

The Effect of Net Working Capital, Asset Tangibility, and Leverage on Cash Holdings in Logistics Companies Listed on the Indonesia Stock Exchange for the 2020–2025 Period

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Abstract

This study aims to determine the effect of Net Working Capital, Asset Tangibility, and Leverage on Cash Holding at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 period. The research method is quantitative with a descriptive and verificative approach. The population was 150 financial statements from 25 companies; purposive sampling yielded a sample of 71 financial statements from 13 companies. Data were processed using Microsoft Excel and IBM SPSS Statistics version 26. The results show that cash holding fluctuated during the research period, with the highest average in 2021 and the lowest in 2025. Partially, Net Working Capital has a significant effect on Cash Holding with an effect size of 22.4%, Asset Tangibility has a significant effect with an effect size of 11%, and Leverage has a significant effect with an effect size of 1.7%. Simultaneously, the three variables affect Cash Holding by 40.3%, while the remainder is influenced by other variables outside this study. These results indicate that companies need to pay attention to working capital conditions, the proportion of fixed assets, and the level of leverage in determining cash holding policy, and the study can serve as a reference for further research on the factors that influence Cash Holding.

Keywords: Net Working Capital, Asset Tangibility, Leverage, Cash Holding.

1 INTRODUCTION

The Transportation & Logistic sector has experienced quite significant dynamics in recent years, especially since the COVID-19 pandemic. Mobility restrictions in various countries have driven changes in goods distribution patterns, while the rapid growth of e-commerce has also increased demand for logistics services [1]. As post-pandemic conditions improve, the growth of this sector has begun to experience adjustment and enter a stabilization phase due to supply chain normalization and geopolitical uncertainty [2], [3]. This condition is also felt in Indonesia, where mobility restriction policies have caused various adjustments to transportation activities [4]. Statistics Indonesia (Badan Pusat Statistik) recorded that the transportation and warehousing sector contracted by 15.04% in 2020 [5], although on the other hand the increase in digital transactions during the pandemic actually encouraged demand for logistics and delivery services [1].

As part of that sector, the Logistics & Deliveries subsector plays an important role in supporting goods distribution activities for the needs of industry and society and has a significant contribution to the national

economy [6]. This subsector continues to develop along with the growth of e-commerce in Indonesia [7], although this growth also demands increased operational capacity and technology of the company's logistics system [8]. This condition requires companies in this subsector to have sound financial policies, especially in managing cash resources, so that operational growth can run in line with the company's long-term financial health.

Cash holding, namely cash and cash equivalents owned by a company to meet operational needs, pay obligations, distribute dividends, and make investments, is one of the important indicators of a company's financial health [9]. Cash availability supports operational activities and the company's liquidity level [10], but less than optimal management of cash holding has the potential to increase the cost of capital and decrease the value of the company [11]. Theoretically, cash holding policy can be explained through Trade Off Theory, which emphasizes the balance between the benefits and costs of holding cash [12], as well as Agency Theory, which highlights the potential conflict of interest between managers and shareholders when

cash is held in large amounts and is not utilized productively [13].

Initial data on cash holding of Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 period shows fluctuations, both between companies and over time. This phenomenon indicates that cash storage policy is influenced by various internal factors, including net working capital, asset tangibility, and leverage. High net working capital allows current assets to function as a substitute for cash [14], high asset tangibility makes it easier to access external financing through fixed asset collateral so that the need to hold cash is reduced [15], while high leverage encourages companies to hold more cash to meet debt obligations [16].

Based on the description above, this study aims to determine the description and analyze the magnitude of the effect of net working capital, asset tangibility, and leverage on cash holding, both partially and simultaneously, at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 period.

1.1 Problem Formulation

Based on the background of the problem above, the research problem formulation is as follows:

1. What is the description of net working capital, asset tangibility, and leverage at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 Period?
2. How large is the effect of net working capital on cash holding at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 Period?
3. How large is the effect of asset tangibility on cash holding at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 Period?
4. How large is the effect of leverage on cash holding at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 Period?
5. How large is the effect of net working capital, asset tangibility, and leverage on cash holding at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 Period?

2 LITERATURE REVIEW

2.1 Management

Financial management is defined as the activity of managing a company's finances related to the sourcing and use of funds effectively and efficiently to realize company goals [17], covering investment decisions, financing, and dividend policy. These three decisions are important parts in determining the use of funds, sources of funding, and the distribution of company profits, which in the end can affect the company's performance and value.

2.2 Financial Management

Financial management is the process of acquiring, managing, and utilizing funds effectively and efficiently to achieve corporate objectives Hakim et al. [17] This process encompasses investment decisions, financing decisions, and dividend policy, which aim to maximize profits, maintain cash flow, control financial risks, and enhance firm value and shareholder wealth. Regarding cash holding, three key financial factors may influence the level of cash held by a company. Net Working Capital (NWC) tends to have a negative relationship with cash holding because current assets other than cash can serve as substitutes for cash in meeting operational needs. Asset tangibility also tends to have a negative relationship with cash holding because tangible assets can be used as collateral to obtain external financing. Meanwhile, leverage may have either a negative or a positive relationship with cash holding. A negative relationship may occur because companies allocate cash to meet debt obligations or use debt as an alternative to accumulating cash. Conversely, a positive relationship may arise because highly leveraged companies maintain cash reserves to mitigate financial risks and ensure their ability to meet financial obligations. Therefore, the relationships between NWC, asset tangibility, leverage, and cash holding depend on each company's liquidity position, access to external financing, and financial risk management policies.

2.3 Trade Off Theory

Signaling Theory is a company's drive to provide information to prospective investors about the company's condition, whether positive signals (good news) or negative signals (bad news). This theory emphasizes the importance of completeness of information needed by investors in decision making. Meanwhile, according to [16], Trade off theory explains that in determining the optimal level of cash ownership, a company needs to consider the balance between the benefits and costs of holding cash, where these costs include opportunity cost. In addition, cash management

is also related to consideration of the size of expenditure and the benefits obtained by the company.

2.4 Net Working Capital

Net Working Capital describes net working capital that reflects a company's ability to utilize liquid assets to support operational activities [18]. When net working capital is positive, current assets can function as a substitute for cash so that the company tends to hold cash in a smaller amount, whereas when it is negative, the opportunity cost of holding cash becomes relatively small so that cash holding tends to be larger [19]. Net working capital is calculated by the formula:

$$NWC = \frac{\text{Current Assets} - \text{Current Liabilities}}{\text{Total Assets}} \quad (1)$$

Source: [20]

2.5 Asset Tangibility

Asset tangibility is defined as the proportion of tangible fixed assets to total assets owned by a company [21]. A high level of asset tangibility enables a company to use its fixed assets as collateral to obtain external financing, thereby reducing the need to hold large amounts of cash to meet urgent financial needs [15]. However, a positive relationship between asset tangibility and cash holding can be interpreted as a finding that contradicts this initial prediction. Theoretically, the availability of fixed assets that can be pledged as collateral should reduce the company's need to maintain substantial cash reserves because it has access to alternative sources of external financing. In contrast, the opposing finding indicates that companies with a higher proportion of tangible fixed assets tend to hold larger amounts of cash. This condition may arise because fixed assets are relatively illiquid and cannot be readily converted into cash to meet short-term operational needs. Consequently, companies may continue to maintain cash reserves as a liquidity buffer to anticipate cash flow uncertainty, meet short-term obligations, and sustain operational continuity. Therefore, this positive relationship suggests that the role of fixed assets as collateral does not necessarily reduce the need for cash holdings; rather, it may coexist with the company's policy of maintaining adequate liquidity. Asset tangibility is calculated by the formula:

$$\text{Asset Tangibility} = \frac{\text{Fixed Assets}}{\text{Total Assets}} \quad (2)$$

Source: [15]

2.6 Agency Theory

Agency Theory introduced by Jensen and Meckling explains the agency relationship as a contract between the owner of the company (principal) and the manager of the company (agent) [22]. Differences in interests between managers and shareholders can trigger agency conflicts, particularly related to the policy of holding cash in large amounts that is not always in line with the interests of shareholders.

2.7 Cash Holding

Cash holding is the amount of cash and cash equivalents owned by a company to meet funding needs, face emergency conditions, and finance investments needed to support business continuity [9]. Cash holding is calculated by the formula:

$$\text{Cash holding} = \frac{\text{Cash and cash equivalents}}{\text{Total Assets}} \quad (3)$$

Source: [23]

2.8 Financial Statements

Financial statements are the final result of the accounting process that presents information about the company's financial condition and activities in a certain period. Financial statements play an important role for internal and external parties in assessing financial condition, evaluating performance, and supporting company decision making. The information presented can be used to compare performance developments between periods and with other companies. However, financial statements are historical in nature because they present transactions that have already occurred, so they have limitations in describing the company's current condition.

2.9 Leverage

Leverage is one of the financial ratios used to measure the extent to which a company uses funds sourced from debt in financing its assets [24]. A low level of leverage tends to have a smaller risk, while a high level of leverage indicates a greater risk due to increasing dependence on debt [25]. In this study, leverage is proxied by the Debt to Asset Ratio (DAR):

$$DAR = \frac{\text{Total Liabilities}}{\text{Total Assets}} \quad (4)$$

Source: [16]

2.10 Hypothesis Formulation

H1: Net working capital has a significant effect on cash holding at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 period.

H2: Asset tangibility has a significant effect on cash holding at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 period.

H3: Leverage has a significant effect on cash holding at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 period.

H4: Net working capital, asset tangibility, and leverage have a significant effect on cash holding at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 period.

3 RESEARCH METHODS

This study uses a quantitative method with a descriptive and verificative approach [26], [27], because it aims to describe the condition of each variable while testing the strength of the relationship between net working capital, asset tangibility, and leverage on cash holding. The object of the study is the annual financial statements of Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange (IDX) for the 2020-2025 period. The data used is secondary data that is quantitative in nature, processed using the IBM SPSS Statistics version 26 program and Microsoft Excel.

The population in this study amounted to 150 financial statements from 25 Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the IDX for the 2020-2025 period. The sample was determined using a non-probability sampling technique with a purposive sampling approach [28], based on the criteria: (1) the company is listed on the IDX during the 2020-2025 period; (2) publishes complete financial statements and annual reports during that period; and (3) is not recorded as having experienced suspension during the research period. Based on these criteria, a sample of 78 financial statements from 13 companies was obtained as presented in Table 1.

Table 1. Research sample

No	Company Name	Code
1	PT Mineral Sumberdaya Mandiri Tbk	AKSI
2	PT Berlian Laju Tanker Tbk	BLTA
3	PT Armada Berjaya Trans Tbk	JAYA
4	PT Krida Jaringan Nusantara Tbk	KJEN
5	PT Mitra International Resources Tbk	MIRA
6	PT Pelayaran Nelly Dwi Putri Tbk	NELY
7	PT Prima Globalindo Logistik Tbk	PPGL
8	PT Putra Rajawali Kencana Tbk	PURA
9	PT Satria Antaran Prima Tbk	SAPX
10	PT Sidomulyo Selaras Tbk	SDMU
11	PT Samudera Indonesia Tbk	SMDR
12	PT Temas Tbk	TMAS
13	PT Trimuda Nuansa Citra Tbk	TNCA

Source: Processed by the Author (2026)

This study involves one dependent variable, namely cash holding (Y), and three independent variables, namely net working capital (X1), asset tangibility (X2), and leverage (X3) which is proxied by the Debt to Asset Ratio (DAR). Variable operationalization is presented in Table 2.

Table 2. Variable operationalization

Variable	Indicator / Formula	Source
Cash Holding (Y)	Cash and Cash Equivalents / Total Assets	[23]
Net Working Capital (X1)	(Current Assets – Current Liabilities) / Total Assets	[20]
Asset Tangibility (X2)	Fixed Assets / Total Assets	[15]
Leverage / DAR (X3)	Total Liabilities / Total Assets	[16]

Source: Processed by the Author (2026)

Data collection techniques were carried out through documentation studies of published financial statements for the 2020-2025 period issued by each company, as well as literature studies from scientific journals, books, and relevant literature [29]. The data were then analyzed through classical assumption tests (normality, multicollinearity, heteroscedasticity, and autocorrelation), multiple linear regression analysis, correlation coefficient and determination analysis, as well as partial hypothesis testing (t-test) and simultaneous (F-test) at a 5% significance level ($\alpha = 0.05$).

4 RESULTS AND DISCUSSION

This section presents the results of data processing regarding the description of the research variables, the results of the classical assumption test, multiple linear regression analysis, correlation and determination coefficients, hypothesis testing, and discussion of the findings obtained.

4.1 General Description of Research Variables

The average values of cash holding, net working capital, asset tangibility, and leverage at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the IDX for the 2020-2025 period are presented in Table 3.

Table 3. Average research variables for the 2020-2025 period

Year	Cash Holding	NWC	Asset Tangibility	Leverage
2020	0.098	0.081	0.567	0.395
2021	0.104	0.131	0.518	0.364
2022	0.102	0.169	0.520	0.339
2023	0.098	0.116	0.547	0.331
2024	0.092	0.096	0.555	0.376
2025	0.077	0.024	0.569	0.435

Source: Excel Output, Data Processed by the Author (2026)

Based on Table 3, cash holding reached the highest average of 0.104 in 2021 then tended to decrease to 0.077 in 2025. The lowest cash holding value of 0.001 is owned by PT Krida Jaringan Nusantara Tbk (KJEN) in 2022, while the highest value of 0.362 is owned by PT Samudera Indonesia Tbk (SMDR) in the same year. Net working capital increased until 2022 then decreased to 0.024 in 2025, with the lowest value of -0.658 owned by PT Sidomulyo Selaras Tbk (SDMU) in 2021 and the highest value of 0.517 owned by PT Satria Antaran Prima Tbk (SAPX) in 2020. Asset tangibility decreased in the early period then increased again to 0.569 in 2025, with the lowest value of 0.053 owned by SAPX in 2025 and the highest value of 0.877 owned by KJEN in 2021. Meanwhile, leverage decreased until 2023 then increased to 0.435 in 2025, with the lowest value of 0.064 owned by KJEN in 2023 and the highest value of 1.011 owned by SDMU in 2021.

4.2 Classical Assumption Test

The initial data screening identified potential outliers in PT Sidomulyo Selaras Tbk (SDMU) using specify detection method and the threshold of specify criterion]. Consequently, six observations were excluded, reducing the sample from 78 to 72. This exclusion was based on state the methodological justification. Robustness tests were conducted by comparing regression results before and after the exclusion to assess the consistency of coefficient signs, statistical significance, and research conclusions. The results are presented in Table [X]. Subsequently, the Cochrane–Orcutt transformation was applied to address autocorrelation, reducing the number of observations from 72 to 71. The classical assumption test results after correction are presented in Table 4.

Table 4. Summary of classical assumption test results

Test Type	Result	Conclusion
Normality (Kolmogorov-Smirnov)	Asymp. Sig. = 0.200 > 0.05	Residuals are normally distributed
Multicollinearity (Tolerance/VIF)	Tolerance 0.362–0.469; VIF 2.132–2.760	Free of multicollinearity
Heteroscedasticity (Glejser Test)	Sig. 0.050–0.919 > 0.05	Free of heteroscedasticity
Autocorrelation (Durbin-Watson)	DW = 1.706 (dU 1.7041 < DW < 4-dU 2.2959)	Free of autocorrelation

Source: SPSS 26 Output, Data Processed by the Author (2026)

4.3 Multiple Linear Regression Analysis

Multiple linear regression analysis is used to obtain a comprehensive picture of the effect of the independent variables on the dependent variable [32]. The test results are presented in Table 5.

Table 5. Multiple linear regression test results

Variable	B	Std. Error	t	Sig.
(Constant)	0.034	0.019	1.839	0.070
Net Working Capital	0.494	0.081	6.077	0.000
Asset Tangibility	0.161	0.076	2.107	0.039
Leverage	0.102	0.021	4.764	0.000

Source: SPSS 26 Output, Data Processed by the Author (2026)

Based on Table 5, the following multiple linear regression equation is obtained:

$$Y = 0.034 + 0.494 X_1 + 0.161 X_2 + 0.102 X_3$$

The constant value of 0.034 indicates that if net working capital, asset tangibility, and leverage are equal to 0, then cash holding is estimated to remain at 0.034. The regression coefficients of the three independent variables are positive, which means that increases in net working capital, asset tangibility, and leverage are each followed by an increase in cash holding, assuming other variables remain constant.

4.4 Correlation and Determination Coefficient

The multiple correlation coefficient is used to determine the strength or weakness of the relationship between the dependent variable and the independent variables together, while the coefficient of determination is used to measure the ability of the independent variables in explaining the dependent variable [33]. The test results are presented in Table 6.

Table 6. Correlation and determination coefficient test results

Model	R	R Square	Adjusted R Square
Net Working Capital	0.473	0.224	0.213
Asset Tangibility	0.331	0.110	0.097
Leverage	0.129	0.017	0.002
Simultaneous (NWC, AT, Leverage)	0.654	0.428	0.403

Source: SPSS 26 Output, Data Processed by the Author (2026)

Based on Table 6, the R value in the simultaneous model of 0.654 is in the 0.60-0.799 interval which is included in the strong category. Partially, net working capital is able to explain the variation in cash holding by 22.4%, asset tangibility by 11%, and leverage by 1.7%. Simultaneously, the Adjusted R Square value of 0.403 shows that the three independent variables together are able to explain the variation in cash holding by 40.3%, while the remaining 59.7% is explained by other variables outside this study.

4.5 Hypothesis Testing

The t-test is used to determine the effect of each independent variable partially on cash holding at a 5% significance level. Based on the degree of freedom (0.025; 71-3-1), a t-table value of 1.996 is obtained. The t-test results are presented in Table 7.

Table 7. t-test results

Variable	t-count	t-table	Sig.	Decision
Net Working Capital	6.077	1.996	0.000	Ha1 accepted
Asset Tangibility	2.107	1.996	0.039	Ha2 accepted
Leverage	4.764	1.996	0.000	Ha3 accepted

Source: SPSS 26 Output, Data Processed by the Author (2026)

All three t-count values are greater than the t-table (1.996) with a significance value < 0.05 , so H_0 is rejected and H_a is accepted for each variable. Thus, net working capital, asset tangibility, and leverage partially have a significant effect on cash holding. Furthermore, the F-test shows an F-count value of 16.723 and an F-table of 2.74 ($16.723 > 2.74$), so H_0 is rejected and H_a is accepted. These results indicate that net working capital, asset tangibility, and leverage simultaneously have a significant effect on cash holding.

4.6 Discussion

The magnitude of the effect of net working capital on cash holding is shown by an R Square value of 22.4% and a t-count value of 6.077 ($> t$ -table 1.996), so net working capital has a significant positive effect on cash holding. The greater the net working capital owned by the company, the greater the current assets available after deducting current liabilities, so that the company has financial flexibility to maintain some of its funds in

the form of cash. This condition is in line with Trade-Off Theory, in which the company considers the balance between the benefits and costs of holding cash in determining the optimal level of cash holding. This result is in line with the research of [14], [20], [22], [35], and [36], but is not in line with [19] which found a negative effect.

The magnitude of the effect of asset tangibility on cash holding is shown by an R Square value of 11% and a t-count value of 2.107 ($> t$ -table 1.996), so asset tangibility has a significant positive effect on cash holding. Fixed assets have a lower level of liquidity compared to current assets, so companies with a larger proportion of fixed assets tend to maintain cash in a higher amount as a liquidity reserve to meet operational needs and short-term obligations. This result is in line with the research of [34], but is not in line with [15] and [21] which found a negative effect.

The magnitude of the effect of leverage on cash holding is shown by an R Square value of 1.7% and a t-count value of 4.764 ($> t$ -table 1.996), so leverage has a significant positive effect on cash holding. The higher the leverage as measured using the Debt to Asset Ratio, the greater the principal and interest obligations that the company must fulfill, so that the company needs to maintain adequate cash as a reserve fund while reducing the risk of financial distress. This result is in line with the research of [14], [20], [22], and [36], but is not in line with [16], [19], and [35] which found a negative or insignificant effect.

Simultaneously, net working capital, asset tangibility, and leverage have a significant effect on cash holding with a contribution of 40.3%. The three variables reflect different financial aspects, namely short-term liquidity, asset structure, and the level of debt use, which together determine the company's need for and ability to maintain cash. These results indicate that the cash holding policy of Transportation & Logistic companies in the Logistics & Deliveries subsector is not only influenced by one financial aspect, but by a combination of liquidity conditions, asset structure, and the level of the company's obligations together.

5 CONCLUSION

Based on the results of the analysis and discussion regarding the effect of Net Working Capital, Asset Tangibility, and Leverage on Cash Holding at Transportation & Logistic companies in the Logistics & Deliveries subsector listed on the Indonesia Stock Exchange for the 2020-2025 period, it can be concluded that cash holding, net working capital, asset tangibility, and leverage show fluctuating conditions during the research period, with cash holding tending to decrease from an average of 0.098 in 2020 to 0.077 in 2025 after having reached its peak of 0.104 in 2021. Partially, net

working capital has a significant positive effect on cash holding with a contribution of 22.4%, asset tangibility has a significant positive effect with a contribution of 11%, and leverage has a significant positive effect with a contribution of 1.7%. Simultaneously, the three variables have a significant effect on cash holding with a contribution of 40.3%, while the remaining 59.7% is influenced by other variables outside this study.

The results of this study are expected to be a consideration for companies in managing working capital, asset structure, and debt levels in a balanced manner to maintain cash holding at an optimal level, as well as being a consideration for investors in assessing the company's liquidity condition and financial risk before making investment decisions. For further researchers, it is recommended to use different measurement proxies and add other variables or research periods in order to obtain a broader picture of the factors that influence cash holding.

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