Cash Holding in Indonesia

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Abstract. This paper has objective to explore determinant of Cash Holding in Emerging Market. Variable is used to determine cash holding which is Gross Profit Margin, Accounts Receivable and Account Payable, Return on Assets, Debt to Equity Ratio, Interest Rate and COVID-19. This paper used panel data model to estimate relationship among variable. Research period is from 2016 to 2023 and 15 Companies in retail industry. The results found that coefficient of correlation among variable is below of 0.5, Gross Profit Margin, Accounts Receivable and Account Payable, ROA and DER and COVID-19 significantly affect cash holding.

Keywords: Account Payable, Account Receivable, Cash Holding, DER and COVID-19, Gross Profit Margin, ROA.
JEL Classification: E31; M21; M41.

1. INTRODUCTION

Keynes theory stated that company or a person has motive to hold cash which is always called cash holding. Cash holding is used for transaction motive, precautionary motive and store value motive (Blanchard, 2021 and Dornbusch, 2017). Cash Holding is blood in the company because cash holding support all activity in the company. Cash holding of company would find as an item at Balance sheet of company. Cash holdings are often used to hedge against future cash shortfalls. Analyst also used cash holding to see the capability company to handle company activity. Manurung (2024a) used cash holding as the capability company how long to operate in the future. Cash holding also is an indicator to invest for increasing value of the company. Some academician said that cash holding reflected firm value. Opler et al (1998) examine the determinants and implications of holdings of cash and marketable securities by publicly traded U.S. in the 1971 -1994 period. Lian et.al (2011) examine Corporate Cash Holding and Financial Crisis. Rashid et.al (2022) discuss cash holding and Profitability. Hapsari and Norris (2022) discuss cash holding in Indonesia. Gracias and Osesoga (2024) studies determinant factors of cash holding in Indonesia. Amess, et al (2015) discuss Corporate of cash holdings regarding causes and consequences. Vuković, et.al (2022) examine cash holding in Balkan Countries.

Cash Holding is still more discussion by researcher, academician and practitioner. Uyar and Kuzey (2014) study analyses the factors that might explain the level of corporate cash holdings in a broad sample of Turkish-listed nonfinancial firms over the period 1997 to 2011. Begenau and Palazzo (2021) estimate a dynamic corporate finance model to quantify the role of this selection mechanism for the secular trend in cash holdings among US public firms. Faulkender and Wang (2006) studies the cross-sectional variation in the marginal value of corporate cash holdings that arises from differences in corporate financial policy. Lotti and Marcucci (2007) found that firm money demand is determined by Cost of Capital and wage. Duchin (2010) studies the relation between corporate liquidity and diversification. The key finding is that multidivision firms hold significantly less cash than stand-alone firms because they are diversified in their investment opportunities. Jebran et.al (2019) investigate determinants of corporate cash holdings in tranquil and turbulent period with evidence from an emerging economy. Chireka and Fakoya (2017) examine the determinants of corporate cash holdings levels in evidence from selected South African retail firms

Source of cash holding provide from sales of product paid by cash, cash from shareholder, and other activity which is increasing inventory paid later. Mostly paper discuss effect cash holding to firm value or as independent variable. Elizabeth et al (2021) examine cash holding on Company Performance. Ozkan and Ozkan (2004) examine cash holding in UK. This paper wants to examine some factor to determine cash holding as dependent variable. The factor will be grouped into internal Facto and External Factor. This paper tries to use Gross Profit Margin, account receivable, account payable, Operational Cost as internal factor. Exchange rate and Oil Price is used as external Factor.

Gross Profit Margin (GPM) is an independent variable to determine cash holding, because GPM is a ratio to raise fund or cash holding in the company. Maryanto and Cahyono (2024) examine effect of profitability, growth opportunity, leverage, and firm size on cash holding. Wahyuni and Setiawan (2023) studied operating cash flow and size company on cash holding, Rokhayati et al (2024) examine net working capital, leverage, firm size, cash flow on cash holding.

Debt to Equity Ratio (DER) is a ratio to show leverage company and capability equity to pay Debts. This ratio become a ratio always to discuss by academician and practitioner. Gunawan (2023) discuss Current Ratio, Benchmark Coal price, Return on Assets and Debt to Equity Ratio on Cash Holding. Sumartha, and Tjakrawala

(2020) studies effect Leverage on Cash holding. Sari and Hastuti (2020) examine working capital, profitability, leverage and on cash holding. Ritonga and Harmain (2023), studies the Influence of Leverage, Profitability, And Growth Opportunity on Cash Holding In Food And Beverage Companies. Tayem (2017) studies Determinant of Cash Holding including DER in Emerging Markets.

Return on Assets (ROA) is a profitability ratio to show the capability company to get profit as compensation for using company asset. Gunawan (2020) investigate Current Ratio, Benchmark Coal price, Return on Assets and Debt to Equity Ratio to Cash Holding, Hidayati and Ratnawati (2024), studies the Effect of Profitability (ROA), Leverage and Firm Size on Cash Holding Industry Company.

Cash Holding also discuss relationship cash holding and other factors. Bliss et. al (2015) investigate Corporate of payout, cash retention, and the supply of credit including Evidence from the 2008–2009 credit crisis. Nguyen et.al (2023) discuss trade payable om cash holding in Vietnam. Peterson and Rajan (1997) explain about theory and Evidence of Trade Credit. Darmawan and Nugroho (2021) discuss the Impact Profitability, Firm Size, Leverage, and Net Working Capital on Cash Holding. Nam and Uchida (2019) studies account payable and firm value in International evidence.

Fluctuation of Cash holding could be also affected by external factor which is Exchange rate and Oil Price and Interest rate and others. This research used Oil Price and Exchange rate as external factor. Tomanova (2016) discuss Exchange Rate Volatility Exposure on Corporate Cash Flows. Pinkowitz and Williamson (2002) discuss exchange rate on cash holding. Wu et.al (2021) examine Cash holdings and oil price uncertainty exposures. Bugshan (2024) studies Oil price uncertainty and corporate cash policy.

This research used period of data from 2016 to 2023 that there is a period called Covid-19 period. Covid-19 period is 2020 to 2022, so this paper put in as dummy variable for 2020 t0 2022. The period of COVID-19 is a period which is all countries got it. Sutrisno (2021) discuss period Covid-19 with cash holding company for Indonesia. Suwito and Yanti (2021) studies factor to determine cash holding before and during period COVID-19. Qin et.al (2021) examine COVID-19 Pandemic and Firm-level Cash Holding. Xiong et.al (2020) discuss impact market reaction to the COVID-19. Xu, and Jin (2022) is Exploring the Impact of the COVID-19 Pandemic on Firms' Financial Performance and Cash Holding. This is the reason Why this variable of COVID-19 entered to research model.

This research used similar data that used by Widjanarko et.al (2025). The Widjanarko et.al (2025) research found that Operational cost, Exchange Rate and Oil Pirce did not affect on Cash Holding. Variable of External Factor of Oil Price and Exchange Rate changed to be Interest. Variable of Operational Cost changed to be Debt to Equity Research and Return on Equity.

2. THEORETICAL REVIEW

Cash Holding is item in current assets that it is as tool of payment of company to others (White et.al, 2003). Cash holding should be placed in first item in Current Assets (Manurung, 2024a). Manurung (2024a) stated, cash holding could be affected some variables, that the variables affect cash holding to be comprise by mathematics formula as follows:

$$\pi = (1 - T)\{r * A - (FC + Qv) - iD\} \tag{1}$$

Equation (1) stated that profit (π) equal to income minus expenses. Assumption of Equation (1), the business is bank or finance company. If the company is a manufacturing company, the equation (1) should be reduced cost of goods sold (COGS). This paper wants to explore cash holding in retail Company. Equation (1) should be reduced by dividend, Account Receivable and Account Payables as follows:

$$\pi - DIV - AR - AP = (1 - T) * \{r * A - (FC + Qv) - iD\} - DIV - AR - AP \tag{2}$$

Then A = D + E, it is substituted to equation (2), so equation (2) become as follows:

$$\pi - DIV - AR - AP = (1 - T) * \{r * (D + E) - (FC + Qv) - iD\} - DIV - AR - AP \tag{3}$$

$$CH = (1 - T) * \{(r - i) * D + r * E - (FC + Qv)\} - DIV - AR - AP \tag{4}$$

Furthermore, Equation (4) divide total Equity of Company (E), so Equation (4) to become equation (5) as follows:

$$\frac{CH}{E} = (1 - T) * \left\{(r - i) * \frac{D}{E} + r - \frac{(FC+Qv)}{E}\right\} - \frac{DIV}{E} - \frac{AR}{E} - \frac{AP}{E} \tag{5}$$

Similar to find Equation (5), If Equation (4) divide Total Asset Company, then Equation (6) become equation (6) as follows:

$$\frac{CH}{TA} = (1 - T) \left\{(r - i) * \frac{D}{TA} + \frac{r}{TA} - \frac{(FC+Qv)}{TA}\right\} - \frac{DIV}{TA} - \frac{AR}{TA} - \frac{AP}{TA} \tag{6}$$

Based on the Equation (5) and (6), Cash Holding affect by tax, Return on Asset (ROA), interest for the loan, amount of Loan, operational cost dividend and sales on credit (account receivable) and Account Payable to supplier.

3. METHODOLOGY

This sub-section will explain the method use in this research. This Sub-section comprises Model Panel Data, Operational Variable and Sources of data.

3.1. Model Panel Data

This research use Model data Panel to estimate relationship some independent variable to determine Profitability as dependent variable which Return on Asset, Return on Equity and Price Earnings Ratio and Revenue, Current Ratio, Debt to Equity Ratio, Exchange Rate, Oil Price and Covid-19 Era which is all as independent variable. Merger and Acquisition is used as moderating variable. Model Data Panel is appropriate for data small which short time series and small company as sample. Besides that, model data panel also show time and the cross-section as sample. Gujarati (2003), Wooldridge (2002), Greene (2008), Biorn (2017), Sul (2019) and Manurung (2024b) stated model data panel is as follows:

    a. Pooled Data Model

        Pooled Data Model is model that data combine all together and the model is as follows:

$$Y_{i,t} = \beta_1 + \beta_2 X_{2i,t} + \beta_3 X_{3i,t} + \mu_{i,t} \qquad\qquad (7)$$

$$i = 1, 2, \dots, k \; ; \quad t = 1, 2, \dots, n$$

        X's are non-stochastic and $E(\mu_{it}) \sim N(0, \sigma^2)$

    b. Fixed Effect Model

        FEM is a model that μ_i and X's are assumed correlated.

$$Y_{i,t} = \beta_{1i} + \beta_2 X_{1i,t} + \beta_3 X_{2i,t} + \mu_{i,t} \qquad\qquad (8)$$

$$i = 1, 2, \dots, k \; ; \quad t = 1, 2, \dots, n$$

    c. Random Effect Model (REM)

        REM is a model that ε_i and X's are assumed uncorrelated.

$$Y_{i,t} = \beta_{1i} + \beta_2 X_{1i,t} + \beta_3 X_{2i,t} + \mu_{i,t} \qquad\qquad (9)$$

$$\beta_{1i} = \beta_1 + \varepsilon_i$$

$$i = 1, 2, \dots, k \; ; \; t = 1, 2, \dots, n$$

μ_i is a random error with a mean value of zero and variance of σ_ε^2.

Judge (1982), Wooldridge (2002), Biorn (2017), Sul (2019) and Manurung (2024b) stated that how we choose FEM or REM as follows:

1. When T (number of time series data) is large and N (the number of cross-sectional units) is small, FEM may be preferable.
2. When N is large and T is small, if we strongly believe that the individual, or cross-sectional, units in our sample are not random drawings from a larger sample, FEM is appropriate. If the cross-sectional units in the sample are regarded as random drawings, the REM is appropriate.
3. When individual error component ε_i and one or more regressors are correlated, FEM is an unbiased estimator.
4. REM estimators are more efficient than FEM Estimators, when N is large and T is small and if the assumptions underlying REM hold.

These criteria could be used as a tool, so it does not need to test FEM versus REM.

3.2. Operational Variable

This sub-section will explain the concept of Operational Variable in this research. Definition of Variable is in this research as follows:

$$Cash\ Holding = \frac{Cash\ and\ similar\ to\ Cash}{Total\ Asset} \qquad\qquad (10)$$

Manurung (2024a) define Gross Profit Margin (GPM) as follows:

$$GPM = \frac{Laba\ Kotor}{Revenue} \qquad\qquad (11)$$

and also Account Receivable (ACP) as follows:

$$ACP = \frac{Account\ Paybale}{Total\ Asset} \qquad\qquad (12)$$

and also Account Payable (APP) as follows:

$$APP = \frac{Account\ Payable}{Total\ Assets} \qquad\qquad (13)$$

and also Debt to Equity Ratio (DER) as follows:

$$DER = \frac{Debts}{Total\ Equity} \qquad\qquad (14)$$

and also Return to Assets (ROA) as follows:

$$RoA = \frac{Net\ Profit}{Total\ Assets} \qquad\qquad (15)$$

Concept of Definition of Variable is in this variable according by Altman (1968) which is all variable divide by Total Assets.

3.3. Sources of Data

Unit Analysis this research is retailing company that listed in Indonesia Stock Exchange. There are 15 of Retailing company which is taking purposively using retailing company has annual repot from 2016 to 2023. Data is collected from some sources. Data mostly is in yearly for period 2016 to 2023. Data, Cash holding, Gross Profit Margin, Account Receivable Collection, Account Payable Collection, Return on Asset (ROA), Debt to Equity Ratio (DER) are collected from annual report of Company that it found in Company Website. Data of Interest was collected from Central Bank of Indonesia.

4. DISCUSSION

In this section will explain three discussion such as Descriptive Statistics, Coefficient of Correlation and Causalities. This explanation starts by Descriptive Statistics, and followed by Coefficient of Correlation and at the end by Causalities.

4.1. Descriptive Statistics

This sub-section will explain descriptive statistic research variable which Cash Holding, Gross Profit Margin (GPM), Account Receivable (ACP), Account Payable (APP), Return on Asset (RoA), Debt Equity Ratio (DER) and Interest (INT). The Statistic Descriptive appear on Table 1.

Table 1: Descriptive Statistic Research Variable.

	CH	GPM	ACR	APP	ROA	DER	INT
Minimum	0.79%	-6.24%	0.18%	0.41%	-949.82%	8.72%	3.50%
Maximum	66.41%	68.19%	15.24%	719.77%	2729.35%	19030.70%	6.00%
Average	17.77%	23.79%	3.98%	35.43%	79.65%	300.64%	4.84%
Standard of Deviation	15.39%	19.86%	4.26%	86.73%	506.22%	1730.50%	0.96%
Skewness	1.157	0.699	1.193	5.962	3.401	10.834	-0.121
Kurtosis	0.641	-1.027	0.108	40.032	13.869	118.212	-1.481
Jarque Bera	-38.8394	-316.77	-92.4963	254638.2	6651.207	7648799	-449.716

Cash holding as item in balance sheet is blood in company which is every activity need it. Cash holding has varying value which is minimum value of 0.79%, maximum value of 0.6641, average value of 0.17178 and standard of deviation of 0.1539. This data show that data cash holding around nearly to minimum value and small standard of deviation.

Ratio Gross Profit Margin (GPM) show the company capability to raise fund which is first profit for operational cost company. Ratio GPM has minimum value of -6.24%, Maximum value of 68.19%, average value of 23.79% and standard of deviation of 19.86%. This data appeared that all GPM nearly around minimum value and deviation among GPM is very small. These data also showed that some companies has experience negative GPM. This negative GPM is mostly in period of COVID-19.

Account Receivable (ACR) is an item in balance sheet to show mostly selling product by credit. Account receivable has minimum value of 0.18%, Maximum value of 15.24%, average value of 3.98% and standard of deviation of 4.26%. The data Account receivable is very closed to each other comparing to data GPM and Cash holing. The data average is closed to minimum value. The deviation of data is very small.

Account payable (APP) is an item in Credit position of balance sheet to show how big the supplier give credit to the company. Account payable has minimum value of 0.41%, Maximum value of 719.77%, average value of 35.43% and standard of deviation of 86.73%. The variation data is very high that could show by standard of deviation. The central data which is average value nearly close to minimum value.

Debt to Equity Ratio (DER) is a ratio to show how capable the equity to pay debts company. Sometimes, it called Leverage. DER has minimum value of 8.72%, Maximum value of 19030.7%, average value of 300.64% and standard of deviation of 1730.5%. The variation data is very high that could show by standard of deviation. The central data which is average value nearly close to minimum value.

Return on Assets (ROA) is a ratio to state how good the company to give compensation for his assets. This ROA variable entered to research to show how impact this variable to Cash holding. This ROA data has minimum value of -949.82%, Maximum value of 2929.35%, average value of 79.65% and standard of deviation of 506.22%. This data shows the variation among data is very high which is average value near to minimum value. This ratio also shows the company have good competitive company.

This research also uses macroeconomic variable which is interest. The Interest variable entered to research to show how impact this variable to Cash holding. Previous research using External Variable which is Oil Price and Exchange rate. These variable does not significant to affect cash holding. This INT data has minimum value of 3.5%, maximum value of 6.00%, average value of 4.84% and standard of deviation of 0.96%. The variation of data is small by showing of standard of deviation.

4.2. Correlation Coefficient

This sub-section will explain Coefficient of Correlation among research variable which is Cash Holding, Gross Profit Margin, Account Receivable, Account Payable, Debt to Equity ratio, Return on Assets (ROA), and

Interest that is showed Table 2 at below.

Table 2 shows that the results are mixed for correlation among research variables. The Coefficient of correlation is varying between 0.00474 to 0.4981. There are no coefficients of correlation above 0.5. It means that this highest coefficient of correlation has medium/average correlation.

Table 2: Coefficient of correlation among research variables.

	CH	GPM	ACR	APP	DER	ROA	INT
CH	1	0.3575***	-0.4246***	0.3683***	-0.08509	0.2967***	-0.05829
GPM		1	-0.3461***	-0.11048	0.2102**	-0.00517	0.019913
ACR			1	-0.15383	-0.01701	0.4981***	-0.00474
APP				1	-0.00656	-0.2146**	-0.11354
DER					1	0.016696	0.10615
ROA						1	0.02163
INT							1

Account Receivable (ACR) and Return on Assets (ROA) has the highest coefficient correlation and significantly correlated at level of significant of 1%. Cash holding (CH) significantly positive correlated to Gross Profit Margin (GPM) at level of significant of 1%. The coefficient of Correlation of Cash holding with Gross Profit Margin is average relationship by showing of number of Coefficient of Correlation of 0.3575. Account Receivable (ACR) has coefficient of Correlation to Cash holding (CH) by 0.4246 that its average relationship. Relationship account receivable (ACR) and cash holding (CH) is significantly relationship at level of significant of 1%. Cash holding (CH) with Account Payable (APP) has coefficient of correlation of 0.3683. This coefficient correlation is nearly to weak relationship, but it significantly correlated at level of significant of 1%. Account Payable (APP) has correlated to cash holding by 0.3683 and significantly correlated at level of significant of 1%. This coefficient of correlation could be stated as average or medium correlation. Gross Profit Margin (GPM) also negatively correlated with account receivable (ACR) by -0.3461 and significant at level of significant of level of 1%. This coefficient of correlation could be stated as weak correlation. GPM has positively correlated with Debts to Equity Ratio (DER) and significant at level significant of 5%. The coefficient correlation among GPM and DER is 0.2102 that its weak correlation. Account Payable has negatively correlated with Return on Assets (ROA) at level significant of 5%. The coefficient of correlation is 0.2146 that is weak correlation. The other correlation among variables is small or weak correlation and do not significant correlate at level of significant of 10%.

This result will impact to choose model for further analysis. Based on the result, the research will use model panel data.

4.3. Causality

This sub-section will explain factor affected cash holding that is shows at equation (9). The result was processed by Eviews program. The model of Cash holding is found as follows:

$Ch_{i,t} = 0.0705 + 0.2992\ GPM_{i,t} - 0.7416\ ACP_{i,t} - 0.0028\ RoA_{i,t} - 0.00155\ DER_t$ (6.568)
(-4.392)　　　(-2.981)　　　(7.599)

$+\ 0.0683\ APP_{i,t} + 0.3988\ INT_t + 0.0291\ COVID\text{-}19_t + e$ (16)
(7.599)　　　(0.4895)　　　(1.8671)

$R^2 = 68.08\%$, $F_{test} = 37.25$, T-test in brackets.

This equation (16) has coefficient of determination by 68.08%. It means that together all variables could explain the fluctuation of data of cash holding is about by 68.08%, the rest is by other variable. The equation (16) has good of fit Model that show by value of F-test.

In the equation (16) shows GPM, ACP, ROA, APP, DER and INT on Cash holding. Covid-19 also entered as an independent variable to cover COVID-19 for research period because this period of COVID -19 is in research Period.

GPM has positively impact on cash holding. It means that GPM increase by 1 unit, it will impact increasing cash holding by 0.2992 unit. GPM significant affect Cash holding at level significant of 1%. This result finding state that the empirical research support to the theory of GPM on cash holding. This research supported the previous research such as Maryanto and Cahyono (2024), Wahyuni and Setiawan (2023) and Rokhayati et al (2024) and Ozkan and Ozkan (2004).

Account Receivable (ACR) have negatively affected on cash holding. It means that ACP increase by 1 unit, it will impact decreasing on cash holding by 0.6167 unit. ACP significant affect Cash holding at level significant of

1%. This result finding state that the empirical research support to the theory of ACP on cash holding. This research supported the previous research such as Bliss et. al (2015), Nguyen et.al (2023), Peterson and Rajan (1997), Darmawan and Nugroho (2021) and Ozkan and Ozkan (2004).

Return on Asset (ROA) have negatively impact on cash holding that it is significant at level of significant of 1%. The coefficient of impact is 0.0028 that is small impact. This result stated that ROA increased by 1 unit, it will decrease of cash holding by 0.0028. This result support the previous research which is Gunawan (2023), Davidson and R. Rasyid (2020), Hidayati and Ratnawati (2024), Sumartha, and Tjakrawala (2020), Sari and Hastuti (2020.

Debt to Equity Ratio (DER) have negatively effect on cash holding that it is significant at level of significant of 1%. The coefficient of impact is 0.00155 that is small impact compared to ROA. This result stated that ROA increased by 1 unit, it will decrease of cash holding by 0.00155. This result support the previous research which is Gunawan (2023), Sumartha, and Tjakrawala (2020), Sari and Hastuti (2020), Ritonga and Harmain (2023), Tayem (2017), and Hidayati and Ratnawati (2024).

Account Payable (APP) have positively affected on cash holding. It means that APP increase by 1 unit, it will impact increasing on cash holding by 0.0610 unit. APP significant affect Cash holding at level significant of 10%. This result finding state that the empirical research support to the theory of APP on cash holding. This research supported the previous research such as Bliss et. al (2015), Nguyen et.al (2023), Peterson and Rajan (1997) and Darmawan and Nugroho (2021) and Ozkan and Ozkan (2004) and Nam and Uchida (2019).

COVID-19 have positively affected on cash holding. It means that OC increase by 1 unit, it will impact increasing on cash holding by 0.0291 unit. COVID-19 significant affect Cash holding at level significant of 10%. This result finding state that the empirical research support to the theory of COVID-19 on cash holding. This research supported the previous research such as Sutrisno (2021), Suwito and Yanti (2021) and Qin et.al (2021) and Xiong et.al (2020) and Xu, and Jin (2022).

This Research found that Interest did not affect on cash holding at level of Significant of 10%. Widjanarko (2025) also did not found that the external factor which is Oil Price and Exchange Rate did not affect cash holding. It means, the external factor mostly did not have impact on cash holding.

5. CONCLUSION
This research has conclusion as follows:
1. The coefficient of correlation among research variable is below of 0.5 that is stated weak to average correlated.
2. Gross Profit margin significantly affect Cash holding
3. Account Receivable significantly affect cash holding
4. Account Payable significantly affect cash holding
5. Return on Asset significantly affect cash holding
6. Debt to Equity Ratio significantly affect cash holding.
7. Period of COVID-19 significantly affect cash holding

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