

## Substitution of Risk Asset Allocation Role of Micro Financial Institutions in Positively Changing Market Structures

Ezeji, Helen. A<sup>1</sup>; Uzuagu, Anthonia.U<sup>1</sup>; Asogwa, Cosmas.I.<sup>2</sup>; Chukwuma, Joseph. N<sup>1</sup>

1. Department of Vocational Teacher Education, University of Nigeria Nsukka, Nigeria;
2. Accounting Researching Scholar @Department of Accounting, University Of Nigeria, Nsukka, Nigeria

### Abstract

Bank consolidations have globally affected banking firms' market structures. Whenever market structures change, both the consolidating and non-involved performances in the local banking market could be co-impacted in the same or different direction at different degrees. Taking evidence from Nigeria changing market structures, we examined how banks and other micro financial institutions concurrently respond in terms of lending to changes in market structures. To have achieved this, we purposively sampled 845 financial institutions, which comprised 24 commercial banks and 821 Micro-Finance Banks (MFBs). We made use of secondary data, which were collected between 2001 and 2010 from the Central Bank of Nigeria Data Base. We analyzed the data by multivariate regression analysis method. The result shows that fall in bank loans to small businesses ( $\beta = -0.817$ ) due to changes in bank size of merged commercial banks positively affected microfinance bank lending ( $\beta = 0.955$ ,  $p\text{-value} = 0.086$ ). MFBs increase their loans to small businesses by 0.955% for every 0.817% fall in banks' loans. Dynamic changes in bank equity affected commercial banks' and MFBs propensities to supply loans to small businesses negatively ( $\beta = -0.699$ ) and positively ( $\beta = 0.727$ ) respectively. This means that as increment in merged bank equity reduced banks' credits to small business borrowers by 0.699% significantly ( $p\text{-value} = 0.023 < 0.05$ ), MFBs responded to the shortfall by increasing their loans by 0.727% although insignificantly ( $p\text{-value} = 0.147 > 0.05$ ). Moreover, increases in bank deposits negatively but significantly affected credits commercial banks supply to small business borrowers ( $\beta = -0.725$ ,  $p\text{-value} = 0.012$ ), but positively although insignificantly affected MFBs loan to borrowers ( $\beta = 0.776$ ,  $p\text{-value} = 0.107$ ) implying that MFBs increase their loans by 0.776% for every 0.725% fall in commercial bank loans. Finally, changes in bank market share negatively and positively affected commercial banks' and MFBs propensities to supply small credits ( $\beta = -0.018$ ) and ( $\beta = 0.03$ ) respectively implying that MFBs banks' increase their loans by 0.03% for every 0.018% fall in merged banks' loan to small credit consumers. On average therefore, credit availability to small businesses has not decreased due to the offsetting lending role of MFBs in the Nigerian banking sector contrary to general opinion. We strongly recommended that the maximum lending volume of MFBs should be reviewed upward to further strengthen them for this emerging role.

**Keywords:** Bank Consolidation, Small Businesses, Bank Lending, Micro-Finance Banks and Market Structures

### 1.1 Introductions

This study is anchored on the evidence we found from Berger et al (1998) and Wolken et al (1996) that in a consolidating environment, huge banks could trade-off small loans to small banks. For us, this means that the relationship between huge loans and small loans in a positively changing market environment could be negative. Considering how significant this relationship could be in lending policy effectiveness and the general welfare of small businesses, we are challenged that from Nigerian financial sector context, scholars are yet to explore substantially the reality of this negative relationship and particularly the roles of small banks where market composition is changing due mainly to firm consolidations. This lack no doubt constitutes a serious literature gap that needs to be closed. Little wonder, the regulating authority have not fully exploited the measures likely to boost the lending effort of small banks especially among the developing economies. Our ultimate aim in this paper is therefore to take evidence from Nigeria and examine whether changes in market structures actually

reduce bank loans to Nigerian small businesses and whether other non-commercial bank financial institutions positively or negatively respond to this market dynamism. Specifically, we would be providing empirical evidence that fall in banks' credit to small business borrowers could translate into higher or lower propensity of the micro-financial institutions to make up the plummeting loans.

Banking consolidation brings about changes in market structures (Prompitak, 2009), which, no doubts, can have marked effects on banking conducts especially as it affects their decision to lend. In our context, market structures define the number of playing banks in the market, banking sizes in terms of gross assets and equity, bank deposit demands and deposit or asset concentration of banking firms. Evidence (see Berger et al, 1998 and Wolken et al, 1996) suggests that consolidation, which also affect market structures dynamically decreases banks' propensity to create small risk asset. Therefore, in the course of the changes in lending decision behavior, other non commercial-banking institutions according to the researchers could respond positively or negatively contemporaneously since they all play in the same local markets. Among these non-commercial banking institutions are the Micro-Finance Banks (MFBs), which have established themselves in small credit local market. Hence, they might react possibly positively towards small loans demand that may be turned down by the consolidating banks, given evidence that merged mega banks turn down small credit demand for higher business profitable loans and investments. If in reality within the context of dynamic market structures, they could fill the gap created by banks' decreasing loans to small business borrowers, they are therefore playing new but unknown roles otherwise referred for the purpose of this paper as an emerging risk asset creation or substitution lending role. Our ultimate concern is to determine the direction and extent of these roles in a dynamic market structures. Berger, et al (1998) referred to this as an external effect of banking consolidation, which they defined as the reaction of the other small banks to banking consolidation in the local markets.

Although scholars in Nigeria such as Emeni and Okafor (2008), and Asuquo (2012) had anyway attempted to investigate the extent bank consolidation affect external lending to small businesses in Nigeria, they concentrated on the static external effect. Unlike the previous research, we shall focus on the dynamic effects. The shortcoming in their research can be obviously noticed from their cross sectional studies, where cross-sectional data ending in 2004 were employed in the determination of the effects. From Nigerian banking firm consolidation perspective, we can strongly argue that their studies did not capture the real substitution effect since actual change in banking firms' market structures for which they used as a reference point kicked off between 2005 and 2006. In addition, we can also argue that even if they have a defense based on the nature of their data, their studies could only capture the static or short-run substitution effect, which would be a period too short for a meaningful effect to surface to inform a useful economic decision. This is especially since according to Berger et al (1998), external effect that follows from corporate restructuring surfaces fully in the third year of the consolidations. This implies that the minimum post-consolidation period for dynamic external effects to fully surface is 3 years, which according to Focarelli and Panetta, (2003) is because there is always a delay in adjustment relating to efficiency. The restructuring and external effects begin after mergers and acquisitions and may take several years to complete according to Berger et al (1998) since it may take time to restructure the consolidated institutions' portfolio by divesting assets, or to change its lending priority or focus by promulgating revised lending policies and procedures. Consideration for time dimension is a sine qua non for capturing the holistic effects of changes in banking market structures on lending decision. Toevs (1992), as shown in Prompitak (2009) allowed a five-

year post-consolidation gestation period to be able to capture dynamic performance changes due to consolidation. Tehranian et al (1992) as shown in Prompitak (2009) consider three years as a normal emergence of performance effects after mergers and acquisitions and follow such a dimension. This study follows this dynamic time dimension and makes much different by using a six-year post-consolidation gestation period in examining the extent and the direction of the substitution-lending role of MFBs in changing banking market structures. However, unlike Berger et al (1998), we employ multivariate models under the framework of Monti-Klein model of banking firm moderations. In this case, two dependent variables are regressed at the same times such that the contemporaneous effects are detected from the command output. Therefore, to the best of our knowledge, there is no study that have considered the simultaneous dynamic effect of bank consolidation on bank and micro-institutions' loans to small credit consumers using multivariate approach. We are the first to consider the substitution-lending role of MFBs in a dynamic banking firm market structures in Nigeria and elsewhere using this model. Using a sample of 845 financial institutions comprising 21 commercial banks and 824 MFBs, we report that micro-finance institutions is substituting for small risk assets abandoned by opportunistic merged banks that are fishing for high profit loans. As banks decrease their loans to small businesses, MFBs reverse the scenario by positively adjusting their lending propensity. However, because they are limited by capital base and maximum amount of risk assets they can create the off-setting is not total. To fix this limitation, we recommend that their capital base should be expanded alongside their lending capacity. Because this study has significantly contributed to literatures, its utility cannot be overemphasized. It would redirect the apex banks' lending policies relating to micro-credit institutions as banking firms' market structures dynamically change. This would particularly affect those in developing and emerging economies where lending policies have been counter-productive.

Therefore, based on the extant literature postulation that external effect seems to be quite strong and positive, offsetting much if not all of the reductions in supply of small business lending by the consolidating institutions, we make the following postulations. We specifically argue that these other banks such as Micro-Finance banks, according to extant literatures may pick up profitable loans that are dropped by merging institutions thereby substituting the former roles of banks in this perspective. Most likely, MFBs could have a dynamic reaction that increases their small business supply. From these fundamentals, we postulate to test the reality of the expected behavior of micro-financial institutions using consolidation metrics such as bank sizes, bank financial characteristics and competitive position.

H1: Dynamically changing banking firms' size and consequential fall in their small risk asset creation propensity do not significantly increase microfinance institution loans supply.

H2: Changing banking firms' financial characteristic in terms of equity condition reduces their credit supply to small businesses but do not significantly increase micro-finance institutions' ability to create additional risk assets to meet the shortfall.

H3: Fall in commercial bank loans to small businesses due to changes in bank deposits of merged banks does not bring about significant increase in microfinance institutions loans.

H4: Fall in commercial bank loans to small businesses due to changes in bank market shares of merged banks does not bring about significant increase in microfinance institutions loans.

## Review of Related Literature

In the review of the related literature, we shall first examine the conceptual framework as it affects consolidation, which is the ultimate driver of the changes in market structure. In the course of this, we shall also define what market structure means in the context of this study. After the conceptual framework, we shall discuss the theoretical foundations of this paper in the light of Structure –Conduct-Performance Theory and The Monti- Klein Theory of banking firm. Briefly, we shall review empirical work on bank lending to small businesses.

## Conceptual and Theoretical Framework

According to Promptak, (2009) banks change their lending decision as market structures change. Market structure defines the number of participants in the market. Decision among the players can therefore change as the number of players fluctuates. Banks in Nigerian have been under the influence of market structure changes. Prior to 2005, there were about 89 banks. However, between 2005 and 2006, the market structure changed as banks reduced to 24. No doubts this had impact on banks' conduct and performance, which includes lending activities. This brings us to the theory and concept of Structure-Conduct-Performance (SCP). The SCP as a model of firm behavior is defined as the relationship between market structure, firm conduct and firm performance. It defines a tripartite relationship of Market Structure, Firm Conduct or Behavior and Firms' Performance. It opines that the existence of entry barriers (prevention of structure change) is the key driver of firm profitability. In this case, as the entry cost goes high, the easier for an existing firm to make abnormal monopoly profits (Gladys, 2013). A bank, which is enjoying monopoly power, prices its lending product to maximize profit and minimize cost as far as possible. These cost minimization and profit maximization make the firm rationalize lending. It encourages banks to break their small business relationship with less potential for profit and try to maximize profit by establishing lending relationship with high borrowers. Therefore, changes in market structures result in market concentration, which decreases the cost of collusion between firms. Micro-Finance Bank [MFB] means any company licensed to carry on the business of providing micro-finance services such as savings, loans, domestic fund transfers and other financial services that economically active poor, micro-enterprises and small and medium enterprises need to conduct or expand their businesses as defined by these guidelines (A special Bulletin from CBN). Micro finance means providing the economically active poor and low income households with financial services, such as credit (to help them engage in income generating activities or expand/grow their small businesses), savings, micro-leasing, micro-insurance and payment transfer. Micro-finance banks are institutions that are established to provide financial services to the active poor. Two categories of micro-finance banks are recognized under the microfinance policy. They are those MFBs licensed to operate as unit banks and within a local government area and MFBs licensed to operate statewide. Their capital bases are respectively a minimum of N20million and N1billion. According to Oye (2011), MFB loan is a facility granted to an individual or group of borrowers whose principal source of income is derived from business activities involving the production or and of goods and services. The maximum loan facility to be given to a borrower per time equals N500,000. This policy can be reviewed by CBN from time to time. This facility is available to peasant farmers, businesspersons, artisans, anglers, senior citizens and non-salaried workers. The problem with these loans is that they are unsecured. The tenure of the loan is between 6 months to 12 months. Individuals, community development associations, private corporate entities and foreign investors can establish MFBs. According to Oye (2011), significant ownership diversification shall be encouraged to enhance good corporate governance of licensed MFBs. Regulation demands

that any Universal banks that wish to establish MFBs as subsidiary must meet up the prescribed prudential requirements and availability of free funds.

One of the factors that drive market structure is consolidation. Consolidation is a consummation of two or more firm into a single firm. It is a product of mergers and acquisitions. Mergers and acquisitions in most literatures represent aspect of organizational re-composition geared toward effecting strategic management, corporate finance and value maximization for investing stakeholders or shareholders in particular. According to extant literatures, both, that is, mergers and acquisitions deal with the buying, selling, dividing and combining of different companies and similar entities. Fundamentally, the combination helps the players grow rapidly in their sector or location of origin, or a new field or new location. The unique thing about consolidations is that the activities affect the market structures of banks, which in turn affects banks' behavior. Based on the Structure-Conduct Performance Paradigm, and Efficient-Structure Performance Hypothesis of banking consolidation, bank mergers and acquisitions affect the way banks behave, and on the other hand, bank concentration causes banks to be more efficient through market collusion that would help the players extract rents from their borrowing customers. From this scenario, mergers and acquisitions activities can be defined as type of restructuring events. This is because the activities occur in some corporate organization and result in reorganization that provides growth or positive value to investing shareholders. Mergers and acquisitions are closely related. In fact, the distinction between the two has become increasingly unclear and variously misconceived in various respects particularly in terms of the main economic outcome according to scholars. Therefore, although both differ, scholars use the terms loosely to mean the same thing. From a legal point of view, according to Wikipedia (2014), a merger is a legal consolidation of two companies into one entity, whereas an acquisitions occurs when one company takes over another and completely establishes itself as the new owner in which case the target company still exist as an independent legal entity controlled by the acquirer. As a concept that is quite complex, a merger according to Oye (2011) is the situation where two or more companies combine to form a larger business organization. On the other hand, according to the scholar, an acquisition involves the purchase of controlling shares in another company. In her book, 'Advanced Financial Accounting' Ofoegbu, (2003), sees merger as an event that takes place where shareholders or business enterprises combine their operations in order to achieve mutual sharing of risks and rewards attached to the combined enterprises. Hence, considering merger from her own point of view, the ultimate aim of merging in the corporate is to diversify for risk removal, reduction or even transfer, which eventually would result in value maximization. Control is an essential element in acquisitions. No wonder Nwude (2005) defines acquisition as the purchase of controlling interest in one company by another company such that the acquired company becomes a subsidiary or a division of the acquirer. Where acquisitions occur between entities according to David, Britton and Ann (2009), the acquiring entity obtains control over the action of the entity taken over. This control, according to them, gives the acquirer the power to govern the financial and operating policies of the acquired, which enables them to obtain benefits from its activities. The term structure refers to the number of banks serving in the entire industry. Market structure responds to the internal variables such as competitions and regulation as well as to external economic and population situations. The term conduct refers to the behavior of the banks in the market. This includes pricing, marketing and innovative behavior of the business of banking. The term performance refers to the quality and quantity of product and services provided by the banks in the industry. SCP models assumes that market structures identified by many firms providing the same product and services though relatively equal in firm size, are competitive

markets generating greater performance. Then the degree of concentration of banks' output in a market affects the extent of competition among banks. This is so because of the assumption that a more highly concentrated market structure is more likely to produce more effective collusion. In other words, SCP model suggests that market concentration lowers the cost of collusion between banks and ends in suboptimal profits for all market participants. Market structure conduct performance SCP or collusion hypothesis following Bain (1951) claims that market structure influences conduct or behavior of firms through pricing and investment policies and this in turn translates into performance.

Changes in market structures also affect banks' specific characteristics such as equity condition, competitive position, portfolio condition, deposit demands and average bank size (Berger et al 1998). Equity position of banks is very significant in determining how banks behave in terms of maximizing their profit. Going from the traditional theory of capital by Klein (1971), the bank is assumed to have a preference ordering over the average rate of return on equity, which can be represented by a utility function that is linear. Based on this, the decision of the firm is always to optimize expected utility or, equivalently according to the scholar, the rate of return on equity. In this framework, bank has two basic sources of funds. First, the capital invested in the bank by the owners and second, funds that were obtained by the issuance of various types of deposits. Undercapitalization of banks then has effects on bank lending behavior. As this increases, banks can decrease or increase their loans to particular group borrowers. According to Samolyx and Avery (2000), as market structures change because of consolidations, small lending products may not evolve with the system. This according to them may change merging banks' relationship with them. This change in relationship is likely going to be negative on bank lending to small businesses. Because the number of banks reflects the intensity of competition in the market, we can decipher based on the Monti-Klein model, the relationship between competitive position of firms and the loan interest rate or loans. That is, as the number of banks in the market increases due to changing market structures, or when the market is more competitive, a bank tends to reduce its loan price and propensity to lend. This reduction in propensity to lend therefore, can affect credit availability to small businesses. In the refined Monti-Klein model, it is assumed that bank can suffer from liquidity risk, which occurs when the bank has to make unexpected cash payments or when there is an unexpected massive withdrawal of deposits. Increase in firms' liquidity risk can affect their propensity to lend. A bigger bank is likely going to absorb higher liquidity risk than small banks. Lending to small businesses could mean low liquidity risk behavior. However, this may not be sustained when competition is increasing. Liquidity risk is defined in the model by the random amount in the volume of deposit withdrawals. If the deposit withdrawals are larger than the bank reserve, a liquidity shortage results and the bank has to pay some penalty cost for this shortage. Default risk is also another market feature that could affect bank lending behavior. Evidence shows that lending to small businesses would likely increase the likelihood of banks' non-performing loans. According to Freixas and Rochet (1998), Monti-Klein model has been extended to the case of risky loans. That is to the case of default risk where loans may become irrecoverable in the case of complete default.

## **Empirical Review**

Several studies have examined the effects of bank mergers and acquisitions on banking behavior. The effects as shown in Prompitak (2009) have been classified into four main groups. They include; the effects of bank mergers on deposits rates, the effects of bank mergers on risk behavior, the effect of bank mergers on bank market shares and the effects of bank mergers on bank loan spread. We shall begin by considering first, the literatures related

to the effects on deposit interest rates. Most of the studies especially those focused on US bank mergers find that bank mergers and acquisitions have a negative influence on the deposit interest rates of the merged banks. Prager and Hannan (1998) confirmed this in their study. According to them, the price effects of bank mergers have substantially increased the concentration of a local market. In their examination of the dynamic changes in bank sizes on deposit interest rates, they found that mergers occurring in concentrated banking market leads to adverse changes in the short-term deposit interest rate. This means that the merged banks do not pass on efficiency gains to their customers. Instead, according to them, they earn increased monopoly rent and therefore offer lower deposit interest rates, which in turn lead to higher credit availability to their customers. Additionally, according to them, the deposit rates of banks that did not operate in the markets where such mergers took place change in the same direction. However, the deposit rates of the merged banks tend to fall by a greater percentage as they maintained. Park and Pennacchi (2007), suggests that large banks engaging in mergers and acquisitions tend to reduce their retail deposit rates. Hannan and Prager (2004) indicate that large banks offer lower deposit interest rates than smaller banks in the same market and that when the size of the organization is fixed or controlled, banks operating in many local banking markets tend to set lower deposit interest rates than those operating in fewer markets.

The effects of bank mergers on bank loan spreads have also been investigated by several scholars although we shall review very few of these literatures. Berger and Udell (1996), suggest that significant negative relationship exists between bank assets and bank lending to small businesses implying that as bank assets increase, the propensities to supply loans to small businesses decrease. However, the study discovers non-significant positive relationship between bank loans and small business lending. In this case, banks with relatively low assets are likely to increase their loans to small businesses. As it affects external effect, which considers how other non-consolidating banks in the same local markets response to mergers and acquisitions, the scholars found significant positive relationship between changes in bank sizes and external lending to small businesses. This shows that as banks drop their profitable small businesses loans due to increases in bank sizes occasioned by consolidation, other non-bank lenders in the same local market are likely to react by picking up such loans. The external effect therefore, tends to increase small business lending by other banks in the same local market that are not involved in mergers and acquisitions. The other banks that are non-involved according to Berger et al (1998), may pick up the profitable loans that are dropped by the merging institutions, or otherwise have a dynamic reaction that increases their small business supply. The scholars conclude by maintaining that the effect of bank mergers and acquisitions are complex with several offsetting static and dynamic effects. From the work of Peek and Eric (1997), large institutions allocate small amount of their risk assets to small businesses. The scholars are of the opinion that banking consolidations are not just about the growth in bank size. Some other issues according to them matter. Small banks according to them cannot just look away from the small business loan supplies since such institutions are generally limited to small loans and cannot make large business because of legal lending limits and diversification problem.

Bank consolidation effect has also been investigated in respect to consolidated banks' attitude to risk. De Nicolo et al (2003), shed light on this issue as they enquire if bank mergers can provide differential incentives for bank's risk-taking. Their result shows that consolidations may result in diversification gains, which may decrease substantially bank risk exposure. Of course, reduction in bank risk entails more confidence on the borrowers thereby leading to higher credit availabilities to borrowers. However, on the other hand according to them,

consolidations may as well allow banks to experience increase in risk exposure thereby leading to smaller risk asset creation by the consolidating institutions. Craig and Santos (1997) also examine the organics of risk effects caused by bank consolidations in the US. They found that the post-acquisition risk of newly formed banking organizations is substantially low indicating that bank consolidation could produce less risky organizations with higher propensity to create risk assets. This implies therefore that diversification gains can be one of the motives for merging. A diversified firm would likely be less risk averse, which would result in more credit availability to borrowers

Survey of bankers involved in mergers and acquisitions indicated that Market Share has not been an important motivation for most bank mergers and acquisitions. Kolari and Zardkoohi (2011) found this as shown in Promptak (2009). The result of their work shows that while market share has not been an important factor, gaining entry into a new market, achieving higher operating efficiency, and profitability were important factors. From the study, many respondents reported an increase in small business loans and medium business loans because of their mergers or acquisitions while less than 10% of the respondent reported a decrease in their large business loans because of a structural change. In addition, according to their survey, fewer than 10% of the respondents reported an increase in their large business loans. From these literatures, it is evident that consolidation affects the way banks behave in relation to lending to small business borrowers. However, there is far less evidence on the role micro-financial institutions are playing as banks change their lending decision. This no doubt is a gap in literature. By filling this gap, this study has contributed significantly to literatures.

### **Methodology**

We employed cross-sectional research designs in this study. Therefore, we used historical secondary data, a cross section of 2000-2010 of 845 banks. The population of the study comprises 821 microfinance banks and 24 commercial banks. Using a purposive sampling technique, we selected the entire population for study as all the 24 commercial banks were involved in the N25billion minimum bank recapitalization processes. Likewise, the 821 micro-finance banks were the ones that emerged successfully after the N20million or N1billion minimum recapitalization mandate as prescribed for them by CBN. The cross-sectional period under study was divided into two. Section 1 denotes the period between 2000 and 2004, which constitutes a five-year premerger period. The second section denotes the period between 2005 and 2010, which is a six-year post merger periods in Nigeria. To capture the time effect, we created dummy variable  $f$  following Promptak (2009), which takes the value one for post merger periods and zero for the period merger did not take place. The periods under consideration cover at least six-year post-consolidation period. Major banking consolidation specifically took place in 2005. Researchers indicate that banking restructuring after mergers and acquisitions occurs within the space of at least three years. By choosing six years post-consolidation gestation period, we are able to capture both short and long run restructuring and external effects.

### **Data Analysis Technique**

We analyzed the secondary data collected by multivariate regression analysis technique with the aid of Predictive Analytic Software (PASW). We also presented and analyzed data by tables and graphs and made inferences from descriptive statistics. For regression analysis to be unbiased and genuine, certain assumptions must be satisfied especially as it concerns multiple regressions. In the first place, the data obtained for the purpose of regression analysis

must follow a normal distribution. Moreover, the independent variable data must also have a linear relationship with dependent variable. In this work, we test for normality using Shapiro-Wilks' Test procedure. With Shapiro-Wilks' statistics, we were able to test the null hypothesis that the data are normally distributed. The p-value of greater than 0.05 indicates the presence of normality and linearity. Apart from the use of Shapiro-Wilks' statistic, we also employed skewness to analyze the normality of the data. Skewness of greater than 1.0 indicates the data are highly tilted and may not be fit for regression analysis, while skewness between 1 and 0, provides evidence that the data at question are suitable for regression analysis. However, for purpose of enhancing linearity, and normality as well, we transformed most of the data by natural logarithm. We postulated four hypotheses in this study to capture the directions as market structures changes. We tested them using f-ratio, and Wilks' lambda, at 5% significant value. We also tested the fitness of the model we formulated using Partial Eta Square and Wilks' lambda.

### **An Econometric Model**

Earlier theoretical expositions on the ways consolidation affects banking behavior maintain that the effects of bank mergers and acquisitions on bank lending can either be dynamic and/or static. Based on this, we model for restructuring dynamic effects using a refined Monti-Klein bank lending model. First, the traditional Monti-Klein is formulated for multiple regression analysis. This means one dependent variable is regressed against two or more dependent variables. In our modified model, we used the foundation to model multivariate effect, which means that two or more dependent variables are regressed simultaneously for their contemporaneous effects. Second, since the traditional Monti-Klein bank lending model views the banking firm in a static setting where demands for deposits and supply of loans simultaneously clear both markets (Klein, 1971; Monti 1972), we refined it following other researchers to fix the static nature of the model. In the original model, there is an inherent problem over how to separate decisions about loans and deposits in the bank optimization of the basic Monti-Klein model in a dynamic setting (Prompitak, 2009). However, this shortcoming as indicated by scholars can be overcome by the introduction of additional suppositions such as risk, size, equity characteristics, and market share into the model. Our model followed suit by reforming the traditional Monti-Klein Model by incorporating these variables. However, as already indicated above while Monti-Klein model is multinomial, we applied multivariate and separated the models into four separate models for ease of analysis. We assumed that increase or decrease in banks' small business loans has the explanation for increase or decrease in MFBs' loans. In this way, we establish our trade-off or substitution relationship between the loans in a dynamic market structures. Therefore, under the assumption of an imperfectly competitive banking market, modified Monti-Klein model can be very suitable for modeling the restructuring co-impacts of changing market structures on bank and MFBs loans to small businesses. Notably, bank mergers and acquisitions have always been explained by such metrics such as bank size, bank deposits, and bank equity and bank market shares (Berger, 1998, Prompitak (2009); Samolyx and Avery, (2000), Emeni and Okafor (2008). Changes in these variables have special influences on bank lending propensities. This indicates that significant relationship can exist between them. For the purpose of this study, we formulated four models based on the traditional Monti-Klein Model adjusted in accordance with our postulations. In these models as shown below, the researcher considers how the effects of changes in these explanatory variables can translate into decrease or increase in both commercial and microfinance bank loans to small businesses. Therefore, these relationships are expressed thus:

$$M_{1it}, C_{1it} = \alpha_{1m,c} + \beta_{1tm,c} BZ_{it} * \sum_{2001}^{2010} F \dots\dots\dots(1)$$

$$M_{2it}, C_{2it} = \alpha_{2m,c} + \beta_{2tm,c} EQ_{it} * \sum_{2001}^{2010} F \dots\dots\dots(2)$$

$$M_{3it}, C_{3it} = \alpha_{3m,c} + \beta_{3tm,c} DEP_{it} * \sum_{2001}^{2010} F \dots\dots\dots(3)$$

$$M_{4it}, C_{4it} = \alpha_{4m,c} + \beta_{4tm,c} MS4_{it} * \sum_{2001}^{2010} F \dots\dots\dots(4)$$

Where

$i=1\dots n$  is the number of cross-sectional units and  $t=1\dots t$  is the number of time period

$\beta_{1m,c}, \beta_{2m,c}, \beta_{3m,c}$  and  $\beta_{4m,c}$  are the  $K \times 1$  vectors of coefficients on the explanatory variables- $BZ$ ,  $EQ$ ,  $DEP$  and  $MS4$  - respectively as related to  $M$  and  $C$ .

$F_i$  is a  $1 \times P$  vector of the time-invariant observables, which varies only between individuals. It takes value 1 for the post merger period and 0 otherwise. It is a merger effect interaction with banks' specific characteristics.  $\alpha_{m,ci}$  is the unobservable individual level effects. This is included to take care of other variables that can affect loans to small businesses, which have been omitted for ease of analysis. It also takes care of the stochastic error.

$M$  is an observable dependent variable, which stands for micro-finance bank loans. It measures how changes in mergers and acquisitions explanatory variables affect the quantity of the loans MFBs make available to borrowers. It is scaled in logarithm for linearity purposes.

$C$  is also an observable dependent variable that measures the quantity of loans supplied to small businesses by commercial banks within the period under survey. It is also scaled in logarithm.

$BZ$  is the  $1 \times K$  vector of independent variable-bank size, which varies between individuals and over time. We defined Bank size in terms of bank gross assets and scaled it in logarithm. It is featured so that we can determine how their variations due to banking consolidation affect their propensity to supply credit to small businesses and how the MFBs respond to these changes in their propensity to supply small credits. The assumption here is that since both operate in the same local market, fall in the small business loans by commercial banks is likely to be the only factor that would explain subsequent rise in loans to small businesses by MFBs all things being equal. Otherwise, the loans dropped by the consolidating banks would be left unpicked and the MFBs loans to small businesses remain proportionally constant.

$EQ$  is the  $1 \times K$  vector of independent variable-bank Equity, which also varies between individuals and over time. As an independent variable, it is featured to measure how changes in bank financial characteristics of merged banks affect bank lending to small businesses both as it affects commercial banking where the direct effect is felt and the MFBs where the indirect effects is determined. It is scaled in terms of bank gross asset. That is,  $EQ$  is the ratio of equity to gross assets expressed in percentage.

$DEP$  is total bank deposits in the banking sector, which as well varies between individuals and over time. It is scaled in logarithm. It is featured to measure changes in total market

deposit demand in relation to small business assets creation by both the consolidated commercial banks and MFBs loans to their customers.

**MS4** is a bank market share. It is the 1xK vector of market concentration index, which varies between individuals and over time. As an independent variable, it measures banking concentration ratio of four big banks. Concentration ratio is the ratio of individual bank assets to total gross assets of banks. It determines the market share of banks in the domestic banking market setting. Hence, it is used in order to feature the bank's market structure, or in other words, the competitive environment in which the banks operates (Prompitak, 2009). The data for the estimation of this index is obtained from the CBN and the banks' financial statement. The four banks selected for the purpose of this calculation are First Bank of Nigeria Plc, Zenith Bank, UBA and GTB that control about 50% of the industry's asset base as at 2009. As of 2012, the top firms' assets constitute about 70% of the entire industry's gross assets. To calculate the concentration ratio, we measure the individual market shares of the selected banks. Thus, we apply the formula:  $ms4 = \frac{\sum_{i=1}^4 C_i}{N}$ ,  $C_i$ = the concentration ratio of each selected top bank= individual assets/ total industry assets,  $i=1, \dots, 4$   $N$ = the number of the banks =4,  $\sum$ = summation symbol.

**F** is a dummy variable that takes the value 1 for post merger periods and 0 for pre-merger periods. It is featured to capture the time effects. In our analysis, we separated the interaction, since we have switched off the pre-merger period by assigning zero to it. Hence, the effect we got is post-merger effects as caused by the influence of consolidations.

#### 4.1 Data Presentation and Empirical Results Analysis

The data are presented in the table 1 below. We have to screen the data as presented in table 3 in order to determine how normal and linear are the data obtained for the purpose of the regression analysis. Normality and linearity of the data were tested with Shapiro-Wilk Statistics and skewness. The data are normal if the Shapiro-Wilk statistics indicate probabilities greater than 0.05.

**Table 1.0: The Raw Data Obtained**

Year	BAC4	TBDEP	TBA	SBLOANS	EQUITY	MFBL
2010	8361953	9784542	17331559	12550	3829448	52867.50
2009	8828001	9150037	17522858	16366	2961363	58215.66
2008	5951779	7960166	15919559	13512	2642647	42753.06
2007	3810984	5001470	10981693	41100	1625291	22850.20
2006	2426729	3245156	7172932	25713	1061594	16450.20
2005	1236126	2036089	4515117	50672	717903.7	28504.80
2004	897337	1661482	3753277	54981	412860.6	11353.80
2003	640546	1337296	3047856	90176	536422.7	9954.80
2002	480409	1157111	2766880	82368	500805.3	4310.90
2001	261303	947182	2247039	52428	364020.5	1314.00

Source: Author: Data Used from CBN Statistical Bulletin **NB: Figures in millions**

TBDEP = Total Bank Deposit, TBA =Total Bank Asset, SBLOANS= Small Business Loans BAC4= Bank Assets Concentration Ratio of 4 topmost banks, EQUITY= total shareholders fund, MFBL= Micro-Finance Bank Loans.

**Table 2: Operation Measure of the Variables for Regression Analysis**

<i>BZ</i>	<i>C</i>	<i>DEP</i>	<i>EQ</i>	<i>MS4</i>	<i>M</i>
7.238838	4.098654	6.990541	22.09523	48.25	4.72
7.243605	4.213956	6.961423	16.9	50.38	4.77
7.201931	4.130726	6.900922	16.6	37.39	4.63
7.040669	4.613846	6.699098	14.8	34.7	4.36
6.855697	4.410165	6.511236	14.8	33.83	4.22
6.654669	4.704773	6.308797	15.9	27.38	4.45
6.574411	4.740214	6.220496	11	23.91	4.06
6.483994	4.955093	6.126228	17.6	21.02	4
6.44199	4.915761	6.063375	18.1	17.36	3.63
6.351611	4.719567	5.976433	16.20001	11.63	3.12

Source: CBN reports of various years, CBN statistical Bulletins and Author computations.

*BZ* = Bank Size (Log10 Gross Assets), *C*= Commercial Bank Loans to small Businesses (Log10CBLBSB), *DEP*=Bank Deposits (Log10BDEPOSIT), *EQ* = Bank Equity (Ratio bank Equity to gross asset), *MS*=Market Share

**Table 3: Data Screening**

Tests of Normality							
	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk			Skewness
	Statistic	Df	Sig.	Statistic	Df	Sig.	
<i>BZ</i>	.169	10	.200*	.887	10	.156	0.126
<i>DEP</i>	.176	10	.200*	.884	10	.144	0.268
<i>C</i>	.187	10	.200*	.905	10	.250	-0.332
<i>MS4</i>	.117	10	.200*	.964	10	.827	0.226
<i>EQ</i>	.175	10	.200*	.907	10	.260	0.320
<i>M</i>	.152	10	.200*	.921	10	.368	-0.996

Source: Author using PASW

In table 3, the results of the tests are presented. The tests indicate data normality and linearity of the variables. The Shapiro-Wilk test statistic for *BZ* equals 0.887 with the associated probability of 0.156. Since the p-value is greater than the 0.05 critical values, we conclude the data are normally distributed and are fit for regression analysis. Likewise, the Shapiro-Wilk test statistics for *DEP*, *C*, *MS4*, *EQ*, *M* are 0.176, 0.187, 0.117, 0.175, 0.152 respectively all indicate the data were normally distributed. Their associated probabilities-0.144, 0.250, 0.827, 0.260 and 0.368 were greater than the 5% critical value. The Shapiro-Wilk statistics are confirmed by the small values of skewness. Skewness of less than 1 shows normality of the data.

### Multivariate Regression Results and Interpretation

The empirical results are presented in the tables below. The results were analyzed based on the specific objectives of the study in which case the researcher is faced with the task of determining the extent fall in bank loans to small businesses due to changes in bank size of merged commercial banks affect microfinance bank lending. We also ascertain the extent changes in bank equity affect commercial and microfinance bank propensity to supply loans

to small businesses. Likewise, the researcher determines the extent fall in bank loans because of changes in bank deposit and market shares of emerging mega commercial banks affect commercial and microfinance bank loans to small businesses. We shall begin the interpretation from table 4.

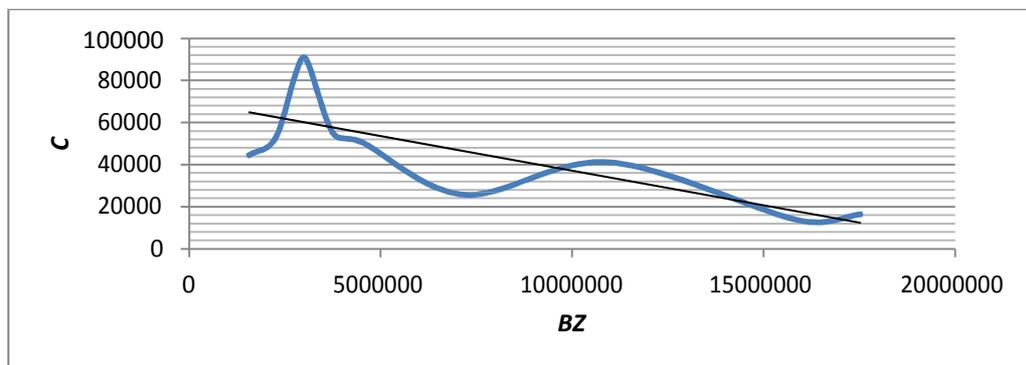
**Table 4: The Extent Fall In Bank Loan To Small Businesses Due To Changes In Bank Size Of Merged Commercial Banks Affects Microfinance Bank Lending.**

Parameter Estimates								
Dependent Variable	Parameter	B	Std. Error	T	Sig.	95% Confidence Interval		Partial Eta Squared
						Lower Bound	Upper Bound	
<b>C</b>	<b><math>\alpha_c</math></b>	10.112	1.746	5.792	.001	5.984	14.241	.827
	<b>F</b>	9.708 E-5	.184	.001	1.000	-.434	.435	.000
	<b>BZ</b>	-.817	.270	-3.027	.019	-1.455	-.179	.567
<b>M</b>	<b><math>\alpha_m</math></b>	-2.471	3.096	-.798	.451	-9.792	4.849	.083
	<b>F</b>	.273	.326	.838	.430	-.497	1.043	.091
	<b>BZ</b>	.955	.479	1.996	.086	-.176	2.087	.363

Source: Author using PASW;  $M_{lit}, C_{lit} = -2.471_m, 10.112_c + (0.955_m - .817_c)BZ_{it} + (0.273_m, 9.708_c)F$

Table 4 as displayed above shows that increase in bank gross assets due to bank mergers and acquisitions reduce credit banks supply to small business borrowers. As bank size in terms of gross assets increases by 1%, loans to small businesses fall by 0.817%. The fall in credit supply is significant at 5%. Other factors held constant, 56% of fall in bank loans is explained by changes in bank sizes. This implies that only 44% is accounted for by other factors. However, micro-finance banks are responding positively to falls in the banks' small credits. The fall in small credits supply by banks increases small credit supply by commercial banks. 0.817% fall in bank loan due to 1% increase in banks' gross assets, brings about 0.955% increases in microfinance bank loans to small businesses. Although this is not significant at 5% level, it shows total offsetting effect. Bank mergers and acquisitions explain up to 36.3% of increase in micro-finance bank loans. This result indicates micro-finance banks have an essential role to play in an economy. Their lending products constitute substitutes to commercial banks'. The graph below clearly depicts this relationship. As the bank gross assets rises, bank loans to small businesses falls. At first, the curve sharply rises indicating positive slope. This period of positive rise was pre-acquisitions period. Then suddenly, the curve began to nosedive. This nose diving period began after mergers between banks and it depicts negative relationship between the variables.

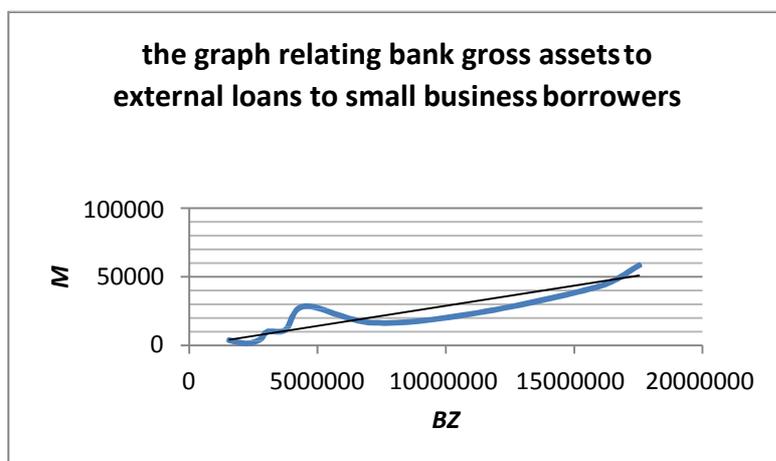
Figure1: Graph showing bank loans to small Businesses and changes in banks gross assets



Source: Author; Data Used are from table 1 in the appendix 1; BZ= Bank Size; C =Commercial Bank Loan To Small Business Borrowers.

The exact picture of the relationship between bank size and micro-finance bank loans is presented in the figure 2 below. The graph shows strong positive relationship between the dependent and independent variables. As the banking sector grows in size, the non-bank credit to small borrowers increases.

Figure 2: Bank size and micro-finance bank loans.



Source: Author; Data Used from CBN Bulletin as Shown in Table 1 in Appendix 1; BZ= Bank Size; M=Micro-Finance Bank Loans Small Credit Users.

### Testing Hypothesis 1

We use the statistics as shown in table 4.1 below to test the hypothesis 1 that changes in bank size and consequential fall in commercial bank loans do not significantly affect microfinance bank loans to small businesses.

**Table 4.1: Test Statistics For Hypothesis 1**

Multivariate Tests <sup>b</sup>							
Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
<b>BZ</b>	Pillai's Trace	.757	9.335	2.000	6.000	.014	.757
	Wilks' Lambda	.243	9.335	2.000	6.000	.014	.757
	Hotelling's Trace	3.112	9.335	2.000	6.000	.014	.757

Source: Author using PASW

The null hypothesis is rejected since the significant value for each of the statistics shows 1.4%, which is less than 5% critical value. The alternative that Changes in bank size and consequential fall in commercial bank loans do significantly affect microfinance bank loans to small businesses is accepted. The model  $M_{lit}, C_{lit} = -2.471_m, 10.112_c + (0.955_m -.817_c)BZ_{it} + (0.273_m, 9.708_c)F$  is therefore efficient and fits our data well.

Table 5 below presents the result of changes in equity condition of banking firm market structures and co-impact on both bank and MFBs loans to small businesses.

**Table 5: The Extent of the Effects Changes in Bank Equity on Commercial Bank and Microfinance Bank Loans to Small Businesses**

Parameter Estimates								
Dependent Variable	Parameter	B	Std. Error	T	Sig.	95% Confidence Interval		Partial Eta Squared
						Lower Bound	Upper Bound	
<b>C</b>	$\alpha_c$	8.780	1.369	6.412	.000	5.542	12.019	.855
	<b>F</b>	-.044	.179	-.249	.810	-.467	.378	.009
	<b>EQ</b>	-.699	.242	-2.887	.023	-1.271	-.126	.544
<b>M</b>	$\alpha_m$	-.407	2.522	-.161	.876	-6.371	5.556	.004
	<b>F</b>	.380	.329	1.155	.286	-.398	1.157	.160
	<b>EQ</b>	.727	.446	1.632	.147	-.326	1.781	.276

Source: Author using PASW  $M_{2it}, C_{2it} = -0.407_m, 8.780_c + (0.727_m, -.699_c)EQ_{it} + (0.380_m, -0.044_c)F$

As indicated in table 5 above, increase in bank equity due to bank mergers and acquisitions reduces credit banks supply to small business borrowers. Based on the result, increase in shareholders' funds lowers banks' propensity to supply small credits to borrowers. When bank equity increases by 1%, loans to small businesses fall by 0.699%. Statistically, the fall is significant at 5%. Partial Eta Square indicates that 54.4% of this fall can be explained by changes in bank equity other factors held constant. With this, it is clear that only 45.6% is accounted for by other factors. However, micro-finance banks' propensities have increased due largely to the consolidation exercise. They are therefore, responding positively to falls in the banks' small credits. The fall in small credits supply by banks increases small credit supply by commercial banks. For any 0.699% fall in bank loans due to 1% increase in bank equity micro-finance banks increase their loans by 0.727%. This is not significant at 5% level, but it shows total offsetting effects. Bank mergers and acquisitions account for up to 27.6% of increase in micro-finance bank loans. This result indicates micro-finance banks have an

essential role to play in an economy. Their lending products constitute substitutes to commercial banks<sup>7</sup>.

### Testing Hypothesis 2

We use the statistics displayed in the table 5.1 below to test hypothesis 2.

**Table 5.1: Test Statistics for Hypothesis 2**

Multivariate Tests <sup>b</sup>							
Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
<i>EQ</i>	Pillai's Trace	.673	6.180	2.000	6.000	.035	.673
	Wilks' Lambda	.327	6.180	2.000	6.000	.035	.673
	Hotelling's Trace	2.060	6.180	2.000	6.000	.035	.673

Source: Author using PASW

The Hypothesis 2 that changes in bank equity and consequential fall in commercial bank loans do not significantly affect microfinance bank loans to small businesses is rejected because the significant values for each of the statistics show 3.5%, which is less than 5% critical value. Therefore, the null hypothesis that Changes in bank equity and consequential fall in commercial bank loans do not significantly affect microfinance bank loans to small businesses is rejected. The alternative that Changes in bank equity and consequential fall in commercial bank loans do significantly affect microfinance bank loans to small businesses is accepted. The model- $M_{2it}, C_{2it} = -0.407m_t + (0.727m_t, -.699c_t)EQ_{it} + (0.380m_t, -0.044c_t)F_t$  - in respect of this hypothesis is therefore good.

In relation to changes in deposit market demand due to changing market structures and their co-impact on both bank and microfinance loans to small business borrowers, we present table 6 below.

**Table 6: The Extent of the Effects Changes in Bank Deposit on Commercial Bank and Microfinance Bank Loans to Small Businesses**

Parameter Estimates								
Dependent Variable	Parameter	B	Std. Error	T	Sig.	95% Confidence Interval		Partial Eta Squared
						Lower Bound	Upper Bound	
<i>C</i>	$a_c$	9.258	1.327	6.975	.000	6.119	12.396	.874
	<i>F</i>	-.011	.166	-.068	.948	-.403	.381	.001
	<i>DEP</i>	-.725	.217	-3.339	.012	-1.239	-.212	.614
<i>M</i>	$a_M$	-1.030	2.560	-.403	.699	-7.083	5.022	.023
	<i>F</i>	.332	.320	1.039	.333	-.424	1.088	.134
	<i>DEP</i>	.776	.419	1.851	.107	-.215	1.766	.329

Source: Author using PASW  $M_{it}, C_{it} = 9.258c_t - 1.030m_t + (0.776m_t, -.725c_t)DEP_{it} + (0.332m_t, -.011c_t)F_t$  .....(3)

The result shows that increases in bank deposits due to bank mergers and acquisitions as well reduce credit commercial banks supply to small business borrowers. As bank deposit increases by 1% loans to small businesses fall by 0.725%. The fall in credit supply is not significant at 5%. Other factors held constant, 61.4% of fall in bank loans is explained by changes in bank deposits. This implies that only 38.6% is accounted for by other factors. The

time effects indicate that in pre-merger periods, banks lend more to small business. However, micro-finance banks are responding positively to falls in the commercial banks' small credits. The fall in small credits supply by banks, increases small credit supply by MFBs. Based on the result, 0.725% fall in bank loan due to 1% increase in banks' gross assets, brings about 0.776% increases in microfinance bank loans to small businesses. Although this is not significant at 5% level, it shows total offsetting effects. Bank mergers and acquisitions explain up to 32.9% of increase in micro-finance bank loans.

### Test of Hypothesis 3

We test this hypothesis using the test statistics as shown in in table 6.1 below.

**Table 6.1: Test Statistics For Hypothesis 3**

Multivariate Tests <sup>b</sup>							
Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
<b>DEP</b>	Pillai's Trace	.773	10.219	2.000	6.000	.012	.773
	Wilks' Lambda	.227	10.219	2.000	6.000	.012	.773
	Hotelling's Trace	3.406	10.219	2.000	6.000	.012	.773

Source: Author using PASW

Based on the above information, the null hypothesis that fall in commercial bank loans to small businesses due to changes in bank deposits of merged banks does not bring about significant increase in microfinance bank loans to small businesses is also rejected. This is since the significant values for each of the statistics show 0.012, which is less than 0.05 critical values. Therefore, the alternative that fall in commercial bank loans to small businesses due to changes in bank deposits of merged banks bring about significant increase in microfinance bank loans to small businesses is accepted. In this regard, the model is fit thus:  $M_{it}, C_{it} = 9.258_c - 1.030_m + (0.776_m, -.725_c)DEP_{it} + (0.332_m, -.011_c)F_{it}$ .

Finally, we analyze the relationship between changing market share or concentration ratio, banks' small business loan and MFBs loans to borrowers. The result is presented in table 7 below.

**Table 7: The Extent of the Effects Changes in Bank Market Share on Commercial Bank and Microfinance Bank Loans to Small Businesses**

Parameter Estimates								
Dependent Variable	Parameter	B	Std. Error	T	Sig.	95% Confidence Interval		Partial Eta Squared
						Lower Bound	Upper Bound	
<b>C</b>	$\alpha_c$	5.162	.173	29.820	.000	4.752	5.571	.992
	<b>F</b>	-.111	.199	-.561	.593	-.581	.358	.043
	<b>MS4</b>	-.018	.008	-2.211	.063	-.037	.001	.411
<b>M</b>	$\alpha_m$	3.154	.225	13.989	.000	2.621	3.687	.965
	<b>F</b>	.226	.259	.872	.412	-.386	.837	.098
	<b>MS</b>	.030	.010	2.824	.026	.005	.054	.532

Source: Author using PASW;  $M_{4it}, C_{4it} = 5.162_c + 3.154_m - 0.018_{c,+} + 0.030_m MS_{it} + 0.226_m - .111_c F_{4i}$ .

The result indicates that increase in bank market share due to changing market structures caused by bank mergers and acquisitions reduces credit banks supply to small business borrowers. Based on the result, increase in the asset concentration ratio lowers commercial banks' propensity to supply small credits to borrowers. When bank market share increases by 1% loans to small businesses fall by 0.018%. Statistically, the fall is not significant at 5% level. Partial Eta Square indicates that 41.3% of this fall can be explained by changes in bank market share. However, micro-finance banks' propensities have increased due largely to the consolidation exercise. They are therefore, responding positively to falls in the banks' small credits. The fall in small credits supply by banks increases small credit supply by MFBs. 0.018% fall in bank loans due to 1% increase in bank market share, micro-finance banks increase their loans by 0.03%. This is significant at 5% level, as p-value equals 2.6%. It shows total offsetting of the negative effects. The forces associated with bank mergers and acquisitions explain 53.2% of the increase in micro-finance bank loans.

### Test of Hypothesis 4

We use the statistics displayed in table 7.1 to test hypothesis 4.

**Table 7.1: Test Statistics for Hypothesis 4**

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
<b>MS4</b>	Pillai's Trace	.764	9.735	2.000	6.000	.013	.764
	Wilks' Lambda	.236	9.735	2.000	6.000	.013	.764
	Hotelling's Trace	3.245	9.735	2.000	6.000	.013	.764

Source: Author using PASW

As the table shows, the hypothesis 4 that fall in commercial bank loans to small businesses due to changes in bank market shares of merged banks does not bring significant increase in microfinance bank loans to small businesses is rejected. This is since the significant values for each of the statistics show 0.013, which is less than 0.05 critical values. Therefore, the alternative that fall in commercial bank loans to small businesses due to changes in bank market shares of merged banks brings significant increase in microfinance bank loans to small businesses is accepted. The model in respect of this postulate is perfectly fit thus:  $M_{4it}, C_{4it} = 5.162_c + 3.154_m - 0.018_c + 0.030_m MS4_{it} + 0.226_m - .111_c F_{4i}$ . The hypotheses tested above prove the facts that fall in commercial bank loans is being offset by increase in microfinance bank loans to small firms. According to Berger et al (1998), the external effect, which is the reactions of the other banks in the local markets seems to be quite strong and positive, offsetting much if not all of the reductions in supply of small business lending by the consolidating institutions. These other banks according to them, may pick up profitable loans that are dropped by merging institutions, or otherwise have a dynamic reaction that increases their small business supply. These assertions are fully supported by the results of the test. The overall results indicate that micro-finance banks play significant substitution risk-asset creation roles in a dynamic banking market structures.

### 4.1.3 Conclusion and recommendations

Changing market structures usually due to bank mergers and acquisitions have significant effects on small business lending by both the banks and micro-finance banks. As bank sizes

increase, bank loans to small businesses decreases. However, this fall in commercial bank loans is taken care of by the rising propensity of micro-finance banks to lend. Therefore, the equilibrium state of small business loan supply and demand, which would have been disrupted by the changing values of bank financial characteristics are being maintained by the rising small bank loans to small businesses. Likewise, changing market structures caused by bank mergers and acquisition as explained by the changing bank deposits bring about decrease in commercial bank loans to small business borrowers. However, the fall is largely offset by consequential rise in Micro-Finance Bank loans to small businesses. Other market and consolidations explanatory variables as well bring about fall in small credit creation by commercial banks. However, micro-finance banks respond positively to such fall in small credits. Micro-finance banks are playing significant new role in Nigerian banking sector, which as we have discovered involves offsetting of negative effects of bank consolidation on credit availabilities to small businesses in Nigerian. This new rose deserves much attention of the policy makers. We recommend that policies towards encouraging Micro-finance banks in Nigeria or elsewhere should be put in place such as lifting the maximum lending of MFBs from N0.5million to N1million or above.

## References

- Afolabi. A and Osita O. A (1997). *Non- Structural test of Competition in Nigeria banking*; NDIC Quarterly Vol.7
- Asuquo, Akabom (2012), *Empirical Analysis of Bank mergers and Acquisitions on Small Business Lending in Nigeria*. @ [www.academia.edu](http://www.academia.edu).
- Avery, Robert B, And Katherine Samolynk. (2004). *Bank Consolidation And The Provision Of Banking Services; The Case Of Small Commercial Loans*. Journal Of Financial Services Research. 291-325.
- Bergar. A.N; Saunders A. Scalise J.M and Udell G.F (1998). *The effects of Bank mergers Bank Mergers and Acquisition on small Business Lending*. J. Finance Economics 50:187-229.
- Berger A; R. Demsetz and P. Strahan (1999). *The Consolidation of Financial Services Industry, Causes Consequences and Implication for the Future*. Journal of Banking and Finance 23:135-194. Web of Science.
- Berger AN, Udell GF (1996). *Universal Banking and the Future of Small Business Lending edited by Anthony Saunders and Ingo Walter,* " *Financial System Design: The case for Universal Banking*, Irwin, Burr Ridge, IL, 59-627.
- Bonaccorsi Di Patti, Emilia, And Giorgio Gobbi; (2003). *The Effect Of Bank Mergers And Acquisitions On Credit Availaibility. Evidence From Corporate Data*. Economic Working Paper. Bank Of Italy. Economic Research Department. No 479.
- Boyd John H And Stanley L. Graham,(1988). *The Profitability And Risk Effects Of Allowing Bank Holding Companies To Merge With Other Financial Firms. A Simulation Study*. Quarterly Reviews Federal Reserve Bank Of Mineapolis. 3-4.
- Corvoisier, Sandrine, and Reint Gropp (2001). *Bank concentration and retail interest rates*. Working Paper Series. European Central Bank. No. 072..
- Craig, Ben R, And Cabral Dos Santos. (1997). *The Risk Effects Of Bank Acquisitions*. Economic Review. 25-35
- Craig, Steven G And Pauline Hardee, (2007). *The Impact Of Bank Consolidation On Small Business Credit Availability*. Journal Of Banking And Finance. 1237-1263.
- Degrese, Hans A., Nancy Massschelein And Janet Mitchel.(2006). *Staying, Dropping Or Switching; The Impact Of Bank Mergers On SME*. TILEC Discussion Papers. No 2006-034.

De Nicole, Giaani, Philip Barthlomew, Jahanara Zaman And Maryzaphirin.(2003). *Bank Consolidation, Internationalization, And Conglomeration; Trends And Implications For Financial Risk*. IMF Working Papers. IMF. No.03/158

Feathershorne, Allen M.(1996). *Post-acquisition Performance of Rural Banks*. American Journal Of Agricultural Economics. 728-733. *Federal Reserve Board*

Focarelli, Dario, And Fabio Panetta, (2003). *Are Mergers Beneficial To Consumers. Evidence From The Market For Bank Deposits*. The American Economic Review. 1152-1172.

Francis K.Emenike and Okafor C. (2008). *Effects of Bank Mergers and Acquisition on Small Businesses Lending in Nigeria* African Journal of Business Management Vol. 2 (a) pp.146-156. Available at [www.acadeimcjournal.nig](http://www.acadeimcjournal.nig).

Gladis, A.A.N (2013). *The Conduct, Structure and Performance of Commercial Banks In Ghana*. European Journal of Business and Innovation Research Vol. 1. No. 4 pp. 34-47.

Hannan Timothy H, And Robin A. Prager.(2004). *Multimarket Bank Pricing; An Empirical Investigation Of Deposit Interest Rates*. Finance And Economic Discussion Series. Board Of Governors Of The Federal Reserve System. No 2004-38

James Kolari and Asghar Zardkoohi (2011). *The Impact of Structural Change in the Banking Industry on Small Business Lending*. New York press Available at [www.federalreserve.gov/pubs/feds](http://www.federalreserve.gov/pubs/feds).

Joe Peak and Eric Rosengreen (1997). *The Bank Consolidation and Small Business Lending. It is not just the Bank Size that Matters*. New York University. Available at [www.federalreserve.gov/pubs/feds](http://www.federalreserve.gov/pubs/feds).

Joe, Peek and Eric Rosengreen (1996). *Small Business Credit Availability: How Important Is Size Of Lender?* Edited By Anthony Sanders And Ingo Walter, Financial System Design: The Case For Universal Banking, Bun Bridge, Il Irwin Publishing.

Keeton, William R (1996). *Do Bank Mergers Reduce Lending To Businesses and Farmers? New Evidence From Tenth District States*. Working Papers. Federal Reserve Bank of Kansas City; 63-75.

Keeton, William R(1995). *Multi-Office Bank Lending To Small Businesses: Some New Evidence* *Federal Reserve bank Of Kansas city*. Economic Review 80 (2) 45-57

Molyneux, Philip, Michael Lloyd-Williams, and John Thornton (1994). *Competitive Conditions in European banking*. Journal of Banking and Finance.: 445-459.

Panetta, Fabio., Fabiano Schivardi, And Matthew Shum, (2004). *Do Banks Mergers Improve Information? Evidence From The Loan Market*. Danco d'Italia Economic Research Paper. Bank Of Italy. No. 524.

Park Kwagwoo and George Pennacchi (2007). *Harming Depositors and Helping Borrowers: The Disparate Impacts of Bank Consolidation*. Working Papers. Federal Reserve Bank of Cleveland No. 07-04

Prager, Robin, and Timothy H. Hannan, (1998). *Do Substantial Horizontal Mergers Generate Significant Price Effects?. Evidence from The Banking Industry.* The Journal of Industrial Economic Edited By Kenneth Hilon and Daviv F. Heath Field. 433-452.

Promptack , Daungkamol (2009). *The Effect Bank Mergers And Acquisitions On Bank Behaviour*. Birmingham Business School. Available @ Promptak10phd.Pdf.

Williams Keaton (2011) *Do Bank Mergers Reduce Lending to Businesses and Farmers*. New York Press Available at [www.federalreserve.gov/pubs/feds](http://www.federalreserve.gov/pubs/feds).

Wolken, John, Cole Rebel and Louise Woodburn (1996). *Banking And Non-Bank Competition For Small Business Credit: Evidence From The 1987 and 1993*. National Survey Of The Small Business Finances''. Federal Reserve Bulletin 82:11 (Nov) 83-95

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:  
<http://www.iiste.org>

### CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

**Prospective authors of journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

### MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Academic conference: <http://www.iiste.org/conference/upcoming-conferences-call-for-paper/>

### IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

