

Analysis of the determinants of cash holdings and the implications for local government spending effectiveness in West Java

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Abstract: *Cash management is fundamental to sustaining uninterrupted local service delivery and supporting credible budget execution. In West Java, municipal cash holdings exhibited fluctuations over 2019–2023, with only a limited number of districts/cities consistently maintaining cash holdings ratios above the operational sufficiency threshold. This study examines (i) the determinants of cash holdings Capacity and (ii) the relationship between cash holdings and expenditure effectiveness. Cash Holdings Capacity is classified as sufficient when the cash holdings ratio exceeds 100%, whereas Expenditure Effectiveness is classified as effective when the effectiveness ratio exceeds 90%. The quantitative analysis applies binary logistic regression to 27 districts/cities in West Java for the 2021–2023 period. The results indicate that cash sufficiency is associated with a combination of regional characteristics, governance-related conditions, and financial fundamentals, including population and area size, audit findings, short-term solvency, and revenue stability. In addition, the second model shows that higher cash holdings are significantly related to lower expenditure effectiveness, suggesting that cash accumulation may coincide with delays in budget absorption and spending execution rather than signalling superior fiscal performance. The study suggests that improving local cash outcomes requires a dual focus: strengthening liquidity fundamentals and revenue predictability while simultaneously enhancing institutional capacity to translate available cash into timely, effective expenditure.*

Keywords: *Cash holdings; cash management; local government finance; expenditure effectiveness; liquidity; West Java, Indonesia*

Introduction

The Indonesian government has implemented a policy of decentralization, granting local governments extensive autonomy in managing their finances. This autonomy encompasses the planning, management, and allocation of regional budgets, which are tailored to the specific needs of their respective areas. These budgets are supported by a combination of locally generated revenue and transfers from the central government. The aim of this system is to empower local administrations to respond more effectively to regional challenges and priorities, fostering greater efficiency and accountability in public financial management.

To ensure stable cash flow and avoid disruptions in government operations, local financial entities such as BUD (Bendahara Umum Daerah) and OPD (Organisasi Perangkat Daerah) prepare monthly cash budgets. These budgets are designed to monitor and regulate

the inflow and outflow of funds. However, evaluations of Local Government Financial Reports (LKPD) reveal that there are often discrepancies between planned cash flows and actual results. This misalignment is evidenced by the reliance of some local governments on short-term loans to cover immediate cash shortages, highlighting existing liquidity problems. In public finance literature, cash holdings are considered crucial for sustaining uninterrupted regional expenditure. They are frequently measured through the ratio of cash and cash equivalents to operational expenses and monthly interest obligations, as suggested by Gore (2009).

West Java Province, as one of Indonesia's most prominent regions with 27 districts and cities, presents an illustrative case of varying levels of cash holdings. Over the past five years, consolidated financial reports (LKPDK) have consistently shown that the province's cash holdings ratio exceeds 100%.

This figure indicates that local governments in West Java have generally been capable of maintaining financial stability and meeting liquidity requirements. A detailed look at the development graph of consolidated cash holdings over this period offers further insight into their practices, showcasing how the province manages to sustain a strong cash position in the face of diverse regional demands.

Figure 1 illustrates that the level of municipal cash holdings in regencies and cities throughout West Java from 2019 to 2023 exhibits a fluctuating trend. During this five-

year period, cash holdings underwent a noticeable decrease in 2021, although they remained within safe thresholds. This decline was followed by a gradual recovery in 2022 and 2023. The sharp drop in 2021 was largely driven by the Covid-19 pandemic, which disrupted fiscal stability at both regional and national scales. The pandemic caused local revenue targets to be unmet due to reduced economic activity, while at the same time, significant budget allocations were redirected to pandemic response efforts, including health services and social assistance.

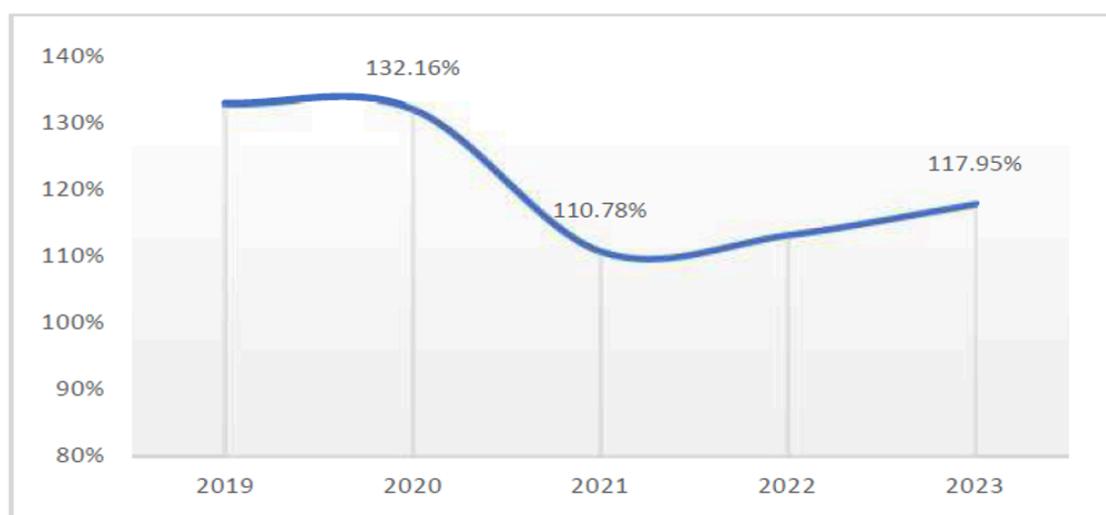


Figure 1. Trends in Municipal Cash Holdings in West Java from 2018 to 2023

Although the overall consolidated cash holdings position indicates a relatively stable financial condition, there is substantial variation across the regencies and cities in West Java. Over the last five years, the data reveals wide disparities in cash holdings ratios. For example, the highest level of cash holdings was recorded in Bekasi Regency in 2020, reaching 376.54%, reflecting a strong liquidity position. In contrast, the lowest ratio occurred in Ciamis Regency in 2021, which was only 1.13%, indicating severe limitations in available cash. These figures highlight that the fiscal capacity and liquidity of local governments in West Java are highly heterogeneous.

The interpretation of cash holding ratios provides insights into local government fiscal health. Local governments with cash holdings exceeding 100% demonstrate an ability to sustain their monthly operational expenditures without relying on outside financing, ensuring that their basic functions remain uninterrupted. Conversely, local

governments with cash holdings below 100% face limitations in meeting their monthly operational needs solely from their available cash. In such cases, they may need to resort to borrowing, delayed payments, or alternative financial instruments to maintain their operations. This distinction underlines the importance of effective cash management to ensure fiscal resilience, particularly in times of economic uncertainty.

Figure 2 highlights disparities in the cash management practices of local governments over the past five years. Specifically, it shows that only a portion of local governments in West Java consistently achieve a Cash Holdings ratio exceeding 100%, which is considered a strong financial position because it reflects that cash reserves are sufficient to cover operational expenditures. The five local governments maintaining this favourable status are Bekasi Regency, Bandung Regency, Bekasi City, Depok City, and Cimahi City. Conversely, six local governments consistently remain

below the 100% threshold, signalling that their cash reserves are inadequate to support their operational needs. These include Sukabumi Regency, Subang Regency, Kuningan Regency, Pangandaran Regency, Sukabumi City, and Tasikmalaya City. Additionally, several other

local governments demonstrate instability, alternating between strong and weak cash positions across different years, reflecting inconsistent financial performance and vulnerability to changes in revenue or expenditure patterns.

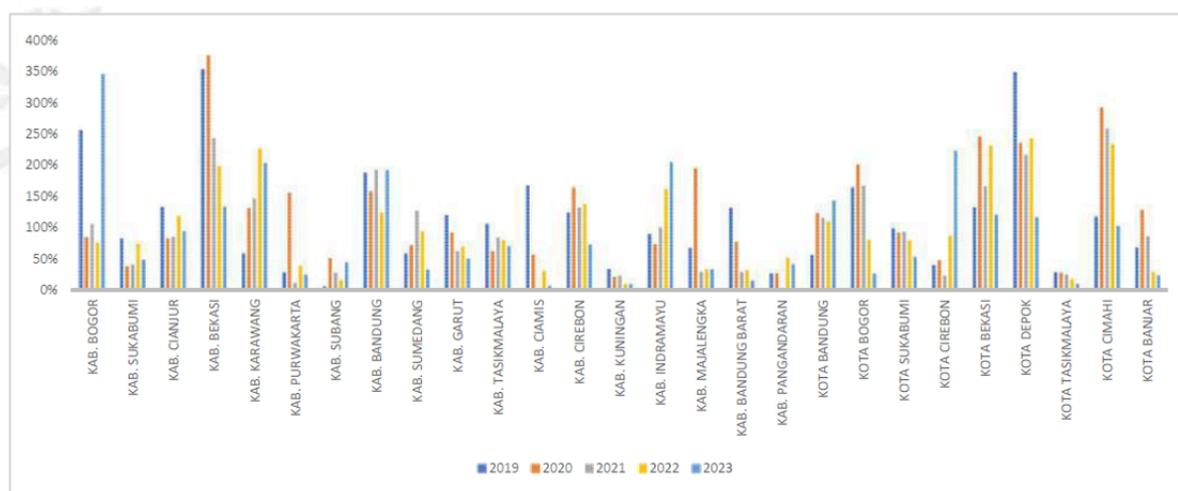


Figure 2. Local governments Cash Holdings ratio

To address the issue of cash management, the central government introduced the Treasury Deposit Facility (TDF) under PMK Number 19 of 2023. The TDF allows local governments to deposit excess funds into the State Treasury through Bank Indonesia, with the goal of improving cash control and encouraging better utilisation of idle funds. Despite this initiative, many local governments continue to maintain high TDF balances, indicating that the deposited funds are not being actively used for development or operational needs. The 2023 Local Government Financial Report (LKPD) reveals that West Java's local governments held a TDF balance of IDR 1.19 trillion, representing 16.05% of total cash and cash equivalents, which marked a significant increase compared to 2022. This suggests that while the TDF can temporarily absorb surplus cash, it does not fundamentally resolve the underlying challenges in local cash management, such as the inefficiency in fund utilisation and spending execution.

Findings from the 2023 audit by the Audit Board of Indonesia (BPK) further underscore these issues. Several local governments received a Qualified Opinion (WDP) primarily due to insufficient cash balances and the misallocation of funds for purposes other than those approved. These recurring audit findings indicate persistent

weaknesses in financial discipline and cash management practices at the regional level. The evidence of financial distress or cash constraints raises concerns about the ability of local governments to sustain operations effectively, highlighting the need for in-depth research into the determinants of Cash Holdings and the systemic factors influencing liquidity conditions in West Java's local governments.

Accordingly, the research objectives are to: (1) examine how structural characteristics of local governments, particularly population size and geographic area are associated with the likelihood of maintaining sufficient cash holdings; (2) assess the governance-related dimension of cash management through audit findings and the implementation of cashless society (CMS) arrangements; (3) evaluate how liquidity fundamentals, especially short-term solvency and revenue stability (revenue variation), shape cash holdings capacity; (4) analyse the implication of cash holdings for the probability of achieving effective expenditure realisation, as an indicator of spending absorption and execution performance; and (5) complement the quantitative evidence with a review of cash management practices in regency and city governments, including issues of planning–realisation mismatches and the handling of idle cash

Research Method

Research design

In quantitative research, sampling uses purposive sampling, a non-random method in which researchers select samples based on specific characteristics that are relevant to the research objectives (Lenaini, 2021). The sample criteria included panel data with an annual time series range from 2021 to 2023 and cross-sectional data from 27 district/city governments in West Java, covering Population Growth, Area, Population Density, BPK Audit Findings, Cash Management Systems Implementation, Minimum Cash Balance Determination, Short-Term Solvency, Budget Solvency, and Income Variation Coefficient. The data was obtained from the Regional Government Financial Reports of Regencies/Cities in West Java, BPK

Audit Reports, and regional statistical data from the Central Statistics Agency.

Variabel operasional

This study draws upon two principal frameworks to guide its analysis: first, the body of research that investigates the various factors influencing cash holdings, and second, the literature that explores how cash holdings impact the effectiveness of regional spending. By integrating these frameworks, the study seeks to provide a comprehensive understanding not only of the determinants of cash reserves but also of their broader fiscal implications. To support this approach, the variables utilized and their corresponding measurements are systematically detailed, with a complete summary presented in Table 1 and Table 2, ensuring clarity and facilitating the interpretation of the study's findings.

Table 1. Predictor Variables (Independent)

No.	Variable	Reference	Measurement
1.	Population (X1)	Jones dan Walker (2007), Pridgen dan Wilder (2012)	Population living within the local government area
2.	Area Size (X2)	Gore (2009)	Calculated based on the logarithm of the population in the area
3.	Population Density (X3)	Esteve et al (2012), Jones dan Walker (2007), De Janvry, Finan, dan Sadoulet (2012)	Population per unit area in natural logarithms
4.	Number of BPK Findings (X4)	Alphi dan Ramadhan (2018)	Number of BPK audit findings recorded in the LHP
5.	Implementation of a Cashless Society (X5)	Ghofar et al (2023)	Implementation of a Cashless Society as seen from the Cash Management Systems (CMS) program. If CMS is already in use, it is given code 1, and if not, it is given code 0.
6.	Minimum Cash Balance (X6)	Ghofar et al (2023)	If a minimum cash balance has been set, it is given code 1, and if not, it is given code 0.
7.	Short-term Solvency (X7)	Ritonga (2014)	$(\text{Current Assets} / \text{Current Liabilities}) \times 100\%$
8.	Budgetary Solvency (X8)	Ritonga (2014)	$(\text{Total Revenue} - \text{Special Allocation Fund (DAK) Revenue}) / (\text{Total Expenditure} - \text{Capital Expenditure}) \times 100\%$
9.	Coefficient of Variation of Revenue (X9)	Gore (2009)	$(\text{Standard Deviation of Revenue} / \text{Average Revenue}) \times 100\%$
10.	Cash Holdings (X10)	Gore (2009)	$(\text{Cash and Cash Equivalents} / \text{Operating Expenses including Interest Expenses}) \times 100\%$

Table 2. Response Variable (Dependent)

No.	Variable	Reference	Formula
1.	Cash Holdings Capacity (Y1)	Gore (2009)	$(\text{Cash and Cash Equivalents} / \text{Operating Expenses including Interest Expenses}) \times 100\%$ If the value is above 100%, it is considered sufficient, and if it is below 100%, it is considered insufficient.
2.	Expenditure Effectiveness (Y2)	Mahmudi (2015)	$(\text{Regional Expenditure Budget} / \text{Regional Expenditure Realization}) \times 100\%$ If the value is above 90%, it is considered effective, and if it is below 90%, it is considered ineffective.

Model Analysis

The model developed in this study utilises a binary logistic regression approach, which is designed to predict the probability of an outcome that takes on one of two possible categories, typically coded as 0 and 1. The binary logistic regression model estimates the relationship between one or more independent variables (predictors) and the log-odds of the dependent binary outcome.

$$\ln \left(\frac{\pi(x)}{1-\pi(x)} \right) \text{ or } Y1 = \alpha + \beta_1 X1_{i,t} + \beta_2 X2_{i,t} + \beta_3 X3_{i,t} + \beta_4 X4_{i,t} + \beta_5 X5_{i,t} + \beta_6 X6_{i,t} + \beta_7 X7_{i,t} + \beta_8 X8_{i,t} + \beta_9 X9_{i,t} + \epsilon \dots \dots \dots (1)$$

$$\ln \left(\frac{\pi(x)}{1-\pi(x)} \right) \text{ or } Y2 = \alpha + \beta_{10} X10_{i,t} + \epsilon \dots \dots \dots (2)$$

Explanation:

- i: district/city government in West Java
- t: sample year (2021-2023)
- α: constant
- β₁₋₁₀: regression coefficients
- X1: population size
- X2: area (log transformation)
- X3: population density
- X4: number of BPK findings

- X5: implementation of cashless society
- X6: minimum cash balance requirement
- X7: short-term solvency
- X8: budget solvency
- X9: regional income variation coefficient
- X10: Cash holdings ratio
- Y1: Cash Holdings
- Y2: Expenditure effectiveness
- ε : error term

Results

This study employs binary logistic regression to test two related models. Equation (1) estimates the likelihood that a district/city government attains sufficient cash holdings capacity (Y1), where the cash holdings ratio is classified as sufficient when it exceeds 100% and insufficient when below 100%. Equation (2) then estimates whether expenditure effectiveness (Y2) is achieved, classified as effective when the effectiveness ratio exceeds 90% and ineffective when below 90%. The first model includes nine predictors (X1–X9), while the second model evaluates cash holdings (X10) as a predictor of spending effectiveness.

Table 3. Binary logistic regression (Model 1)

Variable	B	S.E.	Wald	Sig.
Constant	-42,104	20,119	4,38	0,036
X1 (Population size)	0	0	5,358	0,021
X2 (Area)	3,87	1,628	5,654	0,017
X3 (Population density)	0,638	0,441	2,087	0,149
X4 (number of BPK findings)	0,193	0,092	4,392	0,036
X5 (implementation of cashless society)	-1,806	1,085	2,77	0,096
X6 (minimum cash balance requirement)	1,405	1,305	1,16	0,282
X7 (short-term solvency)	0,094	0,045	4,346	0,037
X8 (budget solvency)	-0,576	3,185	0,033	0,856
X9 (regional income variation coefficient)	-10,156	3,496	8,436	0,004

Note: Dependent variable (Y1) is cash holdings expenditure effectiveness

Table 3 reports the regression estimates for Y1. The constant term is negative and statistically significant (B = -42.104; p = 0.036), indicating that, when all predictors are at their reference/zero values the baseline log-odds of being in the “sufficient cash holdings” category is low. In practical terms, this result is consistent with the notion that sufficient cash holdings is

not an automatic condition; rather, it depends materially on local government characteristics, fiscal conditions, and revenue dynamics captured by the included covariates.

Among local government characteristics, population size (X1) is statistically significant (p = 0.021), although its coefficient is reported as 0 due to rounding in

the table. This pattern suggests that population exerts a measurable association with cash sufficiency, but the marginal effect is extremely small per unit of the population measure used (or becomes visible only at large changes in population). Meanwhile, area size (X2), specified with a log transformation in the study design shows a positive and significant relationship with Y1 ($B = 3.870$; $p = 0.017$). Substantively, this indicates that larger jurisdictions (in the transformed scale) have higher odds of maintaining sufficient cash holdings. Converting the coefficient to an odds ratio yields $\exp(3.870) \approx 47.94$, implying a substantial shift in the odds of cash sufficiency associated with a one-unit increase in the transformed area variable, holding other factors constant.

Table 3 further shows that audit and liquidity conditions are important correlates of cash sufficiency. The number of BPK findings (X4) is positively significant ($B = 0.193$; $p = 0.036$), with $\exp(0.193) \approx 1.21$, indicating that each additional audit finding is associated with higher odds of being classified as cash sufficient. Although this direction may appear counterintuitive, it can reflect a context in which audit findings trigger heightened administrative controls, stricter monitoring, or corrective actions that indirectly strengthen cash discipline and liquidity buffers. In parallel, short-term solvency (X7) is positively significant ($B = 0.094$; $p = 0.037$), with $\exp(0.094) \approx 1.10$. This

result is consistent with the financial logic that stronger current-asset capacity relative to current obligations supports day-to-day liquidity and therefore increases the probability of sustaining sufficient cash holdings.

In contrast, revenue volatility (X9) measured as the coefficient of variation of revenue is negative and highly significant ($B = -10.156$; $p = 0.004$). The implied odds ratio $\exp(-10.156) \approx 0.00004$, indicating that greater instability in revenue is associated with a sharply reduced likelihood of cash sufficiency. This is substantively plausible because volatile revenues complicate cash planning and can force governments to rely on short-term adjustments that compress cash buffers. Regarding governance-related variables, the implementation of a cashless society/CMS (X5) is negative and marginally significant at the 10% level ($B = -1.806$; $p = 0.096$; $\exp(-1.806) \approx 0.16$). This suggests a weaker, but non-negligible, tendency for CMS implementation to coincide with lower odds of cash sufficiency, which may reflect transitional frictions, timing mismatches, or implementation heterogeneity across local governments. Finally, population density (X3), minimum cash balance requirement (X6), and budgetary solvency (X8) are not statistically significant ($p > 0.10$), implying that their partial associations with cash sufficiency are not distinguishable from zero once the other predictors are controlled.

Table 4. Results of binary logistic regression (Model 2)

Variable	B	S.E.	Wald	Sig.
Constant	1,604	0,430	13,907	0,000
X10 (cash holding)	-0,008	0,003	6,494	0,011

Note: Dependent variable is expenditure effectiveness

Table 4 presents the second model, which tests whether cash holdings (X10) is associated with the probability of achieving expenditure effectiveness (Y2). The constant is positive and statistically significant ($B = 1.604$; $p < 0.001$), implying relatively high baseline odds of meeting the expenditure effectiveness threshold when X10 is set to zero in the model's scale. More importantly, the coefficient for cash holdings (X10) is negative and statistically significant ($B = -0.008$; $p = 0.011$). Interpreted in odds terms, $\exp(-0.008) \approx 0.992$, indicating that for each one-unit increase in the cash holdings ratio, the odds of achieving

expenditure effectiveness decline by about 0.8%, holding other factors constant. To illustrate magnitude, a 10-unit increase in the cash holdings ratio corresponds to $\exp(-0.08) \approx 0.923$, or about a 7.7% reduction in the odds of being classified as effective.

Substantively, this negative association indicates that higher cash accumulation is not necessarily aligned with stronger budget absorption or spending execution. Instead, it is consistent with an interpretation that elevated cash holdings may reflect underspending, delays in procurement and project implementation, conservative disbursement

policies, or weak absorption capacity, all of which can reduce the likelihood that expenditure realization reaches the “effective” threshold defined in the study. In this sense, Table 4 complements Table 3: while certain characteristics and financial conditions support the attainment of cash sufficiency, maintaining higher cash balances may simultaneously signal challenges in translating available liquidity into timely and effective expenditure realization

Discussion

The empirical results provide evidence that cash sufficiency and spending effectiveness are shaped by both structural characteristics of local governments and cash-flow risk conditions. In this study, cash holdings capacity is defined as sufficient when the cash holdings ratio exceeds 100%, while expenditure effectiveness is defined as effective when the effectiveness ratio exceeds 90%. Within West Java, prior descriptive evidence points to substantial heterogeneity in cash positions across districts/cities, and a persistent tendency for idle cash to accumulate in the Treasury Deposit Facility (TDF) under PMK No. 19/2023, indicating that liquidity management remains intertwined with utilisation and execution problems rather than being a purely “availability of cash” issue.

Determinants of cash holdings capacity

First, the positive and significant effect of local government size, particularly area size (X2), suggests that larger jurisdictions tend to have higher odds of maintaining sufficient cash holdings. Because X2 is operationalised using a log transformation, this result is consistent with an argument of scale and administrative capacity: larger governments may possess more established financial management structures, broader revenue bases, and more diversified expenditure profiles, enabling them to build liquidity buffers more effectively. The statistically significant population variable (X1), although rounded to zero in the reported coefficient, reinforces that demographic scale still matters, but its marginal contribution is likely small at the unit level and becomes meaningful primarily across large population differences.

Second, the positive association between BPK audit findings (X4) and cash

sufficiency is an important and somewhat counterintuitive result. One interpretation is that audit findings function as an external discipline mechanism: jurisdictions facing more findings may respond by tightening procedural controls, strengthening treasury supervision, or adopting more conservative liquidity buffers to prevent operational disruptions and reputational costs. This interpretation aligns with the broader audit context described in the manuscript, where recurring audit concerns signal weaknesses in discipline and cash management practices, potentially triggering corrective actions by local governments. However, it is also plausible that this relationship reflects reactive cash hoarding, that is, governments under scrutiny may prefer holding larger cash balances as a precaution rather than improving the efficiency of cash utilisation. In this sense, “more audit findings” does not necessarily imply stronger governance quality *ex ante* but may indicate intensified compliance responses *ex post*.

Third, the significant and positive effect of short-term solvency (X7) is theoretically coherent. Since short-term solvency captures the capacity to cover short-term obligations with current assets, its positive relationship with cash sufficiency suggests that liquidity strength is not solely driven by revenue levels, but by the broader balance-sheet position and working-capital management of local governments. This result reinforces the practical implication that improving cash sufficiency may require strengthening short-term financial resilience, through tighter receivables management, expenditure scheduling, and liability control rather than relying on *ad hoc* financing or delayed payments when cash pressures emerge.

Fourth, the strongly negative and significant coefficient for revenue variability (X9) indicates that cash sufficiency is highly sensitive to cash-flow uncertainty. With revenue variation measured using the coefficient of variation, this finding implies that jurisdictions experiencing more unstable revenue streams face greater difficulty maintaining cash reserves above the 100% threshold. Substantively, volatile revenues complicate monthly cash forecasting and increase the risk of timing mismatches between inflows and outflows, thereby reducing the probability of sustaining sufficient liquidity buffers. This result places revenue stability,

rather than revenue magnitude alone at the centre of local cash management performance.

Fifth, the negative (marginally significant) effect of cashless society/CMS implementation (X5) suggests that digital treasury reforms may not immediately translate into stronger liquidity outcomes. Since CMS is coded based on whether it is used (1) or not (0), the coefficient can plausibly reflect transition and implementation frictions, such as uneven user capabilities, partial compliance across organisational units, temporary process bottlenecks, and learning costs during system adoption. Consequently, the result should not be interpreted as evidence against digitalisation per se, but rather as an indication that technology adoption requires complementary changes (procedures, training, enforcement, and integration with budgeting/procurement cycles) before it produces measurable improvements in cash outcomes.

Finally, several predictors population density (X3), minimum cash balance requirement (X6), and budget solvency (X8) are not statistically significant in the multivariate model. A reasonable explanation is that their effects may be context-dependent (varying by local administrative quality, revenue composition, or expenditure rigidity) or may operate indirectly through other included variables (e.g., solvency and revenue stability). In addition, binary codings for policy variables (such as the minimum balance requirement) may be too coarse to capture meaningful differences in the stringency and enforcement of those rules across jurisdictions.

Cash holdings and expenditure effectiveness

The second model indicates that cash holdings (X10) is negatively and significantly associated with expenditure effectiveness (Y2). Interpreted substantively, this suggests a potential liquidity–execution trade-off: higher cash balances may reflect idle funds and delayed disbursement rather than superior fiscal capacity. This pattern is consistent with the policy context in which large idle balances are parked in the TDF, implying that surplus cash can be absorbed temporarily without necessarily improving the underlying efficiency of fund utilisation and spending execution. Under this interpretation, high cash holdings may be symptomatic of procurement delays,

weak project readiness, cautious disbursement practices, or mismatches between cash budgets and realised spending factors that reduce the likelihood of meeting the effectiveness threshold even when cash is available.

Taken together, the two models imply that achieving cash sufficiency is supported by structural capacity (size), liquidity strength (short-term solvency), and revenue predictability, whereas translating liquidity into effective spending requires managerial and institutional capability to execute budgets on time. This reinforces a key policy implication: improving local fiscal governance should not be framed only as “increasing cash buffers,” but also as ensuring that cash is actively converted into timely service delivery and development outcomes, through better cash forecasting, tighter alignment of budgeting with procurement schedules, and stronger enforcement of cash management practices.

Conclusion

This study set out to explain (i) which factors determine whether district/city governments in West Java maintain sufficient cash holdings capacity and (ii) whether cash holdings are associated with expenditure effectiveness, using binary logistic regression. Cash holdings capacity (Y1) is classified as sufficient when the cash holdings ratio exceeds 100%, while expenditure effectiveness (Y2) is classified as effective when the effectiveness ratio exceeds 90%. The findings collectively indicate that liquidity strength is shaped not only by structural characteristics and fiscal conditions, but also by revenue stability and implementation capacity in cash management.

With respect to cash holdings capacity (Equation I), the results show that several factors significantly differentiate local governments that are more likely to maintain cash sufficiency. In particular, area size (X2) has a positive and significant association with cash holdings capacity ($B = 3.87$; $p = 0.017$), indicating that larger jurisdictions are more likely to achieve sufficient cash buffers. The model also identifies significant effects from population size (X1) ($p = 0.021$), the number of BPK findings (X4) ($B = 0.193$; $p = 0.036$), and short-term solvency (X7) ($B = 0.094$; $p = 0.037$). Taken together, these results suggest that structural capacity and liquidity resilience matter: jurisdictions with stronger

short-term financial positions and governance signals (as proxied by audit findings) tend to be more likely to preserve operational cash adequacy.

At the same time, the analysis demonstrates that revenue instability is a critical risk factor for liquidity sufficiency. The coefficient of the regional income variation coefficient (X9) is negative and highly significant ($B = -10.156$; $p = 0.004$), implying that higher revenue volatility substantially reduces the likelihood of maintaining sufficient cash holdings capacity. This reinforces the practical importance of improving revenue predictability and cash-flow forecasting as core elements of local fiscal resilience, beyond merely increasing nominal revenue or relying on ad hoc liquidity measures. The negative and marginally significant estimate for cashless society/CMS implementation (X5) ($B = -1.806$; $p = 0.096$) further implies that digital cash management reforms may face transitional frictions and thus require complementary institutional strengthening to translate into stronger cash outcomes.

Regarding the implications of cash holdings for expenditure effectiveness (Equation II), the model indicates a negative and statistically significant relationship between cash holdings and the probability of achieving effective expenditure performance ($B = -0.008$; $p = 0.011$). This result suggests that higher cash accumulation may coincide with weaker budget execution, consistent with the interpretation that elevated cash balances can reflect delays in disbursement, procurement bottlenecks, or limited absorption capacity, rather than improved fiscal performance. In policy terms, this conclusion is aligned with concerns about idle cash management, including the use of the Treasury Deposit Facility (TDF) under PMK No. 19/2023 and the persistence of sizeable TDF balances among West Java local governments.

Overall, the study's evidence supports a central implication: strengthening local public financial management should pursue a balanced strategy, maintaining adequate liquidity buffers while simultaneously improving the institutional capability to convert available cash into timely, effective expenditure. The determinants identified for Y1 highlight the role of scale, solvency, audit-related governance pressures, and revenue stability, whereas the negative association between cash holdings and

Y2 emphasises that cash surpluses, if not actively managed, may signal inefficiencies in spending execution rather than fiscal strength.

Limitations

First, the study's external validity is constrained by geographic and temporal scope. The empirical setting is limited to district/city governments in West Java (27 jurisdictions), and the regression specification explicitly defines the sample years as 2021–2023. Although the descriptive narrative discusses trends over a longer horizon (e.g., 2019–2023), the inferential claims from Tables 3 and 4 should be interpreted as reflecting the shorter estimation window. This context may limit the generalisability of findings to other provinces with different fiscal structures, administrative capabilities, and governance environments, as well as to periods characterised by different macro-fiscal shocks.

Second, the study relies on binary classifications of key outcomes, which may introduce information loss. Cash holdings capacity (Y1) is dichotomised using a 100% threshold, and expenditure effectiveness (Y2) is dichotomised using a 90% threshold. While these cut-offs improve interpretability and align with established measurement approaches, converting continuous ratios into binary categories may obscure meaningful variation within “high” and “low” groups, reduce statistical power, and make results sensitive to the chosen thresholds.

Third, several predictors are operationalised using proxy measures and coarse codings, which may not fully capture institutional complexity. For example, the implementation of a cashless society (CMS) and the existence of a minimum cash balance policy are measured as dummy variables (1/0). Such operationalisation does not distinguish differences in policy design, enforcement strength, implementation maturity, or system integration across local governments. Similarly, the number of audit findings may vary in severity and materiality, yet it enters the model as a simple count, potentially masking qualitative differences in governance risk.

Fourth, the empirical models should be interpreted primarily as associational rather than causal. The study uses observational administrative measures and applies logistic regression to estimate relationships between

predictors and outcomes. It is therefore possible that some relationships reflect reverse causality or simultaneity (e.g., cash management practices and spending execution influencing each other), as well as omitted factors such as procurement readiness, political budget cycles, administrative capacity, or intergovernmental transfer timing that are not explicitly modelled.

Fifth, the specification for Equation (II) includes only cash holdings (X10) as a predictor of expenditure effectiveness. This parsimonious design is useful for isolating the bivariate association, but it also increases the likelihood of omitted-variable bias, because expenditure effectiveness is plausibly influenced by multiple fiscal, managerial, and institutional determinants beyond liquidity. Future work could extend this model by adding controls (budget composition, procurement indicators, capital spending share, or institutional capacity proxies) to test the robustness of the cash-holdings effect.

Finally, the study depends on secondary financial and audit reporting measures, which may be subject to measurement error and comparability challenges across jurisdictions and years. Differences in reporting practices, timing of recognition, and administrative documentation quality can introduce noise into both dependent variables and predictors, potentially attenuating coefficients or inflating uncertainty in inference.

Policy and managerial recommendations for local governments

First, local governments should strengthen cash forecasting and monthly cash budgeting discipline to reduce timing mismatches between inflows and outflows. The results indicate that revenue volatility (X9) substantially lowers the probability of achieving sufficient cash holdings capacity (Y1). Practically, this implies that cash sufficiency is not only a matter of “how much revenue” is received, but also “how predictable and schedulable” those revenues are. Therefore, district/city treasuries should institutionalise rolling cash forecasts (e.g., monthly updated projections), strengthen reconciliation between revenue realisation and disbursement plans, and improve coordination between BUD and OPD to ensure that expenditure scheduling is aligned with expected cash availability.

Second, the Province and local governments should prioritise reforms that improve short-term liquidity resilience, given the positive and significant role of short-term solvency (X7) in explaining cash sufficiency. This can be operationalised through more stringent management of short-term obligations, clearer prioritisation rules for payments, and improved working-capital practices (e.g., preventing the accumulation of arrears, accelerating the administrative processing of revenues, and ensuring that obligations are recorded and monitored in real time). Such steps can improve cash discipline without resorting to reactive financing measures and can reduce operational disruptions that often arise when cash buffers tighten.

Third, audit information should be used more explicitly as a learning and corrective governance instrument, rather than treated merely as compliance documentation. The positive association between BPK audit findings (X4) and cash sufficiency suggests that audit pressure may trigger tighter controls or more conservative liquidity management. To convert this dynamic into sustainable improvement, local governments should develop structured follow-up mechanisms: prioritising remediation plans, assigning responsibilities and timelines to OPD, and monitoring the closure rate of findings. The objective is to shift from reactive “cash hoarding” behaviour to proactive governance improvements that enhance both liquidity management and expenditure execution.

Fourth, policymakers should treat cashless society/CMS reforms as an institutional transformation requiring complementary capabilities, not merely as technology adoption. Because CMS implementation (X5) is negative and marginally significant for cash sufficiency, the findings suggest possible transition frictions or uneven implementation quality. Accordingly, governments should invest in user training, standard operating procedures, integration with procurement and budgeting processes, and internal control redesign. CMS can yield benefits only when it is embedded in end-to-end financial workflows, including authorisation, verification, and disbursement monitoring. Recommendations to improve expenditure effectiveness and reduce idle cash

Fifth, local governments should balance the objective of maintaining adequate

liquidity with the need to avoid idle cash accumulation, given the negative and significant relationship between cash holdings (X10) and expenditure effectiveness (Y2). This implies that high cash balances may reflect delays in procurement, weak project readiness, or conservative disbursement practices that impede budget absorption. Therefore, local governments should focus on improving upstream execution capacity: earlier procurement planning, strengthening project pipelines, ensuring timely tender processes, and reducing administrative bottlenecks that delay spending. In parallel, spending units should be evaluated not only on compliance but also on timeliness and quality of budget implementation.

Sixth, the central and provincial governments may strengthen incentives and monitoring related to Treasury Deposit Facility (TDF) utilisation, ensuring that TDF is not used as a passive parking mechanism for persistent idle funds. The manuscript's context highlights that substantial TDF balances remain, signalling that utilisation is not yet optimal. This can be addressed through performance-based reporting (linking high idle cash to corrective action plans), targeted technical assistance for low-absorption jurisdictions, and periodic reviews that diagnose whether high cash levels arise from structural constraints (delayed transfers) or managerial constraints (poor procurement readiness).

Suggestions for future research

Finally, future research should expand the analytical scope in at least three directions. First, subsequent studies may extend the model beyond West Java and incorporate more years to test whether the determinants of cash sufficiency and the cash–effectiveness relationship persist across provinces and macro-fiscal regimes. Second, researchers may refine measurement by modelling cash holdings and effectiveness as continuous outcomes or by testing alternative cut-offs to examine robustness. Third, future models of expenditure effectiveness should include additional controls (capital expenditure share, procurement indicators, budget composition, political budget cycle proxies, and institutional capacity measures) to clarify whether cash holdings remains significant once broader determinants of execution performance are incorporated.

References

- Abdullah, S., & Muthia, N. (2017). Determinan saldo kas akhir tahun pada pemerintah daerah di Aceh. *Jurnal Akuntansi Dan Auditing Indonesia*, 21(2), 130-140.
- Alpi, M. F., & Ramadhan, P. R. (2018). Pengaruh karakteristik pemerintah daerah dan temuan audit Badan Pemeriksa Keuangan terhadap kinerja keuangan kabupaten/kota. *Jurnal Studi Akuntansi & Keuangan*, 2(3), 103-114.
- Ayoola, T. (2013). The effect of cashless policy of government on corruption in Nigeria. *International Review of Management and Business Research*, 2(3).
- Baber, W. R., & Gore, A. K. (2008). Consequences of GAAP disclosure regulation: Evidence from municipal debt issues. *The Accounting Review*, 83(3), 565-592.
- Bates, T. W., Kahle, K. M., & Stulz, R. M. (2009). Why do US firms hold so much more cash than they used to?. *The journal of finance*, 64(5), 1985-2021.
- Bewick, V., Cheek, L., & Ball, J. (2005). Statistics review 14: Logistic regression. *Critical care*, 9, 1-7.
- Cohen, S. (2008). Identifying the moderator factors of financial performance in Greek Municipalities. *Financial Accountability & Management*, 24(3), 265-294.
- De Janvry, A., Finan, F., & Sadoulet, E. (2012). Local electoral incentives and decentralized program performance. *Review of Economics and Statistics*, 94(3), 672-685.
- Esteve, M., Boyne, G., Sierra, V., & Ysa, T. (2013). Organizational collaboration in the public sector: Do chief executives make a difference?. *Journal of Public Administration Research and Theory*, 23(4), 927-952.
- Ghofar, A., Eryanto, D., & Lestari, T. R. (2024). *Manajemen Kas Daerah: Teori dan Praktik*. Universitas Brawijaya Press.
- Hasthoro, H. A., & Sunardi, S. (2016). *Tata Kelola Publik Dan Kinerja Keuangan*

- Pemerintah Daerah Di Indonesia. *Jurnal Ekonomi Dan Bisnis*, 19(1), 53-68.
- Hosmer Jr, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression*. John Wiley & Sons.
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review*.
- Jones, S., & Walker, R. G. (2007). Explanators of local government distress. *Abacus*, 43(3), 396-418.
- Lenaini, I. (2021). Teknik pengambilan sampel purposive dan snowball sampling. *Historis: Jurnal Kajian, Penelitian dan Pengembangan Pendidikan Sejarah*, 6(1), 33-39.
- Lofton, M. L. (2018). *Three essays on the management of local government cash flows* (Doctoral dissertation, Syracuse University).
- Mahmudi. (2015). *Akuntansi Sektor Publik*. UII Press Yogyakarta.
- Mahmudi, M. (2016). *Analisis laporan keuangan pemerintah daerah*. Edisi Ketiga, Upp Stim Ykpn, Yogyakarta.
- Mahmudin, M. Z., Rindengan, A., & Weku, W. (2014). Penggunaan Association Rule Data Mining Untuk Menentukan Pola Lama Studi Mahasiswa F-MIPA UNSRAT. *d'Cartesian: Jurnal Matematika dan Aplikasi*, 3(1), 1-8.
- Mardiasmo, M. B. A. (2021). *Akuntansi sektor publik-edisi terbaru*. Penerbit Andi.
- Mardiasmo, M. B. A. (2021). *Otonomi & manajemen keuangan daerah: edisi terbaru*. Penerbit Andi.
- Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate *Cash Holdings*. *Journal of financial economics*, 52(1), 3-46.
- Palacios, J. L. (2014). *John W. CRESWELL. A CONCISE INTRODUCTION TO MIXED METHODS RESEARCH*. Thousand Oaks (CA): Sage. 2014. 152 pp. *Barataria: revista castellano-manchega de ciencias sociales*, (18), 247-249.
- Park, H. A. (2013). An introduction to logistic regression: from basic concepts to interpretation with particular attention to nursing domain. *Journal of Korean academy of nursing*, 43(2), 154-164.
- Pridgen, A. K., & Wilder, W. M. (2013). Relevance of GASB No. 34 to financial reporting by municipal governments. *Accounting Horizons*, 27(2), 175-204.
- Primawaty, A., & Ritonga, I. T. (2017). Analisis Kondisi Keuangan Pemerintah Daerah Sumatera Tahun 2011–2015. *ABIS: Accounting and Business Information Systems Journal*, 5(1).
- Puspitasari, D., & Setyanta, B. (2020). Pengaruh tata kelola publik, pendapatan asli daerah dan total aset terhadap kinerja Pemerintah Daerah. *Al Tijarah*, 6(1), 12-29.
- Putra, D. M., & Shauki, E. R. (2018). Indonesian Treasury Review. *Jurnal Perbendaharaan, Keuangan Negara Dan Kebijakan Publik*, 3(4), 330-346.
- Rahmayati, A. (2011). *Analisis Faktor-Faktor yang Mempengaruhi Cash Holdings Daerah pada Pemerintah Daerah Di Indonesia (Studi Empiris pada Kabupaten/kota Se-Jawa Bali Tahun 2005 s/d 2007)* (Doctoral dissertation, UNS (Sebelas Maret University)).
- Ramirez, A. (2011). Nonprofit *Cash Holdings*: Determinants and implications. *Public Finance Review*, 39(5), 653-681.
- Ritonga, I. T. (2014). Developing A Measure of Local Government's Financial Condition. *Journal of Indonesian Economy & Business*, 29(2).
- Rustam, R. Analisis Proses Perencanaan Dan Pelaksanaan Anggaran Pada Dinas Pariwisata Dan Ekonomi Kreatif Kota Palu. *Katalogis*, 4(5).
- Ruwaida, D., & Abdullah, S. (2015). Faktor-faktor yang Mempengaruhi Realisasi Anggaran Belanja Pendidikan di Provinsi Aceh. *Jurnal Administrasi Akuntansi: Program Pascasarjana Unsyiah*, 4(4).

Salam, M., Rukka, R. M., Samma, M. A. N. K., Tenriawaru, A. N., Muslim, A. I., Ali, H. N. B., & Ridwan, M. (2024). The causal-effect model of input factor allocation on maize production: Using binary logistic regression in search for ways to be more productive. *Journal of Agriculture and Food Research*, 16, 101094.

Sinaga, E. J. (2016). Analisis rendahnya penyerapan anggaran kementerian/lembaga (k/l) dan pemerintah daerah. *Jurnal Rechts Vinding: Media Pembinaan Hukum Nasional*, 5(2), 261-274.

Sitepu, D. R., Priyatmo, T., & Akbar, R. (2024). Determinan Penghambat Penyerapan Anggaran: Studi Empiris pada Provinsi Riau. *Jurnal Manajemen Perbendaharaan*, 5(1), 1-19.

Storkey, I. (2020). *International Government Cash Management Practices*.

Tradinatama, S., & Solikin, A. (2023). Pengaruh dana transfer terhadap pendapatan pajak dan retribusi daerah kabupaten/kota di Indonesia. *Indonesian Treasury Review: Jurnal Perbendaharaan, Keuangan Negara dan Kebijakan Publik*, 8(3), 235-250.

Winarna, J., Widagdo, A. K., & Setiawan, D. (2017). *Financial distress of local government: A study on local government characteristics, infrastructure, and financial condition*. *Global Business & Finance Review (GBFR)*, 22(2), 34-47.

Y. Tampil, H. Komaliq, Y. Langi, Analisis regresi logistik untuk menentukan faktor-faktor yang mempengaruhi indeks prestasi kumulatif (IPK) mahasiswa FMIPA universitas sam ratulangi manado, d'*CARTESIAN* 6 (No. 2) (2017) 56, <https://doi.org/10.35799/dc.6.2.2017.17023>.

Yuwono, S. (2005). *Penganggaran sektor publik*. Bayumedia Publik.