

EXPLAINING BUDGET ABSORPTION BACK-LOADING IN SUMATRA PROVINCES: EVIDENCE FROM FISCAL AND BUDGETARY DETERMINANTS

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ABSTRACT

This study examined the effect of Government Internal Audit Apparatus (GIAA) capability, fiscal stress, rebudgeting, and budget enactment timeliness on budget absorption back-loading in provincial governments on Sumatra Island. Back-loading refers to the tendency of regional expenditure realization to be more concentrated in the second semester. This study used a quantitative approach with secondary data obtained from regional budget realization reports, Financial and Development Supervisory Board (FDSB) performance reports, and regulations concerning local budget enactment and local budget amendment. The sample covered 10 provincial governments on Sumatra Island during 2020-2024, resulting in 50 observations. Data were analyzed using panel data regression with EViews 14. The model selection tests indicated that the Common Effect Model was the appropriate estimation model. The findings showed that fiscal stress has a positive and significant effect on budget absorption back-loading. Government Internal Audit Apparatus (GIAA) capability, rebudgeting, and budget enactment timeliness do not have significant partial effects. Simultaneously, the four variables do not significantly affect budget absorption back-loading. These findings indicate that fiscal pressure is a more direct factor in explaining expenditure concentration in the second semester, while back-loading remains related to broader budget implementation processes beyond the model.

1. INTRODUCTION

Regional budget management through the Local Budget is a central instrument for local governments to provide public services, implement development programs, and support regional economic stability. From a Public Financial Management perspective, budget performance is not only assessed from year-end realization, but also from the quality of the budget cycle, including planning, budgeting, implementation, supervision, evaluation, reporting, and accountability. This view is consistent with the PEFA framework and Government Regulation Number 12 of 2019, which emphasize that public expenditure quality is shaped by the integration of the entire financial management cycle (PEFA Secretariat, 2016; Republic of Indonesia, 2019).

A recurring issue in budget implementation is year-end spending or the use-it-or-lose-it phenomenon. This pattern reflects low budget realization at the beginning of the fiscal year and a concentration of spending near the end of the year. Back-loading may postpone public services and reduce the quality of budget execution (Directorate General of Treasury, 2025; Liebman & Mahoney, 2017).

The Directorate General of Treasury Regulation Number PER-5/PB/2024 provides quarterly budget absorption targets as a reference for budget implementation performance. In practice, regional expenditure realization frequently remains below the expected level in the first semester and increases in the second semester. This condition reflects back-loading, namely the concentration of budget realization in the latter part of the fiscal year. Back-loading is relevant to regional government analysis because regional expenditure is linked to development implementation, public service delivery, and regional economic activity (Alfayuni & Dahtiah, 2021).

The indication of slow absorption in the first semester and back-loading in the second semester appears in provincial governments on Sumatra Island. West Sumatra recorded expenditure realization of only 36.78% in the first semester of 2022, while Jambi Province was urged to accelerate local budget realization after the first semester because expenditure realization remained at 40.87% (Local Legislative Assembly (LLA) Provinsi Sumatera Barat, 2022; Jamberita.com, 2024). Aceh also experienced low APBA absorption entering the second semester (Dialeksis.com, 2025). These facts show that back-loading is not

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merely an administrative issue, but is also related to the timing of development programs and public service delivery.

Back-loading can arise from a lack of synchronization among planning, budgeting, and budget implementation at the beginning of the fiscal year. A delayed local budget enactment may cause the legal basis for expenditure execution to be unavailable at the start of the year. Operational constraints, such as unprepared procurement planning, limited human resources, and failed tender processes, may also slow realization in the first semester. Budget changes during the fiscal year can further narrow the remaining time for implementation and lead to expenditure concentration in the second semester (Albab, 2020; Liebman & Mahoney, 2017).

Agency theory provides the theoretical basis for explaining budget absorption back-loading in regional financial management. Agency theory explains the relationship between principals and agents, in which the principal delegates authority to the agent to perform services and make decisions on behalf of the principal (Jensen & Meckling, 1976; Ross, 1973). In the public sector, society, local legislative councils, and the central government can be positioned as principals, while local governments act as agents responsible for preparing, implementing, and reporting regional budgets (Hendrastuti & Harahap, 2023). Budget implementation delays may indicate a gap between public needs and budget execution behavior because delegated budget authority can create information asymmetry, differences in priorities, and implementation risks.

Public sector budgeting provides the institutional framework for translating public priorities into programs, activities, and financial allocations. The regional budget functions not only as a financial plan, but also as an instrument of planning, control, coordination, and accountability. The quality of budget absorption is therefore linked to the quality of the budget cycle, from planning and enactment to implementation, revision, supervision, and accountability (Alif'ia et al., 2026; Pattiasina et al., 2023; Mayasari et al., 2021). Back-loading in this framework reflects a timing problem in budget execution, not merely a year-end realization issue.

Budget absorption back-loading refers to the tendency of expenditure realization to be relatively low in the early part of the fiscal year and more concentrated in the latter part, particularly in the second semester or final quarter. Andriati (2019) and Zulaikah & Burhany (2019) describe this pattern as an indication that absorption does not occur proportionally across periods. Syamsul et al. (2026) identify several factors related to year-end budget accumulation, including planning, repeated budget revisions, project management, budget regulation, policy changes, supervisory pressure, and fiscal dynamics.

This study defines budget absorption back-loading as the tendency of provincial government expenditure realization to be concentrated in the second semester. The measurement follows a non-cumulative approach by comparing second-semester regional expenditure realization with the annual regional expenditure budget. This measurement captures the timing of expenditure realization, not merely total annual absorption, and is consistent with the view that budget absorption should be observed based on realization across fiscal periods (Ministry of Finance, 2024; Yalisman & Khoirunurrofik, 2025).

This study focuses on four factors in the regional budget management framework: Government Internal Audit Apparatus (GIAA) capability, fiscal stress, rebudgeting, and budget enactment timeliness. GIAA capability represents the capacity of the government internal supervisory apparatus to support governance. Fiscal stress reflects financial pressure when local revenue capacity does not meet budget needs. Rebudgeting indicates budget adjustment during the fiscal year. Budget enactment timeliness represents formal compliance with the deadline for regional budget enactment as the legal basis for implementation (Fitri et al., 2025; Hartandi & Addrison, 2022; Wulandari & Fauzihardani, 2022).

GIAA capability is relevant to back-loading because internal supervision functions as a monitoring mechanism in agency theory. Effective supervision is expected to reduce information asymmetry, strengthen accountability, and support more orderly budget implementation. Higher GIAA capability should help local governments improve budget control and reduce expenditure concentration in the second semester. Empirical findings remain inconsistent. Fitri et al. (2025), Aryani et al. (2024), Ayem & Purwanto (2024), Lantowa & Ntuiyo (2026), and Rahmawati et al. (2024) found that GIAA capability affects budget absorption, while Sutono et al. (2022) found that internal supervision did not significantly affect budget absorption.

Fiscal stress is relevant because revenue pressure can influence the timing of expenditure realization. Local governments tend to be more cautious when revenue realization is uncertain or below target. When realized local own-source revenue does not meet the target, fiscal space narrows and expenditure execution may be delayed until revenue capacity becomes clearer. Studies by Fitri et al. (2025), Syamsul et al. (2026), Tehupuring (2021), Alfayuni & Dahtiah (2021), Elpana et al. (2024), and Jayenchi et al. (2026) show that fiscal pressure can affect budget implementation and contribute to expenditure

accumulation, while Wulandari & Fauzihardani (2022) found that fiscal stress did not affect budget absorption.

Rebudgeting is relevant because budget changes may require adjustments to budget documents, activity schedules, and implementation plans. Budget amendments enacted close to the end of the fiscal year can reduce the remaining time for implementation and increase the risk of expenditure concentration in the second semester. Empirical findings remain mixed. Situmorang et al. (2025), Yalisman & Khoirunurrofik (2025), Jayenchi et al. (2026), Naisanu et al. (2026) and Subhiningsih et al. (2023) found that budget changes affect absorption, while Anggriawan et al. (2020) and Pramudya (2021) found no significant effect.

Budget enactment timeliness is relevant because timely regional budget enactment provides the legal basis for budget implementation at the beginning of the fiscal year. Delays in regional budget enactment may postpone public service provision, create overlapping activities in the second semester, and reduce service quality and quantity (Hartandi & Addrison, 2022). Empirical results also remain inconsistent. Kurniati et al. (2025) found no significant effect, while Anggraini et al. (2024), Komalasari et al. (2025), Alfayuni & Dahtiah, (2021), and Perdana et al. (2025) found a significant relationship between budget enactment timing and budget absorption.

Previous studies show inconsistent results regarding the determinants of budget absorption. Fiscal stress has been reported to have positive, negative, or insignificant effects on budget absorption in different contexts (Elpana et al., 2024; Fitri et al., 2025; Wulandari & Fauzihardani, 2022). Empirical findings on budget changes and budget enactment timeliness also vary across studies (Amellya et al., 2023; Anggriawan et al., 2020; Jayenchi et al., 2026; Kurniati et al., 2025). The inconsistency indicates the need to re-examine these variables using a more specific outcome, namely second-semester budget absorption back-loading. Most previous studies use annual absorption indicators, whereas back-loading is a timing-based phenomenon that concerns the distribution of expenditure realization across semesters.

The research gap lies in the limited empirical examination of second-semester budget absorption back-loading, especially at the provincial government level on Sumatra Island. Existing studies generally examine total annual absorption or identify year-end accumulation factors qualitatively. This study addresses that gap by using a non-cumulative second-semester absorption indicator, integrating GIAA capability, fiscal stress, rebudgeting, and budget enactment timeliness in a panel data model, and focusing on all provincial governments on Sumatra Island during 2020-2024. Previous studies addressing budget absorption back-loading have examined the causal factors using a qualitative approach. This study's novelty is the use of second-semester budget absorption back-loading as a time-based dependent variable, capturing the concentration of spending in the second semester, rather than just annual realization. This study also examines factors suspected of influencing budget absorption back-loading using a quantitative approach, focusing on provincial governments on the island of Sumatra.

This study aims to examine the effect of GIAA capability, fiscal stress, rebudgeting, and budget enactment timeliness on budget absorption back-loading in provincial governments on Sumatra Island. The study contributes to the literature by using a timing-based absorption indicator that focuses on expenditure concentration in the second semester rather than annual absorption alone. The study also provides empirical evidence on fiscal and budgetary determinants of back-loading in regional public financial management.

2. METHODS

This study used a quantitative approach because it tested relationships among variables measured numerically and analyzed statistically (Creswell, 2023). The research object comprised all provincial governments on Sumatra Island, namely Aceh, North Sumatra, West Sumatra, Riau, Jambi, South Sumatra, Bengkulu, Lampung, Bangka Belitung Islands, and Riau Islands.

The sampling technique used was saturated sampling because all members of the population were included. The observation period covered 2020-2024. Thus, the study used 50 observations, consisting of 10 provincial governments over five fiscal years. The data were secondary data obtained from regional budget realization reports, Financial and Development Supervisory Board (FDSB) performance reports, and regulations concerning local budget enactment and local budget amendment.

The dependent variable was budget absorption back-loading in the second semester, measured by dividing second-semester regional expenditure realization by the annual regional expenditure budget. The independent variables consisted of GIAA capability, fiscal stress, rebudgeting, and budget enactment timeliness. GIAA capability was measured using GIAA capability levels. Fiscal stress was measured by the ratio of realized local own-source revenue to targeted local own-source revenue. Rebudgeting was measured by the ratio of amended regional expenditure budget to original regional expenditure budget.

Budget enactment timeliness was measured using a dummy variable, with a score of 1 if the local budget was enacted no later than December 31 of the preceding fiscal year and 0 if it was enacted after that date (Hartandi & Addrison, 2022; Wulandari & Fauzihardani, 2022).

The use of second-semester budget absorption as the dependent variable was intended to capture the timing dimension of expenditure realization. This measurement differs from annual budget absorption because it focuses on the concentration of spending within the fiscal year rather than the total amount realized by year-end. This approach is relevant for identifying back-loading, as local governments may achieve high annual realization while still showing an uneven absorption pattern between the first and second semesters.

Data were analyzed using descriptive statistics and panel data regression with EViews 14. The model selection tests consisted of the Chow test and the Lagrange Multiplier test. Hypotheses were tested using the t-test for partial effects and the F-test for simultaneous effects at a 5% significance level.

Panel data regression was used because the data combined cross-sectional and time-series dimensions. The cross-sectional dimension consisted of 10 provincial governments, while the time-series dimension covered five fiscal years from 2020 to 2024. This model allowed the study to examine variation across provinces and years in explaining budget absorption back-loading. The regression model was specified as follows:

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + e_{it} \quad (1)$$

Y represents budget absorption back-loading in the semester II, X1 represents Government Internal Audit Apparatus (GIAA) capability, X2 represents fiscal stress, X3 represents rebudgeting, X4 represents budget enactment timeliness, i represents provincial government, t represents year, and *e* represents the error term.

3. RESULTS AND DISCUSSIONS

Results

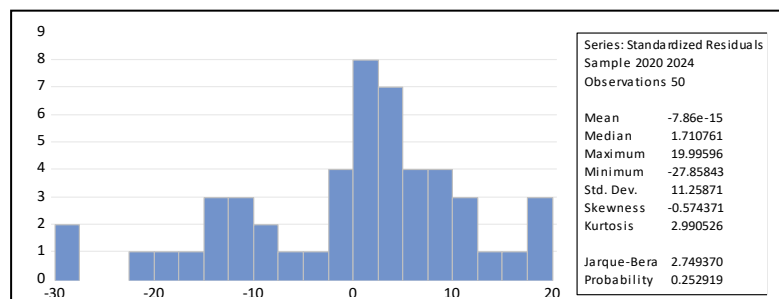
The results section presents the empirical findings obtained from the panel data analysis. The presentation begins with descriptive statistics to describe the distribution and characteristics of each research variable. It then proceeds to the panel data model selection tests to determine the appropriate estimation model. The selected model is subsequently used as the basis for hypothesis testing and interpretation of the partial and simultaneous effects of GIAA capability, fiscal stress, rebudgeting, and budget enactment timeliness on budget absorption back-loading.

Table 1. Descriptive Statistics of Research Variables

Description	X1	X2	X3	X4	Y
Mean	2.820000	99.33187	102.4947	0.800000	56.69910
Maximum	3.000000	122.2815	141.0325	1.000000	80.68348
Minimum	2.000000	78.32044	81.55570	0.000000	23.91684
Std. Dev.	0.388088	10.79486	9.178599	0.404061	12.36663
Observations	50	50	50	50	50

Source: Processed data, EViews 14 output, 2026.

Table 1 shows that the mean value of budget absorption back-loading in the second semester was 56.69910, with a standard deviation of 12.36663. This indicates that, on average, more than half of the annual expenditure budget was realized in the second semester. GIAA capability had a mean value of 2.820000 and a standard deviation of 0.388088, indicating relatively similar capability levels across provincial governments. Fiscal stress had a mean of 99.33187, while rebudgeting had a mean of 102.4947. Budget enactment timeliness had a mean of 0.800000, indicating that most observations enacted local budget on time.



Source: Processed data, EViews 14 output, 2026.

Figure 1. Result of Normality Test

Based on Figure 1, the Jarque-Bera Probability value is 0.252919 ($0.252919 > 0.05$), which means that the data in this study is normally distributed.

Table 2. Result of Multicollinearity Test

	X1	X2	X3	X4
X1	1.000000	0.058532	0.216285	-0.234261
X2	0.058532	1.000000	0.010457	-0.105130
X3	0.216285	0.010457	1.000000	-0.059781
X4	-0.234261	-0.105130	-0.059781	1.000000

Source: Processed data, EViews 14 output, 2026.

The multicollinearity test results table shows that the correlation value for each variable is <0.90 , meaning no multicollinearity was detected.

Table 3. Result of Heteroscedasticity Test

F-statistic	2.262128	Prob. F(4,45)	0.0772
Obs *R-squared	8.370732	Prob. Chi-Square(4)	0.0789
Scaled explained SS	6.748176	Prob. Chi-Square(4)	0.1498

Source: Processed data, EViews 14 output, 2026.

The heteroscedasticity test results table shows that the probability value is >0.05 , indicating no heteroscedasticity in the regression model, meaning the data is free from heteroscedasticity symptoms.

Table 4. Result of Autocorrelation Test

F-statistic	1.566690	Prob. F(4,43)	0.2204
Obs *R-squared	3.396001	Prob. Chi-Square(2)	0.1830

Source: Processed data, EViews 14 output, 2026.

The Autocorrelation Test table shows a probability value > 0.05 . This indicates that the regression model does not experience autocorrelation.

Table 5. Result of Panel Data Regression Model Selection

Test	Probability	Selected Model
Chow test	$0.5213 > 0.05$	Common Effect Model
Lagrange Multiplier test	$0.5647 > 0.05$	Common Effect Model

Source: Processed data, EViews 14 output, 2026.

The Chow test and Lagrange Multiplier test indicate that the Common Effect Model was the appropriate estimation model. Therefore, the interpretation of the panel data regression results in this study refers to the Common Effect Model. The estimated regression equation based on the Common Effect Model is presented as follows:

$$Y = 4.487734 - 5.216298X_{1it} + 0.329093X_{2it} + 0.359775X_{3it} - 3.303869X_{4it} + e_{it} \quad (2)$$

The coefficient of Government Internal Audit Apparatus (GIAA) capability was -5.216298, indicating a negative direction, but the probability value of 0.2578 was greater than 0.05. Fiscal stress had a coefficient of 0.329093 with a probability value of 0.0410, indicating a positive and significant effect. Rebudgeting had a coefficient of 0.359775 with a probability value of 0.0611, while budget enactment timeliness had a coefficient of -3.303869 with a probability value of 0.4454.

Table 6. Result of Panel Data Regression and Hypothesis Testing

Variables	Coefficient	Std. Error	t-statistic	Prob.	Decision
Constant	4.487734	26.56109	0.168958		
Government Internal Audit Apparatus (GIAA) Capability (X_1)	-5.216298	4.551134	-1.146153	0.2578	Not significant
Fiscal Stress (X_2)	0.329093	0.156440	2.103635	0.0410	Significant
Rebudgeting (X_3)	0.359775	0.187297	1.920875	0.0611	Not significant
Budget Enactment Timeliness (X_4)	-3.303869	4.291882	-0.769795	0.4454	Not significant
F-test	-	-	2.323078	0.071039	Not significant
Adjusted R Square	0.097478	-	-	-	-

Source: Processed data, EViews 14 output, 2026.

Table 3 shows that Government Internal Audit Apparatus (GIAA) capability, rebudgeting, and budget enactment timeliness did not have significant partial effects on budget absorption back-loading, while fiscal stress had a positive and significant effect. The F-test probability of 0.071039 indicates that the

four independent variables did not simultaneously affect budget absorption back-loading at the 5% significance level. The Adjusted R Square value of 0.097478 indicates that the model explained 9.7478% of the variation in budget absorption back-loading, while 90.2522% was explained by factors outside the model.

Discussion

GIAA capability did not significantly affect budget absorption back-loading. This result is consistent with Sutono et al. (2022), and Yusmanianti et al. (2025) who found that internal supervision did not significantly affect budget absorption. Theoretically, Government Internal Audit Apparatus (GIAA) can be viewed as a monitoring mechanism in agency theory because it is expected to reduce information asymmetry, strengthen accountability, and support more orderly budget implementation (Hendrastuti & Harahap, 2023; Jensen & Meckling, 1976). In theory, higher GIAA capability should support more orderly budget implementation and reduce the tendency of expenditure realization to accumulate in the second semester. However, GIAA capability has not directly determined the timing pattern of expenditure realization because GIAA does not implement budget programs and activities. GIAA capability reflects institutional supervisory capacity rather than the effectiveness of follow-up actions by regional apparatus organizations.

GIAA capability does not significantly affect budget absorption back-loading because GIAA operates as a supervisory institution, not as an expenditure executor. GIAA may provide early warning, consulting, assurance, evaluation, and recommendations, but the authority to execute programs, conduct procurement, complete contracts, and realize expenditure remains with regional apparatus organizations as budget users. Financial and Development Supervisory Board (FDSB) Regulation Number 6 of 2025 also confirms that GIAA consulting activities do not transfer implementation responsibility from the assisted entity to GIAA. Therefore, GIAA capability can reduce back-loading only when its recommendations are translated into concrete improvements in planning, procurement, contract execution, and activity implementation, not merely into administrative compliance.

The insignificant result indicates that GIAA capability has not yet functioned as a substantive driver of budget execution discipline. In provincial governments on Sumatra Island, GIAA capability remains at an intermediate level, so supervision has not fully developed into an integrated function that produces comprehensive insight and foresight. Internal supervision therefore tends to affect formal compliance more than operational execution. Document completion, procedural compliance, and formal follow-up are insufficient to resolve the main causes of back-loading, such as procurement delays, weak technical readiness, delayed contract completion, and slow physical realization. This finding confirms that GIAA capability affects back-loading only indirectly. Its effect depends on substantive follow-up by regional apparatus organizations, not merely on the formal existence of supervisory capacity.

Fiscal stress had a positive and significant effect on budget absorption back-loading. This result indicates that higher fiscal pressure increases the tendency of expenditure realization to be concentrated in the second semester. The finding is consistent with Alfayuni & Dahtiah (2021), Elpana et al. (2024), and Jayenchi et al. (2026), who show that fiscal pressure and revenue shortfalls can affect budget implementation and contribute to the accumulation of expenditure realization. When realized local own-source revenue does not meet the target, local governments face narrower fiscal space and tend to be more cautious in implementing expenditure. This caution may delay expenditure in the first semester and increase realization in the second semester when revenue capacity becomes clearer.

This finding supports agency theory by showing that fiscal pressure shapes the timing of expenditure decisions. Local governments, as agents, must implement programs and provide public services, but revenue uncertainty limits their discretion in executing expenditure. When realized local own-source revenue does not meet the target, local governments tend to delay spending to avoid liquidity risk and maintain financing capacity for priority programs. This behavior shifts expenditure realization from the first semester to the second semester, thereby increasing budget absorption back-loading.

The positive effect of fiscal stress confirms that back-loading is not merely an administrative delay, but also a fiscal response to revenue uncertainty. Provincial governments facing weak local own-source revenue realization tend to delay or select expenditure more cautiously until financial conditions become more secure. This behavior may be rational for maintaining budget stability, but it creates an uneven absorption pattern because expenditure that should have been realized earlier is postponed and concentrated in the second semester.

Rebudgeting did not significantly affect budget absorption back-loading. This finding is consistent with Pramudya (2021), Anggriawan et al. (2020) and Wulandari & Fauzihardani (2022), who show that budget changes do not always significantly determine budget absorption. Conceptually, rebudgeting is expected to influence back-loading because budget amendments can change expenditure allocations,

require administrative adjustments, and reduce the remaining time for implementation. However, the result of this study indicates that the magnitude of budget change alone is not sufficient to explain the concentration of expenditure realization in the second semester.

Direct observation results show that local budget amendments were mostly enacted in the second semester. Of 50 observations, 20 observations, or 40%, were enacted in September–October, while 25 observations, or 50%, were enacted in November–December. This pattern shows that regional budget amendments are mostly enacted after the fiscal year has progressed substantially. Rebudgeting therefore does not always function as the initial cause of back-loading. In many cases, it occurs after delayed expenditure realization has already formed. This explains why the rebudgeting ratio is insufficient to capture the causal relationship between budget amendment and second-semester expenditure concentration.

The effect of rebudgeting also depends on the substance of the amendment. Budget amendment may involve additional activities, expenditure reductions, allocation shifts, administrative corrections, or adjustments to fiscal conditions. Amendments affecting direct expenditure are more likely to influence back-loading because they are related to procurement, contracts, physical work, verification, and disbursement. Amendments affecting routine, mandatory, or transfer-based expenditure may have weaker effects on expenditure timing.

This finding indicates that back-loading is better understood as an implementation problem than merely a budget amendment problem. Rebudgeting remains important in regional financial management, but its effect on budget absorption depends on amendment timing, amendment substance, and the expenditure category being adjusted.

Budget enactment timeliness did not significantly affect budget absorption back-loading. This result is consistent with Amellya et al. (2023) and Kurniati et al. (2025). Timely local budget enactment primarily indicates formal compliance with the budget approval schedule. Theoretically, timely local budget enactment should provide a legal basis for local governments to start budget implementation at the beginning of the fiscal year. In agency theory, timely enactment may reduce uncertainty between principals and agents because the approved budget becomes a formal mandate for program implementation. However, the result of this study indicates that formal timeliness does not automatically translate into evenly distributed expenditure realization.

This finding shows that budget enactment timeliness reflects budget legality, not budget operability. Timely local budget enactment primarily reflects compliance with the formal approval schedule. It ensures that the regional budget has legal standing, but it does not necessarily mean that activities can be implemented immediately. After local budget enactment, the budget must still be translated into more operational documents. Government Regulation Number 12 of 2019 states that Budget implementation document of local government departments/agencies is the document used as the basis for budget implementation by budget users. This means that budget realization depends not only on local budget enactment, but also on the speed and quality of local budget elaboration, Budget implementation document of local government departments/agencies preparation, procurement readiness, contract execution, and activity readiness at the regional apparatus level.

Evidence from Aceh shows that the 2025 Aceh local budget was enacted early, on September 24, 2024, but absorption in the early second quarter remained low, at approximately 13% physically and 12.4% financially (Novianti, 2025). This condition supports the argument that timely enactment does not automatically prevent back-loading. Budget realization still depends on subsequent stages, including local budget elaboration, preparation of implementation documents, procurement, contract execution, and activity readiness at the regional apparatus level.

Simultaneously, GIAA capability, fiscal stress, rebudgeting, and budget enactment timeliness did not significantly affect budget absorption back-loading. This result indicates that the four variables did not jointly provide sufficient explanatory power for the timing pattern of expenditure realization. The Adjusted R Square value also shows that the model explained only 9.7478% of the variation in budget absorption back-loading, while 90.2522% was explained by factors outside the model. This low explanatory power suggests that back-loading is a broader and more complex phenomenon than supervision, fiscal pressure, budget amendment, and budget enactment timeliness alone.

This simultaneous result can also be understood from the partial findings. Only fiscal stress had a significant effect, while GIAA capability, rebudgeting, and budget enactment timeliness did not. Each variable operates at a different point in the budget cycle. GIAA capability relates to supervision, fiscal stress relates to revenue and fiscal capacity, rebudgeting relates to budget adjustment, and budget enactment timeliness relates to formal approval. Back-loading occurs at the expenditure realization stage; therefore, variables that do not directly determine implementation timing may not form a strong simultaneous effect.

The insignificant effects of GIAA capability, rebudgeting, and budget enactment timeliness suggest that budget absorption back-loading is influenced more by operational implementation factors than by formal institutional arrangements. Although these variables are important components of regional financial management, their influence tends to be indirect because they primarily establish governance structures, legal certainty, and supervisory mechanisms rather than directly determining the execution of expenditure activities.

From a Public Financial Management perspective, expenditure realization is ultimately determined by the effectiveness of budget implementation processes, including procurement readiness, preparation of implementation documents, contract execution, inter-agency coordination, and technical preparedness of regional apparatus organizations. Consequently, improvements in supervision, budget adjustment, and budget approval procedures may not immediately reduce back-loading unless they are accompanied by stronger implementation capacity. This finding indicates that formal compliance and institutional capacity alone are insufficient to ensure an even distribution of expenditure realization throughout the fiscal year.

The finding is consistent with the Public Financial Management perspective, which views budget performance as the result of the entire budget cycle rather than one or several isolated stages. PEFA Secretariat (2016) and Government Regulation Number 12 of 2019 emphasize that public financial management covers planning, budgeting, implementation, administration, reporting, accountability, and supervision. Syamsul et al. (2026) also state that year-end budget accumulation can be influenced by planning, budget revision, project management, regulation, policy changes, supervisory pressure, and fiscal dynamics. Therefore, back-loading in provincial governments on Sumatra Island should be understood as a complex implementation phenomenon that requires attention to the entire local budget execution process.

Budget absorption back-loading in provincial governments on Sumatra Island also reflects the interaction between fiscal conditions and implementation readiness throughout the fiscal year. Budget realization depends not only on formal approval and supervision, but also on procurement preparedness, technical readiness, contract execution, and coordination among regional apparatus organizations. Weaknesses in these implementation stages may delay expenditure realization in the first semester and increase expenditure concentration in the second semester.

Another important finding is that most independent variables in this study operate indirectly through implementation mechanisms rather than directly through expenditure realization. GIAA capability strengthens supervision, rebudgeting adjusts fiscal allocation, and budget enactment timeliness establishes legal authorization, yet none of these variables directly execute expenditure activities. Budget absorption back-loading ultimately occurs at the implementation stage, where procurement readiness, technical preparation, contract execution, verification processes, and inter-organizational coordination become critical determinants. This explains why formal institutional improvements alone are insufficient to evenly distribute expenditure realization throughout the fiscal year. Without operational readiness at the regional apparatus level, improvements in supervision, budget adjustment, and formal budget approval may not substantially reduce second-semester expenditure concentration.

The findings also suggest that budget absorption back-loading in provincial governments on Sumatra Island reflects structural characteristics of regional budget execution rather than isolated administrative weaknesses. Delayed expenditure realization appears to emerge from the interaction between fiscal caution, procedural complexity, implementation capacity, and organizational behavior throughout the budget cycle. Consequently, reducing back-loading requires a more integrated public financial management approach that emphasizes early procurement preparation, synchronization between planning and implementation documents, acceleration of technical readiness, and stronger coordination among regional apparatus organizations. This perspective positions back-loading not merely as a budgeting issue, but as a broader governance and execution capacity challenge in regional financial management.

Thus, the main implication of this study is that back-loading in provincial governments on Sumatra Island should not be interpreted merely as a problem of late budget approval or budget amendment. It is more accurately understood as an implementation phenomenon that emerges when fiscal uncertainty, administrative procedures, operational readiness, and execution capacity interact throughout the fiscal year. The significant role of fiscal stress shows that revenue realization must be managed carefully, while the insignificant effects of GIAA capability, rebudgeting, and budget enactment timeliness indicate that formal institutional capacity and compliance need to be followed by effective implementation at the regional apparatus level. Therefore, efforts to reduce budget absorption back-loading should focus not only on strengthening supervision and formal budgeting procedures, but also on improving the readiness of implementation documents, procurement scheduling, activity planning, and fiscal risk management from the beginning of the fiscal year.

The low explanatory power of the model also indicates the potential importance of budget implementation variables that were not included in this study. Previous studies suggest that procurement

processes, budget execution quality, implementation readiness, human resource capacity, and coordination among implementing units are closely related to budget absorption performance and year-end spending concentration. Delays in procurement activities, incomplete implementation documents, contract management issues, and limited technical preparedness may directly affect the timing of expenditure realization and contribute to budget absorption back-loading. Therefore, future studies should incorporate implementation-oriented variables to provide a more comprehensive explanation of expenditure concentration in the second semester.

Policy implications from this study are particularly relevant for provincial governments seeking to reduce budget absorption back-loading. First, local governments should strengthen revenue forecasting and fiscal risk management to minimize uncertainty in local own-source revenue realization. More accurate revenue projections can reduce excessive spending delays caused by fiscal caution and improve expenditure distribution throughout the fiscal year.

Second, provincial governments should accelerate budget implementation processes from the beginning of the fiscal year by ensuring the early preparation of Budget Implementation Documents (DPA), procurement plans, technical specifications, and contract packages. Early procurement preparation may reduce implementation bottlenecks that frequently cause expenditure accumulation in the second semester.

Third, internal supervision should be directed beyond compliance monitoring toward supporting implementation effectiveness. Government Internal Audit Apparatus (GIAA) should intensify advisory and consulting functions related to procurement readiness, project execution monitoring, and risk mitigation during budget implementation.

Finally, local governments should establish periodic expenditure monitoring mechanisms based on quarterly absorption targets. Early identification of implementation delays would enable corrective actions before expenditure concentration occurs at year-end. These measures may contribute to more balanced expenditure realization, improved public service delivery, and better regional financial management performance.

4. CONCLUSION

This study concludes that fiscal stress has a positive and significant effect on budget absorption back-loading in provincial governments on Sumatra Island. Higher fiscal pressure increases the tendency for expenditure realization to accumulate in the second semester because local governments tend to delay or cautiously implement expenditure when local own-source revenue realization remains below target. In contrast, Government Internal Audit Apparatus (GIAA) capability, rebudgeting, and budget enactment timeliness do not significantly affect budget absorption back-loading. These findings indicate that formal supervisory capacity, budget adjustment mechanisms, and timely budget approval alone are insufficient to evenly distribute expenditure realization throughout the fiscal year.

Simultaneously, GIAA capability, fiscal stress, rebudgeting, and budget enactment timeliness do not significantly explain budget absorption back-loading. The relatively low explanatory power of the model indicates that back-loading is influenced by broader implementation dynamics beyond the variables examined in this study. This finding suggests that back-loading should be understood primarily as an implementation phenomenon within regional financial management rather than merely as a consequence of formal budgeting procedures.

The findings imply that efforts to reduce budget absorption back-loading should not focus solely on formal budgeting procedures and supervisory mechanisms. Provincial governments also need to strengthen budget implementation processes through better procurement planning, implementation readiness, contract management, inter-agency coordination, and fiscal risk management. Future studies are recommended to incorporate implementation-oriented variables such as procurement performance, budget execution quality, human resource capacity, and organizational coordination to provide a more comprehensive explanation of budget absorption back-loading.

This study is limited to four explanatory variables and focuses on provincial governments on Sumatra Island during the observation period. Future studies are recommended to examine variables more directly related to budget implementation, such as quality of budget planning, procurement processes such as goods and services procurement, quality of human resource, budget surplus, expenditure composition, dependence on transfer funds, and physical realization of activities.

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