"Post-recapitalization in Nigeria: how adequate is capital?"

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POST-RECAPITALIZATION IN NIGERIA: HOW ADEQUATE IS CAPITAL?

Abstract

Bank capital is one of the protective and necessary parameters for better performance in any banking system. This may explain why the industry in Nigeria has been constantly recapitalized for sectorial enhancement. Given the various bank capital reforms the sectors have undergone and a number of interventions, the question arose: How adequate is capital? The study used descriptive statistics and Levene's test for equality of variance, as well as an independent sample t-test to look at the (10) ten various performance parameters for both pre- and post-recapitalization periods. From the results of the analysis, most of the performance parameters did not improve after post-recapitalization. This answers the question posed by the study that capital is not adequate in the Nigerian banking sector. Therefore, there is a need to inject more bank capital into the Nigerian banking sector if this sector must have a greater impact and respond to the challenges of the Nigerian economy for sustainable growth and development.

Keywords	bank capital, monetary policy, recapitalization, financial crisis, mergers and acquisitions, bankruptcy and liquidation, bailout
JEL Classification	E52, G01, G33, G34

INTRODUCTION

Reforms in the Nigerian banking sector have always been aimed at repositioning and deepening the financial system in order to ensure the desired growth of the Nigerian economy and favorable competition at the global financial arena in accordance with established national, regional and international standards and best practices. According to Ajayi (2005) as cited in Adegbaju and Olokoyo (2008), the main thrust of reforming the banking sector is centered on addressing operational inefficiencies, poor governance and poor risk management that sought to hinder the health and soundness of the banking system at large. While the Nigerian banking industry has undergone a series of recapitalization policies aimed at strengthening the sector and ensuring better participation in the economy. This study desires to look at the post-recapitalization policy of 2004–2005, which is the last major recapitalization in the country.

This recapitalization policy in Nigeria was undertaken to sanitize the banking industry and make it a system that fits into the global financial dynamics, with that, the banking industry would become strong and reliable, especially with the prevailing global financial conditions. It was done primarily to position the banking system as one that must be efficient, in which depositors can trust and investors can rely upon. The main policy thrust of banking system recapitalization for that reform required banks to recapitalize from the prevailing NGN 2 billion to the new minimum capitalization of NGN 25 billion in full compliance by the end of December 2005. Banks that met the new minimum

capital requirement were given the operational approval to transact banking activities, while those that could not meet the requirements liquidated or merged up. This exercise caused the Nigerian banking industry to witness unprecedented mergers between the small and giant banks, which ultimately brought down the number of banks from 81 to 25. According to Sanusi (2010), "the surge from mergers and acquisitions of banks aimed at meeting the new minimum capitalization caused the capital market to witness a boost of NGN 406 billion in market capitalization, while NGN 360 billion was accepted by the Central Bank of Nigeria (CBN) in addition to foreign capital inflow of USD 654 million and GBP 161,993". This improvement in the Nigerian financial system excited experts all over the world who expressed satisfaction with the success of the policy, which eliminated the old fashioned banking style for one that would move the economy forward.

Unfortunately, the hopes and prospects of the recapitalized banking system in Nigeria became short-lived as a result of these interdependent factors such as macroeconomic instability resulting from the sudden influx of huge inflow of capital funds, poor corporate governance stance in these banks, lack of transparency in the disclosure of the banks' financial standings, the continuous wide gaps in financial regulations and laws, unstructured management processes and governance by the apex bank, and the weak operating environment for banks. In addition to this, the post-recapitalization experience in the Nigerian banking system included the injection of NGN 620 billion bailout funds to save most recapitalized banks, the sacking of indicted banks' CEOs and appointment of advisers to these banks, restructuring of banks and huge impaired shareholders' funds, huge exposure to non-performing loans and the establishment of the Asset Management Corporation of Nigeria (AMCON). Since the banking sector is the hub through which all other economic activities revolve, the soundness, prosperity and survival of the banking sector at any point in time are crucial to the overall performance of the Nigerian economy. Hence, given the prevailing situation in the Nigerian banking system after the 2004–2005 recapitalization exercise, the question that begs for answer is "How adequate is capital"?

1. LITERATURE REVIEW

Based on the capital cushion theory, a bank's capital is expected to serve as a guard against operational losses in order to guard against uncertainties. According to Barrios and Blanco (2000), there are arguments from two schools of thought whether capital cushion should be determined by the regulatory model or the market model. Accordingly, at any point where the capital ratio of banks is not controlled totally, regulatory capital is set as a cushion to enforce sanction where established rule never existed. Capital base regulation by the apex bodies gives a close monitoring and controlling authority to the apex bodies. Banks are expected to meet the required minimum capital and maintain the same capital base throughout their corporate existence before they can be chartered. This minimum capital expectation was the necessity that brought about the adoption of the Basel Accord as a regulatory framework by ten industrial nations. Over the years, this Accord was further broken into the frameworks known as Basel I Accord, Basel II Accord, Basel III Accord and the Basel IV Accord. According to Koch and Macdonald (2010),

the presumptions of the Basel Accords are on the basis of credit model where a bank's required minimum capital base is determined by its asset composition, a situation where a higher credit risk would demand a higher required minimum capital base. The cardinal doctrine of the Basel I Accord sought to ensure a greater convergence on how the capital adequacy of banks would be measured and also to stop the erosion of capital standards as well in the system. Recognizing the weakness of the Basel I Accord on the basis of competitive inequalities in capital requirements in different nations, the Basel II Accord came into force to address this shortcoming. More specifically, the Basel II Accord was designed primarily to address financial innovation and the underlying risks associated with regulatory capital requirements in the banking system. However, the Basel III Accord came as result of the prevalent poor risk management and poor corporate governance in banks; and notably, the Basel III Accord was developed to harmonize trading book exposures, off-balance sheet vehicles and complex securitization issues mostly as a result of the 2007–2009 financial crises.

In the case of financial assets, given the role of bank capital, it is expected that when there is a high likelihood of generating losses, higher capital is only prudential. The level of perceived risk or uncertainty in an asset would be reflected in the assigned risk weight, but the parameter signs would be determined by the direction of change on the required capital cushion as the amount invested in any particular asset is altered. The direction of change complements the implied assets portfolio for mandatory capital adequacy requirements (Osota, 1994). The complements may be in the form of reducing uncertainty in certain other items. For example, an increase in the level of involvement in some low risk assets could reduce the funding risk of the portfolio, thus, reducing the portfolio capital requirement. In summary, if an increase in the level of involvement in a particular asset has the net effect of increasing a portfolio's capital adequacy, then the accompanying sign should be positive. If it results in a net effect that decreases capital adequacy, then the accompanying sign should be negative (Osota, 1994).

The weakness of the link between bank capital and bank failures does not mean, however, that capital is irrelevant to bank solvency. Rather, it is evident that simple capital ratios are imperfect measures of capital adequacy in banks. As such, the important role of bank's capital is revealing a bank's rating externally and the credit worthiness of a bank to investors; hence, banks are subject to market discipline. Knowing the significant role of capital for banks, the need for adequate capital for insured banks is a pressing issue for most banks, especially in developing economies. Rose (1999) opined that a bank's capital is a signal base showing the expansion and growth strength of the bank, building public confidence in the operational and risk management of the bank. In addition, Nzotta (2004) submitted that the core functions of a bank's capital are protective, regulatory and operational functions. Subject to certain economic expectations of a nation, the apex bank would often specify what minimum capital is required by licensed banks based on its guiding rules. Generally, the rules guiding the specified capital requirements should be reasonably sound in order for banks to maintain an operational margin that would protect bank creditors and depositors.

Many empirical works on the relationship between recapitalization and banks' operations and performance have been put forward by many authors around the world (Buser, Chen, & Kane, 1981; Leightner & Lovell, 1998; Denizer, Dine, & Tarimcilar, 2007; Shanmugam & Das, 2004; Adetiloye, Taiwo, & Adegboye, 2018; Benjamin-Addy, 2013), and their findings have varied.

According to Obuobi, Nketiah, Awuah, and Amadi (2020a), recapitalization is a process seeking to boost, stabilize or overhaul the financial position or structure of a bank by swapping around various financing options. In their study of the Ghanaian banking sector, these authors concluded that recapitalization had the potential to improve banking system, especially in the long run. They placed emphasis on the cost to income ratio, profit after tax and net interest margin as possible post-recapitalization drivers of the banking sector in Ghana. This position was previously echoed by Boahene, Dasa, and Agyei (2012) as cited in Obuobi, Nketiah, Awuah, Agyeman, Ofosu, Adu-Gyamfi, Adjei, and Amadi (2020b) that the profitability of Ghanaian banks was significantly positive as a result of recapitalization (capital).

Relying on his arguments on the expected bankruptcy costs, Berger (1995) held that there existed a positive association between return on equity and capital ratio of banks in the USA. He concluded that as capital ratio is subsequently increased, return on equity will therefore increase as insurance expenses on debt uninsured are lowered. In agreement with Berger (1995), Kosmidou, Tanna, and Pasiouras (2008) concluded that recapitalization greatly influenced the profitability of banks owned solely by UK during the period of 1995–2002. In Nigeria, Adegbaju and Olokoyo (2008) revealed that proxies such as YEA, ROA and ROE varied significantly between the pre- and post-recapitalization periods.

In a related study on the impact of bank consolidation on selected banks' performance in Nigeria, Owolabi and Ogunlalu (2013) as cited in Ali, Ekpe, and Aigba (2016) concluded that the return on capital employed by these banks was significantly different, while the return on assets and net profit margin were not in the pre and post recapitalization periods. Likewise, Sufian and Chong (2008) had earlier held that in Philippines, during the period from 1990 to 2005, the profitability of banks was positively influenced by capitalization. In support of Sufian and Chong (2008), Naceur and Omran (2011) examined some

Middle East and North African (MENA) nations from 1988 to 2005 and revealed that the profitability, cost efficiency and net interest margin of banks in MENA improved significantly as a result of bank capitalization.

In Spain, Trujillo-Ponce (2013) found that, though the short-run liquidity of banks may rise as a result of recapitalization, however, to guarantee a good profitable base and high asset quality, the operating macroeconomic environment for banks must be very conducive. A similar study in Spain by Martins, Serra and Stevenson (2019) concluded that the return on average assets was positively impacted by a higher level of capitalization while impacted negatively by the return on average equity. Lastly, studies by most authors (Athanasoglou, Brissimis, & Delis, 2005; Straub, 2007; Bedreldin & Kalhoefer, 2009; and Sadiq, Fatima, Bukonla, & Mobolaji, 2018) agreed with the conclusion that, recapitalization of banks could not enhance banks improvement. Using various bank performance indicators, these authors arrived at similar conclusion that the relationship that existed between bank recapitalization and performance was insignificant and negative as the case may be. In summary, the literature and the empirical review made above could not establish firmly whether capital, as often as its being raised (recapitalization) as regulatory requirements, actually determines bank's performance or not. In different countries, periods, capital adequacy is still a subject of controversy among many authors. In Nigeria, having gone through various stages of recapitalizing the banking system and still proposing recapitalization, this study looks at how adequate capital is in seeking to position the Nigerian banking sector.

2. METHODOLOGY

Over the period, banking regulations and research have adopted effective measures to evaluate the performance of banks using the Capital Assets Management Earnings and Liquidities (CAMELS) approach as an evaluation tool. The CAMELS approach is a system developed in the United States to ascertain the overall position of banks per time. According to Obuobi et al. (2020b), the CAMELS measures of rating are assigned on a ratio-based analysis of various financial statement proxies.

In addition to the proxies used by Obuobi et al. (2020b), this study advanced in its proxies by examining capital adequacy, liquidity, competitiveness, deepening, profitability, concentration, corporate governance, asset quality, non-performing loans, etc. The quantitative research approach constructed on the ex-post facto design is used in this study to analyze data extracted from the Central Bank of Nigeria's annual reports and accounts for banks and the World Bank data for Nigeria. The analysis techniques are the descriptive statistics, Levene's test for equality of variance and the independent sample t-test. Specifically, this study anchors its examination on the 2004–2005 recapitalization exercise in Nigeria on a pre and post basis such as:

Pre-recapitalization (1993–2005) = 13 years;

Post-recapitalization (2006–2018) = 13 years.

The proxies captured in this study to ascertain the position of bank recapitalization on its performance are banking system z-scores (BNZ); banking system credit to deposits (BCD); banking system liquid assets to deposits (LAD); banking system capital to assets (BSC); banking system capital adequacy ratio (CAR); banking system non-interest income to total income (NIIC); banking system net interest margin (NIM); banking system cost to income ratio (BCI); banking system non-performing loans (NPL); and banking system concentration (BSCT).

Based on the analysis, the hypotheses that will guide the findings of this study are put forward.

Individual sample t-test of equality:

H0: $\mu_1 = \mu_2$ *("The two-population means are equal").*

H1: $\mu_1 \neq \mu_2$ *("The two-population means are not equal").*

Levene's test for equality of variances:

H0: $\sigma_{1^2} - \sigma_{2^2} = 0$ *("The population variances of groups 1 and 2 are equal").*

H1: $\sigma_{1^2} - \sigma_{2^2} \neq 0$ *("The population variances of groups 1 and 2 are not equal").*

However, when equality is assumed $\left(\sigma_{1^2} = \sigma_{2^2}\right)$, the test statistic t is calculated as:

$$t = \frac{\overline{x_1} - \overline{x_2}}{s_p\sqrt{\dfrac{1}{n_1} + \dfrac{1}{n_2}}}, \qquad (1)$$

with

$$sp = \sqrt{\frac{(n_1+1)S_1^2 + (n_2+1)S_2^2}{n_1+n_2-2}}. \qquad (2)$$

Also, when equality is not assumed $\left(\sigma_{1^2} \neq \sigma_{2^2}\right)$, the test statistic t is calculated as follows:

$$t = \frac{\overline{x_1} - \overline{x_2}}{s_p\sqrt{\dfrac{1}{n_1} + \dfrac{1}{n_2}}}, \qquad (3)$$

where the degree of freedom is calculated as:

$$df = \frac{\left(\dfrac{S_1^2}{n_1} + \dfrac{S_2^2}{n_2}\right)}{\dfrac{1}{n_1-1}\left(\dfrac{S_1^2}{n_1}\right)^2 + \dfrac{1}{n_1-2}\left(\dfrac{S_2^2}{n_1}\right)^2}, \qquad (4)$$

where $\overline{x_1}$ = mean of the first sample; $\overline{x_2}$ = mean of the second sample; n_1 = sample size (that is, the number of observations) of the first sample; n_2 = sample size (that is, the number of observations) of the second sample; s_1 = standard deviation of the first sample; s_2 = standard deviation of the second sample; s_p = pooled standard deviation.

3. RESULTS

Tables 1 and 2 show a decrease in the value of the banking system capital adequacy ratio from a

Table 1. Descriptive statistics analysis (pre-recapitalization)

Variables	N	Range	Minimum	Maximum	Mean		Std. deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. error	Statistic	Statistic
CAR	13	12.1000	11.3000	23.4000	16.376923	.8595209	3.0990466	9.604
BSC	13	8.7900	7.2100	16.0000	9.782308	.5984169	2.1576227	4.655
LAD	13	28.5600	45.4500	74.0100	66.108462	2.4652588	8.8886171	79.008
BNZ	13	7.6900	10.8700	18.5600	13.415385	.6488764	2.3395570	5.474
BCD	13	24.7500	81.5800	106.3300	91.025385	2.1374792	7.7067910	59.395
BSCT	13	36.6800	22.2800	58.9600	28.076154	2.7535677	9.9281297	98.568
NIIC	13	15.4600	34.2900	49.7500	42.470769	1.1487130	4.1417437	17.154
BCI	13	14.9500	55.5500	70.5000	61.091538	1.3569455	4.8925366	23.937
NIM	13	5.6300	6.4900	12.1200	9.269231	.4979940	1.7955429	3.224
BNPL	13	10.6500	8.7500	19.4000	16.467692	.7942753	2.8638004	8.201
Valid N (listwise)	13							

Table 2. Descriptive statistics analysis (post-recapitalization)

Variables	N	Range	Minimum	Maximum	Mean		Std. deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. error	Statistic	Statistic
CAR	13	20.1500	1.7500	21.9000	15.925385	1.6708008	6.0241578	36.290
BSC	13	15.5100	1.4900	17.0000	10.876923	1.1261908	4.0605385	16.488
LAD	13	51.3300	17.3200	68.6500	35.684615	5.2910546	19.0771686	363.938
BNZ	13	7.2900	12.7800	20.0700	16.480769	.5897625	2.1264190	4.522
BCD	13	39.4400	64.4700	103.9100	86.113077	3.6881909	13.2979612	176.836
BSCT	13	32.5100	38.5800	71.0900	48.848462	3.1356652	11.3058015	127.821
NIIC	13	18.1500	28.8300	46.9800	36.421538	1.4438854	5.2060027	27.102
BCI	13	32.1900	49.1800	81.3700	62.325385	2.5084812	9.0444574	81.802
NIM	13	3.3700	5.6000	8.9700	7.407692	.2717586	.9798397	.960
BNPL	13	13.2400	6.1600	19.4000	12.345000	.9300460	4.7423228	22.490
Valid N (listwise)	13							

Table 3. Levene's test for equality of variances and independent sample t-test for equality of means

Variables/Tests		Levene's test for equality of variances		t-test for equality of means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean difference	Std. error difference	95% confidence interval of the difference	
									Lower	Upper
CAR	Equal variances assumed	2.236	.148	.240	24	.812	.4515385	1.8789229	−3.4263678	4.3294447
	Equal variances not assumed	–	–	.240	17.936	.813	.4515385	1.8789229	−3.4969458	4.4000228
BSC	Equal variances assumed	2.189	.152	−.858	24	.399	−1.094615	1.2753072	−3.7267200	1.5374893
	Equal variances not assumed	–	–	−.858	18.276	.402	−1.094615	1.2753072	−3.7710388	1.5818080
LAD	Equal variances assumed	5.857	.023	5.212	24	.000	30.42384	5.8371876	18.3764830	42.4712093
	Equal variances not assumed	–	–	5.212	16.976	.000	30.42384	5.8371876	18.1071123	42.7405800
BNZ	Equal variances assumed	.147	.704	−3.49	24	.002	−3.065384	.8768468	−4.8751075	−1.2556617
	Equal variances not assumed	–	–	−3.49	23.784	.002	−3.065384	.8768468	−4.8759765	−1.2547928
BCD	Equal variances assumed	5.246	.031	1.152	24	.261	4.91231	4.26281	−3.88570	13.71032
	Equal variances not assumed	–	–	1.152	19.244	.263	4.91231	4.26281	−4.00222	13.82683
BSCT	Equal variances assumed	1.287	.268	−4.97	24	.000	−20.77230	4.1730722	−29.385153	−12.159510
	Equal variances not assumed	–	–	−4.97	23.606	.000	−20.77230	4.1730722	−29.392719	−12.151893
NIIC	Equal variances assumed	.478	.496	3.279	24	.003	6.049230	1.8450871	2.2411581	9.8573035
	Equal variances not assumed	–	–	3.279	22.846	.003	6.049230	1.8450871	2.2309493	9.8675122
BCI	Equal variances assumed	2.510	.126	−.433	24	.669	−1.233846	2.8519780	−7.1200395	4.6523472
	Equal variances not assumed	–	–	−.433	18.469	.670	−1.233846	2.8519780	−7.2147429	4.7470506
NIM	Equal variances assumed	13.078	.001	3.281	24	.003	1.861538	.5673189	.6906497	3.0324272
	Equal variances not assumed	–	–	3.281	18.565	.004	1.861538	.5673189	.6722399	3.0508370
BNPL	Equal variances assumed	1.721	.202	−9.38	24	.000	−8.245384	.8782605	−10.058025	−6.4327441
	Equal variances not assumed	–	–	−9.38	17.091	.000	−8.245384	.8782605	−10.097598	−6.3931712

mean of 16.37 percent to 15.15 percent, respectively, for the pre- and post-capitalization periods. The decrease in the banking system capital adequacy ratio suggests that capitalization may not have been done properly during the recapitalization period. Table 3 revealed a value of 0.148 signaling the acceptance of Levene's alternative hypothesis, since the probability value is greater than 5 percent (P > 0.05), indicating that the variance of the two groups are not equal. On the other hand, the independent sample t-test of equality of mean(s)

result revealed that at the 5 percent level of significance, there was an insignificant variation between pre- and post-capitalization mean(s) of the banking system capital adequacy ratio (p (0.812 and 0.813 > 0.05)), hence, the null hypothesis is accepted as being statistically significant.

For the value of the banking system capital to assets, Tables 1 and 2 show an increase in the value of banking system capital to assets from a mean of 9.78 percent to 10.87 percent, respectively, for the

pre- and post-capitalization periods. The observed increase in the ratio of banking system capital to assets indicates the effectiveness of the recapitalization exercise. This implies that the banking system capital to assets ratio shows greater improvement in the operations of banks during the post-recapitalization exercise. Table 3 further revealed a value of 0.152, signaling the acceptance of Levene's alternative hypothesis, since the probability value is greater than 5 percent (P > 0.05); this indicates that the variances of the two groups are not equal. On the other hand, the independent sample t-test of equality of mean(s) result revealed that at the 5 percent level of significance, there was an insignificant variation between pre- and post-capitalization mean(s) of banking system capital to assets (p (0.399 and 0.402 > 0.05)), hence, the null hypothesis is accepted as being statistically significant.

Tables 1 and 2 show a decrease in the value of banking system liquid assets to deposits from a mean of 66.10 percent to 35.68 percent, respectively, for the pre- and post-capitalization periods. The observed decrease in banking system liquid assets to deposits suggests an evidence of ineffectiveness of the recapitalization exercise in this regard. This implies that the banking system liquid assets to deposits ratio shows no improvement in the operations of banks during post-recapitalization. Table 3 revealed a value of 0.023, signaling the acceptance of Levene's null hypothesis, since the probability value is less than 5 percent (P < 0.05); this indicates that the variances of the two groups are equal. On the other hand, the independent sample t-test of equality of mean(s) result revealed that at the 5 percent level of significance, there existed a significant variation between pre- and post-capitalization mean(s) of banking system liquid assets to deposits (p (0.000 < 0.05)); hence, the null hypothesis is rejected and concluded as being statistically significant.

The result of the banking system Z-scores in Tables 1 and 2 revealed an increase in the value of banking system z-scores from a mean of 13.41 percent to 16.48 percent, respectively, for the pre- and post-capitalization periods. The observed increase in banking system z-scores suggests an evidence of the effectiveness of the recapitalization exercise in this regard. This implies that the

banking system z-scores show an improvement in the operations of banks during the post-recapitalization exercise. Table 3 equally revealed a value of 0.704, signaling the acceptance of Levene's alternative hypothesis, since the probability value is greater than 5 percent (P > 0.05); this indicates that the variances of the two groups are not equal. On the other hand, the independent sample t-test of equality of mean(s) result revealed that at the 5 percent level of significance, there existed a significant variation between pre- and post-capitalization mean(s) of banking system z-scores (p (0.002 < 0.05)), hence, the null hypothesis is rejected as being statistically significant.

Tables 1 and 2 showed a decrease in the value of banking system credit to capital from a mean of 91.02 percent to 86.11 percent, respectively, for the pre- and post-capitalization periods. The observed decrease in banking system credit to capital indicates the ineffectiveness of the recapitalization exercise in this regard. This implies that the banking system credit to capital ratio shows no improvements in the operations of banks during the post-recapitalization exercise. Table 3 revealed a value of 0.031, signaling the acceptance of Levene's null hypothesis, since the probability value is less than 5 percent (P < 0.05); this indicates that the variances of the two groups are equal. On the other hand, the independent sample t-test of equality of mean(s) result revealed that at the 5 percent level of significance, there existed an insignificant variation between pre- and post-capitalization mean(s) of the banking system credit to capital ratio (p (0.263 > 0.05)), hence, the null hypothesis is accepted as being statistically significant.

The result for the banking system credit to capital ratio in Tables 1 and 2 showed a decrease in the value of banking system credit to capital from a mean of 91.02 percent to 86.11 percent, respectively, for the pre- and post-capitalization periods. The observed decrease in banking system concentration indicates the ineffectiveness of the recapitalization exercise in this regard. This implies that the banking system concentration shows an improvement in the operations of banks during the post-recapitalization exercise. Table 3 shows a value of 0.268, signaling the acceptance of Levene's alternative hypothesis, since the probability value is greater than 5 percent (P > 0.05); this indicates

that the variances of the two groups are not equal. On the other hand, the independent sample t-test of equality of mean(s) result revealed that at the 5 percent level of significance, there existed a significant variation between pre- and post-capitalization mean(s) of banking system concentration (p (0.000 > 0.05)), hence, the null hypothesis is rejected as being statistically significant.

Tables 1 and 2 showed a decrease in the value of banking system non-interest income to total income ratio from a mean of 42.47 percent to 1.44 percent, respectively, for the pre- and post-capitalization periods. The observed decrease in banking system non-interest income to total income indicates the ineffectiveness of the recapitalization exercise in this regard. This implies that the banking system non-interest income to total income ratio shows no improvement in the operations of banks during the post-recapitalization exercise. Table 3 also revealed a value of 0.496 signaling the acceptance of Levene's alternative hypothesis, since the probability value is greater than 5 percent (P > 0.05); this indicates that the variances of the two groups are not equal. On the other hand, the independent sample t-test of equality of mean(s) result revealed that at the 5 percent level of significance, there existed a significant variation between pre- and post-capitalization mean(s) of the banking system non-interest income to total income ratio (p (0.003 > 0.05)), hence, the null hypothesis is rejected as being statistically significant.

The result of the ratio of the banking system costs to income in Tables 1 and 2 showed an increase in the value of the banking system cost to income ratio from a mean of 61.09 percent to 62.32 percent, respectively, for the pre- and post-capitalization periods. The observed increase in the banking system cost to income ratio indicates the effectiveness of the recapitalization exercise in this regard. This implies an improvement in efficiency of the sector after the re-capitalization exercise. Table 3 equally revealed a value of 0.126 signaling the acceptance of Levene's alternative hypothesis, since the probability value is greater than 5 percent (P > 0.05), indicating that the variances of the two groups are not equal. On the other hand, the result of the independent sample t-test of equality of mean(s) revealed that at the 5 percent level of significance, there existed an insignificant variation

between pre- and post-capitalization mean(s) of the banking system cost to income ratio (p (0.669 and 0.670 > 0.05)), hence, the null hypothesis is accepted as being statistically significant.

Tables 1 and 2 showed a decrease in the value of the banking system net interest margin from a mean of 9.26 percent to 7.40 percent, respectively, for the pre- and post-capitalization periods. The observed decrease in the banking system net interest margin suggests an evidence of the ineffectiveness of the recapitalization exercise in this regard. This implies that the banking system net interest margin shows no improvement in the operations of banks during the post-recapitalization exercise. Table 3 further revealed a value of 0.001, signaling the acceptance of Levene's null hypothesis, since the probability value is less than 5 percent (P < 0.05); this indicates that the variances of the two groups are equal. On the other hand, the result of the independent sample t-test of equality of mean(s) revealed that at the 5 percent level of significance, there existed a significant variation between pre- and post-capitalization mean(s) of the banking system net interest margin (p (0.003 and 0.004 < 0.05)), hence, the null hypothesis is rejected as being statistically significant.

Tables 1 and 2 showed an increase in the value of the banking system non-performing loans from a mean of 16.46 percent to 17.34 percent, respectively, for the pre- and post-capitalization periods. The observed increase in banking system non-performing loans indicates the ineffectiveness of the post-recapitalization exercise in this regard. This implies that the banking system non-performing loans show no improvement in the operations of banks during the post-recapitalization exercise. Table 3 also showed that a value of 0.202 signals the acceptance of Levene's alternative hypothesis, since the probability value is greater than 5 percent (P > 0.05); this indicates that the variances of the two groups are not equal. On the other hand, the result of the independent sample t-test of equality of mean(s) revealed that at the 5 percent level of significance, there existed a significant variation between pre- and post-capitalization mean(s) of banking system non-performing loans (p (0.000 < 0.05)), hence, the null hypothesis is rejected as being statistically significant.

CONCLUSION

The mean descriptive statistics values for various indicators of the banking system performance in the post-capitalization periods revealed a mixed result. The study concluded that only very few variables, such as the ratio of banking system capital to assets, banking system z-scores and banking system concentration, revealed evidence of effectiveness and improvement in the banking system's operations, health and survival after the post-recapitalization exercise. On the other hand, variables, such as capital adequacy ratio, liquid assets to deposits ratio, bank credit to deposits ratio, the ratio of the banking system non-interest income to total income, banking system cost to income ratio, banking system net interest margin and banking system non-performing loans, revealed no evidence of effectiveness and improvement in the operations, health and survival of the banking system after the post-recapitalization exercise.

Given Levene's test, the banking system liquid assets to deposits ratio and the banking system net interest margin only were found to be equal as a result of their insignificant statistical values of less than 0.05 as the case may be; while the respective variances for the banking system capital adequacy, the banking system capital to assets ratio, banking system z-scores, bank credits to deposits ratio, banking system concentration, banking system non-interest income to total income ratio, banking system cost to income ratio and banking system non-performing loans were not equal.

In conclusion, given the vast number of performance parameters that showed no improvement, regardless of the policy thrust of the 2004–2005 recapitalization exercise, the health and soundness of the Nigerian banking sector remains very fragile and capital is not adequate. Most firmly, the capital inadequacy, as confirmed by the findings of this study, justifies various government bailouts to banks since 2004–2005, bank restructuring and the creation of a recovery agency to deal with excess non-performing loans in the system. While the capital base from this study does not have a significant impact on banking performance, it may be useful for further research beyond capital to see if human management of the capital base can contribute to poor recapitalization performance.

AUTHOR CONTRIBUTIONS

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