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Article

Economic Policy Uncertainty and Corporate Cash Holding Decisions

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Abstract: Economic policy uncertainty changes both the insurance value of corporate liquidity and the costs of retaining it. This study examines when uncertainty increases desired cash reserves, when competing mechanisms reverse that response, and why observed cash can depart from the desired buffer. A structured synthesis of corporate finance research is combined with a one-period liquidity model and transparent numerical scenarios. The model balances the opportunity and carrying costs of cash against expected losses from funding shortfalls, subject to an available-liquidity constraint. An increase in funding volatility raises optimal cash only under a stated condition; higher shortfall costs strengthen precautionary demand, while a greater internalized carrying burden reduces it. In the hypothetical baseline, optimal cash equals 8.11 units per 100 units of initial assets and rises to 10.57 when funding volatility increases. The same volatility increase, combined with a stronger carrying burden, instead produces 6.39 units. These calculations illustrate mechanisms rather than estimate policy effects. The analysis reconciles competing explanations without assuming a universal sign and establishes measurement and identification requirements for empirical research. Corporate cash policy should respond to firm-specific funding exposure, financing capacity, and governance rather than a mechanical policy-uncertainty threshold. Ultimately, this framework provides actionable insights for corporate managers and policymakers navigating volatile macroeconomic environments, ensuring robust financial stability and strategic resource allocation.

Keywords: economic policy uncertainty; corporate cash holdings; precautionary liquidity; financing constraints; corporate governance

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1. Introduction

Cash enables firms to meet obligations and sustain investment when external funding becomes costly or unavailable. It also entails an opportunity cost and may expose shareholders to inefficient managerial spending. Economic policy uncertainty intensifies this trade-off, as firms face ambiguity regarding future taxation, government procurement, regulatory frameworks, or financing conditions. A widely adopted news-based measure of economic policy uncertainty captures these concerns. Its relevance to cash management hinges on how such uncertainty affects a firm's specific funding needs and access to capital markets [1].

The foundational literature on cash holdings frames liquidity as a response to financing constraints, investment opportunities, and cash-flow volatility. Empirical analyses of historical trends in corporate cash balances further highlight the role of evolving risk profiles and firm-specific characteristics. This perspective implies that uncertainty fosters precautionary saving [1]. Several studies support this prediction in both domestic and cross-national contexts. However, other international evidence reports

inverse associations, attributing them to agency conflicts, political interference, or shareholder demands for cash distribution. A robust explanation must reconcile both patterns without presuming either holds universally.

Three conceptual distinctions are essential. Desired cash represents an *ex ante* decision, whereas reported cash reflects an *ex post* balance shaped by operating outcomes and financing activities [2]. The quantity of cash held is not equivalent to its marginal value to shareholders. Finally, policy uncertainty is distinct from realized adverse policy actions and does not directly measure firm-level cash-flow volatility. Consequently, an increase in an aggregate index may coexist with divergent liquidity decisions across firms—even when all operate under identical macro-level conditions.

This paper addresses three interrelated questions: under what conditions does uncertainty raise a firm's desired cash buffer; which countervailing mechanisms may dampen or reverse that response; and what empirical features would allow researchers to distinguish among competing explanations? It integrates a targeted synthesis of prior work with an analytical decision model, numerical sensitivity analysis, and critical assessment of empirical identification strategies [3]. The contribution lies in clarifying the precise conditions underlying conflicting theoretical predictions. The model is intentionally parsimonious, ensuring each assumption and quantitative implication remains transparent and interpretable. It is not advanced as a structural estimation framework or a novel firm-level empirical test.

The resulting argument is inherently conditional. Uncertainty may heighten the benefits of liquidity insurance while simultaneously constraining the resources available to acquire it. Stronger incentives to retain cash do not necessarily translate into higher observed balances, and large cash reserves do not, by themselves, indicate sound financial governance. These distinctions inform the subsequent literature review, model specification, interpretation of findings, and discussion of empirical implications [4].

2. Literature Review

2.1. Precautionary Liquidity and Financing Frictions

The precautionary mechanism arises from an intertemporal trade-off: funds available today may be more valuable when future investment opportunities align with weak operating cash flow. Empirical evidence indicates that firms increase cash holdings in response to cash-flow innovations, particularly when access to external financing is limited. Similarly, cash holdings have been observed to rise with anticipated volatility in future cash flows, especially where hedging instruments or external funding options are constrained. When applied to policy uncertainty, this mechanism requires a demonstrable connection between uncertain policy environments and the distribution of future funding requirements; an increase in an uncertainty index alone does not suffice to establish such a linkage [4].

Financing conditions also shape the economic cost associated with liquidity shortfalls. Debt maturity structure influences liquidity management because firms must refinance obligations on fixed schedules, which may coincide with adverse market conditions. Moreover, cash reserves and unused debt capacity serve distinct roles as liquidity buffers: their effectiveness depends on whether external financing remains accessible precisely when investment decisions must be executed. Consequently, policy uncertainty may influence corporate liquidity strategies through both operational exposure and the stability of external funding sources.

2.2. Investment Timing and Agency Costs

A separate mechanism operates through delayed expenditure. Policy uncertainty has been associated with lower capital investment, particularly where investment is irreversible or highly sensitive to regulatory or fiscal conditions [5]. Investment patterns have also been observed to fluctuate around national electoral cycles. Postponement can leave funds temporarily unspent, but its effect on closing cash balances also depends on revenue receipts, debt repayment, shareholder distributions, and external financing flows.

Political election uncertainty and continuous news-based economic policy uncertainty should likewise remain distinct conceptual and empirical constructs.

Cash holdings can safeguard valuable strategic initiatives while simultaneously enabling inefficient or non-value-adding expenditures. Empirical evidence indicates that corporate governance quality influences both the deployment and market valuation of liquidity. The marginal value of cash has been found to vary systematically with broader financial policy choices. These insights caution against equating higher cash balances with greater shareholder value. They also do not imply that weaker governance inevitably leads to larger cash reserves: dissipation of resources may reduce cash, whereas managerial preference for financial flexibility may increase retention. Governance effects must therefore be linked to specific behavioral mechanisms rather than invoked as a generic explanation for directional outcomes [6].

2.3. Conflicting Evidence and the Analytical Gap

Table 1 summarizes selected studies on economic policy uncertainty and corporate cash holdings that report varying directional associations.

Table 1. Selected Published Evidence on Economic Policy Uncertainty and Cash Holdings. Signs Summarize Reported Associations, Not Estimates Produced in This Study. Russian Observations in the BRIC Sample Begin in 2007.

Study	Setting and period	Reported sign	Main interpretive emphasis
Phan et al. [3]	United States, 1986–2015	Positive	Precautionary saving; some investment delay
Duong et al. [4]	United States, 1985–2014	Positive	Financing constraints and policy exposure
Demir and Ersan [7]	BRIC countries, 2006–2015	Positive	Precautionary liquidity in emerging markets
El Ghouli et al. [8]	19 countries, 1988–2015	Negative	Agency and political extraction costs
Javadi et al. [9]	19 non-US countries, 1991–2019	Negative	Agency problems and distribution pressure

Evidence from the United States highlights precautionary motives, with financial conditions and exposure to policy shifts influencing the relationship. International findings include both positive and negative associations with cash holdings, interpreted through organizational or governance-related frameworks. Variations across studies—including sample composition, definitions of cash, institutional contexts, and methodological approaches—preclude treating these estimates as measurements of a single underlying structural parameter [7].

The table does not attribute all variation in findings solely to governance factors [8]. For instance, studies differ in whether cash is normalized by total assets or non-cash assets, and in how time-varying effects are modeled. Some analyses indicate that higher cash levels are not primarily attributable to reduced investment, while others assign investment timing a secondary explanatory role. Such distinctions support mechanism-specific interpretation over reliance on a single unconditional hypothesis.

The present framework distinguishes among the distribution of funding requirements, the cost associated with unmet funding needs, the opportunity cost of holding cash, and the capacity to accumulate reserves [9]. Figure 1 presents these conceptual channels. This distinction also prevents uncritical interpretation of cash-flow sensitivity as a definitive indicator of financial conditions. Research has shown that intertemporal investment incentives can generate heterogeneous saving behaviors and corresponding sensitivities.

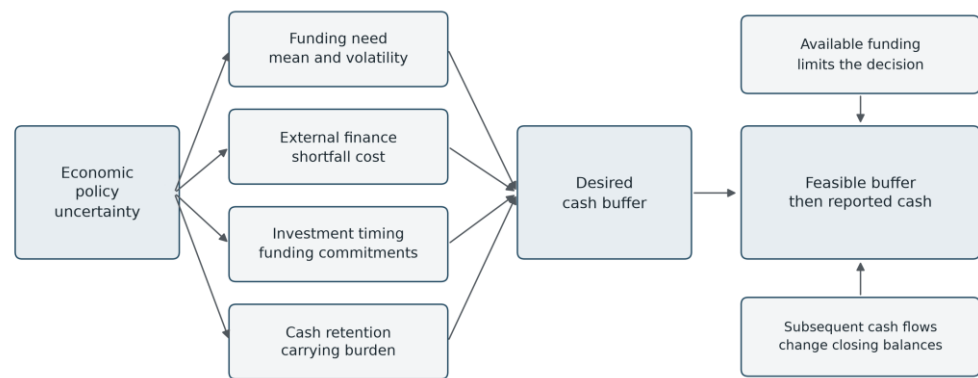


Figure 1. Conceptual Channels Linking Economic Policy Uncertainty to Cash Decisions. Arrows Represent Proposed Mechanisms, Not Estimated Causal Effects. The Feasibility Constraint Separates Desired Reserves from an Attainable Decision; Subsequent Cash Flows Determine Reported Cash.

3. Methodology

3.1. Research Design and Evidence Boundaries

This is an analytical study informed by a structured, non-exhaustive literature synthesis. Sources were selected for their relevance to economic policy uncertainty measurement, corporate liquidity mechanisms, divergent empirical findings on the relationship between economic policy uncertainty and corporate cash holdings, and panel-data interpretation. Publication metadata and claims were verified against publisher, author, or institutional records. No pooled effect size is calculated because the studies employ heterogeneous outcomes and specifications [1]. The literature establishes plausible mechanisms; it does not supply numerical calibration for the model.

The analysis proceeds by defining a one-period decision problem, deriving the interior optimum and boundary conditions, and varying explicit assumptions. All numerical values are hypothetical. There are no generated firm records, fitted coefficients, significance tests, or claims of causal identification [10]. The numerical exercise evaluates the internal implications of the framework rather than testing whether it describes a particular population.

3.2. Liquidity Decision Model

Let c denote cash chosen before a funding shock, measured in currency units per 100 units of initial assets. The fixed denominator prevents valuation or asset-contraction effects from being mistaken for cash accumulation. Net funding need X equals required payments and investment commitments less operating receipts and other dependable funding. Negative X represents a net surplus. For tractability, X follows a normal distribution with mean μ and standard deviation σ , where σ is positive [11]. This approximation permits an explicit expected-shortfall expression; it is not an empirical claim about tail behavior.

The firm minimizes total expected liquidity cost:

$$J(c) = kc + \frac{a}{2}c^2 + L E[(X - c)_+] \quad (1)$$

Here k is the positive marginal opportunity cost of holding cash, a is a nonnegative coefficient for a convex carrying burden, and L is the positive marginal loss from an uncovered funding need. The positive-part operator retains only shortfalls. L can summarize urgent financing costs and the loss associated with unmet commitments. It does not model nonlinear bankruptcy costs. The term involving a can represent an internalized burden of idle liquidity, including expected inefficient deployment. This is a shareholder-oriented benchmark, not a strategic model of managers' private benefits.

Cash must lie between zero and an upper bound denoted by $\bar{c}$. The bound represents funds that can actually be retained or raised before the shock. It distinguishes

greater demand for insurance from the capacity to obtain it. For the normal distribution, define z as the standardized buffer, Φ as the standard normal cumulative distribution function, φ as its density, and Q as its upper-tail probability. Expected uncovered funding is:

$$E[(X - c)_+] = (\mu - c)Q(z) + \sigma\varphi(z), \quad z = \frac{c - \mu}{\sigma} \quad (2)$$

The model holds investment commitments fixed while choosing the buffer [10]. Investment postponement can instead alter the mean or distribution of funding needs before this decision. Keeping these stages distinct avoids counting the same delayed expenditure as both a lower requirement and an independently created cash benefit.

3.3. Optimality and Comparative Statics

An interior optimum c^* equates the marginal carrying cost to the expected marginal reduction in shortfall losses, with z^* evaluated at c^* .

$$k + ac^* = LQ(z^*) \quad (3)$$

The objective is strictly convex because its second derivative equals a plus $L\varphi(z)/\sigma$, which is positive. The optimum is therefore unique. If the first derivative at zero is nonnegative, zero cash is optimal. If it remains nonpositive at the upper bound, the upper bound binds. Otherwise, a monotone root search solves Equation 3 between the two boundaries.

For an interior solution, denoted by c^* , differentiation with respect to funding volatility gives:

$$\frac{\partial c^*}{\partial \sigma} = \frac{L\varphi(z^*)z^*}{\sigma a + L\varphi(z^*)} \quad (4)$$

The denominator is positive, so volatility raises optimal cash when c^* exceeds mean funding need, leaves it locally unchanged at equality, and reduces it when c^* lies below the mean. Thus, even in this simple model, an increase in dispersion alone does not imply an unconditional increase in cash. By contrast, higher L or higher μ raises the interior optimum, while higher k or a lowers it. A binding upper bound on cash can prevent any increase in the feasible buffer.

Uncertainty in financial conditions can affect several parameters simultaneously [12, 13]. It may increase dispersion, raise the cost of accessing external financing, alter expected receipts, or increase the weight shareholders assign to discretionary reserves. The model does not map a given uncertainty index value to a specific change in σ . Instead, it identifies channels through which measured uncertainty could influence the decision, leaving empirical calibration to data-driven analysis.

3.4. Numerical Assumptions and Implementation

Table 2 specifies all inputs. The baseline and four alternatives isolate volatility, amplify financing costs, increase the carrying burden, or impose a binding cash cap. Parameter changes represent illustrative stress cases, not sample means or estimated policy shocks. Cash, mean funding need, volatility, and the cap share the same normalization [14]. k and L are marginal cost coefficients; a has inverse-currency units under that normalization.

Table 2. Assumed Inputs for the One-Period Numerical Analysis. Each Alternative Changes Only the Listed Baseline Parameters.

Parameter	Interpretation	Baseline	Alternative setting
μ	Mean net funding need	2.00	Held fixed
σ	Standard deviation of funding need	6.00	9.00 in all stress cases
k	Linear opportunity cost coefficient	0.030	Held fixed
a	Convex carrying-cost coefficient	0.002	0.010 in carrying-burden case
L	Loss per unit of uncovered funding	0.300	0.450 in financing-cost case
$c\text{-bar}$	Maximum feasible cash buffer	25.00	6.00 in cash-cap case

The first-order condition is solved using bisection with explicit boundary checks. The implementation verifies feasibility and the interior first-order residual, and compares the analytical volatility derivative with a finite-difference approximation. These checks confirm numerical consistency, not external validity [15]. Reported shortfall probabilities and expected shortfall amounts are computed from the assumed distribution at each scenario's selected buffer.

4. Results

4.1. Precautionary Demand and Residual Exposure

Table 3 reports the numerical outcomes. Under baseline assumptions, the optimal cash buffer is 8.11 units per 100 units of initial assets. Increasing σ from 6 to 9 raises the buffer to 10.57, an increase of 2.46 units. Despite this adjustment, the probability of an uncovered funding need rises from 15.41% to 17.05%, and its expected amount rises from 0.482 to 0.820 units. An optimal response therefore need not keep shortfall risk constant: additional protection becomes progressively costly.

Table 3. Hypothetical Model Results. Cash and Expected Shortfall Are Currency Units Per 100 Units of Initial Assets; Probabilities Are Percentages.

Scenario	Chosen cash	Shortfall probability	Expected shortfall
Baseline	8.11	15.41%	0.482
Higher funding volatility	10.57	17.05%	0.820
Volatility and financing cost	12.48	12.21%	0.543
Volatility and carrying burden	6.39	31.29%	1.815
Volatility and binding cash cap	6.00	32.84%	1.939

When volatility and the shortfall-loss coefficient rise together, optimal cash reaches 12.48 units. Relative to the volatility-only case, enhanced liquidity provision lowers shortfall probability to 12.21% and expected uncovered funding to 0.543 units. This outcome illustrates how higher-cost contingent funding strengthens precautionary demand. It does not establish a predicted cash ratio for firms classified as financially constrained.

4.2. Competing Costs and Constrained Adjustment

A stronger carrying burden reverses the cash response in the fourth scenario. With σ equal to 9 and α increased to 0.010, the buffer falls to 6.39 units, below the baseline. The firm accepts more shortfall exposure because retaining additional cash has become more costly within the stated objective. This illustrates competing incentives, not evidence that any particular governance initiative should reduce reserves.

In the final scenario, the feasible buffer is limited to 6.00 units even though the corresponding target without a binding limit is 10.57. Shortfall probability increases to 32.84%. Lower observed liquidity can therefore coexist with stronger precautionary demand. The cash limit is an externally imposed condition here; its endogenous relationship with earnings, credit commitments, or asset sales is outside the scope of the model.

Figure 2 shows how optimal buffers vary with σ under selected parameter settings. The curves distinguish greater desired protection from adjustment limitations. Cross-scenario cash differences reflect assumed changes in the decision environment, so they cannot rank corporate performance or identify welfare effects of actual policies [16].

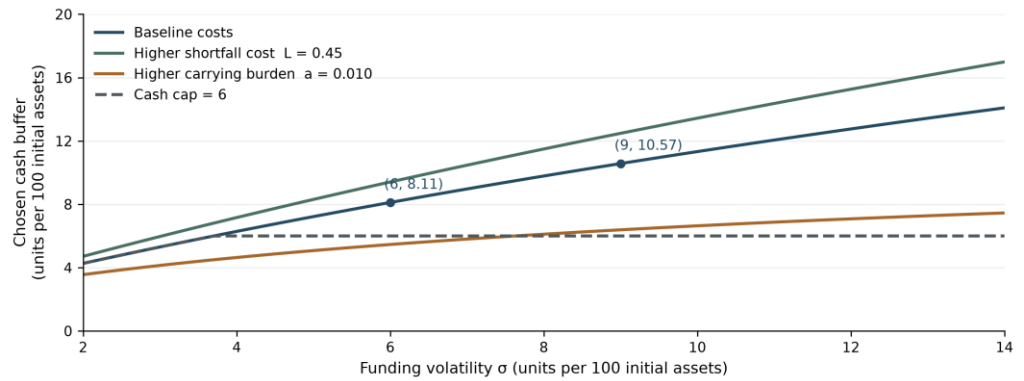


Figure 2. Sensitivity of the Chosen Cash Buffer to Assumed Funding Volatility. Other Parameters Follow Table 2. The Dashed Line Imposes a Cap of 6 Units with Baseline Cost Coefficients. All Curves Are Model Calculations, Not Fitted Relationships with the EPU Index.

4.3. A Boundary to the Positive Uncertainty Prediction

A separate numerical case illustrates the condition in Equation 4. Set μ to 12, k to 0.18, L to 0.30, a to zero, and the cap to 30. Raising σ from 4 to 8 reduces optimal cash holdings from 10.99 to 9.97 units. Both solutions remain below the mean funding need. In this parameter region, a mean-preserving increase in dispersion lowers the marginal probability that an additional unit of cash prevents a shortfall given the current buffer. This example refutes an unconditional mathematical claim; it does not indicate that the negative-response region is widespread among actual firms.

5. Discussion

5.1. Measurement and Empirical Identification

An empirical assessment must specify its outcome before interpreting underlying mechanisms. For instance, the ratio of cash and marketable securities to total assets differs conceptually and operationally from the ratio of cash to non-cash assets. Cash levels, changes in cash balances, saving behavior derived from operating cash flow, and market valuation each address distinct research questions. A rising cash ratio may reflect contraction in non-cash assets rather than actual accumulation of liquid resources. Moreover, restricted cash balances and funds required for routine operational liquidity further complicate the measurement of readily available financial insurance.

Aggregation of economic policy uncertainty measures must align with the firm's fiscal reporting period and the hypothesized decision horizon. The selected index—whether news-based or composite—must be explicitly documented. Methodologically, averaging monthly observations before applying a logarithmic transformation differs from first logging each monthly value and then averaging; neither procedure converts the index into a probability metric nor validates its interpretation as a direct measure of firm-level funding variance. Empirical results must clearly distinguish policy uncertainty from shifts in expected policy direction and from broader macroeconomic distress.

A fundamental identification challenge arises in single-country annual panels: national economic policy uncertainty varies only by year, so full year fixed effects absorb its level entirely. Including both year fixed effects and the national uncertainty level precludes identification of a separate common coefficient. One viable alternative specification instead examines differential exposure:

$$Cash_{i,t} = \alpha_i + \tau_t + \beta[\ln(EPU_t) \times E_{i,0}] + \gamma'W_{i,t-1} + \varepsilon_{i,t} \quad (5)$$

In Equation 5, firm and year effects are represented by α and τ ; E is a firm-level exposure measure fixed prior to the analysis period; W contains predetermined covariates; and ε is the residual. The interaction coefficient captures whether firms with higher exposure exhibit heterogeneous cash responses to changes in economic policy uncertainty [17, 18]. This approach does not estimate the average aggregate effect. Credible identification requires that exposure be determined ex ante—without selection based on

subsequent outcomes—and that auxiliary assumptions limit the influence of other shocks that might differentially affect exposed firms. Industry-level exposure would be fully absorbed by industry-by-year fixed effects; therefore, the source of identifying variation must be explicitly stated.

In multicountry panels, country-by-year fixed effects similarly absorb national economic policy uncertainty levels. Relying solely on common year effects preserves cross-country variation but leaves country-specific macroeconomic confounders unaddressed [19, 20]. Lagging the uncertainty variable is insufficient to resolve endogeneity concerns. Standard errors must account for within-firm temporal dependence and shared time-series shocks; large numbers of firms do not imply a correspondingly large number of independent policy events. Limited time clusters necessitate caution in finite-sample inference.

5.2. Distinguishing Mechanisms and Informing Decisions

Mechanism evidence should connect cash responses to observable intermediate outcomes. A precautionary interpretation is stronger when increased balances coincide with deterioration in financing access or greater exposure to funding shortfalls. Explanations based on investment delay require examining expenditure timing, while agency-based explanations require evidence on payouts, governance practices, or the use and valuation of reserves. A sign on economic policy uncertainty alone cannot distinguish among these channels. Contemporaneous investment or leverage may themselves respond to uncertainty, so controlling for them can remove part of the mechanism under study.

Financing conditions also require careful measurement. Certain widely used indicators have demonstrated limitations, and alternative approaches emphasize firm characteristics such as size and age. Such proxies should be combined with relevant information on credit availability, debt maturity schedules, and existing committed facilities rather than treated as direct observations of funding limitations. Cash-flow sensitivity should be interpreted in light of competing models of corporate saving behavior [19]. These considerations are particularly important when assessing whether financing conditions amplify the effect of economic policy uncertainty.

For corporate decision makers, the analysis supports scenario-based liquidity planning. Management can separate expected obligations from uncertain funding needs, assess the reliability of external facilities in adverse states, and identify the cost of holding additional reserves. A target level should then be evaluated against attainable funding sources, payout commitments, and the governance framework guiding cash deployment. For investors, a declining balance deserves a different interpretation when it reflects operating depletion rather than a deliberate distribution of surplus funds. These recommendations follow from the model's conceptual distinctions and do not prescribe a universal target ratio.

5.3. Limitations

The one-period model omits endogenous investment, dynamic borrowing, tax differences, managerial bargaining, and nonlinear distress costs. Its normal funding distribution may understate asymmetric or severe shortfalls. The convex burden aggregates several costs that an empirical study would need to separate [13, 14]. The selected literature is not an exhaustive systematic review, and the numerical parameters are uncalibrated. Consequently, the analysis establishes internally consistent conditional predictions, while their frequency, magnitude, and causal relevance remain empirical questions. Replication with documented firm data and alternative funding distributions would be necessary before using the numerical targets operationally.

6. Conclusion

Economic policy uncertainty affects corporate cash holdings through the value of liquidity insurance, the cost of external funding, the burden of retained reserves, and the ability to accumulate funds. The literature reports mixed directional associations, and the

analytical model clarifies that a universally positive relationship requires stronger assumptions than are commonly invoked. Higher volatility raises the interior cash target only when the chosen buffer exceeds the mean funding requirement; greater carrying costs or a binding limit on external financing can reverse or dampen the adjustment response.

The numerical scenarios illustrate these conditions without treating assumed parameter values as empirical evidence. They also distinguish desired cash from feasible and reported balances. Empirical research should maintain these distinctions, explicitly document definitions of economic policy uncertainty and cash, and address the collinearity arising from time-invariant national-level uncertainty measures. Practically, liquidity decisions should be linked to firm-specific exposure and financing capacity, while also evaluating intended uses of retained cash. The sign of an association between economic policy uncertainty and cash holdings alone cannot determine whether such holdings reflect precautionary efficiency or suboptimal resource allocation.

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