

The impact of institutional quality on firms cash holdings: evidence from an emerging market

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Abstract

Purpose – This study investigates how institutional quality (IQ) affects corporate cash holdings (CHs) in Vietnam – an emerging market where institutional frameworks are evolving and increasingly gaining policy attention. It further examines economic uncertainty as a mediating channel in this relationship.

Design/methodology/approach – This study utilizes a panel dataset comprising 15,461 firm-year observations from 1,558 publicly listed firms in Vietnam over the period 2008–2022. We employ the fixed effects (FE) regression models to estimate the impact of IQ on corporate CHs. The analysis is further extended to explore the role of economic uncertainty in this relationship.

Findings – The results indicate that higher IQ significantly reduces corporate CHs, primarily by lowering firms' precautionary demand for cash. In addition, the study finds an inverse relationship between IQ and economic uncertainty, alongside a positive relationship between economic uncertainty and corporate CHs. These findings suggest that part of the effect of IQ on CHs operates through its ability to reduce economic uncertainty, thereby diminishing the need for precautionary cash reserves.

Originality/value – This study highlights the influence of IQ on one of the most critical corporate decisions – CH – in the context of an emerging economy undergoing active institutional reform. By doing so, it underscores the pivotal role of IQ not only in shaping firms' financial behavior but also in promoting economic stability, enhancing resource allocation efficiency and supporting the development of a more robust financial system.

Keywords Cash holdings, Institutional quality, Economic uncertainty, Emerging country

Paper type Research article

1. Introduction

Institutional Quality (IQ) plays an extremely important role in examining corporate finance and the business environment. Accordingly, IQ is considered to exert a significant impact on market conflicts and information asymmetry, thereby influencing firms' financing decisions (Alves and Ferreira, 2011; La Porta *et al.*, 1998), driving economic growth, investment and financial development (Acemoglu, 2005), enhancing corporate governance and transparency (Doidge *et al.*, 2007), and reducing the cost of equity capital (Hail and Leuz, 2006). Furthermore, Çam and Özer (2021) assert that improving a country's institutional environment increases businesses' access to long-term financing, making long-term investments that foster economic growth more feasible. Meanwhile, a study by Khan *et al.* (2022) in developing and emerging economies also shows that strengthening IQ is crucial for financial development, suggesting that developing countries should focus on improving IQ. Moreover, robust IQ is not merely a goal but also a foundational bedrock for sustainable development. This underscores the importance of assessing and enhancing IQ as an integral part of the economic

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development process. Research in this area not only aids in formulating strategic development orientations but also highlights the essential role institutions play in building a strong and enduring economy.

Cash is an important and highly liquid corporate asset. Prior research has identified several key determinants of corporate cash holdings (CHs), including transaction costs (Mulligan, 1997), precautionary motives (Opler *et al.*, 1999; Han and Qiu, 2007; Bates *et al.*, 2009), corporate governance (Dittmar and Mahrt-Smith, 2007; Harford *et al.*, 2008), tax incentives (Foley *et al.*, 2007; Pinkowitz *et al.*, 2006) and product market competition (Fresard, 2010). In recent years, research on the factors influencing corporate CHs has gained increasing attention. One such factor is IQ, which can affect a firm's cost of capital and its ability to access external financing, thereby influencing the amount of cash held as a safeguard. Furthermore, IQ is linked to investment, since greater investment opportunities allow firms to utilize their capital in profitable projects. Consequently, investigating the relationship between IQ and corporate CHs is essential. However, there remains a dearth of studies on this topic, particularly in emerging markets like Vietnam, where institutional frameworks are still evolving. Our study addresses this gap by examining how IQ influences corporate CHs in Vietnam.

We perform a Fixed Effects Model (FEM) analysis using a dataset of 15,461 firm-quarter observations from Vietnamese listed firms over the period 2008–2022. The data are collected from the financial statements of companies listed on Vietnam's stock exchanges, including the HOSE, HNX, UPCOM and OTC markets, as provided by Fiin Pro. To measure IQ, we construct an IQ index for Vietnam using six indicators from the World Governance Indicators (WGI) dataset: voice and accountability, control of corruption, government effectiveness, political stability and absence of violence/terrorism, regulatory quality and rule of law, sourced from publicly available World Bank data.

Our findings indicate that IQ has a negative effect on corporate CHs. This relationship arises because higher IQ reduces economic uncertainty, which in turn lowers firms' precautionary cash reserves. To validate this argument, we conduct a correlation analysis examining the correlation between IQ and economic uncertainty. In addition, we perform a regression analysis to investigate the effect of economic uncertainty on corporate CHs. We use the World Uncertainty Index for Vietnam (WUIVNM) (Ahir *et al.*, 2022) as a proxy for economic uncertainty. The results confirm that an improvement in IQ leads to lower economic uncertainty, which subsequently reduces firms' CHs. Furthermore, we conduct robust checks using both quarterly data and separate analyses for different stock exchanges. The results remain consistent across all specifications, confirming the robustness of our findings.

The contribution of this study is threefold. First, it extends the literature on corporate CHs by providing empirical evidence on the role of IQ in shaping firms' liquidity management strategies. While previous studies have primarily focused on firm-specific and macroeconomic determinants of CHs, our research highlights the importance of institutional factors in reducing precautionary cash reserves by mitigating economic uncertainty. Second, this study contributes to institutional economics and corporate finance literature by demonstrating the channel through which IQ influences corporate cash policies. Specifically, we show that higher IQ reduces economic uncertainty, which in turn leads to lower CHs. By incorporating the WUIVNM as a measure of economic uncertainty, we provide novel insights into how governance improvements impact firm behavior in an emerging market. Third, from a practical and policy perspective, our findings offer important implications for financial managers and policymakers. For corporate decision-makers, the results emphasize the need to consider institutional factors when designing cash management policies. For policymakers, our study underscores the benefits of strengthening institutional frameworks to create a more stable economic environment, which ultimately reduces firms' need for excessive cash buffers. By focusing on Vietnam, an emerging economy with evolving institutional structures, our research also provides valuable insights for other developing markets undergoing similar transitions.

This paper is structured into six sections. Following the Introduction, [Section 2](#) presents the theoretical framework, providing a foundation for understanding the relationship between IQ and corporate CHs. [Section 3](#) focuses on literature review and hypothesis development. [Section 4](#) includes a detailed description of the data and research methodology employed in the study. [Section 5](#) presents empirical results and discussion, analyzing the findings in relation to existing literature. Finally, [Section 6](#) concludes the paper by summarizing key insights, discussing policy implications and suggesting directions for future research.

2. Theoretical framework

2.1 Institutional theory

Institutional theory posits that the behavior of individuals and organizations is not solely determined by economic rationality or the goal of profit maximization but is deeply shaped by the institutional environment in which they operate ([Scott, 1995](#)). Institutions – including formal rules such as laws and regulations, as well as informal norms, values and cultural expectations – serve as the “rules of the game” that structure decision-making, risk perception and resource allocation ([North, 1990, 2005](#)).

In the corporate context, institutional theory emphasizes the critical role of IQ in shaping financial behavior. When institutions are weak – characterized by legal uncertainty, ineffective enforcement mechanisms and limited protection of property rights – firms often face higher transaction costs and reduced access to external finance ([La Porta et al., 1998; North, 2005](#)). This may increase firms’ motivation to hold cash as a precautionary measure to cope with risks and unexpected funding shortages. In contrast, in environments where institutions are stable, transparent and reliable, firms benefit from an efficient legal system, reduced uncertainty and transaction costs, thereby lowering the need for precautionary CHs and enabling the reallocation of financial resources toward investment and growth opportunities.

From this perspective, institutional theory not only helps explain cross-country differences in corporate CH behavior but also suggests that improving IQ can serve as a lever to promote more efficient and strategic financial decision-making within firms.

2.2 Agency theory

The agency theory posits that corporate financial decisions are influenced by conflicts of interest between shareholders and managers. Much of the literature has examined whether agency theory can explain the level of corporate CHs (e.g. [Opler et al., 1999; Dittmar et al., 2003](#)) and whether CHs affect firm value through agency problems (e.g. [Harford, 1999; Mikkelsen and Partch, 2003](#)).

In strong institutional environments, high levels of transparency and effective monitoring help reduce agency costs. When financial information is disclosed accurately and timely, managerial misuse of cash becomes easier to detect. At the same time, effective oversight – through shareholders, independent boards or legal mechanisms – increases the likelihood of sanctions against self-serving behavior. As a result, managers have less incentive to retain excess cash for personal discretion. Moreover, in well-functioning institutions, firms face fewer informal costs and legal uncertainties, reducing the need to hold cash for precautionary or political reasons.

Thus, agency theory offers a valuable framework for understanding the relationship between IQ and corporate CHs, particularly in emerging markets where governance structures are still developing.

3. Literature review and hypothesis development

3.1 Literature review

IQ and governance play a pivotal role in shaping corporate financial decisions, investor protection and firm behavior, particularly in emerging markets. [Stulz \(2005\)](#) introduces the

“twin agency” problem, highlighting both insider expropriation and state intervention as significant factors affecting firms and their investors. Building on this, empirical studies explore the multifaceted impact of IQ on financial constraints, corporate CHs and investment decisions.

A strand of research emphasizes the role of government quality in alleviating financial constraints. [Fan et al. \(2013\)](#) stress the importance of government quality in emerging markets, particularly in China, where executive constraints are insufficient to regulate politicians’ behavior. In line with this, [Pinkowitz et al. \(2006\)](#) find that weak investor protection leads to a significant discount on corporate CHs, while [Kalcheva and Lins \(2007\)](#) show that shareholder rights alone do not directly influence CHs but interact with managerial control rights to shape corporate liquidity decisions. Similarly, [Kusnadi et al. \(2015\)](#) demonstrate that institutional development mitigates political extraction threats, enabling non-state-controlled firms to maintain higher cash reserves, though the effect weakens for politically connected firms.

Beyond corporate finance, IQ has broader economic implications. [La Porta et al. \(1998\)](#) highlight the importance of legal systems and investor protection, while [Acemoglu \(2005\)](#) and [Doidge et al. \(2007\)](#) link institutional frameworks to financial development and corporate governance improvements. Poor IQ, particularly corruption, has been shown to stifle investment incentives ([Beekman et al., 2014](#)), whereas a robust institutional environment enhances transparency and reduces information asymmetry ([Elbadry et al., 2015](#)). Institutional strength also supports prudent macroeconomic policies, as demonstrated by [Bermei et al. \(2018\)](#) and [Canh et al. \(2021\)](#), who find that better banking regulations and fiscal policies foster credit allocation efficiency and reduce systemic risks.

The role of institutions extends to fostering a competitive business environment. Strong institutions mitigate risks associated with corruption and administrative inefficiencies, ensuring a stable and transparent economic landscape. This, in turn, enhances firm growth opportunities, strengthens property rights and facilitates access to financial resources. [Tran et al. \(2021\)](#) argue that in economies with a highly skilled workforce, IQ fosters cooperation, reduces transaction costs and enhances economic incentives, positioning the government as a key player in shaping economic rules.

Empirical evidence from Vietnam further underscores the significance of IQ. [Dang \(2013\)](#) finds that foreign direct investment (FDI) contributes to institutional improvements, particularly in northern provinces, while [Tran et al. \(2009\)](#) highlight that better provincial governance enhances firm performance. [Ho and Nguyen \(2024\)](#) extend this perspective to internationalization, showing that institutional factors such as transparency, land access and labor policies significantly influence the global expansion of manufacturing SMEs in Vietnam.

In sum, literature underscores the fact that IQ is a critical determinant of corporate financial behavior and economic development. By reducing transaction costs, improving governance and enhancing investor protection, strong institutions facilitate market efficiency, investment growth and firm competitiveness, particularly in emerging economies.

CHs represent the reserves maintained by firms to manage operations, address unexpected contingencies and seize potential opportunities. The motivations for holding cash can be categorized into four primary motives. First, the transaction motive, as described by [Miller and Orr \(1966\)](#), emphasizes the necessity of sufficient cash reserves for routine transactions such as paying suppliers, employees and taxes, ensuring operational efficiency and reducing reliance on frequent borrowing. Second, the precautionary motive, proposed by [Keynes \(1936\)](#), highlights the importance of cash reserves as a safeguard against economic uncertainties or difficulties in accessing external financing, allowing firms to remain flexible and operational during volatile periods. Third, the speculative motive, noted by [Opler et al. \(1999\)](#), underscores the strategic advantage of holding cash to quickly capitalize on investment opportunities such as acquisitions or new projects, enabling proactive business decisions. Finally, the agency motive, rooted in [Jensen \(1986\)](#) agency theory, suggests that managers may

accumulate excess cash to avoid external financing controls, potentially creating conflicts with shareholders who may prefer cash returns through dividends or buybacks.

CH strategies are further shaped by firm-specific factors. For instance, larger firms with significant growth opportunities tend to hold more cash to finance expansions and maintain strategic flexibility (Bates *et al.*, 2009). More profitable firms generate substantial internal cash flows (CF), reducing their need to hold large cash reserves and allowing them to allocate resources more efficiently (Dittmar and Mahrt-Smith, 2007).

Macroeconomic factors also influence CHs. During periods of economic uncertainty, firms increase cash reserves to protect against disruptions caused by fluctuating demand and market volatility (Bates *et al.*, 2009). Furthermore, interest rates affect the opportunity cost of holding cash, with higher rates prompting firms to optimize their cash management strategies to maximize returns (Faulkender and Wang, 2006). Moreover, market conditions such as access to capital markets play a crucial role in determining CHs. Firms with easier access to external financing can afford to hold less cash, relying on equity or debt issuance to meet financial needs, thereby enhancing their operational flexibility (Opler *et al.*, 1999).

While IQ is widely recognized as a key driver of market efficiency and corporate financial decisions, its impact in emerging economies with stringent government control, such as Vietnam, remains underexplored. In these contexts, heavy state intervention can distort market mechanisms, exacerbate information asymmetry and limit financial flexibility, influencing firms' CH behaviors. Unlike in more liberalized markets, where institutions primarily enhance transparency and reduce transaction costs, firms in tightly controlled economies like Vietnam may hold higher cash reserves as a precaution against policy uncertainties, regulatory constraints and restricted access to external financing. This gap highlights the need for further research on how institutional constraints in government-dominated economies influence corporate liquidity management and financial resilience.

3.2 Hypothesis development

In the context of an emerging market like Vietnam, IQ significantly influences firms' CHs by reducing economic uncertainty and improving the business environment. As IQ improves, firms tend to hold less cash since they face lower risks related to policy changes, legal enforcement and financial accessibility. Specifically, strong institutions enhance property rights, ensure contract enforcement and mitigate the risk of asset expropriation, thereby decreasing the need for precautionary CHs. Moreover, the development of financial markets under high IQ enables firms to access external funding more easily, reducing their reliance on cash reserves to manage liquidity constraints. Furthermore, a stable and transparent business environment lowers transaction costs and limits opportunistic behavior, allowing firms to allocate resources more efficiently. Based on these arguments, this study proposes the following hypothesis:

H1. Institutional quality is negatively related to corporate cash holdings.

4. Research methodology

4.1 Data and sample

Our sample includes 15,461 firm-quarter observations from 1,558 companies listed on Vietnam's stock exchanges, including the HOSE, HNX, UPCOM and OTC markets, as provided by Fiin Pro from 2008 to 2022. We classify firms in Vietnam according to the Industry Classification Benchmark (ICB). The data are obtained from audited financial statements provided by FiinPro, a reputable financial data provider in Vietnam. We exclude companies in the financial and banking sectors from the sample due to their distinct characteristics and strict regulatory requirements. To enhance the precision and reliability of the analysis, we address outliers by winsorizing the data at the 1st and 99th percentiles.

The IQ index is constructed using the Principal Component Analysis (PCA) method, a statistical technique that reduces the dimensionality of correlated variables while retaining as much variability as possible. In this study, PCA is applied to the six governance indicators from the World Governance Index (WGI), including Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law and Control of Corruption, obtained from the World Bank (Kaufmann *et al.*, 2011). The purpose of applying PCA is to transform these highly interrelated indicators into a single composite measure that best represents overall IQ.

These six indicators collectively capture distinct dimensions of governance. Specifically, Voice and Accountability measures the extent of citizen participation and freedom of expression; Political Stability and Absence of Violence/Terrorism assesses risks of political unrest; Government Effectiveness reflects the quality of public services and policy implementation; Regulatory Quality evaluates the government's ability to formulate pro-business policies; Rule of Law measures confidence in the legal system and property rights protection and Control of Corruption gauges the extent to which public power is used for private gain. Each indicator ranges from -2.5 (weak governance) to $+2.5$ (strong governance), and they are constructed based on expert assessments and surveys of households and firms (Kaufmann *et al.*, 2011). Together, these variables offer a comprehensive proxy for the institutional environment in each country.

The PCA method works by computing the covariance matrix of the original variables and then extracting its eigenvalues and eigenvectors to determine new uncorrelated components. Each eigenvalue represents the amount of variance explained by its corresponding principal component. In this case, the first principal component Comp1 is retained because it captures 69.7% of the total variance, making it the most significant underlying factor in explaining IQ (Jolliffe, 2002). The factor loadings (eigenvectors) indicate the relative contribution of each governance indicator to the new index. The results show that Government Effectiveness, Control of Corruption, Regulatory Quality, Rule of Law and Voice and Accountability contribute positively to IQ, while Political Stability and Absence of Violence has a negative loading, suggesting that increased instability negatively impacts overall IQ.

The weights assigned to each governance indicator in Comp1 are derived from their respective eigenvectors, ensuring that the final index captures the maximum variation present in the original dataset. Since the WGI data are reported at the country level, the IQ index is also computed at the national level per year, meaning that all firms in Vietnam will share the same IQ value within a given year. This measure provides a macro-level perspective on IQ and serves as a key variable in analyzing its influence on financial and economic outcomes. The construction process of PCA is provided in [Supplementary Table A1](#).

Following prior studies (Tran *et al.*, 2024), we use the Smoothed World Uncertainty Index for Vietnam (WUIVNM) as a proxy for the level of macroeconomic uncertainty in Vietnam. The WUIVNM index is collected from the link: <https://fred.stlouisfed.org/series/WUIVNM>. The WUIVNM index is constructed using reports from the Economist Intelligence Unit (EIU), a global leader in national intelligence. It captures economic and political uncertainty, including both short-term events (e.g. Brexit) and long-term geopolitical risks (e.g. Afghanistan, North-South Korea tensions). The EIU produces national reports for 189 countries, analyzing political, economic and financial trends, with expert analysts responsible for multiple countries. The index is built by counting occurrences of the words “uncertain,” “uncertainty” and “uncertainties” in EIU reports. According to the descriptive statistics in [Supplementary Table A3](#), the variable WUIVNM (World Uncertainty Index for Vietnam) has a mean of 0.093, ranges from 0 to 0.236 and has a standard deviation of 0.074, indicating moderate variation in economic and political uncertainty across the sample period.

4.2 Research models and variable construction

Our CHs model is based on previous research (e.g. Opler *et al.*, 1999; Harford *et al.*, 2008; Bates *et al.*, 2009; Phan *et al.*, 2017). In our study, the dependent variable is IQ, measured using PCA of six indicators from the WGI, while the independent variable is CH, calculated as the ratio of cash to total assets. We also include several control variables related to firm characteristics in our regression models.

We first control for *firm size* (SIZ) because larger firms tend to have higher market capitalization and better access to capital markets, which affects their ability to hold cash for investment opportunities (Opler *et al.*, 1999). Since a firm's CF plays a key role in funding investments and operational needs, directly impacting its CHs (Opler *et al.*, 1999), we also control for CF in our model. In addition, *Capital expenditures* (CAPEX) can reduce CHs since firms with strong earnings potential and better access to debt financing may not need to retain as much cash (Bates *et al.*, 2009).

We control for *Leverage* (LEV) because firms with higher debt levels may need to hold more cash as a safeguard against financial risks (Opler *et al.*, 1999). Additionally, since the *Price-to-book* (PB) ratio reflects growth potential, we expect firms' price-to-book influences their decisions to increase CHs in response to market expectations.

Other firm characteristics such as *profitability* and *liquidity* play a key role in shaping firms' CHs strategies. Firms with higher profitability (PRO) and easier access to external financing may rely less on cash reserves, while greater liquidity (LIQ) can reduce the need for holding large amounts of cash (Opler *et al.*, 1999; Almeida *et al.*, 2004).

Tangibility (TAN) is also an important factor influencing corporate CHs. Firms with more tangible assets tend to hold less cash because they can use these assets as collateral for borrowing or liquidate them if needed, providing alternative sources of liquidity (Opler *et al.*, 1999; Almeida *et al.*, 2004). In addition, we include DIVPOS as a control variable in the model, defined as a dummy variable equal to 1 if a firm pays a common dividend each year and 0 otherwise (Opler *et al.*, 1999).

We examine the impact of IQ on CHs using the following regression model:

$$CH_{i,t} = \alpha_i + \beta_1 IQ_{i,t} + \beta_2 SIZ_{i,t} + \beta_3 LEV_{i,t} + \beta_4 PRO_{i,t} + \beta_5 TAN_{i,t} + \beta_6 LIQ_{i,t} + \beta_7 CF_{i,t} + \beta_8 CAPEX_{i,t} + \beta_9 PB_{i,t} + \beta_{10} D_{i,t} DIVPOS_{i,t} + \varepsilon_{it} \quad (1)$$

In [equation \(1\)](#), the dependent variable is CH, measured by cash-to-asset ratio. The variable *i* represents an individual firm, while *t* denotes a specific year, ε_{it} is error term. The independent variable is the IQ index, derived from the PCA analysis of the six indicators according to the World Bank's WGIs. Control variables are defined in [Supplementary Table A2](#). We also control firm fixed effects (FE) to account for unobserved time-invariant firm characteristics, or industry FE to account for fixed industry impacts that are present across each industry.

5. Empirical results and discussions

5.1 Descriptive statistics

[Supplementary Table A3](#) presents the descriptive statistics of the sample data. CHs represent the level of cash that a company holds at a given point in time. In this dataset, the cash-to-asset ratio has a mean of 0.093, indicating that, on average, companies hold approximately 9.3% of their total assets in cash. The distribution ranges from 0.001 to 0.516, with a standard deviation of 0.103, suggesting moderate dispersion among firms.

The IQ index exhibits a mean value of 1.298 and a standard deviation of 1.677, reflecting substantial variation in the institutional environment across years. The IQ values range from -1.182 to 3.535, capturing year-to-year differences in the national institutional context in which all firms operate – ranging from weaker governance frameworks to more favorable regulatory conditions.

Supplementary Table A4 presents the correlation matrix among the variables used in the research model. The results show that IQ, the independent variable, is negatively correlated with the dependent variable –CHs, with a coefficient of -0.080 , suggesting that higher IQ may be associated with lower levels of corporate CHs. In addition, CH is positively correlated with profitability (PRO, 0.308), cash flow (CF, 0.232), liquidity (LIQ, 0.202), dividend policy (DIVPOS, 0.198) and the price-to-book ratio (PB, 0.113); and negatively correlated with financial leverage (LEV, -0.254) and firm size (SIZ, -0.139). Regarding the correlation among independent variables, most coefficients are relatively low, indicating a limited risk of multicollinearity. Some noteworthy relationships include a strong negative correlation between liquidity and financial leverage (LIQ and LEV, -0.568), suggesting that greater liquidity are associated with a lower level of debt financing; and a positive correlation between profitability and dividend policy (PRO and DIVPOS, 0.403), indicating that more profitable firms are more likely to pay dividends.

5.2 Empirical results on institutional quality and cash holdings

Table 1 presents the regression results examining the relationship between IQ and CHs while controlling various firm characteristics. Three different model specifications are employed to assess the robustness of the findings. Model (1) uses a pooled OLS regression, estimating the relationship without accounting for unobserved heterogeneity across firms or industries. Model (2) incorporates firm FE to control for time-invariant firm-specific characteristics that may influence CHs, helping to mitigate omitted variable bias. Model (3) includes industry FE, capturing industry-level differences that could impact cash-holding behavior, such as industry-specific financial constraints or risk exposure. Model (4), added in response to the reviewer's suggestion, incorporates firm-level means of time-varying variables under industry FE. This hybrid approach aims to partially mitigate omitted variable bias associated with time-varying factors, as firm FE alone cannot account for such variations. Across all four models, IQ consistently exhibits a negative and highly significant coefficient (-0.005 , $p < 0.01$), indicating that firms operating in better institutional environments tend to hold less cash. The results show that a one-unit increase in the IQ index is associated with 0.005 unit (equivalent to a 0.5% point) decrease in the ratio of cash to assets, suggesting economically significant evidence that stronger IQ reduces firms' CHs. This finding supports the notion that high IQ facilitates financial market development, reduce financing frictions and ultimately lower the need for precautionary CHs.

Firm size (SIZ) also shows a significant negative relationship with CHs, suggesting that larger firms, with better access to external financing, require lower cash reserves. Leverage (LEV) is negatively associated with CHs, implying that highly leveraged firms tend to hold less cash, potentially due to tighter financial constraints. Conversely, profitability (PRO), cash flow (CF), liquidity (LIQ) and dividend-paying status (DIVPOS) are all positively associated with CHs, reflecting that more profitable firms with stronger cash flow and greater liquidity tend to retain higher cash balances.

The findings of this study provide valuable insights into the financial behavior of firms in relation to IQ. The results indicate a significant negative relation between IQ and firms' CHs, implying that companies tend to decrease their cash reserves in environments characterized by higher IQ. One possible explanation for this phenomenon is the enhanced access to external financing mechanisms in regions where IQ is robust. In such environments, firms might feel more secure in relying on external sources for their financial needs, thereby reducing the necessity to hold large cash reserves as a precautionary measure. Moreover, lower levels of information asymmetry in high-quality institutional settings might enable firms to make more informed financial decisions, leading to a reduced reliance on internal cash resources. These findings shed light on the intricate relationship between IQ, financial decision-making and the management of corporate CHs, emphasizing the pivotal role that institutional factors play in shaping firms' financial strategies and liquidity management practices.

Table 1. Regression results: institutional quality and cash holdings

| | (1) CH | (2) CH | (3) CH | (4) CH |
|--------------|----------------------|----------------------|----------------------|----------------------|
| IQ | -0.005*** (0.000) | -0.005*** (0.000) | -0.005*** (0.000) | -0.005*** (0.000) |
| SIZ | -0.007*** (0.001) | -0.004*** (0.001) | -0.006*** (0.001) | -0.006*** (0.001) |
| PB | 0.005*** (0.001) | 0.000 (0.001) | 0.005*** (0.001) | 0.005*** (0.001) |
| LEV | -0.03*** (0.004) | -0.024*** (0.006) | -0.03*** (0.004) | -0.03*** (0.004) |
| PRO | 0.218*** (0.013) | 0.161*** (0.012) | 0.22*** (0.013) | 0.22*** (0.013) |
| CAPEX | -0.13*** (0.011) | -0.082*** (0.01) | -0.125*** (0.011) | -0.125*** (0.011) |
| CF | 0.11*** (0.006) | 0.125*** (0.005) | 0.111*** (0.006) | 0.111*** (0.006) |
| LIQ | 0.004*** (0.000) | 0.004*** (0.000) | 0.004*** (0.000) | 0.004*** (0.000) |
| DIVPOS | 0.023*** (0.002) | 0.01*** (0.002) | 0.024*** (0.002) | 0.024*** (0.002) |
| SIZ_mean | | | | 0.001 (0.003) |
| PB_mean | | | | 0.009** (0.003) |
| LEV_mean | | | | 0.022 (0.014) |
| PRO_mean | | | | 0.143* (0.068) |
| CAPEX_mean | | | | -0.129** (0.053) |
| CF_mean | | | | -0.102** (0.046) |
| LIQ_mean | | | | 0.002 (0.001) |
| DIVPOS_mean | | | | 0.037*** (0.01) |
| _cons | 0.254*** (0.014) | 0.203*** (0.037) | 0.304*** (0.017) | 0.253*** (0.041) |
| Firm FE | No | Yes | No | No |
| Industry FE | No | No | Yes | Yes |
| Observations | 15,461 | 15,461 | 15,235 | 15,092 |

Note(s): Standard errors are in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source(s): Authors' calculations based on the research dataset

5.3 The relationship between institutional quality and economic uncertainty

Our study suggests that IQ is negatively associated with corporate CHs because higher IQ helps reduce economic uncertainty, which in turn leads firms to hold less cash as a precautionary measure. To test this hypothesis, we examine the relationship between IQ and economic uncertainty within the same sample.

Several empirical studies have documented that the relationship between IQ and economic uncertainty is particularly relevant in emerging markets. For example, [Qamruzzaman \(2023\)](#), using data from India and Pakistan, confirms the existence of a bidirectional causal relationship between IQ and economic policy uncertainty. Similarly, [Asamoah et al. \(2016\)](#),

analyzing 40 Sub-Saharan African countries, show that IQ plays a critical role in mitigating the negative impact of macroeconomic volatility. Specifically, the interaction between IQ and economic uncertainty weakens the adverse effect of uncertainty on FDI. These findings suggest that IQ and economic uncertainty are dynamically interlinked, especially in emerging economies like Vietnam – where governance systems and macroeconomic stability are still developing.

To empirically assess this relationship, we conduct a correlation analysis between IQ and economic uncertainty, which is measured using the World Uncertainty Index for Vietnam (WUIVNM) developed by [Ahir et al. \(2022\)](#). WUIVNM is a country-specific measure of economic uncertainty, constructed based on the frequency of uncertainty-related words in the EIU country reports. This index captures the level of uncertainty in Vietnam's economic and policy environment by analyzing qualitative information from economic and political reports. A higher WUIVNM value indicates greater uncertainty, while a lower value suggests a more stable economic environment.

[Supplementary Table A5](#) presents the correlation results, showing a significant negative correlation (-0.179 , $p = 0.000$) between IQ and WUIVNM. This indicates that higher IQ is associated with lower economic uncertainty, supporting the argument that better institutions help stabilize the economic environment and reduce uncertainty.

5.4 The relationship between uncertainty and cash holdings

Since our hypothesis suggests that IQ is associated with lower economic uncertainty (EU), and EU leads to a decrease in CHs, we examine the relationship between economic uncertainty and corporate CHs to better understand how firms adjust their cash management strategies in response to uncertainty. When uncertainty increases, firms face greater risks related to future CF, credit availability and investment opportunities. As a result, they may choose to hold more cash as a precautionary measure.

To empirically test this relationship, we employ a regression model based on prior research on corporate CHs:

$$\begin{aligned} CH_{i,t} = & \alpha_0 + \alpha_1 WUIVNM_{i,t} + \alpha_2 SIZE_{i,t} + \alpha_3 PB_{i,t} + \alpha_4 LEV_{i,t} + \alpha_5 PEO_{i,t} + \alpha_6 CAPEX_{i,t} \\ & + \alpha_7 CFY_{i,t} + \alpha_8 LIQ_{i,t} + \alpha_9 DIVPOS_{i,t} + \varepsilon_{i,t} \end{aligned}$$

In this model, CHs is the dependent variable, while WUIVNM, which represents economic uncertainty, is the key independent variable. Control variables are constructed similarly to those presented in the methodology section. The dataset consists of 15,461 observations in the research sample. The model is processed using appropriate data handling techniques and undergoes necessary robustness tests to ensure the validity and reliability of the results.

[Table 2](#) presents the regression results examining the relationship between economic uncertainty (WUIVNM) and corporate CHs. Model (1) uses a pooled OLS regression, Model (2) incorporates firm FE and Model (3) includes industry FE. The findings consistently show that economic uncertainty has a positive and statistically significant effect on CHs across all model specifications. The coefficient of WUIVNM ranges from 0.075 to 0.08, with a significance level of $p < 0.01$, indicating that when economic uncertainty increases, firms tend to hold more cash as a precautionary measure against potential financial constraints, cash flow volatility and investment risks.

These findings align with the theoretical expectation that firms increase CHs in response to higher economic uncertainty caused by low IQ. At the same time, high IQ helps reduce economic uncertainty, providing indirect evidence supporting the study's main hypothesis. Specifically, stronger institutions create a more stable economic environment, lowering uncertainty and, in turn, reducing firms' need to hold excessive cash reserves.

Table 2. Regression results: economic uncertainty and cash holdings

| | (1) CH | (2) CH | (3) CH |
|--------------|----------------------|----------------------|----------------------|
| WUIVNM | 0.079*** (0.01) | 0.08*** (0.009) | 0.075*** (0.01) |
| SIZ | -0.007*** (0.001) | -0.008*** (0.001) | -0.007*** (0.001) |
| PB | 0.005*** (0.001) | -0.001 (0.001) | 0.005*** (0.001) |
| LEV | -0.027*** (0.004) | -0.014** (0.006) | -0.027*** (0.004) |
| PRO | 0.23*** (0.012) | 0.177*** (0.012) | 0.231*** (0.012) |
| CAPEX | -0.117*** (0.011) | -0.066*** (0.010) | -0.113*** (0.011) |
| CF | 0.109*** (0.006) | 0.124*** (0.005) | 0.11*** (0.006) |
| LIQ | 0.004*** (0.000) | 0.004*** (0.000) | 0.004*** (0.000) |
| DIVPOS | 0.023*** (0.002) | 0.01*** (0.002) | 0.024*** (0.002) |
| _cons | 0.253*** (0.014) | 0.29*** (0.035) | 0.304*** (0.017) |
| Firm FE | No | Yes | Yes |
| Industry FE | No | No | Yes |
| Observations | 15,461 | 15,461 | 15,235 |

Note(s): Standard errors are in parentheses

*** $p < 0.01$, ** $p < 0.05$

Source(s): Authors' calculations based on the research dataset

Overall, the results suggest that economic uncertainty plays a crucial role in shaping corporate cash-holding behavior. More importantly, by demonstrating that IQ indirectly reduces CHs through its impact on economic uncertainty, this study provides valuable insights into the broader role of governance and regulatory stability in corporate financial management. These findings emphasize the need for policymakers to enhance institutional frameworks, ensuring a more predictable business environment that allows firms to optimize their cash management strategies rather than accumulating excessive liquidity buffers.

6. Limitations, implications and conclusion

6.1 Conclusion

This study provides empirical evidence of the negative relationship between IQ and corporate CHs in Vietnam, a tightly government-controlled emerging economy. Beyond confirming this direct relationship, the study further identifies the underlying mechanism by establishing two additional links: (1) higher IQ reduces economic uncertainty, and (2) greater economic uncertainty leads to higher CHs. These findings suggest that in a stronger institutional environment, firms face lower economic uncertainty, reducing their need to hold excess cash for precautionary reasons.

By integrating the role of economic uncertainty, this study offers a more comprehensive explanation of how IQ influences corporate liquidity management. The results highlight the critical role of institutional frameworks in shaping firms' financial decisions, particularly in emerging markets where state control remains strong. These insights contribute to the broader understanding of corporate financial behavior in economies with institutional constraints and provide implications for policymakers seeking to enhance financial stability through institutional reforms.

6.2 Limitations

Despite providing empirical evidence on the negative relationship between IQ and corporate CHs, this study has several limitations. First, the measurement of IQ is based on aggregate indices, which may not fully capture firm-level perceptions of governance, regulatory effectiveness or financial market efficiency. Future research could refine this measurement by incorporating firm-level survey data or alternative institutional indicators.

Second, while the study controls key firm-specific and macroeconomic variables, potential endogeneity remains a concern. IQ and corporate CHs may influence each other simultaneously, requiring more advanced econometric techniques such as instrumental variable (IV) regression or dynamic panel models (e.g. GMM) to strengthen causal inferences.

Third, this study primarily relies on quantitative analysis, which may overlook important qualitative aspects of IQ. Future research could employ case studies, interviews or content analysis to gain deeper insight into how firms perceive and respond to institutional environments. Additionally, external shocks (e.g. political transitions, financial crises or regulatory changes) could alter the relationship between IQ and corporate CHs, suggesting the need for time-sensitive or event-study approaches.

6.3 Implications

The findings of this study have important implications for both policymakers and corporate decision-makers.

For Policymakers: The results highlight the critical role of IQ in shaping corporate financial behavior. Strengthening governance frameworks, ensuring transparent legal enforcement and reducing bureaucratic inefficiencies can create a more predictable business environment, thereby decreasing firms' need for excessive CHs. Policies that promote financial market development and reduce financing constraints will further enhance firms' ability to allocate resources efficiently.

For Firms and Investors: Firms operating in stronger institutional environments should reassess their cash management strategies and consider alternative investment opportunities rather than holding excess liquidity. Investors can also use IQ indicators as a key factor in assessing corporate financial stability and risk.

For Future Research: The study suggests the need for further exploration of the mechanisms through which IQ influences corporate financial decisions. Cross-country comparisons, industry-specific analyses and mixed-method approaches combining quantitative and qualitative data could provide a more comprehensive understanding of this relationship.

By addressing these limitations and expanding future research directions, scholars and policymakers can develop a more nuanced understanding of how IQ affects corporate financial behavior, particularly in emerging markets like Vietnam.

Supplementary material

The supplementary material for this article can be found online.

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