The Role and Impact of the Banking Industry on the Nigerian Economy: An Outlook to Year 2030

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Abstract

The banking industry in Nigeria has undergone many developmental changes and reforms since independence in 1960. As at 2022, there were 5442 banks and their branches in Nigeria. Some studies have been carried out on the impact of the banking industry or sector on growth of the Nigerian economy but these have been limited to the use of partial models and the results have been very limited. The banking sector is crucial to the modern economy as the primary supplier of credit. Maintaining a sound financial system is a key success factor to any country yearning for economic growth and development. In view of the important role of Banks, it is expedient to analyze their impact, dynamics and their outlook in the short term. Therefore, this study uses the total differential systems modeling approach (ecostatometrics) to evaluate the impact of banks and their branches and their distribution between urban and rural areas on the Nigerian economy as a whole in order to determine how effective banks are performing their roles in Nigeria and the constraints on one hand, and to apply Markov Chains Analysis to reveal the transition matrix of banks and their branches in Nigerian States in order to analyze their dynamics, on the other. The result indicated that the impact of bank and their branches on the Nigerian economy especially in the urban areas, is very positive but regrettably, the impact of banks on corruption is very profound causing it to increase by N2,698.9 million per annum and N2,699.8 million per annum in the new democracy. This must be the result of sharp practices among bank personnel that still need to be curbed. Some recommendations geared towards maximizing the impact of banks and their branches in Nigeria were posited. The details are contained in the article.

Key Words: Banks and their branches, Total differential systems modeling approach, Markov Chains Analysis, Urban, Rural, Nigerian economy and Corruption.

INTRODUCTION

The banking sector is crucial to the modern economy. As the primary supplier of credit, it provides money for people to buy cars and homes and for businesses to buy equipment, expand their operations, and meet their payrolls. Although banks do many things, their primary role is to take in funds—called deposits—from those with money, the surplus centers, pool them, and lend them to those who need funds, the deficit centers. Banks are an indispensable element in their role of economic development in any country, including Nigeria. They provide the bulk of the money supply as well as the primary means of facilitating the flow of credit. Consequently, the economic wellbeing of a nation is a function of advancement and development other banking industry. Therefore, development banks which are specialized financial institutions contribute to the economy by providing medium and long-term finance to the industrial and agricultural sector. They do term lending, investment in securities and other activities. The four main functions of banks, therefore are accepting deposits, making loans, providing checking (current) accounts, and acting as financial intermediaries, crucially linking savers to borrowers and facilitating economic activity.

The first bank to be established in Nigeria in 1892 was the African Banking Corporation. This was later in 1894, taken over by Bank of British West Africa Ltd (BBWA) which is the predecessor of present-day First Bank Nigeria Plc. It was joined in 1912 by Barclays Bank Dominion, Colonial and Overseas, the predecessor of present-day Union Bank Plc. The first successful indigenous bank in Nigeria was National Bank of Nigeria, established in 1933.

It is worthy of note that the first banking legislation in Nigeria was not enacted until 1952 (Nwankwo, 1980). This means that the banks which existed before this date were not regulated. Many other indigenous banks rose and fell including Nigerian Farmers and Commercial Bank of 1947 and the Merchant Bank of 1952. It was in 1959 that the current Central bank of Nigeria was established (Hesse, 2007). Between 1940 and 1952, up to 150 indigenous banks sprang up and most of them failed (Adegbite, 2007).

There was an increasing need for foreign involvement in banking in Nigeria. While some western European banks came, there were also some inflows from American banks with the emergence of Nigerian Acceptances Ltd, NAL (with the support of American Express bank) in 1960, Nigerian-American Merchant bank Ltd (with the support of First National Bank of Boston) in 1979, International Merchant Bank Ltd (with First Chicago) and Continental Merchant Bank Ltd (with Chase Manhattan). Most of the British-linked banks were commercial, practicing branch banking and the American-linked ones were merchant (unit banking).

During the indigenization era marked by the Indigenous Enterprises Promotion Decrees of 1972 and 1977, Nigerian government acquired controlling shares in the foreign banks in Nigeria and there existed entry restrictions into the banking system.

With the commencement of the Structural Adjustment Programme and Deregulation later, earlier entry constraints were relaxed and both foreign and local banks re-emerged. Banks increased from forty two (42) in 1986 to one hundred and seven (107) in 1990 and to one hundred and twenty (120) in 1992, but without commensurate regulation (Oyejide, 1993).

Mainly as a result of massive withdrawal of public sector funds from the banks by mid-1990s, there was distress and some liquidations occurred amongst the banks. With the commencement of Universal banking programme in 2002, banking was shared into Investment banking business, Clearing business and Insurance business and choice was allowed to be made amongst them. The earlier existing demarcation between commercial and merchant banks in terms of capital and operation was eliminated and they all operated on equal basis. Later, based on some observed lapses in the clearing system, there was the introduction of Settlement banking. This was a process whereby part of Central bank's functions was ceded to some designated Settlement banks, for efficient clearing service delivery.

In all these, capitalization (capital base) has been a relevant feature of Nigerian banking from the outset. Differences have always occurred in terms of size, timing and manner of instigation.

In 2005, the Central bank instructed the existing banks to capitalize to the level of N25billion in order to continue in operation. Currently, with the categorization of banks in Nigeria into International, National and Regional scope of operations, efforts are on, by the Central\ Bank for banks to recapitalize to the tune of N500billion, N200billion and N50billion, respectively, by 31st March, 2026.

In developing countries, the state of the legal and accounting systems makes it difficult for institutions that are not connected to the payments system to issue short-term liabilities instruments such as commercial paper. Hence, banks are the only non-government issuers of these liabilities. In the above connection, the core mandate of the Central Bank of Nigeria,(CBN) as spelt out in the CBN Act of 1958 include: issuance of legal tender currency, banker and financial adviser to the Federal Government, lender of last resort to banks, maintenance of external reserves to safeguard the international value of the currency, promotion of monetary stability, among others (CBN Act, 1958). In view of the important role of Banks, it is expedient to analyze their impact, dynamics and their outlook in the short term.

OBJECTIVES OF THE STUDY

The objectives of this study among others, are:
1. To evaluate the impact of banks and their branches and their distribution between urban and rural areas, on the Nigerian economy as a whole in order to determine the effectiveness and constraints in the performance of their roles in Nigeria;
2. In particular, to determine their impact on income, output, investment, employment, standard of living and most importantly, corruption among others;
3. To use Markov Chains Analysis to reveal the transition matrix of banks and their branches in Nigerian States in order to analyze their dynamics;
4. To determine the outlook of the banking sector to the year 2030, and
5. Draw conclusions and make some recommendations.

This article is therefore divided into five parts. Part I is the introduction and states the objectives of the study. Part II is the literature review; while Part III is the methodology. In Part IV, the results

of the analyses are presented and discussed and Part V concludes the study and makes some recommendations.

LITERATURE REVIEW

According to Garba and Yakubu (2015), maintaining a sound financial system is an imperative key for success to any country yearning for economic growth and development. A bank is a financial institution licensed to receive deposits and make loans. There are several types of banks including mainly, retail (commercial), wholesale (merchant and investment) as well as development banks and they constitute the banking industry. In most countries, banks are regulated by the national government or central bank and Nigeria is not an exception.

The characteristics of a Bank, include the following:

Managing Money. A bank is a financial entity that deals with other people's money, such as depositors' money.

Individual/Firm/Enterprise. ...

Deposit Acceptance. ...

Advance Payments. ...

Withdrawal and Payment. ...

Utility and Agency Services. .

Savings banks are financial institution that gathers savings, paying interest or dividends to savers. They channel the savings of individuals who wish to consume less than their incomes to borrowers who wish to spend more.

The five most important banking services internationally are checking (current) and savings accounts, loan and mortgage services, wealth management, providing Credit and Debit Cards, Overdraft services.Over time, development banks assume investment bank functions as well. Development banks give priority to financing projects that yield substantial economic, social and environmental benefits. They also provide technical assistance to improve the quality and reduce the risks of projects (Garba and Yakubu, 2015).

The advantages of banking among others, include the fact that:
Your money is safe. ...
Your money is protected against error and fraud. ...
You get your money faster with no check-cashing.
You can make online purchases with ease and peace.
You have access to other products from the bank. ...
You can transfer money to family and friends.
You have proof of payment.
Generally commercial banks not only facilitate but speed up the process of economic development through making more funds available from resources mobilized. The banking system is a catalyst and engine of growth that is responsible for being a life-wire to every sector of the economy.These

institutions offer a wide range of services and products that help individuals, businesses, and other organizations manage their money and achieve their financial goals.

Commercial banks perform various functions, including the following :

Accepting deposits.

Granting loans and advances.

Agency functions.

Discounting bills of exchange.

Credit creation.

Foreign exchange transactions.

Commercial banks create money as an instrument to the apex bank for all its activities. Commercial banks help to enhance development of international trade, these include acting as referees to importers (through use of performance bonds), providing travelers cheque to those going abroad, opening letters of credit as well as providing credit for export.

Currently in Nigeria, there are Commercial banks, Merchant banks, Non-Interest banks, Development banks, Micro finance banks, Mortgage banks/Finance Institutions as well as Mobile money Operators or Online banks.

Bank of Industry evolved from the merger of the former Nigerian Industrial Development Bank, Nigerian Bankfor Commerce and Industry and National Economic Reconstruction Fund in 2001.

Similarly, the current Nigerian Agricultural, Cooperative and Rural Development Bank resulted from the merger of Nigerian Agriculture and Cooperative Bank, Peoples Bank of Nigeria and the assets of Family Economic Advancement Programme in 2000.

Development Bank of Nigeria (DBN), was established in 2014, in partnership with World Bank, African Development Bank, German Development Bank, French Development Bank and European Investment Bank. It is to address major financing challenges facing the Micro, Small and Medium Scale Enterprises in Nigeria (MSMES).

Federal Mortgage Bank of Nigeria (FMBN) has remained for the purpose of financing the housing needs of the people. They all focus on providing loans for or investing in the equity of industrial and/or infrastructural projects. They also engage in trade activities through making use of cheques and other financial instruments possible. They encourage investment, provide direct loans to the government and individuals for investment purposes. They provide managerial advice to small-scale industrialists who do not engage in the service of specialists.

The banking system in any country is of high importance to the degree of development of its economy which is of interest to any government of the day, including Nigeria. The integral role played by the banking sector in Nigeria can neither be over-looked nor over-emphasized. This is largely due to its ability to effectively mobilize financial resources from the surplus spending units to the deficit spending units in the economy.

METHODOLOGY
THE TOTAL DIFFERENTIAL MODELING APPROACH

The approach used in this study is divided into two sections. The first is termed the total differential modeling approach (ecostatometrics) (see Aruofor, 2001, 2017, 2019, and 2020), Aruofor and Okungbowa (2018), Aruofor and Ogbeide (2019, 2022 and 2024). It assumes and rightly so, that in the real world situation, every economic variable or subsystem depends on and is depended upon by other variables or subsystems.

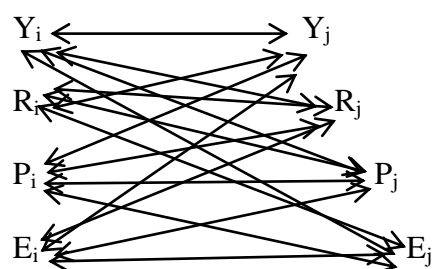A schematic representation of the above theory is presented in Fig. 1.

Fig: 1: The True Socio – Economic Causal Chain

$$Y = \text{Production variables;}$$
$$R = \text{Primary Factors;}$$
$$P = \text{Policy instruments;}$$
$$E = \text{Environmental variables.}$$

This theory was first mooted by Walras as early as 1874 even though it was not developed beyond the conceptual stage. The true practical empirical systems total differential modeling approach (Ecostatometrics), was achieved by Aruofor (2017) and relies on statistically significant multiple simple linear regression coefficients as opposed to multiple linear regression parameters. It is a blend between the traditional Input Output Analysis and Econometrics and assumes the structure of programming models. The theory behind it is that an economy is not truly dynamic but only dynamically static. It is the change that occurs in an economy in the current year(t) that determines where the economy (the endogenous variables) will be at the end of the current year (t) and not in the next year(t+1). This model is a departure from the normal econometric approach, where the structure of the economy is determined by combinations of economic theories. The true structure of an economy is so complex that economic theory will be self defeating (see Duesenberry et al , 1965 and Gordon, 1968). ***Indeed, Adeyoju (1975) had rightly noted that " the unstable nature of population and its growth, national income and its distribution, investment capacity, employment opportunities, balance of payments and raw material base often lead to conflicting theories of economic development".*** Thus, we do not need any elaborate theories to explain the working of an economy.

If we can estimate all the independent relationships among the variables of the economy taken two at a time, (depending on whether they are statistically significant) and classify the significant coefficients into a matrix B, according to whether they are endogenous or exogenous, then we would have in matrix notation,

$$Y = BY + CX + A + U$$

$$\therefore [I - B]Y = CX + A + U$$

$$Y = [I - B]^{-1}CX + [I - B]^{-1}A + [I - B]^{-1}U$$

$$\frac{dY}{dX} = [I - B]^{-1}C$$

$$\therefore dY = [I - B]^{-1}CdX$$

i.e $\Delta Y = [I - B]^{-1}C\Delta X$

$$\therefore Y_t = [I - B]^{-1}CX_t - [I - B]^{-1}CX_{t-1} + Y_{t-1}$$

Where, Y=endogenous and X=exogenous variables. The fact that the relationships are not estimated by multiple linear regressions means that the issue of simultaneous equation bias is by-passed and all the estimation difficulties, including multi-collinearity associated with econometric multiple linear regression, which renders it inconsistent and therefore non-operational, are also by-passed. Moreover, no complicated econometric and economic theories are needed to proceed. It is then possible to view the whole economy at a glance and the structure of the economy is determined automatically.

Thus, given a simple linear regression between two variables, X and Y, we proceed as follows and state the equation as below:

$$Y = a + bX + u$$

Where Y = the dependent variable

X = the independent variable

$a \& b$ = parameters

u = error term.

The estimate of the parameters $a \& b$, is achieved by the application of least squares to the data on the variables, with a view to minimize the sum of squared deviations around the regression line (Koutsoyiannis, 1977, Aruofor, 2001, Aruofor, 2017 and Aruofor, 2020).

The parameters can be estimated by solving the following normal equations:

$$a\sum 1 + b\sum X = \sum Y \qquad (1)$$
$$a\sum X + b\sum X^2 = \sum XY \qquad (2)$$

This was the basic procedure adopted and the coefficients were estimated by means of a computer software, ESM-Lab 4.4, that tested for statistical significance at the 5% level of significance using the asymptotic t-ratios. It was designed jointly by the author Professor Rex Oforitse Aruofor and Mr. Kingsley Igbinoba Omoyuyi of Microcraft Nigeria Limited. The procedure is to determine the important variables required for the solution of the problem, classify them into endogenous and exogenous variables before feeding them to ESM-Lab 4.4. The model is then estimated, and the statistically significant coefficients are automatically classified into a matrix **B** and the structural relationship of the economy is automatically specified. Further analysis can then be performed. (The computer software can be downloaded as esmlab.ng.com from the internet and ran as administrator). For this study, the data were assembled from the Central Bank Statistical Bulletin (CBN, 2017, 2018, 2019 and 2021) and Aruofor, (2017) and Aruofor and Ogbeide (2019, 2024). The time series ranged from 2006 to 2022. The list of variables consists of one hundred and thirteen variables, made up of one hundred and eleven (111) endogenous variables followed by two (2) exogenous variable (fig 2).

THE CONSTRUCTION OF THE COMPOSIT MODEL OF NIGERIA ECONOMY.
The Nigeria model consists of the primary sectors comprising of the agricultural sector, the manufacturing sector, industry, construction, transport, services, education and health; and other real sectors including national income, consumption and investment, population, labor and employment, foreign sector, economic indicators and policy instruments. Together, they comprise the endogenous variables of the model, while the exogenous variable consist ofbanks and banks and their branches nationwide.

THE POPULATION MODEL AND DERIVATION OF VARIABLES
Extant models of the Nigerian economy lacked data on total active work force, employment, etc. These are major defects and according to Stolper, (1966), the development planner cannot afford to assume his facts; he must find them as best as he can. We therefore proceeded as follows:
The population of Nigeria is growing at approximately 3% per year. Given this fact, we back cast the population at 3% discount rate to 1901 and projected it to 2021 assuming that the population has been adjusted for deaths.

1) Going by international standard, children are those people of ages Sixteen (16) years and below and was derived as:
   Children = Pop_t - Pop_{t-16}

2) Population of people eighty years and below was derived as:
   Pop_t – Pop_{t-80}
3) Estimated potential active work force (EPAWF) = Pop_t – Pop_{t-80} – Children.
4) Population of old people equals the residual.
5) Unemployed work force = EPAWF x Unemployment rate.
6) Employed work force (EMPWF) = EPAWF - Unemployed work force.
7) Employment = $\Delta EMPWF$

8) Average wage rate = $Labor \quad Force \quad Compensation / EMPWF$

9) National Productivity = NGDP/Labor force compensation

10) Labor Productivity = NGDP/ EMPWF

11) Demand for Employment = $\Delta EMPWF_{-1}$

12) Demand Pressure for Employment = $(\Delta EMPWF_{-1})$/Unemployed Work Force

13) Demand for Health care = $\Delta HGDP_{-1}$

14) Demand Pressure for Health care = $\Delta HGDP_{-1}/Pop$

15) Demand for Education = $\Delta EdGDP_{-1}$

16) Demand Pressure for Education = $\Delta EdGDP_{-1} / Pop$

17) Demand for Imports = $\Delta IMPOTS_{-1}$

18) Penchant for Imports = $\Delta IMPOTS_{-1} / Pop$

19) Import Dependence = $IMPOTS / NGDP$

20) Slavery = EXTDEBT/Pop

Some other variables were derived from existing data as follows:

- $AGGDD \quad = (\Delta GDP)_{-1}$
- $AGGSS \quad = \Delta GDP$
- $AGGDDPR \quad = (\Delta GDP)_{-1} / POP$
- $GROWT \quad RATE = ((\Delta GDP)/GDP_t)*100)$
- $DINCOM = GDP - TAX$
- $COLIVN = (CONS_{t-1}((1+(INFRT_t/100))))$
- $POOR = POP/((RGDP/EXCHRT)*\$720)$
- $ABPOOR = POP/((RGDP/EXCHRT)*\$360)$
- $RICH = POP - (POOR + ABPOOR)$
- $RPOVRT = (1-((RGDP/EXCHRT)/RGDP)*100)$
- $DDMONY = (\Delta MONYSS)_{-1}$
- $DDMOPR = ((\Delta MONYSS)_{-1} / POP)$
- $IMPDD = (\Delta IMPORT)_{-1}$
- $IMPDDPR = ((\Delta IMPORT)_{-1} / POP)$
- $XPOTDD = (\Delta XPORT)_{-1}$
- $DBTBDN = (EXDBT/(GDP/EXCHRT))$

- *INVEDU* $\quad = (INVSTNENT/NGDP)*EDUGDP$
- *INVIND* $\quad = (INVSTNENT/NGDP)*INDGDP$

However the 2001 and 2006 census of the Nigerian economy by the National Bureau of Statistics was used to adapt the population of male and female, as well as urban and rural populations in Nigeria according to their shares.

Fig 2: LEGEND OF VARIABLES NIGERIA ECONOMY IMPACT OF BANKS

S/no.	ACRONYMS	ACTIVITY	UNIT
1	NGDP(t)	GDP at Current Basic Prices	N million
2	AGGDD	Aggregate Demand	
3	AGGSS	Aggregate Supply	
4	INVST(t)	Investment	N million
5	AGRSEC(t)	1. Agriculture	N million
6	INDUST(t)	2. Industry	N million
7	MANUFC(t	(c) Manufacturing	N million
8	OILREFIN	OIL Refining	N million
9	ELECTSS(t)	3. Electricity,Gas,Steam & Air conditioner	N million
10	WATER(t)	4. Water supply, sewage, waste Mang.	N million
11	CONSTN(t)	5. Construction	N million
12	SERVCS(t)	C. SERVICES	N million
13	TRADE(t)	1. Trade	N million
14	ACCOFOOD	2. Accomadation and Food Services	N million
15	TRASPOT(t	3. Transportation and Storage	N million
16	TRANSEV(t	e. Transport Services	N million
17	POSTCUR(t	f. Post and Courier Services	N million
18	INFOCOM(	4. Information and Communication	N million
19	TELECOM(t	a. Telecommunications and Information Services	N million
20	PUBLSHN(t	b. Publishing,	N million
21	MPIC&SND	c. Motion Pictures, Sound recording and Music production	N million
22	BRODCST(t	d. Broadcasting	N million
23	ARTRECRTI	5. Arts, Entertainment & Recreation	N million
24	FININSUR(t	6. Financial and Insurance	N million
25	FINANCE(t)	a. Financial Institutions	N million
26	INSURANS(	b. Insurance	N million
27	REALEST(t)	7. Real Estate	N million
28	PROFSERV(	8. Professional, Scientific & Technical Serv.	N million
29	ADMINSUP	9. Administrative and Support Services	N million
30	PUBADMN(	10. Public Administration	N million
31	EDUCATN(	11. Education	N million
32	HLT&SOC	12. Human Health & Social Services	N million
33	OTHSERVS(	13. Other Services	N million
34	DISPINC(t)	Disposable Income	N million
35	REALINC(t)	Real Income	N million
36	REALGDP(t	Real GDP	N million
37	GROWTRT(	Growth rate	%
38	GROWTH(t	Growth	N million
39	CONS(t)	Consumption	N million
40	CAPITAL(t)	Capital accumulation	N million
41	FDI(t)	Foreign Direct Investment	N million
42	CPI(t)	Consumer Price Index	
43	INFLTD(t)	Inflation Dummy = 1 when CPI increases, otherwise = 0	
44	INFLATN(t)	Inflation = INFTD X CPI	
45	INFLTRT(t)	Inflation Rate	%
46	UNEMPL(t)	Unemployment Rate	%
47	LABCOMP	Labor Force Compensation	N million
48	MALE	Male Population	Million
49	FEMALE	Female Population	Million
50	URBAN	Urban Population	Million
51	RURAL	Rural Population	Million
52	CHLDRN	Children Population (16 years and below)	Million
53	CHDRNSS	Children Supply	Million
54	EPAWF	Estimated Potencial Active Work Force	Million
55	NADDWF	New Addition to Workforce	
56	POPOLD	Population of Old People (80 years and above)	Million

Fig 2: LEGEND OF VARIABLES NIGERIA ECONOMY IMPACT OF BANKS CONTD

S/no.	ACRONYMS	ACTIVITY	UNIT
57	UNEMWF	Unemployed Work Force	Million
58	EMPWF	Employed Work Force	Million
59	EMPLMNT	Employment	Million
60	PRDTIVTY	Productivity	
61	LPROVITY	Labor Productivity	
62	AVWAGE	Average Wage Rate	Naira
63	DDEMENT	Demand for Employment	
64	EMDDPR	Employment Demand Pressure	
65	POOR(t)	Poor	Million
66	EXTPOOR(t)	Extremely (Absolute) Poor	Million
67	POVRT(t)	Poverty Rate	%
68	SLAVERY	Slavery	
69	SAVINGS(t)	Savings	N million
70	BOT(t)	Balance of trade	N million
71	BOP(t)	Balance of payments	N million
72	EXTRES(t)	External reserve	N million
73	DBTBDN(t)	Debt burden or Bondage	
74	OILREV(t)	Oil revenue	N million
75	NOILREV(t)	Non-oil revenue	N million
76	CORPTD(t)	Corruption Dummy = 1 when DDMOPR increases, otherwise = 0	
77	CORRPTN(t)	Corruption= CORPTD X DDMOPR.	
78	DDMONY(t)	Demand for money	N million
79	DDMOPR(t)	Demand for money pressure	
80	DEMOCY(t)	Dummy Variable 1.0 for New Democracy and 0 elsewhere.	
81	CORDEM(t)	Equals DEMOCY x CORRPTN	
82	PWLFARE	Personal Welfare (Per capita income)	Naira
83	STDOLIVN	Standard of Living	
84	PUPWER	Purchasing Power	
85	FODSRITY	Food Security	
86	HLTCARE	Health Care	
87	DDHCARE	Demand for Health Care	
88	HCRDDPR	Health Care Demand Pressure	
89	HRESDEV	Human Resource Development	
90	DDEDUC	Demand for Education	
91	EDUDDPR	Education Demand Pressure	
92	WEALTH	National Wealth	
93	PWEALTH	Personal Wealth	
94	IMPDPEN	Import Dependence	
95	DDIMP	Demand for Imports	
96	PENCIMP	Penchant for Imports	
97	TIME(t)	Time	
98	EXCHRTRP	Exchange rate (Relative poverty)	N million
99	POP(t)	Population	Million
100	IMPORT(t)	Imports	N million
101	XPOTOIL(t)	Oil export	N million
102	XPTNOIL(t)	Non-oil export	N million
103	DODBT(t)	Domestic debts	N million
104	EXTDBT	External debts	$ million
105	GEXPDN(t)	Government expenditure	N million
106	PRIMELR(t)	Primary lending rate	%
107	INTSAV(t)	Interest rate	%
108	MONYSS(t)	Money supply	N million
109	TAX(t)	Tax	N million
110	ACGSC	Agricultural Credit Guarantee Scheme	N million
111	DFUELP(t)	Domestic fuel price	N/Litre
		EXOGENOUS VARIABLES	
112		Banks	no.
113		Banks plus their Branches	no.

MARKOV CHAINS ANALYSIS

The second section is Markov Chains analysis. An economy and indeed the world consists of variables interacting in a dynamic fashion. These variables include people (i.e. children, the work force, employed and unemployed, old people), businesses, vocations, sectors, governments etc interacting and changing in space and time. Even the policies they implement and the policy instrument they use also change in time and space and the ability to manage these changes tend to depend on our ability not only to understand them but to be able to analyze and interpret them. Markov Chains Analysis provides us with such a tool for analyzing and understanding these changes and ecostatometrics alias total differential modeling approach provides the enabling mechanisms for capturing the changes. Markov Chains Analyses can be approached in terms of flows which is the original concept but also can be approached in terms of change or a combination of both which is a new concept. However, the concept is versatile and depends on how we define our variables in the Markov Chains, especially in the estimation and interpretation of the transition matrix, which is vital to the procedure. In the above connection, our variables can be defined as the probability of being in one state in period ($t+1$), when another state changes in period (t); or just the probability that a variable will change in period ($t+1$) when another variable changes in period (t) or both. Given the above definitions, it is worthy of note that Markov Chains analysis deals only with probabilities which do not admit of negative values; but an economy interacts in both negative and positive numbers. This impasse can be overcome by reducing the system to conform (see Aruofor, 2003 and 2020). This was the methodology applied in this study.

The data on banks and their branches among States was available only from 2006 to 2022 and this ultimately determined the scope of the analysis in this study. Markov Chains analysis was used to analyze the dynamics of banks and their branches within Nigerian States and it was found that the transition matrix, of dimension (38x38) is an absorbing Markov chain with twelve absorbing states.

ANALYSIS OF ABSORBING MARKOV CHAIN.

An absorbing state, is a state that once entered we do not leave. It is a state of having zero probability of being left once entered. Once the absorbing state is entered, the process stops abruptly or completely and is then initiated from another process. A Markov Chain can be said to be absorbing if the following conditions are satisfied:

1.   It has at least one absorbing state.

2.   It is possible to move from every non absorbing state to at least one absorbing state in finite number of steps.

The transition matrix for a typical absorbing Markov Chains with two absorbing states is as shown below:

$$P = \begin{array}{c} \\ S_{1_t} \\ S_{2_t} \\ S_{3_t} \\ S_{4_t} \end{array} \begin{array}{cccc} S_{1_{(t+1)}} & S_{2_{(t+1)}} & S_{3_{(t+1)}} & S_{4_{(t+1)}} \\ \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0.2 & 0.1 & 0.4 & 0.1 \\ 0.3 & 0.2 & 0.3 & 0.5 \end{bmatrix} \end{array}$$

The probabilities P_{ij} may be defined in the usual manner as the probability of starting in state i in period t and moving to state j in period $t + 1$. There are four states S_1, S_2, S_3, S_4 so that there is a 0.3 probability of moving from state S_4 in period t to state S_1 in period $t + 1$. There are two absorbing states S_1 and state S_2. So that once we are in these states, we cannot leave them and the probability of moving to any other state is zero.

It is worthy of note that when we are confronted with Markov Chain having absorbing states, we cannot compute any steady states since the process must end up in one of the absorbing states.

However, several kinds of interesting information can be obtained from the analysis of the absorbing Markov Chains. It is possible to determine the following for example

1.   The probability of absorption by any given absorbing state.

2.   The expected numbers of steps before the process is absorbed.

3.   The expected number of times the process is in any given non absorbing state.

To perform the analysis of absorbing Markov Chains, we start by rearranging the transition matrix into four sub matrices by partitioning it as follows:

$$P = \left[\begin{array}{c|c} I & O \\ \hline A & N \end{array}\right]$$

These sub matrices all contain probability elements but none of them is individually a transition matrix. If we assume that we have r absorbing states and q non-absorbing states, then $r + q = S$ where S is equal to the total, 4 in this example. The sub matrices are then of the following order:

I = $r \, x \, r$ Identity matrix defining the probability of staying

within an absorbing state once it is reached

O = $r \, x \, q$ null matrix indicating the probability of going from an

absorbing state to non-absorbing state.

A = $q \, x \, r$ matrix containing the probability of going from a non –

absorbing to an absorbing state.

N = $q \, x \, q$ matrix showing the probability of going from a non –

absorbing to a non-absorbing state in exactly one step.

Therefore we partition our transition matrix as follows.

$$P = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ \hline 0.2 & 0.1 & 0.4 & 0.1 \\ 0.3 & 0.2 & 0.3 & 0.5 \end{bmatrix}$$

Using the sub matrix N from the subdivided Transition matrix we can obtain what is called the Fundamental matrix F by subtracting N from an identity matrix of same order as N, and inverting the resulting matrix.

$$F = (I - N)^{-1}$$

For a given starting state, a fundamental matrix F indicates the expected number of times a process is in each non absorbing state before it is absorbed. The non absorbing states is referred to as transient state.

The expected number of steps before absorbing is simply the sum of the times the process is in each of the non absorbing states.

Using the data in our illustrative model, the fundamental matrix can be computed as follows:

$$(\mathbf{I} - \mathbf{N}) = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} - \begin{bmatrix} 0.4 & 0.1 \\ 0.3 & 0.5 \end{bmatrix} = \begin{bmatrix} 0.6 & -0.1 \\ -0.3 & 0.5 \end{bmatrix}$$

$$\mathbf{F} = (\mathbf{I} - \mathbf{N})^{-1} = \begin{bmatrix} 1.8519 & 0.3704 \\ 1.1111 & 2.2222 \end{bmatrix}$$

For example, expected time before S_3 is absorbed is given by *1.8519 + 1.1111 = 2.9630* periods.

The probability of absorbtion by any of the absorbing state can be computed by employing the following relationship i.e.

Probability of absorbtion $=$ **FA**

$$\mathbf{FA} = \begin{bmatrix} \mathbf{I} & - & \mathbf{N} \end{bmatrix}^{-1} \mathbf{A}$$

$$= \begin{bmatrix} 1.8519 & 0.3704 \\ 1.1111 & 2.2222 \end{bmatrix} \begin{bmatrix} 0.2 & 0.1 \\ 0.3 & 0.2 \end{bmatrix}$$

$$\therefore \mathbf{FA} = \begin{bmatrix} 0.4815 & 0.2593 \\ 0.8889 & 0.5556 \end{bmatrix}$$

This absorbing probability matrix indicate that a unit in state S_3 will end up in State S_1 with a probability of 0.48149 and in state S_2 with a probability of 0.25926. A unit in state S_4 will

similarly be absorbed into state S_1 with a probability of 0.88889 and into state S_2 with 0.55556 probability. So that if we assume that there were 80 units in state S_3 and 60 units in state S_4, by employing the absorption matrix we can determine how many of these units will be absorbed in the long run as follows:

$$\begin{matrix} & S_3 & S_4 \\ \begin{bmatrix} 80 & 60 \end{bmatrix} \end{matrix} \begin{bmatrix} 0.48149 & 0.25926 \\ 0.88889 & 0.55556 \end{bmatrix} = \begin{bmatrix} 91.8526 & 54.0744 \end{bmatrix}$$

Of the 140, 92 will be absorbed into state 1 while 54 will be absorbed into state 2.

A computer programme has been developed by the author, Professor Aruofor, Rex Oforitse and Mr. Omoruyi, Kingsley Igbinoba of Microcraft Nigeria Ltd and incorporated into ESM Lab and can be assessed on the Internet as esmlab.ng.com.

RESULTS AND DISCUSSION

The impact of banks and banks plus their branches on the economy as a whole is mixed as can be inferred from Table 1 and Table 2. The number of banks in Nigeria increased from 25 in 2006 to 32 by 2022, while the number of banks and their branches increased from 3258 in 2006 to 5442 by 2022 with Lagos State having the highest concentration of 1038 in 2006 and 1602 by2022.

THE IMPACT OF BANKS ON THE NIGERIAN ECONOMY

Banks impact positively on aggregate demand and aggregate supply to the tune of N485,330.6 million and N224,934.2 million respectively. They also impact on industry by N163,687.1 million, on education and on health and social services sector by N7,424.2 million and N5,543.2 million respectively. Banks also promote real income to the tune of N5,651.65 million and causes the economy to grow at 2.58%. Banks also impact on consumption to the tune of N341,189.8 million, causing standard of living to increase by N16,028.1, personal welfare (per capita income) by N9,360.58 and food security by N960.2 while health care increase by N28.54 per capita. They also impact positively on balance of trade to the tune of N298,432.9 million and increase the external reserves by N599.6 million as well as promoting per capita savings by N11.63. They also reduce the inflation rate by –N0.097%.

Regrettably, the impact of banks on corruption is very profound causing it to increase by N2,698.9 million and N2,699.8 in the new democracy. This must be the result of sharp practices among bank personnel. In addition, banks increases the unemployment rate by 0.961% and worsens the penchant for imports and import dependence by N431.26 and 0.001622 respectively, thus increasing imports by N285,948.5 million. They also cause the Naira to depreciate by N0.045/US$. The details are contained in Table 1.

THE IMPACT OF BANKS AND THEIR BRANCHES ON THE NIGERIAN ECONOMY

The full impact of banks and their branches on the Nigerian economy can also be inferred from Table 1. They impact positively on nominal income causing it to increase by N9,610.2 million, as well as on aggregate supply causing it to increase by N3,902.7 million but the impact on aggregate demand is negative. They also promote investment to the tune of N276.6 million and industry by N1979.6 million. Education and health and social services also benefit at N96.42 million and

N37.79 million respectively. Transport, transport services, information, motion pictures and broadcasting are also impacted upon positively by banks and their branches.

Disposable income and real income increase by N10,193.39 million and N18.3 million respectively. The impact on Foreign Direct Investment is also positive at N105.5 million. Contrary to the findings on the impact of banks as above, indeed banks and their branches impact positively on employment, labor productivity and average wage to the tune of 2,124 employees, N38.94 million and N12.66 respectively. Banks and their branches also promote savings by N63.74 million and increases the balance of payments by N1,148.7 million. They also impact positively on external reserves and non-oil revenue to the tune of N1.04 million and N404.8 million respectively.

However as before, they impact positively on corruption causing a shift of 0.000284 and a change of N12.28 million per year in corruption. The sharp practices among bank workers does not make the impact of banks and their branches to be felt to the fullest. Despite this fact, banks and their branches still impact positively on personal welfare causing per capita income to increase by N58.47, food security by N14.81 million, human resources development by N0.24 million and health care by N0.22 million. However, banks and their branches also promote imports and fuel the penchant for imported goods which is not complementary as can be inferred from Table 1.

IMPACT OF URBAN BANKS AND THEIR BRANCHES ON THE ECONOMY.

The data on urban-rural distribution of banks was only available between 1981 and 2004 and this was used to estimate their impact on the economy. As can be inferred from Table 2, the impact of banks and their branches is more profound in the urban areas where they promote nominal income by N998.47 million, disposable income by N886.59 million, real income by N40.9 million. They also promote aggregate demand and aggregate supply to the tune of N310.39 million and N524.09 million respectively. They also impact on investment in the urban areas causing investment to increase by N66.24 million; foreign direct investment by N13.13 million and capital accumulation by N181.99 million.

The urban banks and their branches positively impact on sectoral outputs, thus causing agriculture to increase by N471.47 million, industry by N176.11 million, manufacturing by N31.32 million, oil-refining by N2.57 million, services by N340.63 million and trade by N131.69 million. They also promote non-oil exports to the tune of N48.38 million and contribute to the standard of living and personal welfare of urban dwellers by N4.36 million and N5.23 million respectively. They promote food security to the tune of N2.74 million, increase savings in the urban areas by N19.26 million and also enhance labor productivity by N11.35 million but regrettably they also promote imports to the tune of N105.97 million as can be inferred from Table 2.

TABLE 1: IMPACT OF BANKS AND BANKS AND THEIR BRANCHES ON THE ECONOMY

S/no.	ACRONYM	BANKS(t)	BANKBR(t)	S/no.	ACRONYM	BANKS(t)	BANKBR(t)
1	NGDP(t)	-70266.3	9610.207	57	UNEMWF	0.819665	0.002124
2	AGGDD	485330.6	-1065.02	58	EMPWF	1.033236	0.00031
3	AGGSS	224934.2	3902.665	59	EMPLMNT	-0.01723	0.002351
4	INVST(t)	-176851	276.5628	60	PRDTIVTY	-0.34607	-0.01353
5	AGRSEC(t)	-422637	-1460.23	61	LPROVITY	19429.13	38.93877
6	INDUST(t)	163687.1	1979.626	62	AVWAGE	42.59602	12.65967
7	MANUFC(t	-154048	-202.13	63	DDEMENT	0.223819	-0.0033
8	OILREFIN	-10781.9	-7.44641	64	EMDDPR	0.01783	-4.4E-05
9	ELECTSS(t)	-6915.15	-24.3815	65	POOR(t)	-1.01698	-0.00495
10	WATER(t)	2363.549	-9.72145	66	EXTPOOR(t	-1.46703	-0.00714
11	CONSTN(t)	-34033	-227.804	67	POVRT(t)	0.027121	-9.5E-06
12	SERVCS(t)	-484517	-1022.28	68	SLAVERY	-741.554	7.422653
13	TRADE(t)	-159772	-181.348	69	SAVINGS(t)	-102868	63.74346
14	ACCOFOOI	-9028.53	-68.6874	70	BOT(t)	298432.9	-1253.58
15	TRASPOT(t	-5540.11	226.1782	71	BOP(t)	-108472	1148.702
16	TRANSEV(t	1021.918	2.762601	72	EXTRES(t)	599.595	1.038947
17	POSTCUR(t	421.3335	2.936104	73	DBTBDN(t)	0.005424	3.37E-05
18	INFOCOM(	41737.22	67.62938	74	OILREV(t)	-28405.1	-362.95
19	TELECOM(t	63103.16	-93.4533	75	NOILREV(t)	-20434.6	404.7918
20	PUBLSHN(t	175.5202	-0.33007	76	CORPTD(t)	0.037227	0.000284
21	MPIC&SND	6384.116	38.41434	77	CORRPTN(t	2698.867	12.27688
22	BRODCST(t	-7066.35	73.2772	78	DDMONY(t	-42569.4	206.7846
23	ARTRECRTI	2914.175	-20.2759	79	DDMOPR(t	1900.281	-3.73706
24	FININSUR(t	-28536.5	-38.3611	80	DEMOCY(t)	0.004925	-0.00014
25	FINANCE(t)	-24768.6	-31.8876	81	CORDEM(t	2699.781	12.26502
26	INSURANS	-3765.7	-6.46709	82	PWLFARE	9360.527	58.47154
27	REALEST(t)	-93114.9	-288.176	83	STDOLIVN	16028.1	-21.3471
28	PROFSERV	-47667.7	-62.7465	84	PUPWER	-3.49803	-0.17683
29	ADMINSUF	186.975	1.178365	85	FODSRITY	960.1971	14.80866
30	PUBADMN	83236.42	-288.309	86	HLTCARE	28.53662	0.220199
31	EDUCATN(	7424.168	96.42657	87	DDHCARE	-1187.26	9.782069
32	HLT&SOC	5543.166	37.78964	88	HCRDDPR	-7.14711	0.044324
33	OTHSERVS	-69980.5	-432.745	89	HRESDEV	-21.3375	0.239692
34	DISPINC(t)	-400224	10193.39	90	DDEDUC	2351.411	-3.43323
35	REALINC(t)	5651.645	18.29726	91	EDUDDPR	3.415245	-0.19928
36	REALGDP(t	-359731	-2188.48	92	WEALTH	-0.00107	-1E-05
37	GROWTRTI	2.586844	-0.00087	93	PWEALTH	11.62807	-9.13245
38	GROWTH(t	-0.33484	-0.00059	94	IMPDPEN	0.001622	-2.1E-06
39	CONS(t)	341189.8	-13506.3	95	DDIMP	420833.3	553.2226
40	CAPITAL(t)	-2367.94	-1799.55	96	PENCIMP	431.2679	1.690837
41	FDI(t)	-9643.81	105.5056	97	TIME(t)	-0.10514	-0.00207
42	CPI(t)	-1.83661	0.01005	98	EXCHRTRP	0.045394	-0.00959
43	INFLTD(t)	0.024872	-0.00011	99	POP(t)	-0.88023	0.004333
44	INFLATN(t)	-2.3846	-0.01068	100	IMPORT(t)	285948.3	2845.928
45	INFLTRT(t)	-0.09674	-0.00222	101	XPOTOIL(t)	-24786.7	-1191.48
46	UNEMPL(t)	0.961164	-0.00267	102	XPTNOIL(t)	-13906.9	-449.715
47	LABCOMP	170681.9	-971.124	103	DODBT(t)	-19024.5	-138.346
48	MALE	-0.44364	0.002184	104	EXTDBT	-182878	-2012.97
49	FEMALE	-0.43658	0.002149	105	GEXPDN(t)	40379.17	28.80938
50	URBAN	-0.9732	-0.00703	106	PRIMELR(t)	0.330565	0.000174
51	RURAL	-1.70909	-0.01235	107	INTSAV(t)	0.166739	0.00023
52	CHLDRN	-1.3083	-0.01075	108	MONYSS(t)	-182166	-562.266
53	CHDRNSS	0.485198	0.004261	109	TAX(t)	-135561	-1531.84
54	EPAWF	-1.15314	-0.01073	110	ACGSC	362919	3730.02
55	NADDWF	0.011136	0.000245	111	DFUELP(t)	1.553712	0.005455
56	POPOLD	-0.18963	-0.00179				

TABLE 2: IMPACT OF RURAL-URBAN DISTRIBUTION OF BANKS IN NIGERIA

S/no	ACRONYM	Urban(t)	Rural(t)	S/no	ACRONYM	Urban(t)	Rural(t)
1	NGDP(t)	998.4698	-4810.45	57	UNEMWF	-0.00162	-0.00022
2	AGGDD	310.3962	-1187.1	58	EMPWF	-0.00124	-0.00446
3	AGGSS	524.0898	-1562.97	59	EMPLMNT	-0.00043	0.000372
4	INVST(t)	66.23848	-273.624	60	PRDTIVTY	-0.00343	-0.00536
5	AGRSEC(t)	471.4673	-1765.77	61	LPROVITY	11.34957	25.48032
6	INDUST(t)	176.108	608.3859	62	AVWAGE	-0.07342	0.923829
7	MANUFC(t	31.31941	135.3611	63	DDEMENT	-0.00313	0.003572
8	OILREFIN	2.574627	-21.786	64	EMDDPR	-0.00086	0.000611
9	ELECTSS(t)	6.217806	-18.8484	65	POOR(t)	-0.01063	0.036369
10	WATER(t)	-1.29523	3.458321	66	EXTPOOR(t	-0.01063	0.036369
11	CONSTN(t)	3.752364	15.12078	67	POVRT(t)	-7.8E-06	0.000175
12	SERVCS(t)	340.6271	-1823.7	68	SLAVERY	-1.2085	11.44121
13	TRADE(t)	131.6904	292.915	69	SAVINGS(t)	19.26128	129.8219
14	ACCOFOOD	0.120279	2.828866	70	BOT(t)	-107.2	199.1885
15	TRASPOT(t	-16.8458	-28.6195	71	BOP(t)	-498.089	844.068
16	TRANSEV(t	1.201977	-4.58905	72	EXTRES(t)	-0.85163	7.16799
17	POSTCUR(t	0.653566	-2.76138	73	DBTBDN(t)	-2.7E-05	2.1E-05
18	INFOCOM(	58.0353	-147.942	74	OILREV(t)	-197.929	14.53705
19	TELECOM(t	-1.09966	-5.82674	75	NOILREV(t)	-54.8343	-119.228
20	PUBLSHN(t	0.068603	0.28596	76	CORPTD(t)	-2.5E-05	-4.5E-05
21	MPIC&SND	11.22996	-40.9821	77	CORRPTN(t	-0.1217	-0.21969
22	BRODCST(t	10.09309	28.32542	78	DDMONY(t	-19.5823	116.4504
23	ARTRECRTI	0.724959	-2.64564	79	DDMOPR(t	-0.21312	1.034555
24	FININSUR(t	16.91103	61.13388	80	DEMOCY(t)	0.000114	-0.00032
25	FINANCE(t)	14.608	54.36298	81	CORDEM(t	-0.14991	-0.13871
26	INSURANS	1.867918	6.527488	82	PWLFARE	5.230828	13.22447
27	REALEST(t)	-18.9521	-144.621	83	STDOLIVN	4.361644	4.339216
28	PROFSERV	-0.85346	22.10262	84	PUPWER	-0.03535	0.70769
29	ADMINSUP	-0.00655	0.169677	85	FODSRITY	2.737037	-13.1186
30	PUBADMN	-11.811	-206.755	86	HLTCARE	-0.03581	0.247637
31	EDUCATN(	-4.41435	-77.2821	87	DDHCARE	-2.32883	2.761449
32	HLT&SOC	-2.31841	28.84217	88	HCRDDPR	4.35E-05	0.007971
33	OTHSERVS	21.09174	-76.9718	89	HRESDEV	-0.07591	0.524932
34	DISPINC(t)	886.5949	1184.459	90	DDEDUC	-4.93655	5.853697
35	REALINC(t)	-38.2616	40.8746	91	EDUDDPR	9.16E-05	0.016899
36	REALGDP(t	5406.719	-6091.53	92	WEALTH	-5.7E-07	7.67E-06
37	GROWTRT	-0.00083	-0.02026	93	PWEALTH	-0.00231	1.262595
38	GROWTH(t	-0.00058	-0.00041	94	IMPDPEN	-3.6E-05	4.52E-05
39	CONS(t)	701.7883	-2826.34	95	DDIMP	-41.6436	-23.2324
40	CAPITAL(t)	181.989	480.4816	96	PENCIMP	-0.26812	-1.20752
41	FDI(t)	13.13227	25.36196	97	TIME(t)	-0.00039	-0.00366
42	CPI(t)	-0.00014	0.012031	98	EXCHRTRP	-0.00948	0.045596
43	INFLTD(t)	0.000264	-0.00034	99	POP(t)	-0.00701	-0.00419
44	INFLATN(t)	-0.00011	0.012143	100	IMPORT(t)	105.9697	152.5383
45	INFLTRT(t)	0.001768	-0.03623	101	XPOTOIL(t)	-461.997	-24.1326
46	UNEMPL(t)	-0.00442	0.002939	102	XPTNOIL(t)	48.37682	-23.9564
47	LABCOMP	-2.19469	60.0383	103	DODBT(t)	-31.935	203.6289
48	MALE	-0.00353	-0.00211	104	EXTDBT	-69.9428	1179.446
49	FEMALE	-0.00348	-0.00208	105	GEXPDN(t)	-35.6102	356.7052
50	URBAN	-0.00229	-0.00118	106	PRIMELR(t)	-0.00482	-0.00248
51	RURAL	-0.00401	-0.00208	107	INTSAV(t)	0.002239	-0.00381
52	CHLDRN	-0.00262	-0.00128	108	MONYSS(t)	100.431	-550.387
53	CHDRNSS	2.29E-05	-0.00062	109	TAX(t)	-85.1022	-59.225
54	EPAWF	-0.00372	-0.00246	110	ACGSC	-67.1916	-9.8325
55	NADDWF	0.000246	-0.00065	111	DFUELP(t)	0.000892	0.008481
56	POPOLD	-0.00067	-0.00044				

IMPACT OF RURAL BANKS AND THEIR BRANCHES ON THE ECONOMY

From Table 2, it can be inferred that the impact of rural banks on the Nigerian economy is not as profound as those in the urban areas. However, they promote industry and manufacturing by N608.38 million and N135.36 million respectively. It is regrettable that even agriculture does not benefit from rural banks. Education also does not benefit in the rural areas but health and social services benefit by N28.84 million.

Rural banks promote construction and cause capital to increase by N480.48 million; with foreign direct investment increasing by N25.36 million. They lower the unemployment rate in the rural areas by -0.00022% and create employment for 372 people annually. They also increase labor productivity by N25.48 million.

Poverty in the rural areas is still rife in spite of rural banks, with the poor increasing by 36,369 people per annum. However rural banks promote savings among rural dwellers by N129.82 million, and impact on balance of trade and balance of payment by N199.19 million and N844.07 million respectively as can be inferred from Table 2.

OUTLOOK OF THE BANKING INDUSTRY.

Markov Chains analysis was used to analyze the dynamics of banks and their branches within Nigerian States and it was found that the transition matrix, of dimension (38x38) is an absorbing Markov chain with twelve absorbing states, Table 3. It is easy to see that most of the state branches will eventually become full fledge banks except for Abuja (FCT), Ebonyi, Imo and Nasarawa. The probability of absorption are as shown in Table 3. However, Akwa Ibom, Cross River, Enugu, Kebbi, Ogun, Ondo and Osun States are pure sinks as they remain static at 95, 83, 162, 37, 191, 127 and 113 banks respectively and do not grow. The other absorbing states apart from Banks, include Ekiti, Kwara, Oyo and Plateau States Fig. 3.Ekiti will experience a massive growth of banks from 107 in 2022 to 233 by year 2030; Kwara from 78 in 2022 to 81 by 2030; Oyo State from 237 to 240 and Plateau State from 80 in 2022 to 81 by 2030.

Other non-absorbing states that will experience growth in banks include Jigawa, Katsina, Kogi, Taraba and Yobe States, Fig. 4.Jigawa will increase from 31 in 2022 to 33 by 2030; Katsina from 49 in 2022 to 52 by 2030; Kogi from 63 in 2022 to 74 by 2030; Taraba from 29 in 2022 to 30 by 2030 while Yobe State will increase from 31 in 2022 to 32 by year 2030. All other States will experience minor declines in their number of banks. On the macro level, banks will increase from 32 in 2022 to 204 banks by year 2030.

TABLE 3: THE MARKOV ABSORBING STATES OF BANKS AND THEIR BRANCHES IN NIGERIA

	Banks	Akwa-Ibom	Cross-River	Ekiti	Enugu	Kebbi	Kwara	Ogun	Ondo	Osun	Oyo	Plateau
Banks	1	0	0	0	0	0	0	0	0	0	0	0
Akwa-Ibom	0	1	0	0	0	0	0	0	0	0	0	0
Cross-River	0	0	1	0	0	0	0	0	0	0	0	0
Ekiti	0	0	0	1	0	0	0	0	0	0	0	0
Enugu	0	0	0	0	1	0	0	0	0	0	0	0
Kebbi	0	0	0	0	0	1	0	0	0	0	0	0
Kwara	0	0	0	0	0	0	1	0	0	0	0	0
Ogun	0	0	0	0	0	0	0	1	0	0	0	0
Ondo	0	0	0	0	0	0	0	0	1	0	0	0
Osun	0	0	0	0	0	0	0	0	0	1	0	0
Oyo	0	0	0	0	0	0	0	0	0	0	1	0
Plateau	0	0	0	0	0	0	0	0	0	0	0	1
Abia	0.015551	0	0	0	0	0	0.001221	0	0	0	0.00413	0
Abuja(FCT)	0	0	0	0	0	0	0	0	0	0	0	0
Adamawa	0.015917	0	0	0	0	0	0	0	0	0	0	0
Anambra	0.010786	0	0	0	0	0	0	0	0	0	0	0
Bauchi	0.018082	0	0	0	0	0	0	0	0	0	0	0
Bayelsa	0.013727	0	0	0	0	0	0	0	0	0	0	0
Benue	0.010483	0	0	0	0	0	0	0	0	0	0	0
Borno	0.01035	0	0	0	0	0	0.002573	0	0	0	0	0
Delta	0.007713	0	0	0	0	0	0	0	0	0	0	0
Ebonyi	0	0	0	0	0	0	0	0	0	0	0	0
Edo	0.010286	0	0	0	0	0	0	0	0	0	0	0
Gombe	0.004546	0	0	0	0	0	0	0	0	0	0	0.007655
Imo	0	0	0	0	0	0	0	0	0	0	0	0
Jigawa	0.000646	0	0	0	0	0	0	0	0	0	0	0
Kaduna	0.017762	0	0	0	0	0	0.001358	0	0	0	0	0
Kano	0.01401	0	0	0	0	0	0	0	0	0	0	0
Katsina	0.001379	0	0	0	0	0	0	0	0	0	0	0
Kogi	0.00398	0	0	0	0	0	0	0	0	0	0	0
Lagos	0.00202	0	0	0.010313	0	0	0	0	0	0	0	0
Nasarawa	0	0	0	0	0	0	0	0	0	0	0	0
Niger	0.011844	0	0	0	0	0	0	0	0	0	0	0
Rivers	0.003973	0	0	0	0	0	0	0	0	0	0	0
Sokoto	0.022028	0	0	0	0	0	0	0	0	0	0	0
Taraba	0.003903	0	0	0	0	0	0	0	0	0	0	0
Yobe	0.004843	0	0	0	0	0	0	0	0	0	0	0
Zamfara	0.00349	0	0	0	0	0	0	0	0	0	0	0

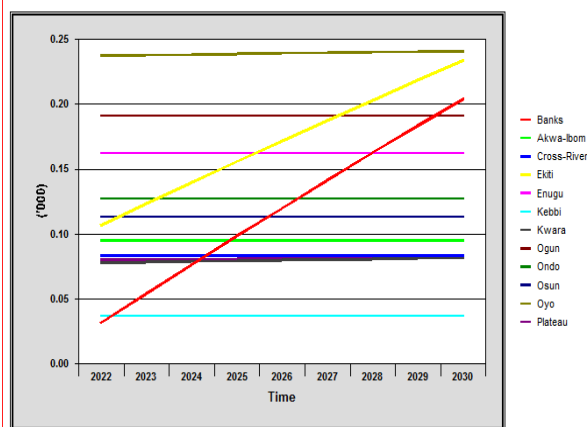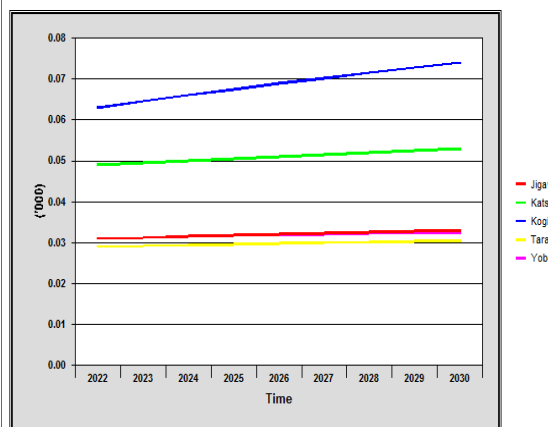

Fig. 3: OUTLOOK OF THE BANKING SECTOR TO YEAR 2030

Fig. 4: STATES THAT WILL EXPERIENCE GROWTH IN BANKS

CONCLUSION

In conclusion, we shall just recapitulate on the highlights of the impact of banks and their branches on the Nigerian economy especially in the urban areas, which cannot be overemphasized.

Indeed, they impact positively on income, causing nominal income, disposable income and real income to increase by N9,610.2 million, N10,193.39 million and N18.29 million annually. They also increase the growth rate by 2.59% per annum as well as cause aggregate demand and aggregate supply to increase by N485,330.6 million and N224934.2 million respectively.

They also impact positively on industry, transport services, post and courier, information and communication as well as telecommunication. Banks also promote labor productivity, average wage and external reserves among others. They also promote government expenditure, lending and interest rates as well as agricultural credit guarantee scheme. Administration, Education, Health and Social Services also benefit from the impact of banks and their branches.

The impact of banks and their branches in the rural areas is also positive but not as profound as their impact in the urban areas. However, establishing more branches in the rural areas of Nigeria will enhance their impact in the rural areas but this again poses the problem of insecurity.

The main constraints facing banks in Nigeria include first and foremost, that they seem to promote corruption, they also promote imports and increase the penchant for imported goods. Indeed the sharp practice among bank workers does not make the impact of banks and their branches to be felt to the fullest. There is a need to address this malaise in the banks.

RECOMMENDATIONS

The following recommendations would help to maximize the impact of banks and their branches in Nigeria:

1. The outlook of banks to year 2030 is good as banks will increase from 32 in 2022 to 204 banks by year 2030. However, this calls for more banks and branches to be established in the rural areas of Nigeria especially to enhance the savings culture of the rural dwellers.
2. Arising from the above recommendation is the need for Government to work harder to ensure the security of life and properties especially banks and their branches in Nigeria.
3. Corruption is the bane of development in Nigeria and has been shown to be prevalent in the banking industry of Nigeria where the sharp practices among bank workers do not make the impact of banks and their branches to be realized to the fullest. Banks should therefore develop policies and adopt strategies to catch and flush out the bad eggs from the industry.
4. Nigerian Agricultural, Cooperative and Rural Development Bank (NACRDB) should establish more rural branches and be encouraged to give loans to rural farmers.
5. Bank of Industry (BOI), should expand their operations and scope and be seen to visibly and positively impact on new industries especially in the rural areas of the country.
6. Lending to borrowers and investing in Bank products should be more transparent and open.
7. Bank personnel in charge of investments, lending, foreign exchange and treasury bills transactions, should be monitored very closely to minimize sharp practices.
8. Channels for seeking redress by customers and clients in cases of deliberate delays and frustrations should not end with the bank manager alone. It should be such that is effective,

easy to access and swift to redress the situation like Customer care and the likes that have been abused. Upgrade of bank processing platforms should not constitute a source of frustration to customers.

9. Central Bank of Nigeria (CBN) should continue to play a supportive role to banks and regulate all excesses that are inimical to growth and development in Nigeria.

10. Finally, Nigerians from all spheres and walks of life, and Bank workers inclusive, should desist from personalizing all forms of transactions, especially concerning investments and stop making customer or clients feel that they are being favored instead of the reverse. This is how and where corruption begins. There is need for re-orientation and attitudinal change.
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REFERENCES

Adegbite, E. O. (2007).*Essentials of money banking.* Lagos: Chumek Ventures.

Adeyoju, S. K. (1975). *Forestry and the Nigerian economy.* Ibadan University Press, Nigeria.

Aruofor, R. O. (2001). *Economic Systems Engineering: An Essay in quantitative models and methods for development planning.* Thy Kingdom Press (Subsidiary of Systemod Nigeria Ltd.),Miscellaneous Publishers, Sapele, Nigeria, 2001.

Aruofor, R. O. (2003): A Presentation of Two Simulated Approaches to Markov Chains Transition Matrix Estimation from Aggregate Data. *The Nigerian Economic and Financial Review, Vol. 8 No. 2 pp 51-76,:*Department of Economics and Statistics, University of Benin, December, 2003.

Aruofor, R. O. (2017). Economic Systems Engineering, Poverty, Unemployment and Under-Development: A Quest for Solution and Imperatives for Developing the Nigerian Economy. In Proceedings of the 6th Inaugural Lecture Series, Benson Idahosa University, March 6.

Aruofor, R. O. and Okungbowa, E. Flourence (2018). Estimating the Real Impact of Devaluation on an Economy: The Case of the Naira. *The Indian Journal of Economics.* Vol XCVIII, No. 390 Part III pp 343-360, ISSN 0019-5170, Jan.2018.

Aruofor, R. O (2019): Analysis of the Impact of Corruption on an Economy: Understanding the Links and Feedback in the Nigerian Case. *Journal of Research in National Development, 17(2) pp 18-34, December, 2019.*

Aruofor, R. O. K. (2020). Economic Systems Engineering: Modeling And Applied Quantitative techniques For Economic And Development Planning. Amazon Books, ISBN: 9798689936024

Aruofor, R. O. and Ogbeide, D. R, (2020): Empirical Evaluation of the Impact of Corruption on Nigeria's New Democratic Governance. *International Journal of Innovative Social Sciences & Humanities Research 8(3):69-90, July-Sept., 2020*

Aruofor, R. O. and Ogbeide, D. R, (2022a): The Buhari-Osinbajo Regime in Nigeria: A Post Mortem. *Journal of Public Administration and Social Welfare Research E- ISSN 2756-5475 P-ISSN 2695-2440 Vol. 7 No. 1 pp 17-34, 2022*

Aruofor, R. O. and Ogbeide, D. R, (2024):An Escalating Analysis of the Role, Impact and Ramification of Investment in the Nigerian Economy and Outlook to Year 2035

International Journal of Social Sciences and Management Research E-ISSN 2545-5303 P- ISSN 2695-2203 Vol 10. No. 3 pp. 77-104, 2024 www.iiardjournals.org IIA

Duesenberry, J. S, Fromm, G, Klein, L. R and Kuh, E. eds, (1965). *The Brookings: Quarterly Econometric Model of the United States Economy,* Chicago; Rand McNally, 1965. Gordon, R. J. (1968): The Brookings Model in Action: A Review Article. *Journal of Political Economy,* pp 489-525.

CBN (2017). *Central Bank of Nigeria Statistical Bulletin,* Abuja.

CBN (2018). *Central Bank of Nigeria Statistical Bulletin,* Abuja.

CBN (2019). *Central Bank of Nigeria Statistical Bulletin,* Abuja.

CBN (2021). *Central Bank of Nigeria Statistical Bulletin,* Abuja.

Duesenberry, J. S, Fromm, G, Klein, L. R and Kuh, E. eds, (1965). The Brookings: Quarterly Econometric Model of the United States Economy*,* Chicago; Rand McNally, 1965.

Gordon, R. J. (1968): The Brookings Model in Action: A Review Article. *Journal of PoliticalEconomy,*pp 489-525.

Hesse, H. (2007). Financial intermediation in pre-consolidation banking sector in Nigeria. *World Bank Policy Research Working Paper,* p. 4267.

Koutsoyiannis, A.(1977): Theory of econometrics. The Macmillan Press Ltd., London and Basingstoke.

Muritala Garba and Usman Yakubu (2015): Role of Commercial Banks to Economic Growth in Nigeria: A Review. *Proceedings of the 1st Management, Technology, and Development Conference4th – 5th November, 2015, ATB University Bauchi, Nigeria, ISBN: 978-978-950-158-8*

Nwankwo, G. O. (1980). *The Nigerian financial system.* London: Macmillan Publishers Ltd.

Oyejide, T. A. (1993). Effects of trade and macroeconomic policies on African agriculture in R. M. Bantista and A. Valdes (eds). *The bias against agriculture: Trade and macroeconomic policies in developing countries,*Chap.5. San Francisco: ICS Press.

Stolper, W. F.(1966): Planning without facts. Harvard University Press, Cambridge, Massachussetts.