

Measuring the Determinants of Value Creation for Publicly Listed Banks in Nigeria: A Random Effects Probit (REP) Model Analysis*.

By

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Abstract

This paper investigates empirically the determinants of shareholder value creation of banks listed in the Nigerian Stock Exchange from 2004-2008 using a random effects probit (REP) model. Basically, we test the significance of such hypothesis as: financial policy hypothesis, dividend policy hypothesis, profitability and earnings hypothesis as well as variables like size, age and structure in capturing firm value creation of the listed banks. Our data are obtained from the annual reports of the listed banks, supplemented by Info-financial publications and Nigerian Stock Exchange- stock market data, all for the period 2004-2008. We compare results based on the standard probit model and the random effects probit (REP) model. The results show that the random effects probit model performs better than the standard probit model. Also dividend policy is more important for value creation than profitability and earnings growth. The financial/debt policy variable, bank size and structure do not affect value creation but unobservable bank characteristics such as management quality or strategy may be important for value creation.

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1. Introduction.

In recent times, especially after the bank consolidation exercise of 2004-2005, the intensity of competition in the Nigerian banking market has increased tremendously. The focus of competition appears to have gradually shifted from the pursuit of deposits (in the money market) to the pursuit of equity (in the capital market). In 2007, the banking sector alone floated 25 new issues out of the total 76 for all sectors in the capital market in that year. Besides, between 2006 and 2008, Nigerian banking stocks have been the most actively traded in the daily market.

With 21 out of the existing 24 banks publicly listed, the market has become more competitive and the banks are increasingly interested in creating shareholder value (ie supplying a satisfactory remuneration to shareholders) so as to succeed in their pursuit of equity capital¹. Between 2006 and 2007, there have been huge increases in the market price of shares and market capitalization rates of most banks. What are not yet clear are the factors that drive these increases in market prices of shares, market capitalization levels or even the created share holder value.

Even more surprising, is the stock market evidence which shows that the banks with the highest increases in market price per share between 2005 and 2007 are not the same banks with the highest increases in dividend growth. Moreover, as shown in table 2, in 2007, 15 of the 20 most capitalized stocks in the Nigerian Stock Exchange were banks but surprisingly, only 5 out of the highest 20 companies in terms of dividend growth were banks. What then was driving the increases in market price per share, market capitalization for banks or even shareholder value? Several questions are therefore important; do higher growth and/or profitability of listed Nigerian banks lead to increased value for their shareholders? Does the dividend policy and debt policy of listed Nigerian banks matter for shareholder value creation? Does shareholder value of listed banks respond to such unobservable characteristics as management quality or organizational strategy?

There is now a large literature that supports the Shareholder Value approach, even-though there is still considerable debate and controversy as to (i) what the most appropriate methods for measuring shareholder value are, and also (ii) what the most significant determinants for shareholder value creation of firms are. Empirical evidence is mixed. With respect to the methods of measuring shareholder value, several approaches have now been used in literature (see Lambert and

¹ In terms of market and book value of shareholder investment, shareholder value creation (SHV) may be defined as the excess of market value over book value per share.

Burdurgurolu, 2000, p.2). These include, Economic Value Added (EVA), Strategic Profit Model (SPM), Ratio of Market Value to Book Value (MV/BV), Customer Value Added (CVA). With respect to the determinants of created value, several variables with theoretical roots from the financial policy hypothesis (Modigliani and Miller, 1958), Dividend Policy Hypothesis (Miller and Modigliani, 1961, Ross, 1977), and Profitability Hypothesis (Rappaport, 1986) have also been tested empirically in several countries.

Most of the empirical studies that have analyzed the determinants of firms' value creation have adopted a common investigation method. An Ordinary –Least Square (OLS) regression model is usually employed to test the relationship between indicators (or determinants) of value creation and a measure expressing the Shareholder Value created (either EVA or MV/BV) with cross-section firm data (see for eg Rappaport, 1986, Caby et al, 1996, Ben Naceur, et al, 1998).

In this study, we adopt a realistic behavioural model of the banks and using panel data sets, we measure our dependent variable (ie shareholder value created) as a dichotomous response variable. As such it takes on two values; 1, when there is future creation of value by the banks and 0, when there is none (as measured by a threshold in the calculated shareholder value like MV/BV). We thus assume that banks are faced with a choice of creating shareholder value in future and that choice depends on factors such as dividend policy, debt policy, profitability, current size etc.

Since our dependent variable (ie the value creation of publicly listed banks) is a dichotomous response variable, the estimation procedure we use is a probit model estimated on an unbalanced panel data. The random effects probit (REP) model proposed by Heckman and Willis (1975) which we adopt is simply an extension to the standard probit model but takes into account the unobserved, group specific heterogeneity by adding random intercepts. In our own case, unobserved heterogeneity is important and this could reflect management quality or strategy. The other observed firm heterogeneity may arise because of differences among banks with respect to size, structure or age.

In sum, the focus of this paper is to analyze empirically the determinants of the future value creation for banks listed in the Nigerian Stock Exchange over the period 2004-2008. As a base, the standard probit model is estimated (this ignores any potential firm unobserved heterogeneity), then we estimate the random effects probit model (accounting for unobserved heterogeneity) using the classical maximum likelihood estimation of the model applying Gaussian Quadrature Methods.

2. Firm Shareholder Value Creation: Theory and Evidence.

The theory of shareholder value has traditionally suggested that every company's primary goal is to maximize the wealth of its shareholders, which should be a given, since it is the shareholders that own the company and any rational investor expects a good return on his or her investment. In the past, methods such as Return on Investment and Earnings per share were the most important performance measurement systems. However with increasing globalization of markets, companies are focusing their efforts on creating shareholder value in order to survive the intense competition. Of critical importance however, has been what determines the created shareholder value of firms.

Miller and Modigliani's (1961) article commonly considered to be the origin of the shareholder value theory, show the irrelevance of dividend (distribution) policies in an ideal environment where the value of the business is linked to two elements (a) the present value of expected dividends and (b) the company's' residual value. They present a cogent argument for the fact that the value of the firm is unaffected by the dividend policy in a world without taxes or transaction costs and where every one was fully informed about the distribution of the firms uncertain cash flows.

Ross (1977) suggests that implicit in the Miller- Modigliani dividend irrelevance hypothesis is the assumption that the market knows the random return stream and values this stream to set the value of the firm. They show that stock market value depends on investor valuation of all cash flows from firms, not just the dividend component. Thus we may find empirical evidence that shows that the value of a company increases because dividends are taken as signals that the firm is expected to have higher future cash flows [see Ross (1977) 'dividend signalling hypothesis'].

According to the Gordon's (1962) dividend relevance hypothesis, the market value of a share is equal to the present value of an infinite stream of dividends to be received by the shareholders. Thus the market value of a share changes with retention ratio or with the payout ratio. He presents a dividend capitalization model which explicitly shows the relationship of expected earnings, dividend policy, profitability and the all equity firms' cost of capital in the determination of the value of the share. Similarly Walter (1963) argues that the choice of dividend policies

almost always affect the value of the firm. His model shows the importance of the relationship between the firms' rate of return r , and its cost of capital, k in determining the dividend policy that will maximize the wealth of shareholders.

The relationship between dividend policy and firm value has been tested in various empirical studies (see Copeland and Weston, 1988 for a summary). Thus the starting point for the theoretical analysis of the determinants of shareholder value is the dividend relevance hypothesis.

Besides the dividend relevance hypothesis, there is also the financial policy hypothesis that focuses mainly on the choice of debt level as a signal for firm value (see Ross, 1977, Leland et al, 1977). In a seminal paper, Modigliani and Miller (1958) show that in a world without taxes, agency costs or information asymmetry, repackaging the firms net operating cash flows into cash flows for debt and residual cash flows has no effect on the value of the firm. Capital Structure theories have also focused on the tax advantage of debt (Modigliani and Miller, 1963), the use of debt as an anti-takeover device, agency cost of debt (Jensen et al, 1976 and Myers, 1977), the effect of debt on investor's information about the firm and their ability to oversee management (Haris et al, 1991). The proposition of Ross (1977) is that an increase in the use of debt will represent an unambiguous signal to the market place that the firms' prospects have increased.

In addition to the dividend relevance and debt relevance hypotheses for explaining firm value, there is also the profitability hypothesis. Rappaport (1986) has argued that profitability is a very important value driver. An improvement of profitability can originate from achieving relevant economies of scale, searching for cost reducing linkages, eliminating overhead that does not add value to the product and eliminate costs that do not contribute to buyer needs. Pandey (2005) has also argued that one reason for the increased interest in shareholder value is the shift in focus from accounting profitability to economic profitability. The most popular measure of accounting profitability is therefore return on equity (RoE), while economic profitability considers the cost of equity K_e ; it is the spread between RoE and K_e (see Pandey, 2005).

In the literature, there are several studies which have investigated the dividend relevance, debt relevance and profitability relevance in addition to other

factors as determinants of shareholder value creation. In a study of the US companies, Varaiya, Kenn and Weeks (1997) find that both profitability and growth influence shareholder value, but profitability has a greater impact. In an earlier study, Woo (1984) finds similar results. Rappaport (1987) has defined the important determinants of shareholder value to include growth rate, operating profit margin, cost of capital, capital investment. Ben-Nacauer and Goaided (1999) investigated the determinants of value creation among listed Tunisian companies. Their results indicate that firm values are positively and significantly correlated with dividend policy and profitability factor. Their results also suggest that the value creation is neither affected by industry patterns nor size.

In a recent study, Ramezani, Soenen and Jung (2002), explore the relationship between growth (earnings or sales) and profitability and between profitability and shareholder value. They use Jensen's alpha as a measure of shareholder value and find that beyond a point, growth adversely affects profitability and destroys shareholder value. More recently also, Pandey (2005) used data of companies listed on the Kuala Lumpur Stock Exchange and tested for the effect of growth and profitability on shareholder value (measured as the market to book(M/B) ratio). They find a strong positive relationship between profitability and the M/B ratio, while growth is negatively related to the M/B ratio.

In this paper, we have considered several theoretical and practical variables as our determinants of shareholder value creation. The data available to us allow an investigation into the role of dividend policy, debt policy, profitability, growth and firm size in determining value creation for listed banks in Nigeria.

2.1 Publicly Listed Banks in Nigeria : Some Recent Evidence.

The Nigerian Banking system has undergone significant changes especially after the recapitalization/consolidation exercise in 2004/2005. The industry total asset base grew approximately 277 % between 2003 and 2007. There were also high branch expansions in and outside of Nigeria. Appendix 2 shows a comparison of selected financial variables (total assets, total liabilities, gross earnings and profit after tax) for the listed banks for 2005 and 2008. From the table (ie. Appendix 2), it is clear that for most of the listed banks these financial variables grew geometrically and in most cases by more than 300% between 2005 and 2008.

Table 1 below shows the performance of banks with respect to some stock market indices (market price of share and dividends per share) as compared between 2005 and 2007 for the listed banks. While there have been increases in market price of share, other indices like earnings per share and dividend per share have not witnessed similar growth. This however raises the question of what has induced the increases in market price of shares for most of the banks.

Table 1: Performance of Publicly listed banks on the Nigerian Stock Exchange
(Comparison of Dec 2005 and Dec 2007)

Name of Bank	2005			2007		
	Market Price of Share (N:K)	Earnings Per Share (N)	Dividend per share(N)	Market Price of Share (N:K)	Earnings Per Share (N)	Dividend per share (N)
Access Bank	2.99	0.09	0.10	23.00	1.16	0.40
Afribank	9.10	0.09	0.20	30.49	1.42	0.30
Diamond Bank	7.75	0.55	0.00	19.32	0.73	0.30
Ecobank		0.27	0.09	7.95	0.28	0.09
Fidelity Bank	2.93	0.16	0.00	11.83	0.30	0.16
First Bank	32.00	2.61	1.60	44.70	1.17	1.00
First City Monument	5.11	0.18	0.07	18.88	0.95	0.35
First Inland				13.30	0.47	-
Guaranty Trust Bank	12.40	1.15	0.45	34.63	1.26	0.75
IBTC/Stanbic	4.57	0.58	0.20	19.89	0.56	0.30
Intercontinental	9.25	0.58	0.20	40.60	1.24	0.70
Oceanic Bank	6.49	0.42	0.32	37.40	1.51	0.42
Platinum Habib Bank	2.60	0.06	0.00	25.51	1.27	0.70
Skye Bank		21.76		17.19	0.74	-
Spring Bank				5.59	0.16	-
Sterling Bank				7.28	0.20	0.10
UBA	13.00	1.61	0.60	49.50	1.90	1.00
Union Bank	25.48	1.64	1.40	43.06	1.63	1.00
Unity Bank	2.18	0.00	0.00	8.80	0.00	-
Wema Bank	3.74	0.10	0.10	15.00	0.55	0.10
Zenith Bank	16.50	1.38	0.70	46.09	1.90	1.10

Source: Securities and Exchange Commission, Annual Report and Accounts 2005 and 2007

Table 2, shows the ranking of listed banks out of the top 20 listed firms for various market indices in 2007. The listed banks performed well in indices such as capitalization, profit margin ratio and turnover growth where the number of banks that appeared in the top twenty of all listed firms were 15, 10 and 12 respectively. The story is different for such indices as dividend growth and return on equity, where only 5 and 2 banks featured respectively in the top 20 listed firms for the year.

Table 2: Ranking of Listed Banks among top 20 listed firms in various market indices (Dec 2007)

	Most Capitalized Companies	Highest Profit Margin Ratio	Highest Turnover Growth	Highest Dividend Growth	Highest Return on Equity
1	First Bank	-----	UBA Plc	-----	-----
2	Intercontinental	-----	Skye Bank	-----	-----
3	UBA Plc	Intercontinental	-----	First City Monument	-----
4	Zenith Bank	Guaranty Trust	-----	UBA Plc	-----
5	Union Bank	-----	-----	-----	-----
6	Guaranty Trust	Fidelity Bank	-----	-----	-----
7	Oceanic Bank	First City Monument	First City Monument	-----	-----
8	-----	-----	Sterling Bank	-----	-----
9	-----	-----	Intercontinental	Intercontinental	-----
10	Ecobank Plc	-----	Access Bank	-----	-----
11	Diamond Bank	Ecobank Plc	Bank PHB	-----	-----
12	Stanbic/IBTC	Access Bank	-----	-----	-----
13	-----	First bank Plc	Fidelity Bank	-----	-----
14	Bank PHB	Zenith Bank	Ecobank	Guaranty Trust	-----
15	Fidelity bank	Bank PHB	Oceanic Bank	-----	-----
16	-----	Afribank	-----	-----	Guaranty
17	Afribank Plc	Oceanic Bank	Afribank	Oceanic Bank	-----
18	-----	-----	Diamond Bank	-----	-----
19	First City Monument	-----	-----	-----	Oceanic Bank
20	-----	-----	-----	-----	-----
	15/20	10/20	12/20	5/20	2/20

Source: The Nigerian Stock Market Manual, 2008 by CITC PLC.

The evidence from table 1 and 2, justifies the need for researchers to measure and assess the determinants of banks performance in the capital market (through performance indices as created shareholder value, increases in market price per share, increases in market capitalization levels) just as there are studies that measure the determinants of bank performance in the money market (through such performance indices as return on assets, profitability, ratio of non performing loans).

3. Methodology.

We start first by presenting the basic model which has been applied to analyse the determinants of firms' shareholder value creation using the Ordinary Least Squares (OLS) approach as seen in such studies as Rappaport (1987), Caby et al (1996). Thereafter we introduce an alternative approach to analysing the determinants of firm value creation when the dependent variable takes the form of an observed binary outcome and is estimated by a Probit Model.

3.1 Determinants of Shareholder Value Creation: The Basic Model

The basic valuation model that can be used to make predictions about the determinants of shareholder value creation is the constant-growth dividend valuation model (see Gordon's, 1962). The model predicts that changes in shareholder value depend not only on the changes in dividends but also on the discount rate. We can then express this as follows;

$$MV = \frac{DPS}{k_e - g} = \frac{EPS(1 - b)}{k_e - g} \quad \text{-----(1)}$$

The market value (MV) of a firms share is the present value of the expected stream of dividends per share (DPS). DPS depends on the firms' payout ratio (1-b) and the earnings growth (g). Earnings growth depends on the retention ratio (b) and on the return on equity (ROE) [g=b X ROE]

The model assumes that dividends grow at a constant rate in perpetuity. Dividend per share (DPS) is equal to earnings per share (EPS) multiplied by one minus retention ratio (b). EPS depends on the firms return on equity (ROE) and the equity investment, expressed as book value of per equity share (BV). (EPS= ROE× BV). We can now re-write equation 1 as follows;

$$MV = \frac{BV \times ROE (1 - b)}{k_e - g} = \frac{BV(ROE - b \times ROE)}{k_e - g}$$

$$\frac{MV}{BV} = \frac{ROE - g}{k_e - g} \text{ -----(2)}$$

Equation 2 also implies that shareholder value will be created when MV/BV ratio is greater than 1, and value will be destroyed if it is less than 1².

Equation 2 can also be written as

$$\frac{MV}{BV} = 1 + \frac{ROE - k_e}{k_e - g} \text{ -----(3)}$$

We can notice from equations 2 and 3, that economic profitability or spread and growth are the main determinants of the MV/BV ratio (ie created shareholder value).

$$MV/BV = \beta_0 + \beta_1(ROE - ke)_{it} + \beta_2 g_{it} + \beta_3(ROE - ke)_{it} g_{it} + \text{-----(4)}$$

Equation 4 implies that the market to book ratio depends on three factors (a), the level of percentage spread (ROE-ke) to be earned; (b) the volume of future investment opportunities as expressed by the rate of growth of earnings per year, g and (c) the interaction term.

Equation (4) is a generic representation of a value-based model. In recent times however, several authors have tried to capture the determinants of firm value creation based on the theoretical hypotheses of firm value. As such, the main determinants of firm value include variables that capture the dividend policy hypothesis (Miller and Modigliani, 1961; Ross, 1977, Miller, 1978), the debt relevance hypothesis (Modigliani and Miller, 1958,1963; Ross, 1977), and the profitability hypothesis (Rappaport, 1986).

The basic specification of the enlarged model is as follows;

² Value based models agree that firms seek to create shareholder value by ensuring that the warranted market value, MV of the equity capital invested in the firm by the shareholders exceed the book value, BV of equity. In other words, firms create value for shareholders if MV > BV, destroys value if MV < BV and sustains value if MV = BV.

$$MV/BV = \beta_0 + \beta_1(ROE - ke)_{it} + \beta_2 g_{it} + \beta_3(ROE - ke)_{it} g_{it} + \beta_4 \text{Payout ratio} + \beta_5 \text{Debt} + \beta_6 \text{ROA} + \beta_7 t \text{-----} (5)$$

- MV is the market value of a firm's equity
- BV is the book value of a firm's equity
- Payout ratio represents the firm's dividend policy calculated as the ratio of total dividends to total earnings
- Debt represents the firm's financial policy, and is measured as the ratio of the sum of all debts to total assets
- ROE-ke represents economic profitability and is the difference between the return on equity and the cost of capital (ROE-ke). ROE is calculated as profit, net of all expenses and taxes and excluding all extra ordinary items divided by the net worth (book value of equity). Cost of equity (ke) is calculated using the Capital Asset Pricing Model, CAPM.
- Growth(g) is here measured as the rate of growth of earnings per year
- Economic profitability- growth interaction variable; is used to capture the joint effect of economic profitability and growth.
- Accounting Profitability, that is ROA. It is the ratio of operating income to total assets

3.2 Determinants of Shareholder Value: The Random Effects Probit Model.

In a panel data where the dependent variable is measured as a dichotomous response and the data contains unobserved heterogeneity in the sample, the Random Effects Probit (REP) has been considered a good estimation technique (see Heckman and Willis 1975, Heckman, 1981 Gu et al, 2007)³. The latent variable

³ It has been shown that if heteroscedasticity is present in the panel data, the Random Effects Probit (REP) gives very biased estimates. As such, it is suggested that the homoscedasticity assumption needs to be tested or alternatively if heteroscedasticity is suspected, it is better to estimate a Random Effects Heteroscedastic Probit (REHET) model instead of REP model.

specification of the standard random effects probit (REP) model in which the random effects result from a group specific error term takes the following form:

$$Y_{it}^* = X_{it} \beta + \varepsilon_{it} \quad \text{----- (6)}$$

Where Y_{it}^* is an observed latent variable, $i = 1 \dots N$, and $t = 1 \dots T_i$ where i indexes individuals, t indexes time periods, X_{it} is a vector of $k \times 1$ explanatory variables and β is a $k \times 1$ vector of regression coefficients. We can decompose the error term into two components as follows;

$$\varepsilon_{it} = \mu_i + \eta_{it} \quad \text{----- (7)}$$

Where we assume that the error terms, μ_i and η_{it} are mutually independent, identically distributed and normal ie;

$$\mu_i \sim N(0, \sigma_\mu^2), \text{ and } \eta_{it} \sim N(0, \sigma_\eta^2) \quad \text{----- (8)}$$

This means that;

$$\text{Var}(\varepsilon_{it}) = 1 + \sigma_\mu^2 \quad \text{----- (9)}$$

The common error component μ_i means that for the same unit/individual, ε_{it} s will be correlated, and the correlation between successive disturbances ε_{it} for the same individual/unit can be written as;

$$\rho = \frac{\sigma_\mu^2}{\sigma_\mu^2 + \sigma_\eta^2} \quad \text{----- (10)}$$

(Note that this in turn means that we can write $\sigma_\mu^2 = \frac{\rho}{1 - \rho}$).

The observed random variable Y_{it} is defined by;

$$Y_{it} = 1(Y_{it}^* > 1) \quad i = 1 \dots n; t = 1 \dots T_i \quad \text{----- (11)}$$

Where $1(\cdot)$ denotes the indicator function, so that Y_{it} is 0,1.

In our analysis, $Y_{it} = 1$, when there is future creation of value by the listed banks,

that is, when $\frac{MV_{it}}{BV_{it}} > 1$,

and $Y_{it} = 0$ elsewhere.

If the various realizations of Y_{it} for each i were independent, we could simply run plain probit. Because they are correlated, things are more difficult; the common μ_i s mean that the T_i observations on unit i are distributed according to a T-variate normal distribution. This means that the likelihood is really complicated. The

likelihood function for the observed sample (ie the contribution of unit i to the likelihood) is; (see Guilkey and Murphy, 1993; Ben Naccur and Goaid, 1999)

$$L = \prod_{i=1}^n P(Y_{i1}, \dots, Y_{it})$$

$$= \prod_{i=1}^n \int_{-\infty}^{\infty} \prod_{t=1}^{T_i} \Phi \left\{ \left[X_{it} \beta + \mu_i \left(\frac{\rho}{1-\rho} \right)^{\frac{1}{2}} \right] [2 Y_{it} - 1] \right\} \phi(\mu_i) d\mu_i \quad \text{----- (12)}$$

Consistent and asymptotically efficient estimator of β and ρ are given by the maximum likelihood procedure according to Buttler and Moffitt's (1982) derivations which involves using an approximation known as Gauss-Hermite quadrature to evaluate the likelihood. These procedures are well implemented in LIMDEP 7.0 which is the statistical software package that we use in our analysis.

3.3 Estimation Procedure

The future value creation of publicly listed banks in the Nigerian Stock Exchange is regressed on explanatory variables that account for dividend policy (payout), financial policy (debt), firm growth (g) and Profitability (ROA). In order to account for observable firm heterogeneity, we introduce appropriate controls in the model such as Size (log of total assets), Consolidation status (Dc which is 1 for banks that merged, and 0 elsewhere), Age (Da which is 1 for first generation banks, 0 elsewhere). We also include a time trend variable that captures the temporal effects of the 2006-2007 bank innovations in the capital market in Nigeria on the value creation process. The specification is as follows:

$$Y_{it} = \beta_1 + \beta_2 Payout_{it} + \beta_3 Debt_{it} + \beta_4 ROA_{it} + \beta_5 Growth_{it} + \beta_6 Size_{it} + \beta_7 Dc_i + \beta_8 Da_i + \beta_9 t + \mu_i + \epsilon_{it} \quad \text{----- (13)}$$

where the variables are as earlier defined to include;

MV/BV is the market value of the common share at the end of the year divided by the book value of the banks' equity at the year end. *Payout* is calculated as the ratio of total dividends to total earnings, while *Debt* is measured as the ratio of the sum of all liabilities to total assets. *ROA* is the ratio of operating income to total assets, while *Growth* is the rate of growth of total earnings per year and *Size* is measured as the log of total assets of the bank.

3.4 Sample Description

Our estimation sample consists of all publicly listed banks in the Nigerian Stock Exchange over a period of five years (from 01/01/2004 to 31/12/2008). The sample is an unbalanced panel data arising from several reasons. Presently the listed banks are 21 but some of them were listed in the market for the first time as from 2005 and for some that merged during the 2004/2005 consolidation exercise and later changed name, we used the data for leading partner in the merger in 2004 but thereafter, used the new name of the bank as from 2005 (ie at the end of consolidation).

Data employed were collected from different sources with bank financial market information collected from 'Info-financials' and capital market information collected from Securities and Exchange Commission (SEC) Annual Reports as well as Nigerian Stock Exchange (SEC) Fact books. It is worthwhile noting that some data (namely, market price of share) are directly taken from the SEC Annual Reports and NSE fact books, while others are calculated based on data available from Info-financials and NSE/ SEC Reports.

Appendix 1 (a & b) reports the descriptive statistics of the sample and the correlations amongst the variables used. It suggests a positive but often low correlation between the dependent variable and the independent variables.

4. Results and Evaluation

As a base, we first estimate the standard probit model (which ignores any potential firm unobserved heterogeneity). Then we estimate the Random Effects Probit (REP) model using the approach of Buffet and Moffit (1982) which is a method that permits one-dimensional integral that can be evaluated by an approximation known as the 'Gauss- Hermite Quadrature' (GHQ).

The various estimation results are presented in table 4 (a). The first column reports the standard probit model while the second column reports the results of the panel probit estimation discussed above (ie using GHQ). We also test for the presence of unobserved heterogeneity using the Wald Test which is based on the significance of the estimate of ρ .

Table 4(a): Results of the Standard and Random Effects Panel Probit Model

	Standard Probit			Random Effects Panel Probit (with GHQ)	
	Coefficient	Standard Errors		Coefficient	Standard Errors
Constant	- 0.193	0.032*		-1.623	0.046*
Payout	0.005	0.012*		0.276	0.013*, **
Debt	-0.028	-0.047		-0.071	-0.061
ROA	0.008	0.042		0.157	0.038*
Growth	0.006	0.033		0.104	0.037*
Size	0.001	0.036		0.064	0.042
Dc (dummy)	0.006	0.045		0.174	0.064
Da (dummy)	0.003	0.043*,**		0.071	0.045*,**
Trend	0.035	0.02*		0.195	0.054*,**
P	-	-		0.464	0.136*,**

* -significant at the 5% level, ** - significant at the 10% level

From the economic theory perspective, the results are interesting. The probability of future value creation is more positively and significantly correlated with pay-out (dividend policy) than with ROA (profitability) and growth (earnings). This suggests that profitability and growth matter but not as much as dividend policy. This supports the assertion by Ben-Naccur and Goaid (1999) that a profitable company which distributes a great deal of its earnings as dividends convey signals of the quality of management and therefore result in value creation. This supports the dividend relevance hypothesis of Gordon, 1962; Walter, 1963, which asserts that dividend decisions are an active variable that can influence the value of the firm.

While the effect of debt can be explained based on economic theory, the effect of size throws some puzzles. The Debt coefficient is negative and insignificant for the Random Effects model while Size is insignificant for all models. The debt effect supports the capital structure irrelevance hypothesis of Modigliani and Miller 1963 which suggests that financing decision (whether debt or equity) does not matter for firm value. Even though there is no extant theoretical prediction of the relationship between size and firm value, It is ordinarily expected that firm size (proxied by total assets) will have positive and significant correlation with

shareholder value. This is in line with the 'bigger the better' belief which expresses a positive relationship between firm size and growth (see Baumol, 1959, Wagner 1992 and others). Our results suggest that increases in bank total assets do not have much effect on shareholder value.

Our dummy variables representing consolidation status and age also present results that do not completely conform to theoretical predictions. The Dc coefficient suggests that value creation is not affected by mergers. Traditional theory however suggests that merger will only create value for shareholders when the combined present value of the merged firms is greater than the sum of their individual present values as separate entities. It appears this was not the case for merged banks in our sample. Also the coefficients on Da suggest that value creation is not affected by firm age. Even though there is no known theoretical connection between firm age and firm shareholder value, the theory of firm learning proposed by Jovanovich (1982) and later expanded by Ericson and Pakes (1995) predict a negative correlation between firm age and firm growth. The coefficient of the age dummy is positive and significant.

Lastly, the time trend factor is positive and significant in all estimations. This finding is reassuring in that it implies that progressive changes in the market have increased the number of investors who by their purchases have contributed to the appreciation of the value of listed banks. In 2007 for instance, the banking sector dominated the new issues market accounting for 25 out of the total 76 new issues in the year and providing 66.27% of the overall total value of the new issues for the year. With the introduction of a new product, Global Depository Receipts (GDR) in 2007, foreign and local investors participated largely in bank mega offers all of which received overwhelming subscriptions. Seven banks issued over US\$2.0 billion worth of GDR in 2007 (SEC, 2007: 22).

Our test for unobserved heterogeneity is based upon the significance of the ρ estimate. The hypothesis of no individual random effect in the panel data is performed with a Wald Test which consists of testing the null hypothesis $H_0: \rho=0$ versus $H_1: \rho \neq 0$. The statistic is as follows;

$$W = \frac{\hat{\rho}}{v(\hat{\rho})} \rightarrow \chi^2 (1) \text{ ----- (14)}$$

In both cases, unobserved heterogeneity was detected giving credence to the hypothesis that the standard probit model is mis-specified. Thus the evidence suggests that non-observed heterogeneity between publicly listed banks, such as

quality of management or organizational strategy is significant in the value creation of the banks.

We test for the stability of our results by re-estimating the model using the Solomon-Cox (SC) approximation of the likelihood function and verifying that the results do not change qualitatively and substantially. The Solomon-Cox (SC) approximation (explained in Lieberman and Matyas 1996) provides an analytical solution for maximum likelihood estimation of non-linear panel data models with random effects, the likelihoods of which are often very complex or indeed intractable. In table 4(b), we compare the results of the alternative estimators (SC) with the earlier panel results of table 4(a) based on GHQ. Both the GHQ and SC methods are implemented by LIMDEP 7.0.

Table 4(b): Random Effects Probit Model Results

	Random Effects Panel Probit (with SC)		Random Effects Panel Probit (with GHQ) –same as 4(a)	
	Coefficient	Standard Errors	Coefficient	Standard Errors
Constant	-1.756	0.056*	-1.623	0.046*
Payout	0.187	0.016*,**	0.276	0.013*,**
Debt	-0.064	-0.056	-0.071	-0.061
ROA	0.185	0.043*	0.157	0.038*
Growth	0.120	0.045*	0.104	0.037*
Size	0.079	0.048	0.064	0.042
Dc(dummy)	0.126	0.078	0.174	0.064
Da (dummy)	0.066	0.013*	0.071	0.045*,**
Trend	0.188	0.0169*,**	0.195	0.054*,**
P	0.482	0.022*	0.464	0.136*

* -significant at the 5% level, **-significant at the 10% level.

The results of the two panel procedures yield similar parameter estimates but they differ from the standard probit model. More specifically, the coefficients from the panel estimators are generally higher than the standard probit model. This generally suggests that allowing for unobserved heterogeneity appear important.

5. Conclusion.

This paper investigated the determinants of shareholder value (SHV) creation for listed banks in the Nigerian Stock Exchange. While there is a general agreement as to the concept of SHV, there is still debate as to the most appropriate factors that drive shareholder value. Recent evidence showing the level of competition of banks in mobilizing equity in the stock market, and increases in the market prices of bank shares and capitalization levels have warranted the need to investigate the factors that determine value creation of the publicly listed banks in Nigeria.

In order to assess the value drivers, we choose as our measure of shareholder value creation; the ratio of market value to book value (MV/BV) of the firms and test the effect of such theoretical and practical variables as dividend policy, debt policy, profitability, growth and size on the SHV creation. We somewhat depart from established literature and consider our dependent variable (SHV creation) as a binary variable. As such, we utilize for our empirical analysis, a random effects probit (REP) model. This allows us to account for unobserved heterogeneity in our sample which may reflect management quality or strategy. Our sample focuses on all the banks that are listed in the Nigerian Stock Exchange over the period of five years (from 01/01/2004 to 31/12/2008).

The results of the analysis suggest that dividend policy matter seriously for listed banks shareholder value. Profitability and growth matter but not as much as dividend policy. This result conforms to theoretical prediction but is surprising because it contrasts practical evidence (in tables 1 and 2 above) which shows that the banks which have the highest growth in dividends were not the same banks with the highest increases in market price per share and market capitalization rates. The comparison in tables 1 and 2 is however for the 2007, which is only one year. Also the capital structure of the firm in terms of debt or equity mix does not affect the SHV. The results also show that size (ie. total assets) has no significant effect on value creation for the listed banks.

The analysis shows that these factors tend to have stronger effects when unobserved heterogeneity is controlled for, suggesting that these aspects matter in themselves and are not simply proxies for such unobservable characteristics such as management quality. Moreover, the unobserved heterogeneity suggests that the standard probit model is mis-specified while nothing really differentiates the two panel estimators.

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Appendix 1

A. Descriptive Statistics of the variables used in the model.

	mean	std.dev	skewness	kurtosis	min.	max
MV/BV	0.66	0.36	-0.8	1.6	0.00	1.00
Pay-Out	0.88	0.42	0.2	3.4	0.12	5.3
Debt	0.42	0.74	-1.4	8.4	0.14	0.64
ROA	0.28	0.36	1.6	2.6	0.22	0.34
Growth	2.2	1.8	4.2	5.8	2.5	4.6
Size	6.2	7.6	2.8	6.8	5.2	8.8

B. Correlation between the variables used in the model.

	MV/BV	Pay-Out	Debt	ROA	Growth	Size
MV/BV	1.00	0.56	-0.03	0.42	0.03	0.056
Pay out		1.00	0.34	0.02	0.04	0.86
Debt			1.00	0.07	-0.01	-0.23
ROA				1.00	0.04	0.36
Growth					1.00	0.04
Size						1.00

**Appendix 2: Financial Summary of Publicly listed banks on the Nigerian Stock Exchange
(Comparison of 2005 and 2008)**

	2005				2008			
	Total Assets N'000	Total Liabilities N'000	Gross Earnings N'000	Profit After Tax N'000	Total Assets N'000	Total Liabilities N'000	Gross Earnings N'000	Profit After Tax N'000
Access Bank	66,918,315	52,846,391	7,494,855	501,515	1,043,465,021	871,462,995	57,627,098	16,056,464
Afribank	95,754,312	74,367,336	12,224,393	967,514	335,691,829	300,804,858	43,325,737	8,123,477
Diamond Bank	131,648,733	104,285,107	15,225,342	2,526,552	603,326,540	486,343,532	56,612,235	11,822,011
Ecobank	67,652,618	40,915,315	9,302,511	1,688,174	311,395,894	276,573,543	32,709,709	7,449,777
Fidelity Bank	34,953,351	25,229,803	6,158,659	1,236,790	533,122,233	397,258,245	40,474,491	12,986,570
First Bank	377,496,000	332,824,000	49,475,000	12,184,000	1,165,461,000	825,614,000	130,600,000	30,473,000
First City Monument Bank	51,318,268	44,102,122	6,121,037	2,339,747	465,210,901	333,083,428	50,086,198	13,720,470
First Inland Bank	25,491,355	20,415,262	3,751,546	7,073,122	181,308,208	146,807,478	27,471,801	2,649,120
Guaranty Trust Bank	167,897,704	134,429,668	23,833,771	5,330,796	717,999,797	556,946,733	74,794,202	21,489,885
IBTC/Stanbic	34,567,664	19,118,252	5,769,805	2,358,155	304,519,994	232,098,261		6,941,765
Intercontinental Bank	164,347,518	131,771,997	21,026,306	4,719,137	1,331,404,000	1,133,133,000	155,971,000	32,861,000
Oceanic Bank	217,853,721	186,762,042	24,309,469	5,897,045	1,030,440,887	807,965,501	73,746,812	22,341,307
Platinum Habib Bank	51,670,878	39,010,512	6,658,337	702,513	1,036,586,074	869,105,808	86,483,952	19,437,039
Skye Bank	31,990,861		6,158,859	492,719	784,878,000	691,025,000	74,615,000	20,425,000
Spring Bank								
Sterling Bank	19,435,298		1,611,280	4,820,558	145,974,674	119,174,279	21,057,246	620,658
UBA	250,783,000	229,664,000	26,089,000	4,921,000	1,520,093,000	1,331,938,000	154,093,000	40,002,000
Union Bank	398,271,000	359,142,000	44,791,000	7,750,000	907,074,000	795,803,000	92,935,000	24,737,000
Unity Bank	33,179,377	30,420,233	5,050,240	409,606				
Wema Bank	97,909,060		15,287,866	844,285	165,081,532	139,898,827	26,430,982	2,554,098
Zenith Bank	332,885,096	291,926,849	34,913,462	7,155,926	1,680,302,005	1,335,958,177	190,075,034	46,524,991

Source : Info-financials: Nigeria's Financial Institutions and Quoted Companies Directory, 2009