

Risk Management and Portfolio Analysis in the Capital Market in Nigeria

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Abstract
This research work is entitled Risk Management and Portfolio Analysis in the Capital Market in Nigeria". This work is embarked on with the purpose of examining critically risks with in the context of financing investment decisions. There is an attempt at appreciating the various criteria for measurement and managing investment risks and its possibility of reduction and to show the effects of changes in market on risks and return. Findings in the study have been able to indicate that investment risks can be identified, diversified portfolio does not reduce/eliminate all risks, macro-economic factors are responsible for the difficulties in diversifying market risks. From the findings, it is recommended that a conducive platform should be created for capital market investment; speculative decisions are to be taken into consideration in returns. There is a need to invest in securities and combinations that are perfectly negatively correlated and portfolio combinations should be correctly balanced for two or more assets, with the same expected return.
Keywords: Risk, Management, Portfolio analysis and capital Nigeria Market

1. Introduction

Following the precedence on what the Nigerian Capital Market has been like before the introduction of the Structural Adjustment Programme (SAP). Alexander (2004) highlighted that many companies could afford to ignore the capital market since they had vast pool of loanable funds to draw from. However, according to the Federal Government Gazette (1989), the introduction of SAP and certain policy measures such as the deregulation of interest rate, mopping up of excess liquidity were introduced with measures. It becomes impossible for business organizations to borrow funds from the money market. As a result more companies are now turning to the capital market.

The Nigerian Stock Exchange Market follows a random walk hypothesis. The problem with Ajayi's work which was quite exhaustive is that his conclusions may not be valid anymore in the structural changes sweeping across Nigerian financial system. Ekechi, in a study of monthly returns between 1977 and 1987 of twenty companies quoted on the Nigerian Stock Exchange also found substantial support for the random walk hypothesis. In the random walk, the variable does not follow a definite pattern like straight-line or even a curve (Jegede, 2003).

In an effort to refute the randomness of stock prices, Alexander (2009), tried to device some trading values solely on prices of a security that moves up at least T percent from a subsequent high, at which time it goes short. The short position is maintained until the price rise to at least Y percent above a subsequent low. In order to appreciate the research work, it is better to briefly define the following terms; risk, portfolio and capital market with the content of financial management.

Blume (1978), defined risk as the degree of profitability of occurrence assigned to an investing or financial decision from the observed knowledge of the part of existing events. Where there are certain parameters of the decision problem, whole values are impossible to fully specify in advance, it is said that, it is risky, better still, risky events are predictable and foreseeable only within the existence of some degree of confidence. Defined risk as the possibility of an adverse deviation from a desired outcome that is expected. It is a probability that what is got is different from what is expected. A portfolio is a collection of investments of an investor, a portfolio can be a collection of shares, for an investor of a property company his portfolio can be a collection of buildings. For a financial manager of various projects, these will be fully expatiated in the subsequent section the capital market is a market which comprises of many participants which primarily deals with facilities of raising new capital for companies to survive and to enjoy operations in perpetuity. It is market for shares and bonds (Pandey, 2005).

2. Capital Market Overview

The capital market is the market for long term funds. The securities traded in the capital market are called investment. Olowe (1996) highlighted that the capital market has both securities based segment (Stock Exchange) and non-securities based segment of the capital market. Capital market can be categorized as handling three manor groups of securities; debt instrument, preference shares, ordinary shares.

According to Alile and Anao, the stock exchange represents the setting for smart and daring speculators to make

a fortune with relatively little effort in terms of contributing anything of substance to national output but also a remarkable means to lose a fortune through false judgement. By trading on shares and bonds. The exchange also assists in transmitting information on price and trading volume to the public. As a means of protecting the on-listed companies particularly as regards financial condition. (Arnold, 1995) The Nigerian Capital Market has been in existence since the 1960s. it did well until it was affected by the global financial crisis. There was a very big decline on the amount of dividends and capital gains of investors. The decline in investors' confidence is yet to be redeemed.

3. Risk and Uncertainty

Olowe (1998) stated that risk and uncertainty though used synonymously are different in practice. Risk refers to those situations where occurrence of a particular event can be postulated with some degree of confidence from the knowledge of part or existing events. Also, risk is the variability that is likely to be associated with future returns on a project. While uncertainty is a situation where the future outcome cannot be predicted with any confidence from knowledge of past existing events. All investments in the capital market in all forms of securities involve risk because the future expected return is surrounded with uncertainty. Therefore, uncertainty of the future creates risks (Agiganwal and Pictra, 1990).

3.1 Systemic Risk

Pandey (1993) stated that systematic risk is the relevant risk measure for assets a risk arises from the uncertainty about economic fluctuation, earthquake, changes in world energy situation, etc. This risk effects all securities and consequently cannot be diversified away by an investor.

According to Van Horne (1989), while stating the principles of systematic risk that expected return on a risky asset depends only on that asset and systematic number of assets to a greater or lesser extent. The normalized systematic risk is of the individual risky assets. Berger and Udeu (1993) were of the opinion that the relevant measure of risk for a risky asset is its systematic risk covariance of returns with the market portfolio of a risky asset. For when the covariance (systematic risk) which is normalized beta coefficient is derived it relates the stocks' variance to market total variance. The normalized systematic measure is referred to as beta (B)

3.2 Unsystematic Risks

According to Pandey (1993), unsystematic risks are risks that are caused by unique factors of a particular organization e.g. strike in a company changes in management, term of raw materials. It does not affect all securities. Eragbe (2006) stated that as more randomly selected securities are added to a portfolio, unsystematic risk is reduced at a decreasing rate approaching zero. He want further to work on 15 to 20 randomly selected securities, where these securities can sufficiently eliminate most of the unsystematic risk of a portfolio.

However, Brealy (1983), agreed that efficient diversification reduces the total risk of a portfolio to the point where only systematic risk remains. Having agreed on the same position as Van Horne stating further that the total risk of an asset is the summation of systematic risk and unsystematic risk based on an understanding of the sources of the risk and returns.

3.3 Announcement Surprise and Expected Returns

Bradford et al, in their study stated that the actual return (R) on a security consists of two parts: the normal or expected return by participants in the capital market and a surprise or unexpected return. The expected part is based on a large number of factors that may influence a given company. The higher the return on a security the higher the risk (Hongall and Gaumonetz, 1986).

4. Measurement of Risks

Risk management is based on the size of the difference that is observed to be existing between actual returns (R) and expected returns Σ(R). Investor's attitude to risk indifference influences each attitude to risk and determines the criteria for measurement. The following represents the various techniques for measuring risks in equity investment.

Payback Period- This is a conventional technique for handling risk, it is a measurement of how quickly the original investment is recorded. This is the higher the payback of the project, the riskier that project. Payback period has a credit of emphasizing liquidity and simplicity. However, it does not consider the magnitude and timing of cash flow (Elton and Gruber, 1995).

Risk Adjusted Discount Rate: Studies for a long time have assumed that to allow for risk, the investors requires a premium over and above an alternative risk free rate to compensate for the risk they bear on an investment. The risk premium reflects the attitude of investors towards risk. This method allows for risk by building in the risk premium to the discount rate that will be used in evaluating future cash flows that will then be a sum of the risk free rate and risk premium. The value of the risk premium could vary with the risk riskiness of the investment. The higher the risk of an investment, the higher the risk premium and vice versa. (Fisher and Jordan, 1990).

4.1 Measurement of Single Investment Risks

A company has different sources of finance like equity capital, preference shares, debentures etc. when there are

additional capital issues by a company, The Marginal Cost Capital (MCC) represents the appropriate required return expected. The Marginal Cost Capital (MCC) is calculated using the following techniques:

a. To calculate the cost of individual capital component i.e. cost of equity, preference shares e.t.c
b. To calculate the total market value for each of the capital components.
c. To determine the Weighted Average Cost of Capital (WACC) using the result in A and B above. (Kindwell, Peterson and Blackweed, 1993).

4.2 Measurement of Multiple Investment Risks

The principle of investment risk is being managed when the overall cost required by all providers of capital in needed. It is the minimum rate of return such that the company's fund may be viewed as a pool of resources. Thus, it is difficult to associate a particular project with a particular form of finance. (Levy and Sarnat, 2004).

Therefore multiple investment risk includes that due to the cost of equity, preference shares, cost of finance is called *Weighted Average Cost of Capital* (WACC). WACC is the appropriate rate of use for investment appraisal subjected to the flowing assumptions that:

- New sources of funds must be found to finance new investments be it from retained earnings, further issues of debt or equity.
- The WACC must reflect the firm's long term future capital mix and capital cost
- The cost of capital to be used in project appraisal should reflect the Marginal Cost of Capital (MCC) (Lone, 1995).

5. Portfolio Risk and Return

Basically, Olowe (1998) stated that when an investor has a portfolio of securities, he or she will expect the portfolio to obtain a certain return. The expected return on a portfolio is the weighted average of the expected return of each investment in the portfolio where the weights represent the portfolio of total funds of each investment in the portfolio.

The expected return on a portfolio is given thus:

$\overline{RP} = Wa.Ra + Wb.Rb$

$\overline{Ra} = Expected\ return\ on\ security\ a$

Wj = Proportion of portfolio funds investment in security

RP = Expected return of portfolio P

$\overline{Rb} = Expected\ return\ on\ security\ b$

The risk of a portfolio depends not only on the riskiness of the securities making up the portfolio but also on the relationship among those securities. This must be considered in calculating the standard deviation (variance) of a selection.

The standard deviation of possible portfolio returns is given thus:

$\delta P \sqrt{= \sum (R - R)^2 P}$

δP = Standard Deviation of the portfolio

R = Return on individual security

$\bar{R}$ = Expected return on each security

P = Probability

The two Σs represent that the co-variances for all possible pair wise combination of securities in the portfolio will be considered. The number of co-variances will get larger as the number of securities in the portfolio increases (Olowe, 1998). Using a two-security case, the standard deviation of portfolio return is given thus:

$\delta P = Wa^2\ \delta^2 a + Wb\delta^2 + 2WaWbcov\ (a,b)$

WA = proportion of total funds invested in security A

δA^2 = the variance of return of security A

δB^2= the variance of return of security B

WB =δAB = co-variance between returns of security A and B.

Calculating the co-variance is not straight forward. Statistically, co-variance is given by:

Cov (A,B)= 1/n -1Σ(RA-RA) (RB-RB).

Van Horne and Markowitz, both stated that in the capital market, portfolios, may be efficient, inefficient and super-efficient. If a particular portfolio is below the line, this means it is offering insufficient returns for its level of total risks. This will result into the position of describing a situation of such portfolio being insufficient (Pandey, 2005).

On the other hand, if a particular portfolio is super-efficient, if a portfolio is one on the line, it means the expected returns and the required return are the same, such a portfolio is described as efficient, this is depicted on a Capital Market Line (CML) as follows:

Mathematically, it is shown thus:
Rf = Risk free rate/return
Rn = Market rate of return
δm = Marker risks
Rp = Expected return on portfolio
δP – Portfolio risk
Note: Rf (Rm - Rf) δP = required/cost of capital δm, while
Rp – Expected return = IRR = Actual Return.
Therefore,
IRR = Coc (Efficient Portfolio)
IRR = Coc (Super-efficient Portfolio)
IRR = Coc (inefficient Portfolio)

6. Capital Asset pricing model (CAPM) and Implication for Investors

The capital asset pricing model was developed by Sharpe in 1964, Linter in 1965, and Mossin in 1996 as an extension of portfolio theory. CAPM predicts the relationship between the risk and equilibrium expected returns on risky assets. Sharpe in 1964, in addition of Markowitz analysis, stated that CAPM precedes the framework for analyzing the risk of individual securities within the general capital equilibrium (Myers and Majlif, 1984).
The CAPM states that investors hold portfolios of securities rather than a single security, there is need to consider the risk of each security in terms of contribution to the risk of the portfolio and not its own risk if held in isolation. Since the risk in the CAPM is investor-oriented rather than firm-oriented. The financial manager should be concerned with the risk of the shareholders when taking investment decisions (Pandey, 2005).
Copeland and Werton in (1983) stated the assumptions on which the CAPM is developed include that:

1. Investors are risk-averse.
2. The value of securities are fixed, marketable and perfectly divisible.
3. There is an existence of risk free security.
4. Investors are price takers, thus having homogenous expectation about securities.
5. Securities markets are frictionless, information is a castle and is simultaneously available to all investors.
6. There are no market imperfections such as tax regulation or transaction cost (Pandey, 2005).

From the statement above, the expected return on a security is equal to the risk-free rate plus a risk premium. The risk premium means that the price of risk multiplied by the quantity of risk is the CAPM beta (B). It is the covariance between returns on security portfolio divided by the risk-free value of a beta in market equilibrium. The CAPM implies an expected return risk relationship in which every individual security is priced in such a way that it has an expected return risk combination that is above SML, it will be undervalued i.e. E(Ri)> Rf+(E[Rm]-Rf)Bi.
If this situation occurs, the security will be attractive to investors. According to CAPM, Sharpe in 1969, observed that the increased demand for the security will cause the price to rise until the equilibrium situation is reached. An over-valued security is characterized by an expected return-risk combination that placed it below the SML. The security is unattractive to investors. The fall in demand will cause the prices of fall until it reaches an equilibrium situation (Lone, 1998).

7. Conclusion

It is therefore concluded that:

i. The risk attached to a particular investment is related to the return on such investment.
ii. Diversified portfolio can reduce all risks to the point where only systematic risks remain.
iii. Management of risk can be attained when historical information reflects the current market process of securities and insider privilege information is publicly available. It is good to hold portfolios instead of single investments when they are properly managed. The lesson to be learnt is that the higher the return, the higher the risk. So it good to go in for calculated risks.

8. Recommendations

It is therefore recommended that:

1. Government officials should create a conducive platform for capital market investment by ensuring that laws are not only made but implemented to minimize insider trading.
2. Investors should ensure that their portfolios are made up of investment with negative correlation so as to reduce the variability in return and risk.
3. Financial analysts should consider macro-economic factors, such as instability in the general

environment that could translate into very volatile returns.

4. Speculation decision needs to be taken by stockholders to affect how returns on future investment portfolios can be achieved.
5. All operational efficiency need to be correctly balanced or weighted for two or more assets with the interest of client attached to the portfolio the analyst covered.

REFERENCES

Aggarwal, R. and Pietra, R. (1990), "Risk Management in the Financial Market" in the Initial Public Market Journal of Financial Management: Volume 10, Number 6, 30-45.

Alexander, J. (2004), "Price Movement in Speculative Market, Trend or Random Walks Hypothesis" Industrial Management Review, 64, (1), 74-89.

Arnold, G. (1998), Corporate Financial Management; Prentice Hall: Lagos

Berger, A. N. and Udell, G.T. (1993), Securitization, Risk and the Liquidity Problem in Banking, Homewood Illinois: Richard D, Irwin Publishing Limited.

Blume, M. E. (1978), The Assessment of Risk, McGraw Hill Book Company New York.

Brealy, R. A. (1983), An Introduction to Risk and Return from Common Stock. Cambridge Mass; The MTT Press.

Dongall, H. E. and Gaumnitz, E. (1986), Capital Markets and Institutions., Prentice-Hall Englewood Cliffs.

Eragbe, E. (2006). Note on Corporate Finance, Longman: Lagos

Federal Government Gazette (1989), "Risk Management : Management" Volume 27, Number 1 430-450

Fisher, D. E. and Jordan, R. J. (1990): Security Analysis and Portfolio Management. Prentice-Hall. New Delhi

Jegede, M. M. (2003), The Valuation of Risky Asset and Selection of Risky Investment in Stock Portfolio and Capital Budget, Longman: Lagos.

Kidwell, D. S., Peterson, R. L. and Blackwell, D. W. (1993), Financial Institutions, Markets and Money.: The Dryden Press New York.

Levy, H. and Sarnat, M. (2004), Capital Investment and Financial Decision. Upper saddle River, NJ: Prentice Hall.

Lorie, J. H.(1998), The Stock Market: Theories and Evidence. Cambridge, Mass: The MTT Press.

Myers, S. C. and Majluf, N. (1984), "Corporate Financing and Investment Decisions". Journal of Financial Economics, Volume 24, Number 1, June, 21-32.

Olowe, R.A (1998), Financial Management Concepts, Analysis and Capital Investment. Lagos: Brierly Jone Limited. Lagos.

Pandey, I. M. (2005), Financial Management, Delhi: Vikas Publishing House Pvi Limited.

Van Horne, A. (1999), Financial Management Policy. New Delhi: Prentice-Hall of India Limited.