Journal of Economics, Finance and Management Studies

ISSN (print): 2644-0490, ISSN (online): 2644-0504

Volume 08 Issue 09 September 2025

Article DOI: 10.47191/jefms/v8-i9-15, Impact Factor: 8.317

Page No: 5993-5999

Meta-Analysis of the Relationship Between Budget Participation and Budget Slack

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ABSTRACT: This meta-analysis examines the relationship between budget participation and budgetary slack by synthesising findings from multiple empirical studies conducted across public and private sector organisations. Drawing on studies with diverse contexts and methodologies, the analysis aims to provide a comprehensive estimate of the overall effect size and to assess potential sector-specific differences. The results reveal a small but statistically significant positive relationship between budget participation and budgetary slack, suggesting that greater involvement in the budgeting process may create opportunities for individuals to introduce slack. Subgroup analysis suggests that this relationship is slightly stronger in the public sector compared to the private sector, although no significant difference was found between the two sectors. Funnel plot analyses show no substantial evidence of publication bias, and the heterogeneity across studies is low, supporting the consistency of the findings. The study contributes to the theoretical understanding by highlighting the complex dynamics of participatory budgeting, where intended benefits, such as enhanced motivation and information sharing, may coexist with unintended behaviours, like slack creation. Practically, the results underscore the importance of coupling participative budgeting processes with appropriate control mechanisms to mitigate the risk of opportunistic behaviour. Limitations of the analysis include measurement inconsistencies, the predominance of cross-sectional data, and the need for deeper exploration of moderating variables. Future research is encouraged to adopt longitudinal designs and to examine contextual and psychological factors that may influence the budget participation–budgetary slack relationship.

KEYWORDS: budget participation, budget slack, meta-analysis

I. INTRODUCTION

Budgetary slack is a well-studied concept in managerial accounting and economics, characterized as the intentional manipulation of budget estimates by managers. Specifically, budgetary slack occurs when managers deliberately understate expected revenues or overstate anticipated expenses to create a buffer that facilitates the achievement of budgetary goals or performance targets. This practice can manifest itself in various forms, such as inflating costs, overestimating resource requirements, or underestimating operational capabilities (Ehsan et al., 2023; Harvey, 2015; Yuen, 2004). Several factors, including managerial attitudes, budgetary participation, and the psychological dynamics within an organisation, contribute to this phenomenon. Research indicates that managers may create slack as a safety measure against unforeseen difficulties or to enhance their perceived performance. Higher levels of budget participation often correlate with increased slack, as managers who influence budget terms may exploit this opportunity to secure more lenient performance expectations (Hiep, 2015; Kahar et al., 2016; Silva et al., 2022).

Participative budgeting can either mitigate or exacerbate budget slack, depending on factors such as the clarity of objectives and the ethical framework within which managers operate (Hardiwinoto, 2013; Wafiroh et al., 2020). When employees are actively involved in budget processes and feel a sense of ownership, they are less inclined to create excessive slack (Octrina & Swastawati, 2023). However, if budget targets are perceived as unachievable or if there are insufficient checks and balances, managers may resort to budget slack as a defensive strategy (Handoyo et al., 2022). Achieving an optimal balance of budget participation, clear performance targets, and a supportive organizational culture is crucial for minimizing undesirable slack behaviours. Ultimately, understanding the economic implications of budget slack is essential, as its effects

can translate into tangible organizational performance outcomes. (Wiersma, 2017) elaborates on how the perception of budgetary difficulty influences the relationship between slack and performance, noting that while slack may facilitate achieving budget targets, it can also distort financial reporting and mislead stakeholders. Therefore, while budget slack may offer short-term relief in performance evaluations, it can undermine long-term organizational health and accountability (Elmassri & Harris, 2011).

The relationship between budget participation and budgetary slack has been a subject of interest within the fields of accounting and management due to its implications for organizational performance and resource allocation. Literature indicates that increased budgetary participation often leads to higher levels of budgetary slack (Anthonius, 2022; Tyas et al., 2022), although limited exploration has been done regarding how organizational commitments (Kurnianto & Sulistyawati, 2023), environmental uncertainties (Kepramareni et al., 2020), or emotional states such as emotional exhaustion (Tong & Prompanyo, 2021) mediate this relationship. while some studies have found that budget participation can lead to positive outcomes, including team motivation and satisfaction (Kahar et al., 2016), others have highlighted dysfunctional consequences such as the creation of slack, where managers project lower revenues than achievable (Purwandari et al., 2023; Putri & Trisnaningsih, 2024). Interestingly, factors such as organizational ethics (Luh et al., 2019) and job satisfaction (Kahar et al., 2016) have been implicated in diminishing or altering the effects of participation in slack creation. This inconsistency emphasizes the need for meta-analytical approaches that synthesize existing findings and clarify the underlying mechanisms at play. Thus, this study aims to investigate the relationship between budget participation and budget slack using the meta-analysis approach.

II. METHODS

This meta-analysis employed a systematic and structured approach to examine the relationship between budget participation and budgetary slack by integrating quantitative findings from prior empirical studies. The goal was to generate an overall effect size estimate and explore differences across organizational sectors. A comprehensive literature search was conducted using major academic databases, including Scopus, Web of Science, ProQuest, and Google Scholar. Search terms included "budget participation", "budgetary slack", "participative budgeting", and "budget manipulation". The search focused on peer-reviewed journal articles, conference papers, and dissertations published in the English language. Studies were included if they provided statistical data that quantified the relationship between budget participation and budgetary slack, such as correlation coefficients or standardized regression coefficients, and reported sufficient information to compute an effect size. Conceptual papers, reviews, qualitative studies, and studies lacking necessary statistical data were excluded. For each eligible study, key information was extracted, including author(s), publication year, sample size, effect size estimates, standard errors, sector classification (public or private), and geographic location. Studies were also coded based on the measurement approach used for budget participation and budgetary slack (e.g., self-reported measures or objective financial indicators). When necessary, reported statistics were converted to a common metric (e.g., Fisher's Z) for consistency. A random-effects model was applied to compute the overall effect size, recognizing that true effect sizes might vary across studies due to differences in context, measurement, and methodology. Subgroup analyses were conducted to compare findings between public and private sector organizations. Heterogeneity among studies was assessed using the Q statistic and I^2 index to determine the extent of variability beyond sampling error. Publication bias was evaluated through funnel plots and visual inspection for asymmetry, supported by statistical tests where appropriate.

III. RESULTS

Table 1 summarizes key descriptive statistics from a meta-analysis dataset consisting of **N = 2,755 observations**. The average effect size (Z) across the studies is relatively small, with a **mean Z of 0.08**, indicating a modest overall effect. The Z values range from **0.00 to 0.32**, suggesting some variability in effect sizes among the studies included. The **variance of Z (Vz)** has a mean of **0.02**, with values spanning from **0.00 to 0.07**, which reflects differences in the precision of effect size estimates across studies. The **standard error of Z (Sez)** shows a mean of **0.12**, with a minimum of **0.07** and a maximum of **0.26**, indicating that while some studies provide precise estimates, others are less precise. Regarding study size, the **average sample size is 91.83**, but there is considerable variation, with sample sizes ranging from **18 to 228** participants. The standard deviation of the sample size **(51.48)** further highlights this diversity in the study scale. Overall, the dataset reflects a meta-analysis with small to moderate effect sizes and varied study characteristics, which may contribute to heterogeneity in the final analysis.

Table 1. Descriptive statistics

N=2755	Z (size effect)	Vz	Sez	Sample size
Mean	0.08	0.02	0.12	91.83
Min	0.00	0.00	0.07	18.00
Max	0.32	0.07	0.26	228.00
SD	0.08	0.01	0.04	51.48

The provided output presents the results of a Chi-Square Test of Homogeneity, which assesses whether the distribution of a categorical variable is the same across different groups—in this case, the public sector and the private sector. The test yields a chi-square statistic (Q), degrees of freedom (df), and a significance value (p-value) for each sector as well as an overall comparison. For the public sector, the chi-square statistic is 10.624 (df = 23, p= 0.987), while for the private sector, it is 0.968 (df = 5, p = 0.965). The overall test produces a chi-square value of 11.665 (df = 29, p = 0.998). Since all p-values are much greater than the conventional significance threshold of 0.05, we fail to reject the null hypothesis, indicating no statistically significant difference in the distribution of the categorical variable between the two sectors. This suggests that any observed variations are likely due to random chance rather than meaningful distinctions between the public and private sectors. Thus, the data supports the conclusion that the two groups are homogeneous in terms of the variable being tested.

Table 2. Homogeneity test

	Chi-square (Q statistic)	df	Sig.
public sector	10.624	23	0.987
private sector	0.968	5	0.965
Overall	11.665	29	0.998

The table presents the results of a subgroup analysis comparing effect sizes between public and private sectors. The analysis reveals important differences in how these sectors respond to the studied intervention or variable. For the public sector, we observe a small but statistically significant effect size of 0.063 (p = 0.004), with a 95% confidence interval (0.020 to 0.106) that excludes zero, indicating a reliable positive effect. In contrast, the private sector shows a non-significant effect size of 0.051 (p = .198), with its confidence interval (-0.027 to 0.128) including zero, suggesting the observed effect may be due to chance. When combining both sectors, the overall effect size of 0.060 remains statistically significant (p= 0.002), with a confidence interval (0.023 to 0.098) that excludes zero. These findings suggest that while the intervention appears effective in the public sector, its impact in the private sector is inconclusive. The differences in results between sectors could stem from various factors, including differing organizational structures, implementation fidelity, or variations in sample size. The public sector's more standardized environment might facilitate more consistent effects, while the private sector's greater variability could obscure measurable impacts. These results highlight the importance of considering sector-specific contexts when interpreting and applying research findings, as interventions may not yield uniform effects across different organizational settings. The overall significant effect suggests that the intervention has merit, but its effectiveness appears to be context-dependent, warranting further investigation into the sector-specific factors that moderate its impact.

Table 3. Size effect

					95% Confidence Interval	
	Effect Size	Std. Error	Z	Sig. (2-tailed)	Lower	Upper
public sector	0.063	0.0219	2.884	0.004	0.020	0.106
private sector	0.051	0.0396	1.288	0.198	-0.027	0.128
Overall	0.060	0.0192	3.146	0.002	0.023	0.098

This forest plot summarizes the results of a meta-analysis comparing effect sizes from multiple studies across two sectors: public and private. Each study is listed on the left side of the plot, with its corresponding effect size, standard error, confidence interval, p-value, and weight in the analysis. Visually, each study is represented by a blue square on the plot, where

the size of the square reflects the weight or influence of the study on the overall result. The horizontal lines through the squares represent the 95% confidence intervals (CIs), indicating the precision of each study's estimate. If a study's CI crosses the vertical line at zero—representing no effect—it means the study does not provide statistically significant evidence of an effect. The plot includes two subgroup analyses: studies conducted in the public sector and those in the private sector. For each subgroup, a pink diamond indicates the pooled effect size and its confidence interval (CI). The diamond's width reflects the CI and its center marks the estimated effect. The public sector subgroup shows an overall effect size of 0.06, while the private sector subgroup shows a slightly smaller effect size of 0.05. However, the test for subgroup differences (p = 0.79) indicates that there is no statistically significant difference between these two groups, suggesting the effect is consistent across sectors. At the bottom of the plot, the overall effect size for all included studies is displayed as a larger pink diamond. The overall effect size is 0.06, with a 95% confidence interval of 0.02 to 0.10. This interval does not cross the zero line, indicating that the effect is statistically significant (p = 0.002). This shows a small but consistent positive effect across all studies combined. The heterogeneity test (Q = 11.67, df = 29, p = 1.00) shows no significant variability between studies, implying that the results are highly consistent. A random-effects model was employed, which is suitable when assuming that the true effect size may vary between studies due to differences in methods, populations, or contexts. Overall, the forest plot provides strong visual and statistical evidence for a modest positive effect, consistent across both public and private sector studies, with low heterogeneity and high reliability.

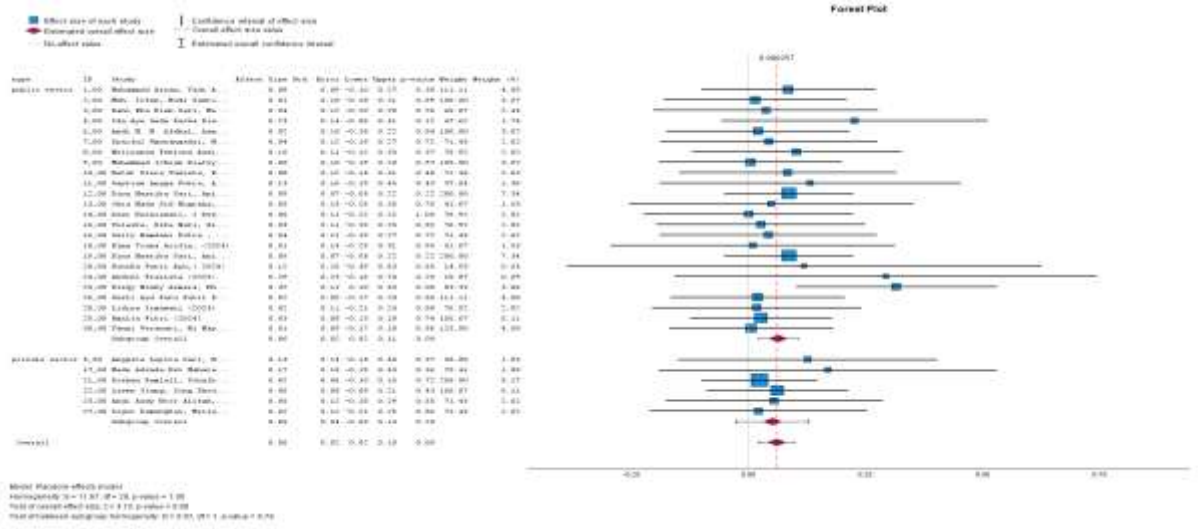

Figure 1. Forest plot

The funnel plot shown below is used to visually assess the presence of publication bias in a meta-analysis involving studies from both the public and private sectors. The vertical axis represents the standard error, which indicates the precision of each study—the higher up a point is on the graph, the more precise the study. The horizontal axis represents the standardized effect size (Z). Each dot in the plot represents a single study, with blue dots corresponding to public-sector studies and maroon dots to private-sector studies. In this plot, the solid vertical line indicates the estimated overall effect size across all studies. In contrast, the dashed diagonal lines represent the 95% pseudo-confidence intervals that form a symmetrical funnel shape. In the absence of publication bias, studies should scatter symmetrically around the overall effect size within this funnel. Visually, the studies appear symmetrically distributed around the vertical line, suggesting no strong evidence of publication bias. Both public and private sector studies are represented across the range of effect sizes, with no clear clustering on one side or outside the funnel. Additionally, many studies are located toward the top of the funnel, indicating high precision, which lends further credibility to the results. The presence of both sectors within this symmetric distribution also suggests that there is no systematic reporting bias between them. Overall, the funnel plot supports the reliability and balance of the studies included in the meta-analysis, with little indication of selective publication or major bias.

Meta-Analysis of the Relationship Between Budget Participation and Budget Slack

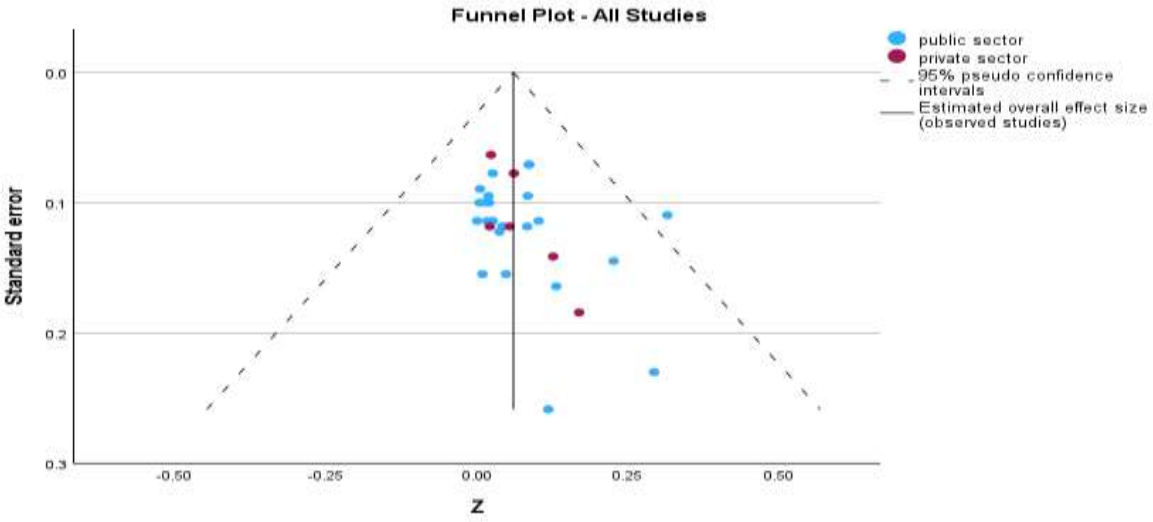

Figure 2. Funnel plot (all studies)

The funnel plot shown illustrates the distribution of study results within two distinct subgroups: private sector and public sector. This plot is used to assess publication bias within each subgroup separately by comparing the standard error (a measure of study precision) against the standardized effect size (Z-score). The plot is divided into two panels—on the left for the private sector (blue dots) and on the right for the public sector (maroon dots). In both panels, the vertical line represents the estimated overall effect size for each subgroup, while the dashed lines indicate the 95% pseudo-confidence intervals that form a symmetrical funnel shape. Ideally, in the absence of publication bias or small-study effects, the studies should be symmetrically scattered around the central vertical line and within the funnel. For the private sector, the studies appear to be symmetrically distributed with no points lying outside the funnel boundaries, suggesting a low risk of publication bias. However, there are fewer studies overall, which limits the power of the visual assessment. The studies are relatively close to the top of the plot, indicating higher precision and consistency in effect size estimates. For the public sector, there is a larger number of studies, and they are mostly symmetrically distributed within the funnel. The spread of data is wider compared to the private sector, which is expected due to the greater number of studies and potentially more variability in study design or population. Importantly, there is no noticeable asymmetry or clustering that would suggest publication bias. Overall, this funnel plot comparison shows that both subgroups demonstrate fairly symmetrical distributions of effect sizes, with no strong visual evidence of publication bias in either the public or private sector. This supports the robustness of the findings in both subgroups of the meta-analysis.

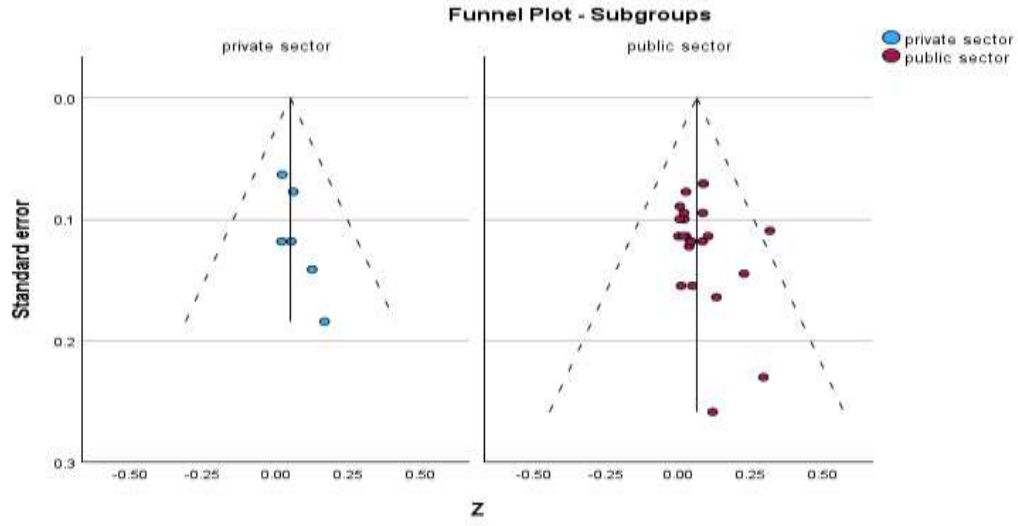

Figure 3. Funnel plot (subgroups)

IV. CONCLUSION

This meta-analysis provides a comprehensive evaluation of the relationship between budget participation and budgetary slack, synthesizing findings from multiple studies across both the public and private sectors. The overall results indicate a small but positive association, suggesting that increased involvement in the budgeting process can lead to a greater

tendency to create budgetary slack. This outcome highlights the complex dynamics of participative budgeting, where opportunities for strategic behaviour may accompany the benefits of inclusion and engagement. The analysis also reveals sector-specific patterns, with a slightly stronger effect observed in public sector organizations compared to those in the private sector. Despite these differences, the consistency of findings across both subgroups, along with the lack of significant publication bias as indicated by the funnel plots, strengthens the validity and generalizability of the results. Ultimately, while participatory budgeting remains a valuable tool for enhancing communication and ownership in the budgeting process, organizations must be mindful of its potential to foster budgetary slack unintentionally. Future research should further investigate contextual and organizational factors that may moderate this relationship, enabling the development of more effective budgeting practices that balance participation with accountability.

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