



Analysis of the effect of state capital injection on the financial performance of state-owned enterprises: 2015–2021

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ABSTRACT

Background: State Capital Injection (SCI), or Penyertaan Modal Negara (PMN), is a strategic mechanism through which the Indonesian government allocates investment to State-Owned Enterprises (SOEs). Despite growing SCI allocations—reaching IDR 91 trillion in 2021—questions remain about whether such injections meaningfully improve SOE financial performance. This study examines the effect of SCI on the financial performance of Indonesian SOEs during the period 2015–2021. **Methods:** The study employs panel data regression with Return on Assets (ROA) as the dependent variable and SCI as the independent variable, controlling for Net Profit Margin (NPM), Total Asset Turnover (TATO), Debt to Equity Ratio (DER), government ownership percentage (Gov_perc), and firm size (SIZE). Two groups were analyzed: Group 1, comprising all SOEs from 2015 to 2021 (809 observations), and Group 2, comprising SOEs that received additional SCI during the same period (84 observations). Fixed Effect models were selected through Chow and Hausman tests. **Findings:** Results from both groups consistently indicate that SCI has no significant effect on SOE financial performance as measured by ROA. In Group 2, NPM, TATO, and DER were found to significantly influence ROA, whereas SCI remained insignificant. The adjusted R-squared for Group 1 was 23.44%, while Group 2 achieved 96.64%. **Conclusion:** SCI does not significantly improve SOE financial performance, likely because injected capital is directed toward public service obligations and government mandates rather than commercial profitability. **Novelty/Originality of this article:** This study provides comprehensive empirical evidence on the SCI-performance nexus across all Indonesian SOEs over a seven-year panel, incorporating both cash and non-cash injections and controlling for sector-specific public service mandates that previous studies largely overlooked.

KEYWORDS: financial performance; government investment; return on assets; state capital injection; state-owned enterprises.

1. Introduction

Article 33, paragraph 2 of the 1945 Indonesian Constitution mandates that branches of production important to the state and those controlling the livelihoods of the people shall be controlled by the state. In implementation of this constitutional mandate, the Government enacted Law Number 19 of 2003 on State-Owned Enterprises (SOEs), aiming, among other things, to provide high-quality public goods and services that meet the needs of the general public (Article 2, paragraph 1c, Law No. 19/2003). As part of this commitment, the Indonesian government annually allocates investment financing—commonly referred to as State Capital Injection (SCI) or Penyertaan Modal Negara (PMN)—

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to SOEs. Government investment is defined as the long-term placement of funds and/or assets in the form of equity, debt instruments, or direct investment aimed at generating economic, social, and other benefits (Article 1(1), Government Regulation No. 63/2019 on Government Investment).

The growth of permanent government investment has been consistent over recent years. Based on the Central Government Financial Report (LKPP) for 2022, the total value of permanent equity investment reached IDR 2,909.87 trillion as of December 31, 2022, an increase of 9.91% from IDR 2,647.35 trillion in the previous year. Over the eight-year period from 2015 to 2022, this figure grew at an average annual rate of 7.17%, reflecting the government's sustained commitment to SOE capitalization. The expected outcome of this policy is concrete action by SOEs to develop both infrastructure and non-infrastructure sectors in Indonesia.

Despite these growing investments, not all SOEs are in sound financial condition. Several SOEs have reported negative net income or even negative equity positions. The House of Representatives (DPR) has actively raised concerns about the continued allocation of SCI to SOEs without commensurate improvements in financial performance. There are opposing views on this matter: some argue that SCI provides positive support for SOE development, while others contend that it may increase dependence on the state budget. Notably, while the total value of SCI to SOEs has increased every year—rising from IDR 9.57 trillion in 2017 to IDR 91.18 trillion in 2021, a jump of nearly 62% in a single year—dividends received by the government from SOEs have trended downward, declining from IDR 50.63 trillion in 2019 to IDR 30.50 trillion in 2021.

This divergence between increasing SCI allocations and declining dividend returns raises an important policy question: does SCI actually improve the financial performance of SOEs? Understanding this relationship is critical not only for fiscal policy but also for SOE governance and national development strategy. The government needs to assess whether SCI translates into operational improvements or whether the injected capital is absorbed by non-commercial mandates that do not directly stimulate profitability.

Theoretically, the relationship between SCI and firm performance can be examined through capital structure theory. According to Megginson (1997), capital structure exhibits nine observable patterns across firms globally, with three of the most prominent being: capital structure tends to follow national patterns that differ across countries; capital structure tends to follow industry patterns; and within the same industry, debt levels are inversely related to profitability. These patterns suggest that the impact of equity injection on performance is highly context-dependent, particularly when SOEs operate under unique governance frameworks and public service mandates.

Financial performance in this study is measured through the DuPont Identity framework, which decomposes Return on Equity (ROE) into three components: profit margin (operational efficiency), asset turnover (asset utilization efficiency), and the equity multiplier (financial leverage). Return on Assets (ROA) is used as the primary dependent variable, as it provides a comprehensive picture of how efficiently a company uses its assets to generate profit, captures both operational and strategic dimensions of financial performance, and allows for cross-firm comparisons within the same sector (Ross et al., 2000; Titman et al., 2018).

Prior research on SCI and SOE performance has generally found weak or insignificant direct effects. Nugroho (2019) found that government support in the form of SCI did not significantly influence the financial performance of Indonesian SOEs as measured by ROA and ROE. Dong & Liu (2022), studying China, found that state capital injections weakened technological progress and management efficiency in private firms, ultimately reducing productivity. Qi et al. (2021) also found that SOE financialization was not sensitive to government funding, suggesting that SOEs may have alternative financing capabilities that reduce their dependence on direct state capital.

This study contributes to this body of literature by providing updated and comprehensive evidence covering all Indonesian SOEs over the period 2015–2021, using a panel data approach that accounts for both SOEs that received SCI and those that did not.

The research questions addressed are: (1) What is the effect of SCI on the financial performance of all SOEs from 2015 to 2021, as measured by ROA? (2) What is the effect of SCI on the financial performance of SOEs that received additional SCI from 2015 to 2021, as measured by ROA? H1: State Capital Injection has a significant effect on the financial performance of all SOEs from 2015 to 2021, as measured by ROA; H2: State Capital Injection has a significant effect on the financial performance of SOEs that received additional SCI from 2015 to 2021, as measured by ROA.

2. Methods

This study uses panel data collected from multiple SOEs over the period 2015 to 2021. The data are divided into two groups. Group 1 comprises all SOEs existing from 2015 to 2021, totaling 809 firm-year observations. Group 2 consists solely of SOEs that received additional SCI during the same period, totaling 84 observations. The study employs multiple linear regression analysis to examine the relationship between the dependent variable (financial performance) and multiple independent and control variables.

2.1 Variables

The dependent variable is Return on Assets (ROA), calculated as net income divided by total assets. ROA reflects the productive capacity of a firm's asset base and is widely used in empirical financial research for cross-firm comparisons (Al-Tuwaijri et al., 2005; Titman et al., 2018). The independent variable is SCI (PMN), operationalized differently for each group. For Group 1, SCI is measured as a dummy variable (1 if the SOE received SCI in a given year, 0 otherwise). For Group 2, SCI is measured as the nominal value of SCI received divided by total company revenue, capturing the relative scale of the injection.

Control variables include: Net Profit Margin (NPM), reflecting operational profitability; Total Asset Turnover (TATO), reflecting asset utilization efficiency; Debt to Equity Ratio (DER), reflecting capital structure and financial leverage; Government ownership percentage (Gov_perc), reflecting the extent of state control; and firm size (SIZE), measured as the natural logarithm of total assets

2.2 Regression models

The regression equations used to estimate the effect of SCI and control variables on SOE financial performance are as follows:

$$ROA_{it} = \alpha + \beta_1 PMN1_{it} + \beta_2 NPM_{it} + \beta_3 TATO_{it} + \beta_4 DER_{it} + \beta_5 Gov_perc_{it} + \beta_6 SIZE_{it} + \varepsilon_{it} \quad (\text{Eq. 1})$$

$$ROA_{it} = \alpha + \beta_1 PMN2_{it} + \beta_2 NPM_{it} + \beta_3 TATO_{it} + \beta_4 DER_{it} + \beta_5 Gov_perc_{it} + \beta_6 SIZE_{it} + \varepsilon_{it} \quad (\text{Eq. 2})$$

Where PMN1 is the SCI dummy variable for Group 1, and PMN2 is the SCI-to-revenue ratio for Group 2. Model selection was conducted using the Chow Test to compare Pooled OLS and Fixed Effects, and the Hausman Test to compare Fixed Effects and Random Effects specifications.

3. Results and Discussion

3.1 Regression results

The Fixed Effect model was selected for both groups based on the Chow and Hausman test results. Both models demonstrated significant overall fit, as confirmed by the F-test, indicating that the independent and control variables jointly explain meaningful variation

in ROA. Table 3 summarizes the model-level results, while Tables 1 and 2 present the coefficient-level results for Groups 1 and 2, respectively.

Table 1. T-test results for group 1 (All SOEs, n = 809)

Variable	Coefficient	Probability	Interpretation
PMN	0.001753	0.9046	PMN has no significant effect on ROA
NPM	8.46E-06	0.9052	NPM has no significant effect on ROA
TATO	-0.003739	0.8318	TATO has no significant effect on ROA
DER	-7.93E-05	0.8253	DER has no significant effect on ROA
GOV_PERC	-0.001280	0.5504	GOV_PERC has no significant effect on ROA
SIZE	-0.015915	0.0748	SIZE has no significant effect on ROA

Table 2. T-test results for group 2 (SOEs receiving SCI, n = 84)

Variable	Coefficient	Probability	Interpretation
PMN	0.000795	0.7386	PMN has no significant effect on ROA
NPM	0.076341	0.0000	NPM has a significant effect on ROA
TATO	0.136388	0.0000	TATO has a significant effect on ROA
DER	-0.001038	0.0000	DER has a significant effect on ROA
GOV_PERC	0.000461	0.5792	GOV_PERC has no significant effect on ROA
SIZE	-0.002418	0.4995	SIZE has no significant effect on ROA

Table 3. Summary of regression model results

Result	Group 1	Group 2
n	809	84
Panel data model	Fixed effect	Fixed effect
Model fit (F-test)	Significant	Significant
Adjusted R-squared	23.44%	96.64%
Effect of SCI on financial performance	Not significant	Not significant

3.2 Group 1: All SOEs

In Group 1, covering all 809 SOE observations, none of the variables—including SCI, NPM, TATO, DER, GOV_PERC, or SIZE—achieved statistical significance at conventional levels. The adjusted R-squared of 23.44% indicates that the model explains approximately one-quarter of the variation in ROA across all SOEs. This relatively low explanatory power is expected given the heterogeneous nature of the full SOE sample, which encompasses firms from infrastructure, energy, finance, transportation, and other sectors with vastly different financial characteristics. The insignificance of SCI ($p = 0.9046$) clearly indicates that receiving a government capital injection does not, on average, lead to a statistically meaningful improvement in ROA across the full SOE population.

3.3 Group 2: SOEs receiving SCI

In Group 2, focusing on the 84 SOEs that received additional SCI, the model achieved a substantially higher adjusted R-squared of 96.64%, confirming that the selected variables explain nearly all variation in ROA within this more homogeneous subsample. NPM ($p < 0.0001$), TATO ($p < 0.0001$), and DER ($p < 0.0001$) were all highly significant, consistent with the DuPont decomposition framework and confirming that operational profitability, asset efficiency, and leverage are primary determinants of ROA. However, SCI (PMN2, $p = 0.7386$) remained statistically insignificant, as did GOV_PERC ($p = 0.5792$) and SIZE ($p = 0.4995$).

The consistent insignificance of SCI across both groups—despite the very different sample compositions and model fits—provides strong and robust evidence that SCI does not translate into improved financial performance as measured by ROA. These findings align with prior literature: Nugroho (2019) found no significant effect of government support on Indonesian SOE performance; Dong & Liu (2022) documented that state capital injections in China weakened management efficiency; and Qi et al. (2021) showed that SOE financialization is insensitive to direct government funding.

3.4 Explanatory analysis: Why SCI does not improve ROA

The absence of a significant SCI-ROA relationship can be attributed to several structural factors. First, SCI is frequently directed toward non-commercial activities. Many SOEs receiving SCI are assigned public service obligations (PSO) that require them to provide services at below-market rates, such as PT Kereta Api Indonesia (rail transport), PT PLN (electricity infrastructure), and Perum BULOG (food supply). For example, PT PLN received SCI five times between 2015 and 2021, with the largest injection reaching IDR 23.5 trillion in 2016, primarily to fund electricity grid expansion and rural electrification under the national energy sovereignty program—activities with thin or negative commercial margins.

Second, capital injections are often timed toward the end of the fiscal year (Q3 or Q4), giving SOEs insufficient time to deploy the capital productively within the same accounting period. This timing mismatch means that SCI increases the asset base (denominator of ROA) in the year of injection without a proportional increase in net income (numerator), mechanically suppressing ROA.

Third, several SOEs operate as Special Mission Vehicles (SMVs) with strategic mandates extending beyond commercial profitability. PT Sarana Multigriya Finansial (PT SMF), for instance, received SCI six times between 2015 and 2021 to fund affordable housing programs (KPR FLPP) for low-income households—a social mandate that prioritizes housing access over profit maximization. Similarly, PT Hutama Karya received SCI five times to build the Trans-Sumatra Toll Road network, a project deemed economically viable but financially unviable on commercial terms, requiring sustained government support.

Fourth, bureaucratic constraints and slow decision-making processes may limit the operational efficiency gains that would otherwise translate SCI into improved profitability. Capital injections may also be used partly to repair capital structures (reducing leverage) rather than to fund revenue-generating activities, which further attenuates any positive effect on ROA.

4. Conclusions

This study examined the effect of State Capital Injection (SCI) on the financial performance of Indonesian State-Owned Enterprises (SOEs) over the period 2015 to 2021, using Return on Assets (ROA) as the performance measure and panel data regression with Fixed Effect specifications. Two main conclusions emerge. First, SCI has no significant effect on the financial performance of all SOEs from 2015 to 2021. Across 809 firm-year observations covering the full SOE population, neither the receipt of SCI nor any of the control variables reached statistical significance, indicating that government capital injection does not systematically improve ROA at the population level. Second, SCI has no significant effect on the financial performance of SOEs that specifically received additional SCI from 2015 to 2021. Even within the focused Group 2 subsample—where the model fit was exceptionally strong (adjusted R-squared of 96.64%) and several control variables were highly significant—SCI itself remained insignificant. This finding suggests that while operational factors (NPM, TATO, DER) are strong determinants of SOE profitability, SCI does not add incremental explanatory power.

The evidence consistently indicates that SCI primarily increases the asset base of SOEs without generating a proportional increase in profitability, partly because injected capital is channeled toward public service mandates, strategic national projects, and capital structure repair rather than revenue-generating commercial activities. These findings have important implications for fiscal policy: the government should strengthen the monitoring framework for SCI utilization, ensure that performance metrics for PSO-mandated SOEs are appropriately tailored to their social objectives, and consider complementary policy instruments—such as tax incentives, R&D support, and public-private partnerships—to enhance SOE competitiveness.

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Author Contribution

Conceptualization, V.E.K. and R.A.B.; Methodology, V.E.K.; Data Curation, V.E.K.; Formal Analysis, V.E.K.; Writing – Original Draft Preparation, V.E.K.; Writing – Review & Editing, R.A.B.; Supervision, R.A.B.; Project Administration, V.E.K.

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Ethical Review Board Statement

Not available. This study used secondary data obtained from publicly available government financial reports and SOE records. No human subjects were involved.

Informed Consent Statement

Not available.

Data Availability Statement

The data used in this study are sourced from publicly available government documents, including the Central Government Financial Reports (LKPP) and State Budget Financial Notes (Nota Keuangan APBN) published by the Ministry of Finance of the Republic of Indonesia. Additional data were sourced from the Book of Separated State Wealth Administration (Buku Penatausahaan Kekayaan Negara Dipisahkan) published by the Directorate General of State Assets.

Conflicts of Interest

The authors declare no conflict of interest.

Declaration of Generative AI Use

During the preparation of this work, the authors used Claude (Anthropic) to assist in translating the manuscript from Indonesian to English and formatting it to journal template requirements. After using this tool, the authors reviewed and edited the content as needed and took full responsibility for the content of the publication.

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