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DETERMINANTS OF CASH HOLDING IN NIGERIA PHARMACEUTICAL FIRMS

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ABSTRACT

This study examines the determinants of cash holding from a sample of six listed Nigeria Pharmaceutical Firms over the period of 2011 – 2014. The study used Regression analysis in the form of ordinary least square method to text the determinants of cash holding on Nigerian Pharmaceutical Firms. The study show that firm size and firm age has negative insignificant relation with cash holding but leverage and cash flows has positive non-significant relation with cash holdings. The results show that the variables determine the cash holdings in Nigeria Pharmaceutical Firm. This is ascertained as 97% of the variation in cash holding can be explained by the movement of firm size, firm age, leverage and cash flows. However we also find that Nigeria Pharmaceutical Firms increase their cash level when their activities are risky, increases cash flow when their levels are high and reduce cash when they are highly leveraged. Besides, the study shows that the negative effects of firm size and firm age is as a result of Transaction cost which is fixed, hence larger firms face economies of scale and thus hold less cash. The study therefore recommends that firms with less leverage should increase their internal fund, also growing companies should hold more cash especially when retained earnings are not sufficient, the mature companies should identify their optimal level of cash holding by balancing marginal cost and marginal benefit of holding cash and finally, the management should increase their assets and the power of investment to build up good cash flow.

Keywords: Cash Holding, Nigeria, Pharmaceutical Firms and 2011-2014.

INTRODUCTION

The aim of this study is to find the determinants of corporate cash holding in Nigeria pharmaceutical firm. Cash is an essential component on each company's financial position which receives much attention from company's investors and analysts. The credit crunch that started in late 2007 has had a massive and sustained impact on the way companies operate through the world. According to ventats, Tony, Heng and Xen (2011), [1], the companies with sufficient cash on hand may escape the need to tap into the increasingly costly and restrictive credit markets. So when talking about cash in line with this work, we ask questions on what are the reasons for a company to hold cash.

This question has been arousing the interest of scholars for decades and it is still a focal point of discussion in modern financial literature. This may be due to the controversial nature of the topic because in a world of perfect capital market, where capital would always be available to fund new projects, there would not exist any benefit related to holding cash. However, in the real world with financing frictions, information asymmetries and transaction cost, the story becomes more complicated. This leads to an investigation on the determinants of cash holding by companies.

Corporations hold a certain amount of liquid balance in the spirit of Keynesian postulations of the money demand for various motives such as precautionary motives, speculation motives and transactional motives [2]. Scholars employed three basic theoretical models that determine the pattern of holding cash, namely: The trade – off model, the pecking – order theory and the free cash flow theory. These theories cover the potential factors that may drive a firm's decision to hold more or less cash.

The majority of studies conducted so far in this particular domain are based on us firms [3, 4, 5, 6, 7 and 8]. In contrast, there is only a limited number

of papers available that focuses on the cash holdings of firm across countries [9, 10 and 11].

According to Ozkan and Ozkan (2004), [10], cash provides low cost financing for firms. Cash holding reduces the pressure to perform well and allows managers to invest in projects that best suit their own interests; but may not be in the shareholders best interest; [12], outline the benefits of cash holding as:

- Reduction in the likelihood of financial distress
- Allowing the pursuance of investment policy when financial constraints are met
- Minimization of the cost of raising external funds or liquidating existing assets.

On the other hand, Opler, Pinkowitz, Stulz and Williamson (1999), [8], affirms the level of cash a firm maintains is characterized by its policies regarding capital structure, working capital requirements, cash flow management, divided payments, investment and asset management

Statement of the Problem

Nigeria pharmaceutical firms utilize cash holding for smooth Operation. They plan for and manage inventories income, receivable and payable to ensure that requirement in these items are met. The little cash holding available in pharmaceutical firms is managed to avoid embarrassment.

According to Okafor, the problems, of intense competition, low capacity utilization, serious faking and adulteration of original brands and even low buying power of customers which causes few sales and high margin that leads to leverage making the industry to finance the majority of its assets by taking on debt; these have been giving the industry a reputation of low profitability and return on investment. He said this may not be the best of times for the pharmaceutical industry in the country as the sector is still

grappling with tough challenges that simply refuse to go away after many concerted efforts.

Odiri (2016), [13], explains that pharmaceutical industries are fast developing a reputation for low profitability in Nigeria and stakeholders are of the view that if this trend continues, the industry would be facing what they call pharmageddon. He explains that when a firm seeks to grow, there is no guarantee that it will be more profitable; to increase market share may require lower prices, which reduce profitability and if a firm seeks to grow in size by diversifying into related industries, it may lack the expertise to do well in these different industries. Couple with the present uncertainty in Nigeria economy, all these problems makes it possible for Nigeria pharmaceutical firms to hold cash. Hence, these studies intend to examine the relationship between cash holding and its determinants. It is on determinants as a result of these problems that the researcher carries out this study on determinants of cash holding in Nigeria of cash holding in Nigerian pharmaceutical firms.

Objective of the Study

The general objective of this study is to examine the factors that determine cash holding in Nigeria pharmaceutical firms, while the specific objectives include:

- To examine the effect of leverage on cash holding
- To ascertain the influence of firm size on cash holding
- To evaluate the impact of firm age on cash holding.
- To determine the extent to which cash flow affects the cash holding.

Research Questions

- What is the effect of leverage on cash holding?
- How does firm size affect cash holding?
- What impact does firm age have on cash holding?

- To what extent does cash flow affect cash holding?

Statement of Hypothesis

The following Null hypotheses are formulated for the study:

- Leverage has no significant effect on cash holding of Nigeria pharmaceutical firms.
- Firm size has no significant effect in affecting cash holding of Nigeria pharmaceutical firms.
- Firm age has no significant effect on cash holding of Nigeria pharmaceutical firms.
- Cash flow has no significant effect on cash holding of Nigeria Pharmaceutical firms.

METHODOLOGY

This study is an Ex-post factor design, base on annual report from Nigeria stock exchange.

Population

The study considered a total of 14 firms which were listed in NSE as at 2014 and selected six (6) that had complete financial statement for the period.

Method of Data Analysis

The data analysis employed is multiple regression.

Model Specification

Cash holding is a function of firm size, leverage, firm age and cash flow.

It is express as:

CCE= F (Firm size, leverage, firm age and cash flow)

$CCEt = B_o + B_1 fmSz + B_2 Lev + B_3 FmAg + B_4 Cf + Ct$

Where

CCE = Cash and cash equivalent

FmSz = Firm Size

Lev = leverage

FmAg = Firm Age

CF = Cash flow

Et = Error Term

DATA ANALYSIS, TEST OF HYPOTHESES AND DISCUSSION OF FINDINGS

Data analysis

At this point all the data collected are presented and analyzed. The purpose of the analysis is to obtain information with which to test for the validity of the hypotheses stated below in this study and achieve the objectives of the study.

Test of Hypothesis one

Ho_1: Leverage has no significant effect on cash holding

Ha_1: Leverage has significant effect on cash holding

Table 1: Regression Result on the impact of leverage on cash holding.

Dependent Variable: CASH_AND_CASH_EQUIVALENT

Method: Least Squares

Date: 05/20/16 Time: 12:13

Sample: 2011 2014

Included observations: 4

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1181348.	4044987.	0.292052	0.7978
LEVERAGE	903131.2	1162813.	0.776678	0.5186
R-squared	0.231723	Mean dependent var		4285387.

Adjusted R-squared	-0.152415	S.D. dependent var	1162634.
S.E. of regression	1248095.	Akaike info criterion	31.21899
Sum squared resid	3.12E+12	Schwarz criterion	30.91213
Log likelihood	-60.43797	Hannan-Quinn criter.	30.54562
F-statistic	0.603229	Durbin-Watson stat	1.661377
Prob(F-statistic)	0.518624		

Source: Author's Eviews Output, 2016.

Table 1 shows the result of the regression of the impact of leverage on cash and cash equivalent. As reviewed from the table leverage has positive but insignificant impact on cash and cash equivalent (coefficient of leverage = 903131.2, t value =0.776678, p value = 0.5186).

The coefficient of determination (R^2) is 23.2%, suggesting that there are other variables that influence cash and cash equivalent. These are supported by Sokpin and Onumah (2009), [14].

Decision rule for the four hypotheses

The decision criteria was stated below as follows: Reject the null hypothesis if Fcalculated values greater than Ftabulated value, Accept null hypotheses if Fcalculated is less than Ftabulated.

Fcal > Ftab value = Reject the null hypothesis

Ftab > Fcal value = Accept the null hypothesis

Ftabulated: Degree of Freedom

D.F = (n – 1)

n = number of years/observations

$\therefore D.F = (n - 1)$

= (4 – 1)

= 3

Level of significant is 5% = 0.05

To get Ftabulated, we go to Tabular Distribution Table in Year 3 at 5% and we have = 10.1

Decision taken on hypothesis one

Leverage: Fcal = 60.3229 > Ftab = 10.1. The Fcal is greater than the F tabulated; thus we reject the null hypothesis and accept the alternate hypotheses which state that leverage has significant effect on cash holding.

Test on Hypotheses two

Ho_2: Firm size has no significant effect in affecting cash holding

Ha_2: Firm size has significant effect in affecting cash holding

Table 2: Regression Result on the Influence of Firm Size on Cash Holding

Dependent Variable: CASH_AND_CASH_EQUIVALENT

Method: Least Squares

Date: 05/20/16 Time: 12:20

Sample: 2011 2014

Included observations: 4

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	108861	2894022	3.76161	0.0640

	88	.	1	
FIRM_SIZE	-0.133401	0.058000	-2.300014	0.1481
R-squared	0.725654	Mean dependent var		4285387.
Adjusted R-squared	0.588481	S.D. dependent var		1162634.
S.E. of regression	745826.9	Akaike info criterion		30.18923
Sum squared resid	1.11E+12	Schwarz criterion		29.88237
Log likelihood	-58.37845	Hannan-Quinn criter.		29.51586
F-statistic	5.290065	Durbin-Watson stat		2.044390
Prob(F-statistic)	0.148147			

Source: Author's Eviews Output, 2016.

Table 2 presents the result of firm size on cash and cash equivalent. As reviewed from the table firm size has negative and insignificant influence on cash and cash equivalent (coefficient of Firm Size = -0.133401, t value = -2.300014, p value = 0.1481). The coefficient of determination (R^2) is 72.6%.

This variation was properly adjusted by the adjusted R^2 to 58.8%. These suggest that firm size has negative influence on cash and cash equivalent. This is supported by Drobetz and Gruninger (2007), [15].

Decision taken for hypotheses two

Firm size: Fcal = 52.90065 > Ftab = 10.1. The Fcal is greater than the Ftab. Hence we reject the null hypotheses and accept the otherwise, which state that Firm size has significant effect in affecting cash holding.

Test on Hypotheses two

Ho_3: Firm age has no significant effect on cash holding

Ha_3: Firm age has significant effect on cash holding

Table 3: Regression Result on the Influence of Firm Age on Cash Holding

Dependent Variable: CASH_AND_CASH_EQUIVALENT				
Method: Least Squares				
Date: 05/20/16 Time: 12:24				
Sample: 2011 2014				
Included observations: 4				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	40579306	14561963	2.786665	0.1083
FIRM_AGE	-130553.7	52365.92	-2.493104	0.1302
R-squared	0.756560	Mean dependent var		4285387.
Adjusted R-squared	0.634840	S.D. dependent var		1162634.
S.E. of regression	702562.5	Akaike info criterion		30.06971
Sum squared resid	9.87E+11	Schwarz criterion		29.76286

Log likelihood	-58.13942	Hannan-Quinn criter.	29.39634
F-statistic	6.215566	Durbin-Watson stat	2.055909
Prob(F-statistic)	0.130196		

Source: Author's Eviews Output, 2016.

Table 3 depicts the result of the firm age on cash and cash equivalent. As studied from the table, firm age has a negative and insignificant impact on cash and cash equivalent (coefficient of Firm age = -130553.7, t value = -2.493104, p value = 0.1302). The coefficient of determination (R^2) is 75.7%. This variation was properly adjusted by the adjusted R^2 to 63.5%. These suggest that firm age has no significant influence on cash and cash equivalent; hence it has a negative relation with cash holding.

Decision taken for hypotheses three

Firm age: Fcal = 62.15566 > Ftab = 10.1. The Fcal is greater than the Ftab. Hence we reject the null hypotheses and accept the otherwise, which state that Firm age has significant effect on cash holding

Test on Hypotheses four

Ho_4: Cash flow has no significant effect on cash holding

Ha_4: Cash flow has significant effect on cash holding

Table 4: Regression Result on the Influence of Cash flow on Cash Holding

Dependent Variable: CASH_AND_CASH_EQUIVALENT				
Method: Least Squares				
Date: 05/20/16 Time: 12:26				
Sample: 2011 2014				
Included observations: 4				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1622025.	1276769.	1.270413	0.3317
CASH_FLOW	4296785.	1963212.	2.188651	0.1601
R-squared	0.705458	Mean dependent var		4285387.
Adjusted R-squared	0.558186	S.D. dependent var		1162634.
S.E. of regression	772792.1	Akaike info criterion		30.26026
Sum squared resid	1.19E+12	Schwarz criterion		29.95341
Log likelihood	-58.52052	Hannan-Quinn criter.		29.58689

F-statistic	4.790192	Durbin-Watson stat	2.102140
Prob(F-statistic)	0.160085		

Source: Author's Eviews Output, 2016.

Table 4 shows the result of the cash flow on cash and cash equivalent. As reviewed from the table, cash flow has a positive but non-significant impact on cash and cash equivalent (coefficient of cash flow = 4296785, t value = 2.188651, p value =0.1601).

The coefficient of determination (R^2) is 70.5%. This variation was properly adjusted by the adjusted R^2 to 55.8%. These suggest that the movement of cash flow has an effect on cash and cash equivalent hit there are other variables that has effects on cash and cash equivalent. This is supported by Drobetz and Grumeger (2007), [15].

Decision taken for hypotheses four

Firm age: Fcal = 47.90192 > Ftab = 10.1. The Fcal is greater than the Ftab. Hence we reject the null hypotheses and accept the otherwise, which state that Cash flow has significant effect on cash holding

Table 5: Multiple Regression Result.

Dependent Variable: CASH_AND_CASH_EQUIVALENT	
Method: Least Squares	
Date: 05/23/16 Time: 09:51	
Sample: 2011 2014	
Included observations: 4	

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEVERAGE	903131.2	1162813.	0.776678	0.5186
FIRM_SIZE	-0.133401	0.058000	-2.300014	0.1481
FIRM_AGE	-130553.7	52365.92	-2.493104	0.1302
CASH_FLOW	4296785.	1963212.	2.188651	0.1601
C	546176.5	362438.8	1.506948	0.1460
R-squared	0.976368	Mean dependent var		1993592.
Adjusted R-squared	0.972071	S.D. dependent var		2911078.
S.E. of regression	486498.2	Akaike info criterion		29.19343
Sum squared resid	5.21E+12	Schwarz criterion		29.43340
Log likelihood	-389.11	Hannan-Quinn criter.		29.26479

	13		
F-statistic	227.2333	Durbin-Watson stat	1.623010
Prob(F-statistic)	0.000000		

Source: Author's Eviews Output, 2016.

The coefficient of determination R^2 is 0.976368. This implies that 97% of the variables show that cash holding is positively influenced by leverage and Cash flow. However, the outcome of regression result is further strengthened by the coefficient of determination R^2 is 0.976368. This implies that 97% of the variations in cash holding could be explained by movement in the variables while about 3% could be attributed to other factors capable of influencing changes in cash holding in Nigeria pharmaceutical firms.

This reveals that cash holding is positively influenced by leverage and cash flow and negatively influenced by firm size and firm age.

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

FINDINGS

1. Leverage

Coming to leverage we find a consistent positive relation with cash holding. High leverage ratio indicates that firms maintain a good relationship to their creditors. This good relationship is associated with relatively low costs when issuing additional debt, in the event of shortage in cash. Thus firms with high leverage ratios would be inclined to hold less cash.

2. Firm Size

We find insignificant negative relations with cash holding for the variable firm size. The negative relation determined for firm size can be interpreted using the trade-off model as it suggest that large firms benefits through

economies of scale in terms of cash management and thus requires less cash.

3. Firm Age

In terms of firm age, one would expect a positive relation as it explains that the more a firm is in operation, the more the cash holding and the more the going concern in the business strategy but we receive a negative outcome which indicates that mature firms hold less cash due to the benefits they derived from Economies of scale. Hence the management choice to invest and grow, rather than to hold cash for shareholders interest.

4. Cash flow

Regarding cash flow, one would expect a negative relation with cash holding due to the fact that it acts as a substitute for cash but the reverse is the case, we received from the regression analysis a positively but non significant relation on cash holding which indicates that agency problems (a link between the management and shareholders) has such a big influence on the cash holding of Nigeria pharmaceutical firms.

SUMMARY OF FINDINGS ON CASH HOLDING

Firm – specific factors	Ozkan & Ozkan (2004)	D'mello et al (2008)	Opler et al (1999)	Ferrein & Vilela (2004)	Drobetz & Grunimer (2007)	Harford et al (2008)	Kim et al (2011)	Chizzy (2016)
Leverage	-	-	-	-	-	-	n.a.	+
Firm size	n.s	-	-	-	-	n.s	-	-
Cash flow	+	n.a	+	+	+	+	n.s	+
Firm age								-

CONCLUSION

This chapter draws conclusion from the hypotheses and regression analysis.

Leverage: Leverage has significant effect on cash holding base on our Hypothesis; it has a consistence positive relation with cash holding using regression analyses. However, Nigeria pharmaceutical firms should raise or create an internal fund to increase its leverage.

Firm size: Firm size has significant effect in affecting cash holding but had negative and insignificant influence on cash holding. Hence companies should balance their marginal cost of holding liquid assets and marginal benefit of cash holding since firm size affect cash holding with in significant influence. For industries with economics of scale, growing in size may be necessary to competitive in a global market.

Firm Age: Firm age has significant effect on cash holding and also had a negative and insignificant impact on cash holding. Thus growing companies should hold more cash especially when retained earnings are not sufficient to finance new investment.

Cash flow: Cash flow has significant effect on cash holding base on the hypotheses; and also had a positive but non-significant impact on cash holding base on the regression analysis. Hence management should increase their assets to build up good cash flow for positive operating activities.

RECOMMENDATION

Armed with the findings, the study makes the following recommendations.

- Firms with less leveraged should increase or raise an internal fund to increase its leverage.
- There is need for mature firms to identify their optimal level of cash holding by balancing the marginal cost of holding liquid assets and marginal benefit of cash holding.

- The growing companies should hold more cash than the mature companies due to the effect of low return on liquid assets, especially when retained earnings are not sufficient to finance new investment.
- The management should increase the amount of their assets and the power of investment decision to build up good cash flow for better operating activities.

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