ESTIMATION OF EQUITY BETAS IN AN EMERGING STOCK MARKET: THE NIGERIAN CASE

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ABSTRACT

This paper addresses a very important topic in corporate finance that is not well treated in many developing stock markets with particular reference to 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 but a very high percentage of the documented works done in this area have been carried out mostly in developed economies cum stock markets of America, Europe and Asia. However since we have need for stock market, there is also 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. Therefore we calculated correlations of the annual bank stock returns from 2000-2011, a twelve year period with the entire market return otherwise called the (historical) betas of the listed banks in Nigeria.The paper discovered that the most volatile banking stock during the period of study is Oceanic bank with beta coefficient of 1.63 and the least volatile stock is Ecobank with beta coefficient of 0.32. Also noted is the fact that the stocks did not generate return symmetrically according their systematic risk levels.

Keywords: Beta, Equity beta, Historical equity beta, Required return to equity, Market return

INTRODUCTION

In the field of finance there are so many assertions. One of such assertions is widespread agreement that the beta coefficient, a major component in the Capital Asset Pricing Model (CAPM) is a good predictor of share price movements in stock markets. While the above assertion had been empirically validated in several developed stock markets, there have been few such studies in developing stock markets like Nigeria. Such studies have now become imperative given the recent developments in the Nigerian stock market. In Nigerian stock exchange, the appropriate beta

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coefficients of the equity stocks have remained in doubt. As it were, there seems to be no definite values for this important component of the CAPM.

In the light of the above problem the major objective of this study is to find out the appropriate beta coefficients for the equity stocks with particular reference to the banking sector. In addressing this specific objective, the study seeks to answer this specific question: What are the appropriate beta values for the listed banking stocks in Nigeria for the period 2000-2011? To hazard a guess, it is hereby proposed that the banking 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 but the area of interest of this study is the banking sector. The decision to research only on banking stocks is informed by the fact that banks are the major financier of other sectors and hence banking stock price movements should influence the price movements of stocks in other sectors. The banking sector also dominates other sectors in terms of market capitalization and volume of equity traded in the market. Therefore, the findings and conclusions to be derived from this work were as related to the banking stocks in Nigeria. The study covers the period of twelve years (2000-2011), comprising 144 months. The significance of 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 so as to 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 to the investor. When deciding on which stock to transact in order to have a justifiable reward the beta value is needful. This work will bring to light and remind potential investors the price movement status of the Nigerian banking stocks. This knowledge will help them to make informed investment and financing decisions that can enhance their investment value, which 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. One major limitation of this study is the unavailability of complete data for 2012 and 2013. The inclusion of the two years data would have made the work a more current study.

This paper is segregated into six sections. Section one introduces the topic of research, section two presents the related literature and previous works carried out by other researchers in the area of study, section three discussed the research methodology, section four showcased the data set upon which the historical betas were computed, section five discussed the summary of findings while section six concludes the paper.

REVIEW OF RELATED LITERATURE

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 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, which can be positive (or capital gain) or negative (or 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 where as dividends on common stocks are usually paid annually but sometimes 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; Pablo and Javier, 2010). 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. Fernandez, (2009) computed Historical betas of AT & 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 are calculated using 5 years of monthly data, that is, on December 18, 2001, the beta is 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 are calculated on the 18th of the month. The monthly return of December 18, 2001 = (total return December 18, 2001/ total return November 18, 2001).

Pablo and Vicente (2009) 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 [ie 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 carried the exercise with four calculated betas every year end versus S&P 500 using, a) monthly data of last 5 years; b) monthly data of last 2 years; c) weekly data of last 5 years; d) daily data of last 5 years; and found similar results with the four betas. Despite this results, Fernandez (2009) reports that 97.3% of the professors that justify the betas use regressions, webs, databases, textbooks or papers, while only 0.9% of the professors justified the beta using exclusively personal judgement (named qualitative betas, common sense betas, intuitive betas, logical magnitude betas and own judgement 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 only risk which cannot be diversified away, i.e. systemic risk, is worthy of being rewarded with a risk premium for financial valuation purposes. The remaining risk, i.e. unsystemic or diversifiable risk may be reduced to zero by portfolio diversification and so 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 –CAPM required return = +ve alpha, the security is underpriced, when actual return –CAPM required return = zero alpha, the security is correctly priced, when actual return –CAPM required return = -ve alpha, the security is overpriced. The CAPM provides a framework for 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 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 securities bias.Therefore, 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.

Applications of beta (β)

1. Determination of expected rate of return for a risky asset, via $Ri = Rf + \beta (Rm - Rf)$

2. Determination of cost of equity capital, via $Ke = Rf + \beta (Rm - Rf)$

3. Determination of portfolio risk via Portfolio Beta $= \beta p = \Sigma Wi \beta i$

4. 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, Defensive stocks = low beta stocks = β = 0.92 – 0.02

On the fourth beta application, 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 assets 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.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 one percent for every one percent 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 move 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 less than one 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 (1) rise faster than the average stock during a bull market, (2) decline less than the average stock during a bear market

Estimation of beta coefficient (β)

Beta coefficient measures the sensitivity of each of the stock's returns to movements in the market's return. It enables us to state what premium should be paid on each of the banks' shares by

comparing each of them with that of the whole market portfolio. The conventional approach for estimating betas as used by Value Line Investment Services, Merrill Lynch (U.S. 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 (1995), the beta coefficient is computed for equity using ordinary least square 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, we adopted the technique developed by Merrill Lynch and also adopted by Akintola-Bello (2004). After using the ordinary least squares to gain a preliminary estimate of beta, using 96 monthly returns, we then adjust the beta using Adjusted beta = Raw beta (0.67) + 0.33. In order to correct the bias in estimating beta, the above formula pushes high betas down to 1.0, and low betas up toward 1.0 and generate a better estimates of betas values.

RESEARCH METHODOLOGY

The study involved quoted banks on the Nigerian Stock Exchange (NSE). 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 bank's annual reports and accounts of the relevant 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. Total return = (Cash payments received + Price change over the period)/Purchase price of the asset. That is, Total Return $(R_i) = (D_t + P_t - P_{t-1})/P_{t-1}$. 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 144 months of each security's returns from January 2000 to December 2011 to estimate betas for the banks quoted on the Nigerian Stock Exchange. The proxy for the market portfolio is therefore the NSE index, which encompass the total market value of quoted stocks.

Estimation market returns (RM)
The NSE All-Share-Index 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)
The rates of return on each share will be obtained by computing the relative values of prices between a holding period (monthly) and dividend, as exemplified in Akintola-Bello, (2004). 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 period t-1. 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 as decimals. The Growth rate in earnings is computed using the Geometric mean of the respective year's earnings growth rates.

Population and sample

In any study, it is important to determine the group of persons or things to study. In line with this thought, the population of this study is all quoted companies in Nigerian Stock market. The sample of study is all the quoted banks on the Nigerian Stock Exchange as they dominate the activities in the market in terms of volume of shares traded and market capitalization. All the unquoted banks and those banks that were not quoted from 2000-2011 were excluded.

Data presentation and analysis

This section presents the data collected and computations made by the researcher. The data collected are the daily ordinary share prices of the subject-banks from the Nigerian Stock Exchange (NSE) Daily Official List (DOL) from January 2000 to December 2011, and the dividends paid during the year for each of the selected banks as shown in their annual reports. Other figures as presented were computed by the researcher. After the presentation of the data, the analysis of the data follows. Table-1 shows the annual holding period return of the banks and the entire equity market (using the All-Share Index) in the twelve – year period of January 2000 to December 2011. It may be seen that the return of Zenith bank varies from the lowest of -60.62% (2009) to highest of 116.68% (2007) with second and third best of 94.10% (2004) and 50.38% (2006). That of Wema bank varies from lowest of -74.66% (2009) to the highest of 166.77 (2007) while that of Unity bank varies from lowest of -74.24% (2009) to 146.40% (2007). The lowest and highest holding period returns for other banks can be seen in Table 1 above. In year by year analysis, Intercontinental bank made the highest HPR of 97.27% in 2000 followed by UBA with 83.90% and UBN with 83.04%. GT Bank made the highest HPR of 98.28% in 2001 followed by UBN with 88.97% and First bank with 76.82% while Wema bank became the most profitable bank in Nigeria in 2002 with 94.94% followed by Intercontinental bank with 88.52% and Zenith bank with 48.25%.

Intercontinental bank made the best return of 135.23% in 2003, the second and third positions were secured by Access bank (69.61%) and StanbicIbtc bank (40.25%).

Table 1: Annual Holding Period Return on Investment on Nigerian stock Market and Subject-firms

Return	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Market (Rm)	37.91	38.28	7.07	51.82	17.13	4.06	31.43	53.05	-58.54	-36.64	17.18	-20.03
1. Access	39.35	10.91	29.51	69.61	52.33	-17.63	6.12	375.92	5.59	-50.55	43.30	-9.98
2. Afribank	65.25	73.75	2.75	-18.73	1.06	7.94	25.48	115.96	17.63	-75.83	-58.80	-27.75
3. Diamond	44.92	54.05	-8.06	0.56	-5.52	82.14	-13.73	134.52	5.00	-54.85	17.72	-30.87
4. Ecobank	30.70	-16.04	21.24	-7.83	9.96	-2.52	188.72	13.89	58.02	100.00	-78.76	-39.20
5. Fidelity	27.46	-29.00	-6.67	13.51	8.49	175.65	-11.65	236.62	3.46	-65.01	-3.99	-5.05
6. FBN	48.84	76.82	-9.97	10.23	16.61	15.55	47.84	0.98	-6.24	-47.05	-11.20	-5.35
7. FCMB	Na	Na	Na	Na	9.76	19.80	-10.84	203.73	12.60	-57.75	33.68	-20.82
8. GTB	43.48	98.28	20.67	15.82	108.94	-10.39	47.67	102.72	-6.76	-44.81	41.24	-1.50
9. Intercont	97.27	-39.53	88.52	135.23	Na	71.99	61.83	106.00	12.55	-76.66	-70.71	-28.27
10. Oceanic	23.62	17.48	9.89	3.71	42.49	83.61	61.43	160.94	-11.63	-75.71	-62.88	-5.61
11. Skye	Na	Na	Na	Na	Na	Na	0	109.52	36.41	-50.54	36.57	-19.86
12. Stanbic	Na	10.42	-8.71	40.25	-23.33	223.63	3.08	175.56	101.69	-70.22	26.25	25.67
13. Sterling	Na	Na	Na	Na	Na	Na	279.03	39.57	-4.62	-73.33	20.73	-1.64
14. UBA	83.90	8.72	-34.52	-1.59	43.32	11.96	57.24	161.78	-17.64	-67.55	-2.16	-45.53
15. UBN	83.04	88.97	-20.64	21.78	16.52	-10.00	11.47	44.59	2.98	-69.00	-54.89	-42.36
16. Unity	Na	Na	Na	Na	Na	147.04	23.15	146.40	-3.57	-74.24	-25.40	-6.83
17. Wema	1.66	34.39	94.94	-17.18	27.57	-19.92	-14.36	166.77	68.56	-70.51	-74.66	-8.11
18. Zenith	4.57	-22.62	48.25	-1.35	94.10	0.65	50.38	116.68	-8.60	-60.62	5.10	3.40

Source: Computed from the financial statements of the banks from 2000-2011. HPR = Holding period return

GT Bank secured the highest return in 2004 with 108.94% followed by Zenith bank (94.10%) and Access bank (52.33%). In 2005 StanbicIbtc bank made highest return of 223.63% with a distant second position taken by Fidelity bank (175.65%) and third position by Unity bank (147.04%). The 2006 saw Sterling bank emerged the highest with 279.03%, followed by Ecobank (188.72%) and Intercontinental bank making a distant third with 61.83%. Access bank emerged the most profitable bank in 2007 with HPR of 375.92% pushing Fidelity bank (236.62%) and FCMB (203.73%) to a distant second and third position. StanbicIbtc (101.69%) made the first position in 2008 seconded by Wema bank (68.56%) and Ecobank (58.02%). It can be observed that only Ecobank made a positive HPR in 2009 while other banks made substantial negative HPR. The year was exactly when the financial meltdown was raking havoc in the Nigerian Stock market. Access bank (43.30%), GT Bank (41.24%), and Skye bank (36.57%) emerged first, second and third position in 2010 while all banks made negative HPR in 2011 except StanbicIbtc and Zenith banks with 25.67% and 3.40% respectively. One important observation here is that some banks outperformed the market return in the period of study. For instance, with market returns of 37.91, 38.28, 7.07, 51.82, 17.13, 4.06, 31.43, 53.05, -58.54, -36.64, 17.18, and -20.03 percent from 2000-2011

respectively, 8, 5, 7, 2, 6, 10, 8, 14, 18, 1, 7, and 11 banks outperformed the market in 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010 and 2011 respectively. Conversely, 5, 9, 7, 12, 8, 6, 8, 4, 0, 17, 11, and 7 banks underperformed the market in corresponding years respectively. That is within the study period a total of 97 banks outperformed the market while a total of 84 banks underperformed the market.

Table 2: Banking stocks beta (new computation)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Ave 1	Ave 2
1. Access	-0.46	0.23	0.43	0.96	1.26	-0.43	-0.58	2.00	1.10	1.82	1.20	1.38	0.74	46.21
2. Afribank	2.08	1.37	1.91	-0.01	-0.01	1.02	0.50	-1.81	0.97	1.46	1.59	-	0.82	10.73
3. Diamond	Na	Na	Na	Na	Na	Na	0.40	1.96	0.98	1.54	1.23	1.70	1.30	18.82
4. Ecobank	Na	Na	Na	Na	Na	Na	Na	2.14	-1.46	0.06	0.04	0.81	0.32	23.18
5. Fidelity	Na	Na	Na	Na	Na	Na	-0.13	2.85	0.71	1.70	0.99	1.21	1.22	28.65
6. FBN	0.87	2.49	0.18	0.59	0.38	0.89	-0.48	0.78	0.92	1.02	0.97	1.48	0.84	11.42
7. FCMB	Na	Na	Na	Na	Na	0.15	0.91	2.62	1.16	1.41	0.84	1.65	1.25	23.77
8. GTB	1.42	1.31	-0.03	1.00	0.64	1.71	0.61	2.19	1.22	0.49	0.99	0.99	1.11	34.61
9. Intercont	Na	Na	Na	0.60	0.98	1.65	1.90	1.27	1.20	1.89	0.85	2.29	1.40	29.85
10. Oceanic	Na	Na	Na	Na	Na	0.93	2.24	1.24	0.92	2.42	1.41	2.24	1.63	20.61
11. Skye	Na	Na	Na	Na	Na	Na	Na	2.23	0.54	1.68	1.27	0.99	1.34	22.42
12. Stanbic	Na	Na	Na	Na	Na	Na	Na	1.05	1.88	0.61	0.76	1.51	1.16	45.84
13. SterlingNAL	0.98	0.19	0.60	0.55	1.63	-0.21	-0.61	2.24	0.98	1.82	1.97	1.29	0.95	43.29
14. UBA	1.37	2.12	0.17	2.37	1.21	1.31	1.70	1.35	1.20	1.64	1.29	1.59	1.44	16.49
15. UBN	1.42	1.72	-0.11	0.90	1.22	0.01	0.17	0.94	1.28	1.39	1.03	1.35	0.94	6.04
16. Unity	Na	Na	Na	Na	Na	Na	-0.22	1.94	1.08	2.02	1.06	3.69	1.60	29.51
17. Wema	0.06	0.89	0	1.83	0.82	0.01	0.48	1.89	0.06	1.30	0.87	1.00	0.77	19.08
18. Zenith	Na	Na	Na	Na	Na	0.93	0.32	2.22	0.98	1.44	0.88	0.86	1.09	19.16

Source: Computed from the data set in table 4.1 above. Ave 1= Average beta. Ave 2 = Average HPR

Table 2 shows the historical betas of the banks in the twelve – year period of January 2000 to December 2011 with respect to the NSE All-Share Index (ASI). It may be seen that the beta of Zenith bank varies from 0.93 (2005) to highest of 2.22 (2007) and 0.86 (2011), the beta of Wema bank varies from 0.06 (2000) to highest of 1.89 (2007), and the beta of Unity bank varies from -0.22 (2000) to 1.94 (2007) and highest of 3.69 (2011) etc.

From Table 3, while the industry average betas are 0.97, 1.29, 0.39, 0.98, 0.90, and 0.66 for the years 2000-2005 respectively, the most volatile stocks in these years have 2.08 (Afribank) in 2000, 2.49 (FBN) in 2001, 1.91 (Afribank) in 2002, 2.37 (UBA) in 2003, 1.63 (Sterling bank) in 2004 and 1.71 (GT Bank) in 2005. The low volatile stocks in the same period have Wema (0.06) in 2000, Sterling (0.19) in 2001, Wema (0.00) in 2002, Afribank (-0.01) in 2003 and 2004, UBN (0.01) and Wema (0.01) in 2005. The volatility of others banks for years 2000-2005 (Table 3).

Table 3: Volatility ranking of the banking stocks with beta (new computation)

Rank	2000	Rank	2001	Rank	2002	Rank	2003	Rank	2004	Rank	2005
1. Afribank	2.08	FBN	2.49	Afribank	1.91	UBA	2.37	Sterling	1.63	GTB	1.71
2. GTB	1.42	UBA	2.12	Sterling	0.60	Wema	1.83	Access	1.26	Intercont	1.65
3. UBN	1.42	UBN	1.72	Access	0.43	GTB	1.00	UBN	1.22	UBA	1.31
4. UBA	1.37	Afribank	1.37	FBN	0.18	Access	0.96	UBA	1.21	Afribank	1.02
5. Sterling	0.98	GTB	1.31	UBA	0.17	UBN	0.90	Intercont	0.98	Oceanic	0.93
6. FBN	0.87	Wema	0.89	Wema	0	Intercont	0.60	Wema	0.82	Zenith	0.93
7. Wema	0.06	Access	0.23	GTB	-0.03	FBN	0.59	GTB	0.64	FBN	0.89
8. Access	-0.46	Sterling	0.19	UBN	-0.11	Sterling	0.55	FBN	0.38	FCMB	0.15
9. Diamond	Na	Diamond	Na	iamond	Na	fribank	-0.01	Afribank	-0.01	UBN	0.01
10. Ecobank	Na	Ecobank	Na	Ecobank	Na	iamond	Na	iamond	Na	Wema	0.01
11. Fidelity	Na	Fidelity	Na	Fidelity	Na	Ecobank	Na	Ecobank	Na	Sterling	-0.21
12. FCMB	Na	FCMB	Na	FCMB	Na	Fidelity	Na	Fidelity	Na	Access	-0.43
13. Intercont	Na	Intercont	Na	Intercont	Na	FCMB	Na	FCMB	Na	iamond	Na
14. Oceanic	Na	Oceanic	Na	Oceanic	Na	Oceanic	Na	Oceanic	Na	Ecobank	Na
15. Skye	Na	Skye	Na	Skye	Na	Skye	Na	Skye	Na	Fidelity	Na
16. Stanbic	Na	Stanbic	Na	Stanbic	Na	Stanbic	Na	Stanbic	Na	Skye	Na
17. Unity	Na	Unity	Na	Unity	Na	Unity	Na	Unity	Na	Stanbic	Na
18. Zenith	Na	Zenith	Na	Zenith	Na	Zenith	Na	Zenith	Na	Unity	Na
Average	0.97		1.29		0.39		0.98		0.90		0.66

Source: Compiled from the data set in table 4.2 above. Ave 1= Average beta. Ave 2 = Average HPR

Table 4: Volatility ranking of the banking stocks with beta (new computation)

Rank	2006	Rank	2007	Rank	2008	Rank	2009	Rank	2010	Rank	2011
1. Oceanic	2.24	Fidelity	2.85	Stanbic	1.88	Oceanic	2.42	Sterling	1.97	Unity	3.69
2. Intercont	1.90	FCMB	2.62	UBN	1.28	Unity	2.02	fribank	1.59	Intercont	2.29
3. UBA	1.70	Sterling	2.24	GTB	1.22	Intercont	1.89	Oceanic	1.41	Oceanic	2.24
4. FCMB	0.91	Skye	2.23	Intercont	1.20	Access	1.82	UBA	1.29	iamond	1.70
5. GTB	0.61	Zenith	2.22	UBA	1.20	Sterling	1.82	Skye	1.27	FCMB	1.65
6. Afribank	0.50	GTB	2.19	FCMB	1.16	Fidelity	1.70	Diamond	1.23	UBA	1.59
7. Wema	0.48	Ecobank	2.14	Access	1.10	Skye	1.68	Access	1.20	Stanbic	1.51
8. Diamond	0.40	Access	2.00	Unity	1.08	UBA	1.64	Unity	1.06	FBN	1.48
9. Zenith	0.32	Diamond	1.96	Diamond	0.98	Diamond	1.54	UBN	1.03	Access	1.38
10. UBN	0.17	Unity	1.94	Sterling	0.98	Afribank	1.46	Fidelity	0.99	UBN	1.35
11. Fidelity	-0.13	Wema	1.89	Zenith	0.98	Zenith	1.44	GTB	0.99	Sterling	1.29
12. Unity	-0.22	UBA	1.35	Afribank	0.97	FCMB	1.41	FBN	0.97	Fidelity	1.21
13. FBN	-0.48	Intercont	1.27	FBN	0.92	UBN	1.39	Zenith	0.88	GTB	0.99
14. Access	-0.58	Oceanic	1.24	Oceanic	0.92	Wema	1.30	Wema	0.87	Skye	0.99
15. Sterling	-0.61	Stanbic	1.05	Fidelity	0.71	FBN	1.02	Intercont	0.85	Wema	1.00
16. Ecobank	Na	UBN	0.94	Skye	0.54	Stanbic	0.61	FCMB	0.84	Zenith	0.86
17. Skye	Na	FBN	0.78	Wema	0.06	GTB	0.49	Stanbic	0.76	Ecobank	0.81
18. Stanbic	Na	Afribank	-1.81	Ecobank	-1.46	Ecobank	0.06	Ecobank	0.04	Afribank	-
Average	0.48		1.62		0.87		1.43		1.07		1.53

Similarly, from Table 4, while the industry average betas are 0.48, 1.62, 0.87, 1.43, 1.07, and 1.53 for the years 2006-2011 respectively, the most volatile stocks in these years were Oceanic (2.24) in 2006, Fidelity (2.85) in 2007, Stanbic (1.88) in 2008, Oceanic (2.42) in 2009, Sterling (1.97) in 2010, and Unity bank (3.69) in 2011. The low volatile stocks in the same period were Fidelity bank (-0.13) in 2006, FBN (0.78) in 2007, Wema (0.06) in 2008, Ecobank (0.06, 0.04 and 0.81) in 2009, 2010 and 2011. The volatility of others banks for years 2006-2011 (Table 4).

Table 5: Ranking of the banking stocks based on average return and volatility

Rank	Average Return	Beta	Rank	Beta	Average Return
1.Access	46.21	0.74	Oceanic	1.63	20.61
2.Stanbic	45.84	1.16	Unity	1.60	29.51
3.Sterling	43.29	0.95	UBA	1.44	16.49
4.GTB	34.61	1.11	ICB	1.40	29.85
5.ICB	29.85	1.40	Skye	1.34	22.42
6.Unity	29.51	1.60	Diamond	1.30	18.82
7.Fidelity	28.65	1.22	FCMB	1.25	23.77
8.FCMB	23.77	1.25	Fidelity	1.22	28.65
9.Ecobank	23.18	0.32	Stanbic	1.16	45.84
10.Skye	22.42	1.34	GTB	1.11	34.61
11.Oceanic	20.61	1.63	Zenith	1.09	19.16
12.Zenith	19.16	1.09	Sterling	0.95	43.29
13.Wema	19.08	0.77	UBN	0.94	6.04
14.Diamond	18.82	1.30	FBN	0.84	11.42
15.UBA	16.49	1.44	Afribank	0.82	10.73
16.FBN	11.42	0.84	Wema	0.77	19.08
17.Afribank	10.73	0.82	Access	0.74	46.21
18.UBN	6.04	0.94	Ecobank	0.32	23.18
Average	24.98	1.11		1.11	24.98

Source: Computed from table 4.2 above

A closer look at the betas shows that the average historical beta of Oceanic bank as at 2011 year-end was 1.63 which is higher than the beta of Access bank which provided on the average the highest holding period return from 2000-2011. Of course this is a negation or an irony of what the theory professed. What this observation shows is that since the market or systematic risk cannot be diversified away it affects all the stocks in the market in different quantum depending on the magnitude of the unsystematic risk inherent in a stock. This scenario was observed in many stocks under study. From Table 5 one can clearly see that the most volatile stock or rather the volatile stocks in this study did not symmetrically provide the commensurate rate of return. The picture here depicts a random walk which is one of the hallmarks of the stock market. Oceanic bank has the maximum beta but ranked 11th in terms of holding period return while Access bank ranked 17th in beta value but has the highest holding period return.

SUMMARY OF FINDINGS

Majority of the banks made their lowest holding period returns in year 2009 when the financial meltdown was at its peak in the Nigerian Stock market. Similarly majority of the banks made their highest holding period returns in year 2007 when the bull took hold of the Nigerian Stock market. All the banks made positive holding period return in 2007, and fourteen (14) out of the eighteen (18) listed banks made above 100% holding period return, three (3) made 13.89, 39.57, 44.59 percent respectively while surprisingly First bank made the lowest return of 0.98 percent. This period was the time bullish market was on. Within the period 2000-2011, Access bank made the highest holding period return in two years, 2007 and 2010 with 375.92% and 43.30% respectively while First bank and Ecobank made the lowest holding period return of 0.98% and -78.76% in these years respectively. However Ecobank made the highest holding period return of 100% in 2009 while Intercontinental bank provided the lowest of -76.66% in that year. GT Bank generated 98.28% and 108.94% in 2001 and 2004 respectively to make it the top most profitable bank in these years while Intercontinental bank with -39.53% in 2001 and StanbicIbtc with -23.33% in 2004 made them the most unprofitable bank in the years respectively. In any case, Intercontinental bank made it to the most profitable bank in Nigeria in terms of holding period return in 2000 and 2003 with 97.27% and 135.23% in respectively. Wema bank with 1.66% in 2000 and Afribank with -18.73% in 2003 were the most unprofitable in 2000 and 2003 respectively. Again, Wema bank with 94.94% made it to top in 2002 while it made it to the lowest bottom in 2005 and 2006 with -19.92% and -14.36% respectively. StanbicIbtc provided the highest holding period return in 2005 with 223.63%, 2008 with 101.69%, 2011 with 25.67% and Sterling bank with 279.03% in 2006. The bank with the lowest holding period return in 2002, 2008, 2011 was UBA with -34.52, -17.64, -45.53 percent respectively.

The estimated 12-year average beta for the subject-banks are as shown in table 4.4 above ranked in order of average returns and volatility. The paper discovered that the most volatile banking stock during the period of study is Oceanic bank with beta coefficient of 1.63 and the least volatile stock is Ecobank with beta coefficient of 0.32. Also noted is the fact that the stocks did not generate return symmetrically according their systematic risk levels.

RECOMMENDATIONS

From the findings of this study, the banking stocks are moderately volatile. However, the paper hereby suggests that to determine the required rate of return on equity, an investor should be at liberty to use either the yearly beta of the equity or the average equity beta as can be obtained using a number of preceding years annual betas of the stock as he deems appropriate. On this note an investor can cast his dice on stocks that generate his required rate of return ex-inflation at tolerable beta value or coefficient.

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