Impact of Working Capital Cycle Management on the Profitability of Insurance Companies in Nigeria

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Abstract: The studyexamined the impact of working capital management on the profitability of insurance companies in Nigeria. Specifically, the study sought to: determine the impact of cash conversion cycle, operating cash flow, premiums receivables, claims payables and reinsurance recoverable on profitability of insurance companies in Nigeria. The study adopted *Ex-post-facto* research design while Panel Data Regression Model was used to analyze annual time series data collected from audited annual reports of the 20 Insurance Companies for the period 1999-2016. The study found that cash conversion cycle has negative and significant impact on profitability of insurance companies in Nigeria while operating cash flow has positive and significant impact on profitability of insurance companies in Nigeria. The study equally found that claims payables and reinsurance recoverable have negative and insignificant impact on profitability of insurance companies in Nigeria while premium receivables has positive and insignificant impact on profitability of insurance companies in Nigeria. The implication of the findings is that without adequate monitoring and management of working capital, the profitability of insurance companies will be impaired. The study concluded that an increase in cash flow from operating activities will lead to an increase in profitability of listed insurance companies in Nigeria whereasan increment in the cash conversion cycle of an insurance company will amount to more financial losses which might hamper a robust profitability. It was recommended that insurance companies should reduce the number of days in their cash conversion cycle; set up a good operating cash flow system that will curb liquidity risks in their companies and should monitor their claims payable level so as to determine when they become unfavorable.

Key words: Profitability · Working capital · Operating cash flow · Premiums receivables

INTRODUCTION

Understanding a company's cash flow health is essential to making investment decisions. Working capital management connotes the ability to control effectively and efficiently the current assets and current liabilities in a manner that provides the firm with maximum return on its assets and minimizes payments for its liabilities [1]. The concept of working capital management addresses the way companies manage their short-term capital and the goal of the management of working capital is to promote a satisfying liquidity, profitability and shareholders' value. A well-managed working capital promotes a company's wellbeing on the market in terms of liquidity and it also acts in favor for the growth of shareholders value [2]. Every organization, whether profit-oriented or not and, irrespective of size and nature of its business, needs some measure of working capital [3]. This is so because working capital constitutes the life-giving force for every economic unit.

According to [4] the components of working capital management of a company are cash conversion cycle, receivables, payables and recoverable. However, within the insurance sub-sector, working capital management component includes cash conversion cycle, operating cash flow, premiums receivables, claims payables and

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reinsurance recoverable. Every corporate organization is concerned seriously about the best way to sustain and improve its profitability. Consequently, firms have to keep an eye on those factors which affect their profitability. Today, owing to the changing world's economic advancement of technology and increased competition among firms, each of the firms is making frantic efforts to enhance its profits [5]. To achieve their profitability enhancement, firms now strive hard to bring their working capital at optimal level.

The assessment of working capital management in relation to profitability becomes imperative as a result of Insurance Market Review in 2009, [6]. The National Insurance Commission (NAICOM) makes it important to examine the management of working capital in Insurance companies in Nigeria [7]. Working capital measures a firm's liquidity and operational efficiency and its management is vital for all businesses, be it manufacturing or service companies [8]. When the liquidity of a business is not properly managed, it will have cash shortages and as a result experience problems paying its obligations when they fall due. National Insurance Commission (NAICOM) expressly stated that the poor performance of insurance business in Nigeria can be linked to cash flow problem as they struggle to settle their claims amid inadequate investible funds. According to NAICOM, outstanding premiums have always been an issue in the underwriting business.

Troubled by huge outstanding premium and saga it created between insurance companies and the brokers, National Insurance Commission (NAICOM) force underwriters to make provision for outstanding premiums. Insurance companies' chief executives are crying out for a long lasting solution to the menace of outstanding premium in the sector against the massive abuse of the Insurance Act 2003. Indeed, working capital starvation has generally been credited as a major cause, if not the main cause of insurance business failure in many developed and developing countries [9]. That goes to say that majority of the business failures are due to poor management of working capital and the firm's success heavily depends on how frequent they are able to generate more cash. The inability of insurance firms to effectively manage its working capital can be attributed to a funding liquidity risk that is caused either by the maturity mismatch between inflows and outflows and/or the sudden and unexpected liquidity needs arising from contingency conditions [10]. Insurance companies have to grasp the requirement to articulate appropriate working capital management policies to ensure healthy working particularly in meeting the demands of the policy holders

by taking into account the heavy rise in operating risk globally and the mounting burden on insurance institutions [11].

Nigeria's dominant position in Africa as the most populous and with one of the largest and fastest growing economies in Africa coupled with its high incidence of risk and uncertainty makes the country a vibrant insurance market [12]. The proper management of working capital becomes extremely important when the company's business is to provide insurance services [13]. Although a number of studies have been carried out on the impact of working capital management on financial performance of firms; most of these studies were largely foreign. The implication might be that policy measures put in place to enhance working capital management and profitability in insurance subsector in Nigeria are not based on local empirical evidences or are at best based on foreign empirical evidences. In view of the foregoing, this study examined the impact of working capital management and on the profitability of insurance companies in Nigeria. Specifically, the study examined the impact of cash conversion cycle on the profitability of insurance companies in Nigeria; the impact of operating cash flow on the profitability of insurance companies in Nigeria; the impact of premiums receivables on the profitability of insurance companies in Nigeria; the impact of claims payables on the profitability of insurance companies in Nigeria and the impact of reinsurance recoverable on the profitability of insurance companies in Nigeria.

Conceptual Review: The cash conversion cycle concept of working capital is based upon the working capital cycle of a firm [14]. The cycle starts with the purchase of raw material and other resources and ends with the realization of cash from the sale of finished goods. It is used as a powerful tool for measuring management effectiveness [15]. According to [16] cash conversion cycle is a combination of several activity ratios involving account receivables, accounts payables and inventory turnover. This means that the ratios show how efficiently management can utilize short-term assets and liabilities to generate cash. Working capital management is vital for a firm, especially for manufacturing, trading and distribution firms, because in these firms working capital management directly affect the profitability and liquidity. An efficient working capital management has to manage working capital in such a way that it eliminates risks of default on payment of short-term obligations on one side and minimizes the change of excessive levels of working capital on the other side [17].

The aim of working capital management is to maximize time outflows and inflows of cash otherwise known as the cash conversion cycle while simultaneously optimizing process costs and process quality. Operating cash flows concentrate on cash inflows and outflows related to a company's main business activities, such as providing services and paying salaries [18]. A company's working capital is a core part of funding its daily operations. However, it's important to analyze both working capital and cash flow of a company to determine whether the financial activity is a short-term or long-term event. A boost in cash flow and working capital might not be good if the company is taking on long-term debt that it doesn't generate enough cash flow to pay off. Conversely, a large decrease in cash flow and working capital might not be so bad if the company is using the proceeds to invest in long-term fixed assets that will generate earnings in the years to come.

Premium receivable is the amount of premium that is owed to an insurer for a policy, but which has not yet been paid by the policyholder. The premium outstanding will decrease in value over the course of the policy term as the policyholder makes installment payments. Many insurers allow policyholders to pay for their policies installmentally, as paying the full value of a policy's premium can be a challenge on your budget to do all at once and offering different payment structures allows insurers to reach a broader market. Insurers allow policyholders to pay premiums over an extended period of time because they can extract an installment fee for the privilege. Insurance claim payables is a formal request to an insurance company for coverage or compensation for a covered loss or policy event which is yet to be settled. Thus, a decision as to whether to stretch payables or not, should be based on the cost and benefits analysis of an insurance firm's credit policy in relation to profitability and or liquidity of the enterprise. Therefore, the ultimate effect of efficiently managing accounts payables is to optimize the cash outflow that ensures that a firm's liquidity is not adversely affected so that a company's financial performance will not also be affected in the long run [19].

Reinsurance recoverable is the portion of an insurance company's losses from claims that can be recovered from reinsurance companies [20]. Reinsurance recoverable includes the amount owed to the insurer by the reinsurer for claims and claims-related expenses, the amount owed for estimated losses that have occurred and been reported, the amount of incurred but not reported losses and the amount of unearned premiums paid to the reinsurer. Insurance companies primarily make money from their underwriting activities. When an insurer underwrites a new policy, it collects premiums from policyholders, but it also takes on the liability associated with providing the coverage [21]. Insurance regulators require insurers to set aside reserves in order to cover potential claims made against the policies that the insurer underwrites [22].

Profitability is a measure of financial performance of an organization's earnings [23]. In insurance, profitability is normally expressed as net earnings from premiums, underwriting activities, annual turnover and returns on investment and return on equity. Profitability is usually measured in terms return on capital employed, return on assets, return on equity and return on investment.

Empirical Review: [24] examined the impact of working capital management on the financial performance of listed conglomerate companies in Nigeria for a period of 2005-2014. The study employed Ordinary Least Square estimation techniques while data were collected from the annual reports and accounts of the companies. The study found that cash conversion cycle has positive but insignificant relationship with the financial performance of the studied companies.

[25] assessed the effect of cash conversion cycle on the profitability of selected insurance firms quoted in the Nigerian Stock Exchange for the period (2000-2011). The return on assets was used as a measure of profitability. Data were collected from the annual financial reports of sampled insurance companies while multiple regression analysis was used in data analysis. The study found that cash conversion cycle had negative and significant effect on profitability

[26] examined the impact of operating cash flow on corporate financial performance of listed conglomerate companies in Nigeria over the period 2005-2014. The result showed a positive and insignificant impact between cash flow from operating activities and financial performance. However the impact was positive and significant when financial performance was proxied by Return on Equity.

[27] employed Ex-post facto research design and time-series data to assess the extent at which cash holding affects financial performance of quoted insurance firms in Nigeria. Secondary data was used. Findings showed that cash holding has a positive and statistical significant effect on financial performance.

[28] examined the impact of working capital management on financial performance of manufacturing companies in Nigeria. The study employed multiple

regressions in analyzing the data sourced from the published financial statement of the firms under the study. The study found that average payment period and average collection period impacts on financial performance (earnings per share and return on capital employed). The implication is that efficient management of working capital will improve the financial performance of the manufacturing firms, hence the study recommended that professionals should be hired by these firm to ensure proper management of stock to avoid stock out.

[29] examined the impact of working capital management on the profitability of petroleum retail firms in Ghana over the period 2008-2013. Data were collected from the audited annual reports of the five selected petroleum retail firms in Ghana. The study showed that cash conversion cycle, average day's inventory and average days receivables have insignificant impact on the profitability of petroleum retail firms in Ghana. The study further found that working capital management practices among the five selected petroleum retail firms support the conservative strategy of working capital management, rather than an aggressive working capital management strategy.

[30] analyzed the impact of working capital on financial performance of the small and medium-sized enterprises in Vietnam, using panel data for 1, 209 enterprises in the period from 2008-2015. The study found that receivables and working-capital turnover impact negatively on financial performance of small and medium-sized enterprises in Vietnam. The paper further showed that accounts payable period and inventory conversion period have a direct relationship with corporate financial performance.

[31] carried out a study on cash flow and organizational performance of Nigerian Hospitality and Print Media using 45 small and medium enterprises from the two sectors. Data collected were analyzed using Pearson Product Moment Coefficient of correlations and Statistical Package for Social Sciences (SPSS) 2.0 Software. The result indicated that a significant strong positive relationship exist between cash flow position and net profit Nigerian Hospitality and Print Media Enterprises. It was concluded that cash flow position determines the extent of net profit performance of organizations in the hospitality and print media in Nigeria.

[32] conducted an investigation on cash flows' effect on financial performance of 183 companies listed on Tehran Stock Exchange over the period 2009-2013. Data analysis was done using Pearson Product Moment Correlation Coefficient. The study found that there is a significant relationship between accounting cash flow, equity cash flow, free cash flow, capital cash flow and financial performance of listed companies in Tehran Stock Exchange.

[33] examined the relationship between cash flow and corporate performance in the food and Beverages sector of Nigeria. Data used were obtained from the Nigerian Stock Exchange for the period 2007-2011 and were analyzed using multiple regression technique. Return on Assets represents the dependent variable and the three cash flow components as the independent variables. The study found that operating and financing cash flow have significant positive relationship with corporate performance while investing cash flow and corporate performance have significant negative relationship.

[34] carried out a research on the cash flow statement component effect on management performance using 138 firms listed on the Tehran Stock Exchange for the period of 2008–2012. Using multiple linear regression on the variables Return on Assets and Return on Equity as performance measures and the independent variables (cash flow from financing activities, cash flow from investing activities, cash flow from operating activities and cash flow from return on investment and interest paid. The finding showed that there is negative relationship between cash flows from investments activities and return on assets while there is no relationship between cash flows from operational activities and financing activities and return on assets.

[35] in his survey on the effect of working capital management on the financial performance of pharmaceutical firms in Nigeria for a period of eight years 2006 to 2013. Data for the study were collected through secondary sources. The study found that both account receivables and inventory were significantly and positively related with financial performance while account payable was found to be significantly but negatively related to financial performance and cash conversion cycle was found to be statistically insignificantly related to financial performance.

[36] assessed the effects of accounts payable on financial performance of publicly listed manufacturing companies in Kenya. Census sampling technique was used and the study used secondary data, which was obtained from the companies' statistics and journals at the Nairobi Securities Exchange. SPSS was used to carry out the descriptive analysis of the variables, requisite analysis and advanced analysis of the data. A multiple regression model was used to test the relationship between the Accounts payable and firm performance.

The results from this research suggested that in most of the manufacturing firms listed at the NSE, there was a direct positive relationship between Accounts Payable and the dependent variable, Profitability and Liquidity, supporting the Pecking Order Theory.

[37] in their study, tried to determine the factors that significantly influence the profitability of insurance companies in Ghana. Principal Component Analysis (PCA)was used to reduce the potentially large number of variables to a smaller set of significant variablesthat influence working capital management on profit for 10 insurance companies listed on the Ghana Stock Exchange between 2008 and 2014 without loss of information. Five significant factors; namely cash conversion cycle, debt ratio, current ratio, sales growth rate and accounts collection Period extracted using principal component analysis were used as regressors to identify the source of causation for profitability by testing the causal effect between working capital management and profitability in the insurance companies in Ghana over the period 2008-2014. A unit root test for all the extracted variables from principal component analysis showed that a co-integration test was feasible. It was revealed that there was a long run relationship between the extracted variables from principal component analysis.

[38] empirically examined the impact of working capital management on profitability of Nigerian Cement Industry for a period of eight (8) years (2002- 2009). Data from secondary sources were analyzed using descriptive statistics and multiple regression analysis. The study found an insignificant negative relationship between the profitability of cement companies quoted on the NSE and the number of days accounts receivable. The study also found a significant negative relationship between the profitability of these cement companies and the number of days inventory are held. The study finally revealed a significant positive relationship between the profitability and the cash conversion cycle.

[39] examined the relationship between cash flow and corporate performance in the food and Beverages sector of Nigeria. Data used were obtained from the Nigerian Stock Exchange for the period 2007-2011 and were analyzed using multiple regression technique. Return on Assets represents the dependent variable and the three cash flow components as the independent variables. The study found that operating and financing Cash flow have significant positive relationship with corporate performance while investing cash flow and corporate performance have significant negative relationship.

[40] investigated whether working capital management affect the performance of non-financial listed firms in Pakistan. Panel econometric technique namely pooled ordinary least squares is used to estimate the relationship between working capital and firm performance. Data were taken from the annual reports of non-financial firms listed on the Karachi Stock Exchange Pakistan during 2007-2010. Three performance measures namely gross profit margin, return on asset and return on equity are used to estimate the impact of working capital variables such as average age of inventory, average collection period and average payment period. Empirical results indicate that average age of inventory is positively related to gross profit margin and return on asset, whereas it is negatively related to return on equity but the relationship is found insignificant.

[41] also conducted a study on the effects of components of a 4 part model of cash flow statement on operational performance of listed Tehran Stock Exchange. All firms enlisted in the Stock Exchange were included in a time range of 5 years from 2007-2011. The Cash flows resulting from investments' return (CFIR), Cash flows resulting from interest paid for financing, Cash flows of investment (CFI) and Cash flows of financing (CFF) were analyzed using Pearson correlation. The study revealed that there is positive relationship between CFIR and ROA and ROE and no meaningful relation between CFI, CFF and ROA and ROE.

[42] investigated the relationship between working capital management and profitability of food and beverages manufacturing firms listed on the Nigerian Stock Exchange. The study used secondary data of 120 firm-year observations between 2002 and 2011. Survey research design was adopted. The data were analyzed using descriptive statistics, correlation analysis and multiple regression analysis. The study found that there is relatively strong positive and significant relationship between working capital management and net operating profit and that a positive but insignificant relationship exist between cash conversion cycle and net operating profit. Also, account collection period has significant negative relationship with net operating profit while inventory conversion period and account payment period have insignificant negative relationship with net operating profit of food and beverages manufacturing companies in Nigeria.

[19] investigated the relationship between working capital management on organizational profitability in Nigeria with special reference to manufacturing companies

quoted in Nigerian Stock Exchange. The data used for this study were derived from the audited finance statements of the firms listed on the Nigerian Stock Exchange (NSE) between 2005-2013 which comprises of twenty (20) manufacturing sectors was finally used as sample size. Panel data methodology was adopted because it combined time series and cross sectional data. The method of analysis is that of Pearson Correlation Moment Coefficient and multiple regressions and the method of estimation is Ordinary Least Squares. The result showed that working capital has negative and significant relationship with the Return on Assets and Return on Equity.

[4] examined the impact of receivables management on profitability of food and beverages manufacturing companies in Nigeria. The variables include, accounts receivable, debt and sales growth. Secondary sources of data were used for the period 2000-2011. The hypotheses were analyzed using the multiple regression analytical tools. The findings show that accounts receivable had negative and non-significant relationship with profitability, while debt had positive but non-significant relationship with profitability of food and beverages manufacturing companies in Nigeria. Finally, sales growth also had positive and non-significant relationship with profitability.

[26] studied the effect of working capital management on firm's profitability in Kenya for the period 2003 to 2012. For this purpose, balanced panel data was used. Pearson's correlation and Ordinary Least Squares regression models were used to establish the relationship between working capital management and firm's profitability. The study finds a negative relationship between profitability and number of day's accounts receivable and cash conversion cycle, but a positive relationship between profitability and number of days of inventory and number of day's payable. Moreover, the financial leverage, sales growth, current ratio and firm size also have significant effects on the firm's profitability.

[10] investigated the influence of working capital management (WCM) on performance of small medium enterprises (SMEs) in Pakistan. The duration of the study was seven years from 2006 to 2012. The data used in this study was taken from secondary sources. The dependent variable of the study was Return on Assets (ROA) which was used as a proxy for profitability. Independent variables were Number of Days Account Receivable (ACR), Number of Day's Inventory (INV), Cash Conversion Cycle (CCC) and Number of Days Account Payable (APP). In addition to these variables some other variables were used which included Firm Size (SIZE), Debit Ratio (DR) and Growth (GROWTH). Regression analysis was used to determine the relationship between WCM and performance of SMEs in Pakistan. Results suggested that APP, GROWTH and SIZE have positive association with Profitability whereas ACR, INV, CCC and DR have inverse relation with profitability.

[22] in their study impact of receivables management on working capital and profitability; A study of selected cement companies in India collected their data from the Annual Reports from the selected cement companies from 2001 -2010. The ratios which highlight the efficiency of receivables management viz, receivables to current assets ratio, receivable to total assets ratio, receivable to sales ratio, receivable to turnover ratio, average collection period, working capital ratio, profitability ratio have been completed using ANOVA statistical tool to know the impact of working capital and profitability of the selected cement companies. Working capital management and profitability were considered as dependent variables. The investigation reveals that the receivable management across cement industry is efficient and showing significant impact on working capital and profitability.

[30] analyzed the relationship between working capital management practices and profitability of listed manufacturing firms in Ghana. The study used data collected from annual reports of all the 13 listed manufacturing firms in Ghana covering the period from 2005-2009. Using panel data methodology and regression analysis, the study found a significant negative relationship between Profitability and Accounts Receivable Days. However, the firms' cash conversion cycle, current asset ratio, size and current asset turnover significantly positively influence profitability.

Theoretical Framework: The study adopted the Risk Return Theory that was propounded by [7]. This theory assumes that investors are risk-averse. The theory was adopted because insurance companies is both a risk-taking and profit making business and insurance firms activities should return profits commensurate with their risk. The higher the risk, the higher will be the profitability and vice versa. This postulation is true when the insurance firm risk appetite is lower than the risk tolerance.

Research Design: The study adopted *Ex-post facto* research design. The reason for adopting Ex-post facto research design is because it utilizes data on event that has taken place and the data are already in existence [33].

The study covered 20 out of the 26 listed insurance companies in Nigeria Stock Exchange as at 2018. The study period was 1999-2016. Data was obtained from the audited annual reports of the companies under study. The study adopted panel regression model. The three major panel regression models that were examined included pooled, fixed and random effect models. The pooled regression model which involves pooling all the variables over time was specified as follows:

$$PRF_{it} = \beta_0 + \beta_1(CCC)_{it} + \beta_2(PR)_{it} + \beta_3(OCF)_{it} + \beta_4(CR)_{it} + \beta_5(RR)_{it} + \varepsilon_{it} \quad (1)$$

The fixed effect model allows the explanatory variables to be fixed while the intercept varies from one company to another. The fixed effect model is specified as follows:

$$PRF_{it} = \beta_0 + \beta_1(CCC)_{it} + \beta_2(PR)_{it} + \beta_3(OCF)_{it} + \beta_4(CR)_{it} + \beta_5(RR)_{it} + \varepsilon_{it} \quad (2)$$

The random effect model allows the dummy variables to be expressed through error term or disturbance and it was specified as:

$$PRF_{it} = \beta_0 + \beta_1(CCC)_{it} + \beta_2(PR)_{it} + \beta_3(OCF)_{it} + \beta_4(CR)_{it} + \beta_5(RR)_{it} + w_{it} \quad (3)$$

where;
ORF_{it} = Profit after Tax (for i^{th} insurance company on t^{th} year)
$(CCC)_{it}$ = Cash Conversion Cycle (for i^{th} insurance company on t^{th} year)
$(PR)_{it}$ = Premium Receivables Ratio (for i^{th} insurance company on t^{th} year).
$(OCF)_{it}$ = Operating Cash Flow Ratio (for i^{th} insurance company on t^{th} year).
$(CR)_{it}$ = Claim Payables Ratio (for i^{th} insurance company on t^{th} year).
$(RR)_{it}$ = Reinsurance Recoverable Ratio (for i^{th} insurance company on t^{th} year).
β_k^s = Regression coefficients for k^{th} variable.
$w_{it} = u_i + \varepsilon_{it}$ is the error term.

The Hausman test was employed to select the model (pooled, random or fixed effects) that best fits the study. The probability values and the t-statistic were used to determine the statistical significance of the results.

RESULTS

Table 1 showed that the mean value for the 20 insurance companies over the years under review were 6473551, 125.58 and 48.98 with standard deviation of 45572309, 43.30 and 332.64 respectively. The minimum and maximum values were also displayed for profit after tax, cash conversion cycle and operating cash flow ratio.

Table 1: Descriptive Statistics Result

Stat.	PRF	CCC	PR	OCF	CR	RR
Mean	6473551	125.58	-2.1E+07	48.98	0.29	0.16
STD	45572309	43.30	4.29E+08	332.64	0.05	0.50
Min	-2.1E+08	25	-8.1E+09	-1.73	0.13	-2.57
Max	5.34E+08	300	1.82E+08	4130.88	0.45	5.05

Source: Author's Computation 2016 from SPSS, 2.0

Table 2: Baseline Panel Regression Results

Variable	Model Methods		
	Pooled Regression Model (Panel 1)	Fixed Effect Model (Panel 2)	Random Effect Model (Panel 3)
C	-11018923 (0.1503)	-5024410 (0.5119)	-11018923* (0.0521)
CCC	-137763.6** (0.0159)	-115406** (0.0416)	-137763.6*** (0.0012)
PRR	0.000545 (0.9226)	0.000278 (0.9480)	0.000545 (0.8955)
OCFR	17496.28** (0.0166)	60779.92*** (0.0000)	17496.28*** (0.0013)
LR	-500202.10* (0.08208)	-157444.6** (0.0092)	-500202.1* (0.07594)
RRR	-2898450.00 (0.5490)	-695176.30 (0.8627)	-2898450 (0.4179)
R^2-Adjusted	0.164	0.642	0.164
F-value	2.707*	13.622**	2.76*
Durbin-Watson (D.W)	0.992	2.000	0.992

( ) – P-value, * - significant at 10%
** - significant at 5% Hausman Test p-value = 0.000
*** - significant at 1%
Source: Author's Computation 2016 from SPSS, 2.0

In line with the stated objectives, the study found that Cash conversion cycle (CCC) has negative and significant impact on profitability of insurance companies in Nigeria. This is confirmed by the coefficient of cash conversion cycle of -137763.6 and the p-value of 0.0012.operating cash flow (OCF) has positive and significant impact on profitability of insurance companies in Nigeria as confirmed by the coefficient of operating cash flow ratio of 17496.28 and the p-value of 0.0013.Premiums receivables (PR) havepositive andinsignificant impact on profitability of insurance companies in Nigeria. This is confirmed by the coefficient of premium receivable of 0.000545 and the p-value of 0.8955.Claims payables (CP) have negative andinsignificant impact on profitability of insurance companies in Nigeriaas confirmed by the coefficient of claims payable of -500202.1 and the p-value of 0.07594. Reinsurance recoverable (RR) has negative and insignificantimpact on profitability of insurance companies in Nigeria as confirmed by the coefficient of reinsurance recoverable of -2898450 and the p-value of 0.4179.

CONCLUSION

The study concluded that cash conversion cycle and operating cash flow have significant impact onprofitability of insurance companies in Nigeria while premiums receivables management, claims payables management and reinsurance recoverable have insignificant impact on profitability of insurance companies in Nigeria. It was equally concluded that that an increase in cash flow from operating activities will lead to an increase in profitabilityof insurance companies in Nigeria.The study equally concluded that an increment in the cash conversion cycle of an insurance company will amount to more financial losses which might hamper a robust profitability. Finally, the study concluded that no existing empirical work to the knowledge of the researcher has been done on reinsurance recoverable and profitability of insurance companies in Nigeria.

Recommendations: Based on the findings of this work we made the following recommendations:

- That Nigerian insurance companies should endeavour to reduce their number of days in cash conversion cycle always in order to enhance their profitability.

- That Nigerian insurance companies should be encourage to set up a good operating cash flow system that will curb liquidity risks in the company.
- The Nigerian insurance firms should develop an explicit procedure for increasing their receivables.
- The Nigerian insurance companies should monitor their claims payable level so as to determine when they become unfavorable.

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APPENDIXES

Sampled Nigeria Insurance Firms:

1. Aiico Insurance Plc.
2. Lasaco Assurance Plc.
3. Law Union and Rock Insurance Plc.
4. NEM Insurance Plc.
5. Niger Insurance Plc.
6. Corner Stone Insurance
7. UNIC Insurance
8. Consolidated Hallmark Insurance plc
9. Prestige Assurance Plc.
10. Royal Exchange Plc.
11. Custodian & Allied Plc.
12. Universal Insurance Plc.
13. Standard Alliance Ins. Plc.
14. Staco Insurance Plc.
15. Linkage Assurance Plc.
16. Int'l Energy Insurance Plc.
17. Guinea Insurance Plc.
18. Regency Alliance Ins. Plc.
19. Equity Assurance Plc.
20. WAPIC Insurance Plc.

Table 1: Descriptive Statistics of the Variables under study by Companies

COMPANIES	Statistic	Profit after Tax	Cash Conv. Cycle	Premium Receivable Ratio	Operating Cash Flow Ratio	Loss Ratio	Reinsurance Recoverable Ratio
Aiico Insurance Plc	Mean	1063551	204.39	256282	0.09	0.35	0.30
	STD	2273564	51.03	969467	0.35	0.06	0.43
	Min	-930158	125.00	-119562	-1.13	0.24	0.01
	Max	9682115	300.00	4131479	0.66	0.45	1.40
Consolidated HallMark	Mean	126508343	128.56	-4364	976.11	0.32	0.13
	STD	166673502	47.98	561681	1174.16	0.03	0.13
	Min	-207111706	73.00	-1906749	7.95	0.26	0.02
	Max	534229069	259.00	1131867	4130.83	0.37	0.49
Cornerstone Ins. Plc	Mean	99082	142.61	-452259306	0.66	0.33	0.07
	STD	638373	30.25	1918849268	1.39	0.05	0.09
	Min	-1889787	112.00	-8140970161	-0.10	0.27	0.00
	Max	1282346	204.00	219881	4.70	0.45	0.27
Custodian & Allied Plc	Mean	1098292	143.17	6122924	0.09	1.46	0.02
	STD	865761	30.97	31515350	0.07	4.88	0.03
	Min	178187	98.00	-19225957	-0.01	0.23	-0.08
	Max	2909006	188.00	130625950	0.26	21.00	0.05
Equity Assurance Plc	Mean	-130710	141.83	3343184	1.02	0.27	0.94
	STD	383125	26.41	9051111	2.06	0.03	1.15
	Min	-895835	103.00	-15619025	-0.57	0.20	0.05
	Max	445041	208.00	31863740	5.65	0.31	3.28
Guinea Insurance	Mean	-15424	158.28	3946777	0.01	0.29	0.09
	STD	124285	27.99	11312270	0.32	0.03	0.09
	Min	-465507	119.00	-7070864	-0.61	0.24	0.02
	Max	92605	228.00	43365000	0.87	0.34	0.34
Int'l Energy Insurance Plc	Mean	-193371	115.61	-2023636	-0.03	0.30	-0.03
	STD	765257	15.17	7434896	0.18	0.03	0.09
	Min	-2164762	79.00	-28954600	-0.56	0.24	-0.21
	Max	795920	139.00	5295380	0.11	0.35	0.07
Lasaco Assrance Plc	Mean	214536	145.94	40322	0.29	0.32	0.07
	STD	215819	73.64	57032	0.46	0.04	0.06
	Min	-198702	59.00	-59260	-0.23	0.27	0.01
	Max	688171	269.00	168402	1.63	0.39	0.20
Law Union & Rock Ins	Mean	75817	126.56	-511858	0.12	0.29	0.19
	STD	404636	15.54	1541031	0.16	0.03	0.12
	Min	-1337180	100.00	-5521650	-0.04	0.25	0.02
	Max	561851	160.00	486077	0.63	0.36	0.52

STD-Standard Deviation, Min-Minimum, Max- Maximum

COMPANIES	Statistic	Profit after Tax	Cash Conv. Cycle	Premium Receivable Ratio	Operating Cash Flow Ratio	Loss Ratio	Reinsurance Recoverable Ratio
Linkage Assurance Plc	Mean	100146	132.72	1276211	0.21	0.29	0.16
	STD	311287	12.25	8127092	0.69	0.03	1.08
	Min	-775779	109.00	-15182875	-1.73	0.22	-2.57
	Max	544564	153.00	25251800	1.08	0.34	3.63
Nem Insurance Plc	Mean	490004	95.00	40479	0.31	0.28	0.15
	STD	581956	19.00	64249	0.41	0.05	0.14
	Min	-56742	59.00	-76457	-0.41	0.18	0.00
	Max	1848616	123.00	200450	1.49	0.38	0.47
Niger Insurance Plc	Mean	274021	78.78	-35683	0.03	0.24	0.02
	STD	826241	25.05	311675	0.32	0.03	0.02
	Min	-2253299	25.00	-1216006	-0.85	0.19	0.00
	Max	2307032	102.00	288822	0.85	0.29	0.07

Prestige Assurance Plc	Mean	255537	90.83	48282	0.09	0.23	0.29
	STD	262820	30.42	74035	0.24	0.05	0.16
	Min	-137003	52.00	-1531	-0.40	0.13	0.10
	Max	711649	159.00	256579	0.55	0.30	0.64
Regency Alliance Ins. Plc	Mean	180296	129.67	584291	0.17	0.25	-0.02
	STD	168511	20.33	3181977	0.34	0.04	0.14
	Min	-66752	100.00	-1839025	-0.48	0.19	-0.43
	Max	470594	168.00	13178300	0.84	0.31	0.16
Royal Exchange Plc	Mean	105642	84.28	80554	0.02	0.27	0.12
	STD	340105	43.50	214394	0.09	0.04	0.10
	Min	-932832	41.00	-35385	-0.13	0.21	0.02
	Max	647142	205.00	920042	0.23	0.36	0.49
Staco Insuranc Plc	Mean	36486	128.94	4830176	0.20	0.29	0.58
	STD	610274	20.81	15213889	0.28	0.04	1.17
	Min	-1888598	100.00	-7036833	-0.33	0.21	0.05
	Max	757982	200.00	61957325	1.06	0.36	5.05
Standard Alliance Ins. Plc	Mean	-742332	124.11	1216410	0.16	0.27	0.09
	STD	2494088	25.76	17411725	0.29	0.04	0.06
	Min	-8715999	90.00	-57432300	-0.42	0.21	0.01
	Max	810238	213.00	34289167	0.74	0.34	0.20
Unic Insurance Plc	Mean	-23247	76.22	-11803	0.00	0.25	0.02
	STD	434613	19.33	39754	0.14	0.04	0.03
	Min	-1083120	43.00	-116954	-0.16	0.19	0.00
	Max	942945	116.00	22453	0.40	0.30	0.10
Universal Ins Plc	Mean	-116857	123.11	8882426	-0.01	0.29	0.00
	STD	533775	12.58	45664230	0.30	0.03	0.00
	Min	-2070669	98.00	-58589100	-0.80	0.23	0.00
	Max	303955	139.00	181779300	0.49	0.33	0.01
WAPIC Insurance Plc	Mean	191206	140.89	6306512	0.02	0.30	0.05
	STD	293322	30.82	13324154	0.11	0.04	0.03
	Min	-395824	89.00	-11632418	-0.26	0.22	0.01
	Max	793993	207.00	42265525	0.12	0.36	0.13

Source: SPSS, 20

Dependent Variable: PAT
Method: Panel Least Squares
Date: 09/20/18   Time: 11:22
Sample: 1999 2016
Periods included: 18
Cross-sections included: 20
Total panel balanced observations: 354

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-11018923	7643149.	-1.441673	0.1503
CCC	137763.6	56881.78	2.421928	0.0159
PRR	0.000545	0.005602	0.097262	0.9226
OCFR	17496.28	7270.855	2.406358	0.0166
LR	-500202.1	2206388.	-0.226706	0.8208
RRR	-2898450.	4831501.	-0.599907	0.5490

R-squared	0.303108	Mean dependent var	6581869.
Adjusted R-squared	0.163806	S.D. dependent var	45950278
S.E. of regression	45572261	Akaike info criterion	38.12430
Sum squared resid	7.23E+17	Schwarz criterion	38.18988
Log likelihood	-6742.001	Hannan-Quinn criter.	38.15039
F-statistic	2.706097	Durbin-Watson stat	0.991716
Prob(F-statistic)	0.050355		

Series: Standardized Residuals
Sample 1999 2016
Observations 354

Mean	-1.47e-09
Median	-5346854.
Maximum	5.05e+08
Minimum	-2.22e+08
Std. Dev.	45248360
Skewness	6.589865
Kurtosis	63.92617
Jarque-Bera	57314.13
Probability	0.000000

Dependent Variable: PAT
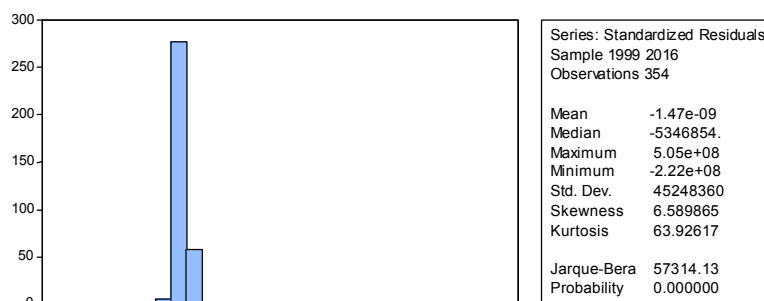Method: Panel Least Squares
Date: 09/20/18 Time: 11:28
Sample: 1999 2016
Periods included: 18
Cross-sections included: 20
Total panel balanced observations: 361

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5024410.	7652624.	-0.656560	0.5119
CCC	115406.0	57798.68	1.996690	0.0467
PRR	-0.000278	0.004262	-0.065256	0.9480
OCFR	-60779.92	7096.513	-8.564759	0.0000
LR	-157444.6	1676774.	-0.093897	0.9252
RRR	695176.3	4015748.	0.173113	0.8627

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.498426	Mean dependent var	6581869.
Adjusted R-squared	0.461837	S.D. dependent var	45950278
S.E. of regression	33708947	Akaike info criterion	37.57243
Sum squared resid	3.74E+17	Schwarz criterion	37.84568
Log likelihood	-6625.320	Hannan-Quinn criter.	37.68115
F-statistic	13.62228	Durbin-Watson stat	2.000593
Prob(F-statistic)	0.000000		

Series: Standardized Residuals
Sample 1999 2016
Observations 354

Mean	2.10e-11
Median	278710.8
Maximum	3.49e+08
Minimum	-3.84e+08
Std. Dev.	32542865
Skewness	-0.706820
Kurtosis	97.09721
Jarque-Bera	130630.2
Probability	0.000000

Dependent Variable: PAT
Method: Panel EGLS (Cross-section random effects)
Date: 09/20/18 Time: 11:31
Sample: 1999 2016
Periods included: 18
Cross-sections included: 20
Total panel balanced observations: 361
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-11018923	5653494.	-1.949047	0.0521
CCC	137763.6	42074.39	3.274287	0.0012
PRR	0.000545	0.004144	0.131491	0.8955
OCFR	17496.28	5378.115	3.253237	0.0013
LR	-500202.1	1632024.	-0.306492	0.7594
RRR	-2898450.	3573771.	-0.811034	0.4179

	Effects Specification	S.D.	Rho
Cross-section random		0.000000	0.0000
Idiosyncratic random		33708947	1.0000

	Weighted Statistics		
R-squared	0.300318	Mean dependent var	6581869.
Adjusted R-squared	0.163806	S.D. dependent var	45950278
S.E. of regression	45572261	Sum squared resid	7.23E+17
F-statistic	2.760907	Durbin-Watson stat	0.991716
Prob(F-statistic)	0.056355		
	Unweighted Statistics		
R-squared	0.030318	Mean dependent var	6581869.
Sum squared resid	7.23E+17	Durbin-Watson stat	0.991716

Series: Standardized Residuals
Sample 1999 2016
Observations 354

Mean	-1.47e-09
Median	-5346854.
Maximum	5.05e+08
Minimum	-2.22e+08
Std. Dev.	45248360
Skewness	6.589865
Kurtosis	63.92617
Jarque-Bera	57314.13
Probability	0.000000

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	307.018080	5	0.0000

** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CCC	115406.049644	137763.609971	1570432748.981178	0.5726
PRR	-0.000278	0.000545	0.000001	0.4101
OCFR	-60779.921853	17496.281471	21436367.637910	0.0000
LR	-157444.604674	-500202.133516	148068023931.87597	0.3731
RRR	695176.321714	-2898449.895085	3354394963955.6213	0.0497

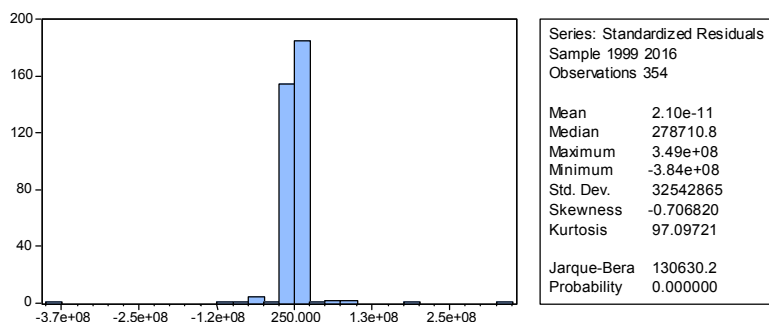Cross-section random effects test equation:
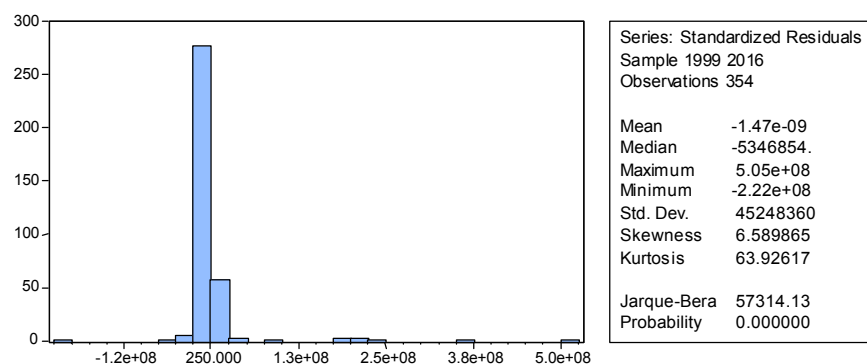Dependent Variable: PAT
Method: Panel Least Squares
Date: 09/20/18 Time: 11:38
Sample: 1999 2016
Periods included: 18
Cross-sections included: 20
Total panel balanced observations: 361

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5024410.	7652624.	-0.656560	0.5119
CCC	115406.0	57798.68	1.996690	0.0467
PRR	-0.000278	0.004262	-0.065256	0.9480
OCFR	-60779.92	7096.513	-8.564759	0.0000
LR	-157444.6	1676774.	-0.093897	0.9252
RRR	695176.3	4015748.	0.173113	0.8627
	Effects Specification		

Cross-section fixed (dummy variables)

R-squared	0.498426	Mean dependent var	6581869.
Adjusted R-squared	0.461837	S.D. dependent var	45950278
S.E. of regression	33708947	Akaike info criterion	37.57243
Sum squared resid	3.74E+17	Schwarz criterion	37.84568
Log likelihood	-6625.320	Hannan-Quinn criter.	37.68115
F-statistic	13.62228	Durbin-Watson stat	2.000593
Prob(F-statistic)	0.000000		

Dependent Variable: LIQUIDITY
Method: Panel Least Squares
Date: 09/20/18 Time: 11:46
Sample: 1999 2016
Periods included: 18
Cross-sections included: 20
Total panel balanced observations: 361

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.557443	0.018748	29.73384	0.0000
CCC	0.000552	0.000140	3.954552	0.0001
PRR	-1.18E-11	1.37E-11	-0.861225	0.3897
OCFR	4.90E-05	1.78E-05	2.746086	0.0063
LR	-0.005646	0.005412	-1.043277	0.2975
RRR	-0.002966	0.011851	-0.250275	0.8025
R-squared	0.607048	Mean dependent var		0.627345
Adjusted R-squared	0.470253	S.D. dependent var		0.114522
S.E. of regression	0.111784	Akaike info criterion		-1.527700
Sum squared resid	4.348458	Schwarz criterion		-1.462119
Log likelihood	276.4029	Hannan-Quinn criter.		-1.501607
F-statistic	4.501526	Durbin-Watson stat		0.648544
Prob(F-statistic)	0.000546			

Series: Standardized Residuals
Sample 1999 2016
Observations 354

Mean	-4.00e-17
Median	0.000668
Maximum	0.358931
Minimum	-0.391896
Std. Dev.	0.110989
Skewness	-0.107759
Kurtosis	4.557188
Jarque-Bera	36.45141
Probability	0.000000

Dependent Variable: LIQUIDITY
Method: Panel Least Squares
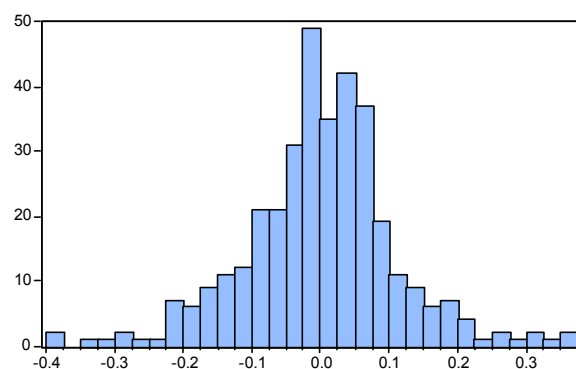Date: 09/20/18 Time: 11:48
Sample: 1999 2016
Periods included: 18
Cross-sections included: 20
Total panel balanced observations: 361

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.595942	0.022164	26.88725	0.0000
CCC	0.000255	0.000167	1.524075	0.1285
PRR	-1.79E-11	1.23E-11	-1.447529	0.1487
OCFR	2.91E-05	2.06E-05	1.415544	0.1579
LR	-0.004955	0.004856	-1.020242	0.3084
RRR	-0.005599	0.011631	-0.481364	0.6306
	Effects Specification			

Cross-section fixed (dummy variables)

R-squared	0.732628	Mean dependent var		0.627345
Adjusted R-squared	0.730215	S.D. dependent var		0.114522
S.E. of regression	0.097632	Akaike info criterion		-1.747218
Sum squared resid	3.136033	Schwarz criterion		-1.473963
Log likelihood	334.2576	Hannan-Quinn criter.		-1.638499
F-statistic	6.529183	Durbin-Watson stat		0.866361
Prob(F-statistic)	0.000000			

Series: Standardized Residuals		
Sample 1999 2016		
Observations 354		
Mean		-3.76e-18
Median		0.002505
Maximum		0.277939
Minimum		-0.310484
Std. Dev.		0.094255
Skewness		-0.085620
Kurtosis		3.779796
Jarque-Bera		9.401728
Probability		0.009087
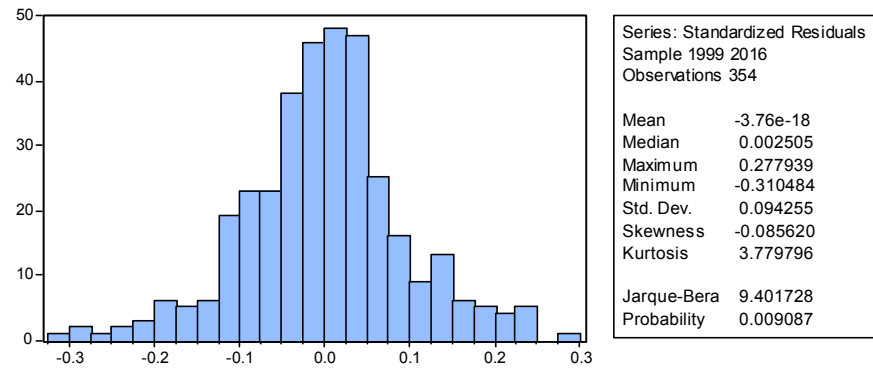
Dependent Variable: LIQUIDITY

Method: Panel EGLS (Cross-section random effects)

Date: 09/20/18 Time: 11:50

Sample: 1999 2016
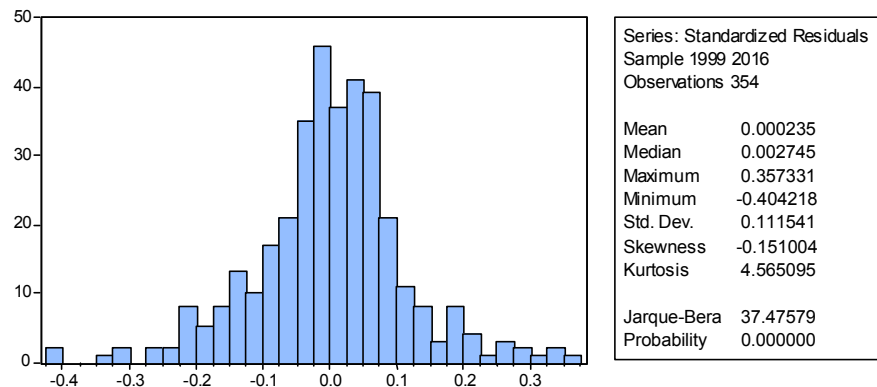
Periods included: 18

Cross-sections included: 20

Total panel balanced observations: 361

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.587229	0.025063	23.42988	0.0000
CCC	0.000320	0.000159	2.018669	0.0443
PRR	-1.72E-11	1.23E-11	-1.400149	0.1624
OCFR	3.36E-05	1.97E-05	1.706363	0.0888
LR	-0.005043	0.004840	-1.041876	0.2982
RRR	-0.004936	0.011440	-0.431454	0.6664

	Effects Specification		S.D.	Rho
Cross-section random			0.061532	0.2843
Idiosyncratic random			0.097632	0.7157

	Weighted Statistics			
R-squared	0.204965	Mean dependent var		0.221163
Adjusted R-squared	0.100955	S.D. dependent var		0.097826
S.E. of regression	0.097258	Sum squared resid		3.291794
F-statistic	1.782018	Durbin-Watson stat		0.830979
Prob(F-statistic)	0.115799			

	Unweighted Statistics			
R-squared	0.051375	Mean dependent var		0.627345
Sum squared resid	4.391853	Durbin-Watson stat		0.622837

Series: Standardized Residuals		
Sample 1999 2016		
Observations 354		
Mean		0.000235
Median		0.002745
Maximum		0.357331
Minimum		-0.404218
Std. Dev.		0.111541
Skewness		-0.151004
Kurtosis		4.565095
Jarque-Bera		37.47579
Probability		0.000000

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.576343	5	0.7650

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CCC	0.000255	0.000320	0.000000	0.2276
PRR	-0.000000	-0.000000	0.000000	0.5390
OCFR	0.000029	0.000034	0.000000	0.4567
LR	-0.004955	-0.005043	0.000000	0.8271
RRR	-0.005599	-0.004936	0.000004	0.7522

Cross-section random effects test equation:
Dependent Variable: LIQUIDITY
Method: Panel Least Squares
Date: 09/20/18 Time: 11:51
Sample: 1999 2016
Periods included: 18
Cross-sections included: 20
Total panel balanced observations: 361

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.595942	0.022164	26.88725	0.0000
CCC	0.000255	0.000167	1.524075	0.1285
PRR	-1.79E-11	1.23E-11	-1.447529	0.1487
OCFR	2.91E-05	2.06E-05	1.415544	0.1579
LR	-0.004955	0.004856	-1.020242	0.3084
RRR	-0.005599	0.011631	-0.481364	0.6306
	Effects Specification			

Cross-section fixed (dummy variables)

R-squared	0.322628	Mean dependent var		0.627345
Adjusted R-squared	0.273215	S.D. dependent var		0.114522
S.E. of regression	0.097632	Akaike info criterion		-1.747218
Sum squared resid	3.136033	Schwarz criterion		-1.473963
Log likelihood	334.2576	Hannan-Quinn criter.		-1.638499
F-statistic	6.529183	Durbin-Watson stat		0.866361
Prob(F-statistic)	0.000000			

Dependent Variable: RR
Method: Panel Least Squares
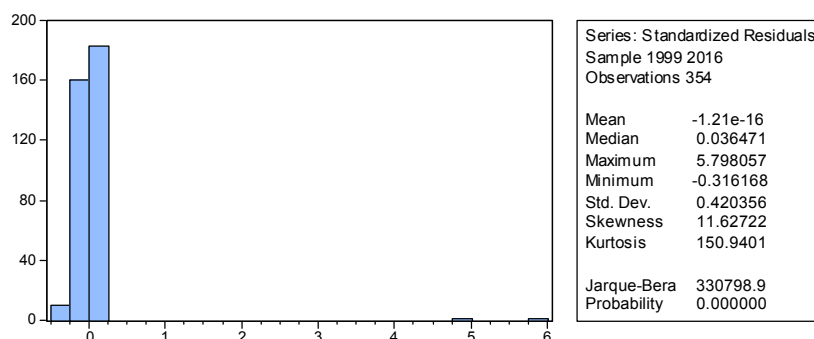Date: 09/20/18 Time: 13:38
Sample: 1999 2016
Periods included: 18
Cross-sections included: 20
Total panel balanced observations: 361

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000514	0.071005	0.007238	0.9942
CCC	-0.000660	0.000528	-1.249390	0.2124
PRR	2.24E-11	5.20E-11	0.430252	0.6673
OCFR	-9.24E-05	6.75E-05	-1.367715	0.1723
LR	1.003393	0.020497	48.95249	0.0000
RRR	0.016891	0.044885	0.376327	0.7069
R-squared	0.873480	Mean dependent var		0.261638
Adjusted R-squared	0.871662	S.D. dependent var		1.181782
S.E. of regression	0.423365	Akaike info criterion		1.135640
Sum squared resid	62.37479	Schwarz criterion		1.201221
Log likelihood	-195.0082	Hannan-Quinn criter.		1.161732
F-statistic	480.5100	Durbin-Watson stat		2.066452
Prob(F-statistic)	0.000000			

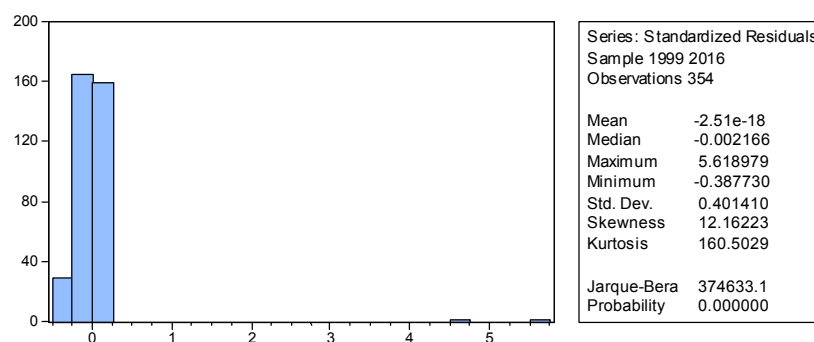| Series: Standardized Residuals	
Sample 1999 2016	
Observations 354	
Mean	-1.21e-16
Median	0.036471
Maximum	5.798057
Minimum	-0.316168
Std. Dev.	0.420356
Skewness	11.62722
Kurtosis	150.9401
Jarque-Bera	330798.9
Probability	0.000000

Dependent Variable: RR
Method: Panel Least Squares
Date: 09/20/18 Time: 13:40
Sample: 1999 2016
Periods included: 18
Cross-sections included: 20
Total panel balanced observations: 361

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002860	0.094394	-0.030294	0.9759
CCC	-0.000645	0.000713	-0.904641	0.3663
PRR	-6.73E-13	5.26E-11	-0.012800	0.9898
OCFR	-2.52E-05	8.75E-05	-0.287523	0.7739
LR	0.999702	0.020683	48.33523	0.0000
RRR	0.010102	0.049533	0.203941	0.8385
	Effects Specification			

Cross-section fixed (dummy variables)

R-squared	0.884628	Mean dependent var	0.261638
Adjusted R-squared	0.876212	S.D. dependent var	1.181782
S.E. of regression	0.415793	Akaike info criterion	1.150746
Sum squared resid	56.87884	Schwarz criterion	1.424002
Log likelihood	-178.6821	Hannan-Quinn criter.	1.259466
F-statistic	105.1100	Durbin-Watson stat	2.263261
Prob(F-statistic)	0.000000		

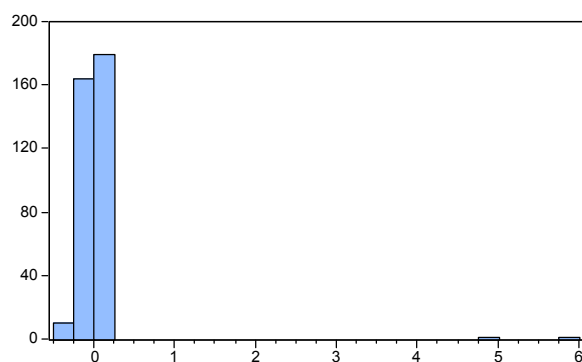| Series: Standardized Residuals	
Sample 1999 2016	
Observations 354	
Mean	-2.51e-18
Median	-0.002166
Maximum	5.618979
Minimum	-0.387730
Std. Dev.	0.401410
Skewness	12.16223
Kurtosis	160.5029
Jarque-Bera	374633.1
Probability	0.000000

Dependent Variable: RR
Method: Panel EGLS (Cross-section random effects)
Date: 09/20/18 Time: 13:41
Sample: 1999 2016
Periods included: 18
Cross-sections included: 20
Total panel balanced observations: 361
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002074	0.080588	-0.025735	0.9795
CCC	-0.000649	0.000585	-1.108484	0.2684
PRR	1.18E-11	5.18E-11	0.228806	0.8192
OCFR	-6.92E-05	7.40E-05	-0.934933	0.3505
LR	1.001747	0.020382	49.14902	0.0000
RRR	0.014684	0.046342	0.316854	0.7515

Effects Specification			S.D.	Rho
Cross-section random			0.091819	0.0465
Idiosyncratic random			0.415793	0.9535
Weighted Statistics				
R-squared	0.874774	Mean dependent var		0.191176
Adjusted R-squared	0.872975	S.D. dependent var		1.163739
S.E. of regression	0.414787	Sum squared resid		59.87274
F-statistic	486.1941	Durbin-Watson stat		2.151105
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.873419	Mean dependent var		0.261638
Sum squared resid	62.40460	Durbin-Watson stat		2.063831

Series: Standardized Residuals
Sample 1999 2016
Observations 354

Mean	0.000668
Median	0.041342
Maximum	5.800338
Minimum	-0.314371
Std. Dev.	0.420456
Skewness	11.63105
Kurtosis	150.9922
Jarque-Bera	331031.6
Probability	0.000000

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	3.314858	5	0.6516

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
CCC	-0.000645	-0.000649	0.000000	0.9930
PRR	-0.000000	0.000000	0.000000	0.1721
OCFR	-0.000025	-0.000069	0.000000	0.3455
LR	0.999702	1.001747	0.000012	0.5606
RRR	0.010102	0.014684	0.000306	0.7934

Cross-section random effects test equation:
Dependent Variable: RR
Method: Panel Least Squares
Date: 09/20/18   Time: 13:42
Sample: 1999 2016
Periods included: 18
Cross-sections included: 20
Total panel balanced observations: 361

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002860	0.094394	-0.030294	0.9759
CCC	-0.000645	0.000713	-0.904641	0.3663
PRR	-6.73E-13	5.26E-11	-0.012800	0.9898
OCFR	-2.52E-05	8.75E-05	-0.287523	0.7739
LR	0.999702	0.020683	48.33523	0.0000
RRR	0.010102	0.049533	0.203941	0.8385
Effects Specification				

Cross-section fixed (dummy variables)

R-squared	0.884628	Mean dependent var		0.261638
Adjusted R-squared	0.876212	S.D. dependent var		1.181782
S.E. of regression	0.415793	Akaike info criterion		1.150746
Sum squared resid	56.87884	Schwarz criterion		1.424002
Log likelihood	-178.6821	Hannan-Quinn criter.		1.259466
F-statistic	105.1100	Durbin-Watson stat		2.263261
Prob(F-statistic)	0.000000			