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BANKS INCENTIVES FOR RISK-TAKING; EVIDENCE OF SELECTED COMMERCIAL BANKS IN GHANA

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ABSTRACT

This paper aims at investigating commercial banks in Ghana incentives for risk taking. It tested the relationship between a selected banks listed on the Ghana stock exchange proxy for risk taking, their Tobin's q, and factors that influence their desire for risk. The factors that influence banks' desire for risk taking were derived from a decomposition of the Tobin's q. and the results of the test reveal that, bank regulations, monetary policies, efficiency, and the banks size significantly influence the banks incentives to risk taking and competition, positively influenced their desire for risk whereas increases in economic growth reduces the banks incentives for risk taking.

Contribution/ Originality: This paper is one of the few papers which have investigated banks risk- taking behavior in a developing country. Most of the study on banks risk taking behavior is centered on developed countries banking system. This paper contributes to the existing literature by providing an analytical risk taking behavior of banks from a developing country perspective. The information provided in this paper is the outcome of the researcher analysis and revision of literature on banks risk taking behavior.

1. INTRODUCTION

It has long been pointed out in literature that, high banks' appetite for risk is inimical to the sound banking system and by extension, the stability of a financial system, Altunbas *et al.* (2007); Gonzalez (2005); Laeven and Levine (2009). The reward of risk to banks when successful, bank owners' limited liability and banks' ability to transfer the cost of their losses of their risk taking to the tax payers through government financial bailout to banks that are in distress, have encourage banks to pursue risk. See Schwarez (2014); Macey and Miller (1993). It is important to note that, bank desire for risk taking is limited by the probability of the bank losing its charter value if they encounter financial distress or fails. Keeley (1990); Berger *et al.* (2009).

To prevent damages to their financial system arising from banks risk taking behavior, government all over the globe, have on one way or other limit banks' desire for risk by imposing regulations and restrictions such as capital

requirement, banks reserve requirement and safety net like deposit insurance on banks with the aim of forcing banks to internalize the cost of risk, thereby discourage them from pursuing risk. Unfortunately, these regulations have not been able to reduce banks incentives for risk taking over the years. Some have encourage banks to engage in risk taking instead of limiting it. For instance, the presence of safety net may relax users of bank assets desire to apply their disciplinary power on banks, therefore, giving banks the opportunity to pursue risk. Keeley (1990); Altunbas *et al.* (2007); Hellmann *et al.* (2000). Also, revenue losses to banks a rising from regulations and restrictions may encourage banks to engage in innovation banking that outwits these requirements and restrictions in order to raise revenue to meet their target revenue Laeven and Levine (2009). According to Laeven and Levine (2009) the ability of regulations and restriction to reduce banks risk taking through forcing them to internalized cost may not be effective because these regulations do not force the existing bank owner to contribute to finance losses of their banks arising from their risk taking, consequently, restricting and regulating banks may not succeed in reducing banks risk taking.

The role monetary policy in achieving economic stability of many economies in recent times cannot be underestimated. It is a common knowledge in economics that monetary policies influence the state of an economy through its control over short-term interest rate. In times of contracting economic growth when prices are falling, normally driven by deficit in liquidity, monetary policy authorities will normally relax their policies leading to injection of liquidity into the economy and forcing prices in the economy toward their defined stable prices, but they tight monetary policy to reduce general prices in the economy in times of rising prices. It is important to note that the effects of monetary policies are not only limited to price stability but also banks' incentive for risk taking. See (Altunbas *et al.*, 2010; Abbate and Thaler, 2015). Generally, bank's desire for risk rises with expansioning monetary policy because it lower short term interest rates leading to fall in the yield of safety assets and encouraging banks to invest more of their assets in risk assets for higher perceive returns on risk assets over the safety assets. See De Nicolo' *et al.* (2010). Consistent with this view, Drechsler *et al.* (2014) argued that, low nominal rate drives down liquidity premium, causing the cost of bank leverage to fall consequently increase banks' desire for risk. Borio and Zhu (2012) supported the view that, low interest rate encourages bank to pursue risk. Arguing based on a number of reasons stated that low interest rate increase the collateral value of assets, income and profit which translate into increase in risk tolerance of banks.

Closely related to monetary policy effects on banks incentives for risk taking, is the effects of economic up and downturns. Generally, assets prices and profits of firms rises during economic upturns and to gain from this rising profit, banks sometimes forgo their prudent investment policy in favour of investing in risk assets, where as in times of economic downturn, banks tend to invest prudently to avoid risk because of declining profit and increase in the probability of their borrower defaults rate. Dinamona (2008). Linking the presence of liquidity to the state of economic growth, Acharya and Naqvi (2012) argued that banks tend to underprice risk and over invest when they have excess liquidity. This exposes them to high risk during economic upturns when general liquidity an economy is rising and vice visa. For these reasons it is safe to conclude that, economic upturn encourages banks to pursue risk where as their desire for risk falls when an economy experience downturns.

Generally, competition forces banks to provide banking services efficiently. Allen and Gale (2004); Schaeck and Cihak (2008) but the effects of competition on banks incentives to risk-taking is inconclusive. On one hand competition in the banking industry is noted as a factor that induces risk-taking in banks and on the other hand competition it is seen as working against risk taking of banks see Berger *et al.* (2009). Arguing in support of the claim that competition encourages risk taking in bank, Keeley (1990); Hellmann *et al.* (2000) and Allen and Gale (2004) pointed out that, intense competitive reduces banks' charter value and encourage risk-taking in banks. Boyd and De Nicolo (2005) on their part argued that, less competition increases bank profit because it enable them to charge higher rate on their loans at the same time pay monopoly charges for deposit, making it possible for the banks to earned monopoly rent. Banks then avoid risk in order to protect this profits (monopoly rent). They

however pointed out that the high rate on loan exposes bank borrower to risk which might expose banks to further risk. Although the prime function of most banks is financial intermediation, in modern banking theory banks efficiency is measured by bank's ability to gather accurate financial information, and apply it to reduce information asymmetry in their external engagement and enhance management control. See Hughes and Mester (2008). Generally, efficient banks, are able to gather accurate information which enable them to assess the risk of borrowers, assets and other market agents, consequently banks are empowered to minimize their risk exposure when they engage their clients and their market agent in a business transaction. In addition, developing efficiency in banks require huge investment outlay which imposes losses to bank owners and other financers of the banks' investment when they fail so, bank owners and other stakeholders of efficient banks, will always have a reason to ensures that their banks avoids risk as compare with inefficient banks. Hughes and Mester (2008); Kwan and Eisenbeis (1997); Berger and De Young (1997). In banking theory, government bailouts of distress large banks considered to be too big to fail, couple with the percieved security against losses associated with their size, encourage banks to pursue risk. Laeven *et al.* (2016); Mishkin (2007). It is important to note however that, the extent to which bank size affects banks incentives for risk taking depend on the size and risk aversion of the shareholders. A small bank with large number of shareholders but highly risk adverse may have less desire to pursue risk, compare with a small bank whose shareholders size is small but highly risk tolerant. In the same line of argument, a large bank with small shareholders but highly risk averse shareholders are likely to pursue less risk than large banks with large number shareholder but high risk tolerance shareholders. In sum, bank size influence banks incentive for risk taking when their managers cease the opportunity of the perceived security their bank size offer to pursue risk and the readiness of their owner's to tolerate such risk. Despite the fact that risk taking reward banks with high returns when successful, banks incentives for risk-taking can be limited by the loss of their charter value, Defined as the market value of potential future profitability of a bank, Lindenberg and Ross (1981): (Hellmann *et al.*, 2000). Charter value of banks represent a value banks loses when they fail or encounters financial distress. This makes risk taking expensive for banks since risk can easily drive banks into financial distress or failure if they are not successful (Demsetz *et al.*, 1997). Unlike previous paper which concentrated on the effects of specific factor that influence banks' incentives for risk taking, for example, Demsetz *et al.* (1997); Drechsler *et al.* (2014). This paper covers a wide number of factors that influence banks incentives for risk taking. It focuses on the effects of factors that are derived from the decomposition of a measure (proxy) of banks incentives for risk taking (Tobin's q). The remainder of this paper is organized as follows Section 2, deals with the derivation of factors that influence banks incentives for risk taking, section 3 describe the empirical model applied to test for the effects of factors influencing banks incentives for risk taking on banks charter value. Section 4 provides information on the data apply in this paper, section 5, reveals the results and interpretation of the information in the results. Section 6 consist of the conclusion.

2. DERIVATION OF THE FACTORS THAT INFLUENCE BANKS' INCENTIVES FOR RISK TAKING FROM THE TOBIN'S Q (BANKS CHARTER VALUE)

Generally, Tobin's q is measured as the ratio of market value of a firm to the replacement cost of its assets. Thus, Tobin q = MVt/ replacement cost. Eqn (1)

Where:

MVt represent the market value of the firm at time t.

According to Lindenberg and Ross (1981) the market value of a firm represent the future profit that is capitalized by the market.

This implies that eqn. (1) can be express as:

$$\frac{\text{Future profit of a firm}}{(1+r)^n}$$

The replacement cost of the firm asset. Eqn (2)

Generally, profit is a function of price and cost, for this reason, the numerator of Eqn (2) can be re arranged as:

$$\frac{\text{Future profit of a firm}}{(1+r)^n} = \frac{\text{price}}{(1+r)^n} - \frac{\text{cost}}{(1+r)^n} \quad \text{Eqn 3}$$

Drawing on the decomposition of profit by Dybvig and Warachka (2010) the function of price can be expressed as: price = P_0 -apy and cost function can also be express as: cost = C_0+ acy

Where; ap is the elasticity of product price to output

ac is the elasticity of product cost to output

y is the output

P_0 and C_0 are the constant term in respect of price function and cost function respectively.

Insert the profit function and cost function into Eqn 3 will yield;

$$\frac{\text{Future profit of a firm}}{(1+r)^n} = \frac{P_0 - apy}{(1+r)^n} - \frac{C_0 + acy}{(1+r)^n} \quad \text{Eqn. (4)}$$

Concentrating on the numerator of Eqn (4) thus Profit = P_0 - apy - C_0+ acy.

Eqn 4 can be arrange into; profit = P_0 - C_0 - y (ap + ac) Eqn. (5)

Eqn (5) can further be solved to produce;

$$\text{Profit} = \frac{P_0 - C_0 - y}{ap + ac}$$ (see appendix) Eqn. (6)

but since P_0 and C_0 correspond with the part of profit and cost respectively which do not respond to changes in output, Eqn. (6) is arranged as; Profit = P_0 - C_0 - $\frac{y}{ap} + \frac{y}{ac}$ Eqn. (7)

$\frac{y}{ap}$ reveals the responsiveness of product price to changes in output, a proxy of product Competitive in a market. It means that the market is less competitive if a producer can change the price of its product following changes in output, but highly competitive if he cannot change the price following changes in output.

$\frac{y}{ac}$ in Eqn (7) indicates how much cost changes when output changes. This may proxy efficiency at which firm is able to manage its cost of production, because cost efficient firms, (bank) cost of production do not increase in more proportionate than the changes in the firm output. At worse it should increase in the same proportion as output,

Placing Eqn. (7) in perspective of Eqn. (2), which is the measure of the Tobin's q will yield;

$$\text{The q,} = \frac{P_0 - C_0 - \left(\frac{y}{ap} + \frac{y}{ac}\right)}{(1+r)^n}$$

Replacement cost of assets Eqn. (8)

Eqn. (8) reveals that, Tobin's q (proxy of banks charter value) which is measured as profit that is capitalized by the market into firm's market value relative to the cost of its replacement assets is a function of capitalized product price competiveness and capitalized cost efficiency relative to the replacement cost of assets of the firm.

Generally banks profit is a function of net interest margin and net non-interest income and reference to Eqn (3), banks' capitalized profit can be express as:

$$\text{Banks capitalized profit} = \frac{\text{interest inc.} - \text{interest exp,}}{(1+r)^n} + \frac{\text{non interest inc.- non interest exp}}{(1+r)^n} \quad \text{Eqn (9)}$$

Where inc is income exp is expenses.

The first part of Eqn (9) measures the effects of monetary policy on banks' capitalized profit because banks interest income and interest expenses as well as the discount factor the market apply to capitalized profit is significantly influence by monetary policy.

The non interest part of Eqn (9) is a function of banks size, regulations and restrictions. See Deyoung and Rice (2004).

Inserting Eqn (9) into Eqn (2)

The q = interest inc. – interest exp, + non interest inc.- non interest exp

$(1+r)^n$ $(1+r)^n$

Replacement cost of bank's assets Eqn (10)

Eqn (10) can be interpreted to mean that the Tobin's q (banks charter value) is also a function of monetary effects on bank's capitalized profit relative to the replacement cost of the bank's assets plus capitalized effects of banks size, regulatory requirement and management efficiency on profit relative to the bank's replacement cost of its assets.

But for the fact that management competency can be captured in cost efficiency, this paper therefore, modeled banks incentives for risk taking as proxy by the measured value of Tobin's q as a function of regulations on banks' capital, monetary policy, bank size, competition, bank's efficiency, and the state of the economic growth.

3. MODEL SPECIFICATION

From the above, Tobin's q (the proxy of bank's charter value) is model linearly as

$B\eth i = ß_0 + ß_1(X_1) + Ɛ^q$

Where; Bði is the specific measure of banks incentive of risk taking

$ß_0$ is the intercept of the equation.

(X_1) the estimated determinants of the bank's incentives to risk-taking.

$Ɛ^q$ is the error factor.

Drawing from the conclusions in section 2.0, this paper empirically modeled banks incentive for risk taking as a linear function of individual bank's Tobin q and capital regulations; monetary policy; competition; economic growth; bank size and banks efficiency.

Thus;

$TQ^i ij = ß_0 + CAPij + YECij + LER\ j + GDPR\ ij + BKS\ ij + er + EFFij.$

Where: $TQ^i ij$ is the estimated proxy of banks charter value

CAPij is the estimated capital regulations for bank i for the period j

YECj the estimated monetary policy for the period j

LER INXij estimated proxy competition for bank i at the period j

GDPRj is the proxy for economic up turns and down turns

BKS ij is the bank size for bank i for the period j

EFFij is the estimated efficiency for bank i for the period j

er is the error term of the model.

4. DATA

The empirical findings of this paper are based on the analysis of data from a sampled of four (4) banks listed on the Ghana stock exchange. These banks are selected because their stock market values made it easy to calculate the market value of the bank's assets. The market value of the assets are determined by multiplying their share prices by the number of ordinary shares outstanding as at the end of each financial year within the study period. The

bases for calculating the market value of firms this way is inspired by the accounting balance sheet concept of the net asset is equal to equity.

In this paper, Banks incentive for risk taking is proxy by the measured value of Tobin's q, which is calculated as the ratio of market value of the banks to the book value of their assets.

The effect of banks regulation in this paper is captured by the individual bank's estimates of their capital adequacy ratio. This measure is selected because capital adequacy ratio is a proxy of the regulatory regime of a banking system. It implicitly captures other regulatory measures operating in an economy by the components of regulatory capital and risk-adjusted assets applied to estimate banks' capital adequacy ratio.

Monetary policy is a proxy in this paper by the yield curve. According to the expectation theory the long run interest rate represents the average of expected short-term interest rate. See Mishkin (2007); Rudenbusch and Tae (2008). Giving that movement of short run interest rate is direct control by monetary policy, it stands to conclude that movement of long run interest rates reflects monetary policy. Therefore, the yield curve is a direct reflection of monetary policy. This paper therefore proxy the effects of monetary policy with the yield curve. The yield curve is captured as the difference between the government of Ghana 91days Treasury bill rate and the 2 years treasury notes rate.

Generally, the economic upturn is associated with high GDP growth whereas economic downturn is associated with low GDP growth, consequently, this paper applied the annual GDP growth of Ghana from as a proxy for economic up and downturns.

Competition among banks in this paper is estimated for each bank by their Lerner index for the end of each period. Lerner index is selected because it provides a measure of banks market power of individual bank because it allows competition to be estimated as, the extent to which the bank can charge for their services that are different from the one offered by the perfect competition. Unlike Panzer Rosse H. statistics, which provide a market-wide measure of competition. Lerner index measures bank specific market power. So Lerner index makes it easy to test the effects of bank's competition on banks incentive for risk-taking at the individual bank's level.

The Lerner index is measured as p-mc/p where p is the price, mc is the marginal cost.

Since the aim of measuring competition in this paper is to test specific banks market power, and not its competitive power over a single product, the price is estimated as;

$$\frac{\text{Total revenue}}{\text{Total output.}}$$

Where total revenue comprises the sum of operating income and other income that is accrued on the banks' tradable assets. The total output for each bank is estimated as the sum of total loans and advances to the bank's client (including banks) as well as other investment in tradable assets.

Following Coccorese (2014); Schaeck and Cihak (2008) the marginal cost for each bank for the end of the period is derived from translog cost function

$$\text{inTc} = a_o + a_i \text{ in}Q_it + \sum \text{in}W_it + \tfrac{1}{2} a\sigma(Q)^2 + 1/2\sum\sum a_x \text{in}(W_it)\ \text{in}(W_it) + \sum a_o\sigma\ \text{in}Q_it\ \ \text{in}W_it + a_Q\ E_it + 1/2\ a_{QQ}(\text{in}\ E_it)^2 + \sum a_Q\ \text{in}\ E_it\ \text{in}\ W_it + \tfrac{1}{2}\ a_Q\ (\text{in}\ E_it)^2 + \sum a\ \text{in}\ E_it\ \text{in}\ W_it + a_Q\sigma E_it\ \text{in}Q.$$

The marginal cost is then calculated as;

$$\frac{\text{InTC}}{\text{inQ}} = a_o + a_{QQ}\text{in}Q_it + \sum \text{in}W_it + a\sigma\ \text{in}E_it$$

where: Qt is the total output (loans) at time t

Wit is price of inputs at time t (deposit, capital and operational expenses)

Et is total equity for bank at time t

With regards to efficiency, this paper applied data envelopment analysis measure of efficiency to estimate efficiency. Although it represents a non-parametric measure of efficiency, it has a similar merit and problem as a stochastic frontier measure.

4.1. Testing for Linearity Parameter of the Linear Regression

To test the linear parameters of the variables applied in the regression model to test the relationship between the Tobin's q and the factors identify to have an influence the Tobin's q, Breusch-Godfrey serial correlation LMT, Breusch Pagan Godfrey heteroscedasticity test, Jacque-Bera test, skewness, and kurtosis were tested to check for serial correlation, heteroskedasticity and the normal curve of the error term of the regression model.

5. RESULTS

The hypothesis test result of Breusch-Godfrey serial correlation LMT failed to reject the null hypothesis of no serial correlation in the error term. This test was significant at 95% confidence level, lag 2. (See table 1 below).This means that there was no serial correlation between the error terms in the regression models. In the case of heteroskedasticity, the test rejected the hypothesis of the presence of heteroskedasticity at 95% confidence level. lag 2 in favour of the presence of homoscedasticity in the error term of the regression models. (See table 1 below). With regards to the results of the Jacque-Bera test for normality, the test reveals that most of the error terms were was normally distributed. The Jarque-Bera test statistics is significant at 95% confidence level, lag 2. This is supported by the outcome of the test on the skewness and kurtosis. (see table 2 below)

Table-1. Test for Serial Correlation and Heteroskedasticity of the Error Term of the Regression model

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	35.87526	Prob. F(2,48)	0.0000
Obs*R-squared	34.15250	Prob. Chi-Square(2)	0.0000
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.245620	Prob. F(6,50)	0.2995
Obs*R-squared	7.412119	Prob. Chi-Square(6)	0.2844
Scaled explained SS	6.296874	Prob. Chi-Square(6)	0.3908

Source: Field Data .June 2017

Table-2. Jarque- Bera test of normal curve of the residual

mean	median	maximum	minimum	Std. Dev	Skewness	Kurtosis	Jarque bera	probability
5.94e-17	-0.0531	0.425454	-0.24364	0.155097	0.893564	3.20811	7.6882	0.021406

Source: Field Data .June 2017

Table-3. Results of the Regression of the Banks' Charter Value on Factors that Influence Their Incentive for Risks.

Dependent Variable: TOBIN_Q_2				
Method: Least Squares				
Date: 12/07/17 Time: 02:25				
Sample: 1 57				
Included observations: 57				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.760158	0.114062	6.664408	0.0000
LERNER_INDEX	-0.046850	0.066702	-0.702373	0.4857
REGULATION	0.709645	0.363903	1.950095	0.0568
BANK_SIZE	4.02E-11	1.67E-11	2.406889	0.0198
YEILD_CURVE	-1.765922	0.684140	-2.581229	0.0128
EFFICIENCY	0.207481	0.117353	1.768003	0.0832
GDP_GR	0.722760	0.920023	0.785589	0.4358
R-squared	0.322948	Mean dependent var		1.076624
Adjusted R-squared	0.241702	S.D. dependent var		0.188491
S.E. of regression	0.164139	Akaike info criterion		-0.661624
Sum squared resid	1.347076	Schwarz criterion		-0.410723
Log likelihood	25.85628	Hannan-Quinn criter.		-0.564115
F-statistic	3.974926	Durbin-Watson stat		0.507874
Prob(F-statistic)	0.002504			

Source: Field Data .June 2017

5.1. Competition

Consistent with the view that, increase in competition reduces banks charter value and as such increases banks' incentives to risk-taking, see Keeley (1990); Hellmann *et al.* (2000) the regression result reveals that, the selected banks incentives for risk is negatively associated with the measure of competition. (See the table 3 above). This implies that when competition rises, the selected banks charter value falls, resulting in increases in their desire to pursue risk. But in times of less competition the banks reduce their incentive for risk taking because their charter value rises. This behavior associated with a banking system where banks place more premium on protecting their monopoly rent.

5.2. Bank Regulations and Restrictions:

The regression results of the variables under consideration in this paper reveal that the selected banks charter value (Tobin's q) is positively associated with the proxy measure of regulations (capital adequacy ratio) see table 3 above. This association is significant at 10%. This findings implies that banks regulations and restrictions significantly influences the selected banks' incentives for risking taking in the negative direction. Thus when regulations and restrictions are tighten the sample banks charter value rises, consequently, leading to a fall in the banks incentives for risk taking. This behavior of the banks can be attributed to high level of risk adverse of the bank's managers and shareholders who are not willing to take up risk in order to reduce the effects these regulations and restricts have on their revenue.

5.3. Bank Size

The information reveal from the analysis of the data of the sampled banks in this paper indicates that bank size negatively influence the selected banks' incentives for risk taking in a sense that the coefficient of the bank size in the regression result is positive. See table 3 above. This implies that the banks' incentives for risk taking falls as their size increases. This behavior of the banks can be explained by how costly their failures are to the banks' owners and their other stakeholders. From the analysis of the results in table 3, it is safe to conclude that the banks managers and stakeholders' do not trade the banks size for risky returns. This is a reflection of high risk aversion of the managers cost of these banks failure are expensive to their owners.

5.4. Monetary Policy

From table (3 above), it is evident that, monetary policy proxy by yield curve, negatively affect the banks' charter value, meaning that, in times of tighten monetary policy when interest rates are rising and the yield curve is indicating downwards slope, the banks charter value rises, causing their incentives for risk taking to fall, and in times of loosening monetary policy when the yield curve is steep sloping, their charter value falls leading to a rise in their incentives for risk taking. This finding is consistent with Altunbas *et al.* (2010); Abbate and Thaler (2015); DellArriccia *et al.* (2017). Who claim that loosening monetary policy increases banks incentives for risk taking than tightening monetary policy? Drawing from De Nicolo' *et al.* (2010) this finding can be attributed to the investment pattern of the banks where much of their investment portfolio is in safety assets, so when interest rate rises in time of tightening monetary policy, they earn enough to meet their obligations from safety assets but earn less from less from them when interest rates fall in times of loosening monetary policies. Consequently, they venture into risk assets when revenues from safe assets fall to make up for losses in revenue when interest rate fall in times of loosening monetary policy.

5.5. Efficiency

The results indicated on the table 3 reveal a positive association between the selected banks' efficiency and the proxy of their charter value (Tobins q). This findings implies that, the banks desire for risk fall when their efficiency

rises, because their charter value rises with improvement in their efficiency and since banks incentives for risk taking is negatively associated with banks charter value, their incentives for risk taking therefore falls when their efficiency rises. To these banks, the cost of failure is dire and as such discourage them from pursuing risk. This findings is consistent with Hughes and Mester (2008); Kwan and Eisenbeis (1997) who assert that, efficient banks avoid risk because the cost of their failure is expensive to their shareholders and managers.

5.6. Economic Growth

Inconsistent with studies such as Acharya and Naqvi (2012); Dinamona (2008) who indicated that economic upturn encourages banks to pursue risk, the findings of this paper reveal that, the sampled banks incentive for risk taking falls as the state of the economy rises and rises when the economy experiences downturns. This is evident by the positive coefficient reported by the regression results on economic growth. See table 3. This means that the banks' charter value (proxy by Tobin's q) rises during economic upturns driving down their incentives for risk taking but falls during economic downturn and encourage the banks to pursue risk. This marks an evidence of highly risk adverse of the banks 'managers and their other stake holders. This implies that, the managers of the banks refuse to pursue profits associated with risk in times of rising economic growth.

6. CONCLUSION

The increasing occurrence of the financial crisis in recent times has hastened the fear of the safety of the global financial system. Many academicians and finance professionals point to the risk-taking behavior of financial intermediaries, especially, the banks as the major causes of financial crisis. Although banks have greater incentives for risk taking, primarily because they are able to internalize the rewards of risk when successful but shift losses from risk to other counterparties in financial contracts. Banks fear of losing their charter value may serve to reduce their risk-taking incentives for risk-taking. But the extent to which the loss of banks charter value works to reduce banks incentives for risk depends on several internal and external factors in a banking system. Several papers have selected and tested the effects of some of these factors on the bank's incentives for risk taking. This paper sought to widen the test to cover the majority of these factors.

In this paper, bank's charter value which is identify in literature as proxy of banks incentives for risk taking, is measured in this paper by the Tobin's q and the factors identified as influencing banks incentives for risk taking are derive from the analysis of Tobin's q formula. The estimated values of the deduced factors that influenced banks desire for risk were regressed against the estimated value of Tobin's q, the proxy banks charter value for each selected bank.

The findings reveal that factors such as bank regulations, monetary policies, efficiency, and the banks size significantly influence the banks incentives to risk taking and factors such as competition positively influenced the selected banks desire for risk whereas economic growth negatively influenced the banks incentives for risk taking.

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APPENDIX 1

DECOMPOSING THE TOBIN'S Q

Generally, Tobin's q is measured as the ratio of market value of a firm to the replacement cost of its assets. Thus,

Tobin q = MVt/ replacement cost. Eqn (1)

Where:

MVt represent the market value of the firm at time t.

According to Lindenberg and Ross (1981) the market value of a firm represent the future profit that is capitalized by the market.

This implies that eqn. (1) can be express as:

$$\frac{\text{Future profit of a firm}}{(1+r)^n}$$

The replacement cost of the firm asset. Eqn (2)

Generally, profit is a function of price and cost, for this reason, the numerator of Eqn (2) can be re arranged as:

$$\frac{\text{Future profit of a firm}}{(1+r)^n} = \frac{\text{price}}{(1+r)^n} - \frac{\text{cost}}{(1+r)^n} \quad \text{Eqn 3}$$

Drawing on the decomposition of profit by Dybvig and Warachka (2010) the function of price can be expressed as: price = profit = P_0 -apy and cost function can also be express as:

cost = C_0+ acy

Where; ap is the elasticity of product price to output

ac is the elasticity of product cost to output

y is the output

P_0 and C_0 are the constant term in respect of price function and cost function respectively.

Insert the profit function and cost function into Eqn 3 will yield;

$$\frac{\text{Future profit of a firm}}{(1+r)^n} = \frac{P_0 - apy}{(1+r)^n} - \frac{C_0 + acy}{(1+r)^n} \quad \text{Eqn. (4)}$$

Concentrating on the numerator of Eqn. (4) thus Profit = P_0 - apy - C_0+ acy.

Thus: Pr. = P_0 - apy - C_0+ acy. Eqn (5)

Where Pr represent profit

Eqn. 5 can also be express as; P_0- C_0- apy+ acy Eqn (6)

re arranging Eqn (6) into; Pr.= P_0 - C_0 - y (ap + ac) Eqn. (7)

Eqn (7) can be express as; Pr + y (ap + ac)= P_0 - C_0 Eqn (8)

Dividing both sides of Eqn. (8) by (ap + ac) and re arranging to yield,

$$Pr+y = \frac{P_0 - C_0}{(ap + ac)}$$ Eqn. (9)

Making Pr. the subject of Eqn (9) will produce

$$Pr = \frac{P_0 - C_0 - y}{(ap + ac)}$$ Eqn. (10)

but since P_0 and C_0 correspond with the part of profit and cost respectively which do not respond to changes in output, Eqn. (6) is arranged as; Profit = P_0 - C_0 - $\frac{y}{ap}$ + $\frac{y}{ac}$ Eqn. (11)

Placing Eqn. (7) in perspective of Eqn. (2), which is the measure of the Tobin's q will yield;

$$\text{The } q, = \frac{P_0 - C_0 - (\frac{y}{ap} + \frac{y}{ac})}{(1+ r)^n}$$

Replacement cost of assets Eqn. (12)

Eqn. (12) reveals that, Tobin's q (proxy of banks charter value) which is measured as profit that is capitalized by the market into firm's market value relative to the cost of its replacement assets is a function of capitalized product price competiveness and capitalized cost efficiency relative to the replacement cost of assets of the firm.

Generally banks profit is a function of net interest margin and net non-interest income and reference to Eqn (3), banks' capitalized profit can be express as:

Banks capitalized profit = $\frac{\text{interest inc.. – interest exp,}}{(1+ r)^n}$ + $\frac{\text{non interest inc.- non interest exp}}{(1+ r)^n}$ eqn (13)

Where inc is income exp is expenses.

The first part of Eqn (13) measures the effects of monetary policy on banks' capitalized profit because banks interest income and interest expenses as well as the discount factor the market apply to capitalized profit is significantly influence by monetary policy. But the non interest part of eqn (13) is a function of banks size, regulations and management competency.

Inserting Eqn (13) into eqn (2)

$$\text{The q} = \frac{\text{interest inc. – interest exp, + non interest inc.- non interest exp}}{\text{Replacement cost of bank's assets}}$$ eqn (14)

Eqn (14) can be interpreted to mean that the Tobin's q (banks charter value) is also the function of monetary effects on bank's capitalized profit relative to the replacement cost of the bank's assets plus capitalized effects of banks size, regulatory requirement and management efficiency on profit relative to the bank's replacement cost of its assets.

But for the fact that management competency can be captured in cost efficiency, this paper therefore, modeled banks incentives for risk taking as proxy by the measured value of Tobin's q as a function of regulations on banks' capital, monetary policy, bank size, competition, bank's efficiency, and the state of the economic growth.