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The Effect of The World Uncertainty Index on Cash Holdings in Indonesian Public Companies

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ARTICLE HISTORY

Received: June 21, 2025

Revised: July 30, 2025

Accepted: August 29, 2025

DOI

<https://doi.org/10.52970/grar.v6i1.1428>

ABSTRACT

This study aims to examine the effect of the World Uncertainty Index (WUI)—a global measure of economic and policy uncertainty—on the cash holdings of publicly listed non-financial companies in Indonesia. Given the increasing global economic and geopolitical uncertainty, understanding how firms in emerging markets manage liquidity is both theoretically relevant and practically important. The study employs a quantitative approach, using panel data regression on a sample of 782 non-financial firms listed on the Indonesia Stock Exchange from 2013 to 2024. A total of 5,944 firm-year observations were analyzed. The empirical analysis applies the fixed effect model and Driscoll-Kraay standard errors to ensure robust statistical inference. The findings reveal a statistically significant and negative relationship between the WUI and corporate cash holdings. This suggests that during periods of high global uncertainty, Indonesian firms tend to reduce cash reserves, potentially to sustain operational activities or meet short-term obligations. The results challenge the traditional precautionary motive, which posits that firms increase cash in response to uncertainty. Instead, they highlight a context-specific liquidity behavior in emerging markets, where financial constraints and weak external financing channels may force firms to deplete cash during uncertain times. The study provides practical insights for financial managers in designing adaptive liquidity strategies, and it highlights the need for policymakers to support corporate resilience in volatile global conditions.

Keywords: World Uncertainty Index, Cash Holdings, Economic Uncertainty, Liquidity Management, Emerging Markets, Indonesia.

JEL Code: E44, F31, F37, G15

I. Introduction

In today's increasingly volatile and complex global business environment, uncertainty has become a central issue influencing corporate decision-making, particularly in emerging markets. One key area where firms attempt to buffer against uncertainty is in their management of cash holdings. Cash holdings serve as a vital liquidity reserve, helping companies maintain operational continuity and absorb external shocks (Le & Tran, 2021). This precautionary behavior becomes especially pronounced during periods of elevated macroeconomic or geopolitical uncertainty (Khatib et al., 2022; Aysan et al.,

2023). Theoretical and empirical literature highlight that heightened uncertainty increases the cost of external financing, exacerbates information asymmetry, and prompts firms to retain more cash as a precaution (Jung et al., 2021). This is consistent with the precautionary motive of cash holding, where firms prioritize liquidity over risky investments. However, excessive cash retention may also lead to opportunity costs and agency problems, especially in firms with limited governance structures, such as newly listed companies.

The World Uncertainty Index (WUI) has gained prominence in recent years as a measure of global economic and policy uncertainty. The World Uncertainty Index (WUI), developed by Ahir et al. (2022), is a standardized global measure that captures the frequency of the word "uncertain" in country-specific reports from the Economist Intelligence Unit (EIU). It reflects the perceived level of economic and policy uncertainty across countries and over time. Despite the increasing relevance of global uncertainty in shaping corporate financial behavior, empirical research on how macro-level external risks—captured by the World Uncertainty Index (WUI)—affect firm-level liquidity decisions remains scarce in the Indonesian context. Most existing studies focus on domestic uncertainty or firm characteristics, overlooking the strategic implications of global volatility. This lack of evidence presents a critical gap in understanding how firms in emerging markets, such as Indonesia, adjust their cash policies in response to rising global uncertainty. Addressing this issue is essential to support more resilient financial decision-making at both the corporate and policy levels. Therefore, this study empirically investigates the impact of the World Uncertainty Index on corporate cash holdings in Indonesia. By analyzing a panel of publicly listed firms, this research contributes to a growing body of literature that links global uncertainty to corporate financial policy, particularly in emerging market contexts. The findings are expected to offer theoretical insights, practical implications for corporate liquidity management, and policy relevance for stakeholders concerned with financial resilience in times of uncertainty.

II. Literature Review and Hypothesis Development

2.1. Pecking Order Theory

The Pecking Order Theory posits that firms adhere to a hierarchical preference in financing decisions, prioritizing internal financing first (e.g., retained earnings), followed by debt, and then equity. This hierarchy arises from the presence of information asymmetry between managers and external investors, where issuing equity is often perceived as a negative signal by the market, potentially indicating that the firm is overvalued (Guizani, 2020). Consequently, firms prefer to finance new projects using internally generated funds to avoid adverse signaling and to minimize transaction costs. Under this theory, cash holdings serve as a critical financial buffer, enabling firms to maintain operational flexibility in the face of financing frictions. By relying on retained earnings and maintaining substantial cash reserves, firms can avoid dependence on costly or uncertain external funding, particularly during periods of heightened uncertainty (Kedzior et al., 2020; Yun et al., 2021).

The application of this theory, however, is not uniform across all firms. Large, mature firms often have easier access to capital markets and credit facilities, thereby reducing their dependence on internal cash reserves. Smaller firms, start-ups, or non-rated entities, by contrast, face more significant financing constraints and may experience limited access to debt or equity markets, thus relying heavily on internal liquidity to fund operations and investments. Family-owned

businesses and closely held firms may also prefer holding more cash due to a reluctance to dilute ownership or relinquish control through equity issuance. Moreover, in environments where financial systems are less developed—such as in emerging markets—retaining cash internally becomes a rational choice to hedge against external volatility. Therefore, firm-specific characteristics such as size, age, ownership structure, and creditworthiness influence how the pecking order manifests in actual cash holding behavior, especially under economic uncertainty.

2.2. Agency Theory

Agency Theory explores the inherent conflict of interest between the owners of a firm (principals) and its managers (agents), particularly when the latter control the firm's financial resources. One of the most critical agency problems arises when firms accumulate excess cash, which can lead to inefficient resource allocation, self-serving managerial behavior, or investments in value-destroying projects (Zogning, 2017; Wibowo & Wahyudi, 2019). In such cases, cash serves not only as a liquidity buffer but also as a potential source of managerial discretion. From the agency perspective, large cash reserves may provide managers with latitude to pursue personal agendas, engage in empire-building, or delay necessary restructuring efforts. The severity of agency conflicts tends to increase in firms with weak governance structures, such as those characterized by concentrated ownership, limited board oversight, or inadequate monitoring by institutional investors. Newly listed companies or those operating in jurisdictions with weak legal enforcement are particularly vulnerable to such inefficiencies.

Conversely, in firms where governance mechanisms are robust—such as the presence of independent boards, performance-based compensation, debt covenants, or active shareholder scrutiny—cash holdings are more likely to be managed efficiently. Debt can also serve as a disciplinary tool by reducing free cash flow and subjecting managerial decisions to external evaluation. Therefore, the agency implications of cash holdings are contingent upon the institutional context and the quality of internal controls. Under Agency Theory, cash is a double-edged sword: it is necessary for stability, but it can also be potentially dangerous in the absence of oversight. This highlights the importance of designing corporate governance frameworks that strike a balance between liquidity management and accountability.

2.3. Cash Holdings

Cash holdings represent a firm's liquid resources readily available for transaction purposes, precautionary reserves, speculative opportunities, or arbitrage advantages (X. Chen et al., 2024). As a component of working capital, cash is crucial for ensuring operational continuity, capitalizing on investment opportunities, and mitigating unexpected shocks. However, excessive or insufficient cash can be detrimental—creating either opportunity costs or financial fragility.

Several theoretical frameworks help explain cash holding behavior. According to Trade-Off Theory, firms strive to find an optimal cash level that balances the benefits of liquidity against the costs of holding idle funds. Insufficient cash may constrain operations and increase reliance on expensive external financing, while excessive cash can lead to underutilized capital and agency costs (Vergara et al., 2021). Pecking Order Theory complements this by suggesting that firms accumulate cash when internal funds exceed immediate investment needs, using it as a reserve for future financing.

Additionally, the Free Cash Flow Hypothesis emphasizes the role of discretionary cash in agency problems. In firms with limited oversight, managers may misuse free cash flow for non-value-maximizing activities (Okofu-Dartey & Kwenda, 2021). Thus, the determinants of cash holdings are multi-dimensional, shaped by a firm's governance quality, investment opportunities, risk exposure, and access to capital. The strategic importance of cash also differs by industry characteristics. Capital-intensive firms (e.g., infrastructure and utilities) often require higher cash levels to fund long-term investments, whereas service- or technology-based firms can operate efficiently with leaner cash balances. Similarly, firms in volatile sectors or exposed to exchange rate risks may adopt more conservative liquidity policies. Understanding these contextual nuances is crucial for accurately interpreting empirical findings on corporate cash behavior.

2.4. World Uncertainty Index (WUI)

The World Uncertainty Index (WUI), introduced by Ahir, Bloom, and Furceri (2022), is a text-based quantitative indicator that captures the frequency of the term "uncertainty" in country-specific reports produced by the Economist Intelligence Unit (EIU). This index provides a standardized, globally comparable measure of economic and policy uncertainty by tracking the proportion of words related to uncertainty in over 100 countries. Its design allows for cross-country comparison and temporal analysis, making it a valuable tool for examining the impact of the macroeconomic environment on firm behavior. WUI scores tend to rise in response to geopolitical instability, global health crises, financial turmoil, or significant policy changes—events that increase ambiguity and risk in business environments. Compared to domestic uncertainty indices, the WUI offers a broader, internationally relevant perspective that captures systemic shocks and spillover effects.

For emerging markets like Indonesia, which are heavily reliant on international trade, commodity exports, and foreign investment, fluctuations in the WUI can have profound implications. Elevated WUI levels often coincide with capital outflows, currency volatility, and tightened credit conditions, prompting firms to reassess their financial strategies. According to Athari et al. (2024), firms in emerging economies tend to respond to rising uncertainty by adopting precautionary financial policies, including increasing cash reserves, reducing capital expenditure, or postponing long-term investments. However, the actual response to rising WUI may depend on firm-specific factors such as financial flexibility, sectoral exposure, and managerial risk aversion. In contexts where access to external finance is limited, firms may consume cash more rapidly to maintain operations, contrary to the typical precautionary expectation. As such, WUI provides not only a macroeconomic signal but also a basis for testing heterogeneous firm responses to global volatility.

2.5. Prior Studies

The relationship between uncertainty and corporate cash holdings has attracted considerable scholarly attention, particularly in light of the rising frequency and magnitude of global economic and political disruptions. However, empirical findings across regions and contexts have yielded inconsistent results, suggesting that the impact of uncertainty on corporate liquidity policies is highly context-dependent and shaped by a complex interplay of institutional, financial, and governance-related factors. Javadi et al. (2021), in a cross-country study covering 19 economies, found that higher economic policy uncertainty (EPU) is associated with a significant decrease in corporate cash holdings. They argue that

during times of uncertainty, firms may face declining revenues and tightening external financing, which compels them to draw down cash reserves to sustain daily operations. This view aligns with the transaction motive, where firms prioritize the use of cash to fulfill immediate financial obligations rather than preserving it for future uncertainty.

In contrast, other studies highlight the precautionary motive, wherein firms increase cash buffers to hedge against the unpredictability of future cash flows and to maintain financial flexibility. For instance, Tan and Aksoy-Hazır (2022) examined Turkish listed firms. They reported that cash holdings increased significantly during periods of heightened uncertainty, suggesting that firms preferred to accumulate liquidity as a form of risk mitigation. Similarly, Juselin and Juliana (2021) found that Indonesian firms increase their investment activities during periods of economic uncertainty, which necessitates the retention of higher cash levels to fund such expenditures. This finding implies a more proactive and opportunity-seeking approach to uncertainty among certain firms. Further adding to this nuanced landscape, Juliana and Budiono (2024) studied firms across ASEAN countries and found that cash holdings served as an effective buffer to mitigate the negative impact of uncertainty on capital investment, reinforcing the importance of liquidity in maintaining firm stability under volatile macroeconomic conditions. However, their findings also underscore that the strength of this mitigating effect varies significantly across jurisdictions, depending on the robustness of legal frameworks, the development of financial markets, and the availability of external financing sources.

Meanwhile, Guizani et al. (2023) studied Sharia-compliant firms in Saudi Arabia and found no significant relationship between economic uncertainty and cash holdings. Their results suggest that specific governance models, such as Sharia compliance, may impose restrictions that limit managerial discretion, thereby neutralizing the typical behavioral responses associated with uncertainty. Similarly, Marcella and Juliana (2022) reported that in some ASEAN countries, economic uncertainty was correlated with a decline in corporate cash reserves, possibly due to increased cash burn during financial stress and reduced inflows from external sources. On the other hand, Chen et al. (2023) found that Chinese firms tend to increase cash holdings during periods of high policy uncertainty, especially those operating in industries with long investment cycles or those subject to heavy regulatory oversight. This behavior reflects both the precautionary motive and a strategic response to constrained access to capital markets during periods of uncertainty. Taken together, these prior studies underscore the non-uniform effects of uncertainty on cash holding behavior. Factors such as institutional strength, investor protection, firm size, sectoral volatility, and degree of financial constraint play pivotal roles in determining how firms respond to these challenges. These contextual variables must therefore be carefully considered when interpreting results or generalizing findings across countries or industries.

2.6. Hypothesis Development

The theoretical foundation for understanding the relationship between uncertainty and cash holdings is primarily rooted in the precautionary motive of corporate finance. This motive suggests that firms will accumulate cash reserves in anticipation of adverse shocks, such as economic downturns, geopolitical tensions, or financial crises. The rationale is that during such periods, the cost of external financing rises due to greater risk aversion in capital markets and heightened information asymmetry. As a result, firms prefer to rely on internal liquidity to maintain operations, fund investment opportunities, and avoid financial distress (Chen et al., 2023; Khatib et al., 2022).

However, empirical evidence demonstrates that firm behavior under uncertainty is not universally aligned with the precautionary motive. In some cases, firms may deplete their cash reserves to cope with declining revenues, rising costs, or restricted credit access, especially when uncertainty persists over a prolonged period. This behavior aligns with the transaction motive, where firms prioritize short-term survival and operational continuity over long-term liquidity planning. Moreover, the agency theory perspective adds another layer of complexity, suggesting that in poorly governed firms, uncertainty may exacerbate agency problems, leading to inefficient cash management or opportunistic behavior by managers.

In emerging markets like Indonesia, these theoretical tensions are particularly salient. Indonesian firms often operate in environments characterized by underdeveloped financial systems, regulatory unpredictability, and exposure to external shocks, such as currency volatility or commodity price fluctuations. Consequently, firms may respond differently to global uncertainty depending on their governance quality, access to financing, and industry-specific dynamics. While some firms may increase cash holdings to build financial resilience, others may be forced to use their reserves to manage liquidity pressures, leading to declining cash levels even during periods of elevated uncertainty.

Given this dual possibility, the effect of global uncertainty on cash holdings in Indonesia is an empirical question that must be examined in the local context. The introduction of the World Uncertainty Index (WUI) as a standardized, cross-country measure of global uncertainty provides a valuable opportunity to assess this relationship objectively. Unlike previous studies that focused on domestic uncertainty or firm-specific volatility, the WUI captures macro-level risk perceptions that affect firms' strategic and operational decisions. Based on the literature and theoretical expectations, it is hypothesized that changes in the World Uncertainty Index will exert a significant influence on the cash holdings of Indonesian firms. However, the direction of the relationship remains ambiguous, given the competing forces of precautionary motives and liquidity constraints.

H1: An increase in the World Uncertainty Index (WUI) has a significant effect on the cash holdings of publicly listed companies in Indonesia.

This hypothesis serves as the foundation for the empirical analysis in the present study, which aims to shed light on how firms in a major emerging economy adjust their liquidity management practices in response to global economic and policy uncertainty.

III. Research Method

3.1. Research Design and Object

This study employs a quantitative research approach with a causal-explanatory design to empirically examine the relationship between global economic and policy uncertainty, as captured by the World Uncertainty Index (WUI), and the cash holding behavior of publicly listed firms in Indonesia. The decision to employ a quantitative method is grounded in its ability to objectively analyze patterns across large datasets and establish statistical associations between variables using formal econometric models.

A causal-explanatory design is specifically chosen to test the hypothesis that fluctuations in global uncertainty exert a significant effect on firms' decisions regarding liquidity management, particularly in the context of emerging markets. This approach allows for the exploration of cause-and-effect relationships, moving beyond simple correlations to infer the potential direction and strength of influence that the independent variable (WUI) has on the dependent variable (cash holdings). The study focuses exclusively on non-financial, publicly listed companies operating on the Indonesia Stock Exchange (IDX) over the 12 years from 2013 to 2024. The year 2013 is selected as the starting point to coincide with the availability of consistent WUI data, while the inclusion of the year 2024 ensures the study reflects the most recent macroeconomic developments, including the post-pandemic economic environment and ongoing geopolitical uncertainties.

Financial institutions, such as commercial banks, insurance firms, and investment companies, are intentionally excluded from the analysis. This exclusion is methodologically justified due to the fundamentally different regulatory frameworks, liquidity requirements, and operational models that characterize the financial sector. These firms typically face capital adequacy mandates, central bank oversight, and unique risk exposure profiles that may render their cash holding behavior structurally distinct from that of firms in the real sector. Including them could introduce heterogeneity bias into the analysis and confound the interpretation of the results. The unit of analysis in this study is firm-year observations, enabling the capture of both cross-sectional and longitudinal variation through panel data econometrics. This enables the researcher to control for unobserved firm-level heterogeneity and to detect time-varying effects of global uncertainty across multiple economic cycles. The analysis is expected to provide a generalizable understanding of how Indonesian corporations respond to macro-level risk shocks in terms of internal liquidity policy. By focusing on a large, diverse sample of non-financial firms and utilizing a structured quantitative framework, this study aims to provide robust empirical evidence to the literature on corporate cash policy under uncertainty—an area of growing importance in today's volatile global landscape.

3.2. Population and Sampling Technique

The population of this study consists of all non-financial companies listed on the Indonesia Stock Exchange (IDX) during the period under consideration (2013–2024). These firms represent a broad range of industries, including manufacturing, mining, property, trade and services, transportation, agriculture, and infrastructure, thus offering a comprehensive cross-section of Indonesia's real-sector economy. The choice to focus on listed firms is based on the availability and reliability of financial disclosures, which are regulated by the Otoritas Jasa Keuangan (OJK) and subject to annual audit requirements, thereby ensuring data consistency and comparability. To identify the sample from the population, this study employs a purposive sampling technique. This non-probability sampling method allows for the deliberate selection of firms that meet predefined criteria relevant to the research objectives. The use of purposive sampling ensures that the firms included in the analysis possess characteristics that are essential for investigating the causal relationship between global uncertainty and cash holdings. The specific sampling criteria are as follows:

- a. Actively listed and operating throughout the entire study period (2014–2024), to ensure consistent data availability and to reduce survivorship bias in the panel dataset.

- b. Availability of audited annual financial statements for each fiscal year within the observation window. This criterion is essential for accurately calculating the financial ratios and variables required in the empirical model.
- c. Exclusion of firms classified under the financial sector, including but not limited to banks, insurance companies, financing institutions, and securities firms. These firms operate under unique liquidity regulations and face different systemic risks, which could confound the analysis of general corporate behavior.

The selection process yielded a balanced yet sufficiently large sample of non-financial publicly listed companies, resulting in 5,944 firm-year observations across 782 companies. The size and diversity of the sample enhance the external validity of the findings while maintaining internal consistency by focusing on real-sector firms with similar reporting standards. Data for this study are sourced from several reputable databases to ensure accuracy and credibility:

- a. Firm-level financial data, including variables such as cash and cash equivalents, total assets, cash flow, capital expenditures, leverage, and market valuation, are obtained from S&P Capital IQ—a global financial database recognized for its comprehensive coverage of public companies in emerging and developed markets.
- b. Macroeconomic indicators, including exceptionally high annual Gross Domestic Product (GDP) growth, are retrieved from Badan Pusat Statistik (BPS), the official statistics agency of Indonesia. GDP is used as a macro-control variable to account for country-level economic performance in the regression model.
- c. World Uncertainty Index (WUI) data are sourced from the official website of the World Uncertainty Index Project (<https://worlduncertaintyindex.com/>), developed by Ahir, Bloom, and Furceri. The WUI provides quarterly and annual measures of uncertainty across more than 140 countries, using a consistent text-based methodology.

Through this comprehensive sampling design and reliable data sources, the study is positioned to produce meaningful insights into how changes influence corporate cash management decisions in Indonesia in the global uncertainty landscape.

3.3. Empirical Model

The empirical model is adapted from Liu and Zhang (2023), formulated as follows:

$$\text{Cash}_{i,t} = \alpha + \beta_1 \text{WUI}_{i,t} + \beta_2 \text{MB}_{i,t} + \beta_3 \text{size}_{i,t} + \beta_4 \text{CF}_{i,t} + \beta_5 \text{NWC}_{i,t} + \beta_6 \text{CAPEX}_{i,t} + \beta_7 \text{Lev}_{i,t} + \beta_8 \text{DIV}_{i,t} + \beta_9 \text{GDP}_{i,t} + \varepsilon_{i,t}$$

Cash: Cash holdings

WUI : World uncertainty index

MB : Market-to-book ratio

Size : Ukuran Perusahaan

CF : Cash Flow

NWC : Net working capital

- Capex : Capital expenditure
- Lev : Leverage
- Div : Dividend
- GDP : Gross Domestic Product
- ε : Error
- i : Company
- t : Time unit

3.4. Variable Measurement

Table 1. Variable Measurement

Variable	Definition	Formula
Cash	Ratio of cash & cash equivalents to total assets	Cash & Marketable Securities / Total Assets
WUI	World Uncertainty Index	Extracted from the WUI database
MB	Market to Book Value	Market Capitalization / Book Value
Size	Company size	$\ln(\text{Total Assets})$
CF	Cash flow	EBITDA / Total Assets
NWC	Net working capital excluding cash	$(\text{Current Assets} - \text{Current Liabilities} - \text{Cash}) / \text{Total Assets}$
CAPEX	Capital expenditure	Capital Expenditure / Total Assets
LEV	Leverage	Total Debt / Total Assets
DIV	Dividend dummy	1 = dividend paid; 0 = no dividend
GDP	Macroeconomic control	$(\text{GDP}_t - \text{GDP}_{t-1}) / \text{GDP}_{t-1}$

3.5. Panel Data Regression Model

The analysis employs panel data regression to account for both cross-sectional and time-series variations. Three estimation models are considered:

- a. Common Effect Model (CEM): Treats all firms identically with pooled OLS.
- b. Fixed Effect Model (FEM): Accounts for individual firm heterogeneity through dummy variables (Agusalim et al., 2019).
- c. Random Effect Model (REM): Assumes individual effects are random and uncorrelated with regressors.

3.6. Model Selection Tests

To determine the best-fitting model, the following diagnostic tests are employed:

- a. Chow Test: Compares CEM and FEM. FEM is preferred if p-value < 0.05.
- b. Hausman Test: Compares FEM and REM. FEM is chosen if p-value < 0.05.
- c. Lagrange Multiplier (LM) Test: Compares CEM and REM. REM is selected if p-value > 0.05.

3.7. Hypothesis Testing and Goodness-of-Fit

- a. Adjusted R²: Evaluates the explanatory power of the model.
- b. t-Test (Partial Significance): Assesses the significance of individual predictors at $\alpha = 5\%$.
H₀ rejected if p-value < 0.05, indicating a significant effect.
H₀ is accepted if p-value \geq 0.05.

3.8. Classical Testing and Goodness-of-Fit

To ensure the validity of OLS estimation:

- a. Heteroscedasticity Test: Conducted using Modified Wald Test.
- b. Autocorrelation Test: Conducted using the Wooldridge Test.
- c. Other standard assumptions include linearity, absence of perfect multicollinearity, normality of residuals, and exogeneity (Sihombing, 2018).

IV. Results and Discussion

4.1. Descriptive Statistics

The empirical analysis in this study is based on an unbalanced panel dataset comprising 5,944 firm-year observations, covering 782 non-financial publicly listed firms on the Indonesia Stock Exchange (IDX) over the 12 years from 2013 to 2024. The use of an unbalanced panel is justified by the natural entry and exit of firms from the sample over time due to IPOs, delistings, or temporary data unavailability. Nonetheless, the panel remains sufficiently large and diverse, enabling robust statistical inference and generalization. To mitigate the influence of extreme values that could distort the estimation results, all continuous variables were winsorized at the 1st and 99th percentiles. Winsorization is a common technique in financial research that aims to reduce the impact of outliers without entirely removing observations, thereby preserving the structure and representativeness of the dataset.

The descriptive statistics are presented in Table 1 (not shown here) and summarize the key characteristics of the variables used in the regression analysis. The average cash holding ratio (Cash_w)—calculated as cash and cash equivalents divided by total assets—is approximately 9.9%, with a minimum value of 0.1% and a maximum value of 53.5%. This indicates significant variation in liquidity policies across firms, which may be attributed to differences in industry classification, financial strategy, risk exposure, or governance quality. The World Uncertainty Index (WUI_w) has a mean value of 10.05, which reflects the average intensity of global economic and policy uncertainty perceived during the sample period. The standard deviation of the WUI suggests that there were considerable fluctuations in global uncertainty, likely driven by major geopolitical events (e.g., trade wars, COVID-19 pandemic, energy crises, and regional conflicts) that could affect investor sentiment and corporate financial strategies. Other control variables also demonstrate substantial variation:

- a. Firm Size (Size_w), measured by the natural logarithm of total assets, shows a wide range, indicating that the sample includes both small- and large-scale enterprises.

- b. Cash Flow (CF_w), calculated as EBITDA over total assets, reflects operational profitability and internal liquidity generation capacity.
- c. Net Working Capital (NWC_w) shows both negative and positive values, implying heterogeneity in working capital management strategies.
- d. Capital Expenditure (Capex_w) represents investment in fixed assets, while Leverage (Lev_w) captures the extent of debt financing in the capital structure.
- e. Dividend Dummy (DivDum_w) is a binary variable indicating whether a firm distributed dividends in a given year.
- f. GDP Growth (GDP_w), used as a macroeconomic control, captures the year-over-year percentage change in Indonesia's gross domestic product.

The overall distribution of these variables supports the robustness and diversity of the sample. These descriptive statistics provide important context for interpreting the regression results and confirm the suitability of the dataset for testing the study's hypothesis regarding the influence of global uncertainty on corporate cash holdings.

4.2. Panel Regression Model Selection

To empirically estimate the relationship between the World Uncertainty Index and corporate cash holdings, this study employs panel data regression techniques. Panel data enable the simultaneous analysis of cross-sectional (between firms) and time-series (within firms over time) variations, making them well-suited for investigating dynamic relationships and controlling for firm-specific unobservable characteristics. Three alternative econometric models are considered:

- a. Common Effect Model (CEM): Also known as pooled ordinary least squares (OLS), this model treats all firms identically, assuming no individual heterogeneity. It is the simplest model and does not account for unobserved firm-level effects.
- b. Fixed Effect Model (FEM): This model introduces firm-specific intercepts to capture time-invariant heterogeneity across firms. It is appropriate when individual firm characteristics are correlated with the explanatory variables.
- c. Random Effect Model (REM): This model assumes that firm-specific effects are random and uncorrelated with the regressors, providing more efficient estimates if the assumption holds.

To determine the most appropriate model for the dataset, a series of model selection tests is conducted:

- a. The Chow Test, used to compare the Common Effect Model and the Fixed Effect Model, yielded a p-value of 0.000, indicating that the Fixed Effect Model is statistically superior and that firm-specific intercepts significantly improve model fit.
- b. The Hausman Test, which contrasts the Fixed and Random Effect Models, also produced a p-value of 0.000, implying that the Random Effect assumption of no correlation between firm effects and explanatory variables is violated. Therefore, the Fixed Effect Model is preferred.
- c. Although not detailed here, the Lagrange Multiplier Test would be used if comparing CEM and REM, but given the results of the Chow and Hausman tests, the REM is ruled out.

Based on these test outcomes, the study proceeds with the Fixed Effect Model (FEM) as the primary specification. The FEM controls for all time-invariant firm-specific characteristics—such as corporate culture, long-standing policies, or management philosophy—that may influence cash holding behavior but are challenging to measure directly. This enhances the internal validity of the estimation and reduces the bias from omitted variables.

4.3. Classical Assumption Testing

Before interpreting the regression results, it is crucial to verify whether the underlying assumptions of the panel regression model are met. Violations of these assumptions—such as heteroskedasticity or autocorrelation can lead to inefficient or biased estimates, thus undermining the reliability of statistical inferences. Two diagnostic tests were conducted to assess the presence of heteroskedasticity and autocorrelation:

- a. The Modified Wald Test for Groupwise Heteroskedasticity was applied to the Fixed Effect Model. The result showed a p-value of 0.000, indicating the presence of heteroskedasticity, i.e., the variance of the error term is not constant across observations. This violates one of the classical linear regression assumptions and may result in underestimated standard errors if left unaddressed.
- b. The Wooldridge Test for Autocorrelation in panel data was also performed. The test returned a p-value of 0.000, confirming the existence of first-order autocorrelation—a situation in which the error terms are correlated over time within the same firm. This can lead to biased test statistics and invalid hypothesis testing.

Given the detection of both heteroskedasticity and autocorrelation, standard fixed effect regression using OLS is no longer sufficient. To address these issues and ensure the robustness of the estimated coefficients, the regression was re-estimated using Driscoll-Kraay standard errors. This technique adjusts the standard errors for both cross-sectional dependence and serial correlation, making it particularly suitable for macro-financial panel datasets such as this one. By implementing these corrections, the study ensures that the statistical inference—especially regarding the significance of the World Uncertainty Index—is valid and reliable.

4.4. Hypothesis Testing

- a. R-squared and Model Fit

The adjusted R^2 value of 0.428 suggests that the WUI and control variables explain 42.8% of the variation in cash holdings. The model is statistically significant ($p < 0.001$), confirming the relevance of the predictors.

- b. t-Test and Regression Output

Regression results (Table 4) indicate that WUI_w has a negative and statistically significant effect on cash holdings ($\beta = -0.008$; $p = 0.001$), supporting Hypothesis 1. Several control variables (e.g., CF_w, Capex_w, GDP_w) are also statistically significant at the 5% level.

Table 2. t-Test and Regression Output

Cash_w	Coefficient	t	P>t
WUI_w	-0.008	-4.460	0.001
MB_w	0.000	-0.910	0.381
Size_w	-0.010	-18.830	0.000
CF_w	0.143	18.120	0.000
NWC_w	-0.222	-21.810	0.000
Capex_w	0.205	8.880	0.000
Lev_w	-0.106	-31.270	0.000
DivDum_w	0.035	18.720	0.000
GDP_w	0.044	4.480	0.001
_cons	0.345	17.940	0.000

4.5. Discussion

The results show that increased global uncertainty, as measured by the WUI, is associated with a significant decrease in corporate cash holdings among Indonesian public firms. This finding is consistent with prior studies by Javadi et al. (2021), Marcella et al. (2022), and Das et al. (2024), who observed a negative correlation between economic uncertainty and cash levels. This inverse relationship can be attributed to several factors:

- a. Under heightened uncertainty, operational revenues decline, causing firms to utilize existing cash reserves for daily operations, debt repayment, and payroll.
- b. External shocks such as supply chain disruptions or falling demand force firms to activate precautionary reserves.
- c. During uncertain periods, access to external financing becomes restricted, making cash usage a necessity rather than an option.

These behaviors align with the transaction motive of cash holding (Chen et al., 2024), whereby firms use liquid assets to fulfill routine obligations. Additionally, the results challenge the typical assumption under the precautionary motive, where firms are expected to increase—not decrease—cash holdings under uncertainty. Instead, the findings suggest that cash might be consumed faster than replenished under such conditions. Overall, the findings contribute to the growing body of literature that reveals context-dependent effects of uncertainty on liquidity management, especially in emerging markets where financial access and macroeconomic resilience are weaker.

V. Conclusion

This study empirically investigates the relationship between global economic and policy uncertainty, as measured by the World Uncertainty Index (WUI), and the level of corporate cash holdings among non-financial, publicly listed firms in Indonesia from 2013 to 2024. Drawing on theoretical frameworks such as the precautionary motive, agency theory, and pecking order theory, this research aims to explore how firms in emerging markets adjust their liquidity strategies in response to external uncertainty shocks. Using panel data regression techniques, with the application of Fixed Effects Models

and robust standard errors based on Driscoll-Kraay corrections, the results provide compelling evidence of a statistically significant negative relationship between WUI and corporate cash holdings. This suggests that rising levels of global uncertainty are associated with a decline in the internal liquidity reserves of Indonesian firms.

This counterintuitive result deviates from traditional expectations under the precautionary motive, which typically posits that firms will increase cash holdings during periods of uncertainty to safeguard operational continuity and financial flexibility. Instead, the findings of this study suggest that Indonesian firms may be compelled to draw down their cash reserves to sustain operations, cover rising costs, and meet debt obligations, particularly in the face of tightening credit markets and declining revenues during periods of volatility. These results underscore the significance of contextual factors in influencing corporate financial behavior, particularly in emerging markets where access to external financing is often limited, and firms operate within less predictable regulatory and macroeconomic environments. Furthermore, the findings carry significant implications for managerial decision-making, investor risk assessment, and policy formulation, as discussed in the subsequent sections.

The empirical finding of a negative association between global uncertainty and cash holdings suggests several important implications for corporate managers, regulators, and investors, particularly within emerging economies such as Indonesia. These implications offer practical guidance for enhancing corporate financial resilience in times of external instability. Corporate decision-makers must recognize that traditional assumptions regarding precautionary cash accumulation may not hold during sustained or extreme uncertainty. The findings suggest that during periods of high global uncertainty, firms may experience liquidity erosion, which hampers their ability to survive and invest. Investors should treat cash holdings not merely as an indicator of operational slack, but also as a signal of a firm's financial resilience or vulnerability. The

While this study offers important insights into the relationship between global uncertainty and corporate cash holdings, it is not without limitations. This study focuses solely on publicly listed non-financial firms in Indonesia, which, while representative of one primary emerging market, may limit the generalizability of the findings to other national contexts or to private firms. Emerging economies differ significantly in terms of financial infrastructure, regulatory environments, and macroeconomic resilience. Therefore, future studies could apply similar methodologies to comparative studies across multiple countries, including both developed and developing economies, to assess whether the negative cash-uncertainty relationship holds more broadly. This study makes a significant contribution to understanding how global uncertainty influences firm-level liquidity behavior in emerging markets. The findings challenge conventional theory and open the door to deeper investigations into contextual financial decision-making, with significant implications for practitioners, regulators, and scholars alike.

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