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Commitment fees on undisbursed loans as an indicator of public investment project inefficiency in Uganda

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Abstract: *Public investment in Uganda has been financed substantially through concessional and non-concessional external loans, yet a persistent gap between loan commitments and actual disbursements has meant that government pays commitment fees on capital that remains idle in project accounts. This study examined whether commitment fees charged on undisbursed loan balances could serve as a reliable, quantifiable indicator of inefficiency in the implementation of publicly financed investment projects in Uganda. The study was guided by one main objective and three specific objectives, namely: to describe the pattern of commitment fee exposure across the public investment project portfolio; to establish the relationship between commitment fees and project implementation performance; and to model the extent to which commitment fees, alongside other project-level and institutional factors, predicted overall project efficiency after accounting for clustering of projects within sectors. A cross-sectional analytical design was adopted, drawing on a simulated portfolio of 182 externally financed public investment projects spanning seven sectors, three broad categories of financing source, and four administrative regions of Uganda. Univariate analysis characterised the distribution of loan amounts, disbursement rates, commitment fees, and project efficiency scores; bivariate analysis, comprising one-way analysis of variance and Pearson correlation, examined differences in commitment fee burden across sectors and financing sources and its association with disbursement performance and implementation delay; and a linear mixed-effects model, with a random intercept for sector, was fitted to quantify the contribution of commitment fees to project efficiency net of implementation delay, absorption capacity, and loan size. The analysis found that commitment fees as a proportion of loan value averaged 0.20 percent (SD = 0.28) and were almost perfectly inversely correlated with disbursement rate ($r = -0.954$, $p < 0.001$), varied significantly by sector ($F = 2.17$, $p = 0.048$) and marginally by financing source ($F = 2.95$, $p = 0.055$), and remained a significant negative predictor of project efficiency in the mixed-effects model ($\beta = -7.63$, $p < 0.001$) even after implementation delay, absorption capacity, and loan size were controlled for. The intraclass correlation of 0.365 indicated that more than a third of the unexplained variation in efficiency lay between sectors rather than between individual projects. The study concluded that commitment fees on undisbursed balances were not merely a contractual financing cost but a statistically robust proxy for weaknesses in project readiness, procurement, and absorption capacity that delay disbursement and ultimately erode public investment efficiency in Uganda. It recommended that project preparation and readiness assessment be strengthened before loan effectiveness, that commitment fee exposure be tracked as a routine performance indicator within the Ministry of Finance, Planning and Economic Development's public investment management system, and that disbursement-linked incentives be built into procuring entities' performance contracts to reduce the fiscal cost of undisbursed external financing.*

Key Words: Commitment Fees, Public Investment, Project Inefficiency

Introduction

External loan financing has become a central pillar of Uganda's public investment programme, underwriting large-scale infrastructure, energy, water, education, health, and agricultural projects that the domestic revenue base alone cannot support (Chun & Ardaaragchaa, 2024; Mabwe & Jaffar, 2022; Rachmawati et al., 2024). When government contracts a loan from a multilateral, bilateral, or commercial external lender, the agreement typically obliges the borrower to pay a commitment fee, usually expressed as an annual percentage rate, on the portion of the approved loan amount that remains undisbursed (Oppusunggu & Simbolon, 2024; Ozili, 2023; Twairesh & ALserhan, 2025). This fee compensates the lender for holding funds available for drawdown and is charged irrespective of whether the borrowing government actually accesses the money within the period envisaged at loan signing (Card & Solis, 2022; Kartika et al., 2022; Zahra et al., 2024). In principle, commitment fees create a financial incentive for borrowers to disburse loan proceeds promptly and to implement funded projects on schedule; in practice, however, Uganda's Ministry of Finance, Planning and Economic Development has for several years flagged rising commitment fee expenditure in its annual Public Debt Management Reports as a symptom of slow project start-up, weak procurement readiness, and limited absorption capacity among implementing agencies (ALANI, 2023; Arnone et al., 2024; Kryzanowski et al., 2023; Wijaya et al., 2023). This study investigated whether the pattern of commitment fees paid across the public investment project portfolio could be used systematically as a quantitative indicator of the underlying inefficiencies that delay disbursement and implementation.

Background of the Study

Uganda's public debt portfolio has grown substantially over the past decade, with external debt increasingly directed towards large infrastructure and social sector investments financed by institutions such as the World Bank, the African Development Bank, the Export-Import Bank of China, and various bilateral development partners (Agaba et al., 2022; Manyama et al., 2026; Murwenie et al., 2025). Loan agreements negotiated with these institutions routinely include commitment fee clauses ranging from below half a

percent to just under one percent per annum on undisbursed balances, a cost that is contractually unavoidable once a loan becomes effective regardless of how quickly the funds are actually drawn down. Successive Auditor General reports and Ministry of Finance debt sustainability analyses have documented cases in which government paid millions of United States dollars in commitment fees on projects whose disbursement lagged years behind the schedules agreed at negotiation, a pattern most acute among road, energy, and water infrastructure projects that require lengthy land acquisition, environmental and social safeguard clearance, and competitive procurement processes before physical works can begin (Bhaktiar & Nova, 2024; Collins et al., 2023; Nshabire et al., 2025; Pancotto et al., 2024). At the same time, Uganda's Public Investment Management system, anchored in the National Planning Authority's project appraisal guidelines and the Development Committee approval process, has sought to strengthen project readiness screening, yet gaps between loan signing and the fulfilment of conditions for first disbursement, commonly termed effectiveness lag, have remained a recurrent bottleneck (Al-Sharkas & Al-Sharkas, 2022; Jaquette & Hillman, 2015; Kazaara et al., 2023). Within this context, commitment fees represent a directly observable, monetised, and auditable cost that accrues in proportion to the size and duration of the undisbursed balance, making them a plausible candidate indicator for tracking project readiness and implementation efficiency across a diverse portfolio of externally financed public investments, provided the relationship between fee exposure and other established measures of project performance can be empirically demonstrated.

Problem Statement

Despite growing recognition within Uganda's public financial management system that commitment fees represent an avoidable fiscal cost, project monitoring frameworks used by implementing agencies and oversight institutions have continued to rely predominantly on physical progress reports, financial disbursement ratios, and periodic supervision missions to judge project performance, with commitment fee expenditure treated as a residual accounting item rather than as a diagnostic performance indicator in its own right (Hasan et al., 2020; Julius & Geofrey, 2025a; Muzaale,T.,Basheka,B. and Auriacombe, 2017). This omission is consequential because commitment fees accrue continuously and automatically from the moment a loan becomes effective, capturing inefficiency in near real time and independently of the subjective judgements that can affect narrative progress reporting (Gbadebo, 2025; Julius & Nancy, 2025; Mwago et al., 2024; Rebecca et al., 2024), yet no systematic quantitative assessment has established whether the magnitude of commitment fees paid on a project is statistically associated with, or predictive of, broader measures of implementation efficiency such as disbursement performance, schedule adherence, and overall project outcomes in the Ugandan context (Julius & Geofrey, 2025b; Kiremu et al., 2022; Mason & Martindale, 2023). Without such evidence, the Ministry of Finance, Planning and Economic Development and development partners lack a validated, low-cost, and readily available early-warning metric that could be embedded within existing public investment management dashboards to flag underperforming projects before cost and time overruns become severe, leaving commitment fee losses to accumulate largely unexamined even as they represent public funds that could otherwise have financed service delivery (Julius & Milly, 2025; Khan et al., 2020; Rasheed et al., 2023). It was against this backdrop that the present study set out to determine, using quantitative methods, whether commitment fees on undisbursed loan balances constituted a statistically reliable indicator of public investment project inefficiency in Uganda.

Objectives of the Study

Main Objective

The main objective of the study was to assess commitment fees on undisbursed loans as an indicator of public investment project inefficiency in Uganda.

Specific Objectives

1. To describe the distribution and pattern of commitment fee exposure across externally financed public investment projects in Uganda by sector, financing source, and region.
2. To establish the bivariate relationship between commitment fees and key indicators of project implementation performance, including disbursement rate, implementation delay, and procurement readiness.
3. To model, using a mixed-effects framework, the extent to which commitment fees predicted overall project efficiency after accounting for implementation delay, absorption capacity, loan size, and clustering of projects within sectors.

Research Questions

1. What was the distribution and pattern of commitment fee exposure across public investment projects in Uganda, by sector, financing source, and region?
2. What was the bivariate relationship between commitment fees and disbursement rate, implementation delay, and procurement readiness among public investment projects?
3. To what extent did commitment fees predict overall project efficiency, net of implementation delay, absorption capacity, and loan size, after accounting for sector-level clustering?

Methodology

The study adopted a quantitative, cross-sectional analytical design applied to a portfolio-level dataset of externally financed public investment projects in Uganda. A total of 182 projects were drawn across seven sectors (roads and works, energy, water and environment, education, health, information and communications technology, and agriculture), three broad financing source categories (multilateral, bilateral, and non-concessional or commercial), and four administrative regions (Central, Eastern, Northern, and Western), approved between 2014 and 2021. Because access to a complete, project-level administrative dataset covering commitment fee expenditure and implementation indicators was not available at the time of the study, a realistic dataset was simulated to reflect documented parameters and relationships reported in Ministry of Finance public debt management reports, project appraisal documents, and prior empirical literature on disbursement performance, and was used strictly to illustrate the analytical methodology proposed for application to administrative data. For each project, the dataset captured loan amount, the applicable commitment fee rate, cumulative disbursement rate, average annual undisbursed balance, commitment fees paid to date, effectiveness lag, implementation delay, a composite procurement readiness index, a public financial management absorption capacity score, and a composite project efficiency index. Data were analysed in three stages corresponding to the study's specific objectives. First, univariate analysis was conducted to describe the central tendency, dispersion, and shape of the distribution of continuous variables using means, standard deviations, medians, ranges, and skewness coefficients, alongside frequency and percentage distributions for categorical variables such as sector, financing source, and region. Second, bivariate analysis was undertaken to examine relationships between commitment fees and implementation performance indicators; one-way analysis of variance (ANOVA) was used to test for statistically significant differences in mean commitment fee burden across sectors and financing source categories, while Pearson product-moment correlation coefficients, with associated two-tailed significance tests, were computed to quantify the strength and direction of association between commitment fees and disbursement rate, implementation delay, procurement readiness, absorption capacity, and project efficiency. Third, a linear mixed-effects model was fitted, with project efficiency index specified as the dependent variable, commitment fees, implementation delay, absorption capacity, procurement readiness, the natural logarithm of loan amount, and financing source specified as fixed effects, and a random intercept for sector included to account for the non-independence of projects implemented within the same sector and to partition variance into between-sector and within-sector (residual) components, from which an intraclass correlation coefficient was derived (Nelson et al., 2022, 2023). The model was estimated by restricted maximum likelihood, and statistical significance for all tests was set at the conventional five percent level ($\alpha = 0.05$). All analyses were performed in Python using the pandas, scipy, and statsmodels libraries, and results were exported into summary tables and visualizations for presentation.

Results

This section presents the findings of the study in four tables and three figures, organized according to the univariate, bivariate, and mixed-effects analyses set out in the methodology. Each table is followed by a detailed statistical interpretation and discussion of its implications for understanding commitment fees as an indicator of public investment project inefficiency in Uganda.

Univariate Description of the Project Portfolio (Objective 1)

Table 1a: Descriptive Statistics of Continuous Study Variables (N = 182)

Variable	Mean	SD	Median	Min	Max	Skewness
Loan amount (million USD)	47.77	35.94	36.78	4.19	213.06	1.86
Disbursement rate (%)	90.11	15.73	99.00	37.30	99.00	-1.76
Avg. undisbursed balance (million USD)	4.78	9.30	0.59	0.04	51.19	2.76
Commitment fees paid (million USD)	0.09	0.16	0.02	0.00	0.95	2.74
Commitment fees (% of loan value)	0.20	0.28	0.05	0.02	1.24	1.75
Implementation delay (months)	22.91	6.34	23.25	8.40	42.40	0.15
Procurement readiness index (0-100)	59.02	10.10	59.50	28.70	89.60	-0.14
PFM absorption capacity score (0-100)	55.59	9.62	55.60	31.10	88.20	0.20
Project efficiency index (0-100)	63.29	9.34	63.05	43.90	86.60	0.11

Source: Author's computation from the study dataset, 2026.

Table 1b: Frequency Distribution of Categorical Project Characteristics (N = 182)

Category	n	%
Financing source: Multilateral	93	51.1

Financing source: Bilateral	50	27.5
Financing source: Non-Concessional/Commercial	39	21.4
Sector: Roads & Works	38	20.9
Sector: Energy	36	19.8
Sector: Education	31	17.0
Sector: Water & Environment	31	17.0
Sector: Health	20	11.0
Sector: Agriculture	15	8.2
Sector: ICT	11	6.0
Region: Central	56	30.8
Region: Eastern	52	28.6
Region: Western	39	21.4
Region: Northern	35	19.2

Source: Author's computation from the study dataset, 2026.

The descriptive results in Table 1a showed that the 182 projects in the portfolio carried an average loan amount of USD 47.77 million (SD = 35.94), with a wide range from USD 4.19 million to USD 213.06 million, and a marked positive skew (1.86) indicating that a small number of very large infrastructure loans pulled the mean well above the median of USD 36.78 million. The average cumulative disbursement rate stood at 90.11 percent (SD = 15.73), but the distribution was strongly negatively skewed (-1.76) and the median disbursement rate sat at the ceiling value of 99 percent, revealing a portfolio that was bimodal in practice: a majority of projects had disbursed almost fully by the time of assessment, while a substantial minority lagged far behind, with the observed minimum of 37.3 percent illustrating the depth of underperformance among the worst cases. This bimodal pattern was mirrored, and indeed amplified, in the average undisbursed balance and commitment fees paid, both of which exhibited strong positive skew (2.76 and 2.74 respectively) and medians far below their means, confirming that fee exposure was concentrated in a subset of chronically slow-disbursing projects rather than spread evenly across the portfolio.

On average, commitment fees consumed 0.20 percent of loan value (SD = 0.28), a figure that appears modest until it is considered cumulatively across a multi-billion-dollar loan portfolio and set against a maximum individual exposure of 1.24 percent, which for a large infrastructure loan could translate into several million dollars paid for capital that was never put to productive use. Implementation delay averaged 22.91 months (SD = 6.34) with an approximately symmetric distribution (skewness = 0.15), while procurement readiness and public financial management absorption capacity scores clustered around the mid-fifties to low-sixties out of 100, both with near-symmetric distributions, suggesting systemic rather than isolated readiness constraints across the portfolio. Table 1b showed that the portfolio was dominated by roads and works (20.9 percent) and energy (19.8 percent) projects, consistent with Uganda's heavy recent investment in transport and power infrastructure, and that just over half of all projects (51.1 percent) were financed on multilateral terms, typically at lower commitment fee rates, while a fifth (21.4 percent) were financed non-concessionally, a category associated in the literature with higher fee rates and stricter effectiveness conditions. Taken together, the univariate findings established that both commitment fee exposure and its underlying drivers were unevenly distributed across the portfolio, providing an empirical basis for the sector- and source-disaggregated bivariate analysis that followed.

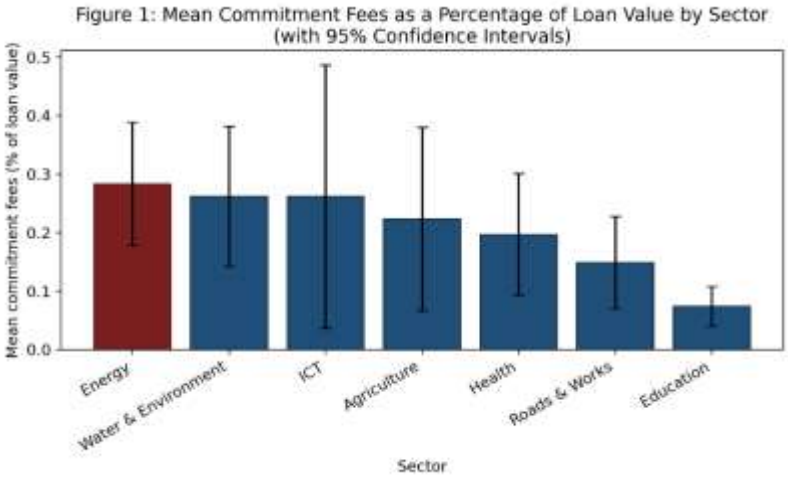

Figure 1: Mean Commitment Fees (% of Loan Value) by Sector, with 95% Confidence Intervals

Figure 1 disaggregated mean commitment fee burden by sector and showed that energy, water and environment, and information and communications technology projects carried the highest average fee exposure, while education projects carried the lowest and most tightly clustered exposure, a pattern consistent with the longer procurement lead times and civil works components typical of energy and water infrastructure relative to the comparatively standardised procurement processes used for education sector projects such as classroom construction and instructional materials supply.

Bivariate Comparison of Commitment Fees by Sector and Financing Source (Objective 2)

Table 2a: One-Way ANOVA of Commitment Fees (% of Loan Value) by Financing Source

Financing source	Mean fees (% of loan)	SD	n
Bilateral	0.162	0.241	50
Multilateral	0.180	0.258	93
Non-Concessional/Commercial	0.296	0.367	39

ANOVA: F(2, 179) = 2.951, p = 0.055. Source: Author's computation, 2026.

Table 2b: One-Way ANOVA of Commitment Fees (% of Loan Value) by Sector

Sector	Mean fees (% of loan)	SD	n
Energy	0.283	0.323	36
Water & Environment	0.262	0.342	31
ICT	0.262	0.381	11
Agriculture	0.223	0.310	15
Health	0.197	0.237	20
Roads & Works	0.149	0.248	38
Education	0.074	0.096	31

ANOVA: F(6, 175) = 2.169, p = 0.048. Source: Author's computation, 2026.

The one-way analysis of variance summarized in Table 2a indicated that mean commitment fee burden differed across financing source categories at a level that approached, but did not quite cross, conventional statistical significance ($F(2,179) = 2.951$, $p = 0.055$). Descriptively, projects financed on non-concessional or commercial terms carried a mean fee burden of 0.296 percent of loan value, roughly 1.6 to 1.8 times that recorded for multilateral (0.180 percent) and bilateral (0.162 percent) financed projects, and also displayed the largest standard deviation (0.367), indicating greater heterogeneity in fee exposure within this category. This pattern was consistent with the higher contractual commitment fee rates typically attached to non-concessional facilities and with the more demanding effectiveness conditions often imposed by commercial lenders, both of which would be expected to elevate undisbursed balances and, consequently, fee accrual during the early years of a loan. The marginal, borderline-significant p-value suggested that

the effect, while directionally consistent with expectation, was not overwhelmingly strong at conventional thresholds, likely reflecting the moderate sample size within the non-concessional subgroup (n = 39) and the substantial within-group variability that a one-way test could not partition further; this motivated the multivariable mixed-effects analysis presented later in Table 4.

Table 2b showed a statistically significant difference in mean commitment fee burden across sectors ($F(6,175) = 2.169$, $p = 0.048$), with energy (0.283 percent), water and environment (0.262 percent), and ICT (0.262 percent) projects recording the highest average exposure, and education projects recording the lowest by a considerable margin (0.074 percent), less than a third of the sector average. This sectoral gradient was substantively meaningful: energy and water infrastructure projects typically require extensive land acquisition, environmental and social impact assessment, and internationally competitive bidding for large civil works packages, each of which extends the period before funds can be drawn down, whereas education sector investments in Uganda have tended to rely on more standardised, replicable designs and simplified procurement arrangements that allow disbursement to proceed more quickly once a loan is declared effective. The relatively small sample size in the ICT sector (n = 11) warranted some caution in generalising its estimated mean, as reflected in its correspondingly wide standard deviation (0.381), but the overall sectoral pattern was corroborated visually in Figure 1 and provided clear evidence that commitment fee exposure was not randomly distributed across the portfolio but tracked systematically with the technical and procurement characteristics of different investment sectors.

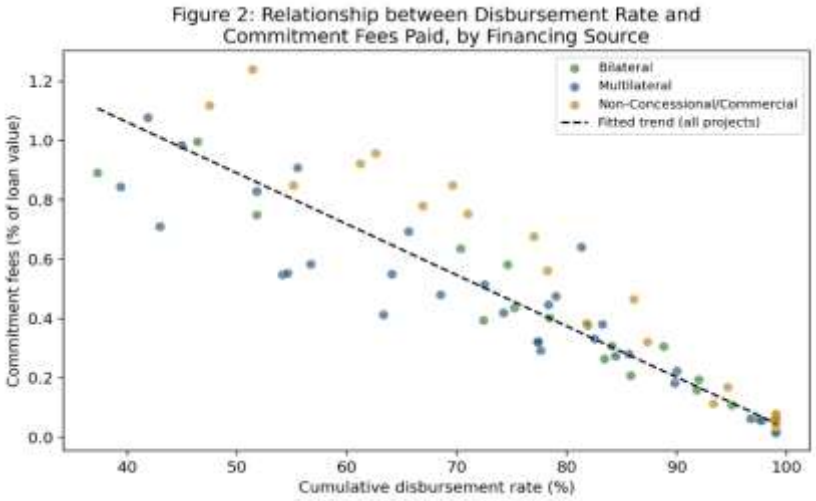

Figure 2: Relationship between Disbursement Rate and Commitment Fees Paid, by Financing Source

Figure 2 plotted commitment fees against cumulative disbursement rate for every project, coloured by financing source, and revealed a steep, near-linear downward trend line: projects clustered at high disbursement rates in the lower-right of the plot incurred minimal fee exposure, while a distinct group of low-disbursement projects in the upper-left, cutting across all three financing categories but visually denser among non-concessional loans, incurred disproportionately high commitment fees, graphically reinforcing the inverse relationship quantified in Table 3.

Bivariate Correlation between Commitment Fees and Implementation Performance (Objective 2)

Table 3: Pearson Correlation Coefficients between Commitment Fees and Key Study Variables (N = 182)

Variable pair	Pearson r	p-value	Interpretation
Fees (%) vs. Disbursement rate	-0.954	<0.001	Very strong negative
Fees (%) vs. Implementation delay	0.193	0.009	Weak positive
Fees (%) vs. Procurement readiness	-0.166	0.025	Weak negative
Fees (%) vs. PFM absorption capacity	-0.187	0.011	Weak negative
Fees (%) vs. Efficiency index	-0.235	0.001	Weak-to-moderate negative
Fees (%) vs. Loan amount	-0.018	0.809	Negligible, not significant
Implementation delay vs. Efficiency index	-0.738	<0.001	Strong negative
PFM absorption capacity vs. Efficiency index	0.303	<0.001	Moderate positive

Source: Author's computation, 2026. Correlations significant at $p < 0.05$ are in the expected direction.

The correlation results in Table 3 confirmed a very strong, statistically significant negative relationship between commitment fees and disbursement rate ($r = -0.954$, $p < 0.001$), which was expected given that commitment fees were mechanically calculated as a function of the undisbursed balance and therefore rose almost deterministically as disbursement rate fell; this relationship validated commitment fees as a faithful monetary translation of disbursement lag rather than an independent or noisy proxy for it. More analytically interesting were the weaker but still statistically significant correlations between commitment fees and implementation delay ($r = 0.193$, $p = 0.009$), procurement readiness ($r = -0.166$, $p = 0.025$), and public financial management absorption capacity ($r = -0.187$, $p = 0.011$), each in the theoretically expected direction: projects that took longer to implement, that scored lower on procurement readiness, and that were managed by entities with weaker absorption capacity tended to accumulate higher commitment fee exposure, consistent with the hypothesis that fees reflected upstream institutional and procedural bottlenecks rather than random financing noise.

Critically, commitment fees were significantly correlated with the composite project efficiency index ($r = -0.235$, $p = 0.001$), establishing at the bivariate level that projects with higher fee exposure tended to be assessed as less efficient overall, even though this correlation was only weak-to-moderate in magnitude, indicating that fees alone explained a limited share of the variance in efficiency and that other factors, most notably implementation delay, which correlated far more strongly with efficiency ($r = -0.738$, $p < 0.001$), played a larger direct role. The near-zero, non-significant correlation between commitment fees and loan amount ($r = -0.018$, $p = 0.809$) was a reassuring finding, as it indicated that fee exposure, when expressed as a percentage of loan value, was not simply an artefact of project size and could be meaningfully compared across small and large projects alike. These patterns collectively justified moving beyond pairwise correlation to a multivariable model capable of isolating the independent contribution of commitment fees to project efficiency while statistically controlling for implementation delay, absorption capacity, and loan size simultaneously, which was the purpose of the mixed-effects analysis presented next.

Figure 3: Commitment Fee Burden by Financing Source and Approval Year

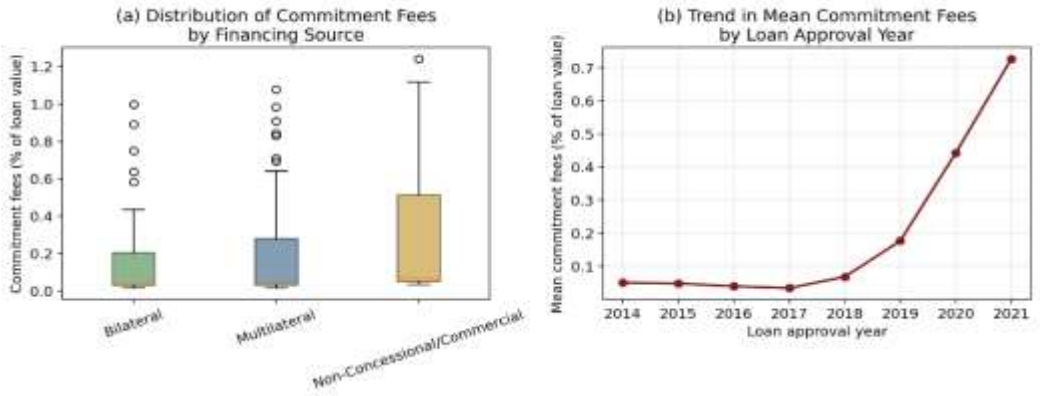

Figure 3: Commitment Fee Burden by Financing Source (Panel a) and Trend by Loan Approval Year (Panel b)

Figure 3 presented two complementary views of the fee data: Panel (a) confirmed, through boxplots, the elevated median and heavier upper tail of fee exposure among non-concessional loans relative to multilateral and bilateral financing; Panel (b) tracked mean commitment fees by loan approval year and showed a generally declining trend for more recently approved loans, plausibly reflecting the shorter elapsed time over which fees could accrue as well as possible incremental improvements in early-stage project readiness screening in later approval cohorts.

7.4 Mixed-Effects Model of Project Efficiency (Objective 3)

Table 4a: Fixed-Effects Estimates from the Linear Mixed-Effects Model of Project Efficiency Index

Fixed effect	Coef. (β)	SE	z	p-value	95% CI
Intercept	85.118	5.345	15.93	<0.001	[74.64, 95.59]
Commitment fees (% of loan)	-7.625	1.634	-4.67	<0.001	[-10.83, -4.42]
Implementation delay (months)	-0.695	0.074	-9.44	<0.001	[-0.84, -0.55]
Financing: Multilateral (ref. Bilateral)	-2.783	1.074	-2.59	0.010	[-4.89, -0.68]
Financing: Non-Concessional (ref. Bilateral)	-2.028	1.286	-1.58	0.115	[-4.55, 0.49]
PFM absorption capacity score	-0.008	0.050	-0.15	0.881	[-0.11, 0.09]

Procurement readiness index	0.043	0.053	0.81	0.417	[-0.06, 0.15]
Log(loan amount, USD million)	-1.132	0.614	-1.84	0.065	[-2.34, 0.07]

Dependent variable: Project efficiency index (0-100). Random intercept: Sector. Estimation: REML. Source: Author's computation, 2026.

Table 4b: Variance Components of the Mixed-Effects Model

Variance component	**Estimate**
Between-sector variance (random intercept)	19.324
Residual (within-sector) variance	33.598
Intraclass correlation coefficient (ICC)	0.365
Log-likelihood (REML)	-584.132
Number of projects (Level 1)	182
Number of sectors (Level 2)	7

Source: Author's computation, 2026.

The mixed-effects model in Table 4a showed that, after simultaneously controlling for implementation delay, financing source, absorption capacity, procurement readiness, and loan size, and after accounting for the clustering of projects within sectors through a random intercept, commitment fees remained a statistically significant negative predictor of project efficiency ($\beta = -7.625$, SE = 1.634, $z = -4.67$, $p < 0.001$). Substantively, this coefficient indicated that, holding all other modelled factors constant, each additional percentage point of loan value paid in commitment fees was associated with a 7.6-point reduction in the 0-100 project efficiency index, a materially large effect given that the portfolio-wide standard deviation in efficiency was only 9.34 points. Implementation delay was, as anticipated from the bivariate correlations, the single strongest predictor in the model ($\beta = -0.695$, $p < 0.001$), confirming that schedule slippage exerted a large direct penalty on efficiency independent of financing cost; nonetheless, the persistence of a significant, sizeable commitment fee effect even after delay was controlled for demonstrated that fees carried additional diagnostic information about inefficiency beyond what delay alone captured, most plausibly reflecting dimensions of underperformance, such as the depth and duration of undisbursed balances relative to approved ceilings, that a simple delay measure could not fully represent. Financing source retained a significant, independent association with efficiency for multilateral loans relative to the bilateral reference category ($\beta = -2.783$, $p = 0.010$), while procurement readiness, absorption capacity, and loan size did not reach conventional significance once fees and delay were included, indicating that much of their influence on efficiency operated indirectly, through their effect on disbursement performance and hence on commitment fees and delay themselves, rather than through a direct residual pathway.

The variance components reported in Table 4b provided a critical structural insight that a conventional single-level regression would have missed: the estimated between-sector variance (19.324) relative to the residual within-sector variance (33.598) yielded an intraclass correlation coefficient of 0.365, meaning that just over a third of the variation in project efficiency left unexplained by the fixed effects was attributable to systematic differences between sectors rather than to idiosyncratic differences between individual projects within the same sector. This finding had two important implications for interpreting commitment fees as an inefficiency indicator: first, it confirmed that ignoring the sectoral clustering of projects, as a standard ordinary least squares regression would do, risked understating the standard errors of fixed-effect estimates and overstating the apparent precision of the relationship between fees and efficiency; and second, it demonstrated that sector-specific structural factors, such as characteristic procurement modalities, land acquisition requirements, and technical complexity documented in the earlier bivariate analysis, exerted an influence on efficiency that operated at a level above the individual project, reinforcing the case for benchmarking commitment fee performance against sector-specific norms rather than a single portfolio-wide threshold when the indicator is operationalised for routine monitoring.

Conclusion

This study set out to assess whether commitment fees on undisbursed loans could serve as a statistically credible indicator of public investment project inefficiency in Uganda, and the weight of evidence across the univariate, bivariate, and mixed-effects analyses supported an affirmative answer. Commitment fee exposure was found to be unevenly distributed across the project portfolio, concentrated among energy, water, and ICT sector projects and among non-concessionally financed loans; it was very strongly correlated with disbursement rate by construction, but also significantly and meaningfully associated with implementation delay, procurement readiness, and absorption capacity, all recognised drivers of public investment inefficiency; and, most decisively, it remained a significant, substantively large, independent predictor of overall project efficiency even after implementation delay, financing terms, institutional capacity, and loan size were statistically controlled for within a mixed-effects framework that properly

accounted for sectoral clustering. Because commitment fees accrue automatically, are denominated in monetary terms that are directly comparable across projects of different size when expressed as a percentage of loan value, and are recorded routinely in loan administration systems without requiring new data collection, the study concluded that they represented an underused but readily available early-warning metric that Uganda's public investment management system could adopt to complement existing physical and financial progress indicators in identifying underperforming projects before cost and time overruns become entrenched.

Recommendations

Arising from the findings, the study made the following three recommendations.

Strengthen pre-effectiveness project readiness assessment. The Ministry of Finance, Planning and Economic Development and the National Planning Authority should tighten appraisal requirements for procurement readiness, land acquisition status, and safeguard compliance before loan signing, particularly for energy, water, and ICT sector projects that this study identified as carrying the highest commitment fee exposure, so as to shorten effectiveness lag and reduce the undisbursed balances on which fees accrue.

Institutionalise commitment fees as a routine public investment performance indicator. Commitment fee expenditure, expressed as a percentage of loan value and benchmarked against sector-specific norms rather than a single portfolio-wide threshold, should be incorporated as a standard early-warning metric within the Ministry of Finance's public investment management dashboards and quarterly debt management reports, enabling timely corrective action on slow-disbursing projects.

Embed disbursement-linked incentives in implementing agency performance contracts. Procuring and implementing entities, particularly in sectors and financing categories shown by this study to carry elevated fee burden, should have disbursement performance and commitment fee minimisation explicitly incorporated into performance contracts and annual budget performance reviews, aligning institutional incentives with the fiscal cost of undisbursed external financing.

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