

Measuring Performance Efficiency of Nigerian Publicly Quoted Banks : A Data Envelopment Analysis Approach

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Abstract

In this study we measured and evaluated the performance of some selected Nigerian commercial banks using Data Envelopment Analysis (DEA) models. The nineteen (19) sampled commercial banks in this study were drawn from CBN 2009 audited reports as contained in BGL banking report. In measuring and evaluating the sampled commercial banks we used the constant returns to scale (CRS), variable returns to scale (VRS) and Scale efficiency DEA models. This study, finally show that Mega banks in Nigeria are faced with total asset idleness while medium and small banks are better in turning their small asset and equity input (gross earnings and net interest income) into better outputs relatively more efficiently than the bigger banks in Nigeria. The study however recommends caution in the adoption of DEA results as there exists a myriad of extraneous factors that could render seemingly efficient banks into distressed or failed banks within a short period of time.

I. Introduction

BANKS PLAY A central role in the economy. They keep the savings of the public and finance the development of business and trade. Furthermore, numerous studies argue that the efficiency of financial intermediation affects economic growth while others indicate that bank insolvencies can result in systemic crisis which have adverse consequences for the economy as a whole. Thus, the performance of banks has been an issue of major interest for various stakeholders such as depositors, regulators, customers and investors. While bank performance has been traditionally evaluated on the basis of financial ratios, advances in operational research (OR) have resulted in a shift towards the use of such state-of-the-art technique like Data Envelopment Analysis (DEA), in the analysis of commercial bank

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Appendix I
CRS DEA Results
Input-Oriented : CRS Model Target

DMU No.	DMU Name	Efficient Input Target		Efficient Output Target	
		ASSET	EQUITY	INCOME	GROSS
1	ACCESS	313496.47279	3923.95754	27713.00000	81062.94274
2	AFRIBANK	219015.64017	3521.31524	19749.65898	64238.00000
3	DIAMOND	276577.95994	3074.25411	23203.00000	60733.01727
4	ECOBANK	220566.71888	2333.17707	18123.00000	45137.00000
5	FIDELITY	79295.30139	3430.17550	7699.00000	23621.90709
6	FIRST BANK	601447.75688	6544.30566	50004.00000	128148.00000
7	FCMB	140632.87846	3036.94991	13150.00000	41228.84703
8	GTB	685887.68859	6792.22834	54867.00000	127475.00000
9	INTERCONTINETAL BANK	410956.90210	5629.30173	37889.55233	119770.00000
10	SKYE	607246.00000	5792.00000	47864.00000	106698.00000
11	STABIC IBTC	200883.59053	5752.55714	19018.00000	59201.27500
12	UBA	1022591.31534	10417.52008	82737.00000	198148.00000
13	UNION	334564.27900	4582.87296	30846.27778	97506.00000
14	UNITY	118802.12182	3299.73028	9531.27419	35932.00000
15	WEMA	75696.00000	5160.00000	3473.00000	25286.00000
16	ZENITH	1248835.45062	11911.57279	98435.00000	219430.42015
17	BANKPHB	735653.00000	10077.00000	67826.00000	214400.00000
18	FINBANK	172558.00000	44722.00000	22923.00000	59542.00000
19	STANDARD CHARTRED	117265.74270	1544.20561	10612.00000	32448.30164

DMU No.	DMU Name	Input- Sum of Optimal		Lambdas	
		Oriented	Sum of	RTS	ith
		CRS	lambda	Benchmarks	
Efficiency					
1	ACCESS	0.48402	0.452	Increasing	0.147 SKYE 0.305 BANKPHB
2	AFRIBANK	0.51876	0.411	Increasing	0.126 WEMA 0.285 BANKPHB
3	DIAMOND	0.42474	0.425	Increasing	0.283 SKYE 0.143 BANKPHB
4	ECOBANK	0.64649	0.347	Increasing	0.272 SKYE 0.075 BANKPHB
5	FIDELITY	0.23687	0.150	Increasing	0.095 BANKPHB 0.055 FINBANK
6	FIRST BANK	0.52645	0.935	Increasing	0.671 SKYE 0.264 BANKPHB
7	FCMB	0.37327	0.211	Increasing	0.185 BANKPHB 0.026 FINBANK
8	GTB	0.72823	1.112	Decreasing	1.030 SKYE 0.082 BANKPHB
9	INTERCONTINETAL BANK	0.57837	0.559	Increasing	0.559 BANKPHB
10	SKYE	1.00000	1.000	Constant	1.000 SKYE
11	STABIC IBTC	0.61361	0.327	Increasing	0.256 BANKPHB 0.071 FINBANK
12	UBA	0.96646	1.638	Decreasing	1.421 SKYE 0.217 BANKPHB
13	UNION	0.79138	0.455	Increasing	0.455 BANKPHB
14	UNITY	0.45507	0.525	Increasing	0.406 WEMA 0.120 BANKPHB
15	WEMA	1.00000	1.000	Constant	1.000 WEMA
16	ZENITH	0.94845	2.057	Decreasing	2.057 SKYE
17	BANKPHB	1.00000	1.000	Constant	1.000 BANKPHB
18	FINBANK	1.00000	1.000	Constant	1.000 FINBANK
19	STANDARD CHARTRED	0.51303	0.164	Increasing	0.025 SKYE 0.139 BANKPHB

Input-Oriented : CRS Model Slacks

DMU No.	DMU Name	Input Slacks		Output Slacks	
		ASSET	EQUITY	INCOME	GROSS
1	ACCESS	0.00000	0.00000	0.00000	16736.94274
2	AFRIBANK	0.00000	0.00000	654.65898	0.00000
3	DIAMOND	0.00000	0.00000	0.00000	7549.01727
4	ECOBANK	44028.10267	0.00000	0.00000	0.00000
5	FIDELITY	0.00000	0.00000	0.00000	5060.90709
6	FIRST BANK	468933.42243	0.00000	0.00000	0.00000
7	FCMB	0.00000	0.00000	0.00000	6022.84703
8	GTB	95041.60999	0.00000	0.00000	0.00000

9	INTERCONTINETAL					
	BANK	52674.77093	0.00000	6774.55233	0.00000	
10	SKYE	0.00000	0.00000	0.00000	0.00000	
11	STABIC IBTC	0.00000	0.00000	0.00000	16402.27500	
12	UBA	487134.36605	0.00000	0.00000	0.00000	
13	UNION	469102.75750	0.00000	13589.27778	0.00000	
14	UNITY	0.00000	0.00000	2592.27419	0.00000	
15	WEMA	0.00000	0.00000	0.00000	0.00000	
16	ZENITH	351117.63579	0.00000	0.00000	20430.42015	
17	BANKPHB	0.00000	0.00000	0.00000	0.00000	
18	FINBANK	0.00000	0.00000	0.00000	0.00000	
19	STANDARD					
	CHARTRED	0.00000	0.00000	0.00000	8297.30164	

Source : Self Computed

Appendix II
VRS DEA Results
Input-Oriented! VRS Model Target

DMU No.	DMU Name	Efficient Input Target		Efficient Output Target	
		ASSET	EQUITY	INCOME	GROSS
1	ACCESS	386084.40279	4832.52264	27713.00000	65491.60323
2	AFRIBANK	305223.41264	4907.35663	21218.53200	64238.00000
3	DIAMOND	359233.60129	3992.99849	23516.14701	53184.00000
4	ECOBANK	409280.00000	3609.00000	18123.00000	45137.00000
5	FIDELITY	123235.74203	5330.96180	7699.00000	35005.16445
6	FIRST BANK	632819.62119	6645.40337	51839.64484	128148.00000
7	FCMB	212675.45525	4592.70059	13150.00000	38578.14075
8	GTB	780771.23418	6855.80050	54867.00000	127475.00000
9	INTERCONTINETAL				
	BANK	533107.20604	6472.85656	43258.71686	119770.00000
10	SKYE	607246.00000	5792.00000	47864.00000	106698.00000
11	STABIC IBTC	234150.82027	6705.20658	19018.00000	70753.04689
12	UBA	1562112.00000	10779.00000	82737.00000	198148.00000
13	UNION	577686.64470	5466.04467	43423.21327	97506.00000
14	UNITY	168603.97054	4682.97719	9770.86394	35932.00000
15	WEMA	75696.00000	5160.00000	3473.00000	25286.00000
16	ZENITH	1686914.99999	12559.00000	98435.00000	199000.00000
17	BANKPHB	735653.00000	10077.00000	67826.00000	214400.00000
18	FINBANK	172558.00000	44722.00000	22923.00000	59542.00000
19	STANDARD				
	CHARTRED	228577.00000	3010.00000	10612.00000	24151.00000

DMUNo	DMU Name	VRS Efficiency		Optimal Lambdas with Benchmarks				
1	ACCESS	0.59609	0.498	SKYE	0.203	WEMA	0.299	STANDARD
								CHARTRED
2	AFRIBANK	0.72295	0.194	WEMA	0.210	BANKPHB	0.597	STANDARD
								CHARTRED
3	DIAMOND	0.55167	0.336	SKYE	0.007	BANKPHB	0.657	STANDARD
								CHARTRED
4	ECOBANK	1.00000	1.000	ECOBANK				
5	FIDELITY	0.36813	0.055	SKYE	0.917	WEMA	0.028	BANKPHB
6	FIRST BANK	0.53458	0.801	SKYE	0.199	BANKPHB		
7	FCMB	0.56449	0.168	SKYE	0.519	WEMA	0.313	STANDARD
								CHARTRED
8	GTB	0.73505	0.781	SKYE	0.176	UBA	0.044	BANKPHB
9	INTERCONTINETAL							
	BANK	0.66504	0.313	SKYE	0.367	BANKPHB	0.320	STANDARD
								CHARTRED
10	SKYE	1.00000	1.000	SKYE				
11	STABIC IBTC	0.71522	0.752	WEMA	0.239	BANKPHB	0.009	FINBANK
12	UBA	1.00000	1.000	UBA				
13	UNION	0.94389	0.149	ECOBANK	0.851	SKYE		
14	UNITY	0.64584	0.586	WEMA	0.058	BANKPHB	0.355	STANDARD
								CHARTRED

15	WEMA	1.00000	1.000	WEMA
16	ZENITH	1.00000	1.000	ZENITH
17	BANKPHB	1.00000	1.000	BANKPHB
18	FINBANK	1.00000	1.000	FINBANK
19	STANDARD CHARTRED	1.00000	1.000	STANDARD CHARTRED

Input-Oriented VRS Model Slacks

DMU No.	DMU Name	Input Slacks		Output Slacks	
		ASSET	EQUITY	INCOME	GROSS
1	ACCESS	0.00000	0.00000	0.00000	1165.60323
2	AFRIBANK	0.00000	0.00000	2123.53200	0.00000
3	DIAMOND	0.00000	0.00000	313.14701	0.00000
4	ECOBANK	0.00000	0.00000	0.00000	0.00000
5	FIDELITY	0.00000	0.00000	0.00000	16444.16445
6	FIRST BANK	454097.01609	0.00000	1835.64484	0.00000
7	FCMB	0.00000	0.00000	0.00000	3372.14075
8	GTB	7467.20688	0.00000	0.00000	0.00000
9	INTERCONTINENTAL BANK	0.00001	0.00000	12143.71686	0.00000
10	SKYE	0.00000	0.00000	0.00000	0.00000
11	STABICBTC	0.00000	0.00000	0.00000	27954.04689
12	UBA	0.00000	0.00000	0.00000	0.00000
13	UNION	380856.16531	0.00000	26166.21327	0.00000
14	UNITY	0.00000	0.00000	2831.86394	0.00000
15	WEMA	0.00000	0.00000	0.00000	0.00000
16	ZENITH	0.00001	0.00000	0.00000	0.00000
17	BANKPHB	0.00000	0.00000	0.00000	0.00000
18	FINBANK	0.00000	0.00000	0.00000	0.00000
19	STANDARD CHARTRED	0.00000	0.00000	0.00000	0.00000

Source : Self Computed