

Research Article

Determinants of Cash Holdings: Evidence from Listed Pharmaceutical Companies in Nigeria

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Abstract:

This study assessed the determinants of cash holdings of quoted pharmaceutical firms in Nigeria from 2014-2022. Three hypotheses were formulated in line with the objectives of the study. Ex-post facto research design and panel data were adopted and the data for the study were obtained from fact books, annual reports and account of the quoted pharmaceutical firms under study. Pearson coefficient of correlation and Panel least square regression were applied for the test of the three hypotheses formulated with aid of E-View 9.0 statistical software. Findings showed that market-to-book value ratio, investment in non-current assets and cash flow have a significant but negative significant relationship with cash holding (proxied by cash and cash equivalent) at 5% significant level. Based on these findings, the study recommended among others that pharmaceutical firms should adopt cash management practices since cash reduces the burden to perform well and allows managers to invest in projects that best suit their own interests.

Keywords: Market-to-Book Value Ratio, Investment in Non-Current Assets, Cash Flow, Cash Ratio

Background to the study

Cash holding is defined as cash in hand or readily available for investment in physical assets and to distribute to investors (Ezechukwu & Amahalu, 2020). Corporations hold a certain amount of liquid balance, for various motives such as precautionary, speculative, and transactional. Transaction motive refers to cash which is held for everyday transactions to pay for goods or services; that is, cash is held for day-to-day operations to make routine payments. Precautionary motive refers to cash held for safety reasons; that is, cash balance is held in reserve for unforeseen fluctuations. From speculation motive point of view, corporations hold cash balance to take advantages of any bargain purchases that may arise. Tradeoff theory, pecking order theory, and free cash flow theory usually explain the pattern of cash holdings. Firms, according to tradeoff theory, set their optimal level of cash holdings by weighing the marginal costs and marginal benefits of holding cash (Amahalu & Ezechukwu, 2017). The main cost of holding cash is the opportunity cost of the capital invested in liquid assets. The pecking order theory suggests that the firms should finance investments first with retained earnings, then with safe debt and risky debt, and finally with equity to minimize asymmetric information costs and other financing costs. If retained earnings are insufficient to finance investments then firms use cash holdings and if required issue debt.

The board of directors and the CEO are responsible for formulating cash management, corporate governance, and all other policies in the organization. Thus, board size and the CEO duality play an important role in the organization and can lead to higher cash balances. The higher cash balances can lead to an agency problem because the board of directors and the CEO may not work in the favor of the shareholders to maximize their wealth. Eneh, Okegbe and Amahalu (2019) emphasizes that firm should maintain optimum cash holding. How to determine the optimum cash holding is a major concern for financial managers globally. Effort has been on to identify what are the determinants of cash holding bearing in mind the firm's characteristics such as size, growth opportunities, leverages, cash flow, dividend payout, Net working capital among others. Hence, this study examines the factors that determine corporate cash holding on Pharmaceutical Companies listed in Nigeria.

Statement of the Problem

Under the pressure of weak equity markets, rising financing costs, liquidity problems in all industries, and record-high volatility in all markets, many companies proceed to rethink the way a firm's capital structure is managed. Regardless of a firm's profitability, in times of increasing liquidity problems, cash management and optimal financial policy-making are critical to a firm's success and, sometimes, survival. The elements of a financial policy must be well aligned with each other and their impact must be fully understood in order to comprehend the mechanisms of a firm's key figures and the environment within which the company performs (Okudo & Amahalu, 2023). Practitioners tend to make their decisions based on target credit ratings and other factors,

albeit with modest consideration to financial theory.

The literature on corporate cash holdings has only been developed in recent years and the complete picture of the determinants on cash holdings is yet to be found. The studies of Okudo, Mbonu & Amahalu (2022); Mbonu and Amahalu (2021); Suryadi, Endri and Yasid (2021); Aziz, Marwat, Zeeshan, Paracha and Al-Haddad (2021); Khan, Lulu, Khan and Meyer (2020); Okegbe, Eneh and Amahalu. (2019) provide interesting hypotheses that can be further built upon. However, it seems as though more empirical evidence has to be found in order to reach a consensus on the issue. For instance, how are cash holdings determined in Pharmaceutical firms in Nigeria? Could cash holdings be determined using surrogates, like market-to-book ratio, Investment in non-current asset, cash flow, Networking capital, firm size, return on assets among others? Are there systematic differences in the determinants between markets and, if so, how might these differences be explained? The current study aims to fill these gaps by identifying the determinants of cash holdings in quoted Pharmaceutical firms in Nigeria using the above-mentioned variables for a nine (9) year period spanning from 2014-2022. .

Objectives of the Study

The main objective of the study is to ascertain the determinants of cash holdings in pharmaceutical companies listed on NSE.

The specific objectives are;

- a. To determine the relationship that exists between market to book ratio and cash and cash equivalent of quoted pharmaceutical firms in Nigeria.
- b. To ascertain the association between Investments in non-current assets and cash and cash equivalent of quoted pharmaceutical firms in Nigeria.
- c. To determine the relationship between cash flow and cash and cash equivalent of quoted pharmaceutical firms in Nigeria.

Research Hypotheses

In line with the above research questions the following null hypotheses were formulated;

Ho₁: There is no significant relationship between market to book value ratio and cash and cash equivalent of quoted pharmaceutical firms in Nigeria.

Ho₂: There is no significant relationship between investment in non-current asset and cash and cash equivalent of quoted pharmaceutical firms in Nigeria.

Ho₃: There is no significant relationship between cash flow and cash and cash equivalent of quoted Pharmaceutical firms in Nigeria.

Conceptual Review

Market to Book Value (M/B)

The market-to-book ratio is measured as the book value of assets, less the book value of equity, plus the market value of equity, divided by assets. As proxy for investment opportunity the market-to-book ratio was employed. The market-to-book ratio is measured as the book value of assets – the book value of equity + the market value of equity divided by the book value of assets. Since growth options as intangible assets are not reflected on the balance sheet, the market value of equity is used as an indicator for growth options (Amahalu, Ezechukwu, Egolum & Obi, 2018).

Investment in Non-current asset

Non-current assets are company long-term investments where the full value will not be realized within the accounting year. Examples of noncurrent assets include investments in other companies, intangible assets such as goodwill, brand recognition and intellectual property, and property, plant and equipment (Tom-West, Okoye & Amahalu, 2021).

Cash flow

Cash flow is an index of the money that is actually received by or paid out by a firm for certain time period. This index is not inclusive of non-cash accounting charges such as depreciation. Cash represents the firm's vascular system, if it dwindles, the business will not survive (Okudo, Amahalu & Oshiole, 2023). The fact that a firm is profitable does not mean that it is also solvent. The profit is not cash. The solvency, flexibility and the financial performance of the firm are set on the firm's ability to generate positive cash flows from the operating, investing and financing activities (Okoye, Amahalu, Nweze & Obi, 2016). Cash flows represent all inputs and outputs liquidities and cash equivalents. Liquidities represent cash on hand and demand deposits. Cash equivalents are short-term investments with a liquidity degree that can be easily converted into cash with an insignificant risk of value change.

Cash Holdings

Cash holding is the money that a person or company keeps available to spend rather than investing. It is also seen as the assets that

a company or person holds in ready cash, as opposed to property, shares, bonds. It is empirically shown that the probability of financial distress increases *ceteris paribus* with the level of growth opportunities due to the intangible and uncertain nature of future growth (Amahalu & Okudo, 2023). Moreover, cash holdings can also be described as dry powder, i.e. growth capital for future expansion and prospects. Hence, the marginal benefit of cash holdings and the related financial flexibility, that is, the marginal costs of liquidity shortage, increases alongside a firm's growth opportunities. In times of cash shortage, a firm with strong profitable investment opportunities would have to give up higher valued projects than others. In other words, a suboptimal capital structure can lead to suboptimal investment strategies that do not maximize firm value but instead only benefit particular stakeholders. Holding cash for these reasons is generally referred to as precautionary motives (Amahalu, Okoye, Obi & Iliemena, 2019).

Cash and Cash Equivalents

The term cash and cash equivalents includes: currency, coins, cheques received but not yet deposited, checking accounts, petty cash, savings accounts, money market accounts, and short-term, highly liquid investments with a maturity of three months or less, such as treasury bills. Cash and cash equivalents (CCE) are the most liquid current assets found on a business's balance sheet (Amahalu, Egolum, Nweze & Obi, 2018).. Cash equivalents are short-term commitments with temporarily idle cash and easily convertible into a known cash amount. An investment normally counts to be a cash equivalent when it has a short maturity period of 90 days or even less (if maturity period is more than 90 days (e.g., 100 days), then it will not be considered as cash and cash equivalents) from date of acquisition and when it carries an insignificant risk of changes in value (Okudo, Ezechukwu & Amahalu, 2022).

Market to book value and cash holdings

Firms want to avoid situations where the agency costs of debt are so high that they cannot raise funds to finance their activities and invest in valuable projects. Obviously, one way to do so is to choose a low level of leverage (Ogbodo Amahalu, & Abiahu, 2017). However, one would expect firms with valuable investment opportunities, for which the cost of raising additional outside funds is high, or even prohibitive, to hold more liquid assets, since the cost of being short of funds is higher (Okudo, Amahalu, Obi & Okafor, 2022). The market-to-book ratio is often used as a proxy for investment opportunities.

Cash flow and Cash holdings

The principle benefit of holding cash is the following: it enables firms to undertake their profitable investments projects without raising outside funds at high transaction costs. It also makes it possible for firms to reduce their cash flow uncertainty. In addition, firms which pay dividends may have to reduce or cut their dividends when having a cash shortage (Amahalu, & Obi, 2020). Thus, holding large amount of cash enables them to avoid such situations. The existence of such benefits should make cash holdings valuable to shareholders. Thus, one could expect a positive relationship between cash holdings and firm market value measured by its Tobin's Q (Mbonu & Amahalu, 2021).

Theoretical Review

The Trade- Off Theory

The trade-off theory originates from Modigliani/Miller (1963) who extends their original model by including taxes. In its basic form, the theory compares the benefits of tax-deductibility to the danger of bankruptcy and determines the optimal level of corporate debt. When applied in cash holding research, the trade-off theory regards the costs and benefits of holding cash and assumes that firms have a specific, optimal, target level of cash (Amahalu, & Obi, 2020).

Empirical Review

Sulaman (2016) explored the determinants of corporate cash holdings of non financial firms among diverse firm sizes and diverse industries in Pakistan. For analyses she used a sample of 50 Public Limited companies listed at Karachi Stock Exchange over the period of 2012-2014. The study applied descriptive statistics, co relational and multiple regression line. On behalf of multiple regressions she concluded that firm size, board size, net working capital and investment significantly affect the corporate cash holdings. Debt structure, leverage and return on asset are non-significant and have negative association with cash holdings.

Mohsin and Muhammad, (2015) investigated the determinants of corporate cash holdings. Cash flows, leverage, liquidity, cash flows volatility, profitability, growth opportunities, firm size, debt maturity and dividend represent the independent variables in the research study. It is based on a panel data of 150 Pakistani non-financial listed firms on KSE during the time period 2004-2012. The results imply that growth opportunity, company size, cash flows and profitability of the firms exert a positive effect, while leverage and liquidity show a significant negative impact on corporate cash holding. This study find out that both pecking order theory and trade-off theory play an important role in explaining the determinants of corporate cash holdings.

Maximilian (2015) examined the firm specific determinants of cash holdings for a sample of 270 German listed firms over the

period from 2005 to 2013. The study tested the predictions for the various firm-specific determinants, which are suggested by three theoretical models: the trade-off model, the pecking order theory and the free cash flow theory. The study found that firm size, leverage, bank debt and liquid assets have significant negative influences on cash holdings. Moreover, the variable investment opportunity turns out to be positively related with cash holdings. Hence, it can be concluded that the trade-off model prevails in explaining most of the variation in cash holdings among German listed firms. The pecking order theory receives reasonable support as well, while there is only weak support for the free cash flow theory. Besides, she found that the overall effect of the firm-specific determinants, and particularly the effect of leverage, decline during the period after the global financial crisis (2009-2013). This may be attributed to the creditors' increased prudence and the tightening of their credit policy, following the financial crisis.

Methodology

Research Design

This study employed the use of Ex-Post Facto research design.

Population of the Study

The population of the study comprised of the seven (7) pharmaceutical companies quoted on the floor of the Nigerian Exchange Group (NGX) as at 31st December 2022. These are: Fidson Healthcare Plc, GlaxoSmithKline Consumer Nigeria Plc, May & Baker Nigeria Plc, Morison Industries Plc, Neimeth International Pharmaceuticals Plc, Pharma-Deko Plc, PZ Cussons Nigeria Plc.

Sample Size and Sampling Method

The seven (7) quoted pharmaceutical firms represent the sample size for this study. Purposive sampling method was employed for this study.

Sources of Data

This study utilised secondary data as the main source of information and were sourced from fact books and annual report and accounts of the selected companies from 2014-2022.

Table 1 Variable Description/Operationalisation of Variables

| Variables (code) | Proxies (operational definitions) |
|---|--|
| Dependent Variables | |
| Cash and cash equivalents (CCE) | Cash + Cash Equivalents/Current Liabilities |
| Independent Variable | |
| Market-to-book (M/B) ratio | Book value of assets - Book Value of Equity + Market value of Equity)/ Book Value of assets. |
| Investment in Non-current assets ratio (INCA) | Capital expenditure (CAPEX)/ Net Asset |
| Cash flow (CF) | [(profit after tax plus depreciation)/(total asset-cash and cash equivalent)] |
| Control Variables | |
| Net Working Capital (NWC) | total current asset – total current liabilities |
| Current Ratio (CR) | Current Assets/Current Liabilities |

Model Specification

In the course of this study, the following models were specified:

$$CCE_{it} = \beta_0 + \beta_1MB_{it} + \beta_2INCA_{it} + \beta_3CF_{it} + \beta_4NWC_{it} + \beta_5CR_{it} + \epsilon_{it} - \text{equ (i)}$$

Where:

- β_0 = Constant term (intercepts)
- $\beta_1, \beta_2, \beta_3,$ = Coefficients of the parameter estimates
- ϵ_{it} = Error term/Stochastic term
- MB_{it} = Market-to-Book ratio for firm i in period t
- $INCA_{it}$ = Investment in non-current assets for firm i in period t
- CF_{it} = Cash flow for firm i in period t
- CCE_{it} = Cash and cash equivalent for firm i in period t
- NWC_{it} = Net Working Capital for firm i in period t
- CR_{it} = Current Ratio for firm i in period t

Table 2 Pearson Coefficient Correlation Matrix

| | CCE | MB | INCA | CF | NWC | CR |
|------|---------|---------|---------|---------|---------|--------|
| CCE | 1.0000 | | | | | |
| MB | -0.5092 | 1.0000 | | | | |
| INCA | 0.4631 | -0.3961 | 1.0000 | | | |
| CF | -0.3753 | 0.2071 | -0.6050 | 1.0000 | | |
| NWC | 0.9697 | -0.4552 | 0.3133 | -0.1949 | 1.0000 | |
| CR | -0.3648 | -0.1291 | -0.4758 | 0.8802 | -0.1875 | 1.0000 |

Source: E-Views 9.0 correlation output, 2023

Interpretation

The Pearson Coefficient Correlation Matrix result revealed that CCE positively correlates with INCA (0.4631) and NWC (0.9697) but negatively correlates with MBV (-0.5092), CF (-0.3753) and CR (-0.3648).

Test of Hypotheses

Table 3: Panel Least Square regression analysis testing the relationship between MB, INCA, CF, NWC, CR and CCE

Dependent Variable: CCE

Method: Panel Least Squares

Date: 05/29/23 Time: 16:15

Sample: 2014 2022

Periods included: 9

Cross-sections included: 7

Total panel (balanced) observations: 63

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--------------------|-------------|-----------------------|-------------|----------|
| C | 0.638873 | 0.080675 | 7.919115 | 0.0000 |
| MB | -0.030668 | 0.015743 | -2.948032 | 0.0437 |
| INCA | -0.009539 | 0.032701 | -3.291691 | 0.0021 |
| CF | -0.004070 | 0.014628 | -3.278211 | 0.0030 |
| NWC | 0.177818 | 0.171812 | 1.034955 | 0.3045 |
| CR | -0.102403 | 0.091883 | -1.114492 | 0.2691 |
| R-squared | 0.591612 | Mean dependent var | | 0.527293 |
| Adjusted R-squared | 0.450322 | S.D. dependent var | | 0.259071 |
| S.E. of regression | 0.252468 | Akaike info criterion | | 0.140383 |
| Sum squared resid | 4.206856 | Schwarz criterion | | 0.268869 |
| Log likelihood | -0.913410 | Hannan-Quinn criter. | | 0.191419 |
| F-statistic | 14.18739 | Durbin-Watson stat | | 1.662926 |
| Prob(F-statistic) | 0.000000 | | | |

Source: E-Views Regression output, 2023

Interpretation of Regressed Result

The regressed coefficient correlation result in table 3 shows a negative relationship between MB ($\beta_1=-0.030668$), INCA ($\beta_2=-0.009539$), CF ($\beta_3=-0.004070$), CR ($\beta_5=-0.102403$) and CCE; a positive relationship between NWC ($\beta_4=0.177818$) and CCE. The slope coefficients show that the probability values are $P(x_1=0.0437<0.05)$; $P(x_2=0.0021<0.05)$; $P(x_3=0.0030<0.05)$ $P(x_4=0.3045>0.05)$ and $P(x_5=0.2691>0.05)$. This implies that CCE is negatively significant with MB, INCA and CF at 5%, however, positively non-significant with NWC and negatively non-significant with CR. The coefficient of determination (Adjusted R-squared) obtained was 0.45 (45%). The Adjusted R-Squared value shows that 45% of the systematic variations in the dependant variable can be jointly predicted by all the independent variables (MB, INCA, CF, NWC, CR) while 55% was

explained by unknown variables that were not included in the model. The overall significance of the model (Prob F-statistic = 0.000000) is statistically significant at 5%.

Considering the P-value of the regression test = 0.000000 which is less than the critical value at 0.05, hence, H_1 is preferred over H_0 . Thus, MB, INCA and CF have a negative and statistically significant relationship with CCE of pharmaceutical firms in Nigeria at 5% level of significance.

Findings, Conclusion and Recommendations

Findings

Based on the analysis of data, the following findings were made:

1. Market-to-Book ratio has a significant negative relationship with cash and cash equivalent of pharmaceutical firms in Nigeria at 5% level of significance.
2. Investment in non-current assets has a significant negative relationship with cash and cash equivalent of pharmaceutical firms in Nigeria at 5% level of significance.
3. Cash Flow has a significant negative relationship with cash and cash equivalent of pharmaceutical firms in Nigeria at 5% level of significance.

Conclusion

The study ascertained the determinants of cash holdings of quoted pharmaceutical firms for a seven year period covering from 2014 to 2022. This study used a sample of seven (7) quoted pharmaceutical firms to conduct the study with panel data during the period 2014-2022. The results obtained showed that there exist a negative but statistically significant relationship between market-to-book ratio, investment in non-current assets, cash flow and cash and cash equivalent of pharmaceutical firms at 5% level of significance.

Recommendations

In line with the findings and conclusions, the following recommendations were made:

1. In order to reverse the relationship that exist between market-to-book value and cash and cash equivalent, it is highly recommended for firms to have optimum cash holding reserves.
2. Since investment in non-current assets significantly relate with cash and cash equivalent, pharmaceutical firms should hold substantial amount of cash and cash equivalents for investment purposes.
3. Since cash flow significantly relate with cash and cash equivalent pharmaceutical firms should adopt cash management practices since cash reduces the burden to perform well and allows managers to invest in projects that best suit their own interests.

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