THE EFFECTS OF FINANCIAL DEREGULATION ON MARKET STRUCTURE AND COMPETITION: THE CASE OF NIGERIAN COMMERCIAL BANKS

BY

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September, 2000

DECLARATION

I hereby declare that this thesis is a record of my own primary research work. It has not been presented in any previous application for the award of a higher degree. All sources of information are acknowledged.

16/4/01

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CERTIFICATION

This thesis entitled "**The Effects of Financial Deregulation on Market Structure and Competition: The case of Nigerian Commercial Banks**" by Muhammad Nasirudeen Maiturare meets the requirements of the regulations for the award of the Degree of Doctor of Philosophy (Ph.D Business Administration) of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This Thesis is Dedicated to my late mother,
Hajiya Ummu Kulthum Maiturare.

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ABSTRACT

The structure and regulation of a country's financial markets and institutions have been the focus of considerable policy attention for a number of economic and political reasons. Banks and other financial institutions encourage and collect the savings that finance a country's economic growth. Thus playing an integral role in transmitting the government's monetary and credit policies to the rest of the economy. The banking industry, particularly commercial banking (with over 80% of total deposits) are effectively regulated as a means to provide subsidized credit or services to targeted groups and to protect particular groups from such activities as cut-throat competition, hostile takeovers, and expropriation. No doubt, such restrictive regulatory policies, regarded as "financial repression" had to some extent contributed to the nation's development programmes, particularly in the agricultural sector and the small scale industry. However, these regulatory policies were believed to have had their costs on the banking system's competitiveness, efficiency and performance.

Economic theory suggests that provided there are no externalities, the competitive price is efficient. This theory is also applied to financial markets, looking at the supply of funds, the demand for funds, and the market clearing interest rate. Thus, recent research works in development finance have advocated that financial markets need to be fully liberalized from the "interference" of governments so as to improve the efficiency of resource allocation.

The study, thus, made an attempt to investigate the effects of deregulation measures on the performance of the commercial banking sector. In particular the study evaluated the extent to which deregulation policies affected structure, efficiency and competition in the commercial banking market. To accomplish this objective, in the context of Nigerian commercial banking system, three hypotheses were tested using data from 18 commercial banks and other publicly available data from the Central Bank of Nigeria, National Deposit Insurance Corporation and Securities and Exchange Commission.

The major finding of the study is that the link between market structure and efficiency, on one hand, and the relationship between entry and competition on the other, were weak and not in conformity with stated theoretical objectives. The study also concludes that the Nigerian banking sector is over concentrated with the three largest banks accounting for over 60% of deposits, from the inception of financial reforms to date.

The study thus recommended a pro-competitive policy to facilitate inter-bank rivalry among the leading banks which continue to dominate the system, and the entry or creation of new banks with a reasonable number of branches to minimise the current over- concentration of the market. Furthermore, there is a need to increase the number of institutions that compete for deposits by promoting the entry of non-bank financial institutions.

Further research into the assessment of deregulation and various parameters of banking efficiency, could be carried out using the translog cost equation. The methodology would allow the researcher to identify best practice banks and thus might be useful in decisions regarding merging and closing of banks.

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CHAPTER ONE:
INTRODUCTION

1.1 *Introduction*

Prior to the mid 1980's the Nigerian Financial System developed under an umbrella of monetary and regulatory policies aimed at supporting the state orchestrated development strategy. In the pre-deregulation era, the commercial bank dominated financial system became an instrument of planned industrialization policies and operated under a framework characterized by controlled interest rates, directed credit programmes, high reserve requirements, and other restrictions on financial intermediation.

While these financial and regulatory policies were not exclusive to Nigeria and contributed to development programmes particularly in the agricultural sector, the policies were believed to have had their costs on the banking system's competitiveness, efficiency and performance. Interest rate controls led to non-price competition in the form of branch network building by banks in the system. This situation and restrictive entry policies gave rise to contracted market dominated by public and private banks owned by industrial groups with excessively large branch networks and high overhead costs.

In retrospect, it is generally thought that the combination of these factors created an inefficient banking system and uncompetitive market structure -- the nature, level and extent of competition in an industry or market. It involves examining factors such as the number of firms that compete, their

concentration, cost, demand and technological conditions, and ease of entry and exit conditions.

This situation is not peculiar to Nigeria alone. Indeed, until the advent of global financial deregulation in the 1970s most countries, both developed and developing, followed restrictive financial and regulatory policies. However, in the last two decades, a number of developing countries have adopted policies designed to deregulate their economies, particularly the financial markets. This has usually been carried out as part of comprehensive structural adjustment programmes aimed at ensuring that market forces are assigned greater roles in the allocation of scarce resources.

1.2 The Structural Adjustment Programme (SAP)

The Federal government, on 27th June, 1986, adopted the IMF prescribed structural reform package. A cardinal aim of the Structural Adjustment programme (SAP) was to put in place a market oriented economy. This development led to major changes in the entire Nigerian economic environment, particularly the financial services sector to which commercial banks are the dominant players.

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1.2.1 Objectives of SAP

The economic problems of excessive dependence of the economy on one commodity (monoculture), chronic lack of self-reliant growth and development, serious balance of payments disequilibrium, growing government budget deficit, low productivity, stagflation from the late 1970s, are what SAP was designed to attack (Dotun Phillips:1987). The types of policies in the programme also date as far back as the late 1970s and more

particularly 1982 when an economic stabilization programme was introduced by the then civilian government led by Alh. Shehu Shagari. In fact the administration which introduced SAP had itself taken a first step in the same direction in October 1985 when it passed a national Economic Emergency Decree. Under the discretionary powers conferred on the President by that decree, and in the subsequent 1986 budget, measures had been taken to reduce wages and salaries, remove subsidies on petroleum, ban the importation of some commodities (especially food), suspend non-essential projects and so on.

SAP, therefore, is the latest in the series of policy programmes directed at Nigeria's economic problems. What distinguishes it from previous efforts is the comprehensive breadth, the much greater depth, and the radical determination which characterize the programme. Its preoccupation was the removal of the perceived distortions which for many years have prevented the economy from crossing the threshold to sustained, self-reliant growth and development.

Specifically, the main objectives of SAP were:

1. To restructure and diversify the productive base of the economy in order to reduce dependence on the oil sector and imports;
2. To achieve fiscal and balance of payments viability over the period;
3. To lay the basis for a sustainable non-inflationary or minimal inflationary growth;
4. To lessen the dominance of unproductive investments in the public sector, improve the sector's efficiency and intensify the growth potential of the private sector.

The major policy in the SAP package consists of the removal of the perceived over valuation of the naira through the establishment and operation of a foreign exchange bidding scheme under a Second-tier Foreign Exchange Market (SFEM). This mechanism for obtaining a realistic Naira exchange rate was to be accompanied by several other policy measures including:

a) Deregulation, reduction of administrative controls and greater reliance on market forces;
b) Trade and payments liberalization;
c) Tariff reform and rationalization to promote industrial diversification;
d) Adoption of appropriate pricing policies for petroleum products and public enterprise output (removal of subsidies)
e) Rationalization and privatization of public enterprises;
f) Strengthening existing demand management policies;
g) Adoption of measures to stimulate production and broaden the supply base of the economy.

No doubt, all the above stated measures have implications for the financial sector. Nonetheless, the study is only directly concerned with the first policy measure – Deregulation, reduction of administrative controls and greater reliance on market forces in the nation's financial system.

1.2.2 Implementation of SAP

Of these main elements of SAP, the first, the easiest and the fastest to be implemented was the downward adjustment of the Naira exchange rate through SFEM which took off on September 29, 1986. SFEM has since been replaced by Autonomous Foreign Exchange Market (AFEM). SFEM/AFEM

had reduced the exchange value of the Naira dramatically from about ₦1.50 : $1.00 in September 1986 to an average of about ₦88.54 : $1.00 in 1998. The downward slide of the Naira exchange rate continuously pushed up production costs in view of the high import dependence of existing production structures. The rising cost of production was further induced by continuos scarcity of petroleum products, frequent power outages, deteriorating infrastructures and equipment and the upward reviews of the salary structure in the public sector.

The demand management measures have also been quicker to put in place through monetary and credit limits, fiscal deficit limits, and incomes limit. Indeed, one of the main characteristics of SAP is the various macroeconomic limits which it seeks to impose on the level of economic activity. For example, the overall expansion of credit was limited to 7.6% for the second half of 1986 and 4.4% for 1987 but increased to 24.5% in 1998.

Expansion of credit to the government sector was pegged at 7.4% in 1986 , 1.5% in 1987 and 0% for 1998. However, targets set were generally not achieved due to the effect of frequent shortfalls in oil revenue following incessant weakening of the international oil prices. Inevitably, a liquidity squeeze has been one of the immediate results of SAP, with negative implications for new investments, employment, capacity utilization and overall economic recovery.

Similarly, with regard to fiscal limits, government budget deficit was to be limited to 4% of the GDP in 1986 and 3.5% in 1987 fluctuating to 11% in 1998. Also public sector wage increase, were limited to 10% over the SAP period; government transfers and loans to parastatals were not to exceed 50%

of 1985 levels; employment in the government sector was to be reduced; and overall public expenditure was to be reduced also. The significant withdrawal of government from the circular flow of income also had speedy deflationary impact on effective demand, incomes, employment, and overall macroeconomic development.

A central component of the SAP reforms was the restructuring of the national financial system by relaxing some regulations considered inhibitive to orderly growth and development within the financial system. Hence deregulation has so far been evidenced principally by the abolition of import and export licensing schemes as a logical consequence of the institution of SFEM/AFEM, the abolition of the commodity board scheme, the removal of price controls, the deregulation of interest rates, abolition of sectoral allocation of credit, relaxation of entry barriers as well as other monetary measures. These measures were aimed at developing an efficient and competitive financial system that would support and facilitate the functioning of a liberal economy.

Indeed, relaxation of regulatory barriers has attracted a significant number of banks into the system, reforms were also successful in halting the decline in financial intermediation observed prior to 1986 and contributed to financial deepening and a revitalization of the stock market. At the same time product variety increased and quality of financial services improved. Moreover, the Nigerian banking system became more integrated with the external financial world and improved its financial technology and human capital. This development has, to a large extent, substantiated the world bank position about the necessity of adjustments in Africa. The World Bank had

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argued that a top priority for reform in Africa is to increase competitiveness through domestic deregulation, trade reform, and the privatization of public enterprises and that competition leads to higher productivity, as firms forced to compete are more efficient than those with privileged access to credit or foreign exchange.

In spite of the improvements highlighted above, the banking sector, particularly commercial banking is still beset with a number of problems, caused or accentuated by the process of deregulation. Such problems include poor management, increase in fraudulent practices, inadequate infrastructure and scarcity of professional staff, and poor quality of bank services. The problems might likely have adverse effects on the banking industry efficiency.

Furthermore, there is a fundamental conflict in the deregulation exercise which arise from the fact that deregulation fosters competition and efficiency while regulation ensures viability and stability of the banking system. It therefore becomes difficult to pick one and leave the other. For example increase in savings due to deregulation of interest rates creates the problem of excess liquidity for the banks. Secondly, easy access to foreign exchange has encouraged the importation of non-essential commodities into the country with its consequence on the value of the Naira.

It is, therefore, important to study the impact of these policies on the operations of the banking industry particularly the commercial banking sector with a view to determining the net effects of the deregulation measures implemented so far.

1.3 Statement of the Problem

Since the introduction of financial liberalization (another term for financial deregulation) as a key component of the Structural Adjustment Programme, banking business in Nigeria has raised a wide variety of performance questions. What kind of market structure exists in banking after the reforms? Was the removal of interest and credit barriers sufficient to transform the market structure into a competitive and efficient one or have the distortions resulting from earlier financial and regulatory policies build endogenous constraints into the system, thwarting competition and efficiency, liberalization notwithstanding? Is there any significant improvement or deterioration in the measures of financial deepening that could be attributable to the policy of deregulation? These are some of the questions that this study attempted to answer. However, the focus is on the commercial banking sector, specifically.

1.4 Purpose and Scope of the Study

The purpose of this study is to assess the performance of Nigerian commercial Banks between 1990 and 1999. The choice of the period is informed by the fact that the two most important restrictions that are central to financial repression were not completely removed until October, 1996. The period was chosen to ensure that the study captures the effects of this significant deregulation measure.

The study also evaluates the degree of competitiveness in the banking system since the introduction of Financial Reforms. Specifically, the study assesses the performance of banks in the era of deregulation, in the context of a developing economy such as Nigeria. The study also assesses the nature of

regulatory regimes, and the state of competition in the financial system. Thus the goal is threefold:

1. To assess the state of competition in the financial system following the regime of deregulation.
2. To identify the key determinants of efficiency in the banking system following the programme of deregulation.

3. To analyse the extent to which reforms affected market concentration in the commercial banking sector.

1.5 Hypotheses of the Study

The review of developments in the banking system suggests that excessive regulation creates an uncompetitive market structure and an inefficient banking system characterized by high overhead costs, absence of innovations and sub-optimal performance. However, this observations themselves are not sufficient to establish a causal link between parameters. In order to do this, this study presents three hypotheses:

H_1: The policy of financial deregulation did not significantly affect the efficiency of Nigerian commercial banks.

H_2: Deregulation measures negatively affected commercial banking system's competitiveness.

H_3: There is no significant improvement in the concentration ratio (CR) of commercial banks following the programme of deregulation.

1.6 Significance of The Study

The Structural Adjustment Programme (SAP) is, without doubt, the most important, most comprehensive, and most controversial reform package ever undertaken in the Nigerian economy. Yet no single study was done on such an important topic as that investigated by this study. Of course, there are a number of studies on the assessment of bank performance in Nigeria before and after deregulation, none of such studies, to the best of our knowledge, had examined the process from the viewpoint and models applied in this research in the context of Nigeria.

Furthermore, SAP is IMF imposed package. But IMF has been accused of promoting policies that are clearly detrimental to hapless and gullible third world countries. The Economist of 12 October 1991 accused the World Bank & the IMF of sitting in judgement on governments, using their financial clout to influence economic policy in developing countries targeted at achieving the subterranean political and economic interest of its mentors.

This study therefore would serve as the pioneer work in the area of deregulation and financial sector performance as well as provide the gauge for measuring the efficacy of the Structural reform package in achieving the twin objectives of efficient market structure and banking competitiveness.

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1.7 Plan of The Study

The remainder of this thesis has been divided into six chapters. Chapter two reviews the evolution of the banking market in Nigeria and the nature of regulations accompanying each era. A critical review of development finance theories related to the concept of deregulation was undertaken in chapter three. Chapter four provides the theoretical framework for the empirical analysis and analyzes the developments in banking market structure, various measures of market concentration, and bank profitability. Chapter five presents the methods used for testing the hypotheses in this study. The Results of the models employed in the analysis are discussed in Chapter six. Finally, conclusion and recommendations of the study are presented in chapter seven.

CHAPTER TWO:

DEVELOPMENTS IN THE NIGERIAN BANKING INDUSTRY

2.1 Introduction

This chapter reviewed developments in the Nigerian banking industry. The rest of the chapter is divided into five sections. Section 2.2 reviewed the Nigerian financial system. The various systematic changes that characterised the banking sector in the pre-SAP period were discussed in section 2.3. Section 2.4 examined the nature and sources of banking regulation. Finally, section 2.5 focussed on the major features of the deregulation process.

2.2 The Nigerian Financial System

A financial system is a conglomerate of various institutions, markets, instruments and operators that interact within an economy to provide financial services CBN Briefs (1997). Such services may include resource mobilization and allocation; financial intermediation; and facilitation of foreign exchange transactions to enhance international trade, among others. The financial system, thus, plays important roles in the process of economic growth and development of a country. In Nigeria, the financial system has undergone remarkable changes in terms of ownership structure, the depth and breadth of instruments employed, the number of institutions established, the economic environment and the regulatory framework within which the system operates.

2.2.1 Structure of the Nigerian Financial System

The Nigerian financial system comprises the regulatory/supervisory authorities as well as banks and non-banking financial institutions. The regulatory/supervisory authorities are the Federal Ministry of Finance (FMF),

Central Bank of Nigeria (CBN), Nigeria Deposit Insurance Corporation (NDIC), Securities and Exchange Commission (SEC), National Insurance Commission, Federal Mortgage Bank of Nigeria (FMBN), and the National Board for Community Banks (NBCB). The CBN is the principal regulator and supervisor in the money market with the NDIC playing a complementary role.

The CBN exclusively regulates the activities of finance companies and specialised/development finance institutions such as the Nigerian Industrial Development Bank (NIIDB), the Nigerian Bank for Commerce and Industry (NBCI), and the Nigerian Agricultural and Co-operative Bank (NACB). The SEC is the apex regulatory/supervisory authority in the capital market. The Nigerian Stock Exchange (NSE) is a self regulatory or user-regulatory institution. The registrars, stock brokers and issuing houses that also interact in the market complete the chain in the capital market. In the 1997 amendment to CBN Decree No. 24 of 1991, the CBN is to report to the Presidency through the Federal Ministry of Finance.

With effect from 1st January 1997, the Central Bank of Nigeria effectively assumed the full control leadership of all the banking institutions in the financial system. In this regard, the CBN has responsibility for controlling and supervising all commercial, merchant and community banks, the People's Bank, finance companies, discount houses, primary-mortgage institutions, bureaux de change and all development banks.

2.2.2 The Money Market and Its Institutions

The money market is the market for short-term debt instruments. The major function of the market is to facilitate the raising of short-term funds from the surplus sectors of the economy. The deficit units, which could be

public or private, obtain funds from the market to bridge budgetary gaps by trading in short-term securities such as Treasury Bills, Treasury Certificates, Call Money, Certificates of Deposits (CDs), and Commercial Papers (CPs).

With the commencement of Open Market Operations (OMO) by the CBN on the 30th of June 1993, the scope of the money market has been expanded. The number of participants in the market also increased with the establishment of five discount houses. Money market institutions constitute the hub of the financial system. These institutions include discount houses, commercial and merchant banks, low income and rural sector target institutions like the People's Bank of Nigeria and community banks which are special purpose banks.

2.2.3 The Capital Market

The Nigerian capital market is a channel for mobilizing long-term funds. The main institutions in the market include the Securities and Exchange Commission (SEC), which is at the apex and serves as the regulatory authority of the-market, the Nigerian Stock Exchange (NSE), the issuing houses and the stock broking firms. The capital market is classified into two segments, the primary and the secondary segments.

The Nigerian Stock Exchange evolved from the Lagos Stock Exchange which commenced business in 1961. It provides a mechanism for mobilising private and public savings through long-term instruments (equities, debentures, bonds and stocks) which are traded on the floor of the Exchange. The Exchange also provides a means for trading in existing securities. To encourage small as well as large scale enterprises gain access to public listing, the NSE operates the main Exchange for relatively large enterprises and the

Second-tier Securities Market (SSM), where listing requirements are less stringent, for small and medium-scale enterprises.

2.3 Perspective on Nigerian Banking Regulations

The pre-SAP banking scene was characterized by systematic changes designed to promote banking in the country. These changes are commonly categorized into three phases, namely; the era of laissez faire banking (1892 - 1952), the era of limited banking regulations (1952 - 1958), the period of prudential Regulations and Control(1959 - 1985).

2.3.1 Era of Laissez Faire banking (1892 - 1951)

The period 1892 - 1951 is otherwise called the era of "free banking", due to the total lack of controls or banking regulations during the period. What was required was registration under the companies ordinance.

Another major feature of the period is that banking business was monopolized by foreign banks; principally, the African Banking corporation (1892) - the precursor of the Standard Bank now First Bank of Nigeria; the Colonial Bank which predated the former Barclays Bank (1917) and presently Union Bank; and the British and French Bank (1948) which became United Bank for Africa (UBA) in 1961. Alleged discrimination against Nigerians by these banks led to the establishment of indigenous banks which, unfortunately offered little or no competition to foreign banks essentially because of their weak capital base and poor managerial capacity. Consequently, only three of the indigenous banks survived. They are: National Bank of Nigeria (1933), Agbonmagbe Bank (1945) and African Continental Bank (1947).

In fact more than three quarters of the banks licensed during this period failed. This, coupled with the widespread fraud and banking abuse led to the enactment of the first banking ordinance (legislation) in 1952.

2.3.2 Era of Limited Banking Regulation (1952 - 1958)

The period 1952 - 1958 is also called the era of Bank failure. The enactment of Nigerian Banking Ordinance in 1952 introduced some form of regulation into the Nigerian banking scene. The ordinance laid down the standard and procedure for the conduct of banking business by prescribing the mandatory minimum capital requirement for banks and introducing regulations to check bank failure. Some of the conditions stipulated by the ordinance for the operation of banking business are as follows:

i) A fully paid-up capital of ₦25,000.00 out of an authorized capital of ₦50,000.00.

ii) Maintenance of reserve funds in which 20% of profits must be paid into until it offsets the paid-up capital.

iii) Maintenance of satisfactory level of liquidity to meet up customers demand.

iv) Banks were prohibited from granting unsecured loans greater than ₦600 to their directors.

Many banks could not satisfy these conditions and this caused mass failure of banks and collapse of the prevailing banking boom. In fact all the indigenous banks established in the country during this period failed. Although, on one hand, sanity was restored to the banking business, the bank failures of this era were attributed to the monopolistic structure of the banking industry which allowed the foreign banks to enjoy exclusive patronage from the British firms.

2.3.3 Era of Intensive Banking Regulation (1958 - 1986)

The period 1958 - 1986 is similarly referred to as the era of consolidation because it improved and consolidated on the gains of the banking ordinance period. The period began with the enactment of the Central Bank of Nigeria Act of 1958 which established the Central Bank of Nigeria (CBN). This act empowered the CBN to promote and integrate the Nigerian financial system. Thus, the CBN was able to outline regulatory measures to effectively stem the tide of bank failures that reigned in the preceding periods. Since its inception, the CBN has attempted to prevent bank failures through its formulation and implementation of monetary and banking policies. Through these measures, the CBN has attempted to ensure that banks remain viable and profitable while contributing to economic growth which, in turn, will strengthen the banks.

Other major sources of banking regulation of this period are:

(1) The Exchange Control Act of 1962,
(2) The 1968 Companies Act, and
(3) The Banking Act of 1969.

The Exchange control Act, though not aimed at banks directly, nonetheless necessarily restrict the actions of the banks, through which foreign Exchange transactions were mostly carried out, by ensuring that foreign exchange was allocated to the priority sectors of the economy. The 1968 Companies Act required foreign based banks operating in Nigeria to be incorporated in the country. During this period also, government acquired controlling shares in a number of foreign banks, including the "Big Three" commercial banks.

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The Banking Act of 1969 generally provided for the regulation and control of the monetary and financial system. Specifically, it made provisions for the granting of licenses to banks while imposing restrictions on the activities of licensed banks. The Act also made provision for the CBN to exercise its power in maintaining monetary and financial stability in the economy through measures like the stipulation of liquidity and capital adequacy requirements, as well as limits on interest rates and bank lending to the private sector.

There is no doubt that banking regulations had some salutary effects on the banks and their customers. They certainly improved the viability of banks in Nigeria by stemming the tide of massive bank failures witnessed in the formative years of banking in Nigeria. However, despite the benefits associated with this development a number of problems arose from the banking regulations, especially in the early 1980s, and questioned the entire mode of banking regulation.

2.4 Nature of Banking Regulation

Having outlined the regulations, it is necessary to examine their various forms and how they were applied prior to SAP. Three categories of banking regulations are considered - statutory regulations, Central bank's guidelines and other regulations incidental to performing the functions of the CBN.

2.4.1 Statutory Regulations

The main statutory regulations are specifically stated in the banking laws - the Cental Banking Act (1958) and the banking Act (1969). These laws stipulate the duties of banks and the punishment for default. Some of the regulations specify the requirements for the maintenance of reserve funds,

disclosure of interest by directors and other bank officials, keeping books of accounts, restriction on payment of dividends and other activities of banks. These and other rules are designed to protect all the interest groups in banking development - shareholders, management, workers, customers, as well as the right of shareholders to earn their dividends, ensure that banks remain viable and strong for the benefit of all parties. Other objectives of the banking regulations are to ensure that banks have honest and dedicated staff, keep books of accounts to enable them render regular returns to the regulatory authorities within the prescribed time limit. The regulations are designed also to give direction to the banks in the preparation and publication of profit and to give direction to the banks in the preparation and publication of profit and loss accounts and balance sheets and the appointment and powers of auditors - all of which are expected to enhance sound banking practices and thereby enable the banks to carry out their major function of financial intermediation.

2.4.2 Central Bank Guidelines

In addition to the statutory regulations, the Central Bank is empowered to make other rules to foster monetary stability and a sound financial structure. These extra rules are usually reflected in the regular Central Bank's guidelines. In the period before SAP, the important regulatory instruments were the stipulation of cash reserve requirement and liquidity ratio, the call-up of special deposits and issue of stabilization securities, as well as the direct regulation of interest rates and growth and sectoral distribution of bank credit.

Introduced in the 1976/77 fiscal year, the cash reserve ratio was designed to reduce or increase the liquidity of banks which will affect their ability to grant credit. In this regard, the CBN prescribes the cash balances as a proportion of demand deposit liabilities which banks must keep at the CBN.

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On the eve of SAP in 1986 when the prescribed ratio ranged between 2 and 5 percent, reserve requirement-liquidity ratio - was originally fixed at 25 percent mainly to safeguard the ability of banks to meet their depositors' cash withdrawals and ensure confidence in the banking system. Subsequent legislative amendments gave the central bank not only the power to alter the composition of the liquid assets for the compilation of the liquidity ratio but also to change the liquidity ratio itself, though it remained unchanged at 25.0 per cent during the pre-SAP period.

The CBN's power to call for special deposits from banks has been found to be useful supplement to cash and liquidity ratios. This instrument was used on a number of occasions during the pre-SAP period. A related instrument - stabilization securities - which was introduced in 1976, was retired in 1979 and was not utilized again in the pre-SAP era. Another important tool of control was the direct regulation of interest rates. Up to July 1987, interest rates were determined administratively by fixing the range within which both the deposit and lending rates were to be determined by banks. It is pertinent to note that the most popular tool of regulating the lending activities of banks prior to SAP (and even now) was the specification of ceilings on their credit expansion and indication of sectoral allocation of the permissible quantum of credit. It may be observed that the banking regulations emanating from CBN guidelines assist mainly in the process of monetary control which is essential for economic stability. In the main, the tools of direct monetary control are virtually inevitable in undeveloped financial markets, while the general evidence is that monetary authorities usually face problems in their application.

2.4.3 Regulation Arising from some CBN Functions

Apart from regulations arising directly from the statutes or the regular CBN guidelines, other rules emanate from certain functions of the Central bank. For example, as the bankers' bank, the CBN decides the amount of overdraft it can allow each bank. It has also the opportunity to advise the banks or to hold consultations with them. For example, the bankers' committee meetings provide opportunities for interactions with the banks. The cental Bank also uses its supervision of the cheque clearinghouses to monitor the activities of banks. Besides, the bank is involved in the selection of applications for banking licenses.

2.4.4 Monitoring and Enforcement

Having identified the sources and nature of banking regulations, it remains to examine how the regulations are enforced. There are two major ways through which the CBN monitors the activities of the licensed banks in order to assess their compliance with the regulations. The first is the appraisal of their statutory returns to the CBN. This enables the CBN to analyse banks' performance with a view to determining what new strategies to adopt to enhance future performance. Such analysis also helps the Bank to make recommendations to government on policies affecting the banks. Apart from appraising the banks' statutory and other returns, the CBN goes further to examine the books of banks in order to ensure that they comply with the regulations set for them in the statutes and the Central Bank guidelines. In the process of supervising the affairs of the banks, defaults may be detected and are usually penalized. The major penalties for default are fines, the confiscation of the equivalent of credit excesses or shortfalls by the CBN and withdrawal of some privileges.

2.4.5 Appraisal of Banking Regulations

The effects of banking regulations in Nigeria prior to SAP could be described as mixed. While some of the effects were salutary, others could be considered counter-productive. Banking regulations-whether statutorily or discretionarily administered by the regulatory authorities - had some salutary effects on the banks and their customers. They, no doubt, positively influenced the viability of banks in Nigeria. This fact is best appreciated if we recollect the constant bank failures during the laissez-faire banking practices of the 1940's and 1950's. Between 1951 ;and 1952, for example, about 17 new indigenous banks were established, but only one of them survived beyond two years. The free for all banking practices of the period, especially before the Banking Ordinance of 1952, no doubt, encouraged the factors which led to bank failures. These factors included inadequate capital and staff, structural handicap and poor management.

Following the 1952 Ordinance and subsequent banking laws - the Central bank Act and the 1969 Banking Act, Bank failures gradually disappeared from the Nigerian scene. This will tend to corroborate the view that the protection of banks has been the cental aim of the regulations. Banking regulations, by promoting the viability of banks, encouraged increased investment in the banking industry and consequent growth in banks and the services they rendered.

Despite the benefits just highlighted, a number of problems arose from the banking regulations, especially in the period immediately before SAP, and questioned the entire mode of banking regulation. The main approach to banking regulation in the period before SAP involved the use of direct controls. The performance of banks with regard to the rules was mixed. The

degree of compliance varied among the banks with some of the banks making good efforts at compliance.

Obviously, for some of the regulations, the banks had no other alternative than to comply. For example, when the CBN required banks to make special deposits with it, they had no room to manoeuvre, especially if the deposits could be transferred from the banks' current accounts at the CBN. Besides, the Central bank's control, through the withdrawal of privileges or facilities, tended to compel compliance. The major areas of default were the cases where the banks had room and incentive to manoeuvre. For example, on the average, most banks defaulted on the ceilings imposed on their credit expansion and the guidelines on the sectoral allocation of their credit.

Furthermore, the rapid increase in the number of banks since the 1970s increased the burden of monitoring individual banks and therefore made enforcement of regulations more difficult. The banks exploited this loophole by circumventing the controls, through window dressing and the use of off-balance sheet items to hide relevant information about their operations, thereby increasing the difficulty of the regulatory authorities in getting appropriate information for enforcing the regulations. In an attempt to get the growing number of banks to comply with the rules, the regulatory authorities diverted more of its resources to the enforcement compliance with credit ceilings and related direct controls.

Lastly, the focus of Pre-SAP regulations on direct control resulted in declining competition in the banking industry as each bank's market share became strictly determined by credit ceilings and administratively fixed interest rates. Efficiency of the system was reduced as banks were allowed the

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same proportional expansion in credit irrespective of the level of their efficiency. Above all, regulations gave too much room to fraudulent and corrupt practices within the system.

Also, competition was declining as each bank's market share became strictly determined by credit ceilings and administratively fixed interest rates. More importantly, over regulations gave too much room to fraudulent and corrupt practices within the system. These and other related problems associated with intensive banking regulations led to the introduction of Financial Deregulation in Nigeria.

2.5 The process of Deregulation in the Nigerian Banking Industry (1986 - 1995)

The era of deregulation of the Nigerian banking system came with the adoption of SAP in 1986. SAP was meant to assign a pivotal role to market forces in the pricing and allocation of resources for development. This has given rise to a dramatic change in the banking environment. The principal measures of deregulation so far implemented in the banking system cover such areas as interest rates, licensing of new banks, sectoral allocation of credit, withdrawal of public sector deposits, and the use of an auction method in the issuing of treasury securities.

During this period, the Nigerian banking system witnessed more changes than any other sector of the economy. Since the commencement of the deregulation, the number of banks operating in the country grew tremendously as a result of the ensuing ease of entry into the field of banking. With deregulation, many new crop of banking institutions emerged which are privately sponsored in which neither the Federal nor State Governments are

shareholders. For instance the number of banks increased from 41 in 1986 to 120 in 1993; while total number of branches rose to 2,397 from 1,394 in the same period.

In order to protect the system from the adverse effects of such open door policy in the licensing of new banks, the minimum paid-up capital was raised from =N=10 million to =N=20 million and later =N=50 million for commercial banks; and =N=6 million to =N=12 million and now =N=40 million for merchant banks. It is now raised to =N=500 million. This measures were meant to ensure a sound capital base for effective and competitive banking operations in the light of the sharp depreciation in the exchange value of the Naira.

In addition to the above changes, the period of deregulation has also witnessed a number of strategic institutional changes in the banking sector. The take-off of the Nigeria Deposit Insurance Corporation (NDIC) in 1989 represent one of these institutional changes. Others include the Peoples Bank of Nigeria (PBN) introduced in 1989, and the Community Banking Scheme in 1990. The establishment of Nigeria Import and Export Bank (NEXIM), Discount Houses, Bureaux De Change, Mortgage Banking institutions, etc are all part of the institutional changes.

Another notable action which has placed the banks at greater alert in a period of deregulation was the withdrawal of public sector deposits from the banking system which has had the effect of separating banks from such public sector funds which had been known to discourage healthy competition in savings mobilization.

Similarly, the introduction of the use of an auction-based system for the issuing of treasury securities whose principal objectives are the promotion of greater reliance on market forces in the determination of yields on government debt instruments through market-determined interest rates and efficient management of public debt.

Finally, banks faced serious competition from non-bank financial institutions - finance houses, bureaux de change, etc. This non-bank competitors had invaded prime service areas such as consumer loans and deposits, cash management services and investment advise, that were traditionally dominated by licensed banks before the introduction of the economic adjustment programme.

2.6 Recent Developments in the Nigerian Financial System

The Nigerian financial system has undergone some remarkable changes in recent times. Some of these developments include the promulgation of the Failed Banks (Recovery of Debt) and Financial Malpractices in Banks Decree No. 18 of 1994. This is to facilitate the prosecution of those who contributed to the failure of banks and to recover the debt owed to the failed banks. Another m development was the inauguration Financial Services Regulatory Coordinating Committee (FSRCC) by the CBN in 1994. The aim is to coordinate and standardise the regulatory policies of all financial institutions in the system with a view to evolving some, cooperation among regulatory agencies. The CBN also granted forbearance to finance companies operating in Nigeria whereby they were given a maximum of four years to amortize their classified assets portfolio against their current profits. The minimum borrowing of the finance companies had been reviewed downward from N100,000.00 to N50,000.00 since 1994.

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Three important decrees to further regulate the financial system were promulgated in 1995. These were: the Money Laundering Decree No. 3; the Nigerian Investment Promotion Commission Decree No. 16, and the Foreign Exchange (Monitoring and Miscellaneous Provisions) Decree No. 17. The Money Laundering Decree/is mainly to prevent drug money and other illegally acquired assets from entering into the financial system in order to forestall the damaging effects of such monetary injection. The Decree limits the maximum amounts of cash payments that can be made or accepted to N500,000 for an individual and N2 million for corporate bodies, respectively. Amount in excess of these limits are to be reported to appropriate authorities.

The Nigerian Investment Promotion Commission among other things, is charged with the responsibility of encouraging, promoting and coordinating investment activities in Nigeria. The Commission is empowered to initiate and support measures which would enhance the investment climate in Nigeria for both citizens and foreign investors. The Commission is also empowered, to register any enterprise in which foreign participation is permitted and to allow foreign enterprises to buy shares of any Nigerian enterprise m any convertible foreign currency.

The Foreign Exchange (Monitoring and Miscellaneous Provisions) Decree established an autonomous foreign exchange market. The Decree empowers the Central Bank of Nigeria, with the approval of the Finance Minister, to issue guidelines to regulate the procedures for transactions in the market as well as other matters which may enhance the effective operation of the market. The Decree provides for any convertible foreign currency to be traded in the market. It also allows an individual, ,resident in or outside Nigeria, to invest in any security in Nigeria. The Decree provides that any

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cash transfer in excess of US$10,000 is subject to the approval of the Bank, while the Minister should be furnished with such information on a regular basis.

In 1997, the CBN Decree 24 and BOFI Decree 25 both of 1991 were amended. The highlights of the amendments include the withdrawal of the autonomy of the CBN with its supervision placed under the Federal Ministry of Finance. However, the powers of the Bank over the institutions within the financial system were enhanced by the Decree. Institutions which were hitherto outside the control of the bank are now placed under **its direct** supervision. These include primary mortgage institutions, community banks, People's bank ' 11 as development finance institutions as we DFIS). The Bank's board is to be chaired by a part-time chairman, which is a departure from the regime when the Governor of the Bank also chaired the board of the Bank. Also, the minimum capital requirements of both commercial and merchant banks was fixed at a uniform level of N500 million instead of the former N50 and N40 million for the two categories of banks, respectively.

A new insurance decree was also promulgated which stipulates new capital requirements for insurance companies and also created the National Insurance Commission as the regulatory organ in the industry. A computerised trading system was introduced in the Nigerian Stock Exchange to facilitate trading on the floor of the Exchange to enhance processing and settlement of transactions and facilitate the internationalization of the Exchange. The Nigeria Deposit Insurance Corporation Decree No. 22 of 1988 was amended to give more powers to the Corporation to deal with insured banks and to act independent of the CBN on some matters affecting problem banks.

Having reviewed the general developments in the Nigerian banking industry, it is important to also examine, specifically, developments in the management of the two factors that are most central to 'financial repression'– Interest rate and Sectoral allocation of credit.

CHAPTER THREE:

LITERATURE REVIEW

3.1 Introduction

Once the current economic crisis took hold in the Third world, various competing theoretical frameworks were developed to try to explain its origin and dynamics. Among one of the earliest explanations, and one which has proved to be politically significant, is the position, favoured by monetarists of various shades, that the chief causes of the Third world crisis lies in the fact that the expansion of the interventionist state and public expenditure have led to problems of inflation, balance of payments deficits, unemployment, and negative growth rates, among others. These problems have combined with falling primary commodity prices, low workers' productivity, high wages, and low savings to propel Third World economies helped by excessive population growth rates in the context of a dwindling productive capacity.

Furthermore, the regime of fixed exchange rates and over-valued currencies whose values are administratively determined, are among some of the factors associated with the interventionist state that have served to aggravate the economic problems of developing countries.

It is important to note that the monetarist theoretical framework developed as a critique of Keynesianism which it holds responsible for providing the ideological justification for the expansion of the state apparatus. In contrast to Keynesianism, monetarism is centred in the primacy of the monetary problem and the market mechanism. It therefore takes the view that if the crisis in the Third World is to be overcome and growth restored, not only must public expenditure be cut and the frontiers of the state rolled back, the

forces of the market must also be given a free rein in matters of trade and exchange rate determination. A tight monetary policy must be articulated in order for the rate of inflation to be curtailed. Workers wages must also be reduced. Different variants of the monetarist explanation of crisis have been developed in different countries by adherents of monetarism seeking to apply the theory to their concrete national situations.

Critics fault the monetarists explanation for its obsession with equilibrium in an international economy that has shown itself to be very dynamic. Equally astonishing is the total side tracking of the structures of production and an exclusive concentration on the level of circulation and exchange of commodities in monetarist theory. However, Bayo Olukoshi (1991) maintains that the market is organically inter-connected with the level of social production and that a proper understanding of the latter is crucial for an understanding of the former. Neither is the market as free as the monetarist think - the growth of monopolies in the world economy and a host of other distortions have ensured that the market is not nearly as perfect as is often assumed. Opponents of structural reform point to the fact that the forces of demand and supply do not operate in the abstract but are concrete reflections of social relationships, contradictions and struggles that define the general character of economic development.

It is worth noting also that although reformists declare their chief task as the taming of inflation, their concrete policy instruments such as devaluation and high interest rates actually fuel inflationary pressures in the economy as the experience of many developing countries that are currently implementing adjustment programmes shows. But that experience notwithstanding, the ideology of monetarism seems to have become so

hegemonic that discussion of Third World developmental needs are now reduced to the questions of adopting correct prices and maintaining mean economic equilibria. Yet, analysts, operating within the underdevelopment/dependency framework, are insisting that the institutional/structural issues which are central to the explanation of third world underdevelopment and dependency still remain valid and are germane to the economic crisis.

According to the underdevelopment/dependency theorists, the genesis of the on-going crisis in the Third World cannot be separated from the long-standing transfer of surplus from the periphery of the capitalist world economy to its metropole. This problem has been compounded by the enclave nature of development in most Third World economies and the weak inter-sectoral linkages that exist between agricultural and industrial activities, for example. The lopsided nature of the international division of labour serves to reinforce the structural imbalances within the economies of developing countries, imbalances which include narrow production bases.

Furthermore, the fragmentation of the product and factor markets of Third World economies as well as their openness and external dependence are additional factors in the current economic crisis facing them. In the specific African context, Onimode notes that in addition to the basic structural deficiency of the economies, the current crisis has a specific conjunctural nature.

For the underdevelopment/dependency theorists, policy measures which seek to overcome the Third World crisis without tackling its structural roots by de-linking the economies of the developing countries from the international

capitalist system are bound to fail. Monetarists economic programmes merely tinker with the problems facing third World countries in the sense that they do not tackle the underlying structural roots of the crisis.

The opponents of structural adjustment further argue that policy instrument such as devaluation, financial deregulation, trade liberalization and privatization of public enterprises can only serve to heighten the dependence of Third world economies on the Western countries, which dependence was responsible in the first place for the crisis. The economic measures are bound to heighten the internal distortions and dislocations in the Third World economies in addition to further entrenching foreign domination.

Without doubt, the underdevelopment/dependency school offers very useful insights into the origins and nature of the African crisis. Particularly helpful is the insistence of its theorists on the need to locate the crisis within the context of the general dynamics of international capitalism. But this is also precisely where they falter in their analysis, concentrating as they did almost exclusively on external sources of crisis as captured by the concept of dependence to the neglect of the internal dynamics of Third World capitalism and its inherent propensity to create crises.

Indeed, it is desirable for third world countries to pursue structural transformation. For even opponents of SAP agree that the capitalist system does have the capacity for resolving crisis within itself. After all, did not Keynesianism resolve the deep-seated international capitalists crisis of the 1930s and launch the system on a long boom of over four decades before the current crisis set in? Nonetheless, they maintained that structural

transformation is not a voluntaristic path which nations choose at will but is rather imposed by the concrete struggle of class forces within the polity.

The obvious dissatisfaction with the underdevelopment/dependency approach as an alternative to monetarists explanations of crises has led scholars to either seek a third option or to attempt to promote a return to the classical marxian theory of crisis as a step forward. However, the aim of this chapter is not to project any particular viewpoint, but rather to advance the differing positions on the issue of structural adjustment with a view to examining the conceptual issues involved in structural reform strategies.

3.2 Conceptual Issues in Adjustments

If there is profound conceptual disagreement in the literature on the roots and nature of the Third World crisis, there is even more debate on the appropriateness of the structural adjustment programmes being implemented by most developing countries. The triumph of the IMF/world Bank adjustment programmes in the Third World has a dual significance. At one level, it reflects hegemonic position which the ideology of monetarism came to assume in the period from the 1970s following the rise to power of conservative governments in the key Western countries that dominate the international financial system. At another level, it marked the beginning of a historical turning point in the post-colonial model of accumulation that defined the framework for development in the third world in the period up to the 1970s.

In most parts of Africa, Asia and Latin America, colonialism left a legacy of underdevelopment and economic backwardness. The economies that the colonialists constructed and which they left behind were characterized by low levels of technological development, minimal inter-sectoral linkages,

weak infra-structural bases, and massive external dependence. The labour was at a level in which they exported a few crops and mineral products. Not surprisingly, the struggle for national independence in the Third World was closely tied to the quest for material development and transformation of society. But, as Bangura (1983) observed, this was a task for which the market mechanism was unsuited for several reasons:

> "... for one thing, foreign capital, supported by a new indigenous enterprises, primarily maintained an enclave presence in the local economies. for another, the market itself was poorly developed as an allocative and developmental agency in the three vital sectors of the economies, viz: capitalist firms, public enterprises and the petty commodity sector where the bulk of the population of peasants, self-employed artisans, and small-scale producers eke out a living.

Given the unsuitability of the market for the massive task of post-colonial reconstruction, and given its underdevelopment, it fell on the post-colonial state to act as the principal steering mechanism in the economy. In going about this tasks, the state had to regulate the structure of society and provide the environment essential for the management of the various distortions and stresses in the economy. In addition, it had to perform certain legitimate functions, especially in the area of public expenditure on social and welfare facilities, so that it could control the unstable and lopsided accumulating process over which it had to preside.

In a bid to give a minimum level of coherence to the economy the state played a leading role in integrating the driving forces in the private, public and petty commodity sectors with a view to ensuring capital accumulation in the system. Thus it is that the state came to achieve the leading role in the economy. It is that centrality which is now under attack on all fronts by the forces of globalisation through programmes of adjustment and stabilization which seek to supplant the post-colonial model of state-centric capitalism.

At the heart of the IMF/world bank-led effort to restructure the basis of accumulation in the Third World is an attempt to enthrone the market as the primary moving force in the economy. Through policies such as trade, exchange, and price liberalization, it is hoped that a minimalist state will emerge to supersede its interventionist predecessor and manage adjustment with a view to providing an appropriate framework for promoting development. Also, the enthronement of the market will eliminate the patron client relations that have been the bane of Third world capitalist development and hopefully provide the necessary economic pre-conditions for the flowering of liberal democracy.

On face value, the arguments that have been marshalled by various scholars and agencies for the enthronement of the market appear to be compelling. A closer examination will however reveal major loopholes and contradictions in the monetarist economic logic. For a start, it should be recalled that in monetarist economic thinking, inflation, balance of payments deficits, negative growth rates, and unemployment cannot occur simultaneously as the last two problems are incompatible and contradictory with the first two and policies used for curing one set of the problems cannot be used for curing the other. It is, however to the discredit of the monetarists

that most capitalists economies suffer all four problems at one and the same time.

Indeed, the various policy instruments which the monetarists have put together under the rubric of structural adjustment actually fuel all four problems. Devaluation, for example, has had serious inflationary consequences as well as repercussions for real growth and employment. Similarly, the application of a liquidity squeeze as a strategy for fighting inflation has, in practice not only further pushed costs upwards but also negatively affected capacity utilization in the industry.

However, the proponents of the market believe that the setbacks that have been recorded in the economies of countries implementing structural adjustment can be explained by the failure of Third world policy makers to exhibit the political will necessary for carrying out necessary changes promptly and comprehensively. But opponents maintain that the will itself begs too many questions. The reality is that the market has itself proved unable to eliminate some of the long standing distortions in the many Third World economies. Patron - client relations, even in the most rapidly reforming countries, have not been eliminated - far from it; their locus has simply been shifted from the public to the private sector. Be that as it may, we would next examine the theoretical underpinning for the programme of deregulation embarked upon by the Federal Government of Nigeria since 1986.

3.3 The Concept of Economic Deregulation

The simplest possible definition of Financial Deregulation is removal of financial repression (FR). FR consists of a set of restrictions on market competition that yields a protected environment for financial intermediaries.

The most common restrictions are: 1. Guaranteed intermediation margin through fixation of lending and deposit rates or direct subsidy programs; 2. Controls on international capital flows and foreign competition; 3. Barriers to exit for financial intermediaries often accompanied by unlimited (conjectural) deposit insurance; 4. Barriers to exit for major industrial clients of financial intermediaries, i.e. conjectural loan insurance for the largest loans in the portfolio; 5. Guaranteed business activity through government funded credit allocation programs to key economic sectors. A Financial Liberalization programme consists of the simultaneous removal of all or part of these restrictions. Of all restriction, Klaus P. Fisher (1997) identified control on interest rates and credit allocation as central to Financial Repression.

Deregulations, therefore, is the process of eliminating existing regulations such as the abolition of all forms of foreign exchange control, the liberalization of interest rates and the review of sectoral allocation of credit for banks. Due to the central position and the crucial roles played by banks, many economists have provided evidence to show that there is a direct linkage between bank's survival/growth and the growth and development of the nation's economy. The banking sector in the opinion of the experts, can assist in the break away from a depressed economic performance to an accelerated growth if and only if the sector is not repressed and distorted with inappropriate and inflexible regulations.

Indeed Rose (1988) noted that bankers are entrepreneurs, who when freed from constraints of regulations will readily pursue new opportunities for better service, stronger growth, and improved earnings whenever those opportunities appeal. Too much regulations, especially the inflexible and dogmatic ones, deny banks of their innovation and incentive to take risk and

invest in business enterprise. It could also result in problems such as loss of competitiveness and inefficiency, resource mis-allocation, etc., among banks thereby hindering the growth of the nation's economy.

Economic regulation in general embraces all types of controls which government imposes on economic and business activities. At the peak of regulation, government can be observed actually participating in some non-traditional public sector activities in an attempt to foster competition and improve economic efficiency. Whenever over regulation fails, as it often does, the process of deregulation inevitably begins in a bid to avoid a collapse of the whole system.

Economic Deregulation in the present context may be defined as the deliberate and systematic removal of regulatory controls structures and operational guidelines which may have inhibited growth, competition and efficient allocation of scarce resources in an economy. Deregulation implies allowing economic agents and factors of production to respond freely to market forces. The underlying philosophy of the deregulation of an economy or its component segments is the belief that factors of production, goods and services are optimally priced and allocated when their prices are freely determined in a competitive environment.

Therefore, the symptom that often precipitates the need for deregulation is the prevalence of supply/demand gaps in both the product and factor markets. In the financial markets, the gap manifests itself in a savings/investment imbalance, the prolonged existence of which is not conducive to long-term economic growth. The deregulation of the financial markets by eliminating distortions such as subsidized interest rates and credit

rationing will most likely improve economic efficiency and the productivity of investments. In this regard, McKinnon (1973) and Shaw (1973) define Financial liberalization (another terms for deregulation) as the establishment of interest rates that equate the demand for and the supply of savings. They believe that financial liberalization is a prerequisite economic reform for economic development, because it would encourage savings and investment, the adoption of appropriate technologies, learning-by-doing and income equalization.

The concept of "Financial Deepening" introduced by some economists in the early 1970s, as a measurement of efficient allocation of capital by shifting more of the available resources to those with better investment opportunities (through financial liberalization) also provides theoretical support for some of these assertions. For example Cameron (1972), and McKinnon (1973), noted that financial deepening will contribute most significantly to economic growth if the countries (government) are not to interfere in the operations of the financial institutions. This hypothesis explains that poor performance by banks and other financial institutions could be attributable to interest rate regulations, (i.e. ceilings on deposit and loan rates) as well as official guidelines pertaining to lending operations.

The regulations of interest rates (the price of credit), is a major evidence of financial repression. Public policies that abolish interest rate control would normally set in motion forces that encourage financial innovations. For example, in the United States of America, Regulation Q set ceilings on time and saving deposit rates and until, 1978, prevented any interest payment on current accounts. These ceilings were gradually raised until 1980, when the Depository Institutions Deregulation Act was passed.

The lesson from the American experience in this respect was that as the ceilings were raised to market determined rates, the levels and efficiency of financial intermediation were drastically improved with their implications for economic growth (Verstuysen, 1988, p.2). Shaw (1973) asserted that generally interest deregulation enhances the growth of financial institutions which provide more investors with access to borrowing. Another expected effect of interest rate deregulation is the reduction in capital flight from the domestic economy McKinnon (1973, p.163) and Shaw (1973, p.94). Additionally, it would reduce self-investment, curb market loans and advances and investment in unproductive assets. Consequently, efficiency and economic growth are encouraged which further feedback to encourage the growth of financial institutions in the domestic economy. The increase in the number of financial institutions, especially banks, would increase the degree of competition in the banking industry and promote efficiency.

All the above stated postulations and their by-products are expected to have effects on the profitability of banking business. In the long run, profits are reduced as monopoly rents are eliminated. It is therefore desirable to investigate the extent to which all the above mentioned theoretical expectations are met in any economy that embarks on financial liberalization programmes. Such an investigation would assist in the monitoring and evaluation of the reform programmes.

3.3.1 The Rationale for Banking Regulation

Banking is one of the most regulated of industries in almost all countries and at all times. By regulation it is meant: "the laws, rules, directives and guidelines established to minimize the risk exposure of financial institutions and market inequities in order to ensure the safety and soundness

of individual institutions as well as the financial system itself (Ogunleye 1995). Since the establishment of banking, governments have imposed controls on banks, even when most other businesses were free to operate, subject only to the statutes and other general rules of law. There are a number of reasons for this.

Firstly, banks have the unique ability to "create" money by approving loans and crediting the proceeds to accounts, thus increasing the money supply. Secondly, commercial banking as an institution is so important to the economy for it dominates all other sub-sectors in the financial sector of any nation, as well as provide the working capital for other industries. Thirdly, Commercial banks hold about (70%) of the money supply (M_1) in the form of demand deposits.

Because of these reasons and many others, governments have a deep concern for the soundness of the system, and the policies and practices of banks in general. Hence regulatory agencies take all possible steps to ensure that every bank is operating prudently and in conformity with all proximate laws and regulations. The purpose is to protect the public's resources and confidence in the financial system. In this regard, banks are the most heavily regulated institutions in both developed and developing economies. Banking is a public trust that, if left to industry whims, might assume too much risk, ultimately leading to extensive losses and widespread lack of confidence in the soundness and integrity underlying financial intermediation.

As financial intermediaries, banks assist in channelling funds from surplus economic units to deficit areas to facilitate business, transactions and economic development generally. Since these funds are owned by third

parties, prudence demands that such funds should be efficiently managed to sustain the confidence of depositors in the banking system, ensure the continuous soundness of the system itself and thereby minimize the risk of bank failures.

Prudential requirement apart, the authorities may want to intervene in the operations of the banking system to correct the shortcomings of the price fixing mechanism in ensuring that what is commercially rational for an individual bank also approximates social rationality as much as possible. For instance, interest rates may be regulated to encourage savings mobilization and ensure adequate investments for rapid economic growth. Similarly, the existence of market imperfections and externalities in financial markets, especially in developing countries, has often induced official intervention not only to boost investments, but also to redirect credit to economic sectors with high social but low commercial rates of return.

Accordingly, an efficient and effective financial system is indispensable not only for the provision of efficient intermediation but also for the protection of depositors, encouragement of healthy competition, maintenance of confidence in and stability of the economic system, and protection against systemic risk and collapse. Thus, the degree of success of bank and other financial institution in performing their prescribed functions depends on the financial and regulatory environment which in itself, is a function of the totality of the environment in which they operate.

Therefore, the rationale for regulation includes protection of deposits and investors' funds, promotion of monetary stability and other macroeconomic objectives, the need to correct for market failure and ensure

safety and systemic stability, maintenance of level playing field to ensure competitive equity among banks and also between banks and other financial institutions, and to plug regulatory slippages and arbitrages.

The main purpose of financial regulation is to improve upon the performance of financial markets relative to how they would perform driven solely by the forces of the private marketplace. For example, in the 1930s it was decided that, left unchecked, competition in the pricing of U.S. banking services could become so intense that it would actually be harmful to the functioning of the markets. This resulted in the introduction of inter-est rate and price restrictions to provide banks with an inexpensive source of funds. In the same way the regime of intensive banking regulation was initiated to achieve stability in the Nigerian banking sector.

In addition, to insure that domestic and smaller market participants were not forced from the market as a result of excessive competition, entry barriers and branching restrictions were introduced. Such regulation, however, frequently results in unintended behaviour and market inefficiencies. The price restrictions aimed at providing an inexpensive source of bank funding resulted in disinter-mediation and significant bank expenditures to circumvent the restrictions. The entry barriers resulted in inferior service levels and the generation of local market power by incumbent institutions as competing service providers were unable to use an efficient entry mechanism. These unintended effects often prompt re-regulation to realize the original intent of the regulation, but without the resulting inefficiencies. However, re-regulation typically results in additional responses by bankers aimed at avoiding the effect of the regulation.

In responding to regulation, banks are altering the production process. The theoretical foundation for most bank cost studies is based on the maintained assumption of cost minimization with respect to market input prices in competitive markets. However, extensive evidence suggests that this is not the behaviour practised by regulated firms. Regulated firms frequently alter the production process from what it would be in the absence of the regulation. Banking firms are subject to extensive regulation in nearly all facets of operations, raising the possibility that the assumption of cost-minimizing behaviour in response to market input prices may be particularly inappropriate for this industry.

3.3.2 The Rationale for Financial Deregulation

However desirable as it may seem, worldwide experience has shown that government intervention in the workings of any market may not often achieve the intended objectives efficiently. In reality such intervention often results in new economic distortions leading to sub-optimal resource utilization. In order to remove or minimize these distortions, policy makers have often resorted to economic deregulation. Financial markets are usually one of the first sectors of the economy to be subjected to deregulation.

In the late 70's and early 80's many developing countries, especially those of sub-Saharan Africa had undergone a series of economic crises. This situation was reflected in unprecedented deterioration of all conceivable economic indicators. The economic crises of those countries have been linked to two main factors, namely; domestic policy failure and inadequate institutional capability.

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Nigeria like many other third world countries had in the past used government interventions as a tool for allocation of resources. This interventionist approach of the government has been described as not only repressive but a major factor retarding the growth process of the economy in addition to being harmful to the banking public whose interest the policy is aimed at protecting, in the first instance. For example , the system of rigid financial control, as observed by Meltzer (1967), "..... is an inefficient means of protecting the public against the consequence of poor judgement, and is an inefficient means of protecting the public against the errors (or in rare cases, moral failure) of individual bankers.

Broadly, the rationale for financial deregulation, therefore is to create an environment that will boost domestic capital formation. This is achieved by abandoning the system of credit ceiling, leaving the interest rates to individual banks's discretion as dictated by the prevailing market conditions and setting the economy free from all forms of distortions under a well designed and managed set of economic policies and institutional arrangements so as to promote savings and, consequently, economic development.

However, deregulation does not imply laissez faire complete absence of regulation. Rather deregulation is a continuos process of examining existing regulatory framework with a view to deregulating when appropriate and regulating when necessary to allow market forces greater role in the pricing system. The emphasis, therefore, is on the necessity of a particular regulation and appropriateness of any deregulation measure. Thus deregulation does not imply complete absence of regulation, and greater role for market forces does not imply resignation to market forces because of market imperfections and

occasional market failures. Deregulation, however, implies closer monitoring and supervision.

Aside of the above stated reasons adduced to the introduction of deregulation, developments in information technology has also provided an impetus to the adoption of deregulation concepts world wide. Technological innovations have unleashed market forces that made it increasingly difficult to maintain a tightly regulated financial system, as funds found their way more easily to unregulated parts of the system. Deregulation also was driven by a new view about the appropriate *role* of government in financial markets. Finance, of course, is *not* an end in itself. Rather, it is an institutional means of facilitating the production of goods and services. Policymakers in most countries--industrial as well as emerging--have come to recognize that limiting the efficient flow of funds from savers to investors only hinders economic growth. In other words, they are adopting the position that government should play less of a role in directing resource allocation. Instead, it should let market forces work to reduce domestic distortions and inefficiencies.

The negative effects resulting from rigid financial sector controls, on the process of financial intermediation, have led many countries including Nigeria to undertake reform of their financial sector. Such other countries include: United Kingdom (1971), Japan (1974), Nepal (1975), New Zealand (1976), Sri Lanka (1977), Malaysia (1978), Philippines (1980), Thailand (1980), Australia (1982), Indonesia (1983), to mention a few. In all these countries, the reform placed greater reliance on the use of market forces. Also, in all the cases, including Nigeria, the reform has led to changes in interest rate policy and expansion of financial activities.

3.4 Overview of financial reform programmes

Since the early 1970s when the world economy slipped into recession, many Third World Countries have, to varying degrees, been faced with very serious problems of accumulation. This should not be surprising as the participation of these countries in the international capitalist division of labour makes possible the refraction of global capitalist crises into their local economies and, in most cases, their capacity to absorb the external shocks is limited, Adebayo Olukoshi (1991). But crises - refraction is only one dimension of the problems currently facing most developing countries. The mode of organization of production in many Third World states is such that their economies have an autonomous capacity for generating crises of structural, periodic, and conjectural types from within. In many respects, the on-going crises facing most Third World economies represent a complex combination of economic problems arising from domestic and external sources.

In their bid to contain the worst effects of the economic crises that have bedevilled them since the early 1970s, many African, Asian and Latin American governments have, in collaboration with the International Monetary Fund (IMF) and the World Bank, adopted a set of standard measures which they hope will put their economies back on the path of recovery and growth. The measures have invariably come under the rubric of structural adjustment and have had profound implications for the economies and politics of these countries and the welfare of their citizens. Hence, these adjustment programmes have excited a great deal of debate and are the main object of contests among diverse social groups that either support or oppose them.

The intellectual blueprint for financial-sector reform can be traced back to the seminal works of Gurly and Shaw (1955), McKinnon (1973), and Shaw (1973), who postulate that government intervention to control interest rates and credit allocation to priority sectors will lead to financial disintermediation and a financial system less able to mobilize savings for investment and growth. Their prescription is complete liberalization of the financial market to allow for a more efficient mobilization and allocation of financial resources for investment and growth.

During the 1950s and 1960s, developing-country governments, including sub-Saharan Africa, intervened in the financial market to control interest rates and direct credit to priority sectors of the economy. However, during the 1980s, changing macro-economic conditions in the developing countries created the need for financial-sector reform as part of a wider structural-adjustment reform in those countries.

For example as part of Nigeria's financial-sector reform program initiated in 1983, and supported by the World Bank and the IMF, the government liberalized the financial market by removing controls on deposit, lending rates, and sectoral credit ceilings. Other policy changes include the restructuring of commercial banks and the passage of new banking laws to lay a strong foundation for safety and soundness of the financial markets. The financial-sector reform was designed to enhance the banking sector's ability to improve saving mobilization and enhance, as well, the allocation of financial resources for growth and development.

The objective of this survey is to report findings of an extensive review of literature on financial-sector reform in developing countries, including sub-

Saharan Africa in general and Nigeria in particular, and to draw lessons from the experience of other developing countries that could apply to Nigeria and to Africa in general. As a result, we may be able to examine and recommend policy measures by which governments and financial institutions can improve banking efficiency to promote financial deepening and savings mobilization for growth and equity.

Various hypotheses have been tested in examining whether financial-sector reform results in efficiency gains of the banking sector. These hypotheses range from the impact on efficiency gains of production, scale, scope, and allocative efficiencies of the financial market after financial-sector reform. Other hypotheses relate to the extent of monetization (financial deepening), savings mobilization, transaction costs, spread between deposit and lending rates, portfolio diversification, and development level of financial institutions and instruments.

Some of the findings of past research on sub-Saharan Africa show that liberalization of the financial markets has had little visible impact upon the supply response of financial savings as compared with the history of financial reform in other developing countries and in the East Asian countries. Almost a decade after the financial-sector reform in sub-Saharan Africa, the banking system remains uncompetitive and burdened with poorly performing portfolios. Domestic savings remain low, and investment continues to lag behind that in other developing countries. In most sub-Saharan African countries, despite financial-sector reform, the ownership of financial institutions still rests in the hands of the government, and the banking sector continues to direct more credit to the public sector at the expense of the private sector.

3.5 Countries' Experiences in Economic Reform Programmes

The transition from economic repression to liberalization usually calls for the adoption of an economic reform package. The Nigerian version of the reform package (SAP) was discussed in the proceeding section **1.2** of this study. This section briefly examines the experience of other sub-saharan Afican (SSA) countries that embarked on similar macroeconomic adjustment programmes. Thus, from the early 1980s to date many counties in SSA including Cote d'Ivoire, Ghana, Guinea, Madagascar, Mozambique, Tanzania and Uganda have also launched macroeconomic reforms principally to stimulate the private sector and yield greater space to market forces in the national economic arena. The overall objective is to promote structural changes that support sustainable long-term growth.

By and large, the contents of the structural adjustment programme embarked upon by SSA countries hae not differed markedly as they were all virtually packaged by the Bretton Woods Institutions. For example, the Economic Recovery Programme (ERP) of Ghana which commenced in 1983 had identical policies and objectives as those adopted under SAP in Nigeria some three years after. One notable difference between the programmes, however, was the absence of bank restructuring in the Nigerian programme whereas it was an important element of ERP in Ghana. This was perhaps due to the fact that bank distress was not an issue when SAP was introduced in Nigerian contradistinction to the situation in Ghana where most of the banks were distressed prior to the introduction of macroeconomic reforms. Due to the similarities between The Nigeria and the Ghanian nation, it would be expedient to study the Ghanian experience with reforms in greater detail.

Financial Sector Reform - The Ghana Experience

The impact of financial-sector reform on Ghana's financial sector is mixed. Despite some significant improvement in economic growth and macroeconomic performance, Ghana's recorded savings and investment, based on gross national income measures, remain very low. The country's recorded savings and investment gap continues to widen, and the economy's dependence on foreign sources of funds for financing domestic projects remains deeply entrenched.

Evidence from past research shows that most Ghanaians refrain from saving in the formal financial sector because of the lack of access to financial institutions (especially in rural areas), high bank transaction costs, and lack of confidence in the formal banking system. Bank officials are often maladroit in their dealings with bank customers, especially those who are illiterate which alienates potential depositors from the formal banking system.

Comparatively, the rural population saves a greater portion of income than urban dwellers. However, only a small fraction of rural dwellers' savings is held in financial assets; most is held in non-financial assets such as buildings, building materials, cattle, or other tangible goods.

An important efficiency feature of financial intermediation is the ability to adapt financial products or instruments and banking services to customer needs so as to attract a greater number of depositors. The government's continued ownership of financial institutions prevents competition and efficiency in the banking sector. The lack of competitive environment and inefficiency of the banking system hamper innovation of financial instruments and products. Because the payment system remains predominantly cash-based,

urban currency holdings outside the banking sector remain quite high. Also Nigeria's broad money, (M2/GDP) holdings as a measure of financial deepening declined steadily over the years.

Evidence has shown that allocative efficiency, in the form of optimal allocation of scarce financial resources to the most productive sectors of the economy, is beneficial for economic growth and development. However, the Ghanaian government's continued reliance upon the financial market for credit to finance its budget deficit "crowds out" small and medium enterprises from the credit market. This reflects commercial banks' preference for short-term government securities that carry higher yields as compared with lending to the private sector, which is considered to be very risky.

The implication of the above findings is that Ghana's growth could be accelerated by an efficient financial intermediation that provides greater incentives and rewards for the public to hold financial assets in the banking sector. Evidence from the experience of other developing countries show that a necessary condition for the success of efficient financial intermediation includes macro-economic stability of economic aggregates, price stability, prudential supervision and adequate regulation of financial institutions, development of money and capital markets, a strong linkage between formal financial institutions in the urban and rural areas, and efficient risk management. The task of this survey is to draw lessons from previous research and from experience of other countries that will help in understanding the concept and outcomes of financial sector reforms being implemented by Ghanaian government since 1986..

At the inception of ERP in Ghana, all the eleven (11) commercial banks (9 owned by government and 2 foreign owned) in the country were distressed. The healthy bank in operation was the only Merchant Bank in the country with 70% and 30% government and foreign ownership respectively. As part of the bank restructuring embodied in the financial liberalization programme, holding actions were imposed and the accounting standards improved upon. Foreign management was sourced for the distressed banks and the Non-Performing Assets Recovery Trust (NPART) which has a legal status, took over the bad assets for recovery. The banks issued bonds up to the amount of bad loans taken over and it was financed by facility provided by the World Bank and other foreign donors.

The bank restructuring measure in Ghana was successful to the extent that there were no bank runs and public confidence was sustained. A good degree of success was also recorded in macroeconomic reforms. For example, inflation rate plummeted from over 100% before the reform to about 15% just two years into the economic recovery programme.

The Ghana experience serves to illustrate the distinction in liberalization and restructuring of the banking industry. Liberalization can commence without restructuring as witnessed in several countries which embarked on the two, simultaneously.

In Nigeria, the phenomenon of high interest rates has been identified as a major drawback to the efficacy of financial deregulation. Unduly high interest rates posed solvency problems for both the private sector borrowers and the banks themselves due to growing incidence of classified assets. In a situation of high interest rates, micro enterprises often suffer because banks

doubt their ability to sell enough to service their loans Steel and Webster (1992). Indeed the adverse effects of financial deregulation was experienced in all countries of the world that embarked upon financial liberalization.

During the 1980's, over 25 emerging markets undertook extensive reorganizations of their financial institutions sometimes at very large costs to society. Judging by the scale of the Banking crisis observed during the period of this study, the 1990's may well beat this record at a staggering cost to taxpayers. As of 1996 estimates, the recent Mexican crisis will cost taxpayers in the long run a minimum of 15% of GNP (spread over many years) to rescue their banks. The money is being used to cover losses in the bank's loan portfolios and foreign exchange denominated liabilities, following the peso depreciation of 1994-1995. This sum is five times the per year expenses in health and education by Mexico (2.8% of GNP).

As was the case in the Unites States' S&LA debacle, it will take years before the final bill laid at taxpayers' feet will be known. Most likely it will be larger than current estimates. The cost of a similar crisis in Venezuela in 1994 is of over 15% of GNP, about trice the health and education spending (6.3% of GNP). As of May 1996, an incipient Brazilian BC (including private and state-owned banks) will cost the public purse a minimum of 4.5% of the GNP. There are more examples of equally dramatic character dating back to the 1970's.

In fact, Caprio and Kligebiel (1996) provide estimates of the cost of several banking crisis: among these are the crisis of Bulgaria 14% of GNP, Finland, 8% of GNP, Hungary 10% of GNP, Mexico 12-15% of GNP, Norway 4% of GNP, Spain 17% of GNP, Sweden 6% of GNP, Venezuela 18% of

GNP. According to these authors, in three cases (Argentina, Chile and Côte d' Voir) the losses exceeded 25% of GNP. Honohan (1996) estimates that since 1980, the crisis resolution costs of banking crises in all developing countries and ex-socialist economies amounts to a quarter of a trillion dollars! In almost all these cases, the BC happened after the implementation of a major liberalization program of the financial sector, a "financial liberalization". Kaminsky and Reinhart (1995) report that in 18 out of 25 banking crisis surveyed, the financial sector had been liberalized some time during the previous five years.

3.6 Macroeconomic Performance and Financial Deregulation

Financial reform policies in developing countries usually focus on freeing interest rates, reducing or eliminating government control over credit allocation, easing restrictions on market entrance of new financial institutions and lifting controls on foreign exchange and capital inflows. Financial liberalization programmes can usually count on strong support from the World Bank and the IMF. The need for reform originates from the belief that government interventions, such as ceilings on nominal interest rates, direct control of credit allocation and high reserve requirements, have limited economic growth in developing countries and that the ill-functioning of financial markets has become a source of macroeconomic instability.

Much of the theoretical underpinning of financial reform policies in developing countries stems from the so-called `financial repression' school of thought developed by McKinnon (1973) and Shaw (1973), which argues that lifting controls on interest rates and credit allocation will reduce the `repression' of financial development and will increase the willingness to save in financial assets and improve investment efficient under determined financial

discipline. Financial liberalization is thus intended to raise savings, investments and growth, as well as to bring about more efficient use of resources. Usually a distinction is made between two types of efficiency in this context (Tobin 1984, Fry 1988): allocative and productive or financial efficiency. Allocative efficiency is defined as the allocation of scarce savings to the most productive uses in terms of highest (social) rate of return. A financial system guided by market principles is in this view believed to intermediate most efficiently between savers and investors.

Productive efficiency relates to the ability of the financial system to supply finance to investors at the lowest possible costs. These costs involve not only the interest paid by the ultimate borrower (the lending rate), but also the cost of intermediation between lenders and borrowers (usually expressed in the spread between deposit and lending rates). By fixing nominal interest rates, regulating credit allocation, limiting market entrance and maintaining foreign exchange controls, developing country governments have distorted financial markets and have hampered the optimal allocation of savings. The McKinnon Shaw view that financial liberalization will increase both the quantity of resources available for investment and he efficiency of their allocation is also strongly present in assessments of financial sector reforms in other parts of the world.

This may sound good in theory, but practice tends to be quite different. Developing country experience with financial liberalization indicates that increased savings, investment and financial efficiency are by no means necessary outcomes of the reform measures. Financial markets in developing countries are imperfect and financial institutions are usually not the text book type agents, optimally allocating resources. Indeed, a number of countries

showing good economic performance, like South Korea and Taiwan, maintained heavy government controls over the financial sector f or several decades.

However, in other cases, like in Sub-Saharan Africa and Latin America, government interventions in the financial sector are rated to be less successful and have contributed to inefficiencies and market segmentation. The experience is thus mixed and the success or failure of financial system, external conditions and the timing and nature of government interventions. Lessons to be drawn from the developing country experience are therefore not straightforward and by no means deliver blueprints for successful financial policies elsewhere. What can be learned from these experiences is a better understanding of the workings of the ingredients that are considered as part of recipes for financial and economic reform under varying circumstances. After studying the experience with Latin American financial liberalization, McKinnon himself (1988) recognizes the limitations of his own original approach and states that the order in which the monetary system is stabilized in comparison with the deregulation of banks and other financial institutions `must be more carefully considered than had previously been thought.'

Reviewing the available evidence, the following elements merit consideration:

a) structure determinants of savings and investment;
b) the nature of financial institutions and determinants of credit allocation;
c) the degree of competition in financial markets;
d) the organizational structure of the banking system;
e) effectiveness of bank supervision and prudential regulations nd lender-of-last-resort function through monetary authorities;
f) macroeconomic policies and timing of financial liberalization.

3.6.1 Savings, Investment and Financial Reform

According to financial repression theory, freeing of interest rates will raise the availability of financial savings by both raising the savings rate and shifting portfolio choices towards financial assets. Greater credit availability and the shift out of unproductive assets such as commodity holdings will subsequently allow for a higher level of productive investment. However, there are no compelling theoretical reasons why higher real interest rates will necessarily lead to higher household savings or will be a sufficient condition for improved allocative efficiency. Even according to conventional theory (Gersovitz, 1989; Aghevli et al., 1990), the response of real private savings to higher interest rates will be ambiguous: higher savings out of higher rentier incomes may be offset by substitution effects from expected higher future income from wealth earnings. Econometric studies have found little support for a significant and positive relationship between real interest rates and private savings. Equally, there is no systematic pattern in the effects of liberalization of interest rates and the level of savings in developing countries Cho and Khatkhate (1989), on a sample of Asian countries; and Massad and Eyzaguiree (1990) on Latin America. Stronger evidence exists that higher real interest rates stimulate financial savings Gupta (1984) and Fry (1988), implying a substitution former all assets (e.g. real estate, commodity stocks) or shares to interest bearing financial assets.

Higher interest rates may even have a negative impact on private savings, particularly under unstable macroeconomic conditions. In situations of economic stagnation and higher inflation, freeing of interest rates may lead to a situation where national savings fall, while financial savings, and thus financial deepening increase. With falling per capita incomes, high inflation, and high nominal interest-yielding financial assets to contain the fall in their

living standards by consuming (part of) the additional interest income (Akyuz, 1992). Also, higher interest rates will redistribute income from debtors to creditors. This may not only discourage investment in real assets, but also lower private savings, particularly corporate savings. In developing countries the equity basis of firms is often weak and the maturities on loans is short, such that they tend to have high leverage and corporate debt carries variable interest rates.

Turkey, Chile, Argentina an the Philippines provide examples where financial liberalization and macroeconomic instability led to a combination of lower household savings and higher financial savings. Brazil, Chile, Argentina, Uruguay, the Philippines, among others, are examples where in the 1980s corporate profits and savings were depressed drastically, when domestic interest rates were raised or liberalized in attempts to stabilize the economy!

In South Korea and Taiwan, by contrast, low interest rates and high real estate prices have raised household savings during various instances in the 1970s and 1980s (Amsden and Ebuh, 1990; and Park and Park, 1993). Moreover, development in these countries form in general a marked contrast with the financial repression hypotheses, as decades of controlled interest rates have not impeded savings rates from moving up to 30-40 percent GNP. It should be noted however, that in South Korea and Taiwan interest rates were managed much more flexibly in the 1970s and 1980s than in other developing countries with controlled nominal interest-rate regimes, ensuring that real interest rates remained positive. Together with growing real savings positive real deposit rates stimulated growth of financial savings and thus financial intermediation. Interest rates are currently being deregulated in Korea and

Taiwan but only gradually. Interest-rate ceilings still exist, but in South Korea lending rates were to be fully liberalized by the end of 1993 and deposit rates by 1997. In these countries, good economic performance under far-reaching government intervention in financial sectors has been a reason for slow progress with financial liberalization rather than the latter being seen as a precondition for a better growth performance(Haggard and Maxfield 1993).

This developing country evidence shows that freeing of interest rates is not a sufficient condition to boost savings investment and economic growth. What is more, under conditions of macroeconomic instability and highly leveraged firms, financial liberalization may have a negative impact of a sometimes devastating magnitude. Another important lesson that can be derived from the above is that if the interest-rate elasticities of savings and investment are low, large interest-rate changes may be required to match supply and demand in certain financial market segments. Domestic public debt problems in many developing countries are related to this problem, as the domestic financing of public sector deficits under controlled monetary expansion and liberalized interest rates has required the issue of very high-yielding government securities in order to attract enough investment funds. As discussed further below, also costly solutions to bad loan problems have crated Central Bank losses which have significantly contributed to the domestic public sector debt overhand and high real interest rates in countries like Argentina, Chile and the Philippines. Demand for bank deposits and private investment has been crowded out as a consequence.

These are not arguments to sustain financial repression in the form of negative real interest rates. The Korean and Taiwanese experiences suggests that provided macroeconomic conditions remain stable interest rates may be

effectively controlled at positive real levels and without seriously impeding financial sector development. However, as argued below, interest-rate management should also be assessed in relation to financial market imperfections, bank behaviour and bank supervision.

3.6.2 Credit Rationing

Financial liberalization is supposed to improve allocative and productive efficiency of investment finance, particularly through a market-based pricing of the cost of borrowing. To achieve this, markets should be sufficiently competitive and should provide complete information. Such market conditions generally do not apply to financial markets in developing countries (and elsewhere). Financial market systems tend to be incomplete (i.e. futures, secondary and securities markets are missing or poorly developed), thus providing less information than more developed market systems.

Informational imperfections are also inherent in the `product' itself. That is, investors have to face the risk of default by the borrower. This risk might be covered through a premium over the interest rate, but it has been convincingly shown that -- in theory and practice -- lenders are more likely to avert such risks by rationing credit supplies over different classes of borrowers, even in competitive markets. Credit rationing thus serves as a rational device for lenders to avoid exposure to risky loans, which in practice implies that the poorer potential borrowers lack access to formal sources of finance. In developing countries it means that, typically, peasants, small manufacturing enterprises and urban informal services activities, which usually occupy two-thirds or more of the labour force, have no source of credit supply or have to resort to informal money lenders.

The above observations have important implications for assessing the role of interest-rate management in the process of financial reform. As shown by Stiglitz and Weiss (1981), imperfect information in the market for bank credits means that the interest charged on the loan will differ from the expected return to the bank, which is the interest rate times the repayment probability of the borrowers. This probability is always small than 100 percent because banks do not have full information about the default risks of borrowers. The probability of payment is itself inversely related to the interest rate: that is, when a higher interest rate is charged, the probability of full repayment will decline. Above a certain interest rate level expected returns may actually decline, with further interest rate increases, and banks will close the credit window for some borrowers even if they are willing to pay a higher interest. This inherent feature of the market for bank loans shows the limits to which interest rates can be raised, and rational behaviour of banks, under perfect competition and proper prudential regulation (e.g. adequate provisions for bad loans), leads to credit rationing and interest rates below market-clearing levels.

What then are the effects of macroeconomic instability, inadequate bank regulation and imperfect bank competition on the market for bank credits? Macroeconomic instability will affect the performance of investment projects and this will increase the risk of default on bank loans. In search of higher returns banks may be inclined to lend to borrowers with potentially high-yielding investment projects, but which are also more risky. This potential risk of moral hazard in the bank itself, induced by greater economic instability, may be contained if bank supervision and regulation commands that banks hold adequate reserves against loan losses and if explicit or implicit deposit insurance is either absent or adequately priced (Villanueva and

Mirakhor, 1990). Such reserve requirements will lower expected profits at a given lending rate, and if bank behaviour is risk averse, they will lower interest rates and ration credit more severely. Cho and Khatkhate (1989) and Villanueva and Mirakhor (1990) provide evidence that low and stable bank lending rates can be observed where bank supervision and prudential regulation are strong and effective (such as in Malaysia).

Weak and inadequate bank supervision and regulation may be a critical source of financial instability and bank crises. If rules about provision against loan losses are inadequate or poorly enforced unsound banking practices may go unpunished if authorities also provide implicit deposit insurance. Banks will be inclined to supply high-interest loans for risky projects as they will not have to pay for the full costs of large losses under bad economic conditions. As argued further below, this is part of what happened in Argentina, chile and Uruguay in Latin America and the Philippines and Indonesia in Asia.

3.7 Bank Concentration and Interlocking Ownership

It is true that banks may also engage in other than marginal return calculations if bank competition is imperfect. Risks of moral hazard are often compounded by the fact that financial markets tend to be heavily concentrated. bank concentration is very high in many developing countries and has usually remained high in countries undergoing financial sector reforms. While banking in the latter group of countries is usually already characterized as oligopolistic (Weston, 1980; Born, 1983), banking in developing countries tends to be significantly more concentrated. Heavy bank concentration has to do with a number of structural features usually present in developing countries. One aspect relates to the determinants of savings and investment performance, as discussed above.

Evidently, the scope for broadly based and competitive banking will be limited if savings and investment levels are low because of their structural determinants and cannot be simply raised through changes in financial policies. Further, government regulations often severely limit the entrance of new financial institutions, particularly of foreign banks and branches. Pressures to maintain such barriers to entry are usually strongly and effectively exercised by powerful economic interests behind the banking industry. Finally, bank concentration is rooted in the historical formation process of financial institutions. Banks in developing countries typically have been formed by rich family groups with a stake in trading, industry and agri-businesses. Consequently, besides a high degree of concentration, financial sectors are also characterized by the prevalence of inter-locking ownership, where banks form part of a conglomerate of firms with operations in various economic activities Leff (1976); Drake (1980); Galves and Tybout, (1985).

These market imperfections, i.e. incomplete markets, risk, credit rationing, oligopolistic banking structures and interlocking ownership patterns, strongly affect the productive and allocative efficiency of financial markets. Concentrated banking usually leads to large bank spreads, thus keeping the cost of financial intermediation high while credit rationing practices may exclude whole classes of borrowers from credit market access and not necessarily allocate funds to investment projects with the highest (social) rates of return. Such factors have been primary reasons for government intervention. Governments in developing countries have intervened to reduce the cost of borrowing by imposing interest-rate ceilings and to enhance access to credits to specific borrowers through the creation of special credit schemes and banking institutions.

Government-directed and preferential credit schemes have made an important contribution to successful industrialization in a number of East Asian countries, such as South Korea and Taiwan. In the early 1960s, when both countries embarked on a course of export-led industrialization, their financial systems were highly segmented, with highly fragmented informal credit or `curb' markets coexisting with a highly concentrated commercial banking system. For policy makers at that time it was clear that the financial system would not be able to allocate limited domestic resources to export industries. Governments in both countries moved to a system of tight interest ceilings, direct control over a number of large commercial banks and credit rationing Vos (1982); Amsden (1989); Park (1989); Cho and Khatkhate (1989).

Targeted industries received loans at preferential interest rates, but loans were made strictly conditional on good performance. Although strong economic conglomerates (in Korea these are called the Chaebol) were strongly favoured under these policies, the conditionality was forcefully implemented. The success of this credit allocation policy has been further attributed to the fact that performance was subject to competitiveness in world markets, which provided relatively reliable indicators about whether the support was effectively used (Westphal, 1990).

This success has not been replicated in Africa and Latin America, where subsidized credits mostly have lacked the conditionality and effective control of efficient use. It cannot be denied that preferential credit schemes have helped foster industrial and agricultural development in both Africa and Latin America; Garcia-Zamor and Sutin (1979), but these schemes have been sustained for decades under high protective import-substitution policies, and

criteria of competitiveness and good performance have mostly been lacking. Cheap credits thus turned into simple hand-outs, often at considerable fiscal and monetary costs.

Interlocking ownership patterns also impinge upon the allocative efficiency of credit supplies. Financial intermediaries operating within a larger economic group tend to pursue the interests of the group rather than those of creditors and depositors. Owners, firms belonging to the conglomerate and related interest groups typically have privileged access to the bank's credits, often with disregard of 'normal risk considerations. Such `in house' lending practices are closely associated with important shares of non-performing loans in the portfolios of the banking sector provoking many banking crises in the 1980s and 1990s in developing countries. Prudential regulation and supervision by the monetary authorities, such as restrictions on bank's exposure to single and allied borrowers, should prevent such malpractice, but these may be difficult to implement in practice.

3.8 Chapter Appraisal

Recent events have drawn attention to the banking industry, one of the most important and vital sectors needed for an efficient market economy. It is important to understand how the various aspects of the banking system in general and the underlying structure of the banking sector in particular affect economic growth and development. Only recently have economists begun researching and better understanding the economic impact of the banking sector's market structure. Although this section describes only a few studies, they are representative of the most recent research and allow for some general conclusions about how a monopoly bank is modelled and about bank structure's importance to the macro economy.

One result drawn from these studies is that monopoly in banking benefits certain aspects of the economy. In particular, a monopoly bank can help overcome, or at least mitigate, some of the problems inherent in the bank–borrower relationship. As long as informational asymmetries exist and complete information is not easily and costlessly obtainable by all parties, the problems of adverse selection and moral hazard remain. A monopoly bank can partially overcome these problems by screening prospective borrowers, by using the choice of interest rates and credit rationing to induce self selection and less risky behaviour, or by relying on the development of long-term relationships. Using these techniques to address the problems related to a lack of full information is often more effectively and efficiently accomplished by a monopoly bank.

However, when ascertaining the overall economic impact, it is noteworthy that partial equilibrium models find either that monopoly is beneficial or that it is unclear whether a monopoly is beneficial or detrimental. General equilibrium models find just the opposite. Either monopoly is detrimental to the economy, or, at best, the impact is ambiguous. This clearly indicates that how completely the banking sector and the economy are modelled is crucial to the results obtained. A comparison of the results of Schnitzer (a partial equilibrium model) and Cetorelli (a general equilibrium model) highlights this as both models use screening to overcome the problem of adverse selection. Both find that a monopoly bank screens more efficiently than competitive banks. However, Cetorelli also takes into account the full effects of a monopoly's redistribution of resources away from productive purposes (that is, profits) and finds the overall impact of a monopoly is ambiguous. This suggests that to determine the macroeconomic impact of a

less competitive banking system, it is important to model more than just the bank–borrower relationship.

It is interesting, however, that Cetorelli does describe conditions under which monopoly would benefit the economy even under a general equilibrium framework. Cetorelli argues that the conditions under which monopoly would be beneficial are most relevant to developing countries, which are plagued by asymmetric information, problems with writing and enforcing contracts, and a lower average quality of productive capital than their developed counterparts. He indicates that these problems maybe overcome, and result in greater capital accumulation, with a monopolistic banking system. This is in stark contrast to Smith and Guzman, who find that monopoly is never beneficial. This contrast indicates that even in the general equilibrium framework, more research is needed to understand under exactly what conditions and in what types of countries having a less competitive banking system might be beneficial.

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CHAPTER FOUR:

THEORETICAL CONSIDERATIONS

4.1 Introduction

This chapter discusses the theories which relate to market structure, banking efficiency and competition as well as the measures of industry concentration. The succeeding sections describes and discusses the various models available for carrying out a research in analyzing banking performance viz-a viz the concept of deregulation.

4.2 Structure, Conduct, and Performance

Much of the basis for traditional antitrust analysis—for banking and other industries—stems from the structure-conduct-performance(SCP) paradigm. As summarized by Tirole(1988), the SCP paradigm argues that the structure of a market (which includes factors such as market concentration, product differentiation among sellers in the market, and cost structure) influences firms' conduct in the market (which includes factors such as pricing, advertising, research and development), and conduct influences performance (which includes such factors as profitability, efficiency, and price relative to marginal cost).

Empirical tests of the SCP paradigm in banking have often found that the structure of the market—especially market concentration—has influenced conduct and performance. Gilbert (1984) reviews the banking literature and concludes that the majority of the evidence supports the idea that bank market structure influences bank performance. He also concludes that the evidence supports measuring concentration at the local market level to explain performance.

Additional studies have been conducted since Gilbert's review. Berger and Hannan(1989) find that higher local market concentration is associated with banks paying lower rates on deposits. Hannan (1991) finds that higher local market concentration is associated with higher interest rates on loans. More recently, however, Radecki (1998) looks at the relationship between interest rates paid by a bank and the concentration of the market in which the bank operates. When examining data from 1996, he finds no link between local market concentration and the rates paid on deposits; he does find, however, a link between concentration of a state's banking market and deposit rates paid in that state, suggesting that the state may now be the relevant definition of the banking market.

4.2.1 An Overview of Bank Structure

Economists have long recognized that financial markets in general, and banks in particular, play a vital role in the efficient functioning and development of any economy. Some of the recent research examining the relationship between banks, financial markets, and the macro economy have their origins in early work by Cameron (1967), Goldsmith (1969), McKinnon(1973), and Shaw (1973). These authors highlight the fact that financial markets affect, and inturn are affected by, economic growth. They argue that well-developed financial markets are necessary for the overall economic advancement of less developed countries.

Townsend (1979) and Stiglitz and Weiss(1981) represent the next major work in this area. They developed some of the first banking-related models based on utility and profit maximization rather than on assumptions of the resulting behaviour. Their models focus primarily on the part asymmetric information plays in the allocation of resources. Much of the subsequent

research in this area focuses on banks' and financial markets' role in helping overcome information gaps between borrowers and lenders.

With the work of Townsend and Stiglitzand Weiss as a foundation, Diamond (1984),Gale and Hellwig (1985), Boyd and Prescott(1986), and Williamson (1986, 1987) developed theoretical frameworks that model financial intermediaries more explicitly. Banks arise naturally in these models as a means for overcoming asymmetric information problems. The particular form of this problem is that it is costly for lenders (or banks) to obtain information about borrowers and their projects. In these models, banks possess economies of scale with respect to gathering information and monitoring firms and thus are more efficient (or more cost-effective)than individual investors could be.

Until the early 1990s, most of the research focussed primarily on a theoretical understanding of the relationship between banks and borrowers and justifying the existence of banks within the framework examined—that is, what services a bank could provide that individuals could not accomplish for themselves. However, in the 1990s theoretical and empirical research returned to the focus of the late 1960s and early 1970s, more closely examining the relationship between the financial sector and economic growth.

Recent empirical work on this relationship has established a strong, positive association between the development of a formal financial sector and an economy's level (or rate of growth)of real activity. King and Levine (1993b) establish that the banking sector's development is not only correlated with economic growth but is also a cause of long-term growth. Subsequent

work has refined King and Levine and established that financial markets (defined more broadly than in their work) are a source of economic growth.

In addition, a theoretical literature exploring the nature of the correlation between the banking sector and economic growth has developed. It suggests that the financial system could impact real economic performance by affecting the composition of savings (Bencivenga and Smith 1991), providing information (Greenwood and Jovanovic 1990), and affecting the scope for credit rationing (Bencivenga and Smith 1993; Boyd and Smith 1997, 1998).However, most of the theoretical literature on the relationship between intermediation and growth considers an economy with a competitive banking system. As a practical matter, economies display substantial variation in the competitive environment of their banking systems.

Ascertaining the actual level of competitiveness within the industry is extremely difficult. Consequently, concentration ratios (the fraction of the banking market served by the largest four or five banks) are often used as a proxy to measure competitiveness. It should be noted that these ratios are an imperfect measure, as even if the largest banks control most of the market, they still might compete fiercely among themselves.

As a result of these differences, more recent theoretical research has begun examining the banking sector's market structure along two lines. The first, characterized by Krasa and Villamil (1992) and Winton (1995), examines the optimal size, number, and capitalization of banks. Although these studies deal somewhat with bank structure, they focus primarily on the optimal size of banks when risk exists in the environment—that is, when portfolio risk cannot be completely diversified away. The second line of research focuses on

comparing economies that are identical except for the structure of the banking system. These models examine the impact bank structure has on some particular aspect of the economy. Thus, they assume a particular market structure (either competitive banks or a monopoly bank), as opposed to ascertaining the optimal bank size and number. It is this line of research that was explored in this study.

4.2.2 Bank Structure and the Economy

To examine the economic impact of a banking system's structure, most theoretical models compare economies with competitive banking systems with those having monopolistic systems. Although few, if any, banking systems are true monopolies, comparing these two extremes sheds light on how the degree of competition in the banking system affects the economy.

It is well understood that monopolies tend to reduce an economy's overall social welfare. They charge higher prices and produce less than optimal amounts of goods and services, they stifle invention and innovation, and they distort resource allocation, all of which reduce capital accumulation and growth. This characterization of the negative aspects of a monopoly also applies to the banking sector. One would expect a monopoly bank to make fewer loans and to have higher service fees, higher interest rates on loans, and lower interest rates on deposits than a competitive bank. However, the idea that a monopoly is only detrimental to an economy is predicated on the existence of complete markets and complete information. In the real world neither markets nor information tends to be complete. This is especially true of financial markets and the banking industry.

Unlike many businesses, banks do not produce physical goods but, rather, provide the financial means for production. One of the biggest problems the banking sector faces is a lack of information about both the individuals requesting funds and the projects they propose to undertake with the loans. This asymmetric information leads to problems of adverse selection—choosing the most profitable borrowers—and moral hazard—convincing borrowers to use funds in less risky ways. These inherent problems, which are difficult for a competitive banking system to overcome, can be eased or eliminated by a monopolistic (or oligopolistic)banking system. However, for a complete comparison between economies with different banking system structures, the gains from a monopolistic system must be weighed against the losses mentioned above.

The recent literature can be divided into two groups, based on the economic framework used: partial equilibrium models and general equilibrium models. The partial equilibrium models focus on some particular aspect of the bank–borrower relationship and ascertain how the market structure of the banking system impacts it. Generally, these models do not talk into account all major aspects of banks—in particular, they tend to ignore the deposit side of banking—nor are they concerned with the overall economic impact of the particular banking structure. However, they illustrate the point that a monopoly bank can be beneficial in that it helps overcome the problems associated with asymmetric information.

The general equilibrium models also focus on one particular aspect of the bank–borrower relationship. However, these models also consider the deposit side of banking and are concerned with the overall economic impact of the banking system. Thus, they are better for ascertaining whether the costs

outweigh the benefits of a monopoly bank. One consequence of being able to examine both the costs and benefits is that the relationship between borrowers and banks is often modelled with less richness and detail. The next sections describe six recent studies and detail some of the theoretical benefits and costs associated with a monopolistic banking system.

4.3 Partial Equilibrium Models

To illustrate the benefits of a monopoly bank, it is useful to begin with a review of recent partial equilibrium models. These models deal with the basic problem of asymmetric information between banks and borrowers—adverse selection and moral hazard—in several standard ways.

Numerous theoretical models address the problems of adverse selection and the economic implications of banks' inability to distinguish between different classes of potential borrowers. Generally, there are two primary methods by which banks determine creditworthiness: screening of potential borrowers prior to making a loan and inducing borrowers to reveal the true nature of their investment project. In models where a bank screens potential borrowers, it gathers the information needed to determine(usually under the assumption of certainty)whether the borrower's investment project will produce a good or bad return. However, screening is costly in that it consumes resources and profits. Alternatively, the bank can induce borrowers to truthfully state whether their investment projects' returns are expected to be good or bad. This is usually accomplished by the choice of contract terms and the interest rates on loans or by rationing credit to their projects.

Moral hazard is the other primary problem that arises between borrowers and lenders. When the borrower has several investment choices, it

is in the bank's interest to induce the borrower to undertake the project that is less risky and more likely to have a positive return. Of the three studies discussed in this section, Petersen and Rajan (1995) and Schnitzer(1998a) consider the problems of both adverse selection and moral hazard, whereas Caminal and Matutes (1997) make the moral hazard problem paramount. Petersen and Rajan rely on inducing borrowers to take appropriate actions, while Schnitzer relies on screening to overcome the asymmetric information problem. Caminal and Matutes use both techniques.

4.3.1 Long-term Relationships, Credit Rationing, and Banks.

Petersen and Rajan (1995) are particularly interested in understanding the long-term relationships between banks and businesses. They ask two questions: Can firms facing competitive credit markets form strong ties with a particular creditor? And do the benefits from forming such ties diminish as markets become more competitive? The questions arise from the idea established in the labour literature that competition and long-term relationships are in-compatible. The authors also empirically study the U.S. small business market, as bank finance and the degree of competition vary at the local level in this market. They find that less competition in the banking industry leads to more firms obtaining loans, and they obtain these loans at a lower cost.

Petersen and Rajan employ a static, three-period model, with two classes of borrowers—those with good project returns and those with bad project returns. Bad-return borrowers who borrow in the initial period (at date 0) will receive a return of zero in the following period(at date 1). Good-return borrowers have two projects in which they can invest, hence the moral hazard in the model. They have access to both a risky and a riskless technology. The risky project has a higher return than the riskless project with some given

probability; otherwise it returns nothing. Any returns from the initial project are used to partially finance subsequent investment projects. However, in spite of possessing some initial capital, the good-return entrepreneur must also borrow to fully fund a project in the next period (at date 1).

Banks are the only source of funding in the economy. At date 0, banks are unable to differentiate between good- and bad-return borrowers. At the beginning of date 1, all borrowers' types are revealed, and thus loans at this date are only made to good-return borrowers. It is assumed contracts take the form of debt contracts. Finally, this model does not address how the deposits needed to make the loans are obtained.

In equilibrium banks will offer two sequential one-period loan contracts as opposed to one two-period contract. This stems from both the adverse selection problem experienced at date 0, as well as the moral hazard problem pertaining to good-return borrowers at both dates 0 and 1. If the bank offers a two-period contract, the result will be higher interest rates on loans, relative to two one-period contracts, at date 0 in an attempt to cover potential losses from loans to bad-return borrowers. This higher rate exacerbates the moral hazard problem, which can lead to credit rationing by the bank. The bank can minimize these problems by offering two sequential one-period debt contracts. In addition, good-return borrowers will borrow as little as possible at date 0 to differentiate themselves from bad return borrowers. This will also reduce borrowing costs in the subsequent period. Finally, banks will structure loans and interest rates so that they induce the good return borrowers to choose the less risky project and so that banks can recoup all costs associated with lending at all dates.

The authors demonstrate that as market power increases, firms with lower credit quality are able to obtain funding. The intuition is that as market power increases, it is easier for banks to extract more surplus from firms in subsequent periods. This can also be viewed as banks implicitly taking an equity stake in firms. Petersen and Rajan also show that as market power increases, the initial interest rate offered to the lowest quality firms obtaining financing becomes lower than that in a purely competitive banking system. Thus, greater financing to more firms is achieved as the banking system becomes less competitive.

4.3.2 Bank Structure and Solvency

The second partial equilibrium model, Caminal and Matutes (1997), explores the relationship between market structure and the solvency of the banking sector. The authors' reason for investigating the linkage is the recent deregulation in the banking and financial markets. They note that one of the primary goals of this deregulation has been to improve the efficiency of banks by increasing competition between them. However, it is often argued that too much competition can jeopardize the solvency of the entire banking system. Caminal and Matutes show that a monopoly bank will raise the volume of loans (and thus, the volume of risky loans) to certain borrowers while decreasing the volume of (risky) loans to other borrowers. Thus, they are unable to draw clear-cut conclusions about the relationship between market structure and solvency.

The basic model is static and incorporates market uncertainty, asymmetric information, and moral hazard. Moral hazard, the primary problem, arises because borrowers can choose from a range of production technologies. Caminal and Matutes incorporate asymmetric information and

economic uncertainty into their theoretical framework in three ways. First, informational asymmetries can be reduced either by monitoring or by rationing credit. By monitoring, the authors mean the bank can choose and supervise the production technology the firm uses. Monitoring, therefore, is conducted prior to making the loan and has the flavour of the German banking system, in which banks have seats on the boards of businesses to which they make loans. In addition, monitoring is costly and borrower-specific. Thus, monitoring is a costly way to eliminate the moral hazard problem inherent in this model.

In lieu of monitoring, a bank may ration credit by providing smaller loans than borrowers desire. However, credit rationing and monitoring are not perfect substitutes. If the bank monitors, there obviously is no reason to ration credit (and thus the loan size will be larger than without monitoring). When the bank rations credit, it does so to induce borrowers to choose a less risky production technology. The final aspect of the model relates the size of a loan to its level of riskiness. The larger the loan, the riskier it will be. This stems from the assumption that a borrower's return depends on both the size of the loan and a multiplicative aggregate shock.

The contract between the bank(s) and borrowers develops in stages. First, the bank offers an interest rate and the guarantee that neither it (nor the firm) will be forced to lend (or borrow) more than either party would like. Next, the bank learns the cost of monitoring and decides whether to monitor. The bank then offers a maximum loan amount. At this point, the firm can attempt to renegotiate the interest rate, the loan size, or both. After the success (or failure) of any renegotiations, the firm chooses the size of loan, given the agreed-upon interest rate. Finally, the production technology is chosen (by the bank if monitoring or by the borrower if not), production is undertaken, and

repayment is made according to the contract. All contracts between banks and borrowers are assumed to be standard debt contracts. As with Petersen and Rajan, the deposit side is ignored and it is assumed a bank can obtain as much in deposits as needed to make loans, at a cost that is not prohibitive.

Caminal and Matutes show that market power in banking raises the interest rate on loans, which has certain repercussions. For a given level of monitoring, the higher the interest rate, the worse the incentive problem. This, in turn, results in a tightening of credit and smaller loans to the credit-constrained group. However, higher interest rates will also lead the bank to increase monitoring, which will reduce the proportion of credit-constrained borrowers. Thus, the higher interest rate associated with a monopoly bank has two opposite effects on the volume of loans. More borrowers (and more risky borrowers) will receive loans due to the increase in monitoring. This is offset by the fact that those who are credit-constrained receive smaller loans than they otherwise would.

This ambiguity about monopoly banking's impact on total loan volume leads to ambiguity about the relationship between market power and banking system solvency. The greater the volume and the larger each individual loan, the greater the probability of a bank failure. The number of loans to those who are not credit rationed increases, implying that bank failure is more likely, while the size of the loans to those who are credit-rationed decreases, implying that failure is less likely. Consequently, it is impossible to draw a clear-cut conclusion about the relationship between the structure and the solvency of the banking system.

4.3.3 Screening Borrowers, Restructuring Firms, and Banks

The partial equilibrium model by Schnitzer (1998a) examines how banks use screening in deciding loan disbursement. Schnitzer evaluates the economic prospects of firms in transition economies, particularly those of Eastern Europe. Although not directly interested in how banking sector structure impacts the economy, she argues that banks in transition economies play a fundamental role in the financing, monitoring, and restructuring of firms. Consequently, she addresses two questions. First, how does the market structure of the banking sector impact the screening process for obtaining financing? Second, how does banking structure affect the likelihood of restructuring by a firm's manager? Her results are mixed in that a competitive banking sector will result in too little screening but more restructuring than a monopolistic system.

There are two agents in Schnitzer's economy: a firm and either a monopoly bank or two banks acting as Bertrand competitors. The firm has an investment project with uncertain return that must be financed with credit. The return to the investment is either good, with some given probability, or it is bad. There is no moral hazard problem with respect to the operation of the project. Banks, the only source of financing in the economy, must decide whether to screen borrowers and then to whom to give loans. Screening is costly but perfectly reveals whether the investment is good or bad. It is assumed the cost of screening is low enough that the returns from lending only for good projects exceed the costs of screening. Finally, how banks obtain the deposits necessary to make loans is not modelled. It is assumed that the banks can obtain sufficient deposits to fund all borrowers and that the cost of obtaining these funds is not prohibitive.

A monopoly bank in this economy always screens. The cost of screening is assumed to be less than the expected losses from making loans for bad-return projects; thus, the bank will only make loans for good-return projects. The bank will set the interest rate sufficiently high that it extracts all surplus from the investment projects. These results are compared with those from an economy with two banks engaged in Bertrand competition. The competitive banking scenario is further divided into two cases: one where screening produces informational spillovers and one where it does not.

In the first case, because of the informational spillovers, if either bank screens and ascertains the borrower's particular project return, this information becomes public knowledge. In this case, neither bank will engage in screening because there exists a classic free rider problem. Thus, in equilibrium both good- and bad-return borrowers will obtain financing as banks randomly make loans. This is inferior to the equilibrium with a monopoly bank because, by assumption, the losses associated with loans to bad projects exceed the costs of screening.

In the second case, informational spillovers do not exist—that is, screening produces private information. Under this condition three equilibria exist. One is an (unique, mixed strategy)equilibrium where both banks screen with some positive probability. There are also two (symmetric, pure strategy) equilibria where one bank screens and the other does not. All of these equilibria are less efficient than the monopoly bank because either banks duplicate screening costs or, as before, losses from lending without screening exceed the costs of screening. Thus, screening technology is most efficiently used in an economy with a monopolistic banking system.

Schnitzer also shows that a competitive system is more likely to lead to firms restructuring. In her model, restructuring is defined as the manager spending some unobservable effort attempting to make the project more profitable and results in one of two outcomes. Either the effort, which is decided upon before credit offers or screening, can raise the probability that the project will generate a good return, or it can increase the project's return. In either case, restructuring only occurs when the banking system is competitive. This is because under a competitive system, the manager is able to keep part of the increased returns resulting from his or her efforts. With a monopoly bank, the bank confiscates any extra return (by choice of interest rate), and thus, the manager lacks the incentive to undertake restructuring.

Although each of the three studies discussed examines different aspects of the bank–borrower relationship, all find that monopoly in banking may be economically beneficial because of the bank's ability to overcome problems related to adverse selection and moral hazard. However, there are two important caveats. First and foremost, since these are partial equilibrium models, they do not take into account all the economic effects of bank structure. Their conclusion—that monopoly may be beneficial—is limited to the specific problem each study examines and does not imply the benefits from a monopoly outweigh all the costs. In addition, all the models focus only on the bank–borrower relationship and ignore the deposit side of banking—an important omission that may affect the results.

4.4 General Equilibrium Models

The remaining three models—Cetorelli(1997), Smith (1998), and Guzman (forthcoming)—are general equilibrium (and overlapping generations) models. As a result, they allow for an exploration of the deposit

side of banking and its potential constraint on the lending side, as well as for an examination of monopoly's detrimental impact on capital accumulation and growth. However, as a trade-off for a general equilibrium framework, they do not model the interaction of banks and borrowers with as much richness as some of the partial equilibrium models. For example, they all ignore the possibility of moral hazard and deal only with the problem of adverse selection.

4.4.1 Screening and Banks

Like Schnitzer, Cetorelli (1997) investigates how the structure of the banking system affects the screening process. However, unlike the first three models discussed, the equilibrium achieved with a monopolistic banking system is not necessarily superior to (Pareto dominates) the equilibrium from a competitive system. Cetorelli's results differ from Schnitzer's because he employs a general equilibrium model that takes into account monopoly profits' negative impact on capital accumulation. Cetorelli notes that many countries—such as the United States during the Civil War, postwar Japan, and European countries in the nineteenth century—seem to have experienced enhanced growth in periods during which the financial sector was less competitive and more concentrated. This observation forms the basis for the question Cetorelli investigates: How does credit market competitiveness impact economic growth?

The basic economic model Cetorelli uses is a standard Diamond (1965) overlapping-generations model with production. However, production is a two-stage process, where in the first stage, potential entrepreneurs attempt to setup a project. If they succeed, in the next stage they produce goods after renting capital and labour. To set up a project, entrepreneurs are required to

borrow funds from banks. At the beginning of each period, every young individual is a potential entrepreneur. The young can further be divided into two groups: those entrepreneurs with good project returns—who will succeed with some given probability—and those with bad project returns—who will be unsuccessful. If unsuccessful in starting a project, the individual provides labour in the second stage of production.

Banks are the only entities that provide credit for stage one of production. It is argued that banks will naturally arise due to economies of scale with respect to both diversification across borrowers and with respect to the screening process. As with Schnitzer, screening is costly, but it does provide perfect information about an entrepreneur's type (either good or bad project returns). Cetorelli further assumes that once an individual is screened, there are perfect informational spillovers and all banks in the economy know his or her type. Finally, screening costs are not constant and are, in fact, proportional to the amount of saving. Cetorelli compares two economies—one with Bertrand competitors and the other with a monopoly bank—in terms of capital accumulation and steady-state levels of the capital stock. Bertrand competition, in conjunction with the perfect informational spillovers associated with screening, renders screening economically infeasible; as before, a free rider problem exists. A monopoly bank, in contrast, will always screen as screening costs are lower than the losses from lending to bad-return entrepreneurs. Consequently, because a monopoly bank screens and is thus more efficient in the loans it makes, capital accumulation will be greater.

However, there is also a downside to the monopoly bank. It is assumed bank profits are consumed by the bank and not rebated to any individuals in the economy. Thus, instead of these profits being used to create future capital,

as is the case with a competitive banking system, they are lost to the economy. It is not obvious which of these forces—efficiency gains from screening or production losses from profits—will dominate and, consequently, whether a monopoly bank benefits the economy.

Cetorelli also examines the model's comparative statics to ascertain the conditions under which a monopoly bank would definitely lead to greater capital accumulation than a competitive system would. He finds that given a sufficiently low proportion of high-quality entrepreneurs and other conditions—such as low screening costs, high savings elasticity, and low loan demand elasticity—capital accumulation and growth will be greater with a monopoly bank. Finally, Cetorelli also discusses in what types of countries these conditions are likely to prevail.

4.4.2 Bank Solvency

Smith (1998)focuses on how monopoly in banking affects both income levels and the likelihood of dramatic swings in the business cycle. His impetus is similar to that of Caminal and Matutes; he observes that the stability of the banking industry appears to be enhanced when only a limited number of banks exert significant market power. This market power is often the result of regulatory barriers enacted by various governmental bodies. Smith shows that a competitive banking system will result in a higher level of income and output and in a reduction in the severity of the business cycle.

Like Cetorelli, Smith uses a standard diamond (1965) overlapping-generations model with production. In addition, production is subject to stochastic shocks. There are two types of individuals in the economy: lenders and entrepreneurs. Lenders have three ways to save for old age. They can

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allocate their wage income to direct, bilateral loans to an entrepreneur, to deposits at a bank, or to investments in a storage technology. Entrepreneurs can either save their income by one of these means, or they can invest it in a risky project. Entrepreneurs fall into three categories: those who do not need to borrow to fund a project, those who need to borrow less than half the start-up cost of the project, and those who need to borrow more than half the project's start-up cost.

Borrowers have two sources of financing: banks and direct, bilateral (unintermediated)loans. Banks and individual lenders are assumed to act as Bertrand competitors. Although the model allows for bilateral contracts, in equilibrium they are not chosen. However, they are important to the model in that they limit a monopoly bank's power to impose any interest rate it chooses—that is, they place an upper bound on interest rates. Consequently, banks are the only channel for transferring funds from lenders to borrowers. Although banks in this model do not screen, they can monitor borrowers' returns after the investment project is completed. The decision to monitor is made prior to making the loan(as in Diamond 1984), and monitoring is costly. Finally, it is assumed there are sufficient deposits for a bank to fund any number of borrowers it chooses.

Smith shows that a competitive banking system is better than a monopoly system in that it allows for higher incomes and reduces the severity of the business cycle. Banks in general benefit the economy because their monitoring costs are lower than those incurred with bilateral lending. With a competitive system, these savings are used for additional loans, resulting in increases in production and income. When there is a monopoly bank, the savings are appropriated (by means of higher interest rates on loans) by the

bank in the form of profits(and consumed by the owners). Thus, less productive investment is possible.

Higher interest rates have a second detrimental impact on the economy: they raise the opportunity cost of obtaining funds for all borrowers—even those who are good risks. The intuition is that higher interest rates on loans increase the return on bank liabilities. The higher opportunity cost of funds filters through to borrowing rates in all markets for loans, regardless of the type of borrower, and this results in more firms needing to borrow to finance their projects. Finally, Smith also shows that adverse shocks to the economy are less pervasive in a system with competitive banks.

4.4.3 Credit Rationing and Bank Structure

Like Cetorelli, and to a lesser degree Smith, Guzman is interested in the impact the banking system's market structure has on capital accumulation and economic growth. Guzman also examines how market structure affects the quantity and the likelihood of credit rationing to arise. Most of the recent theoretical literature that explores the relationship between growth and banking and includes credit rationing as a possibility considers only economies with competitive banking systems. As a practical matter though, banking systems' industrial organization varies widely across countries. Thus, the relationship between banks and the economy is unclear when a country's banking system is not competitive. This is the impetus for Guzman's work. He shows that monopoly in banking tends to be detrimental to the economy because it decreases capital accumulation and growth and exacerbates the problems associated with credit rationing.

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As with the other two general equilibrium models, Guzman uses a variant of the Diamond(1965) overlapping-generations model with production. Two types of individuals populate the economy: lenders and borrowers. Lenders, who earn wage income when young, have two options for allocating this income: they can deposit it with a bank or use it in their own investment project. Borrowers have no income when young but do have investment projects, which, on average, are more productive than those of lenders. Borrowers must obtain financing to operate projects, and all borrowers are identical (ex ante) since project returns are drawn from the same random distribution. The return to a borrower's project is private information available to anyone for a fixed cost.

The basic contract between banks and borrowers is a standard debt contract. If feasible, the borrower repays principal plus interest on the loan. Otherwise, the borrower defaults on the loan and the bank verifies the borrower's return and retains all proceeds from the investment project. Guzman shows that monopoly in banking tends to reduce capital accumulation and growth in the economy. Monopoly is also more likely to lead to credit rationing, and when rationing occurs, it tends to be more severe under a monopoly than under a competitive system.

The intuition behind these results is best understood by looking at the differences between the interest rate charged on loans and paid on deposits in each type of banking system. When credit rationing exists, the interest rate on loans is the same under both systems because the shortage of funds results in borrowers bidding up the price of funds to the same level. The monopoly bank pays a lower return on deposits (the source of the bank's profits), which results in less funding being available for borrowers. This leads to a greater likelihood

of credit rationing and less growth as fewer borrowers undertake productive investment projects.

When credit is not rationed and all borrowers are funded, the interest rate on deposits is the same under both systems. Because the same number of borrowers is funded under either system, the same amount of funds must be deposited in the banks. The quantity of deposits depends only on the deposit interest rate, and thus the same interest rate on deposits prevails independent of the banking system. A monopoly charges a higher interest rate on loans (its source of profits). This leads to more monitoring of borrowers than with a competitive system, as the likelihood of default rises with the interest rate. Thus, a monopoly uses more resources to operate and directs fewer resources to productive investment, resulting in lower growth and capital accumulation. Finally, in some instances the monopoly bank will both charge a higher interest rate on loans and pay a lower rate on deposits. This results in more severe credit rationing, more monitoring, fewer borrowers undertaking investment projects, and ultimately less capital accumulation and economic growth.

As with the partial equilibrium models, there is a common theme with the general equilibrium models: monopoly in banking will generally be detrimental to the economy as it results in less capital accumulation and lower economic growth. This is in stark contrast to the results from the partial equilibrium models. This difference in conclusions results from the fact that the general equilibrium models take into account the detrimental effects that accrue from a monopoly bank—particularly that monopolies consume productive resources by maintaining profits at a higher level than competitive systems. However, it should be noted that one of the drawbacks to the general equilibrium models is that to be able to draw conclusions from these models,

they sometimes have to sacrifice richness in terms of how individuals are modelled—especially the lack of moral hazard connected with choosing more or less risky investment projects.

4.5 Financial Structure and Commercial bank profitability

As financial intermediaries, banks play a crucial role in the operation of most economies. Recent research, as surveyed by Levine (1996), has shown that the efficacy of financial intermediation can also affect economic growth. Crucially, financial intermediation affects the net return to savings, and the gross return for investment. The spread between these two returns mirrors the bank interest margins, in addition to transaction costs and taxes borne directly by savers and investors. This suggests that bank interest spreads can be interpreted as an indicator of the efficiency of the banking system. In this section, we reviewed how bank interest spreads are affected by taxation, the structure of the financial system, and financial regulations such deposit insurance.

A comprehensive review of determinants of interest spreads is offered by Hanson and Rocha (1986). That paper summarizes the role that implicit and explicit taxes play in raising spreads and goes on to discuss some of the determinants of bank cost and profits, such as inflation, scale economies, and market structure. Using aggregate interest data for 29 countries in the years 1975-1983, the authors find a positive correlation between interest margins and inflation.

Recently, several studies have examined the impact of international differences in bank regulation using cross-country data. Analyzing interest rates in 13 OECD countries in the years 1985-1990, Bartholdy, Boyle, and

Stover (1997) find that the existence of explicit deposit insurance lowers the deposit interest rate by 25 basis points. Using data from 19 developed countries in 1993, Barth, Nolle and Rice (1997) further examine the impact of banking powers on bank return on equity - controlling for a variety of bank and market characteristics. Variation in banking powers, bank concentration and the existence of explicit deposit insurance do not significantly affect the return on bank equity.

Demirgüç-Kunt, Asli, and Harry Huizinga, (1997) extends the existing literature several ways. First, using bank-level data for 80 developed and developing countries in the 1988-1995 period, they provided summary statistics on size and decomposition of bank interest margins and profitability. Second, they use regression analysis to examine the underlying determinants of interest spreads and bank profitability. The empirical work enables them to infer to what extent the incidence of taxation and regulation is on bank customers and/or the banks themselves. Apart from covering many banks in many countries, their study is unique in its coverage of interest margin and profitability determinants. These determinants include a comprehensive set of bank characteristics (such as size, leverage, type of business, foreign ownership), macro indicators, taxation and regulatory variables, financial structure variables, and legal and institutional indices. Among these, the ownership variable, the tax variables, some of the financial structure variables, and the legal and institutional indicators have not been included in any previous study in this area. To check whether some of these determinants affect banking differently in developing and developed countries, the study further interact these variables with the country's GDP per capita.

The results indicated that bank characteristics, macro indicators, implicit and explicit financial taxation, deposit insurance, overall financial structure, and the legal and institutional environment all significantly affect bank interest spreads and profitability.

Their results show that well-capitalized banks have higher net interest margins and are more profitable. This is consistent with the fact that banks with higher capital ratios tend to face a lower cost of funding due to lower prospective bankruptcy costs. In addition, a bank with higher equity capital simply needs to borrow less in order to support a given level of assets.

Differences in the bank activity mix also have an impact on spreads and profitability. The results show that banks with relatively high non-interest earning assets are less profitable. Also, banks that rely largely on deposits for their funding are less profitable, as deposits apparently require high branching and other expenses. Similarly, variation in overhead and other operating costs is reflected in variation in bank interest margins, as banks pass on their operating costs to their depositors and lenders.

The international ownership of banks also has a significant impact on bank spreads and profitability. Foreign banks, specifically, realize higher interest margins and higher profitability than domestic banks in developing countries. This finding may reflect that in developing countries a foreign bank's technological edge is relatively strong, apparently strong enough to overcome any informational disadvantage. Foreign banks, however, are shown to be less profitable in developed countries.

Macroeconomic factors also explain variation in interest margins. Guzman (1999) found that inflation is associated with higher realized interest margins and higher profitability. Inflation entails higher costs - more transactions, and generally more extensive branch networks - and also higher income from bank float. The positive relationship between inflation and bank profitability implies that bank income increases more with inflation than bank costs. Further, high real interest rates are associated with higher interest margins and profitability, especially in developing countries. This may reflect that in developing countries demand deposits frequently pay zero or below market interest rates.

Banks are subject to implicit and explicit taxation which may affect their operations. Implicit taxes include reserve and liquidity requirements that are remunerated at less-than-market rates. Inevitably reserves reduce interest margins and profits especially in developing countries, since there the opportunity cost of holding reserves tends to be higher and remuneration rates are lower. Explicit taxes translate into higher net interest margins and bank profitability. In fact, the regression coefficients suggest that the corporate tax is fully passed on to bank customers in poor and rich countries alike, and is not simply a tax on bank rents. This result is consistent with the common notion that bank stock investors need to receive a net-of-company-tax return that is independent of the company tax.

The existence of an explicit deposit insurance scheme coincides with lower interest margins. The effect on bank profitability is also negative, although it is not significant. These results did reflect design and implementation problems inherent in explicit deposit insurance systems.

Regarding financial structure, banks in countries with a more competitive banking sector -- where banking assets constitute a larger portion of the GDP -- have smaller margins and are less profitable. The bank concentration ratio positively affects bank profitability, and larger banks tend to have higher margins. A larger stock market capitalization to GDP increases bank margins, reflecting possible complementarity between debt and equity financing. A larger stock market capitalization to bank assets, however, is related negatively to margins, suggesting relatively well-developed stock markets can substitute for bank finance.

4.6 Market Structure and Efficiency Models

Although a number of different models exist for determining the relationship between market structure banking efficiency cum study shall limit itself to examining two of the most widely used models in this area.

4.6.1 The SCP Model

The traditional Structure-Conduct-Performance (SCP) idea emphasizes the market or industry structure when analysing the pricing and output decisions of market participants. In this context, market structure refers to the number and size distribution of firms. The market is treated as the unit of analysis. If it is concentrated, say in assets, sales, deposits or some other measures of economic activity, then we are likely observe non-competitive, collusive behaviour and, in that case, equilibrium industry profitability will depend upon the degree and stability of collusion among firms.

Therefore, the higher the share of the market controlled by a small number of large firms, or the higher the market concentration, the greater the possibility that market participants will agree to collude, either tacitly or

overly, and raise prices above costs, therefore earning supranormal profits. Hence, the existence of a positive relationship between some measure of concentration, proxying market structure, and profits, proxying performance, would imply that market structure is not competitive and market participants enjoys profits primarily because of their market power.

The efficient structure concept, on the other hand, maintains that firm-specific efficiencies arising from superior management, use of new technology, etc., enable some firms to increase their market share at the expense of other relatively inefficient firms, leading to market concentration. The implicit assumption is that the differing efficiencies among firms lead to unequal market shares and high levels of concentration, and are causally due to factors that reduce costs. The leading firms will earn above-average profits even if they charge prices at the level of secondary firms. Therefore, we observe a positive relationship between market concentration and profits, but it is not due to collusion and does not necessarily imply a causation between structure and performance. The efficient structure hypothesis implies that the casual link will be between market share, a measure of firm efficiency, and profits, but there will be no causal relationship between market concentration and profitability. Therefore, the positive relationship between concentration and profits found in some industry studies is spurious and simply reflects the correlation between market share and concentration.

Both hypotheses interpret market share variable differently. Researchers who support the efficient structure hypothesis would argue that a high market share is an indication of superior efficiency. On the other hand, traditional structure-performance school would regard market share as proxying market power, due to product differentiation or some other factor, which will give

leading banks the ability to collude and thereby earn higher than average profits.

To estimate average profits, past studies tend to use the interest rates paid on deposits or the interest rates paid on loans as the measure of banking outcomes. One potential shortcoming of using these measures is that they may not capture differences in the underlying bank products that could account for differences in rates charged or paid. If, for example, a bank paid a lower interest rate on deposits than its competitors did, the bank might nevertheless attract depositors in a competitive market if the bank maintained a larger staff that provided better service than the other thinly staffed banks. Some customers might be willing to accept a lower interest rate on deposits if they were compensated with better service.

As a measure of banking outcomes, profitability avoids this shortcoming. Under competitive conditions, paying lower rates while providing a larger staff would leave profitability unchanged: although paying lower rates on deposits would increase profitability, that boost to profitability would be offset by the cost of maintaining the larger staff. In addition, more banks can be included in a study based on profitability than in a study based on interest rates because all banks report profitability on the report of Condition and Income ("call report"),whereas reliable interest-rate information must be obtained from more limited survey data.

Although profitability has some advantages as a performance measure, it also has some drawbacks. First, the accounting conventions that are used to compute profitability may introduce imprecision into the measurement of profitability itself. Second, while the rate paid or charged by a bank is a fairly

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direct measure of the link to the customer, profitability is a larger, less immediate concept subject to various influences that may be difficult to control for statistically. Because profitability lacks immediacy as a measure of the terms of banking services that customers receive, the results of a study based on profitability may be interpreted in several ways.

Under an interpretation rooted in the SCP paradigm, finding that higher market concentration is associated with higher profitability would be taken as a sign of anti-competitive practices: high concentration implies that competition is limited, allowing firms in the market to exercise pricing power that results in monopoly profits. As Peltzman (1977) discusses, however, a positive correlation between profitability and concentration could emerge for reasons other than anti-competitive practices. If a market has a firm that grows large because of cost advantages, that market would exhibit high profitability and high concentration, even in the absence of anti-competitive practices. Results of earlier studies (e.g., Berger and Hannan 1989, Hannan1991) of the banking industry, however, suggest that a positive relationship between concentration and profitability would reflect market power, given that those studies found that higher concentration was associated with less competitive terms on loans and deposits. The particular measure of profitability used is the return on average assets (ROA) for banks within the local market, where local markets are approximated as MSAs for metropolitan statistical areas and as counties for non-metropolitan areas. For each market, ROA is the ratio of net income of the banks in the market to the average over the year of the banks' assets.

It is worthwhile noting that both hypotheses point to an observationally equivalent relationship between market structure and profits while differing as

to the causal factors generating it. While it is possible that both hypotheses might be operative simultaneously it is nevertheless important to distinguish between the two as they have different public policy implications. If profitability is due to market structure, then a regulatory policy to reduce concentration and consolidation in the sector may be justified. On the other hand if performance is due to efficiency then such a regulatory policy may be welfare reducing.

Weiss (1974) suggested that by estimating a profit function that takes both market share and concentration measure into account at the same time it may be possible to ascertain whether profitability is due to the efficiency of or to market structure, and hence the validity of the two hypotheses, in explaining the structure-performance relationship. Tests of this nature have been undertaken by Smirlock (1985) and Evanoff and Fortier (1988), Molyneaux (1992) and it is the approach adopted in this study. Indeed, There is a considerable disagreement in the literature as to which of the two hypotheses best explain the correlation between market concentration and profits.

Most recent studies, Berger and Hannan (1989), Neuberger and Zimmerman (1991), Saunders and Udell (1991), Hannan (1991), and Neumark and Sharpe (1992) use deposit rates or loan rates instead of profits as the dependent variable and provide a much more direct test of the SCP hypothesis in a manner that excludes as an alternative explanation the form of efficient structure hypothesis that is used to explain the positive relationship between profit and concentration. The weight of the evidence these studies provide support the SCP hypothesis.

Earlier studies analysing the relationship between market structure and profitability used linear regression techniques, regressing some measure of profits on a market concentration variable--proxying market structure--and other control variables. Following Weiss (1974) and Smirlock (1985), Evanoff and Fortier (1988), Molyneaux (1992) and Denizer (1997), a cross-sectional profit equation including both firm- specific market share, proxying for firm efficiency, and concentration variables is specified in equation 4.1.

$$ROA_{it} = b + b1CR_t + b2MS_{it} + b3CA_{it} + b4TA_{it} + b5LA_{it} + b7DT_{it} + b8OEA_{it} + b9MDGR_t + b10D1 \quad (4.1)$$

where:

ROA = bank i's profits measured as the return on assets

CR = market structure variable, 5 (10) firm deposit (asset) concentration ratio

MS = market share measure, bank i's deposits as a percentage of total market deposits

CA = bank i's capital-to-asset ratio

TA = bank i's total assets

LA = bank i's loans-to-assets ratio

DT = bank i's demand deposits-to-total deposits ratio

OEA = bank i's operating expenses-to-total assets ratio

MDGR = market deposits growth rate

D1 = 1 for private, 0 for public banks

The independent variables include both firm and market specific variables, and they are similar to those utilized in previous studies.

4.6.2 Banking Efficiency Model

The abundant literature and researches on economic efficiency provides for a better understanding of market competitiveness and profitability. Such an analysis, in turn, can provide policymakers with information which may prove valuable in the design of public policy. The methodology allows the researcher to identify best practice banks and thus might be useful in decisions regarding merging and closing banks. Rather than concentrating on traditional scale and scope analysis of productive efficiency, the model concentrate on management efficiency. This focus derives from recent research in banking which indicates that management's ineffectiveness in managing resources accounts for a significantly higher percentage of costs in banking compared to scale and scope efficiencies (Berger et al., 1993). Furthermore, instead of comparing the operating performance of the chosen sample banks with a set of superior-operated banks by using financial ratios, the model use production theory and econometric procedures to extract information on managerial efficiency.

The stochastic frontier approach was used to calculate a measure of production efficiency for each bank in the sample of previous studies (Aigner et al., 1977 and Meeusen and Broeck, 1977). This approach uses a parametric technique to estimate the characteristics of "best-practice" banks from bank cost functions. These best-practice banks represent institutions which produce their financial products and services at the lowest cost using the most efficient mix of productive inputs or factors of production. Individual bank efficiency indices were measured by computing the deviations of costs from the cost frontier estimated from the sample data. This inefficiency factor captures both allocative inefficiencies from failing to react optimally to relative prices of inputs, and technical inefficiencies resulting from employing excessive amount of the inputs to produce outputs.

In this framework, systematic deviations of cost from the frontier or best-practice levels are associated with poor management while random deviations can be attributed to uncontrollable factors that affect total costs, such as weather, luck, labour strikes, or machine performance.

The stochastic frontier cost function approach maintains that managerial or controllable inefficiencies only increase costs above best-practice levels and that random fluctuations or uncontrollable factors can either increase or decrease costs. Therefore, the model assumes that inefficiencies follow an asymmetric half-normal distribution, while random fluctuations follow the typical assumption of a symmetric normal distribution.

To calculate each bank's efficiency index, we would need to first fit a stochastic frontier cost function to characterize the efficient frontier for the sample banks. The form of the equation is a standard translog cost function:

$$\ln TC = \propto + \sum_{j=1}^{3} \beta_j I_n Y_j + \tfrac{1}{2} \sum_{j=1}^{3} \sum_{k=1}^{3} \beta_{jk} I_n Y_j I_n Y_k$$

$$+ \sum_{n=1}^{3} \gamma_n I_n W_n + \tfrac{1}{2} \sum_{n=1}^{3} \sum_{p=1}^{3} \gamma_{np} I_n W_n I_n W_p + I_n Z + \tfrac{1}{2} \qquad (4.2)$$

where;

TC = Total cost of inputs used to produce the bank's various outputs.

Yj = The three output quantities included in the cost function: total loans and securities, demand deposits, and fee income.

Wn = The prices of inputs used in the production of bank assets; wage rate, interest for borrowed funds, and the price of physical capital.

Z = Equity capital for each bank, to adjust for increased costs of funds due to financial risk.

u = Composite error term used to, capture cost inefficiency.

v = Random error term.

The above cost equation is estimated to get estimates of ln u. The variable ln *u* is used to derive the cost inefficiency measure. The inefficiency measure *(INEFF*) is an exponential transformation of the raw estimate of ln *u. INEFF* has a minimum value of 1 for the most efficient bank; all other banks are above 1.

$$INEFF = \exp(\ln u). \qquad (4.3)$$

Efficiency *(EFF)* is measured by comparing the inefficiency index of each bank with the index of the most efficient bank. This gives a good measure of relative efficiency in the sample. The efficiency measure is bounded between 0 and 1. EFF is 1 for the most efficient bank, and close to 0 for the least efficient bank.

This model was not used for testing any of the hypothesis in this study due to its characteristics of measuring only relative efficiency within each time period rather than the aggregates efficiencies in these periods.

4.7 Measures of Industry Concentration

Theory suggests that there is a relationship between the level of output controlled by a small number of large firms and performance. As a result a number of approaches were developed by eminent researchers to measure the level of concentration within an industry. The prominent and most widely used of these models are (1) concentration ratios and (2) the Herfindahl-Hirschmann index (HHI).

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4.7.1 The Herfindahl-Hirschmann index (HHI)

The HHI is calculated by summing the squares of the market shares of all firms in an industry, that is,

$$HHI = 10{,}000\sum X_i^2 \qquad (4.4)$$

The value of HHI lies between 0 and 10,000. HHI = 10,000 when there is a single firm; HHI = 0 when there are numerous infinitesimally small firms. In the banking industry the HHI equals the sum of the squared market shares of the firms in the market, based on deposits. If, for example, the deposits in a market are equally divided between two competitors, then that market would have an HHI of $5{,}000 = 50^2 + 50^2$. The HHI measures the concentration of the market, that is, the degree to which market shares are concentrated among few competitors. Higher HHI values imply a greater concentration of market share among a few competitors. The HHI would attain its highest possible value ($10{,}000 = 100^2$) in a monopolistic market and would approach zero in a market divided equally among an infinite number of competitors. In the United States of America, for example HHI is used by regulatory authorities for merger analysis. Mergers proposed in markets with high initial HHI values or mergers that would increase the HHI substantially are considered potentially anticompetitive. In particular, Department of Justice guidelines view bank mergers as potentially anticompetitive if they would result in a post-merger HHI above 1,800 and would increase the HHI by 200 or more (Rhoades 1993).

The greatest advantage of the HHI is that it is based on the market shares of all the firms in an industry and therefore is regarded as a relatively complete index. Since it is based on squared market shares, the HHI places a

greater weight on firms with large market shares so that it takes more account of the size distribution problem.

4.7.2 Concentration Ratios

Concentration Ratios measure how much of the total output of an industry is produced by the n largest firms in that industry, i.e.

$$CRn = \frac{X1+X2+X3+.....+Xn}{\sum X_i} \qquad (4.5)$$

where,

Xi is the fraction of total market sales accounted for by each firm

5-firm Conc. Ratio,

$$CR5 = \frac{X1+X2+X3+X4+X5}{\sum X_i}$$

8-firm concentration Ratio,

$$CR10 = \frac{X1+X2+X3+.....+X10}{\sum X_i}$$

Evidence from previous studies have shown that the use of HHI in place of CR5, for example, does not change any empirical results. HHI is also criticized on the grounds that it is mainly concerned with the dispersion of sellers, but the theory is more concerned with concentration and therefore a concentration measure should be used. For all the above reasons the various CR measures in terms of deposits are used as a market structure proxy. Hence our decision to adopt the model of concentration ratio as the ideal measure of banking market concentration.

4.8 Entry and Competition Models

Competition is perhaps the most fundamental idea in economics, and as firms fight for profits, the competitive paradigm makes clear dynamic predictions: strong performers should pass the market test and survive, while weak performers should shrink, exist or sell out. These reallocation effects the transfer of market share from under-performers to more successful firms – are a critical part of the competitive process, but this stylized picture is not always the reality. Regulation, uncertainty, and other barriers to entry can protect inefficient firms, limit entry and exit, and prevent the textbook competitive shakeout.

Indeed, a number of earlier studies, Heggestad and Rhoades (1976), Rhoades (1980), and Rhoades and Rutz (1981), and Bodenhorn (1990), studied competition in banking markets in the USA by analysing the degree of stability inter firm relationships. Their approach proxies inter firm rivalry, or competition, among firms by mobility and turnover and analyses the impact of a number of important variables that are expected to influence competition, such as entry, and size of the pre-existing firms. In this context, mobility indicates churning out the rank position of leading firms. Turnover, on the other hand captures the movement into the leading bank group by banks formerly outside of that group, reflecting aggressive behaviour. It is also thought that such measures reflect a certain market structure.

In essence, changes in the rank and possibly output shares of firms in the market do not result in certain kind of conduct (competitive or uncompetitive) but rather they reflect conduct that arises from certain market structure; in uncompetitive markets successful cooperation (collusion) among

firms will not lead to changes in firm rankings or in market shares. However, in competitive markets the opposite is expected to be observed. This study follows the aforementioned earlier studies in methodology but modifies them slightly to assess the impact of entry, size of the leading banks, and market structure on competition in the banking market following the reforms.

Following Rhoades (1980), Bodenhorn (1990) and Denizer (1997), the following model is estimated:

$$R_t = b0 + b1ENT_t + b2AVG_t + b3MDGR_t + b4CR5_t \qquad (4.6)$$

where:

R = rivalry

R_1 = mobility among top 10 banks

R_2 = mobility among all banks

ENT = number of entries

CR = 5 firm deposit concentration ratio

AVG = average fixed asset size of top 10 banks

MDGR = market deposit growth rate

The R1 version of the equation uses mobility among top 10 banks as the level of analysis, while the R2 form of the equation uses mobility among all banks in the market as the dependent variable.

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CHAPTER FIVE:
RESEARCH METHODOLOGY

5.1 Introduction

The purpose of this chapter is to discuss the methods of investigation followed in this study. The arrangement of the chapter is as follow. In section 5.2 the criteria used for sample selection and brief description of the Banks studies are presented. Section 5.3 described the sources and methods of data collection, while section 5.4 discussed the techniques of data analysis employed in this study. Section 5.5 presents the specific models adopted for testing the hypothesis. Finally, Section 5.6 discusses the data used in the study.

5.2 Sample Selection

The sample for this study consisted of 18 commercial banks. The selection of banks for the purpose of this study was done in terms of more important determinants of banking sector performance. These determinants include: size, age, market structure, and degree of government control. The banks selected included those quoted on the Nigerian Stock Exchange as well as those that are not quoted. The study used only banks in the commercial banking sector. The method of stratified sampling was used to select banks that are included in this study. From each banking sector characteristics banks were selected randomly through the assignment of statistical numbers. To assess the opinion of industry practitioners as well as regulators, a set of questionnaire was designed for selected Chief Executives of banks, banking officers and staff of regulatory agencies - i.e. CBN and NDIC.

The commercial banks (CB_X) included in the selection are as follows:-

CODE	BANK
CB_1	AFRIBANK
CB_2	AIB
CB_3	BANK OF THE NORTH
CB_4	COOPERATIVE DEVELOPMENT BANK
CB_5	FIRST BANK
CB_6	HABIB BANK
CB_7	INLAND BANK
CB_8	INTERNATIONAL TRUST BANK
CB_9	LION BANK
CB_{10}	ORIENT
CB_{11}	OWENA
CB_{12}	SAVANNAH BANK
CB_{13}	SGBN
CB_{14}	TRADE BANK
CB_{15}	UBA
CB_{16}	UNION BANK
CB_{17}	UTB
CB_{18}	WEMA BANK

5.3 Sources of Data

The main focal period for the study is 1990 - 1999. The choice of the period is informed by two major considerations. Firstly, a period of at least three (3) years is required for the real effects of SAP (which was introduced towards the end of 1986) to manifest and significantly influence the performance of banks. Secondly, the most important measures of financial liberalization (deregulation of interest rates and removal of sectoral allocation of credit) were only fully implemented in the 1990's. Nonetheless, data before 1990 was used in certain instances, mainly in analysing commercial banking concentration ratio and assessing the measure of financial deepening pre and post deregulation.

The main sources of data on the industry variables are the various issues of financial statements of the banks contained in their annual reports for the period under investigation. Included in these reports are reports of the Chief Executives of the banks as well as reports of the auditors all of which proved very valuable in integrating and analysing the information contained in the reports. Additionally, Central Bank of Nigeria Annual Reports, statistical bulletin, economic and financial review, credit and monetary guidelines , international financial statistical publication were used for macro economic variables, such as total investment in the economy, Gross Domestic Product (GDP), aggregate money supply and so on. Other sources of data for the study included NDIC Annual Reports, and Nigerian Stock Exchange (NSE) Fact book. In addition to these sources aggregate data would be obtained from the World Bank, the International Monetary Fund (IMF) and the International Financial Corporation (IFC).

5.4 Method of Analysis

In a time series analysis, various components of the data set should relate to the same time period. However, Nigerian banks adopt different accounting periods. Nonetheless, since the data from each bank represent twelve months of operation and activities, such differences in accounting period would not affect the accuracy of the data being considered for any given year.

Multiple regression of the performance variables and control variables in the specifications of models x, y, and z and the ratios are fitted to the data of selected banks with a view to trace the influence of deregulation measures on the respective dependent variables. We use SPSS software package to run the regression for eight cross section years, viz; 1990 - 1999. Regressions are

also run for the pooled data of the eight cross section years. The pooling was done on industry basis for two reasons:

i) It can generally be expected that the accounting practices of the banks in the commercial banking sector would be similar, particularly following the implementation of BOFID.

ii) The firms within the same industry are not expected to differ in respect of their financial pattern (Pandey, 1981).

Statistical significance of these *a priori* economic relationships were tested and statistical significance or insignificance of the coefficients of the performance variables were established. Analysis of the mathematical sign of the coefficients was undertaken. A positive and statistically significant coefficient for the various dependent variables was interpreted as supporting the given hypotheses. An insignificant or negative coefficient was taken to indicate the inability of deregulation measures in improving the performance of commercial banks. The results are presented in the form of tables.

5.5 Model Specifications

Numerous models abound for evaluating the performance of Banks along certain pre-determined parameters. A number of such models which are directly relevant to this study were reviewed in chapter four which discussed the aspect of theoretical consideration. However, for the purpose of this study, the following performance based market models would be adopted as the tools of investigation, namely; (1) the market structure model (SCP), (2) the competition (Rivalry) model and (3) the Concentration Ratio (CR) model.

5.5.1 Market Structure and Performance Model

The study shall adopt the equation 4.1 for testing the hypothesis for the relationship between market structure and performance. This cross-sectional profit equation was used in similar studies by Weiss (1974), Smirlock (1985), Evanoff and Fortier (1988), Molyneaux (1992) and Denizer (1997)

$$ROA_{it} = b + b1CR_t + b2MS_{it} + b3CA_{it} + b4TA_{it} + b5LA_{it} + b6DT_{it} + b7OEA_{it} + b8MDGR_t + b9D1 \quad (4.1)$$

where:

ROA = bank i's profits measured as the return on assets

CR = market structure variable, 5 (10) firm deposit (asset) concentration ratio

MS = market share measure, bank i's deposits as a percentage of total market deposits

CA = bank i's capital-to-asset ratio

TA = bank i's total assets

LA = bank i's loans-to-assets ratio

DT = bank i's demand deposits-to-total deposits ratio

OEA = bank i's operating expenses-to-total assets ratio

MDGR = market deposits growth rate

D1 = 1 for private, 0 for public banks

A finding of b1>0 and b2=0 supports the traditional S-C-P hypothesis. On the other hand, if b1=0 and b>0, then the efficient structure is supported. It is, of course, possible that both b1 and b2 maybe positive and significant, indicating that both factors are operative simultaneously. The effects of market concentration and market share on profits will be given by partial derivatives equal to the coefficients b1 and b2 respectively. The performance measure, the dependent variable, is bank profits measured as the return on assets(ROA),

i.e., net income divided by total assets. Other possible performance measures are return on equity(ROE) and bank stock prices.

The use of ROE may not be the best measure because banks can divide capital between debt and equity, making the comparison of equity values across banks difficult. ROA is the most widely used bank performance measure and, as suggested by Evanoff and Fortier (1988), dividing net income by total assets, which is ROA, makes it a more comparable measure across banks because "bank assets are a more common denomination." Therefore, ROA is the dependent variable. Business Week (April 9, 1984), and Business Week (April 8, 1985), also suggest that ROA is the single best performance measure for banks, as cited in Rhoades (1987).

The structure conduct performance analysis would be performed at three levels. The first level would test the traditional SCP hypothesis without the market share variable. The resulting variant equation is given as follows:

$$ROA_{jt} = b + b1CR_t + b3CA_{jt} + b4TA_{jt} + b5LA_{jt} + b7DT_{it} + b8OEA_{it} + b9MDGR_t + b10D1 \qquad (5.1)$$

The second level of analysis examined the SCP model in its complete form. That is the regression analysis was performed using equation 4.1.

The third level of analysis estimated the SCP model equation with the market share variable and excluding the market structure variable. By so doing the possible effect of market share on bank profitability was tested. The equation used was a variant of equation 4.1 stated in the following form:

$$ROA_{it} = b + b2MS_{it} + b3CA_{it} + b4TA_{it} + b5LA_{it} + b7DT_{it} + b8OEA_{it} + b9MDGR_{t} + b10D1 \quad (5.2)$$

The independent variables include both firm and market specific variables, and they are similar to those utilized in previous studies. Following previous studies, market structure would be proxied with the share of 5 leading banks in total deposits. Hence, concentration ratio is defined as the sum of shares of the leading 5 banks in total deposits, CR5. It must be noted, though, that what constitutes an appropriate market structure measure is not easy to answer. Theory provides little guide on the selection of an appropriate market structure variable. As noted by Evanoff and Fortier (1988), "the theory offers no information on the absolute number or size distribution of firms necessary to exercise market power. The questions concerning what number of firms is too large to permit collusion, and what amount of output control for price setting, are empirical issues."

However, theory suggests that there is a relationship between the level of output controlled by a small number of large firms, and performance, and probably because of this reason an overwhelming number of researchers have used concentration ratio despite its limitations. Alternatively, some researchers have used the Herfindahl-Hirschmann index (HHI), but the use of HHI in place of CR3 does not change any empirical results. HHI is also criticized on the grounds that it is mainly concerned with the dispersion of sellers, but the theory is more concerned with concentration and therefore a concentration measure should be used. For all the above reasons the various CR measures in terms of deposits are used as a market structure proxy.

The market share (MS) variable is assumed to be a proxy for firm-specific effects, and is defined as bank deposits divided by total market deposits. There are also a number of control variables similar to those that can be found in earlier SCP studies. They are included in order to take into account factors like risk, costs and demand that influence profitability. Given the fact that ROA is not risk adjusted, a capital-asset ratio (CA) is included to account for the unequal risk levels between banks, with low ratios indicating relatively risky positions. Banks with low capital ratios may be more aggressive and take risks expecting high returns. On the other hand, highly capitalized banks might play it safe and hold less risky assets (loans)and remain profitable. Therefore, the expected sign of CA is indeterminate.

Another control variable coming from the liability side of the balance sheet is the amount of demand deposits relative to total deposits (DT). This ratio gives a bank's relative cost of funds and should be positively related to profitability given the fact that demand deposits are relatively cheap source of funds. If this ratio is high, then banks do not need to make use of purchased funds, which are expensive. From the asset side of the balance sheet we have the ratio of total loans to total assets (LA). This ratio is of particular interest because loans usually represent the major category of income earning asset, generating more income than the main alternative assets, government securities, in addition to providing some idea about bank's risks. A high ratio may reflect aggressive loan marketing which could increase profits. On the other hand, large loan portfolios may be costly to manage and could result in substantial loan losses, which decrease profits. Therefore, the coefficient on this portfolio variable could be positive or negative.

In order to control for bank size, total assets (TA) of each bank is included in the sample. In this way the possibility of scale economies that could arise from size, and the possibility that larger banks have greater loan and product diversification potential is taken into account. As pointed out by Smirlock (1983) and Evanoff and Fortier (1988), diversification reduces risks and therefore the required rate of return. Hence, the sign on this coefficient is indeterminate. Operating expenses (OEA) should exert a negative impact on bank profits and it is included in the analysis as a proportion of total assets. We account for market demand by including the market deposits growth rate (MDGR).

Markets with high growth rates are likely to increase bank's deposit base but the contribution of deposits to profits will depend upon a number of factors. First, it will depend on the bank's ability to convert deposit liabilities into income earning assets, which are related to macroeconomic factors such as the GNP growth rate, the level of interest rates, etc. In addition, high growth rates attract additional competitors who reduce profits for all market participants. Therefore, the sign of MDGR is also indeterminate. In order to account for different types of ownership a dummy variable is included. D1 equals one for private banks and 0 for public banks.

5.5.2 Entry and Competition Model

The Rivalry model used by Rhoades (1980), Bodenhorn (1990) and Denizer (1997) and specified in equation 4.6 is suitable for this study. Hence it was used to examine the degree of competitiveness in the banking sector following the introduction of deregulation measures by the federal government. The equation was estimated in two forms, R1 and R2, given as follows:

$$R1 = b_0 + b_1ENT_t + b_2AVG_t + b_3MDGR_t + b_4CR5_t \quad (5.3)$$

$$R2 = b_0 + b_1ENT_t + b_2AVG_t + b_3MDGR_t + b_4CR5t \quad (5.4)$$

The dependent variable in the analysis takes two forms and takes into account both the price and non-price dimensions of competition. However, it is slightly different than the earlier studies which proxy competition by mobility and turnover among the top three and five firms. The first mobility measure used in this study, on the other hand, focuses on top 10 banks in terms of deposits because of their similarity to each other. They operate large branch networks nationwide and hence they may be expected to display similar operational characteristics.

The reason for focussing on the leading firms is methodological. As pointed out by Heggestad and Rhoades (1976), size differences between firms among the leading firms is often significant but differences among firms, both in relative and absolute terms, is observed to decline rapidly once one moves down in size from industry leaders. Hence, a rank change among industry leaders is probably due to some significant event that influence structural inter firm relationships while rank changes among smaller firms is more likely to be due to chance or to another factor that unrelated to structural characteristics of the market. Another important reason is that leading firms in a given industry are well known names and have capacity in terms of their size and establishness to enforce desired strategies which in turn may create a pattern of conduct for the entire market. For these reasons, the first mobility measure is defined as the sum of rank changes among the top 10 banks for each of the years during the 1990-1999 period.

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While the first measure is designed to capture structural changes in inter firm rivalry, its focus on the leaders may not capture the aggressive behaviour of fringe firms. Earlier studies attempted to overcome this problem by the turnover measure which accounts for the changes in the identity of leading firms. In other words, turnover measures the number of times firms below the top 5 or top 10 move into the ranks of top 5 or top 10. However, in the Nigerian context turnover measure may not be appropriate and is not used in this study. The size differences between the leading and fringe firms are too large in Nigeria for fringe firms to make into the leading group, and only counting the number of times the smaller banks move into the leading group of banks competition at the level of fringe firms may be understated. Hence, the second mobility measure takes into account the rank changes for all banks in the market. It is defined as the sum of rank changes for all banks for each of the years during the 1986-1995 period.

Among the independent variables in this study, the entry variable is of particular interest. Since the financial reforms aimed at increasing competition by promoting entry and this analysis is concerned with the impact of entry on competition, entry measure is proxied by the number of gross bank entry into the system during the 1990-1999 period. This variable is expected to have a positive sign since it increases the number of banks in the market which should alter the competitive stance of existing banks toward their rivals. As pointed out by Rhoades (1980) entry will reduce concentration and " will tend to increase uncertainty among the firms in the market with respect to their views of the actions of their rivals as well as to their views of the action of the new entrant". Hence, entry is expected to weaken the established relationships among old firms and contribute to competition.

Competitive structure of the market is captured by a concentration variable. As noted already this variable is expected to influence the conduct of market participants by making cooperation among market participants easier which in turn would keep firm rankings stable. As pointed out by Heggestad and Rhoades(1976) such stability may also be due to " vigorous but stalemated competition, as all competitors strain and succeed equally". However, such an outcome would be improbable in the sense that not all competitors would perform equally well at all times. Hence, the greater the stability which is expected to be facilitated by concentration, the higher the chances that overt or tacit cooperation exists. Consequently, this variable is expected to exert a negative influence on inter firm rivalry.

Two other independent variables are included to take into account other market factors expected to influence competition. The average fixed asset size of ten largest banks which is mostly made from their branches and equipment is introduced to capture the possibility that large firms are perceived as intimidating to other rivals or potential entrants. It proxies investments made in fixed assets and should be a good measure in determining the impact of such sunk investments on competition. Size may also have an important reputation component. However, under either case, this variable should negatively affect mobility. Finally, a market growth variable is included for two reasons. First, growing markets makes entry more attractive and easier. Second, rapid growth should increase uncertainty in inter firm relationships and makes tacit and/or overt cooperation more difficult and hence should increase mobility. It is defined as the quarterly growth rate of deposits over the 1986-1992 (1st quarter) period.

5.5.3 Concentration Ratio Model

The measure of concentration specified in equation 4.5 was selected as the model for determining the level of concentration in the commercial banking market.

$$CRn = \frac{X1+X2+X3+.....+Xn}{\sum X_i} \qquad (4.5)$$

where,

Xi is the fraction of total market sales accounted for by each firm

When an industry is composed of a very large number of firms, each of which is very small, then CR5 is close to zero, and the less concentrated is the industry. However, when five or fewer firms produce all of an industry's output, CR5 is 1, the more concentrated is the industry and consequently it is alleged that there is very little competition in the industry.

Higher concentration values, thus indicate oligopolistic market situation, suggesting that few banks dominate the scene and therefore have the power to influence banking practices considerably.

5.6 Data

The data used in this study is the annual reports of individual banks included in the sample and covers the period between 1990 and 1999 and includes only commercial banks. Data from the central bank annual statistical bulletins extends back to 1986 - the beginning of structural reform programme. The sample contains ratios and a number of levels of variables from balance sheets, income statements and notes on accounts with 5207 observations. For the analysis, the data has been pooled (cross-section and time series).

The empirical analysis was performed on annual observations of accounting data for a sample of 18 banks of various sizes, age and ownership structure that have been exposed to the Financial Deregulation event and for which reasonably "good" detailed financial information at the level of individual banks was available over the relevant period. The sample may suffer of survival bias because we included only surviving commercial banks - those that did not eventually disappear by liquidation, merger or acquisition. The portion of the analysis that uses aggregate market data was performed using annual figures of commercial banks' returns to central bank.

CHAPTER SIX:

DATA PRESENTATION AND ANALYSIS

6.1 Introduction

In section 1.4 we submitted that this study is an attempt to assess the performance of Nigerian commercial banks following the policy of financial deregulation. The aim is to study the effects that deregulation measures, on the whole, had on the market structure, efficiency, and competitiveness of the commercial banking sector. The study also examined the measures of financial deepening for the period so as to determine whether or not the expected improvement in that area was achieved.

Four hypotheses are presented. $\mathbf{H}_1$ states that the policy of financial deregulation did not significantly affect the efficiency of Nigerian commercial banks. The second hypothesis, $\mathbf{H}_2$, posits that deregulation measures were not successful in improving the commercial banking system's competitiveness. While $\mathbf{H}_3$ states there is no significant improvement in the concentration ratio (CR) of commercial banks following the programme of deregulation. Lastly, $\mathbf{H}_4$, maintains that deregulation of interest rates did not contribute to financial deepening, as argued by proponents of deregulation. The method of linear regression was employed in testing the first two hypothesis, $\mathbf{H}_1$ and $\mathbf{H}_2$. While simple trend analysis was used in testing the last two hypotheses, $\mathbf{H}_3$ and $\mathbf{H}_4$. The results of both analysis is presented in the following sections.

6.2 Results for the Estimated Equations

The models to be used in testing these hypothesis were presented in section 5.4 of the preceding chapter. Models A is defined by ten (10) variables consisting of ratios, a figure and a dummy. To test the robustness of the model,

the analysis was performed in three stages, using three equations named, estimates 1, 2, and 3. The first equation tests the traditional SCP hypothesis. This is performed by estimating equation (1) without the market share (MS) variable, but with the market structure measure CR5. The second equation (1) is estimated with both market share and market structure variables. By doing so the validity of the two competing hypothesis in explaining bank profitability is tested. Lastly, the possible effect of market share on bank profitability was tested by estimating equation (1) with the market share variable and excluding the market structure variable. Since hypotheses interpret market share variable differently. The results of the three derived regression equations are presented in the next section.

Furthermore, the raw data for this study is reported in Appendix A while the detailed regression results and trend analysis results are presented in Appendices Band C

6.2.1 Model A: Market Structure Equations

Regression results for the market structure model are reported in tables 1, 2, and 3. All of the equations are estimated using Ordinary Least Square (OLS) regression method as against the method of weighted Least Squares (WLS). The rationale being that the data is pooled. The presence of autocorrelation, a common problem in time series data was tested using Durbin - Watson test. The residuals for consecutive observations were found to be totally uncorrelated, indicating the absence of such problem. Indeed, the resulting Durbin - Watson statistic is above 1.9 in all the three equations. These results are close enough to the expected value of 2.

Furthermore, the values of Multiple R from the three equations suggests that the relationship between the dependent variable and the independent variables could swing in either direction. The same trend is found in the three estimates (1, 2, and 3). This result is consistent with the general findings of this study, where the behaviour of the variables do not conform to the typical behaviour expected in studies of this nature. This situation is not particularly disturbing as similar results were found in Cevdet Denizer (1997) and Smirlock (1985).

In general, the explanatory power of the regressions are "good", given the cross-sectional nature of the sample.

Estimate 1: Equation 4.1 without MS variable

Equation 4.1 tests the traditional SCP hypothesis. The first level of analysis is performed by estimating the equation without the market share (MS) variable - equation 5.1.

The resulting estimated equation is given below:

$$ROA = -.02 - .04CR + .28CA + 9.60E\text{-}11TA - .02LA + .05DT + .26OEA + .04MDGR + .01D1$$

The summary results are reported in table 6.1 below.

Table 6.1: SCP Model Results, estimated without the MS variable (Dependent Variable is Return on Assets, ROA)

Variable	B	SE B	Beta	Tolerance	VIF	T	Sig
CA	.281265	.076340	.321876	.845283	1.183	3.684	.0004
CR	-.044397	.051307	-.076206	.831811	1.202	-.865	.3887
D1	.007474	.008103	.091582	.654402	1.528	.922	.3583
DT	.049193	.026720	.157223	.884600	1.130	1.841	.0682
LA	-.021060	.040709	-.050437	.678733	1.473	-.517	.6059
MDGR	.043024	.028157	.147387	.693409	1.442	1.528	.1293
OEA	.262025	.097108	.261994	.684304	1.461	2.698	.0080
TA	9.596E-11	1.323E-10	.075267	.598874	1.670	.725	.4698
C	-.018343	.041018			-.447		.6556

Multiple R .50802

Standard Error .03627

F = 5.00060 Signif F = .0000

Durbin-Watson Test = 1.98813

Sources of Data: Computed From the Data by the Researcher

The coefficient on the market structure variable is of particular interest. As table 6.1 shows, the results does not support the hypothesis that market structure is related to the rate of profits. The coefficient on the market structure variable is negative and statistically not significant at the 5% level. Therefore, using an approach found in earlier studies, it was found that market structure is not an important factor in explaining bank profitability in the Nigerian banking market.

In order to test for the presence of computational problems, the tolerance coefficient for all the variables entered in the equation were computed. As the results in Table 6.1 show, the tolerance levels for the variables are sufficiently high. This, therefore leads us to conclude that the variables, individually and collectively contributed significant information to the model.

While the variable of interest CR5 is not significantly related to profits, it is interesting to note that, with the exception of Loans to Asset variable all the other variables have significant influence on the dependent variable.

Estimate 2: Equation 4.1

In this block, equation 4.1 was estimated with both market share and market structure variables. By doing so the validity of the two competing hypothesis in explaining bank profitability is tested. The equation was entered in its complete form, and the resulting estimate equation is given below.

ROA = -.02 - .05CR - .02MS + .28CA + 1.3E-10TAt - .02LA
+ .05DT + .26OEA + .04MDGR + .01D1

The summary of the regression results are given in Table 6.2 below.

Table 6.2:SCP Model Results, estimated with all the variables (Dependent Variable is Return on Assets, ROA)

Variable	B	SE B	Beta	Tolerance	VIF	T	Sig T
CA	.280674	.076721	.321200	.843968	1.185	3.658	.0004
CR	-.044847	.051575	-.076979	.830150	1.205	-.870	.3864
D1	.006879	.008690	.084287	.573830	1.743	.792	.4302
DT	.047588	.028063	.152094	.808721	1.237	1.696	.0927
LA	-.020765	.040908	-.049730	.677806	1.475	-.508	.6127
MDGR	.043917	.028643	.150447	.675720	1.480	1.533	.1280
MS	-.017561	.089939	-.031101	.256422	3.900	-.195	.8455
OEA	.257678	.100025	.257648	.650408	1.537	2.576	.0113
TA	1.226E-10	1.904E-10	.096139	.291862	3.426	.644	.5209
C	-.016551	.042201			-.392		.6956

Multiple R .50827

Standard Error .03642

F = 4.41204 Signif F = .0001

Durbin-Watson Test = 1.98907

Sources of Data: Computed From the Data by the Researcher

According to the efficient structure hypothesis there should be a direct relationship between market share, arising from firm-specific efficiencies, and profits. Therefore, if $b_2>0$ and $b_1=0$, then it is possible to infer that bank profitability is directly linked to market share, proxying efficiency, and banks controlling large portions of deposits are more efficient than others and earn rents due to their efficiency. Such a finding will also imply that market concentration does not enable banks to earn supranormal (monopoly) profits

Cevdet Denizer (1997). On the other hand, if $b_1>0$ and $b_2=0$ it will mean, as put nicely by Smirlock (1985), "market share does not affect firm rents and that rents reflected in higher profitability are monopoly rents that result from market concentration."

However, as indicated earlier, the results might yield other possible combinations of b_1 and b_2 and both forces can be operative simultaneously. The purpose of this exercise is to determine the impact of MS on CR5 and profits. In Evanoff and Fortier (1988) and Smirlock (1985), the inclusion of market share in their initial model, with the market structure variable, changes the overall relationship: market share enters with a strong positive influence and market concentration becomes insignificant. In this study, however, such effect is not found as results presented in table 6.2 show. They do not support the efficient structure hypothesis; the coefficient of the market share is not even marginally significant. In the same way, the market structure variable is also not significant at the 5% level with a negative sign. However, the correlation matrix (Appendix C2) indicates a marginally significant positive relationship between MS and CR at the 5 % level. But such a relationship is absent between Market Share and profits.

As was the case with estimate 1, the tolerance coefficient for all the variables entered in the equation were computed. As the results in Table 2 show, the tolerance levels for the variables are high except for the market share and Total Asset variables, suggesting the absence of computational problems. Hence we can conclude, here also, that the variables, contributed significant information to the model.

Estimate 3: Equation 5.2

The possible effect of market share on bank profitability was tested by estimating the SCP model equation with the market share variable and excluding the market structure variable - equation 5.2. The estimated equation is given below.

$$ROA = -.05 - .01MS + .28CA + 1.01E\text{-}10TA - .02LA + .05DT + .28OEA + .05MDGR + .01D1$$

Table 6.3 present the results.

Table 6.3: SCP Model Results, estimated without the CR variable (Dependent Variable is Return on Assets, ROA)

Variable	B	SE B	Beta	Tolerance	VIF	T	Sig T
CA	.275545	.076413	.315330	.848987	1.178	3.606	.0005
D1	.006504	.008670	.079690	.575248	1.738	.750	.4547
DT	.050277	.027863	.160687	.818659	1.222	1.804	.0738
LA	-.028130	.039979	-.067369	.708162	1.412	-.704	.4831
MDGR	.046634	.028442	.159756	.683861	1.462	1.640	.1038
MS	-.014065	.089753	-.024911	.256935	3.892	-.157	.8757
OEA	.282158	.095880	.282125	.706362	1.416	2.943	.0039
TA	1.005E-10	1.884E-10	.078804	.297160	3.365	.533	.5950
C	-.047298	.023010			-2.056		.0421

Multiple R .50340

Standard Error .03638

F = 4.87937 Signif F = .0000

Durbin-Watson Test = 1.98733

Sources of Data: Computed From the Data by the Researcher

The coefficient on the market share variable is negative and is not significant. Such a finding does not support the argument that market share is a source of power by itself, nor it supports the hypothesis that firm-specific effects resulting in high market shares exist. This result can be interpreted as additional evidence for the rejection of SCP hypothesis for the Nigerian banking market since the market structure, by itself, is not significant as well as with the market share variable. Similarly, the market share is also never significant by itself nor with the market structure variable.

The tolerance situation is similar to what obtained in estimate 2, where the tolerance levels for the variables are high except for the market share and Total Asset variables. Hence computational problems are expected to be minimal as was the case with the first two estimates. The entry variables could, on the whole, be said to have contributed significant information to the model.

While the variable of interest CR5 is not significantly related to profits, it is interesting to note that, with the exception of Loans to Asset variable all the other variables have significant influence on the dependent variable.

Further Interpretation of the Results

Although the key variables of interest in this study are market structure (CR) and market share (MS), our model also contain seven control variable. Results for control variables in the study will be summarized briefly. The coefficient of the capital-asset ratio (CA) is highly significant, entering with a positive sign at all the three levels of analysis. It is probably the case that well capitalized banks behave much more cautiously, earn relatively low

returns, but remain profitable Cevdet Denizer (1997). Results with the total asset (TA) variable are not so consistent. In all the equations it has a positive sign, and it is always insignificant, except in equation 3. However, such results are also found in other studies. Shepherd (1972), finds a negative relationship between size and profitability in his study of the market share-rate of return relationship, and he attributes this to X inefficiency. Newman, et al (1979), report similar results in their analysis of market concentration-profitability relationship in Germany. Like Shepherd (1972), they attribute such a finding to X inefficiency. More recently, Evanoff and Fortier (1988) find a negative relationship between size and profitability in their re-evaluation of structure-performance relationship. The loan-asset ratio (LA)is highly significant in all equations and enters with a negative sign. This indicates that banks with large loan portfolios relative to assets absorb high administrative costs and incur substantial loan losses. Relatively cheaper sources of funds as given by the demand deposits-total deposits ratio (DT) contribute to profits and is consistently statistically significant at the 5% level. Operating expenses-total asset ratio is significant in all equations and has the expected sign, which is consistent with our expectations. Market deposit growth rate (MDGR), also turned out to be significant with a positive sign suggesting that MDGR does impact profits significantly. The coefficient for the ownership variable (D1) is significant in all three equations, suggesting that privately owned banks are more profitable than the public banks.

6.2.2 Model B: Competition Model Equations

The degree of competitiveness in the banking market was examined using the competition models given in chapter five. The equations were estimated by OLS regression on the pooled cross section - time series data set.

The two equations given by R1 and R2 were determined. The resulting estimated equations are presented as estimates 4 and 5, respectively.

Estimate 4: Equation 5.3

$$R_1 = 25.96 - .51ENT - .291E\text{-}07AVG - 23.24MDGR - 8.44CR5$$

Estimate 5: Equation 5.4

$$R_2 = 31.47 - .25ENT - 5.18E\text{-}07AVG - 34.22MDGR + 9.91CR5$$

Tables 6.4 and 6.5 present the regression results.

Table 6.4: Regression Results for R1, mobility among Top 10 banks

(Dependent Variable is Return on Assets, R1)

Variable	B	SE B	Beta	Tolerance	VIF	T	Sig T
AVG	-2.91210E-07	1.5418E-07	-1.540416	.161399	6.196	-1.889	.1553
CR	-8.441300	15.409902	-.195117	.846163	1.182	-.548	.6220
ENT	-.511776	.371448	-.796030	.321611	3.109	-1.378	.2621
MDGR	-23.244059	10.736156	-1.186043	.357726	2.795	-2.165	.1190
C	25.956670	10.345361				2.509	.0870

Multiple R .82337

Standard Error 2.57993

F = 1.57870 Signif F = .3686

Durbin-Watson Test = 3.07799

Table 6.5: Regression Results for R2, mobility among all banks

(Dependent Variable is Return on Assets, R2)

Variable	B	SE B	Beta	Tolerance	VIF	T	Sig T
AVG	-5.17792E-07	2.7142E-07	-1.556948	.161399	6.196	-1.908	.1525
CR	9.906469	27.127775	.130164	.846163	1.182	.365	.7392
ENT	-.250821	.653901	-.221769	.321611	3.109	-.384	.7269
MDGR	-34.222393	18.900057	-.992626	.357726	2.795	-1.811	.1679
C	31.469134	18.212097				1.728	.1825

Multiple R .82310

Standard Error 4.54175

F = 1.57548 Signif F = .3693

Durbin-Watson Test = 2.81629

Sources of Data: Computed From the Data by the Researcher

In both equations, most variables have the expected sign and are significant at the 5 percent level, except the entry variable. The entry variable, enters with a negative sign in the first equation and is not significant. This is inconsistent with our expectations on the basis of theory although similar results were obtained by Rhoades (1980). When mobility among all firms is used the sign of entry variable still did not change and. it still remains insignificant. While these results would imply that the entry of some 38 banks between 1986 and 1993 did not have a significant pro-competitive effect on rivalry and have not been sufficient to alter the inter-firm relationships among banks in the market, they may be due to a number of reasons.

Firstly, it may be that more time is needed before the new entrants can have an impact on market relationships particularly because full deregulation

of interest rates and complete abolishing of sectoral credit allocation only came into effect in October, 1996.

Secondly, the entry of new banks have been on a small scale which reduces the likelihood that they will change the nature of established relationships. In other words, a minimum entry size may be needed in order to penetrate into the market and compete with the established banks effectively.

Thirdly, as noted earlier, the new entrants chose to focus on trade finance and other specialized services although they are authorized to collect deposits. This in effect left the pre-existing large banks unchallenged in the retail market Given these considerations, it is not surprising that entry did not positively influence competition in the equations estimated. Hence, results obtained does not mean entry does not matter. Rather, it highlights the importance of conditions under which entry will be more effective, i.e., when the type and size of the entrants are close to the existing firms in the industry, Hannah and Kay (1977), Kheamani and Shapiro (1988).

The results for the concentration variable are consistent with expectations - market concentration is a determinant of competition in the retail banking market and is correlated with a low level of inter-firm rivalry. Such a finding is in line with Heggestad and Rhoades's proposition that mobility is an element of " industry structure but rather reflect conduct that the theory would predict to arise from certain market structures". This result also corroborates the earlier result that found a positive relationship between market share and concentration and profits. The average fixed asset size of the top 5 banks has a weak negative impact on competition.

This result suggests that the branch network and equipment owned by the top 5 banks are only marginally affecting competition in the market. Bodenhorn (1990) also finds similar results. It may also be an indication of reputation effects which are thought to be significant in banking. Contrary to expectation, market growth is not strongly related to competition. This result is in line with other competition studies.

The analysis of responses from the questionnaire revealed both regulators and operators have mixed feelings about the desirability of the measures of deregulation so far implemented. However, opinions are divided on the level of monitoring and supervision by regulatory bodies. The practitioners believed that the apex bank is imposing too many conditions particularly on credit and capitalisation requirements. Regulators on the other hand believe banks need to be more closely monitored, to guard against the rising trend of moral hazard which is becoming prevalent among many banks.

6.2.3 *Model C:* **Concentration Ratio**

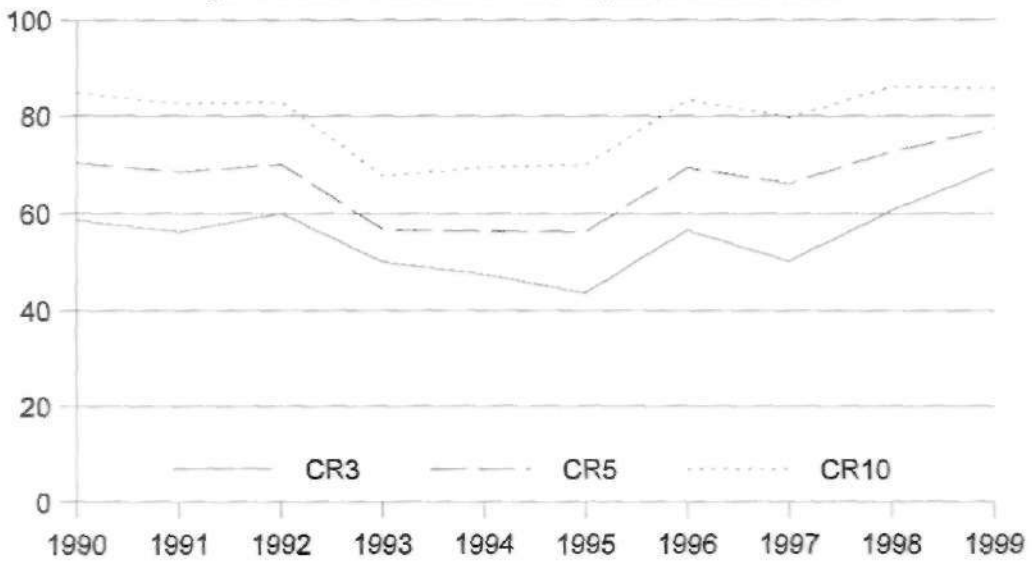
A casual observation of the concentration ratios reveal that the commercial banking system in Nigeria is grossly over concentrated. The trend is presented in Table 6.6 below.

Table 6.6: Market Concentration Ratios

Year	CR3	CR5	CR10
1990	58.6	70.4	84.9
1991	56.2	68.6	82.6
1992	60	70.1	82.9
1993	50	56.8	67.7
1994	47.4	56.5	69.5
1995	43.6	56.4	70
1996	56.6	69.4	83.4
1997	50.2	66.2	79.8
1998	60.6	72.7	86.1
1999	69	77.4	85.7

Sources of Data: Computed From the Data by the Researcher

Figure 6.1: Market Concentration Ratios - Nigerian Commercial banks



As expected, reforms reduced concentration in the years following reforms. However by 1995, when the policy of guided deregulation was introduced concentration ratios soared to pre-deregulation levels. The ratios have remained undesirably high ever since, with temporary improvements recorded in 1996 and 1997, a situation that could be attributed to the policy of complete deregulation of interest rates and the abolishment of sectoral allocation of credit effected in mid 1996.

By whatever measurable criteria, a situation where only three banks in the economy account for more than half of the total market deposits at any given year does not encourage real competition. The commercial banking market in Nigeria is purely oligopolistic. This is in spite of the relaxation of entry barriers which saw the establishment of nearly 40 commercial banks during the period under investigation. Clearly, the Nigerian banking sector is among the most concentrated in the world. In countries like Malaysia and Philippines, CR5 hardly rise above 50%, not to mention CR3. Hence we conclude that H_3 can not be rejected.

CHAPTER SEVEN:
CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

A financial system's contribution to the economy depends upon the quantity and quality of its services and the efficiency with which it provides them. The inherent efficiencies, which are expected of a financial sector, are hardly made manifest in a tightly controlled financial system. So in a repressed financial system where policies governing the system is the preserve of the government, very few instances exist of highly successful and viable financial institutions, which achieved their success under such repressive environments. Stiglitz (1998) could not have been more precise when he asserted that "history does not offer many examples of highly successful economies that did not accord the market a central role in the allocation and monitoring of capital."

The results of this study have a number of policy implications. The first is that reforms had not engendered reduced concentration and this would lead us to conclude that the cooperative attitude and tradition of understanding among the banks is still strong, deregulation not withstanding. Indeed , the Central bank in its Annual report decried the rising oligopolistic nature of the commercial banking system in Nigeria in which only 10 banks accounted for 68% of total deposit liabilities as against 44.7% in 1997. The results of this study attest to this undesirable trend. This suggest that we can not reject the first hypothesis, H_1 having conclusively established that the profitability of the leading banks is largely due to size rather than specific efficiencies.

These developments clearly suggest that the high profitability in the sector - while operating costs were rising - have been primarily due the uncompetitive pricing of banks and not their efficiency, which are captured by the equations estimated. Hence, the deregulation and liberalization process that started in 1986 should be maintained but be reviewed constantly to guard against deviations from set objectives. Also related to the first one is that the size and type of the entrants is as important as the entry itself and that future policies should take this factor into account. The findings of this study indicate that entry at small scale has not been sufficient to alter inter-firm relationships in the market. While it may be argued that reforming the financial system should be regarded as a process and entry will increase competition over time, it is not clear that entry at small scale will deliver that result. This view is shared by Cevdet Denzer (1997).

As noted already, prior to 1986 with the distorted price of capital and rising inflation it was very profitable to collect deposits by opening new branches. However, with the deregulation of interest rates this situation changed and capital became expensive and eliminated rents that could be earned by collecting deposits and simply investing them into real assets or other profitable activities.

In the two competition equations estimated, the size of the large banks exerted negative impact on competition which may indicate that the size of the banks has now become a mobility barrier in the system. Such a proposition seems to be in line with Caves and Porter's (1977) contribution which generalized Bain's original theory of entry barriers to include mobility barriers which makes the point that competition not only depends on new entry but "structural restraints on firms' abilities to change their market shares" or

mobility within an industry as well. Thus, we can conclude that Deregulation, per se was not successful in promoting competition in the commercial banking system. We, therefore, can not reject the second hypothesis, H_2. Thus, subsequent measures to be taken in promoting competition in the system must ensure that both the entry and mobility barriers are taken into account.

On the whole the policy of deregulation introduced by the government may have had some effects in galvanising bankers away from 'arm-chair-banking' but it has not brought in the expected dividends of allocative and productive efficiencies as well as lower concentration. This situation appeared to be the experience with Third world economies undertaking financial liberalization. Indeed, after studying the experience with Latin American financial liberalization, McKinnon himself (1988) recognizes the limitations of his own original approach and states that the order in which the monetary system is stabilized in comparison with the deregulation of banks and other financial institutions `must be more carefully considered than had previously been thought.'

7.2 Recommendations

1. Given the results of this study on competition, a pro-competitive policy would need to facilitate inter-bank rivalry among the leading banks which continue to dominate the system. This in turn requires the entry or creation of new banks with a reasonable number of branches. In other words, what is needed is entry at a certain size. In the short term this could be achieved by breaking up and privatizing public banks. This task is already been undertaken by the National privatization council. Breaking up public banks, can easily result in the creation of

some new banks with more branches which will reduce concentration and facilitate mobility in the retail banking market.

Such a strategy is also likely to improve efficiency in the sector. Since it would strengthen the existing significant amount of -X- inefficiencies in banking. In other words, differences in managerial ability to minimize costs and maximize profits seem to be larger than the cost effects of the choice of scale and scope of the output level. If so, creating banks with sizeable branches by breaking up public banks prior to privatization is likely to improve their governance structures and their productive efficiency.

Promoting the entry of non-banks and local banks would also be desirable and there is a need to increase the number of institutions that compete for deposits. Contrary to views expressed by some bankers and policymakers the market is not over-banked. In most developing countries savings and loan associations, building societies and cooperative banks actively compete and are numerous. The first step to fill this gap might be the creation of institutions for housing finance and the development of a mortgage market and entry of new institutions should not be restricted.

The experience of both the developed and developing countries with financial deregulation and liberalization policies has shown that promoting competition involves striking a balance between a number of potentially conflicting objectives and the risk financial deregulation brings. In most countries public policy objective has been to maintain financial market stability and investor protection while achieving

productive and allocative efficiency through deregulation. However, Competition in banking is not like competition in soap production. There are risks and distortions associated with bank competition that make the welfare effects of increased competition uncertain" particularly when there is deposit insurance. In many respects, financial markets are incomplete and market failures are a reality which implies that there would always be a case for government intervention.

What these arguments imply is that owing to the conflicting objectives banking will need to be regulated and be different from other industries which in turn will limit the intensity of competition. However, this does not mean that present low level of competition in banking in Nigeria might be or should be acceptable. Even if the best of conditions are created for a competitive system, owing to the conflicting objectives and regulations imposed on the financial sector profitability will be higher than other industries. Hence, there is ample room for competition in the Nigerian market although it is not to be expected that increased competition will approximate ideal conditions. A corollary to these arguments is that the regulatory framework and supervisory capacity of the authorities will be crucial factors in striking a balance between competition, system stability and efficiency and with increased globalization of financial markets this task will not become easier.

Area of Further Research

Further research into this topic could be carried out using the translog cost equation.

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APPENDIX A: QUESTIONNAIRE

Department of Business Admin,
Ahmadu Bello University,
Zaria.

Dear Sir/Madam,

I am a staff of Ahmadu Bello University undertaking a research on the Effects of Financial Deregulation on market structure and competition in Nigerian Commercial Banks. This questionnaire is a part of the research design to gather information about the implications of the measures of deregulation so far taken by the government.

This is to request you to kindly fill in the required information on the questionnaire. I wish to assure you that all information supplied will only be used for the purpose of this study.

Thank you for your kind attention.

Yours faithfully,

Sgd.
Muhammad Nasirudeen Maiturare

1. Name of your organisation or sector _____
2. How long have you been working in the financial sector?_____
3. Are you aware of the Fed. Govt's deregulation policy?_____
   If the answer is Yes, please list the specific ones you are aware of.

   _____

   _____

   _____
4. What is your opinion about the efficacy of each measure.

   _____

   _____

   _____
5. What publicly available data do you think are important in assessing bank performance, generally?

   _____

   _____

   _____
6. What publicly available data do you think are important in assessing bank performance in a deregulated economy?

   _____

   _____

   _____
7. What is your opinion about the reliability of publicly available data in Nigeria.?

   _____

   _____
8. What is your general assessment of the performance of banks since the introduction of deregulation policy?

   _____

   _____

APPENDIX B1:

REGRESSION RESULTS FOR MARKET STRUCTURE EQUATION (ESTIMATE 1)

**** MULTIPLE REGRESSION ****

Listwise Deletion of Missing Data

	Mean	Std Deviatio	Label
ROA	.026	.041	
CA	.069	.047	
CR	.658	.070	
D1	.444	.499	
DT	.414	.130	
LA	.262	.097	
MDGR	.298	.139	
OEA	.081	.041	
TA	18994230.415	31929929.280	

N of Cases = 124

Correlation, 1-tailed Sig:

		ROA	CA	CR	D1	DT	LA	MDGR	OEA	
ROA		1.000	.387	-.142	.191	.190	.098	.024	.331	
	.		.000	.057	.017	.017	.140	.397	.000	
CA		.387	1.000	.049	.322	.089	.135	-.147	.241	
			.000	.		.293	.000	.164	.068	.052
	.003									
CR		-.142	.049	1.000	.046	-.122	.132	-.196	-.183	
			.057	.293	.		.305	.088	.071	.015
	.021									
D1		.191	.322	.046	1.000	.009	.317	-.082	.220	
			.017	.000	.305	.		.460	.000	.184
	.007									
DT		.190	.089	-.122	.009	1.000	.086	-.144	.126	
			.017	.164	.088	.460	.		.172	.055
	.082									
LA		.098	.135	.132	.317	.086	1.000	-.267	.455	
			.140	.068	.071	.000	.172	.		.001
	.000									
MDGR		.024	-.147	-.196	-.082	-.144	-.267	1.000	-.186	
			.397	.052	.015	.184	.055	.001	.	
	.019									
OEA		.331	.241	-.183	.220	.126	.455	-.186	1.000	
			.000	.003	.021	.007	.082	.000	.019	.
TA		-.134	-.122	.216	-.420	-.180	-.100	-.346	-.154	
			.069	.088	.008	.000	.022	.135	.000	.043

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**** MULTIPLE REGRESSION ****

	TA
ROA	-.134
	.069
CA	-.122
	.088
CR	.216
	.008
D1	-.420
	.000
DT	-.180
	.022
LA	-.100
	.135
MDGR	-.346
	.000
OEA	-.154
	.043
TA	1.000

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Equation Number 1 Dependent Variable.. ROA

Descriptive Statistics are printed on Page 1

Block Number 1. Method: Enter
CA CR D1 DT LA MDGR OEA TA

Variable(s) Entered on Step Number
1.. TA
2.. LA
3.. CA
4.. DT
5.. CR
6.. MDGR
7.. OEA
8.. D1

Multiple R .50802
R Square .25809
Adjusted R Square .20648
Standard Error .03627

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	8	.05261	.00658
Residual	115	.15124	.00132

F = 5.00060 Signif F = .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	TA	LA	CA	DT	CR	MDGR
TA	1.751E-20	.04329	.01380	.25253	-.14558	.44261
LA	2.332E-13	.00166	.08303	-.03329	-.20574	.15993
CA	1.394E-13	2.580E-04	.00583	-.06278	-.07879	.08220
DT	8.929E-13	-3.622E-05	-1.281E-04	7.140E-04	.10164	.23234
CR	-9.884E-13	-4.297E-04	-3.086E-04	1.393E-04	.00263	.11787
MDGR	1.649E-12	1.833E-04	1.767E-04	1.748E-04	1.703E-04	7.928E-04
OEA	9.256E-13	-.00167	-.00138	-3.566E-05	.00139	3.367E-04
D1	4.774E-13	-6.734E-05	-1.564E-04	3.211E-05	-2.903E-05	3.816E-05

**** MULTIPLE REGRESSION ****

Equation Number 1 Dependent Variable.. ROA
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	OEA	D1
TA	.07202	.44515
LA	-.42245	-.20414
CA	-.18673	-.25276
DT	-.01374	.14828
CR	.27876	-.06983
MDGR	.12313	.16725
OEA	.00943	-6.572E-05
D1	-5.172E-08	6.567E-05

---------- Variables in the Equation ----------

Variable	B	SE B	95% Confdnce Intrvl B		Beta
CA	.281265	.076340	.130050	.432480	.321876
CR	-.044397	.051307	-.146027	.057233	-.076206
D1	.007474	.008103	-.008577	.023526	.091582
DT	.049193	.026720	-.003735	.102121	.157223
LA	-.021060	.040709	-.101696	.059576	-.050437
MDGR	.043024	.028157	-.012749	.098796	.147387
OEA	.262025	.097108	.069673	.454377	.261994
TA	9.59653E-11	1.3233E-10	-1.66162E-10	3.58093E-10	.075267
(Constant)	-.018343	.041018	-.099592	.062906	

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
CA	.845283	1.183	3.684	.0004
CR	.831811	1.202	-.865	.3887
D1	.654402	1.528	.922	.3583
DT	.884600	1.130	1.841	.0682
LA	.678733	1.473	-.517	.6059
MDGR	.693409	1.442	1.528	.1293
OEA	.684304	1.461	2.698	.0080
TA	.598874	1.670	.725	.4698
(Constant)			-.447	.6556

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	CA	CR	DI	DT	LA	
1	6.96687	1.000	.00013	.00417	.00018	.00402	.00148	.00155	
2	.95604	2.699	.00003	.00314	.00006	.09989	.00003	.00003	
3	.40318	4.157	.00035	.05075	.00028	.33103	.00697	.00026	
4	.24143	5.372	.00018	.68484	.00039	.34676	.00053	.00301	
5	.20868	5.778	.00007	.19264	.00025	.06280	.00439	.05499	
6	.11279	7.859	.00067	.00602	.00193	.00447	.33652	.00506	
7	.07428	9.685	.00001	.03221	.00176	.11739	.20368	.66746	
8	.03276	14.584	.03969	.02595	.11454	.03362	.34804	.26250	
9	.00399	41.810	.95888	.00028	.88061	.00003	.09836	.00515	

	MDGR	OEA	TA
1	.00201	.00242	.00219
2	.00022	.00040	.32819
3	.09856	.00012	.17755
4	.02423	.01843	.05716
5	.11994	.28273	.03556
6	.22091	.31264	.05510
7	.00129	.26979	.05203
8	.40144	.01148	.28932
9	.13140	.10199	.00290

End Block Number 1 All requested variables entered.

**** MULTIPLE REGRESSION ****

Equation Number 1 Dependent Variable.. ROA

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	-.0055	.1430	.0260	.0207	124
*RESID	-.0540	.2526	.0000	.0351	124
*ZPRED	-1.5233	5.6585	.0000	1.0000	124
*ZRESID	-1.4879	6.9667	.0000	.9669	124

Total Cases = 180

Durbin-Watson Test = 1.98813

APPENDIX B2:
REGRESSION RESULTS FOR MARKET STRUCTURE EQUATION (ESTIMATE 2)

**** MULTIPLE REGRESSION RESULTS ****

Listwise Deletion of Missing Data

	Mean	Std Deviation	Label
ROA	.026	.041	
B	1.000	.000	
CA	.069	.047	
CR	.658	.070	
D1	.444	.499	
DT	.414	.130	
LA	.262	.097	
MDGR	.298	.139	
MS	.058	.072	
OEA	.081	.041	
TA	18994230.415	31929929.280	

N of Cases = 124

**** MULTIPLE REGRESSION ****

CORRELATION TABLE FOR ESTIMATE 2; 1-TAILED SIG:

	ROA	B	CA	CR	D1	DT	LA	MDGR	MS	OEA	TA
ROA	1.000	.	.387	-.142	.191	.190	.098	.024	-.221	.331	-.134
	.	.000	.000	.057	.017	.017	.140	.397	.007	.000	.069
B	.	1.000	.	.	.	.	.	.	.	.	.
	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000
CA	.387	.	1.000	.049	.322	.089	.135	-.147	-.240	.241	-.122
	.000	.000	.	.293	.000	.164	.068	.052	.004	.003	.088
CR	-.142	.	.049	1.000	.046	-.122	.132	-.196	.138	-.183	.216
	.057	.000	.293	.	.305	.088	.071	.015	.064	.021	.008
D1	.191	.	.322	.046	1.000	.009	.317	-.082	-.558	.220	-.420
	.017	.000	.000	.305	.	.460	.000	.184	.000	.007	.000
DT	.190	.	.089	-.122	.009	1.000	.086	-.144	-.317	.126	-.180
	.017	.000	.164	.088	.460	.	.172	.055	.000	.082	.022
LA	.098	.	.135	.132	.317	.086	1.000	-.267	-.229	.455	-.100
	.140	.000	.068	.071	.000	.172	.	.001	.005	.000	.135
MDGR	.024	.	-.147	-.196	-.082	-.144	-.267	1.000	-.063	-.186	-.346
	.397	.000	.052	.015	.184	.055	.001	.	.244	.019	.000
MS	-.221	.	-.240	.138	-.558	-.317	-.229	-.063	1.000	-.324	.782
	.007	.000	.004	.064	.000	.000	.005	.244	.	.000	.000
OEA	.331	.	.241	-.183	.220	.126	.455	-.186	-.324	1.000	-.154
	.000	.000	.003	.021	.007	.082	.000	.019	.000	.	.043
TA	-.154	.	-.122	.216	-.420	-.180	-.100	-.346	.782	-.154	1.000
	.069	.000	.088	.008	.000	.022	.135	.000	.000	.043	.

Note: '.' is printed if a correlation cannot be computed.

**** MULTIPLE REGRESSION RESULTS ****

Equation Number 1 Dependent Variable.. ROA

Descriptive Statistics are printed on Page 7

The following variables are constants or have missing correlations:

B

They will be deleted from the analysis.

Block Number 1. Method: Enter
B CA CR D1 DT LA MDGR MS
OEA TA

Variable(s) Entered on Step Number
1.. TA
2.. LA
3.. CA
4.. DT
5.. CR
6.. MDGR
7.. OEA
8.. D1
9.. MS

Multiple R	.50827
R Square	.25834
Adjusted R Square	.19978
Standard Error	.03642

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	9	.05266	.00585
Residual	114	.15119	.00133

F = 4.41204 Signif F = .0001

**** MULTIPLE REGRESSION RESULTS ****

Equation Number 1 Dependent Variable.. ROA

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	TA	LA	CA	DT	CR	MDGR
TA	3.624E-20	.05666	-.01862	-.04114	-.13353	.41938
LA	4.412E-13	.00167	.08145	-.04263	-.20704	.16367
CA	-2.719E-13	2.556E-04	.00589	-.04843	-.07688	.07478
DT	-2.198E-13	-4.895E-05	-1.043E-04	7.876E-04	.11018	.17252
CR	-1.311E-12	-4.368E-04	-3.042E-04	1.595E-04	.00266	.10911
MDGR	2.287E-12	1.918E-04	1.643E-04	1.387E-04	1.612E-04	8.204E-04
OEA	-2.101E-12	-.00172	-.00133	1.470E-04	.00145	2.377E-04
D1	6.579E-14	-7.252E-05	-1.485E-04	5.744E-05	-2.225E-05	2.453E-05
MS	-1.226E-11	-1.360E-04	2.722E-04	7.392E-04	2.073E-04	-4.114E-04

	OEA	D1	MS
TA	-.11033	.03977	-.71599
LA	-.41979	-.20400	-.03695
CA	-.17312	-.22267	.03944
DT	.05237	.23553	.29288
CR	.28145	-.04965	.04469
MDGR	.08296	.09856	-.15972
OEA	.01001	.07803	.22256
D1	6.783E-05	7.552E-05	.35089
MS	.00200	2.742E-04	.00809

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**** MULTIPLE REGRESSION RESULTS ****

Equation Number 1 Dependent Variable.. ROA

---------- Variables in the Equation ----------

Variable	B	SE B	95% Confdnce Intrvl B		Beta
CA	.280674	.076721	.128690	.432658	.321200
CR	-.044847	.051575	-.147016	.057322	-.076979
D1	.006879	.008690	-.010336	.024094	.084287
DT	.047588	.028063	-.008005	.103182	.152094
LA	-.020765	.040908	-.101804	.060274	-.049730
MDGR	.043917	.028643	-.012824	.100658	.150447
MS	-.017561	.089939	-.195728	.160607	-.031101
OEA	.257678	.100025	.059529	.455827	.257648
TA	1.22578E-10	1.9036E-10	-2.54521E-10	4.99676E-10	.096139
(Constant)	-.016551	.042201	-.100150	.067048	

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
CA	.843968	1.185	3.658	.0004
CR	.830150	1.205	-.870	.3864
D1	.573830	1.743	.792	.4302
DT	.808721	1.237	1.696	.0927
LA	.677806	1.475	-.508	.6127
MDGR	.675720	1.480	1.533	.1280
MS	.256422	3.900	-.195	.8455
OEA	.650408	1.537	2.576	.0113
TA	.291862	3.426	.644	.5209
(Constant)			-.392	.6956

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	CA	CR	DI	DT	LA
1	7.33743	1.000	.00011	.00365	.00017	.00288	.00121	.00138
2	1.45785	2.243	.00000	.00394	.00000	.04296	.00018	.00036
3	.40523	4.255	.00030	.05056	.00024	.24289	.00525	.00040
4	.25771	5.336	.00004	.21938	.00015	.48297	.00820	.00170
5	.22470	5.714	.00003	.65852	.00002	.00005	.00594	.04468
6	.12374	7.700	.00089	.00971	.00228	.00227	.24747	.00749
7	.09264	8.899	.00007	.00452	.00080	.00724	.00874	.19593
8	.06558	10.577	.00006	.02425	.00080	.14411	.20073	.53027
9	.03123	15.328	.03920	.02539	.12999	.07046	.40101	.21204
10	.00388	43.488	.95931	.00009	.86556	.00417	.12127	.00577

	MDGR	MS	OEA	TA
1	.00176	.00117	.00203	.00119
2	.00025	.03759	.00135	.05889
3	.09914	.00151	.00042	.11284
4	.05010	.04897	.08285	.00025
5	.02992	.02443	.10673	.01506
6	.01978	.15963	.32740	.08855
7	.31356	.33725	.11652	.52817
8	.10185	.29107	.24247	.16196
9	.27630	.07052	.00138	.02644
10	.10734	.02785	.11884	.00664

End Block Number 1 All requested variables entered.

* *

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	-.0072	.1419	.0260	.0207	124
*RESID	-.0536	.2525	.0000	.0351	124
*ZPRED	-1.6054	5.6030	.0000	1.0000	124
*ZRESID	-1.4723	6.9324	.0000	.9627	124

Total Cases = 180

Durbin-Watson Test = 1.98907

APPENDIX B3:
REGRESSION RESULTS FOR MARKET STRUCTURE EQUATION (ESTIMATE 3)

**** MULTIPLE REGRESSION RESULTS ****

Listwise Deletion of Missing Data

	Mean	Std Deviation	Label
ROA	.026	.041	
CA	.069	.047	
DI	.444	.499	
DT	.414	.130	
LA	.262	.097	
MDGR	.298	.139	
MS	.058	.072	
OEA	.081	.041	
TA	18994230.415	31929929.280	

N of Cases = 124

Correlation, 1-tailed Sig:

	ROA	CA	DI	DT	LA	MDGR	MS	OEA
ROA	1.000	.387	.191	.190	.098	.024	-.221	.331
	.	.000	.017	.017	.140	.397	.007	.000
CA	.387	1.000	.322	.089	.135	-.147	-.240	.241
	.000	.	.000	.164	.068	.052	.004	.003
DI	.191	.322	1.000	.009	.317	-.082	-.558	.220
	.017	.000	.	.460	.000	.184	.000	.007
DT	.190	.089	.009	1.000	.086	-.144	-.317	.126
	.017	.164	.460	.	.172	.055	.000	.082
LA	.098	.135	.317	.086	1.000	-.267	-.229	.455
	.140	.068	.000	.172	.	.001	.005	.000
MDGR	.024	-.147	-.082	-.144	-.267	1.000	-.063	-.186
	.397	.052	.184	.055	.001	.	.244	.019
MS	-.221	-.240	-.558	-.317	-.229	-.063	1.000	-.324
	.007	.004	.000	.000	.005	.244	.	.000
OEA	.331	.241	.220	.126	.455	-.186	-.324	1.000
	.000	.003	.007	.082	.000	.019	.000	.
TA	-.134	-.122	-.420	-.180	-.100	-.346	.782	-.154
	.069	.088	.000	.022	.135	.000	.000	.043

**** MULTIPLE REGRESSION RESULTS ****

TA

ROA	-.134
	.069
CA	-.122
	.088
D1	-.420
	.000
DT	-.180
	.022
LA	-.100
	.135
MDGR	-.346
	.000
MS	.782
	.000
OEA	-.154
	.043
TA	1.000

**** MULTIPLE REGRESSION RESULTS ****

Equation Number 1 Dependent Variable.. ROA

Descriptive Statistics are printed on Page 1

Block Number 1. Method: Enter
CA D1 DT LA MDGR MS OEA TA

Variable(s) Entered on Step Number
1.. TA
2.. LA
3.. CA
4.. DT
5.. OEA
6.. MDGR
7.. D1
8.. MS

Multiple R .50340
R Square .25342
Adjusted R Square .20148
Standard Error .03638

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	8	.05166	.00646
Residual	115	.15219	.00132

F = 4.87937 Signif F = .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	TA	LA	CA	DT	OEA	MDGR
TA	3.551E-20	.02992	-.02923	-.02683	-.07650	.44050
LA	2.254E-13	.00160	.06718	-.02039	-.38510	.19153
CA	-4.209E-13	2.052E-04	.00584	-.04032	-.15833	.08392
DT	-1.409E-13	-2.271E-05	-8.585E-05	7.763E-04	.02240	.16245
OEA	-1.382E-12	-.00148	-.00116	5.983E-05	.00919	.05478
MDGR	2.361E-12	2.178E-04	1.824E-04	1.287E-04	1.494E-04	8.089E-04
D1	5.471E-14	-7.601E-05	-1.507E-04	5.865E-05	7.980E-05	2.583E-05
MS	-1.213E-11	-1.017E-04	2.952E-04	7.253E-04	.00189	-4.231E-04

**** MULTIPLE REGRESSION ****

Equation Number 1 Dependent Variable.. ROA
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	D1	MS
TA	.03348	-.71716
LA	-.21930	-.02834
CA	-.22744	.04305
DT	.24277	.29001
OEA	.09600	.21905
MDGR	.10473	-.16575
D1	7.517E-05	.35390
MS	2.754E-04	.00806

---------- Variables in the Equation ----------

Variable	B	SE B	95% Confdnce Intrvl B		Beta
CA	.275545	.076413	.124186	.426904	.315330
D1	.006504	.008670	-.010670	.023678	.079690
DT	.050277	.027863	-.004914	.105468	.160687
LA	-.028130	.039979	-.107321	.051061	-.067369
MDGR	.046634	.028442	-.009703	.102972	.159756
MS	-.014065	.089753	-.191850	.163719	-.024911
OEA	.282158	.095880	.092238	.472078	.282125
TA	1.00475E-10	1.8845E-10	-2.72815E-10	4.73766E-10	.078804
(Constant)	-.047298	.023010	-.092877	-.001720	

--------- Variables in the Equation ---------

Variable	Tolerance	VIF	T	Sig T
CA	.848987	1.178	3.606	.0005
D1	.575248	1.738	.750	.4547
DT	.818659	1.222	1.804	.0738
LA	.708162	1.412	-.704	.4831
MDGR	.683861	1.462	1.640	.1038
MS	.256935	3.892	-.157	.8757
OEA	.706362	1.416	2.943	.0039
TA	.297160	3.365	.533	.5950
(Constant)			-2.056	.0421

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Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	CA	D1	DT	LA	MDGR
1	6.36711	1.000	.00048	.00493	.00388	.00162	.00192	.00236
2	1.45769	2.090	.00000	.00386	.04278	.00017	.00036	.00024
3	.40068	3.986	.00118	.04397	.24566	.00634	.00019	.10766
4	.25657	4.982	.00021	.21116	.48324	.00774	.00157	.05973
5	.22457	5.325	.00011	.67000	.00025	.00601	.04729	.02725
6	.12009	7.281	.00367	.01144	.00014	.29708	.00832	.00533
7	.09189	8.324	.00042	.00384	.00424	.02561	.20930	.30075
8	.06526	9.877	.00022	.02612	.13448	.16576	.60253	.11348
9	.01613	19.867	.99371	.02468	.08534	.48966	.12854	.38321

	MS	OEA	TA
1	.00156	.00295	.00161
2	.03782	.00142	.06020
3	.00213	.00005	.11294
4	.05430	.08584	.00044
5	.02248	.11682	.01505
6	.15996	.32885	.11816
7	.33939	.14687	.51119
8	.27293	.28566	.16626
9	.10944	.03155	.01414

End Block Number 1 All requested variables entered.

**** MULTIPLE REGRESSION RESULTS ****

Equation Number 1 Dependent Variable.. ROA

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	-.0051	.1410	.0260	.0205	124
*RESID	-.0491	.2577	.0000	.0352	124
*ZPRED	-1.5142	5.6112	.0000	1.0000	124
*ZRESID	-1.3495	7.0849	.0000	.9669	124

Total Cases = 180

Durbin-Watson Test = 1.98733

APPENDIX C.1

REGRESSION RESULTS FOR RIVALRY EQUATION (Estimate 4)

**** MULTIPLE REGRESSION RESULTS ****

Listwise Deletion of Missing Data

	Mean	Std Deviatio	Label
R1	7.000	2.976	
AVG	23647822.325	15742703.560	
B0	1.000	.000	
CR	.646	.069	
ENT	-.500	4.629	
MDGR	.296	.152	

N of Cases = 8

Correlation, 1-tailed Sig:

' . ' is printed if a correlation cannot be computed.

	R1	AVG	B0	CR	ENT	MDGR
R1	1.000	-.045	.	-.325	-.156	-.355
	.	.457	.000	.216	.357	.194
AVG	-.045	1.000	.	.322	-.796	-.779
	.457	.	.000	.218	.009	.011
B0	.	.	1.000	.	.	.
	.000	.000	.	.000	.000	.000
CR	-.325	.322	.	1.000	-.140	-.215
	.216	.218	.000	.	.371	.305
ENT	-.156	-.796	.	-.140	1.000	.516
	.357	.009	.000	.371	.	.095
MDGR	-.355	-.779	.	-.215	.516	1.000
	.194	.011	.000	.305	.095	.

Equation Number 1 Dependent Variable.. R1

Descriptive Statistics are printed on Page 1

The following variables are constants or have missing correlations:

B0

They will be deleted from the analysis.

Block Number 1. Method: Enter
AVG B0 CR ENT MDGR

Variable(s) Entered on Step Number
1.. MDGR
2.. CR
3.. ENT
4.. AVG

Multiple R .82337
R Square .67793
Adjusted R Square .24851
Standard Error 2.57993

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	4	42.03181	10.50795
Residual	3	19.96819	6.65606

F = 1.57870 Signif F = .3686

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	MDGR	CR	ENT	AVG
MDGR	115.26505	-.12351	.29225	.70562
CR	-20.43464	237.46508	-.22890	-.33436
ENT	1.16545	-1.31023	.13797	.74891
AVG	1.168E-06	-7.944E-07	4.289E-08	2.377E-14

Equation Number 1 Dependent Variable.. R1

---------- Variables in the Equation ----------

Variable	B	SE B	95% Confdnce Intrvl B		Beta
AVG	-2.91210E-07	1.5418E-07	-7.81873E-07	1.99454E-07	-1.540416
CR	-8.441300	15.409902	-57.481772	40.599171	-.195117
ENT	-.511776	.371448	-1.693871	.670319	-.796030
MDGR	-23.244059	10.736156	-57.410802	10.922684	-1.186043
(Constant)	25.956670	10.345361	-6.966408	58.879747	

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
AVG	.161399	6.196	-1.889	.1553
CR	.846163	1.182	-.548	.6220
ENT	.321611	3.109	-1.378	.2621
MDGR	.357726	2.795	-2.165	.1190
(Constant)			2.509	.0870

Collinearity Diagnostics

Number	Eigenval	Cond	Variance Proportions				
		Index	Constant	AVG	CR	ENT	MDGR
1	3.59106	1.000	.00059	.00282	.00063	.00132	.00400
2	1.22101	1.715	.00007	.00412	.00005	.19372	.00685
3	.16569	4.655	.00024	.08302	.00090	.41803	.18366
4	.01780	14.203	.08248	.90874	.10553	.38423	.77214
5	.00443	28.474	.91662	.00131	.89289	.00270	.03335

End Block Number 1 All requested variables entered.

Equation Number 1 Dependent Variable.. R1

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	3.8910	11.0161	7.0000	2.4504	8
*RESID	-2.5844	2.1769	.0000	1.6890	8
*ZPRED	-1.2688	1.6390	.0000	1.0000	8
*ZRESID	-1.0017	.8438	.0000	.6547	8

Total Cases = 8
Durbin-Watson Test = 3.07799

APPENDIX C.2

REGRESSION RESULTS FOR RIVALRY EQUATION (Estimate 5)

**** MULTIPLE REGRESSION RESULTS ****

Listwise Deletion of Missing Data

	Mean	Std Deviatio	Label
R2	15.625	5.236	
AVG	23647822.325	15742703.560	
B0	1.000	.000	
CR	.646	.069	
ENT	-.500	4.629	
MDGR	.296	.152	

N of Cases = 8

Correlation, 1-tailed Sig:

' . ' is printed if a correlation cannot be computed.

	R2	AVG	B0	CR	ENT	MDGR
R2	1.000	-.565	.	-.127	.486	.078
	.	.072	.000	.382	.111	.427
AVG	-.565	1.000	.	.322	-.796	-.779
	.072	.	.000	.218	.009	.011
B0	.	.	1.000	.	.	.
	.000	.000	.	.000	.000	.000
CR	-.127	.322	.	1.000	-.140	-.215
	.382	.218	.000	.	.371	.305
ENT	.486	-.796	.	-.140	1.000	.516
	.111	.009	.000	.371	.	.095
MDGR	.078	-.779	.	-.215	.516	1.000
	.427	.011	.000	.305	.095	.

Equation Number 1 Dependent Variable.. R2

The following variables are constants or have missing correlations:
B0
They will be deleted from the analysis.

Block Number 1. Method: Enter
AVG B0 CR ENT MDGR

Variable(s) Entered on Step Number
1.. MDGR
2.. CR
3.. ENT
4.. AVG

Multiple R .82310
R Square .67749
Adjusted R Square .24747
Standard Error 4.54175

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	4	129.99259	32.49815
Residual	3	61.88241	20.62747

F = 1.57548 Signif F = .3693

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	MDGR	CR	ENT	AVG
MDGR	357.21215	-.12351	.29225	.70562
CR	-63.32796	735.91617	-.22890	-.33436
ENT	3.61180	-4.06046	.42759	.74891
AVG	3.620E-06	-2.462E-06	1.329E-07	7.367E-14

Equation Number 1 Dependent Variable.. R2

---------- Variables in the Equation ----------

Variable	B	SE B	95% Confdnce Intrvl B		Beta
AVG	-5.17792E-07	2.7142E-07	-1.38156E-06	3.45979E-07	-1.556948
CR	9.906469	27.127775	-76.424961	96.237900	.130164
ENT	-.250821	.653901	-2.331795	1.830154	-.221769
MDGR	-34.222393	18.900057	-94.369934	25.925148	-.992626
(Constant)	31.469134	18.212097	-26.489044	89.427312	

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
AVG	.161399	6.196	-1.908	.1525
CR	.846163	1.182	.365	.7392
ENT	.321611	3.109	-.384	.7269
MDGR	.357726	2.795	-1.811	.1679
(Constant)			1.728	.1825

Collinearity Diagnostics

Number	Eigenval	Cond	Variance Proportions				
		Index	Constant	AVG	CR	ENT	MDGR
1	3.59106	1.000	.00059	.00282	.00063	.00132	.00400
2	1.22101	1.715	.00007	.00412	.00005	.19372	.00685
3	.16569	4.655	.00024	.08302	.00090	.41803	.18366
4	.01780	14.203	.08248	.90874	.10553	.38423	.77214
5	.00443	28.474	.91662	.00131	.89289	.00270	.03335

End Block Number 1 All requested variables entered.

Equation Number 1 Dependent Variable.. R2

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	10.3719	21.6402	15.6250	4.3093	8
*RESID	-4.3677	4.3598	.0000	2.9733	8
*ZPRED	-1.2190	1.3959	.0000	1.0000	8
*ZRESID	-.9617	.9599	.0000	.6547	8

Total Cases = 8

Durbin-Watson Test = 2.81629

APPENDIX D.1:
DATA FOR MARKET STRUCTURE EQUATIONS

ROA	B	CR	MS	CA	TA	LA	DT	OEA	MDGR	D1
.0203	1	.7037	.0639	.0956	3,447,000.00	.3147	.4600	.	.4275	0
.0180	1	.6855	.0646	.0766	4,734,000.00	.3131	.4600	.	.3515	0
.0139	1	.7014	.0625	.0612	6,385,825.00	.3303	.3894	.0920	.4515	0
.0210	1	.5680	.0704	.0501	11,105,580.00	.1823	.5240	.0878	.5721	0
.0118	1	.5645	.0623	.0404	16,117,560.00	.1578	.4613	.0919	.2292	0
.0223	1	.5641	.0741	.0471	20,559,462.00	.2841	.4361	.1091	.1904	0
.0058	1	.6941	.0859	.0474	32,292,790.00	.2927	.4101	.0963	.2266	0
.0071	1	.6619	.0980	.0426	38,203,191.00	.3324	.3523	.0816	.2315	0
.0121	1	.7266	.0786	.0476	41,174,603.00	.2867	.6032	.0899	.1134	0
.0078	1	.7741	.0829	.0417	41,400,000.00	.3488	.5281	.1288	.1724	0
.0189	1	.7037	.0362	.	2,078,368.00	.	.	.	.4275	0
.0046	1	.6855	.0347	.	2,438,211.00	.	.	.	.3515	0
.0026	1	.7014	.0389	.0126	3,861,775.00	.1422	.7503	.0277	.4515	0
.0128	1	.5680	.0243	.0035	3,794,167.00	.1754	.6978	.0417	.5721	0
.0065	1	.5645	.0224	.0572	4,820,656.00	.2336	.7119	.0785	.2292	0
.0201	1	.5641	.0274	.0508	7,115,060.00	.2196	.7065	.0816	.1904	0
.0052	1	.6941	.0381	.0594	12,502,070.00	.1562	.5430	.0682	.2266	0
.0171	1	.6619	.0361	.0736	12,605,707.00	.3336	.	.0915	.2315	0
.0104	1	.7266	.0330	.0833	17,548,839.00	.2598	.	.0867	.1134	0
.	1	.7741	.	.	.	.	.	.1724	0	
.0091	1	.7037	.0534	.0593	2,764,637.00	.3332	.5819	.0597	.4275	1
.0020	1	.6855	.0411	.0534	2,950,683.00	.3704	.4936	.0640	.3515	1
.0043	1	.7014	.0342	.0773	3,723,565.00	.3575	.4303	.0641	.4515	1
.	1	.5680	.0284	.0206	4,198,771.00	.3296	.3819	.1024	.5721	1
.	1	.5645	.0317	.0115	5,922,677.00	.2914	.	.	.2292	1
.	1	.5641	.0285	.	6,021,798.00	.3550	.5290	.1451	.1904	1
.0019	1	.6941	.0337	.0052	8,434,942.00	.2810	.4988	.1023	.2266	1
.0319	1	.6619	.0309	.0543	10,030,857.00	.3328	.3964	.1041	.2315	1
.0324	1	.7266	.0424	.0583	17,129,181.00	.3849	.4577	.0827	.1134	1
.0315	1	.7741	.0547	.0578	32,263,829.00	.3992	.5056	.0611	.1724	1
.0103	1	.7037	.0052	.0881	266,688.00	.2321	.4914	.0396	.4275	1
.0249	1	.6855	.0053	.0853	378,375.00	.2533	.5094	.0409	.3515	1
.0721	1	.7014	.0036	.1564	472,103.00	.2647	.4592	.0712	.4515	1
.0285	1	.5680	.0047	.	995,370.00	.1263	.	.	.5721	1
.0222	1	.5645	.0037	.1476	1,011,041.00	.1521	.4803	.0994	.2292	1
.0365	1	.5641	.0050	.0824	2,159,018.00	.1947	.3453	.0814	.1904	1
.0251	1	.6941	.0111	.0812	3,232,955.00	.1505	.2680	.0604	.2266	1
.0421	1	.6619	.0059	.1530	2,368,027.00	.3953	.3330	.0858	.2315	1
.0419	1	.7266	.0055	.2935	3,000,898.00	.3180	.2900	.0983	.1134	1
.	1	.7741	.	.	.	.3230	.	.1724	1	
.	1	.7037	.1718	.0354	8,483,000.00	.1947	.3356	.0770	.4275	0
.	1	.6855	.1581	.0404	11,319,096.00	.1444	.3914	.0624	.3515	0
.0197	1	.7014	.1573	.0563	16,986,309.00	.2578	.3978	.0647	.4515	0
.0248	1	.5680	.1374	.0634	23,552,248.00	.1305	.4415	.0948	.5721	0
.0164	1	.5645	.1454	.0409	33,808,858.00	.2088	.4707	.0905	.2292	0
.0135	1	.5641	.1628	.0553	61,443,282.00	.2753	.4329	.0824	.1904	0
.0127	1	.6941	.1937	.0512	78,417,239.00	.2575	.3974	.0772	.2266	0
.0151	1	.6619	.1877	.0674	102,220,226.00	.2934	.4043	.0819	.2315	0
.0211	1	.7266	.2083	.0640	139,602,646.00	.2629	.3129	.0616	.1134	0
.0227	1	.7741	.2069	.0873	129,503,301.00	.3475	.3004	.0776	.1724	0

.0192	1	.7037	.0156	.0559	981,281.00	.1835	.3898	.0454	.4275	0
.0263	1	.6855	.0152	.0755	1,151,342.00	.1677	.5216	.0577	.3515	0
.0427	1	.7014	.0166	.0556	2,675,270.00	.0896	.4925	.0486	.4515	0
.0710	1	.5680	.0184	.0884	3,525,063.00	.1572	.4839	.0688	.5721	0
.0660	1	.5645	.0205	.0821	3,794,125.00	.1434	.5628	.0639	.2292	0
.0244	1	.5641	.0209	.0734	6,104,704.00	.3471	.6875	.0754	.1904	0
.0247	1	.6941	.0215	.0771	7,624,888.00	.3250	.6189	.0738	.2266	0
.0225	1	.6619	.0227	.0925	9,403,482.00	.3397	.6071	.0713	.2315	0
.0276	1	.7266	.0241	.0806	13,450,796.00	.3437	.5688	.0771	.1134	0
.0399	1	.7741	.0298	.0886	15,793,408.00	.3462	.4858	.0905	.1724	0
.0169	1	.7037	.0081	.	370,564.00	.1297	.	.	.4275	1
.0252	1	.6855	.0032	.	233,515.00	.2195	.	.	.3515	1
.0274	1	.7014	.0048	.	509,173.00	.2519	.	.	.4515	1
.0224	1	.5680	.0061	.0870	1,012,524.00	.2636	.3495	.0796	.5721	1
.0038	1	.5645	.0045	.1136	1,133,911.00	.2863	.5427	.0936	.2292	1
.0040	1	.5641	.0041	.1158	1,151,528.00	.4626	.5590	.1345	.1904	1
.0171	1	.6941	.0069	.1454	2,487,004.00	.3226	.4213	.0795	.2266	1
.0205	1	.6619	.0134	.0939	6,792,709.00	.2066	.7226	.0492	.2315	1
.0145	1	.7266	.0155	.0687	11,774,258.00	.2466	.5365	.0598	.1134	1
.0300	1	.7741	.0139	.0980	7,911,892.00	.3641	.4731	.1165	.1724	1
.0079	1	.7037	.0051	.0927	305,825.00	.0922	.3397	.0566	.4275	1
.0177	1	.6855	.0062	.0575	424,976.00	.0978	.2593	.0563	.3515	1
.0268	1	.7014	.0095	.0683	1,193,091.00	.1379	.5177	.0442	.4515	1
.0171	1	.5680	.0066	.1220	1,120,283.00	.	.	.	.5721	1
.2776	1	.5645	.0045	.0886	766,247.00	.2010	.5166	.0185	.2292	1
.1692	1	.5641	.0038	.2796	614,649.00	.3189	.5636	.2710	.1904	1
.	1	.6941	.	.	. .	.	.	.2266	1	
.	1	.6619	.	.	. .	.	.	.2315	1	
.	1	.7266	.	.	. .	.	.	.1134	0	
.	1	.7741	.	.	. .	.	.	.1724	0	
.0213	1	.7037	.0056	.0630	328,684.00	.2024	.	.	.4275	1
.0116	1	.6855	.0037	.0756	393,105.00	.1196	.	.	.3515	1
.0213	1	.7014	.0047	.0623	548,177.00	.1303	.	.	.4515	1
.0152	1	.5680	.0044	.0910	954,914.00	.1043	.3932	.0553	.5721	1
.0162	1	.5645	.0040	.0923	1,141,139.00	.1603	.3173	.0730	.2292	1
.0038	1	.5641	.0048	.0724	1,481,434.00	.1344	.	.	.1904	1
.0409	1	.6941	.0041	.0313	1,484,830.00	.2126	.3745	.0848	.2266	1
.0011	1	.6619	.0049	.0267	1,820,574.00	.2651	.3040	.0818	.2315	1
.0277	1	.7266	.0055	.0041	3,704,912.00	.2060	.4765	.0499	.1134	1
.0352	1	.7741	.0059	.1306	5,549,576.00	.2012	.4169	.0519	.1724	1
.0157	1	.7037	.0037	.0834	351,866.00	.2380	.	.	.4275	1
.0037	1	.6855	.0040	.0578	542,033.00	.2185	.	.	.3515	1
.0082	1	.7014	.0040	.0945	538,954.00	.2282	.2693	.0979	.4515	1
.0483	1	.5680	.0036	.0326	628,948.00	.3489	.3775	.2036	.5721	1
.0405	1	.5645	.0034	.0088	655,659.00	.4864	.4103	.1487	.2292	1
.0067	1	.5641	.0032	.0069	747,005.00	.4790	.3698	.1654	.1904	1
.1029	1	.6941	.0025	.0076	771,176.00	.4569	.3679	.2639	.2266	1
.	1	.6619	.	.	. .	.	.	.2315	1	
.	1	.7266	.	.	. .	.	.	.1134	1	
.	1	.7741	.	.	. .	.	.	.1724	1	
.0047	1	.7037	.0093	.0663	622,263.00	.3096	.1187	.0786	.4275	1
.0025	1	.6855	.0105	.0492	838,868.00	.2793	.0704	.0849	.3515	1
.0116	1	.7014	.0091	.1188	1,010,488.00	.2805	.4479	.1160	.4515	1
.2698	1	.5680	.0061	.1487	807,173.00	.3828	.5240	.1543	.5721	1

.0403	1	.5645	.0056	.0928	1,147,664.00	.4625	.	.1500	.2292	1
.0254	1	.5641	.0075	.0315	1,870,850.00	.2945	.5699	.1200	.1904	1
.0203	1	.6941	.0080	.0049	2,301,829.00	.3827	.6158	.1220	.2266	1
.0381	1	.6619	.0073	.0284	2,708,448.00	.3837	.4268	.1115	.2315	1
.0256	1	.7266	.0095	.2289	4,847,218.00	.4849	.5722	.0978	.1134	1
.	1	.7741	.	.	. .	.	.	.1724	1	
.0090	1	.7037	.0454	.0642	1,925,299.00	.4670	.	.	.4275	0
.0010	1	.6855	.0499	.0400	3,089,571.00	.2067	.3941	.0470	.3515	0
.0013	1	.7014	.0470	.0308	4,065,806.00	.2220	.2483	.0544	.4515	0
.0059	1	.5680	.0363	.0309	4,596,660.00	.2488	.3495	.0662	.5721	0
.0671	1	.5645	.0344	.	4,985,729.00	.3110	.3373	.1158	.2292	0
.0271	1	.5641	.0268	.	5,423,022.00	.2738	.3807	.1396	.1904	0
.1581	1	.6941	.0225	.2131	4,787,936.00	.2613	.4558	.1883	.2266	0
.0013	1	.6619	.0181	.0254	5,564,239.00	.2058	.4122	.1540	.2315	0
.0063	1	.7266	.0192	.0295	6,233,494.00	.2551	.4901	.	.1134	0
.	1	.7741	.	.	. .	.	.	.1724	0	
.0006	1	.7037	.0239	.0356	1,556,849.00	.3449	.4796	.0551	.4275	0
.0222	1	.6855	.0193	.0158	1,613,521.00	.3499	.4070	.0685	.3515	0
.1043	1	.7014	.0170	.0201	2,081,179.00	.2667	.4643	.0625	.4515	0
.0012	1	.5680	.0114	.0573	1,742,987.00	.2742	.3612	.1118	.5721	0
.0076	1	.5645	.0100	.0734	2,123,579.00	.2426	.4078	.1539	.2292	0
.0081	1	.5641	.0110	.0464	3,030,241.00	.1670	.4131	.1054	.1904	0
.0307	1	.6941	.0121	.0789	3,687,056.00	.1587	.3314	.1328	.2266	0
.0205	1	.6619	.0137	.0878	6,988,895.00	.2162	.	.1515	.2315	0
.0150	1	.7266	.0121	.0966	7,524,669.00	.1952	.	.1148	.1134	0
.	1	.7741	.	.	. .	.	.	.1724	0	
.0107	1	.7037	.0043	.0988	275,270.42	.4093	.2818	.0571	.4275	1
.0127	1	.6855	.0055	.0764	397,187.00	.2822	.2962	.0688	.3515	1
.0173	1	.7014	.0078	.0922	824,065.00	.2869	.4029	.0682	.4515	1
.0223	1	.5680	.0064	.0757	1,096,144.68	.3261	.	.3308	.5721	1
.0169	1	.5645	.0080	.0581	1,677,566.00	.2529	.	.0869	.2292	1
.0175	1	.5641	.0093	.0888	2,071,537.00	.3264	.4228	.0981	.1904	1
.0114	1	.6941	.0095	.0774	2,786,746.00	.3278	.3440	.0933	.2266	1
.0051	1	.6619	.0115	.1530	3,919,827.00	.2569	.	.0813	.2315	1
.0155	1	.7266	.0127	.1139	5,576,900.00	.3206	.	.0797	.1134	1
.	1	.7741	.	.	. .	.	.	.1724	1	
.0065	1	.7037	.2500	.0416	11,350,873.00	.2207	.2288	.0408	.4275	0
.0008	1	.6855	.2270	.0382	12,684,500.00	.1920	.3123	.0409	.3515	0
.0005	1	.7014	.2282	.0271	18,610,900.00	.1961	.2009	.0371	.4515	0
.0111	1	.5680	.1558	.0337	22,949,595.00	.2365	.2269	.0488	.5721	0
.0065	1	.5645	.1581	.0666	54,005,059.00	.1152	.2518	.0464	.2292	0
.0176	1	.5641	.1299	.0799	53,665,623.00	.1675	.6118	.0780	.1904	0
.0123	1	.6941	.1301	.0809	65,438,980.00	.1644	.3788	.0762	.2266	0
.0153	1	.6619	.1281	.0640	78,744,308.00	.2133	.3739	.0628	.2315	0
.0093	1	.7266	.1625	.0443	113,142,882.00	.2176	.3040	.0561	.1134	0
.0251	1	.7741	.2020	.0565	119,987,000.00	.1444	.4553	.0659	.1724	0
.0106	1	.7037	.1645	.0717	9,242,000.00	.2511	.3016	.0038	.4275	0
.0006	1	.6855	.1858	.0508	13,166,000.00	.1319	.3433	.0035	.3515	0
.0035	1	.7014	.2065	.0414	23,869,000.00	.1581	.0922	.0358	.4515	0
.0141	1	.5680	.1682	.0453	32,008,000.00	.1318	.3390	.0478	.5721	0
.0087	1	.5645	.1565	.0387	46,326,000.00	.2347	.3782	.0605	.2292	0
.0071	1	.5641	.1530	.0404	80,806,000.00	.1762	.3913	.0529	.1904	0
.0122	1	.6941	.2409	.0449	85,708,000.00	.2431	.2719	.0680	.2266	0
.0127	1	.6619	.2056	.0486	95,317,000.00	.2670	.2783	.0622	.2315	0

.0151	1	.7266	.2347	.0632	114,839,000.00	.2383	.2491	.0640	.1134	0
.0248	1	.7741	.2277	.0631	126,234,000.00	.2208	.3129	.0631	.1724	0
.0159	1	.7037	.0102	.0434	867,269.00	.1399	.	.	.4275	0
.0147	1	.6855	.0208	.0514	1,351,606.00	.0835	.3227	.0576	.3515	0
.0092	1	.7014	.0169	.0459	1,592,054.00	.1305	.2808	.0868	.4515	0
.0471	1	.5680	.0142	.0717	2,881,292.00	.2997	.3110	.0819	.5721	0
.00 3	1	.5645	.0217	.0551	4,113,229.00	.5467	.2875	.0909	.2292	0
.0034	1	.5641	.0318	.0694	3,572,260.00	.	.	.1553	.1904	0
.0129	1	.6941	.0237	.0460	7,899,033.00	.3445	.2693	.0713	.2266	0
.0166	1	.6619	.0281	.0616	10,061,775.00	.2956	.2754	.0657	.2315	0
.	1	.7266	.	.	17,282,727.00	.	.	.0447	.1134	0
.	1	.7741	.	.	. .	.	.	.1724	0	
.0183	1	.7037	.0239	.0778	1,006,251.00	.2530	.	.	.4275	1
.0178	1	.6855	.0248	.0752	1,402,167.00	.2249	.	.	.3515	1
.0212	1	.7014	.0207	.	1,704,613.00	.3706	.	.	.4515	1
.0324	1	.5680	.0240	.	3,154,996.00	.3221	.	.	.5721	1
.0224	1	.5645	.0423	.0618	10,153,795.00	.1483	.2928	.0434	.2292	1
.0256	1	.5641	.0445	.0713	11,517,519.00	.2553	.2141	.0428	.1904	1
.0074	1	.6941	.0434	.0894	13,672,022.00	.3469	.	.0645	.2266	1
.0167	1	.6619	.0425	.0822	17,502,254.00	.	.	.0705	.2315	1
.0243	1	.7266	.0423	.1001	17,268,872.00	.4326	.3183	.1075	.1134	1
.0234	1	.7741	.0330	.0964	17,924,803.00	.4809	.4824	.0934	.1724	1

APPENDIX D.2:
RAW DATA FOR COMPETITION EQUATIONS

R1	R2	b0	ENT	CR	AVG
9.00	26.00	1.00	7.00	.6855	5,474,935.50
4.00	14.00	1.00	1.00	.7014	8,396,424.20
6.00	14.00	1.00	.00	.5680	11176637.20
10.00	18.00	1.00	-1.00	.5645	18404768.80
10.00	18.00	1.00	-1.00	.5641	25622873.00
6.00	13.00	1.00	.00	.6941	31677790.00
2.00	8.00	1.00	.00	.6619	38107769.50
9.00	14.00	1.00	-10.00	.7266	50321380.40

APPENDIX D.3:
RAW DATA FOR 3 - FIRM MARKET CONCENTRATION (CR3)

Deposits in millions of Naira

Year	First Bank	UBA	Union Bank	Total for 3 banks	Market Deposit	CR3
1986	4,412.70	4,766.70	4,107.00	13,286.40	18,137.60	0.73
1987	5,010.50	5,872.90	4,349.90	15,233.30	23,086.70	0.66
1988	5,646.40	8,159.30	4,876.50	18,682.20	29,065.10	0.64
1989	5,785.20	9,694.10	5,782.80	21,262.10	27,164.90	0.78
1990	6,585.00	11,894.50	6,379.70	24,859.20	38,777.30	0.64
1991	8,287.00	17,356.20	9,740.00	35,383.20	53,208.70	0.66
1992	11,965.00	18,627.50	17,356.20	47,948.70	75,047.70	0.64
1993	16,439.00	18,354.00	20,115.00	54,908.00	110,453.60	0.50
1994	23,275.00	33,161.60	24,914.00	81,350.60	142,537.50	0.57
1995	41,641.00	37,019.00	51,607.00	130,267.00	178,962.10	0.73
1996	55,498.00	39,521.00	55,141.00	150,160.00	214,359.80	0.70
1997	66,202.00	48,858.00	59,310.00	174,370.00	280,028.70	0.62
1998	84,531.00	73,207.00	77,239.00	234,977.00	314,303.50	0.75
1999	127,230.00	82,518.00	93,035.00	302,783.00	377,164.20	0.80

KASHIM IBRAHIM LIBRARY