

The Potency of Cash Flow in Predicting Corporate Performance

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Abstract: ‘Cash flow potency in predicting corporate performance’ is simply studying the inflow and outflow of cash and cash equivalents with the mind of projecting into the future of entities and taking desirable decision where necessary. The study was influenced by the dire need for a basis for reviewing corporate entities for possible investment or divestment. Amidst other methods of examining potential corporate entities for investment, the cash flow was put on the spot. The objective of the study is to ascertain the impact of cash flows (CF) on the reported profits (RP) of corporate entities. The study examined the impact of cash flow statements’ activities (operating, investing and financing) and reported profit (performance); making prediction of the future performance using the equation derived. The quasi-experimental research design was adopted for this study, using a panel data from the annual reports of Banks quoted on the Nigerian Stock Exchange for a period of ten (10) years (2007 -2016). In analyzing the data from this study, panel multiple regression technique was applied on STATA econometrics software. The outcome revealed a positive impact of cash flows (CF) on the reported profits (RP), albeit the impact was insignificant. Further to it, the respective variable (CFFOA, CFFIA, and CFFA) of cash flow had a positive effect albeit within the insignificant region of the rating. Also, all the coefficients of the element of cash flow were negative, with cash flow from operating activities having the best proximity to predict profit; though the prediction might be insignificant and therefore not necessarily very helpful in forecasting corporate performance. The study outcome necessitated the recommendation that cash flow statement should not be over-dependent upon in reviewing of corporate efforts.

Key words: Cash Flow Statement, Corporate Performance, Forecasting, Potency, Quoted banks

1.0 INTRODUCTION

The statement of cash flows reports the movements of cash and equivalent of cash over a reporting period and the effect of these movements on the cash position of the business (Weygandt, Kieso, & Kimmel, 1998; Ofoegbu, 2003; Atrill & McLaney, 2011). As cash remains the life wire of a business (Nwude, 2004, Atrill & McLaney, 2011), the importance of cash flow statements in the financial statement cannot be over-emphasized (Atrill & McLaney, 2011). In Nigeria, Statement of Cash Flow replaced the Statement of Sources and Application of Fund, which the Companies and Allied Matter Acts 2004 (as amended) formerly required public companies to prepare. Essentially, the argument put forward by accounting scholars at different time and locations, was that the Fund Flow Statement adopted accrual concept of measuring earnings, and that accrual concept distorts the measure by including factors that will never affect the flow of cash to or from the business (Zeff & Keller, 1985; Danos & Imhoff, 1991), meanwhile forecast of future performance puts the focus on management accountability (Lee, 1981 in Zeff & Keller, 1985).

Gombola, Haskins, Ketz and Williams (1987), did a study on ‘Cash flow in Bankruptcy Prediction’, in a bid to

investigate whether cash flow from operation (CFFO) is important in predicting corporate failure after the mid 1970s. The methodologies employed were: linear discriminant analysis, quadratic discriminant analysis and probit analysis. The results were approximately the same. The independent variables were analyzed against the dependent variable in a manner analogous to linear regression when there are only two states for dependent variable. They also assessed the predictive ability of the models generated by means of jackknife technique. The conclusion reached was that the marginal predictive ability of CFFO is insignificant in all the four years. They opined that CFFO is not an important predictor of corporate failure. Essentially, the study was carried out when the cash flow statement still considers accruals (i.e. when it was still Fund Flow Statement); this is also evidence in their calculation of cash flow from operation, “calculated as working capital from operation, minus changes in current liabilities and current assets other than cash”. More so the study took place 1987 more than 30 years ago; when a lot of development has happened, lots of changes have happened on the field of Accounting, particularly as it affects the generally accepted accounting practices, both at the international and the local platforms.

In the same vein, Adelegan (2003) investigated the relationship between cash flow and dividend changes in

Nigeria. The study was necessary to validate the claim of a similar study (a study done in a country with a more developed market) in Nigeria. In furtherance a wider testing period and a more refined cash flow measures than previous studies was used. The regression models were structured using the Ordinary Least Square (OLS) method. A market value deflator was used in the regression model because it avoids the historical cost bias that is inherent in other deflators such as the book value of equity and total assets. In conclusion, he opined that firm growth potentials, firm size and the level of leverage affect the association between changes in dividend and cash flow of corporate firms in Nigeria. The study supports the claim that cash flow is important in dividend changes, though with other variables in consideration. The study concentrated on dividend, but did not say whether the cash flow incidental to the period under review has any bearing with the profit declared; and whether the incidental cash flows is potent in predicting management performance vis a vis profitability of firms, other things being equal. More so, the study was done more than fifteen (15) years ago. Fifteen years is so long a time for changes to happen and a gap created.

Similarly, other studies exist on cash flow, but they have similar challenges with those of Gombola et al (1987) and Adelegan (2003). That is, the study is either not addressing the predictive ability of the cash flow on performance of corporate companies, and/or the study was carried out long ago that it leaves one to wonder whether this finding(s) is still valid, with the trends of dynamism experienced in recent past in the field of accountancy. It is against this background that the study on ‘the potency of cash flow statement in forecasting corporate performance’ becomes imperative. This study is significant in the sense that it documents evidence of the predictive ability of cash flow to predict future performance of an entity thereby helping the investors in taking economic decision. The paper contributes to the international literature on the extent to which cash flow can predict performance of corporate entities.

Empirical investigation on investment in corporate companies and national income vis a vis economic growth reveal that, investment in corporate companies is significantly an important vehicle for economic growth and increased national income (Borensztein, De Gregorio & Lee, 1998). This implies as investment in corporate companies’ increases the national income increases as well, and there is improved economic growth and vice versa, all things being equal.

Research has revealed that risk alongside uncertainty could form barrier to investment (Arrow & Lind, (2014) and subsequently affect the national income, and by extension economic growth. Therefore, it becomes inevitably a problem to a nations’ economy, where the nations’ investment environment is characterized by risk and uncertainty. Consequently the fear to invest particularly

because investors take sensitive investment decisions relying on basis that has no bearing with the future profitability of the firm. On the contrary, the ability of investors to predict the future of corporate entities with a relative degree of certainty, relying on the entity’s cash flow information, could reduce the fear of losing investment in corporate companies, and as well increase the national income, all things being equal. Hence, the need to empirically investigate the potency of cash flow statement in predicting corporate performance.

The convergent objective of this study is to empirically examine the potency of cash flow statement in forecasting corporate performance. Specifically, the study strived amongst other things to:

- i) ascertain the impact of cash flow (CF) on the reported profits (RP) of corporate entities;
- ii) examine the effect of cash flow from operation (CFFO) on reported profits (RP) of corporate entities;
- iii) examine the effect of cash flow from financing activities (CFFFA) on reported profits (RP) of corporate entities;
- iv) examine the effect of cash flow from investing activities (CFFIA) on reported profits of corporate entities.

The study was done on ten (10) Banks, whose shares are listed on the Nigeria Stock Exchange for a period 10 years, covering the years 2007 to 2016. The period covers the time the world witnessed global financial crises; Ten (10) Banks for ten (10) years duration constitute one hundred (100) observations was considered adequate for a meaningful research endeavour.

2.0 LITERATURE REVIEWS

The concept of cash and cash flow get their weight from the importance associated with money (i.e. legal tender) as a medium of exchange and settlement of debts, which is essentially subsumed by its general acceptability (Afolabi, 1999). Cash is the most liquid of all asset to an individual or company, representing the paper currency and coin, negotiable money orders, cheques and bank balances, and cash equivalent (i.e. all highly liquid securities with a known market value and a maturity of less than three months) (Downes & Goodman, 1995) in (Yilmaz, 2011). Brockington (1993) corroborated the position of Downes and Goodman (1995) on the meaning of cash; and added that the term cash is used to describe a transaction that involves an immediate payment instead of deferred by a period of credit. Cash flow meanwhile, is the volume of cash moving into and out of a business; the difference between the cash moving into and that moving out, is called net cash flow (Brockington, 1993).

Petty and Rose (2009), after reviewing current textbooks pedagogy for introducing cash flow, observed that one

group (i.e. financial management) takes a finance-oriented approach consistent with the demarcation of the investing and financing decisions by putting emphasis on the cash flow produced by the firm’s assets, regularly referred to as ‘free cash flow’. “Free cash flow gives the net cash flow available for distribution to investors (debt-holders and stockholders) after the firm has met all of its operating needs and paid for investments in new fixed assets and net working capital” (Petty & Rose, 2009). On the other hand, the other group of textbooks focuses on the accounting statement of cash flows (International Accounting Standard Board (IASB), 2013 & 2007) and either ignores or barely mentions the concept of free cash flow. The accounting statement of cash flow shows the net effect of cash flows from operating, financing and investment activities on the firm’s cash account (cash and cash equivalent on the statement of financial position.

To wrap-up their investigation, Petty and Rose (2009) opined that attempt to reconcile a firms free cash flow with its accounting statement of cash flows, as well as the importance of free cash flow to financial management is generally missing from textbooks discussions. They recommend that greater attention should be paid to the linkage of free cash flow and accounting statement of cash flow for the necessary bridging of gap. Meanwhile, Weygandt, Kieso and Kimmel (1998), observed that reporting the causes of changes is considered very necessary because investors, creditors and other interested parties want to know the possibility of getting back whatever is invested in a company. Penman (2007) added that managers should not be rewarded on the basis of changes in the market price of material, but for adding value (earnings) i.e. buying the input (raw material) favourably, transform it, and selling it to customers with a mark-up. Essentially, it will help to reduce risk and uncertainty; and improve agency theory;

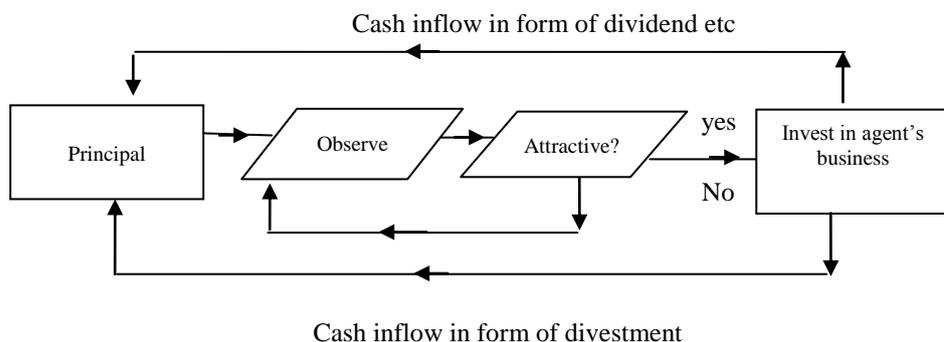
maximize the Shareholders wealth; and maximize Stakeholders wealth.

2.1 Theoretical Reviews:

Agency Theory:

The theory offers the framework for discussing the connection that exist between the various interest groups in an organization; it sees firm as an amalgamated unit consisting of different interest groups (Institute of Chartered Accountants of Nigeria (ICAN), 2009). Essentially, agency relationship exists when the owner(s) of a firm i.e. shareholder(s), as the Principal, appoints a manager otherwise known as the Agent to perform some work on its behalf and give the agent appropriate decision-making authority (Block & Hirt, 1992). It follows therefore that managers should act in the best interest of the shareholders (principal) i.e. shareholders wealth maximization, but this may not always be the case, as managers may maximize their own wealth (Pandey, 2008), which could have great effect on corporate performance. Penman, (2007) suggests that business managers should be rewarded on the basis their productivity.

But where the interest of the managers is to maximise their own interest rather than the shareholders’, such interest could be revealed in the pattern of cash flow which could lead to the decrease in owners’ dividend. Shareholders are always interested in a high dividend as they take high level risk to earn high returns. Cash flow could help shareholders to easily detect when the business is heading towards liquidation especially, in the absence of capital investment by the organisation. Cash flow pattern may serve as a mirror through which the principal (shareholders) monitors the activities of the agents (managers).



The above flow shows the relationship between principal, cash flow and agent (business).the principal provide the cash after observing the business through the flow of cash and cash equivalent. The cash provided is handed over to agent and in turn the agent provides back cash in form of dividend to the principal. The level of dividend provided by the agent will aid the principal in having an understanding of how the agent manages the resources/cash.

Theory of Stakeholders Wealth Maximization:

Ayuso, Rodriguez, Garcia and Arino, (2007) opined that stakeholder theory can be traced back to the seminar work of Freeman (1984), who articulated a new conceptual model wherein firms must address the interests of their stakeholders i.e. groups and individuals who can affect or are affected by the organization’s activities. The objective behind this theory is to maximize the long-run earnings and

to retain enough to increase the corporate wealth for the benefit of all stakeholders (ICAN, 2009). In practice the objective of these stakeholders or constituents of a firm differ and may conflict with each other (Pandey, 2008). It beholds the manager of the firm to reconcile and balance these conflicting objectives. Every stakeholder is interested in cash flow in order to take decisions. Cash flow pattern aids stakeholders to make decision with regard to short, middle and long term investment. If cash flow of a company appears to be low or poor, it may scare away potential investors and also threaten the interest of existing investors.

Theory of Risk and Uncertainty:

Investment risk is observed from two broad perspectives: business risk and financial risk. Business risk relates to the inability of the firm to hold its competitive position and maintain stability and growth in its earnings; meanwhile financial risk relates to the inability of the firm to meet up with its debt obligation as they become due (Block & Hirt, 1992). Pandey (2008) notes that investment should be evaluated in terms of both expected return and risk. He notes further that risk in investment happens because of the uncertainty of returns. Alao and Adebawojo (2012) added that the term uncertainty is used to denote the impossibility of knowing the exact result of a course of action, situation or decision. Common concepts in risk such as risk-averse, risk seeker and risk neutral give an understanding of the various positions from which investors view risk (alongside the inability to predict the future outcome of the business entities) in their investment decisions; the implication is far reaching on investment in conjunction with national development. Myers and Majluf (1984), in Broussard, Buchenroth and Pilotte (2004) observed that asymmetric information causes external funding to be more expensive than it would be in a world of perfect markets. This effect occurs because outsiders cannot distinguish between firms having high versus low quality projects and so will prefer to be risk averse; thereby letting few bold individual that eats risk to invest for a high return (i.e. high cost on the firm).

Cash could help the different categories of investors and shareholders in their investment decisions. Risk-averse individuals could use the cash flow information to predict stability in the cash flow pattern of an organization so as to eliminate risk and uncertainty. On the other hand, risk seekers investors use the cash flow information to predict possible return or inflow if the current cash base is invested. Furthermore, risk neutral investors use cash flow to predict the best investment to undergo bearing in mind the systematic risk which cannot be eliminated. They also try to reduce or eliminate the unsystematic risk via diversification of portfolio with consideration of efficient market hypothesis (EMH).

2.2 Empirical Reviews:

As earlier cited, the study of Gombola, et al. (1987) and Adelegan (2003), did not address the predictive ability of

the cash flow on performance of corporate companies, and that the study was carried out long ago that it leaves one to wonder whether this finding(s) is/are still valid, with the trend of dynamism experienced in recent past in the field of accountancy.

Broussard, Buchenroth and Pilotte (2004), estimated the impact of increasing pay-performance sensitivity (PPS) on the sensitivity of investment to cash flow. Their motivation was that they wanted to provide additional evidence on the usefulness of executive compensation in reducing agency costs and the influence of managerial incentives on the severity of financial constraint on investment. They observed that the dominant effect of increasing alignment of managers' and shareholders interest was able to reduce the over-investment of free cash flow, and that there was some evidence that PPS helps reduce the underinvestment of cash flow due to managers avoiding to do what they are supposed to do. They also find no indication that incentives make worse the severity of financial constrictions. The study did not answer the question 'whether it was the cash flows from all the company's activity that is responsible for the profit?' Or whether on seeing the cash flow management, the performance of a business can be predicted vis a vis the managers skills.

Gentry, Newbold and Whiteford (1990), did a study on 'profiles of cash flow components'. The purpose for the study was to provide a brief tutorial on cash flow analysis and generate profiles of cash flow components that provide a reference point for comparative analyses. The study adopted theoretical percentage contribution of each flow component to total cash flow (i.e. ratio analysis); using relative cash flow component to evaluate management performance, a hierarchy of relationship emerged. In their conclusion, they opined that the cash flow analyses shows that the financial health of a company depends upon its ability to generate net operating cash flows that are sufficient to cover a hierarchy of cash outflows, and that the profiles generated from a large sample of companies show that relative cash flow components vary across company size and across industry groups. However, the study was done in 1990, about 28 years ago. Twenty-eight years is such a long time that leaves one to wonder whether the experience of Gentry, Newbold and Whiteford are still valid and reliable.

In consonance with the foregoing it is obvious that at some point in time the proper management of cash flow translates into company performance and could be a basis for the assessment of the skills of the management team, and could be used to predict the future expectation of a company. It is against this background that the study on 'the potency of cash flow statement in predicting corporate performance. This study is pertinent to help investors in corporate companies take sensitive financial decision with ease (after viewing the cash flows from operation, financing and

investment activities, with the minimum fear of losing their money); and essentially contribute to existing knowledge.

3.0 METHODOLOGY

The blueprint or format that guided the research and analysis was the quasi-experimental (ex-post facto) design (Onwumere, 2009: 113; Murthy, 2009; ICAN, 2006). Within the ambit of the ex-post facto design, the research adopted a panel data from the annual financial report of banks quoted in Nigeria, between the periods of 2007 to 2016. The justification for the periods was that the said periods covered the time banks in Nigeria and the world witnessed melt-down and merger. Ten (10) years duration is considered adequate for a meaningful research endeavour. More so, the availability data from annual report prepared on old GAAP and IFRS.

Quantitative data was applied in this investigation. Osuala (2001), and Fayeye and Ojo (1997), support the use of quantitative data when they posited that when items vary in respect to some measurable characteristics, a quantitative classification is appropriate. Data for this study were gotten from the secondary source of the annual financial statement. Data collected were the net cash flows from the components of the cash flow statement, and the profit after interest and tax.

The population investigated were Banks quoted on the Nigerian Stock Exchange between the periods of 2007 and 2016. Companies in this group are statutorily required to submit their published annual financial statements to the Securities and Exchange Commission (SEC) for validation. The financial statements of these banks were considered relatively reliable measurement yardstick. Ten (10) banks were conveniently selected from the study population of twenty twenty-one (21) deposit money banks.

The research used panel multiple regression technique for the achievement of its objective. The justification for adopting multiple regression technique for the stated objectives, was that more than one independent variable (X) is predicting the independent variable (Y) (ICAN, 2006). Essentially, the objectives shall be modelled after multiple regression equation models (Hanke and Reitsch, 1991). The dependent variable was profitability and the independent variables were operating activities, financing activities, and investing activities.

Apriori Expectation:

It was the expectation of the researcher that cash flow should have significant and positive impact on company performance, and that the impact of cash flow from operating activities should relatively be more significant on corporate performance than cash flow from financing and investing activities. Cash flow statement should be valid and reliable tool for predicting corporate performance vis a vis management skills.

Model of the Study:

Essentially, the study adopted panel data regression model. Comparatively adopts the fixed effect model of the panel data analyses method and random effect model. The Fixed Effect Model according to Brooks (2014) and Gujarati & Porter (2009) follows the form presented below:

$$Y_{it} = \alpha + \beta_1 x_{it} + \beta_2 x_{it} + \beta_3 x_{it} + \lambda_i + v_{it}$$

λ_i is a time-varying intercept that captures all of the variables that affect Y_{it} that vary over time but are constant cross sectionally (Gujarati & Porter, 2009). Where:

$$\begin{aligned} \text{RP} &= \text{Reported profit} = Y_{it} \\ \text{CFFO} &= \text{Cash flow from Operations} = \beta_1 \\ \text{CFFFA} &= \text{Cash flow from financing Activities} = \beta_2 \\ \text{CFFIA} &= \text{Cash flow from financing activities} = \beta_3 \\ &\beta_1, \beta_2, \beta_3 \geq 0 \end{aligned}$$

In substituting our variables under study into the fixed effect model will appear thus:

$$RP_{it} = \alpha + \beta_1 CFFO_{it} + \beta_2 CFFFA_{it} + \beta_3 CFFIA_{it} + \lambda_i + v_{it}$$

The Random Effect Model according to (Gujarati & Porter, 2009; Koutsoyiannis, 1977) follows the form presented below:

$$Y_{it} = \alpha + \beta_1 x_{it} + \beta_2 x_{it} + \beta_3 x_{it} + w_{it}, w_{it} = \varepsilon_{it} + \mu_{it}$$

Where:

ε_{it} measures the random deviation from the global or common intercept term α , subscript “*it*” represents the combination of individuality and time. μ_{it} = the regular error term

In substituting our variables under study into the fixed effect model will appear thus:

$$RP_{it} = \alpha + \beta_1 CFFO_{it} + \beta_2 CFFFA_{it} + \beta_3 CFFIA_{it} + (\mu_i + \varepsilon_{it})$$

To estimate the models and evaluate the impact of CFFO, CFFFA, and CFFIA on RP in the ten companies, the selection of the better suited model from the two is done following the Hausman test as presented by (Gujarati & Porter, 2009) which appears thus:

$$H_{stat} = (\beta^{FE} - \beta^{RE})' [Var(\beta^{FE}) - Var(\beta^{RE})]^{-1} (\beta^{FE} - \beta^{RE}) \sim \chi^2(k)$$

The Hausman test represents a distance measure between Fixed Effect and Random Effect Model with an H_0 that the Random Effects are better, efficient and consistent and an H_1 that the Fixed Effects (LSDV) are better, more efficient and consistent. Rejecting the null hypothesis implies a preference of the fixed effect model over the random effect model.

4.0 PRESENTATION AND ANALYSIS OF DATA

Data gathered for the study are displayed in appendix one. It contains the reported profit i.e. profit after interest and tax, which proxies performance as the dependent variable. The independent variables are the element of cash flow which includes: cash flow from operating activities (CFFOA); cash flow from financing activities (CFFFA); and cash flow from investing activities (CFFIA). The displayed data were for ten (10) years and for ten (10) respective companies,

totaling one hundred (100) observations. As at the time of data gathering, it was prettily difficult coming across requisite CEFFOA, CFFFA, and CFFIA data for Union Bank for the year 2007, hence there was no representation made for that year.

Hausman specification test for best effects analyzed revealed that the difference in coefficients is not systematic; therefore the fixed effects regression result is reported. The fixed effects result revealed an overall R-squared of 0.0096 (.96%); indicating there a positive impact of cash flow (CF) on the reported profits (RP) of the stated banks, though the impact is insignificant. Further to it, the respective variable (CFFOA, CFFIA, and CFFA) of cash flow had a positive R-square of 0.0968 (9.68%); indicating a positive effect although within the insignificant region of the rating. Also, all the coefficients of the element of cash flow were negative (CFFOA = -0.022; CFFIA = -0.024; CFFA = -0.090), with cash flow from operating activities having the best proximity to predict profit (with -0.022 coefficient); though the prediction might be insignificant and therefore not necessarily helpful in forecasting corporate performance.

Discussion of Results:

The finding of the study is in consonance with the finding of Gombola et al (1987) that concluded in their study that cash flow from operation is insignificant in predicting corporate failure. More so, the study of Gentry et al (1990) whom after carrying-out a study for the purpose of providing a brief tutorial on cash flows analysis and generate profiles of cash flows component that provide a reference point for comparative analysis, concluded that the cash flow analysis shows that the financial health of a company depends upon its ability to generate net operating cash flows that are sufficient to cover a hierarchy of cash flow. The outcome of the study is in consonance with our a priori expectations in the sense that cash flow has positive impact on profitability albeit not significant. This could be possibly so because very few activities of banks are cash backed.

5.0 CONCLUSION

The study of the potency of cash flow in predicting or forecasting corporate performance was imperative because of the need of investors and/or prospective investors to predict the performance of corporate entities with relative certainty. The study outcome revealed that cash flow has a positive but insignificant impact on performance of the corporate entities; and that the respective variables of cash flow also has positive but insignificant impact on performance of corporate entities; and that cash flow from operating activities has a better proximity to performance than other components of cash flow.

Owing to the study outcome, it is recommended that the cash flow statement should not be over-dependent upon in analyzing corporate performance. Obviously, the performance of company cannot be obtained from viewing

the flows cash and cash equivalent alone. It is necessary to observe other component of the financial statements for possible predictive strength.

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Appendix i

Observation	S/N by coy	Consolidated Group Balances		RP	CFFOA	CFFIA	CFFA
		Companies	Year	₦Billion	₦Billion	₦Billion	₦Billion
1	1	Access Bank	2007	6.08	116.21	-4.05	0.00
2	1	Access Bank	2008	15.85	365.18	-65.47	127.56
3	1	Access Bank	2009	9.20	-461.77	87.88	-37.65
4	1	Access Bank	2010	11.07	67.77	-72.65	-6.23
5	1	Access Bank	2011	16.71	146.55	-43.90	-9.05
6	1	Access Bank	2012	39.33	-80.51	157.17	40.46
7	1	Access Bank	2013	36.30	-117.28	123.21	-7.05
8	1	Access Bank	2014	22.59	-105.41	80.28	48.04
9	1	Access Bank	2015	31.29	-98.56	98.63	-18.98
10	1	Access Bank	2016	39.49	30.88	-8.60	33.57
11	2	Diamond Bank	2007	5.74	47.81	-18.48	0.01
12	2	Diamond Bank	2008	12.82	61.13	-31.85	0.01
13	2	Diamond Bank	2009	-8.17	-13.22	-7.33	-5.95
14	2	Diamond Bank	2010	1.33	-23.54	-12.96	9.14
15	2	Diamond Bank	2011	-13.72	75.79	-84.75	24.47
16	2	Diamond Bank	2012	22.11	29.53	61.24	21.57
17	2	Diamond Bank	2013	28.54	213.16	-235.33	0.70
18	2	Diamond Bank	2014	25.49	131.86	-72.71	79.02
19	2	Diamond Bank	2015	5.66	-178.71	60.15	-8.08
20	2	Diamond Bank	2016	3.50	-77.98	24.55	20.01
21	3	FCMB	2007	5.95	64.26	-13.43	10.51
22	3	FCMB	2008	15.11	-16.44	3.47	99.46
23	3	FCMB	2009	0.56	-46.95	-10.17	18.99
24	3	FCMB	2010	7.93	-96.47	-31.32	-5.88
25	3	FCMB	2011	-9.24	77.61	-84.81	-13.48
26	3	FCMB	2012	15.29	212.01	-138.54	1.99
27	3	FCMB	2013	16.00	-28.38	74.26	31.83
28	3	FCMB	2014	22.13	-116.13	-17.79	51.81
29	3	FCMB	2015	4.76	5.80	14.62	32.22
30	3	FCMB	2016	14.34	-82.70	-6.16	-31.23
31	4	Fidelity	2007	4.71	59.82	-3.68	-2.07
32	4	Fidelity	2008	13.36	58.95	-14.08	93.81
33	4	Fidelity	2009	1.43	-8.67	-15.94	-8.79
34	4	Fidelity	2010	6.11	24.65	-2.92	-0.72
35	4	Fidelity	2011	5.36	181.28	-52.13	-4.06
36	4	Fidelity	2012	18.20	42.64	-4.51	-4.06
37	4	Fidelity	2013	7.72	-37.68	-35.75	64.24
38	4	Fidelity	2014	13.80	53.57	-98.94	35.67
39	4	Fidelity	2015	13.90	107.31	-133.37	9.58
40	4	Fidelity	2016	9.73	56.91	59.66	-35.03
41	5	First Bank	2007	20.64	133.16	-129.69	16.86
42	5	First Bank	2008	36.54	6.27	-26.00	241.06
43	5	First Bank	2009	15.76	-16.53	-54.62	-57.43
44	5	First Bank	2010	29.18	8.30	-31.19	86.24

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45	5	First Bank	2011	18.64	103.54	-10.67	-33.94
46	5	First Bank	2012	75.10	26.88	-60.79	-54.08
47	5	First Bank	2013	66.45	114.83	8.98	17.19
48	5	First Bank	2014	84.84	-460.25	-14.29	198.83
49	5	First Bank	2015	2.95	457.96	-190.41	-133.75
50	5	First Bank	2016	10.45	166.90	-175.58	-18.74
51	6	GTB	2007	13.19	40.02	-29.29	42.61
52	6	GTB	2008	28.32	199.00	-19.14	16.31
53	6	GTB	2009	23.69	-10.01	-13.44	-10.07
54	6	GTB	2010	38.35	194.07	40.81	-17.76
55	6	GTB	2011	51.74	126.79	-156.88	124.47
56	6	GTB	2012	87.30	36.15	7.74	88.73
57	6	GTB	2013	69.24	177.28	-223.35	-38.14
58	6	GTB	2014	66.74	-28.56	59.53	-53.62
59	6	GTB	2015	99.44	28.47	-34.00	7.47
60	6	GTB	2016	132.86	510.96	-127.95	-306.23
61	7	Sterling Bank	2007	1.87	41.19	-11.43	0.00
62	7	Sterling Bank	2008	6.58	46.90	-11.45	11.04
63	7	Sterling Bank	2009	-9.02	-34.22	-7.24	-12.56
64	7	Sterling Bank	2010	5.04	24.89	-71.76	10.86
65	7	Sterling Bank	2011	6.91	-11.29	45.33	6.88
66	7	Sterling Bank	2012	6.95	-14.88	-4.01	1.48
67	7	Sterling Bank	2013	8.27	-41.95	72.70	17.42
68	7	Sterling Bank	2014	9.00	-0.76	-8.06	19.66
69	7	Sterling Bank	2015	10.29	54.69	-76.37	10.16
70	7	Sterling Bank	2016	5.16	-124.89	35.85	27.07
71	8	UBA	2007	21.44	1.00	-31.66	90.31
72	8	UBA	2008	40.83	347.80	-261.64	-16.67
73	8	UBA	2009	2.38	-156.03	87.48	1.44
74	8	UBA	2010	0.60	47.68	-265.04	65.19
75	8	UBA	2011	-9.65	-20.65	-108.17	103.56
76	8	UBA	2012	54.77	235.23	9.50	-2.35
77	8	UBA	2013	46.60	-64.20	-114.48	-83.30
78	8	UBA	2014	47.91	-107.62	133.99	77.42
79	8	UBA	2015	59.65	110.88	196.87	13.82
80	8	UBA	2016	72.26	30.11	-191.05	100.79
81	9	Union Bank	2007	13.80			
82	9	Union Bank	2008	-72.52	-163.67	-11.51	-11.58
83	9	Union Bank	2009	-281.17	36.53	-43.06	120.00
84	9	Union Bank	2010	106.47	45.75	-274.02	9.36
85	9	Union Bank	2011	-91.45	-193.67	234.77	216.26
86	9	Union Bank	2012	1.19	30.51	-61.96	-0.17
87	9	Union Bank	2013	3.84	-70.82	-38.07	10.03
88	9	Union Bank	2014	26.83	-126.84	121.28	27.90
89	9	Union Bank	2015	14.20	-20.81	-9.10	-10.76
90	9	Union Bank	2016	15.39	5.11	35.71	5.45
91	10	Zenith Bank	2007	18.68	249.19	-47.73	8.34

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92	10	Zenith Bank	2008	51.99	456.60	-45.54	192.86
93	10	Zenith Bank	2009	20.60	-297.02	-137.34	-32.91
94	10	Zenith Bank	2010	37.82	97.34	-10.53	6.70
95	10	Zenith Bank	2011	48.70	-47.91	-16.52	-10.65
96	10	Zenith Bank	2012	100.68	103.64	-0.95	-29.06
97	10	Zenith Bank	2013	95.32	265.58	-10.53	-1.70
98	10	Zenith Bank	2014	99.46	-115.48	2.64	188.27
99	10	Zenith Bank	2015	105.66	-450.49	-23.93	216.54
100	10	Zenith Bank	2016	129.65	-1.66	-28.55	11.90

Appendix ii

Fixed Effects Regression Result

```

Fixed-effects (within) regression      Number of obs   =      99
Group variable: bank                  Number of groups =      10

R-sq:  within = 0.0281                Obs per group:  min =      9
      between = 0.0968                    avg =      9.9
      overall  = 0.0095                    max =      10

corr(u_i, Xb) = -0.0680                F(3, 86)       =      0.83
                                           Prob > F       =      0.4816
    
```

rp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
cffoa	-.0222349	.0298837	-0.74	0.459	-.0816419	.037172
cffia	-.024062	.0515616	-0.47	0.642	-.126563	.078439
cffa	-.0898736	.061224	-1.47	0.146	-.2115829	.0318357
_cons	25.01193	4.517667	5.54	0.000	16.0311	33.99275
sigma_u	29.907863					
sigma_e	40.176051					
rho	.35656618	(fraction of variance due to u_i)				

F test that all u_i=0: F(9, 86) = 5.10 Prob > F = 0.0000

Source: Researcher's computation using Stata 13 Econometrics Software

Random Effects Regression Result

```

Random-effects GLS regression      Number of obs   =      99
Group variable: bank              Number of groups =      10

R-sq:  within = 0.0203                Obs per group:  min =      9
      between = 0.0716                    avg =      9.9
      overall  = 0.0218                    max =      10

corr(u_i, X) = 0 (assumed)          Wald chi2(3)    =      2.06
                                           Prob > chi2     =      0.5592
    
```

rp	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
cffoa	-.0023605	.0321555	-0.07	0.941	-.0653842	.0606632
cffia	-.0367855	.0549715	-0.67	0.503	-.1445277	.0709567
cffa	-.0726532	.0656832	-1.11	0.269	-.2013899	.0560835
_cons	23.57007	6.200055	3.80	0.000	11.41819	35.72196
sigma_u	10.998738					
sigma_e	40.176051					
rho	.06972112	(fraction of variance due to u_i)				

Source: Researcher's computation using Stata 13 Econometrics Software

Hausman Specification Test for Best Effects

	—— Coefficients ——		(b-B) Difference	sqrt(diag(V _b -V _B)) S.E.
	(b) fixed	(B) .		
cffoa	-.0222349	-.0023605	-.0198744	.0054355
cffia	-.024062	-.0367855	.0127235	.0120109
cffa	-.0898736	-.0726532	-.0172204	.0122343

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(3) &= (b-B)' [(V_b - V_B)^{-1}] (b-B) \\ &= 17.77 \\ \text{Prob} > \text{chi2} &= 0.0005 \end{aligned}$$

Source: Researcher's computation using Stata 13 Econometrics Software