



## Effect of Bank Holding Company Structure on Farmers' Financial Welfare in Nigeria

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### Abstract

This study examines the impact of bank holding structure on the financial welfare of farmers. We used an ex post facto research design and studied all the 18 deposit money banks in Nigeria. We used dummy variable to measure bank conglomerate structure for the period between 2001 and 2018. We also identified the features of financial holding companies based on firms' specific variables including portfolio condition, competitive standing, equity characteristics and sizes. Based on our analysis, bank holding structures significantly and positively affect banks' propensity to create risk assets to farmers (coefficient=0.34; p-value less 5%). This implies that ring fencing banks leads to increase in credit availability to farmers and consequently their welfare advancement in Nigeria. Banks with holding structure have competitive advantage and this competitiveness benefits farmers significantly (coefficient=0.05; p-value < 0.05). Our analysis also shows that banks with holding structures diversify into non-interest source of revenue, which yields positive and significant effect on farmers' financial welfare (coefficient=2.05). Thus, diversifying conglomerating banks can outperform their peers in terms of risk asset making for farmers to extent that relative to non conglomerate banks, up to 2.05% of credit is allocated to farmers for every unit change in bank market due to holding structures. Variation in deposit demands, and gross assets were found to advance loans to farmers. However, default risks and liquidity risk of conglomerate banks limits their credit availability to farmers, which implies that conglomerate banks are highly sensitive to liquidity and default risks. We also found that

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conglomerate banks allocates risks asset to farmers based on the national economic growth level. Thus, as the economy improves conglomerate banks' desire to make risk assets to farmers also increases. We recommend that regulators should improve economic growth in order to draw banks into lending to farmers. Conglomerate banks should be protected from default shocks and liquidity risks in order to encourage them to lend more to farmers.

**Keywords:** Bank; Bank holding; Lending; Farmers' welfare; Conglomeration; Small business; Farmers; Nigeria; Bank holding companies



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## 1. Introduction

Financial welfare of borrowers can change when banks alter their business models. Banking models affect market structures differently, which in turn impact banks' lending behaviour (Lungu, 2007; Promptak, 2009; Wanke *et al.*, 2016). There are different banking models in Nigeria namely international banking models, national banking models, rural banking model and universal banking or bank holding company (BHC) model. Each of these banking operational policies presents different opportunities and threats to bank customers. Thus, while some can advance the financial welfare of borrowers by positively affecting banks' desire to lend to their customers, others can constitute significant constraints to borrowers including farmers by focusing banks away from their intermediation roles. Of the different banking models in existence, universal banking model has received little attention on its contemporary effect on credit availability to farmers in Nigeria. Regulators consider universal banking highly risky to depositors. Thus, in order to address the depositors' protection and risks issues and ring-fence banking from non-banking businesses, the regulators require that banks adopt a BHC structure prior to engaging in universal banking. In Nigeria, some banks have taken such a conglomerate banking structure and arguments have continued to emerge that such banking structures can be harmful to borrowers. While researchers have provided inconclusive evidence of the effect of BHC structure on small business borrowers Asogwa *et al.* (2018), it is not clear how BHCs affect bank loans to farmers in Nigeria. This creates a knowledge gap with its policy implication for credit availability to farmers in Nigeria.

Therefore, this study examines the effect of bank holding structure or universal banking model on credit availability to farmers in Nigeria. Thus, we examine whether banks' change from interest based income to revenue based earnings pursuit can benefit farmers in Nigeria. Because such banks could face stiff competition from banks and non-banking firm players in the credit markets, this study also examines whether such competition can present opportunities to farmers.

The desire to diversify operational base has driven some banks to adopt a universal banking policy. Universal banking is a banking model whereby banks engage in non-banking businesses such as real estate deals, insurance and general merchandize businesses. Universal banking enables banks to compete with other non-banking firms in their domain. Such a diversified business model can alter the focus of banks' business pursuit such as focusing banks away from interest-driven deals to revenue-based business activities. In this case, their normal intermediation roles can be undermined thereby leading to disequilibrium in the credit market. Universal banking involves some elements of high risks with regard to bank customers. For example, such bank can tie down bank customers' deposits by using customers' deposits to pursue some promising non-banking ventures. Such extra-banking business deals can cause liquidity distress or solvency issues if the projects fail at the expense of borrowers such as farmers that rely on banks for credits. On the other hand, universal banking can benefit borrowers including farmers and their households. For example, if the non-banking projects results in positive cashflow, more risk assets could be made available to borrowers and farmers who apply for loans.

Generally, BHC structure can solidify banking system and shields depositors' funds because of their business diversification strategies. BHC model promotes the emergence of diversified dynamic conglomerate banks that always pursue mergers and acquisitions. However, the model can have a marked impact on banking market structure and their lending decision processes (Lungu, 2007; Promptak, 2009; Wanke *et al.*, 2016). A change in banks' market structure, which is due to acquisitions for example, can affect banks' lending-decision processes (Nderitu and Ndiritu, 2018). Therefore, BHCs' model can drive banks' desire to make risk assets to farmers, who solely rely on banks for credits. The overall assumption among the regulators is that BHCs affect borrowers negatively because they bring about the emergence of "too Big To Fail" banks that have no time for small household farmers and businesses. As such, there has been a clarion call that Nigeria has no further need for BHCs. Therefore, based on the assertion that Nigeria does not need BHCs because it negatively affects banks' desire to make risk assets to small-scale businesses including farmers; we are highly concerned because the regulators may adopt anti-BHC policies. Researchers for example Keeton (1995) and Biekpe (2011) warned regulators not stipple such banks because doing so would expose banks to financial distress and liquidity risks. Consistently Gary and Ellis (2016) noted that BHCs has great potential to mitigate financial crises thereby possessing the capacity to serve farmers without constraints. We fear that if we do not investigate the contemporary potential effects of large banks on lending to farmers in Nigeria, counterproductive policies capable of causing chaos in the Nigerian financial sector could emerge in near future.

Although BHCs have continued to evolve, researchers argue that the main reasons that companies conglomerate have not been very clear (Nicolo *et al.*, 2004). However, the proponents of BHC model believe that the BHC model improves the competitive conditions for banks and can as well promote their customer service quality. Moreover, Keeton (1995), Gary and Ellis (2016) and Keeton (1995) argue that bank conglomeration can overcome banks susceptibility to the risk of local downturn. BHC could profit small businesses such as farmers because conglomeration involves diversification, which could promote more access to the capital market (Keeton, 1995).

Access to capital market could lead to higher liquidity, which borrowers could benefit from (Keeton, 1995). In addition, the benefit theory of bank lending suggests that the banks or firms acquired by larger banks could benefit in terms of liquidity from merging with the conglomerating banks. This liquidity benefit could enable the subsidiaries to increase their loans to small businesses such as farmers. Thus, the diversifying banks could be associated with lower risks, higher small business loans, and less investment in safe government securities (Gary and Ellis, 2016; Keeton, 1995).

Despite the above discussed benefits, the critics argue that there is a high tendency that such a banking structure could negatively change the bank-lending decisions. As such, they worry that the participating banks may focus only on investing in government securities and lending to big corporations. This raises the fear that emerging BHCs may ignore their very important role of lending to farmers that solely depend on these banks for credit (Keeton, 1995; Wolken *et al.*, 1996). The fear of the critics is that the BHC structure could lead to the emergence of “too big to fail” banks, which usually pursue policies inconsistent with the need of farmers, where real economic activities occur and significant employment is created. Farming offers great opportunity for national economic transformation. Apart from greatly contributing to Gross Domestic Product (GDP), farming businesses employ the highest level of labour in most developing countries. Farming as a small business helps in economic re-engineering, industrialization, and job creation (Berger and Udell, 1996). However, their ability to carry out these essential roles depends on their financial well-being, which, in turn, depends on the ability of banking firms to allocate credits to them (Wolken *et al.*, 1996). Therefore, changes in banking models that have the potential to alter banking market structures and drive bank-lending decisions (Berger *et al.*, 1998; Prompitak, 2009), have been under significant examination to understand their potential impacts on lending to small business farmers (Berger and Udell, 1996; Okafor and Emeni, 2008; Peek and Rosengren, 1997; Prompitak, 2009; Strahan and Weston, 1998; Walraven, 1997).

We organize the remainder of the paper into five sections. In Section 2, we review previous related literature. Section 3 presents our research methodology and design. In Section 4, we present the data and results. Section 5 analyses the effects of specific variables on bank loans to small businesses. Finally, we offer our conclusions in Section 6.

## 2. Literature Review and Hypotheses

Within the two decades that researchers have investigated the impacts of bank consolidations and universal banking on small businesses borrowers including farmers, several theories have emerged. For this paper, we shall focus on a few fundamental theories, including size theory, information theory, cost theory, evolutionary theory, and the syphoning theory.

Size theory postulates that large banks emerging through business combinations have larger resources to pursue higher profit-yielding businesses and, therefore, allocate fewer risk assets to small businesses than small banks do (Berger and Udell, 1996; Carter *et al.*, 2004; Sapienza, 2002). This theory suggests that the higher a bank grows its assets, the fewer loans it will be inclined to make to low-risk asset users. Specifically, Berger and Udell (1996) and Sapienza (2002) postulate that small banks, judging by their gross asset size, are much more inclined to make higher risk-adjusted returns on small business borrowers than large banks can make. In support of this idea, Carter *et al.* (2004) suggest that smaller banks possess a higher competitive advantage than bigger banks for making low-risk assets. For example, in a better way than big banks, smaller banks do not avoid credit blockages. Moreover, size theory argues that more opportunities to lend money are available to large banks than to smaller banks. The availability of many lending opportunities allows large banks to direct lending opportunities away from small businesses (Bloch, 2008). Naturally, according to Bloch (2008), big banks possess the ability to invest in the form of loans to large borrowers, as regulators do not usually restrict lending to specific limits as they do for small banks.

Information theory highlights that large banks more often deal with informational, transparent borrowers, such as multinationals that publish their accounts, than with small borrowers that are informationally opaque (Berger and Udell, 1996). Therefore, extending loans to small businesses, according to Berger and Udell (1996), anchors on long-term, established relationships. In support of this, Peek and Rosengren (1997) suggest that the policies and procedures associated with transacting with small, informationally opaque borrowers may be very different from those associated with creating risk assets for large, informationally transparent borrowers. Therefore, the cost associated with transacting with informationally opaque borrowers and transparent borrowers may be hard to bear simultaneously. This theory, in sum, suggests that bank lending depends on the available information relating to the affairs of the borrowers and their creditworthiness. This information is always hard to obtain for small businesses, and this difficulty has distanced small businesses from large banks. Hence, the inability to obtain and produce this information delays loan processing for small business and, may eventually result in the loan being denied.

The market-product evolution theory of bank consolidations, as postulated by Avery and Samolyuk (2004), highlights that bank consolidations make it possible for evolving banks to specialize in dealing with products that have a national or international standard. It suggests that mergers are dynamic events that can bring about an evolution in the banking product market. However, small business lending is likely to be one of the banking products that would remain local despite such an evolution (Samolyuk and Avery, 2000). According to scholars, small business lending has been inherently local, which means that firms can only supply the product to borrowers who have “idiosyncratic credit needs” and risks aligned to the future of the local economy. In this case, it is suggested that small business lending would generally demand “local expertise for monitoring borrower-specific risks” consistent with information theory. The banks that are evolving through mergers and acquisitions and that are forward-looking, however, will not stoop so low as to monitor these local borrower-specific risks, thus giving smaller, non-merging banks the opportunity to supply more loans to small business borrowers.

Another important theory that has tried to provide an explanation for the relationship between mergers and acquisitions is the syphoning theory of [Kolari and Asghar \(2011\)](#). The syphoning hypothesis argues that the larger aggregate organization will spirit away funds from their acquired small banks or will reallocate credit to align with the lending objectives of the aggregate organization. Therefore, large firms that need funds may target small firms to achieve their funding objectives. By syphoning assets that would have been allocated to small borrowers, small business borrowers are adversely affected. Therefore, the propensity of large banks to lend to small businesses diminishes with increases in mergers and acquisitions. Contending the syphoning hypothesis is the benefit theory. The benefit theory explains that small banks benefit financially when they join larger banks. For example, they may gain access to their parents' liquid assets that may help them to extend their small business lending policies.

## 2.1. Empirical Review

[Asogwa et al. \(2018\)](#), analysed the banking firms' lending behaviour of BHCs and used the geometric lag analytic model to detect the lifespan of bank conglomeration impacts on small business financial welfare in Nigeria. The study found that, although the impact of emerging conglomerate banks on lending to small businesses is significantly negative ( $d^1_4_0.6897$ ;  $p < 0.01$ ), the effect reverses to a pre-conglomerate positive status within one year. The study showed that bank conglomeration does not negatively affect the financial welfare of small business borrowers in the long run and that contrary to the widespread belief and fear, the negative effects are not permanent. Their analysis also shows that although large banks are feared to have no time for mid-sized businesses, the mere increases in size, as may be caused by economic or internal growth; do not pose a threat to small business borrowers. Thus, they found evidence that large sized banking firms positively and significantly correlate with small and predictable risks ( $d^1_41.7935$ ;  $p < 0.01$ ). Hence, according to them, contrary to what regulators fear, there is no real issue surrounding the idea that building diversifying banks will influence small business loans negatively. What matters is the means through which large banks emerge. Therefore, they recommend that the regulators ought to exercise caution so that they do not discourage the emergence of bank holding companies.

[Keeton \(1995\)](#), confirms that large banks do not rely on small credit users to realize a targeted level of commercial lending. He found that multi-office banks decreased their loans to small businesses after adopting such a structure. However, they warned that, because other competitors can compensate for such decreases, regulators should not curtail BHCs. [Walraven \(1997\)](#), [Peek and Rosengren \(1998\)](#), [Strahan and Weston \(1998\)](#), [Berger and Udell \(1996\)](#), [Okafor and Emeni \(2008\)](#), and [Asuquo \(2012\)](#) support, with empirical evidence, the theory that large banks lend more to small businesses than small banks do. As [Keeton \(1995\)](#) and [Berger et al. \(1998\)](#) warned, in the long run, the effect of large banks acquiring small banks could be positive, as structural changes could occur which could enable large banks to lend more to small business borrowers. They also highlight that competitors in local markets can close the gap that would be created in terms of lending to small businesses ([Poshakwale and Qian, 2011](#)). Overall, these researchers conclude that large banks may not be associated with small businesses being given less frequent and smaller loans.

[Strahan and Weston \(1998\)](#), found that such an impact, although appearing to be negative to small business loans, has a very short span, as it soon returns to the pre-merger state. Based on domestic evidence using two sample case studies, both [Okafor and Emeni \(2008\)](#), and [Asuquo \(2012\)](#) found negative impacts of bank mergers on small business borrowers in Nigeria. Consistently, however, they emphasized that the external effects could compensate for the immediate decline of small business loans [Asogwa et al. \(2015\)](#). However, they did not discuss whether negative impacts on small business borrowers were short-term or long-term. Hence, based on the size theory of bank consolidation and lending to small businesses, the impact on small businesses is inconclusive to date, highlighting the need for new studies.

The theories that most prominently highlight the effect of FHCs on lending to small businesses are the size, syphoning, and diversification theories. Conglomerate banks emerge from mergers between banks and non-financial firms. The emergence of the non-financial firm indicates a change in size that is consistent with normal mergers. The same theory explains that large banks reduce their loans to small businesses due to a change of focus and that this characteristic also applies to conglomerate banks.

Similarly, the diversification and divestment theories illustrate the fact that conglomerate banks could lower or increase their loans to small business borrowers. FHC models in Nigeria demand that banks either divest or become parents through diversification if they engage in non-banking activities. Analysts suggest that bank conglomerations lead to higher diversification, which, in turn, may lead to a shift from interest income to revenue income. A change of focus from loan interest income to revenue-based income would likely result in a lower propensity to lend to borrowers. This also follows from the fact that banks that diversify into non-interest income activities can face higher systemic risks than banks that focus on normal intermediation roles ([Lepetit et al., 2005](#)). This risk perception may limit the capacity of larger banks to lend to small businesses that are adjudged highly risky.

Contrarily, a couple of BHC-small business lending optimists have stressed that, compared to non-diversifying banks, BHCs can create more low-risk assets because their diversified status enables them to have easier access to liquidity in the capital market when liquidity problems occur ([Keeton, 1995](#)). Therefore, diversified banks could lead to higher small business loans and less investment in safe government securities. In addition, the benefit theory of bank lending contends the syphoning theory postulated by [Kolari and Asghar \(2011\)](#) and has consistently suggested that acquired banks could benefit in terms of liquidity from merging with larger banks. This benefit could enable them to increase their loans to small businesses, which could positively affect their financial welfare. [Berger et al. \(1998\)](#), also explain that, in today's information-driven age, larger banks can exploit the advantage offered by their

size to reduce the current information problem and increase their loans to small businesses. Hence, the contemporary effect of bank conglomerations on small business lending is both an empirical and debatable issue

Therefore, using evidence from Nigeria, we contribute to this debate by postulating the following hypotheses.

H<sub>1</sub>: Changing from interest based deals to revenue based activities significantly affects BHCs' ability to lend to farmers.

H<sub>2</sub>: Competition between BHCs and non-bank holding companies significantly affects credits to farmers.

H<sub>3</sub>: Conglomerate banks advance the financial welfare of small scale farmers by lending more to farmers than their non-conglomerating peers do.

H<sub>4</sub>: The Diversification of BHCs' activities significantly affects their ability to make risk assets to farmers

### 3. Methodology and Research Design

We studied all the commercial banks in Nigeria for the period between 1996 and 2017. However, we take cluster perspectives in our analyses to test our different postulations. Therefore, we use two major samples of data sourced from CBN Statistical Bulletins, financial statements of the banks, and the NSE Statistical Bulletin. The first sample constitutes 89 small banks to test the pre-conglomerate bank era for the period between 1996 and 2005. The second sample is 18 banks from which we examined post-conglomerate effect. We measure the effect of BHCs models from time and size perspectives, following the research of Berger *et al.* (1998) and Promptak (2009). Therefore, we consider BHCs' model as dichotomous dummies that are given a value of 1 (conglomerate banks, non-involved) or 0 (other) for the post-BHCs period, following the methods of several studies (Berger *et al.*, 1998; Focarelli and Fabio, 2003; Keeton, 1995; Promptak, 2009).

Due to adjustment inefficiency, the leading dummies of the past five years are considered. Previous scholars have limited this to three years (Berger *et al.*, 1998; Focarelli and Fabio, 2003; Promptak, 2009). However, we go beyond the normal limit to get a better idea of the long-term effects of BHCs on lending to farmers. Moreover, the level of adjustment inefficiency could be higher in developing economies than in developed economies. We specifically test for the effect of BHCs using firm-level data from dichotomous perspectives. We analyze the data using multiple regression analyses with the aid of EView and Predictive Analytic software.

#### 3.1. Model Formulation

This study adapts the Monti-Klein banking firm theory. According to the theory, as postulated by Klein (1971) and Monti (1972), banks make profits from the positive margin obtained from the difference between risk assets (loans, which they give after keeping a fraction of deposits as a reserve) and fixed deposit interest rates. In granting loans and collecting deposits, banks have to pay intermediary costs, which are a linear function of the assumed amounts of loans and deposits. Following the assumptions made about risks – including default and liquidity risks incorporated in the model by Prisman *et al.* (1986), Dermine (1986), Fuetes and Sanstre (1998), and Corvoisier and Gropp (2001) – the modified Monti-Klein theory of banking firms is:

$$\theta = i_L(y_1) L - iD(y_2) D - iF - K(L, D) - i_p E\{\max(0, W - V)\} - \mu iL(y_1)L \tag{1}$$

The above model is subject to the reserve requirement condition,  $V = \alpha D$ , and the limitation conditioned by the statement of financial position,  $V + L = IF + D$  (Promptak, 2009).  $V$  is the legal reserve requirement, which equals the percentage  $\alpha$  of deposit  $D$  that is reserved.  $i$ ,  $i_L$ , and  $iD$  are the returns on security, loans, and deposits, respectively. The inverse demand functions for loans and deposits are given by  $i_L(y_1)$  and  $iD(y_2)$  with derivatives  $iL'(y_1)$  and  $iD'(y_2)$  greater than zero, respectively.  $S$ ,  $L$ , and  $D$  are the amounts of security (assets), loans, and deposits, respectively.  $K$  is the total intermediate cost of managing an amount  $L$  of loans and an amount  $D$  of deposits.  $W$  is a random variable denoting net withdrawals, indicating the presence of liquidity risks.  $i_p$  is the penalty for exceeding the withdrawal limit or for liquidity default.  $IF$  and  $\mu$  represent interbank financing rate and the default risk likelihood.  $\theta$  is the price of loans that will maximize profit.

To achieve profit maximization, managers allocate loans such that marginal return is equal to the average expected return on investment, equity, or government securities.

Therefore, the behaviour of the banks in maximizing profit is on the condition that

$$i'_L = \frac{1}{(1-\mu)} \frac{i + C' + i_p P_i(W \geq V)}{1 - \frac{1}{\epsilon_L}} \tag{2}$$

where  $K' = \frac{\Delta K(L, D)}{\Delta L, \Delta D} = \frac{D \Delta K(L)}{\Delta L} + \frac{L \Delta K(D)}{\Delta D}$  represents the marginal cost of accepting deposits and granting loans, and  $\epsilon_L = \frac{-i_L L'(i_L)}{L(i_L)}$  represents the loan demand elasticity.

To make the model more realistic in a competitive environment, we integrate the effects of interaction behaviour between competing firms in the market into the model. As demonstrated in Fuetes and Sanstre (1998), the following condition under the simplified assumptions holds.

$$i'_L = \frac{1}{(1-\mu)} \frac{i + K' + i_p P_i(W \geq V)}{1 - \frac{1}{\epsilon_L + \mathbb{Z}_L^t}} \tag{3}$$

$\mathbb{Z}_L^t$  is the intensity of the competition between banks in the loan market, which reveals that the optimal loan rate could fall with the price elasticity of demand. It also indicates that a banks' rival sensitivity varies with changes in their strategy as the market structure changes (Fuetes and Sanstre, 1998).

Since the interest of this paper is on the impact of bank conglomeration on credit availability, we follow the popular rule which involves directly integrating the effect of conglomeration in the model by adding merger

dummies (Fuetes and Sanstre, 1998; Prompitak, 2009). In addition, as previous research suggests, we consider that, during economic booms, banks tend to create more risk assets (Bils, 1989).

Considering that the traditional Monti-Klein model of banking firms is based on loan pricing, we rearrange the modified equation by making  $L$  the subject as in the following.

$$i_L(y_1) L = \theta + iD(y_2) D + iIF-K(L, D) + i_p E\{\max(0, W-V)\} + \mu iL(y_1)L \tag{4}$$

In this equation,  $i_L(y_1) L$  represents changes in bank loans (in our case, loans to small businesses), and  $\theta$  is the profit performance measure expected to yield a negative effect. We specify our equation for the industry-based model below.

$$AGL_t = \alpha + \beta_1 BHC_{it} + \beta_2 BHC\_Diver_{it} + \beta_3 BHC\_Comp_{it} + \beta_4 \Delta BHC\_INT\_Rev + \beta_5 equ_t + \beta_6 cr6_t + \beta_7 gta_t + \beta_8 npl_t + \beta_9 depa_t + \beta_{10} liqrsk_t + \beta_{11} cost_t + \beta_{12} E^{gth}_t + \beta_{13} BHC*CR^6_t + \beta_{14} ibr_t + f \sum_{2017}^{2001} Yearr_t$$

where  $r$  is the stochastic error,  $\alpha$  is a control for unobservable variables, and the  $t$  subscripts are featured to indicate time.  $\beta_1, \beta_2, \dots, \beta_{11}$  measure the extent of the impacts of the independent variables on low-risk asset allocation.  $AGL_t$  stands for aggregate bank loans to farmers transformed into a natural logarithm to enhance linearity with the explanatory variables. The assumption is that the higher the quantity of loans available is the better the financial welfare of farmers. That is farmers who have enough credit will maximize farming advantages.  $BHC_{it}$  is a dummy variable representing bank holding companies. It takes value 1 if at year  $t$  firm  $i$  is a conglomerate bank, and otherwise 0.  $BHC\_Diver$  is a measure of amount of conglomerate capital invested in other non-banking activities relative to the banks total capital. Thus, it is a ratio of banks' investment in non-banking businesses to banks' total capital.  $equ$  stands for a bank financial characteristic that is measured as the ratio of bank equity to total gross assets.  $Cr4$  is the bank concentration ratio, which is included to control for banks' competitive positions. It is the four-firm concentration ratio in the Nigerian banking industry, measured in terms of total assets.  $Gta$  is a variable that stands for bank gross assets, transformed into a natural logarithm to capture size effects on small business loans.  $Npl$  is a portfolio condition variable measured by the ratio of non-performing loans to total loans, featured to capture the effects of the default probability of borrowers (Berger et al., 1998; Prompitak, 2009; Rose, 1996).  $Depa$  controls for the effect of changes in bank deposits on bank lending propensity, transformed into a natural logarithm to remove the variations that would result from size differences (Ayadi and Pujals, 2005).  $Liqrsk$  measures the effect of liquidity risk on bank lending behaviour, determined as the ratio of bank loans to total deposits, in accordance with Berger et al. (1998).  $Cost$  controls for differences in the efficiency and productivity of different banks (Focarelli and Fabio, 2003) measured as the ratio of cost to income.  $E^{gth}$  equals economic growth measured in terms of gross domestic product (GDP) at market price, transformed into a natural logarithm to control for the influence of economic development and growth in bank lending behavior, as was done in Prompitak (2009) and Bils (1989) to reflect changes in macroeconomic factors.  $BHC*CR^6$  measures interactions between the BHC model dummy variable and the bank market structures, as in Sapienza (2002), as market concentration correlates with mergers.  $Ibris$  the three-month inter-bank interest rate in the inter-bank market to control for the banks' market risk, which, following the recommendation of Nys (2003), is the risk that changes in assets and liability in the market will lead to a diminution in earnings and investors' values.  $r$  is the stochastic error.

## 4. Results

### 4.1. Descriptive Statistics

Table-1. Descriptive statistics from operation measures of variables using industry historical data

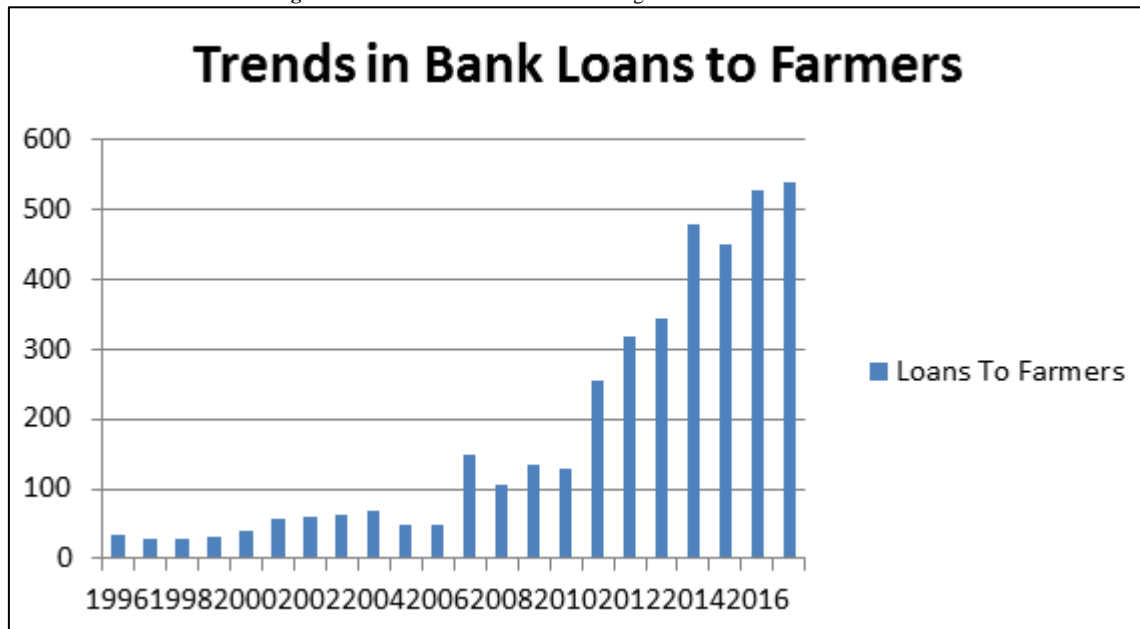
Var.	AGL	cr4	Depa	Equ	gta	ibr	Liqrsk	Npl	E <sup>gth</sup>
Mean	4.48	38.49	6.43	17.97	6.74	10.49	83.15	6.06	20.90
Median	4.61	37.69	6.41	17.86	6.75	10.24	80.62	3.74	14.48
Maximum	4.95	66.50	7.23	28.13	7.43	16.31	142.86	21.8	120.26
Minimum	4.09	23.90	5.43	12.53	5.76	5.69	60.91	0.41	-4.76
Std. Dev.	0.29	10.81	0.60	3.83	0.55	2.80	19.20	6.83	27.24
Skewness	-0.04	0.78	-0.20	0.77	-0.33	0.21	1.59	1.31	2.85
Jarque-Bera	1.54	2.075	1.44	2.35	1.45	0.31	15.26	5.25	74.18
Probability	0.46	0.35	0.48	0.30	0.48	0.85	0.00	0.07	0.00
Sum	80.69	692.8	115.76	323.57	121.36	188.85	1496.83	109.08	376.27
Sum Sq. Dev.	1.47	1987.05	6.19	250.55	5.26	133.30	6271.20	794.96	12616.85
Observations	18	18	18	18	18	18	18	18	18

Source: Authors, data used from Table 2, and variables are as previously defined

$$AGL_t = \alpha + \beta_1 BHC_{it} + \beta_2 BHC\_Diver_{it} + \beta_3 BHC\_Comp_{it} + \beta_4 \Delta BHC\_INT\_Rev + \beta_5 equ_t + \beta_6 cr6_t + \beta_7 gta_t + \beta_8 npl_t + \beta_9 depa_t + \beta_{10} liqrsk_t + \beta_{11} cost_t + \beta_{12} E^{gth}_t + \beta_{13} BHC*CR^6_t + \beta_{14} ibr_t + f \sum_{2017}^{2001} Yearr_t \tag{5}$$

The standard deviations of the statistics indicate low risk. Therefore, we can say that, overall, these variables are good proxies for bank mergers and acquisitions.

Figure-1. Trends in loans to farmers in Nigeria between 1996 and 2016



Source: CBN Statistical Bulletin

#### 4.2. Univariate Analysis

Table-2. Correlation matrix for the post-conglomerate period

	<i>AGL</i>	<i>Equ</i>	<i>bcr4</i>	<i>Npl</i>	<i>Depa</i>	<i>liqrsk</i>	<i>Gta</i>	<i>mr<sup>SB</sup></i>	<i>mr<sup>LB</sup></i>	<i>e<sup>gth</sup></i>	<i>Ifr</i>
	1	-.36	-.8**	.40	-.77**	.22	-.74**	-.31	-.8**	-.23	.62**
<i>Sbl</i>		.13	.00	.09	.00	.35	.00	.19	.00	.37	.01
<i>Equ</i>		1	.12	-.75**	.63**	.00	.67**	.76**	.51*	.20	.06
			.61	.00	.04	.9	.002	.00	.03	.433	.82
<i>bcr4</i>			1	-.057	.447	-.1	.406	-.00	.65**	.102	-.6**
				.817	.055	.46	.085	.99	.02	.686	.01
				1	-.81**	.04	-.84**	-.5*	-.5**	-.138	.171
<i>Npl</i>					.000	.88	.000	.03	.01	.584	.48
<i>Depa</i>					1	-.3	.99**	.39	.87**	.212	-.36
						.16	.000	.10	.00	.398	.13
<i>liqrsk</i>						1	-.329	.05	-.12	-.219	.06
							1	.41	.86**	.211	-.33
<i>Gta</i>								.077	.000	.400	.166
<i>mr<sup>SB</sup></i>								1	.33	.360	-.07
									.15	.142	.77
<i>Mr<sup>LB</sup></i>									1	.152	-.45
										.547	.05
<i>E<sup>gth</sup></i>										1	-.27
											.278
<i>Ifr</i>											1

Source: Authors; \*\* = significant at 1%; \* = significant at 5%; we analyzed the correlation with SPSS 20 instead of EViews in order to flag the significance of the univariate relationship; variables are as previously defined.

A look at the above matrix shows that the correlation between *gta* and *sbl* is negative and significant (-0.74\*\*). Mergers involving only large banks, and mergers involving large banks and small banks have negative correlations with small business lending behaviour (-0.8\*\* and -0.31) respectively. However, the correlation is not significant for mergers involving only small banks (*mr<sup>SB</sup>*).

**Table-3.** Correlation matrix using only pre-Conglomerate data

	AGL	Equ	cr4	npl	depa	Lqrk	Gta	Egth
AGL	1	.899**	-.934**	-.795*	.841**	-.153	.838**	.314
		.002	.001	.018	.009	.717	.009	.448
Equ		1	-.935**	-.878**	.819*	-.114	.825*	.030
			.001	.004	.013	.788	.012	.944
Cr4			1	.905**	-.944**	.150	-.947**	-.302
				.002	.000	.724	.000	.468
Npl				1	-.795*	-.243	-.799*	-.098
					.018	.562	.017	.818
Depa					1	-.307	1.000**	.539
						.460	.000	.168
Liqrsk						1	-.309	-.323
							.456	.435
Gta							1	.522
								.184
Egth								1

**Source:** Authors, using data from table 3; data computed with SPSS version 20; variables are as previously defined. \*\* = significant at 1%; \* = significant at 5%

Contrary to the post-merger correlation matrix, the relationship between small business lending (*sbl*) and bank size (*gta*) is significantly positive (0.838; sig. value=0.009). Prior to mergers, liquidity and default risks negatively correlated with small businesses lending.

### 4.3. Multivariate Regression Analyses

In multivariate analyses, we examine three models: the pre-merger model, the post-conglomerate model at the industry level, and the post-conglomerate model at the firm level. We outline the results of our analyses in Table 4 below.

**Table-4.** Regression analyses output

<i>Variable</i>	<i>Post BHC Model</i>	<i>Pre-BHC Model</i>
<i>(Constant)</i>	-12.132	4.0112
<i>BHC</i>	.034*	-
<i>BHC_Diver</i>	2.05*	-
<i>BHC_Comp</i>	0.05*	-
<i>ΔBHC_INT_REV</i>	.963**	-
<i>Equ</i>	-.095*	4.01296
<i>Liqrsk</i>	-.007*	0.13743
<i>Npl</i>	-2.43*	-0.67*
<i>Gta</i>	.624**	0.00131
<i>Depa</i>	1.385*	-0.00211*
<i>Ibr</i>	-.067**	-0.0650**
<i>Eg<sup>th</sup></i>	-.023**	0.23
<i>CR<sup>6</sup></i>	2.4*	0.03
<i>Cost</i>	-0.4*	-0.8*
<i>BHC*CR<sup>6</sup></i>	2.4*	-
<i>Year Effect</i>	yes	yes
<i>Industry Effect</i>	no	no
<i>R</i>	0.82	0.70
<i>R-Squared</i>	0.67	0.49
<i>DW</i>	2.491	2.89
<i>F-Statistic</i>	603.84	7.0
<i>Sig. Value</i>	0.000	0.020

**Source:** Author Using SPSS

## 5. Discussion of Results

We postulated that change from interest focused banking activities to revenue based activities significantly affected BHCs' ability to lend to farmers. Our analysis shows that the effect is significantly positive. As banks change from interest based activities to revenue based businesses, they allocate higher part of their resources to farmers. The reason could be that most of their activities have links with farmer connected businesses. As they move into non-banking businesses they could improve their relationship and understand the businesses of their acquired firms very well. This means that information asymmetry likely to have limited their risk asset allocation to farmers may have diminished significantly due largely to their familiarity with the nature of their clients' businesses.



Therefore, we accept the hypothesis that if a bank changed from interest based activities to revenue businesses they would increase their loans to farmers. This finding is consistent with the findings of Keeton (1995), and Berger *et al.* (1998) who found that in the long run, the effect of large banks acquiring small banks and conglomerate activities could be positive, as structural changes could occur which could enable large banks to lend more to borrowers. Consistently, Poshakwale and Qian (2011) show that competitors in local markets can close the gap that would be created in terms of lending to borrowers.

We also examined how competition between BHCs and non-bank holding companies significantly affects credits to farmers. Competition could create opportunities on one hand for banks to increase their lending to farmers. On the other hand, it could limit banks' ability to lend to borrowers. Based on our analysis, we found that competition between conglomerate and non-conglomerate banks increases banks' loan to farmers in Nigeria. The coefficient is 2.4 and the associated probability is less than 5%. Therefore, we reject the null that such competition reduces loans to farmers and conclude that it increases loans to farmers. This has implication for policy makers. Creating opportunities for banks to conglomerate could lead to higher lending to farmers. Such increase in lending to farmers has national growth and development implication. As farmers welfare increases, gross domestic products and income per capita would increase. This is because as farmers invest with the loans, the national products would increase all things being equal. Evidence has shown that competition increases economic development. Thus this findings are consistent with prior researchers such as Horvath *et al.* (2016), Liu *et al.* (2014) and Jiménez *et al.* (2013). Based on the competition fragility and stability theories, Horvath *et al.* (2016) found consistent with our finding that heightened levels of bank competition are associated with greater bank fragility in the Czech Republic. In the same way, Liu *et al.* (2014) found that non-cooperative bank competition and bank stability robustly promote growth and that bank concentration may have a positive effect on industrial growth consistent with our finding that competitions increase opportunity for lending to farmers Jiménez *et al.* (2013) also consistently found that market power is the primary source of franchise value and that competition in banking markets leads to banking stability.

Conglomerate banks advance the financial welfare of farmers by lending more to farmers than their non-conglomerating peers do. We found this effect to be significantly positive. The coefficient is 0.034 and the associated p-value is less than 0.05. Therefore, we conclude that if a bank operates a holding structure, it would cater for farmers' interest high compared to their non-conglomerate peers. The implication is that the policy makers should encourage the growth bank holding company. However, we caution because bank holding company could be uncontrollable if they grow so high. This could stifle competition and encourage monopoly. When banks turn monopoly they may charge excess interest which could in turn discourage borrowers such as farmers. This evidence is consistent with Keeton (1995), and Berger *et al.* (1998). Both scholars found that BHCs can increase loans to borrowers relative to banks with no such structures.

The Diversification of BHCs' activities significantly affects their ability to make risk assets to farmers. This postulated was tested and analyzed. We found that the diversification of BHCs encourages bank loans to farmers. The coefficient equals 2.05 and the associated probability is less than 0.05. Thus, we reject the null hypothesis and conclude that diversification significantly affects banks' desire to allocate their risk assets to farmers in Nigeria. The implication is that banks should be encouraged to diversify their operations through acquisitions of their peers and other non-banking institutions. There should investment in non-banking businesses. If they are motivated to do so, the loans to farmers could significantly rise. This finding does not support the syphoning hypothesis, which states that banks acquire other firms to divert their liquid assets for other high-yielding investments. Rather, it proves the benefit theory. As discovered by the use of the investment variable that was included in the firm-level model, the relationship between investment and farmers is positive and statistically significant. This also establishes the postulation that higher levels of diversification may lead banks to shift their focus from interest income to revenue income. Therefore, it is reasonable to assume that conglomerate banks pursue higher profits through their non-financial-based subsidiaries, but such move does not hinder them from lending to farmers. Moreover, changes in bank lending focus have had risk implications, which significantly affect their decision to create low-risk assets. According to finding such as Lepetit *et al.* (2005), banks which diversify into non-interest income activities can face higher systemic risks than banks that focus on their normal intermediation roles. Our analysis does not corroborate this theory.

Our analysis also showed that during both post and pre-conglomerate periods, conglomerate banks' default risks negatively affected loans to farmers. This means that Conglomerate banks are sensitive to default risk likelihood of farmers. The higher likelihood of farmer borrowers defaulting resulted in lower loans being given to farmers. In the post-conglomeration period, though, conglomerate banks have become highly risk-averse as such they reduce the amounts of credit given to farmers for fear that the farmers will default. Therefore, a higher level of systemic risk can bring about a change in the focus of large banks, which, in turn, has a significant negative effect on bank lending to farmers. We found that GDP negatively affects BHC loans to farmers in the post conglomerate period. However, in the pre-conglomerate period, the effect is positive though insignificant. This means that rising GDP may discourage loans to farmers in the post conglomerate period, which means that encouragement the emergence of BHC should not focus on the short term effect. There is need to consider the interplay of other essential variables. This also means that BHCs could focus on other lucrative subsectors as economy grows. Thus as economy grows, farmers should grow alongside the economy to be relevant to BHCs' lending model during economic boom.

Based on analysis, growth in assets does not negatively affect loans to farmers in Nigeria. We found that the impact of large banks, in terms of loans given to farmers is significantly positive. Therefore, we do not find evidence that large conglomerate banks significantly decrease their loans to farmers consistent with the theory that large banks increase their risk asset allocation to borrowers (Berger *et al.*, 2008). We can conclude that large banks can be

significantly associated with increases in loans to farmers. Our finding goes a long way to dispute the anecdotal evidence given by critics who argue that large conglomerate banks have no time for the middle and focus only on multinational lending. We can infer from our analyses that the problem is not actually the emergence of “too big to fail” banks, but the means through which they emerge (Asogwa *et al.*, 2018). The emergence of large conglomerate banks that depend on mergers and acquisitions or conglomerations could lead to higher loans to farmers.

## 6. Conclusion and Policy Implications

Based on our findings, bank conglomerations and large banks emerging out of consolidations have strong positive dispositions to lend to farmers. However, this effect could also depend on the level of economic development. As economy grows, conglomerate banks appear to reduce their focus on risk assets creation to farmers. This suggests that farmers should grow alongside the economic growth to be relevant in BHC lending model. Diversification and healthy competition improve BHC loans to farmers. As banks diversify, we show they would likely get intimated with their borrowers’ businesses. This was found to be healthy for the welfare of farmers as they get more loans. This implies that diversification reduces information asymmetry that largely reduces banks’ trust for their borrowers. Competition improves bank loans to farmers. This is based on our evidence. As banks compete among each other, they would more likely reduce interest costs than when they do not compete. Given also that diversification positively affects bank loans to farmers, size based on the diversification as well yield positive relationship with bank loans. This means that banks reap economies of scale due largely to their holding status; they extend part of their risk assets to farmers. Their portfolio of loans to farmers rises with increase in bank deposits. We also reach a conclusion that conglomerate banks are highly sensitive to farmers’ ability to repay. As such, default risks limit conglomerate bank loans to farmers. Likewise, liquidity risk of conglomerate banks, reduce their ability to lend to farmers. We conclude that our findings have strong policy implications. Conglomerate banks should be encouraged not only to exist but to compete with non-conglomerate peers. Such action advances the overall farmers. Diversification should characterize BHCs. As they diversify, their portfolio of loans to farmers increases. The interaction of consolidation and banks’ competitive positions lessen banks’ desires to terminate relationships with farmers. Therefore, while in the short-run, it seems as though conglomerate banks decrease their loans to farmers, few years following the conglomeration and consolidations; the emerging FHCs will most likely begin to improve their loans to farmers. Therefore, any potential negative relationship between loans and farmers and conglomerate banking is expected to alter in the future. Policy makers should continue to create conducive environment. We also recommend that regulators should not discourage mergers between large banks, nor should they discourage the activities that lead to bank conglomerations (Asogwa *et al.*, 2018). Apart from advancing the welfare of farmers by making credits available to them, bank conglomeration will further strengthen the economy and as farmers follow the development, nations’ wealth would rise.

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