returns that an investor would have made on their investments in intervals (such as a week, a month) over that period. These returns can then be related to a proxy for the market portfolio to get a beta in the CAPM.

The beta of the overall stock market is +1.0 and every other stock beta is viewed in relation to this value, + 1.0. A stock with beta of exactly one will on the average move by just 1% for every 1% movement by the market. A stock with a beta of 1.5 tends to be 50% more volatile than the average stock market index while that with a beta of 0.5 is half as volatile. If a stock with a beta rating of 1 moves 10% another stock with a beta equal to 2 can be expected to move twice as much (i.e., 20%). The beta usually used in stocks classification is the adjusted stock beta (Akintola, 2004).

When the stock market is declining, a stock with a beta rating of <1 is preferred. The reason is that such a stock is expected to decline less than the market. Conversely in a rising market such a stock will underperform compared to the overall market. When the overall market is rising, a stock with a high beta is expected to out-perform the market. An investor's objective during the stock selection process is to identify stocks that will rise faster than the average stock during a bull market and decline less than the average stock during a bear market

Huy (2013) captures the views by Sharpe (1964) and Black (1972) that the expected stock return is linearly proportional to its market beta and affirms that certainly, beta as a market risk measure has certain influence on expected stock returns. He also reported that Fama and French (1988) also indicated in the three factor model that "value" and "size" are significant components which can affect stock returns. They also mentioned that a stock's return not only depends on a market beta but also on market capitalization beta. The market beta is used in the three factor model, developed by Fama and French (2006) which is the successor to the CAPM model by Sharpe.

Estimation of beta coefficient (β): The conventional approach for estimating betas as used by Value Line Investment Services, Merrill Lynch (a US investment firm) and the London Business School Risk Management Service is to relate historical returns on an investment to a proxy for the market portfolio returns, using the ordinary least square techniques to get a beta. Also, according to Fischer and Jordan (2005), the beta coefficient is computed for equity using ordinary least squares techniques. It is generally accepted that due to some statistical factors such as error in capturing the data and early approximations, the estimated betas using the regression analysis are not unbiased estimates of the underlying beta of a security. To correct for this bias, Merrill Lynch developed the technique which was also adopted by Akintola-Bello (2004). The technique is that after using the ordinary least squares to gain a preliminary estimate of beta, using 96 monthly returns, they adjust the beta using Adjusted beta = Raw beta (0.67)+0.33. In order to correct the bias in estimating beta, the formula above pushes high betas down to 1.0 and low betas up toward 1.0 and generate a better estimates of beta values.

Grinblatt and Sheridan (1998) state that in practice, with historical return data, the beta value is the ratio of the covariance of the financial asset returns and the market returns to variance of the market return (beta = Cov[Ri, Rm]/Variance of Market return). Here, the proxy for market return is the return of the S&P 500. Grinblatt and Sheridan (1998) agreed that there exist estimation errors in computing beta value and support the idea of correcting the errors by adjusting the estimated beta value using the Bloomberg adjustment formula which states that adjusted beta equals 0.66 (Unadjusted beta)+0.34. Grinblatt and Sheridan (1998) state that analysts should avoid using daily returns and instead, estimate betas with weekly or monthly returns where the effect of delayed or lagging reaction to market movements tends to be less severe.

Black (1972) shows how the CAPM changes when there is no risk-free asset or when investors face restrictions on or extra cost of borrowing. Black (1993), while estimating the relationship between beta and return on US shares, 1926-1991 established poor relationship after 1965. On the assessment of risk, Blume (1971) found out that betas change over time. Blume (1975), on his study on betas and their regression tendencies, established that betas tend to 1 over time. On short term stationarity of beta coefficients, Levy (1971) confirms that betas change over time. Grinblatt and Sheridan (1998) regressed 17 quarterly (last quarter of 1991-1995) historical returns for Dell Computer and the S&P 500 and obtained a beta of 1.02.

MATERIALS AND METHODS

The study involved quoted firms on the Nigerian Stock Exchange (NSE). The NSE daily official list provided the stock prices we used to compute the capital gain of

the relevant months and years. The NSE Daily Official List (DOL) provided the composite market index, the All-Share Index (ASI) we used to obtain rates of return on the entire market. Follow-up figures were computed by the researcher as shown below. The second component of return which is the change in the price of the investment asset which can be positive (capital gain) or negative (capital loss) is used. This element of return is the difference between the monthly average market price of the stock at the beginning of each month and the monthly average market price at the end of the month. The average return for each year, both for the market and the stocks were obtained from the geometric mean of the 12-monthly returns for each year. The stocks' betas were obtained using the linear regression model. In this study, we will use 156 months of each security's returns from January 2000 to December 2012 to estimate betas for the firms quoted on the Nigerian Stock Exchange. The proxy for the market portfolio is therefore the NSE All-Share Index (ASI) which encompass the total market value of quoted equity stocks.

Estimation market return (RM): The NSE All-Share-Index (ASI) is used as a proxy for market rate of return. The NSE ASI was established on January 02, 1984 as a base date and set at 100 as a base value to which all subsequent values of the index can be related. It is a real time index because it is recalculated at the end of every trading day and captures the population of all listed shares.

Estimation of Rates of Return of an Asset (Ri): Usually, the total rate of return on each share is obtained by computing the relative values of prices between an holding period (monthly) plus dividend as exemplified by Akintola-Bello (2005), Pandian (2005). The return on a security is computed as:

$$(D_t+P_t-P_{t-1})/P_{t-1}$$

Where:

D_t = Dividend paid in period t

P_t = Closing price in period t

P_{t-1} = Closing price in immediate preceding period t-1

However, in this study, only the monthly capital gains were used as a proxy for rates of return to compute the beta in order to compare like terms with like terms. That is since market return does not include dividend in its return, then return from equity should be determined without the dividend element in order to place the two items on the same basis for reasonable comparison. The 12 monthly returns for each share were chain linked to obtain the annual return for stock. Chain link simply means finding the geometric mean of the 12 monthly returns.

Geometric Mean: According to Watsham and Parramore (2007) the geometric mean is the most appropriate measure of means when an average rate of change over a number of time periods is being calculated. It is a single measure of periodic growth rate which if repeated n times will transform the opening value into the terminal value. To measure the annual growth rate over n years, the appropriate model for geometric mean is as follows:

$$GM = (1+g_1)(1+g_2)(1+g_3)----------(1+gn)^{1/n}-1$$

where, g is the periodic growth rates expressed in decimals. The growth rate in earnings is computed using the geometric mean of the respective year's earnings growth rates.

RESULTS AND DISCUSSION

Population and Sample: In any study, it is important to determine the group of persons or things to study (Freund and Williams, 1979). In line with this thought, the population of this study is made up of all quoted companies in the Nigerian Stock market. The sample of study comprises all the quoted Airlines services, automobile, road transport and maritime firms on the Nigerian Stock Exchange.

Data presentation and analysis: Listed in Table 1 are the total risks for the airlines, automobile, road and maritime sectors' stocks as computed by the researcher from 2000-2012.

Standard deviation is a measure of total risk. On yearly average, the Standard deviations of Airlines services sector returns were 41.06, 9.48, 12.29, 14.55, 9.43, 12.07 based on monthly returns for the period 2007-2012, respectively and that of the market returns for the same period were 4.87, 8.19, 11.22, 5.34, 4.60, 3.73, respectively. The total risk of Automobile sector monthly returns were 4.34, 5.87, 6.30, 8.08, 9.77, 5.80, 12.00, 11.38, 13.86, 36.16, 8.79, 6.87, 5.18 for the period 2007-2012, respectively against that of the market returns of 3.82, 5.36, 4.02, 5.64, 7.68, 4.48, 5.33, 4.87, 8.19, 11.22, 5.34, 4.60, 3.73 for the same period, respectively. That of the road transport sector were 20.01, 24.79, 20.32, 13.41, 9.17, 0 from 2007-2012 while that of Maritime Services from 2006-2012 were 9.61, 21.97, 20.50, 17.71, 13.81, 12.22, 11.53%, respectively. For the 13 years period, the average total risks of the four sectors were 16.48, 10.34, 14.62, 15.34 and 6.19 for the airlines, automobile, road transport, maritime sectors stocks and the market, respectively. Based on

Table 1: Total risks of airlines/automobile/road/maritime sectors stocks

Stocks	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Ave
ASL	Na	Na	Na	Na	Na	Na	Na	48.88	10.96	9.22	16.09	12.17	12.79	18.35
NAHCO	Na	Na	Na	Na	Na	Na	Na	33.23	7.99	15.35	13.00	6.69	11.35	14.60
Average	Na	Na	Na	Na	Na	Na	Na	41.06	9.48	12.29	14.55	9.43	12.07	16.48
BEWAC	0	0	0	1.29	1.83	0	0	Na	Na	Na	Na	Na	Na	0.45
DUNLOP	7.68	6.61	13.94	9.83	19.18	13.09	24.63	19.97	24.95	78.49	0	0	0	16.80
INCAR	12.47	7.40	12.76	17.77	5.95	8.48	26.59	11.75	4.95	8.86	16.79	Na	Na	12.16
INTRA	2.54	0	0	0	0	0	0	3.01	1.58	Na	Na	Na	Na	0.79
RT	2.10	21.21	11.07	19.56	30.74	13.21	20.75	22.18	5.51	21.14	9.57	13.74	10.35	15.47
BRISCOE														
REITCOT	1.22	0	0	0	0.93	0	0	0	32.30	Na	Na	Na	Na	3.83
Average	4.34	5.87	6.30	8.08	9.77	5.80	12.00	11.38	13.86	36.16	8.79	6.87	5.18	10.34
ABC	Na	Na	Na	Na	Na	Na	Na	20.01	24.79	20.32	13.41	9.17	0	14.62
Japaul	Na	Na	Na	Na	Na	Na	9.61	21.97	20.50	17.71	13.81	12.22	11.53	15.34
Market Risk	3.82	5.36	4.02	5.64	7.68	4.48	5.33	4.87	8.19	11.22	5.34	4.60	3.73	6.19

Table 2: Betas of airlines/automobile/road/maritime sectors stocks

Stocks	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Ave
ASL	Na	Na	Na	Na	Na	Na	Na	-3.68	0.81	-0.69	1.91	2.16	1.73	0.37
NAHCO	Na	Na	Na	Na	Na	Na	Na	4.72	0.76	1.19	2.21	1.15	-0.15	1.65
Average	Na	Na	Na	Na	Na	Na	Na	0.52	0.79	0.25	2.06	1.66	0.79	1.01
BEWAC	0	0	0	0	0.12	0	0	Na	Na	Na	Na	Na	Na	0.02
DUNLOP	1.55	0.76	0.35	0.58	1.55	2.26	0.64	1.70	2.48	-0.71	0	0	0	0.86
INCAR	-0.39	-0.12	0.36	0.60	0.31	-0.56	0.89	0.87	-0.01	0.01	-1.13	Na	Na	0.08
INTRA	-0.37	0	0	0	0	0	0	-0.23	0.05	Na	Na	Na	Na	-0.06
RT	-0.10	-0.56	-0.32	0.27	1.47	1.81	1.73	2.14	0.28	0.16	1.23	0.96	0.85	0.76
BRISCOE														
REITCOT	-0.18	0	0	0	-0.04	0	0	0	0.44	Na	Na	Na	Na	0.02
Average	0.09	0.01	0	0.24	0.57	0.59	0.54	0.90	0.65	-0.18	0.05	0.48	0.43	0.34
ABC	Na	Na	Na	Na	Na	Na	Na	3.21	2.10	1.61	1.53	1.42	0	1.65
Japaul	Na	Na	Na	Na	Na	Na	-0.28	3.36	1.84	1.38	2.21	1.74	-0.24	1.43

Table 3: Alpha risks of airlines/automobile/road/maritime sectors stocks

Stocks	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Ave
ASL	Na	Na	Na	Na	Na	Na	Na	52.56	10.15	9.91	14.18	10.01	11.06	17.97
NAHCO	Na	Na	Na	Na	Na	Na	Na	28.51	7.23	14.16	10.79	5.54	11.50	12.96
Average	Na	Na	Na	Na	Na	Na	Na	40.54	8.69	12.04	12.49	7.78	11.28	15.47
BEWAC	0	0	0	1.29	1.71	0	0	Na	Na	Na	Na	Na	Na	0.43
DUNLOP	6.13	5.85	13.59	9.25	17.63	10.83	23.99	18.27	22.47	79.20	0	0	0	15.94
INCAR	12.86	7.52	12.40	17.17	5.64	9.04	25.70	10.88	4.96	8.85	17.92	Na	Na	12.09
INTRA	2.91	0	0	0	0	0	0	3.24	1.53	Na	Na	Na	Na	0.85
RT	2.20	21.77	11.39	19.29	29.27	11.40	19.02	20.04	5.23	20.98	8.34	12.78	9.50	14.71
BRISCOE														
REITCOT	1.40	0	0	0	0.97	0	0	0	31.86	Na	Na	Na	Na	3.80
Average	4.25	5.86	6.23	7.83	9.20	5.21	11.45	10.49	13.21	36.34	8.75	6.39	4.75	10.00
ABC	Na	Na	Na	Na	Na	Na	Na	16.80	22.69	18.71	11.88	7.75	0	12.85
Japaul	Na	Na	Na	Na	Na	Na	9.89	18.61	18.66	16.33	11.60	10.48	11.77	13.91

Computed from the Monthly rates of return from the subject firms

these data, it can be said that on the 13 years average, airlines services sector was the most risky among the four sectors. This sector is closely followed by maritime sector. All the sectors have total risk higher than that of the market. The yearly total risk of the individual stocks can be observed from (Table 2).

Recall that a beta of <1 implies that the sector' return is less volatile than the NSE All-Share Index return. Based on yearly average and monthly returns, airlines services sector had average beta of 0.52, 0.79, 0.25, 2.06, 1.66 and 0.79 for the period 2007-2012, respectively. That implies that the Airlines services sector yearly average returns were less volatile than the NSE All-Share Index return in all the years except in years 2010 and 2011. Though based on individual stocks, some were more volatile than the market. Automobile sector betas were less volatile than the market all through the period. Road transport and Maritime services sectors were more volatile than the market except in 2012. On the 13 years average, road transport sector was the most risky among the four sectors closely followed by maritime sector. The two sectors had systematic risk higher than that of the market. The yearly systematic risk of the individual stocks can be observed from Table 3.

Table 4: Percentages of Beta risks of airlines/automobile/road/maritime sectors stocks

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Ave
ASL	Na	Na	Na	Na	Na	Na	Na	-7.53	7.39	-7.48	11.87	17.75	13.53	5.92
NAHCO	Na	Na	Na	Na	Na	Na	Na	14.20	9.51	7.75	17.00	17.19	-1.32	10.72
Average	Na	Na	Na	Na	Na	Na	Na	3.34	8.45	0.13	14.44	17.47	6.10	8.32
BEWAC	0	0	0	0	6.56	0	0	Na	Na	Na	Na	Na	Na	0.94
DUNLOP	20.18	11.50	2.51	5.90	8.08	17.27	2.60	8.51	9.94	-0.90	0	0	0	6.58
INCAR	-3.13	-1.62	2.82	3.38	5.21	-6.60	3.35	7.40	-0.20	0.11	-6.73	Na	Na	0.36
INTRA	-14.57	0	0	0	0	0	0	-7.64	3.16	Na	Na	Na	Na	-2.12
RT BRISCOE	-4.76	-2.64	-2.89	1.38	4.78	13.70	8.34	9.65	5.08	0.76	12.85	6.99	8.21	4.73
REITCOT	-14.75	0	0	0	-4.30	0	0	0	1.36	Na	Na	Na	Na	-1.97
Average	-2.84	1.21	0.41	1.78	3.39	4.06	2.38	3.58	3.87	-0.01	2.04	3.49	4.11	2.11
ABC	Na	Na	Na	Na	Na	Na	Na	14.69	10.61	8.32	15.21	-4.03	0	7.47
Japaul	Na	Na	Na	Na	Na	Na	-2.91	15.29	8.98	7.79	16.00	14.24	-2.08	8.19

Table 5: Percentages of Alpha risks of airlines/automobile/road/maritime sectors stocks

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Ave
ASL	Na	Na	Na	Na	Na	Na	Na	107.53	92.61	107.48	88.13	82.25	86.47	94.08
NAHCO	Na	Na	Na	Na	Na	Na	Na	85.80	90.49	92.25	83.00	82.81	101.32	89.28
Average	Na	Na	Na	Na	Na	Na	Na	96.66	91.55	99.87	85.56	82.53	93.90	91.68
BEWAC	0	0	0	100	93.44	0	0	Na	Na	Na	Na	Na	Na	27.63
DUNLOP	79.82	88.50	97.49	94.10	91.92	82.73	97.40	91.49	90.06	100.90	0	0	0	70.34
INCAR	103.13	101.62	97.18	96.62	94.79	106.60	96.65	92.60	100.20	99.89	106.73	Na	Na	99.64
INTRA	114.57	0	0	0	0	0	0	107.64	96.84	Na	Na	Na	Na	35.45
RTBRISCOE	104.76	102.64	102.89	98.62	95.22	86.30	91.66	90.35	94.92	99.24	87.15	93.01	91.79	95.27
REITCOT	114.75	0	0	0	104.30	0	0	0	98.64	Na	Na	Na	Na	35.30
Average	86.17	48.79	49.59	64.89	79.95	45.94	47.62	76.42	96.13	100.01	64.63	46.51	45.89	65.58
ABC	Na	Na	Na	Na	Na	Na	Na	85.31	89.39	91.68	84.79	104.03	0	75.87
Japaul	Na	Na	Na	Na	Na	Na	102.91	84.71	91.02	92.21	84.00	85.76	102.08	91.81

Computed from the Monthly rates of return from the subject firms

The specific unsystematic, diversifiable non-market-determined risk of the four sectors on the 13 years average were 15.47 for airlines, 10 for automobile, 12.85 for road transport and 13.91 for maritime sectors. On yearly average, it ranges between 8.69 in 2008 and 40.54 in 2007 for the airlines, 4.25 in 2000 and 36.34 in 2009 for the automobile, 0 in 2012 and 22.69 in 2008 for road transport and between 9.89 in 2006 and 18.66 in 2008 for the maritime sector. The highest unsystematic risks were recorded in 2007 (during the market boom in Nigeria) for airlines, 2009 (when the market meltdown was on course in the Nigeria capital market) for automobile, 2008 (the beginning of market meltdown in Nigeria) for road transport and maritime sectors (Table 4).

The squared correlation coefficient, also called the coefficient of determination indicates the percentage of the variance of a share return explained by the changes in the market returns. In the Airlines services sector, this index shows 3.34, 8.45, 0.13, 14.44, 17.47 and 6.10% based on monthly returns for the period 2007-2012, respectively. Thus, 3.34, 8.45, 0.13, 14.44, 17.47 and 6.10% of Airlines services sector total risk (standard deviation of the sector returns) was explained by the market risk which is called beta and therefore non-diversifiable. Likewise, majorly, <5% of the total volatility in automobile sector was explained by the market fluctuations while that of the road transport sector hung around 15.21% and that of the maritime had maximum of 16% beta content (Table 5).

The percentage of unexplained total risk by the systematic risk is called non-market risk or unsystematic risk which is diversifiable. In the Airlines services sector we have 96.66, 91.55, 99.87, 85.56, 82.53, 93.90% of the total risk attributed to unsystematic risk from 2007-2012, respectively. Others can be seen in Table 5. The 13 years averages for the sectors were 91.68, 65.58, 75.87 and 91.81% for the airlines, automobile, road transport and maritime, respectively. It is obvious that the total risks in these sectors are mainly unsystematic risk (Table 6).

The average return in terms of capital gains yield of the Airlines services sector stocks was -10.93% while ASL, NAHCO recorded average of -2.65, -19.22%, respectively. That of automobile sector was -3.94% and R.T. Briscoe which happens to be the only stock that made it to 2012 had the only existing capital gain in this sector. Other stocks in this sector were moribund even before 2012. While the market made positive capital gain on the 13 years average, all the sectors recorded negative in this respect. From Table 6, all the stocks have nothing to cheer about in terms of capital gain within the period of study (Table 7-8).

The yearly ranking of the stocks in order of the magnitude of the systematic risk shows that in 2000, 2001, 2004, 2005 and 2008, Dunlop had the highest positive reaction with the market. In 2002 and 2003, Incar motors took the lead though less volatile than the market. RT Briscoe topped the list in 2006, ASL led in 2011 and 2012 while NAHCO, ABC, Japaul were the highest systematic

Table 6: Capital Gain Yields of airlines/automobile/road/maritime sectors stocks

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Ave
ASL	Na	Na	Na	Na	Na	Na	Na	132.05	-12.24	-148.57	-58.14	27.2	43.81	-2.65
NAHCO	Na	Na	Na	Na	Na	Na	Na	35.95	-85.37	-39.38	27.67	-63.78	9.59	-19.22
Average	Na	Na	Na	Na	Na	Na	Na	84.00	-48.81	-93.98	-15.24	-18.29	26.70	-10.93
BEWAC	0	0	0	9.39	12.47	0	0	Na	Na	Na	Na	Na	Na	3.12
DUNLOP	6.82	-9.62	-22.82	-15.26	-8.86	26.71	98.86	-77.77	-113.81	-65.44	0	0	0	-13.94
INCAR	42.77	45.22	17.94	-10.49	-27.1	-23.06	166.79	58.59	5.82	-36.11	-112.09	Na	Na	11.66
INTRA	9.22	0	0	0	0	0	0	-1.77	6.92	Na	Na	Na	Na	1.60
RTBRISCOE	-41.92	108.69	-29.26	103.75	2.24	-15.77	39.32	123.33	-51.46	-94.79	-80.42	-78.33	11.39	-0.25
REITCOT	-5.62	0	0	0	-4.5	0	0	0	212.8	Na	Na	Na	Na	22.52
Average	1.88	24.05	-5.69	14.57	-4.29	-2.02	50.83	20.48	12.05	-65.45	-64.17	-39.17	5.70	-3.94
ABC	Na	Na	Na	Na	Na	Na	Na	57.09	-43.63	-78	-32.4	-7.67	0	-17.44
Japaul	Na	Na	Na	Na	Na	Na	-54.95	223.98	-85.7	-97.97	13.32	-55.61	-24.49	-11.63
Market return	37.91	38.28	7.07	51.82	17.13	4.06	31.43	53.05	-58.54	-36.64	17.18	-20.03	30.57	13.33

Computed from the Monthly rates of return from the subject firms

Table 7: Volatility ranking of the airlines/automobile/road transport/maritime stocks

Ranks	2000	Beta	2001	Beta	2002	Beta	2003	Beta	2004	Beta	2005	Beta	2006	Beta
1	Dunlop	1.55	Dunlop	0.76	Incar	0.36	Incar	0.60	Dunlop	1.55	Dunlop	2.26	RTB	1.73
2	Bewac	0	Bewac	0	Dunlop	0.35	Dunlop	0.58	RTB	1.47	RTB	1.81	Incar	0.89
3	RTB	-0.10	Intra	0	Bewac	0	RTB	0.27	Incar	0.31	Bewac	0	Dunlop	0.64
4	Reitzcot	-0.18	Reitzcot	0	Intra	0	Bewac	0	Bewac	0.12	Intra	0	Bewac	0
5	Intra	-0.37	Incar	-0.12	Reitzcot	0	Intra	0	Intra	0	Reitzcot	0	Intra	0
6	Incar	-0.39	RTB	-0.56	RTB	-0.32	Reitzcot	0	Reitzcot	-0.04	Incar	-0.56	Reitzcot	0
7													Japaul	-0.28
AVE		0.09		0.01		0.07		0.24		0.57		0.59		0.43

Table 8: Volatility ranking of the airlines/automobile/road transport/maritime stocks

Ranks	2007	Beta	2008	Beta	2009	Beta	2010	Beta	2011	Beta	2012	Beta
1	Nahco	4.72	Dunlop	2.48	ABC	1.61	Japaul	2.21	ASL	2.16	ASL	1.73
2	ASL	-3.68	ABC	2.10	Japaul	1.38	Nahco	2.21	Japaul	1.74	RTB	0.85
3	Japaul	3.36	Japaul	1.84	Nahco	1.19	ASL	1.91	ABC	1.42	Dunlop	0
4	ABC	3.21	ASL	0.81	RTB	0.16	ABC	1.53	Nahco	1.15	ABC	0
5	RTB	2.14	Nahco	0.76	Incar	0.01	RTB	1.23	RTB	0.96	Nahco	-0.15
6	Dunlop	1.70	Reitzcot	0.44	ASL	-0.69	Dunlop	0	Dunlop	0	Japaul	-0.24
7	Incar	0.87	RTB	0.28	Dunlop	-0.71	Incar	-1.13				
8	Reitzcot	0	Intra	0.05								
9	Intra	-0.23	Incar	-0.01								
AVE		1.34		0.97		0.42		1.14		1.24		0.37

Compiled from table 2 above

risk in 2007, 2009, 2010, respectively. The laggards can be seen in Table 7 and 8. This classification is important because during a period of expected upswing in the market return, investors should go for the shares whose beta coefficient is positively high. Conversely, during a period of expected downswing in the market return, investors should go for the shares whose beta coefficient is negatively high. Table 7 and 8 made this choice quite easy.

The yearly ranking of the stocks in order of the magnitude of the relative return (annual return per unit of beta) shows RT Briscoe occupying the first position in 2000, 2002, 2003, Japaul leading in 2006 and 2012, ASL in 2009 and 2011 in annual return per unit of systematic risk incurred. The sectoral averages for automobile sector are 53.37, 97.26, 12.68, 56.75, 20.80 and 7.38% in 2000-2005 which all exceeded that of the market. Based on the existing stocks in the market up to 2012, Japaul led followed by ASL. Dunlop, RT Briscoe, ABC and NAHCO all had negative relative return in 2012. While all the four sectors average in 2012 was -29.57% return per beta, the sectors combined underperformed the market which provides an average of 2.15% as against the sector average of -29.57%. Table 9-11 shows the standing of all the stocks and that of the market on this scale of measure.

In all the sector stocks from 2000-2012, a total of 87stocks were examined. Out of the 87 stocks examined, 43 which represents 49.43% of the stocks for the period were of very low beta ($0<\beta<0.4$); 1 which represents 1.15% of the stocks for the period were of low beta ($0.4<\beta<0.5$); 14 which represents 16.09% of the stocks for the period were of moderate low beta ($0.5<\beta<1.0$); none of the stocks for the period reacts equally with the market movement ($\beta = 1.0$); 7 which represents 8.05% of the stocks for the period were of moderate high beta ($1.0 <\beta< 1.5$); 11 which represents 12.64% of the stocks for the period were of high beta ($1.0<\beta<1.5$) and very high beta ($1.5<\beta<2.0$), respectively. On the average, 50, 20, 10 and 20% of the stocks are in the very low, moderate low, moderate high and high beta, respectively as can be seen from Table 13.

Table 9: Ranking of the stocks based on Relative Return (RR) = (Annual Return/Beta)

Ranks	2000		2001		2002		2003		2004		2005		2006	
s/n	Stocks	RR	Stocks	RR	Stocks	RR	Stocks	RR	Stocks	RR	Stocks	RR	Stocks	RR
1	RTB	419.20	Bewac	0	RTB	91.44	RTB	384.26	Reitzcot	112.50	Incar	41.18	Japaul	196.25
2	Reitzcot	31.22	Intra	0	Incar	49.83	Bewac	0	Bewac	103.92	Dunlop	11.82	Incar	187.40
3	Dunlop	4.40	Reitzcot	0	Bewac	0	Intra	0	RTB	1.52	Bewac	0	Dunlop	154.47
4	Bewac	0	Dunlop	-12.66	Intra	0	Reitzcot	0	Intra	0	Intra	0	RTB	22.73
5	Intra	-24.92	RTB	-194.09	Reitzcot	0	Incar	-17.48	Dunlop	-5.72	Reitzcot	0	Bewac	0
6	Incar	-109.67	Incar	-376.83	Dunlop	-65.20	Dunlop	-26.31	Incar	-87.42	RTB	-8.71	Intra	0
7													Reitzcot	0
AVE		53.37		97.26		12.68		56.75		20.80		7.38		80.12

Table 10: Ranking of the stocks based on Relative Return (RR) = (Annual Return/Beta)

Rank	2007		2008		2009		2010		2011		2012		Ave	
s/n	Stocks	RR	Stocks	RR	Stocks	RR	Stocks	RR	Stocks	RR	Stocks	RR	Stocks	RR
1	Incar	67.34	Reitzcot	483.64	ASL	215.32	Incar	99.19	ASL	12.59	Japaul	102.04	Reitzcot	69.71
2	Japaul	66.66	Intra	138.40	Dunlop	92.17	Nahco	12.52	Dunlop	0	ASL	25.32	Japaul	31.64
3	RTB	57.63	ASL	-15.11	Nahco	-33.09	Japaul	6.03	ABC	-5.40	RTB	13.40	ASL	28.63
4	ABC	17.79	ABC	-20.78	ABC	-48.45	Dunlop	0	Japaul	-31.96	Dunlop	0	Bewac	14.85
5	Intra	7.70	Dunlop	-45.89	Japaul	-70.99	ABC	-21.18	Nahco	-55.46	ABC	0	Intra	13.46
6	Nahco	7.62	Japaul	-46.58	RTB	-592.44	ASL	-30.44	RTB	-81.59	Nahco	-63.93	Dunlop	4.72
7	Reitzcot	0	Nahco	-112.33	Incar	-3611.00	RTB	-65.38					RTB	-10.45
8	ASL	-35.88	RTB	-183.79									ABC	-13.00
9	Dunlop	-45.75	Incar	-582.00									Nahco	-40.78
10													Incar	-394.50
AVE		15.90		-42.72		-578.35		0.11		-26.97		12.96		-29.57

Table 11: Market relative retur

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Ave
Rm/om	9.92	7.14	1.76	9.19	2.23	0.91	5.90	10.89	-7.15	-3.27	3.22	-4.35	8.20	2.15

Computed from tables 1 and 6 above

Table 12: Number of Stocks in each Volatility level

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	Ave
Very low	5	4	6	4	4	3	4	2	3	2	1	1	4	43	5
Low	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-
Moderate low	-	2	-	2	-	1	2	1	2	2	-	1	1	14	2
Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moderate high	-	-	-	-	1	-	-	-	-	2	2	2	-	7	1
High	1	-	-	-	1	1	1	1	1	1	2	1	1	11	2
Very high	-	-	-	-	-	1	-	5	2	-	2	1	-	11	-
Total	6	6	6	6	6	6	7	9	9	7	7	6	6	87	10

Compiled from Table 1 above NB: $0<\beta<0.4$ = Very Low (VL), $0.4<\beta<0.5$ = Low (L), $0.5<\beta<1.0$ = Moderate Low (ML), $\beta = 1.0$ = Normal with the market, $1.0<\beta<1.5$ = Moderate High, $1.5<\beta<2.0$ = High, $\beta>2.0$ = Very High

Table 13: Percentage of stocks in each volatility level

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	Ave
Very low	83	61	100	67	67	50	57	22.2	33.3	28.6	14.2	16.7	67	49.43	50
Low	-	-	-	-	-	-	-	-	11.1	-	-	-	-	1.15	-
Moderate low	-	33	-	33	-	16.7	28.6	11.1	22.3	28.6	-	16.7	16.5	16.09	20
Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moderate high	-	-	-	-	16.5	-	-	-	-	28.6	28.6	33.3	-	8.05	10
High	17	-	-	-	16.5	16.7	14.4	11.1	11.1	14.2	28.6	16.7	16.5	12.64	20
Very high	-	-	-	-	-	16.7	-	55.6	22.2	-	28.6	16.7	-	12.64	-
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Table 14: Number and percentage (in parentheses) of stocks in each of the three classifications of volatility levels

Beta	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Ave
$\beta<0$	4(66)	2(34)	1(17)	-	1(17)	1(17)	1(14)	2(22)	1(11)	2(29)	1(14)	-	2(33)	18(21)
$\beta= 0$	1(17)	3(49)	3(50)	3(50)	1(17)	3(50)	3(43)	1(11)	-	-	1(14)	1(17)	2(33)	22(25)
$0<\beta<1$	-	1(17)	2(33)	3(50)	2(33)	-	2(29)	1(11)	5(56)	2(29)	-	1(17)	1(17)	20(23)
$\beta =1$	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$\beta>1$	1(17)	-	-	-	2(33)	2(33)	1(14)	5(56)	3(33)	3(42)	5(72)	4(66)	1(17)	27(31)
Total	6	6	6	6	6	6	7	9	9	7	7	6	6	87(100)

Compiled from Table 2 above

From Table 14, it can be seen how the stocks fared in terms of value of beta below zero, equal to zero, between zero and one, equal to one and above one. On the whole, we had 65 volatile stocks during the 13 yearS period of study, out of which 27 were aggressive stocks, 18 defensive stocks, 20 moderate volatile stocks and no average stock. Dormant stocks constituted 22 out of the 87 stocks which represents 25% of the whole lot for the study period.

CONCLUSION

For the 13 years period, the average total risks of the four sectors and the entire market were 16.48, 10.34, 14.62, 15.34 and 6.19 for the airlines, automobile, road, transport, maritime sectors stocks and the market, respectively. Airlines services sector was the most risky among the four sectors. This sector was closely followed by the maritime sector. All the sectors have total risks higher than that of the market. On the 13 years average, road transport sector was the most risky among the four sectors; it was closely followed by the maritime sector. The two sectors had systematic risks higher than that of the market. The Airline service sector's maximum of 17.47% of total risk was explained by the market risk which is called beta and therefore non-diversifiable. Majorly, <5% of the total volatility in automobile sector was explained by the market fluctuations while that of the road transport sector hung around 15.21% and that of the maritime had a maximum of 16% beta content.

From Table 14, we note that 27 stocks in the sectors sample have beta values higher (>) than 1. There are 20 stocks in the sector sample with beta values <1. Eighteen stocks in the sector sample have beta values <0. None has a beta value equal to 1. Therefore, in essence, within the study period, we have 40 defensive stocks, 20 conservative stocks, no average stock and 27 aggressive stocks. None of the stocks recorded beta of 1. This shows that none, out of the stocks moves in tandem with the movement of the market. Therefore, the bulk of the risk in these sectors is constituted by relatively large proportion of unsystematic, idiosyncratic, non-market determined, specific diversifiable risk. Consequently, we opine that some corrective measures have to be embarked upon in order to reduce noise in the rates of return of these stocks.

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