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Research Article

OVERHEAD COST SHARE, MATERIAL COST SHARE, AND PROFITABILITY: EVIDENCE FROM INDONESIAN LISTED TEXTILE FIRMS, 2018–2024

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ABSTRACT

Background: Listed Indonesian textile producers lost money in most years between 2018 and 2024, a period of fibre and energy price shocks, the COVID-19 pandemic, weak demand, and import competition. Studies that link production costs to profit mostly use pooled cross-firm variation and report conflicting signs.
Purpose: The study asks whether the composition of production costs (the shares of factory overhead and direct materials, with direct labour as the reference category) is associated with return on assets (ROA), and whether that association differs between firms and within firms over time.
Design/methodology/approach: An unbalanced panel of 11 textile and textile-product firms listed on the Indonesia Stock Exchange (76 firm-years) combines hand-collected cost shares from audited annual reports with balance-sheet and income data from LSEG Workspace. Two-way fixed-effect models are estimated with firm-clustered standard errors and wild cluster bootstrap p-values, and a within–between (Mundlak) random-effects model separates the two sources of variation.
Findings/Result: Within firms, the overhead share is negatively associated with ROA at the 10% significance level in every fixed-effects specification: moving one percentage point of the cost base from direct labour to overhead is associated with an ROA about 1.8 percentage points lower. The association loses significance when size and leverage are lagged and disappears once Sri Rejeki Isman, which collapsed in 2021–2022, is excluded. The material share shows no within-firm association. Between-firm and within-firm coefficients differ significantly at the 1% level (joint Mundlak test): firms with structurally higher overhead or material shares are not less profitable on average. All estimates are associations.
Conclusion: In this sample, a rising overhead share goes with lower profitability within firms, but mainly as a signal of severe volume collapse rather than as a general driver of profitability, and pooled estimates of cost composition and profitability mix two different relationships.
Originality/value (State of the art): The study applies the within–between distinction to cost composition in an energy- and asset-intensive industry over the 2018–2024 shock period and shows how sensitive firm-level cost–profit evidence can be to a single distress episode in small listed-firm panels.

ARTICLE INFO

Keywords:
cost composition, operating leverage, within–between estimation, profitability, textile industry

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INTRODUCTION

Textiles and apparel employed about 3.87 million people in Indonesia in 2024, down from 3.98 million a year earlier (Badan Kebijakan Fiskal [BKF], 2024), and the subsector contributed 0.97% of GDP in 2025 (BPS, 2026). Listed producers have fared poorly. In the 11 firms studied here, mean ROA fell from 1.9% in 2018 to −7.2% in 2024, and the median firm made a loss in five of the seven years. PT Sri Rejeki Isman Tbk (Sritex, ticker SRIL), the largest integrated producer, was declared bankrupt in October 2024 (The Jakarta Post, 2024), and signs of financial distress among listed textile and garment firms had appeared before the pandemic (Maximillian & Septina, 2022).

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Much of the pressure runs through production cost. In integrated cotton mills in a developing economy, energy accounts for about 16% of production cost and ranks second only to cotton (Bantelay et al. 2020), and Indonesia's textile subsector is among its energy-intensive industries (Salamah et al. 2019). Between 2018 and 2024 energy prices spiked during the 2022 crisis (Milewska & Milewski, 2023), the government extended safeguard duties because textile imports, especially from China, kept rising (BKF, 2024), and capacity utilisation in textiles stood at 51.71% in July 2025 (Kemenko Perekonomian, 2025). Much of the fibre is imported, which ties input costs to the exchange rate (Handoyo et al. 2023).

The two main cost blocks behave differently. Direct materials move almost one-for-one with output; factory overhead (energy contracts with minimum charges, depreciation of machinery, maintenance, and indirect labour) is largely committed in the short run. Classic cost-behaviour and operating-leverage research predicts that a high share of committed costs raises the sensitivity of earnings to volume (Lev, 1974) and that costs fall less when activity falls than they rise when activity rises (Anderson et al. 2003; Banker & Byzalov, 2014). Unused capacity is costly in practice: in United States manufacturing plants it amounts to about 4.8% of sales (Ederhof et al. 2021). For these reasons the share of overhead in production cost should carry information about how well output absorbs the committed cost base.

Empirical work on production costs and profitability in Indonesia and other emerging markets has not settled the question. Overhead has been reported as positively related to ROA (Tarigan & Siagian, 2022; Akinleye & Fakorede, 2025), unrelated to profit (Alfiah & Suparno, 2023; Prihatni & Ulupui, 2025; Jemita & Kurnianingsih, 2026), and, at the level of total production cost, negatively related to net profit in textiles and garments (Manurung & Suzan, 2023). Most of these studies pool observations across firms and years. A pooled coefficient mixes two questions: whether firms with structurally different cost structures differ in profitability, and whether a given firm earns less in years when its cost structure shifts. The distinction is standard in panel econometrics (Mundlak, 1978; Bell et al. 2019), and the operating-leverage literature gives reasons to expect the two answers to differ, because firms that carry high fixed costs may earn higher average returns as compensation (Novy-Marx, 2011; Chen et al. 2019). It has not been applied to cost composition in an energy- and asset-intensive industry, and none of the Indonesian studies above reports inference that accounts for the small number of firms.

This study therefore estimates the association between the overhead and material shares of production cost and ROA for textile firms listed on the Indonesia Stock Exchange (IDX) over 2018–2024, separating within-firm from between-firm variation. The contribution is threefold, and it is narrower than the motivation might suggest. First, it applies the within–between distinction to cost composition over a period that covers normal operation, the pandemic, and the energy and import shocks that followed. Second, it finds a negative within-firm association between the overhead share and profitability, significant at the 10% level, and shows that this association, often read as evidence of an absorption mechanism, rests largely on a single collapse episode. Third, it documents that between-firm and within-firm coefficients differ significantly, which explains part of the conflicting signs in the earlier literature.

METHODS

An initial screening of the IDX website identified 16 textile and garment issuers listed during 2018–2024. Firms were retained when they published audited annual reports for 2018–2024 and disclosed factory overhead (labelled factory overhead, manufacturing overhead, or indirect production costs) separately from direct materials and direct labour in the notes on the cost of goods manufactured. Table 1 shows the selection; 11 firms remain. Nine operate mainly in upstream activities (fibre, spinning, weaving, and finishing), and two (RICY and POLU) also produce garments.

Cost shares were hand-collected from the notes on the cost of goods manufactured. Overhead was taken as reported by each firm, without reclassification, because the notes do not allow a common breakdown of overhead into energy, depreciation, and other items across firms. Total assets, total liabilities, net income after tax, revenue, and gross profit were retrieved from LSEG Workspace (Company Fundamentals, standardised annual statements, retrieved on 9 November 2026). ROA and the other financial ratios are computed from these items for every observation, so that all financial variables come from one consistently standardised source; where LSEG reports restated comparative figures, the restated values are used.

Audited statements for SRIL in 2024, the year of its bankruptcy, are not available in LSEG and could not be obtained, so the panel is unbalanced: 10 firms contribute seven years and SRIL contributes six, for 76 firm-years. Five firms report in US dollars (CNTX, INDR, POLY, SRIL, and TFCO) and six in rupiah. Ratios are unaffected by currency; for firm size, total assets of rupiah reporters were converted to US dollars at the Bank Indonesia year-end middle rate. CNTX has a fiscal year ending on 31 March, and its observations are indexed by fiscal-year label.

Table 2 defines the variables. Total production cost is the sum of direct materials, direct labour, and factory overhead. The cost shares are compositional (OHCS + MCS + LCS = 1), so including all three would make the regressors perfectly collinear. The direct-labour share (LCS) is the omitted reference category: the coefficient on OHCS measures the change in ROA when one unit of the cost base moves from direct labour to overhead with the material share held constant, and the coefficient on MCS has the corresponding meaning for materials. Because the shares are bounded and sum to one, an additive log-ratio specification, ln(OHCS/LCS) and ln(MCS/LCS), is estimated as a robustness check (Aitchison, 1986). Leverage is measured as total liabilities to total assets because several firms had negative equity, which makes a debt-to-equity ratio undefined.

Model and Estimation

The baseline specification is a two-way fixed-effect model:

$$ROA_{it} = \beta_1 OHCS_{it} + \beta_2 MCS_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 SG_{it} + \alpha_i + \lambda_t + \varepsilon_{it} \quad (1)$$

where α_i and λ_t are firm and year effects. Year effects absorb common shocks such as the pandemic and the 2022 energy crisis. Sales growth (SG) controls for the volume changes that move the overhead share mechanically. Because ROA, size, and leverage share total assets in their construction, and losses reduce equity and raise leverage in the same year, the model is also estimated with size and leverage lagged one year. To separate within-firm from between-firm associations, the study estimates a within–between random-effects model (Mundlak, 1978; Bell et al. 2019):

$$ROA_{it} = \mu + \beta_W'(x_{it} - (\bar{x}_i) + \beta_B'(\bar{x}_i) + \lambda_t + u_i + \varepsilon_{it} \quad (2)$$

where $\bar{x}_i$ is the vector of firm means and β_W and β_B are the within and between coefficients. A joint Wald test of $\beta_B = \beta_W$ is the cluster-robust version of the Hausman test; it does not require the random-effects assumptions that the classical test relies on.

Table 1. Sample selection

Criterion	Firms
Textile and garment issuers listed on the IDX during 2018–2024	16
Excluded: incomplete annual reports for 2018–2024 (SBAT, ACRO)	(2)
Excluded: factory overhead not disclosed separately (TRIS, BELL)	(2)
Excluded: no longer engaged in textile production (ARGO)	(1)
Final sample	11
Firm-years (SRIL 2024 unavailable; unbalanced panel)	76

Note: Sample firms are CNTX, ESTI, INDR, INOV, MYTX, POLU, POLY, RICY, SRIL, SSTM, and TFCO.

Table 2. Variable definitions

Variable	Definition	Source
ROA	Net income after tax / total assets	LSEG
OHCS	Factory overhead / total production cost (direct materials + direct labour + factory overhead)	Annual reports (notes on cost of goods manufactured)
MCS	Direct materials / total production cost	Annual reports
LCS	Direct labour / total production cost = 1 − OHCS − MCS; omitted reference category	Annual reports
SIZE	ln(total assets in US dollars)	LSEG; Bank Indonesia year-end rates
LEV	Total liabilities / total assets	LSEG
SG	Revenuet / revenuet−1 − 1, in reporting currency	LSEG
GM	Gross profit / revenue (robustness outcome)	LSEG

Inference accounts for the structure of the data. With firm effects and only seven years, the main threat is serial correlation of the errors within firms, so standard errors are clustered by firm (Petersen, 2009). Statistical significance is assessed at the 1%, 5%, and 10% levels using the firm-clustered standard errors. Because cluster-robust t-tests can over-reject when there are only eleven clusters (Cameron et al. 2008; MacKinnon et al. 2023), p-values for the cost shares are also computed with the restricted wild cluster bootstrap using Webb six-point weights and 9,999 replications (Roodman et al. 2019) and reported as a sensitivity check rather than as the sole basis for judging significance. Clustering by year, used in an earlier version of this analysis, is not retained because seven clusters are even fewer. Diagnostics include an F-test for firm effects, a joint test of year effects, the Wooldridge test for first-order serial correlation (Drukker, 2003), and the Pesaran CD test for cross-sectional dependence (Pesaran, 2021). Fit is reported as within-R2. Robustness checks re-estimate the preferred model without controls, with lagged controls, with log-ratio shares, with gross margin as the outcome, without the influential SRIL 2021–2022 and POLY 2024 observations, without SRIL, and dropping one firm at a time. An interaction between OHCS and a sales-decline indicator tests whether the overhead association is stronger in years of falling sales. Estimation used Python (statsmodels and NumPy); a Stata do-file implementing the same models is provided with the replication files.

Cost Behaviour, Operating Leverage, and Cost Composition

Operating leverage refers to the share of costs that do not vary with output. Lev (1974) showed that firms with a higher ratio of fixed to variable costs have more volatile earnings and higher systematic risk. Later work found that costs are "sticky": selling, general, and administrative costs rise by more when activity increases than they fall when activity decreases, because managers hold on to committed resources when they expect demand to recover (Anderson et al. 2003). Banker and Byzalov (2014) generalise this into a theory of asymmetric cost behaviour driven by adjustment costs and managerial expectations, and the subsequent literature is reviewed by Ibrahim et al. (2022) and Amanda et al. (2024). Evidence for Indonesian manufacturers is mixed; Lusiana and Kristianti (2020) found no stickiness in selling, general, and administrative costs, which are less tied to machinery than factory overhead is.

Cost composition links these ideas to profitability. When output falls, materials and direct labour shrink with it while committed overhead does not, so the overhead share rises and unit cost increases unless prices adjust. Ederhof et al. (2021) show that the cost of idle capacity depresses reported gross margins. The same logic carries a caution that matters for interpretation. At a constant level of total cost, a pure reallocation from labour to overhead has no direct accounting effect on profit; an association between the overhead share and ROA must therefore come from changes in volume, prices, or costs that move together with composition. The overhead share is better read as a symptom of the volume–capacity relation than as a lever in itself.

Within-Firm and Between-Firm Variation

Firm-level panels contain two kinds of variation. Permanent differences between firms, such as technology, product mix, integration, or ownership, are captured by firm means; transitory changes within a firm over time are captured by deviations from those means. Fixed-effect estimators use only the second kind, pooled estimators blend both, and random-effects estimators are consistent only if the permanent component is unrelated to the regressors (Mundlak, 1978). Bell et al. (2019) recommend estimating within and between effects jointly so that both can be interpreted. For cost composition the two effects need not share a sign. Between firms, a capital-intensive producer with a high overhead share may be more profitable on average, as compensation for bearing operating leverage (Novy-Marx, 2011; Chen et al. 2019), even though its bankruptcy risk is also higher (Tao et al. 2022). Within a firm, a rise in the overhead share is more likely to coincide with a fall in volume.

Prior Evidence on Production Costs and Profitability

Studies of Indonesian consumer-goods producers report that factory overhead is positively related to ROA while material cost is not significant (Tarigan & Siagian, 2022), that material cost is positively related to profit while overhead is not (Prihatni & Ulupui, 2025), and that cost-efficiency measures have no significant effect on profit margins (Alfiah & Suparno, 2023; Jemita & Kurnianingsih, 2026). For Nigerian consumer-goods firms, both shares are positively associated with ROA (Akinleye & Fakorede, 2025). In manufacturing panels, energy intensity is negatively related to profitability (Alavani et al. 2024), and during the 2022 energy crisis

Polish producers protected margins mainly by raising prices and cutting other costs (Milewska & Milewski, 2023). Textile firm performance in Indonesia declined during the pandemic years (Setiawan & Septiani, 2025). None of these studies separates within-firm from between-firm variation, and most use nominal costs or pooled estimators.

Hypotheses

The absorption argument predicts that, within a firm, years with a higher overhead share are years with lower profitability, because the overhead share rises when volume falls and committed costs are spread over fewer units.

H1: Within firms, the overhead cost share is negatively associated with ROA.
A larger material share makes unit cost more exposed to fibre prices and, for imported fibre, to the exchange rate. If producers cannot pass these costs on, margins fall. A competing argument predicts no association: fibre, yarn, and fabric prices tend to follow input prices, so part of a material shock is recovered in selling prices. We state the directional hypothesis implied by the exposure argument and treat a null result as consistent with pass-through.

H2: Within firms, the material cost share is negatively associated with ROA.
Because permanent differences in technology and product mix can make high-overhead firms more profitable on average, the between-firm association should be less negative than, and possibly opposite in sign to, the within-firm association.

H3: The association between cost composition and ROA differs between firms and within firms, with between-firm coefficients exceeding within-firm coefficients.
For the controls, larger firms are expected to be more profitable (positive sign for size), leverage is expected to be negatively associated with ROA through interest costs and distress (Khalifaturofi'ah & Setiawan, 2024; Kurniasih et al. 2020), and sales growth is expected to be positively associated with ROA because it captures the volume changes that drive absorption. Figure 1 summarises the framework.

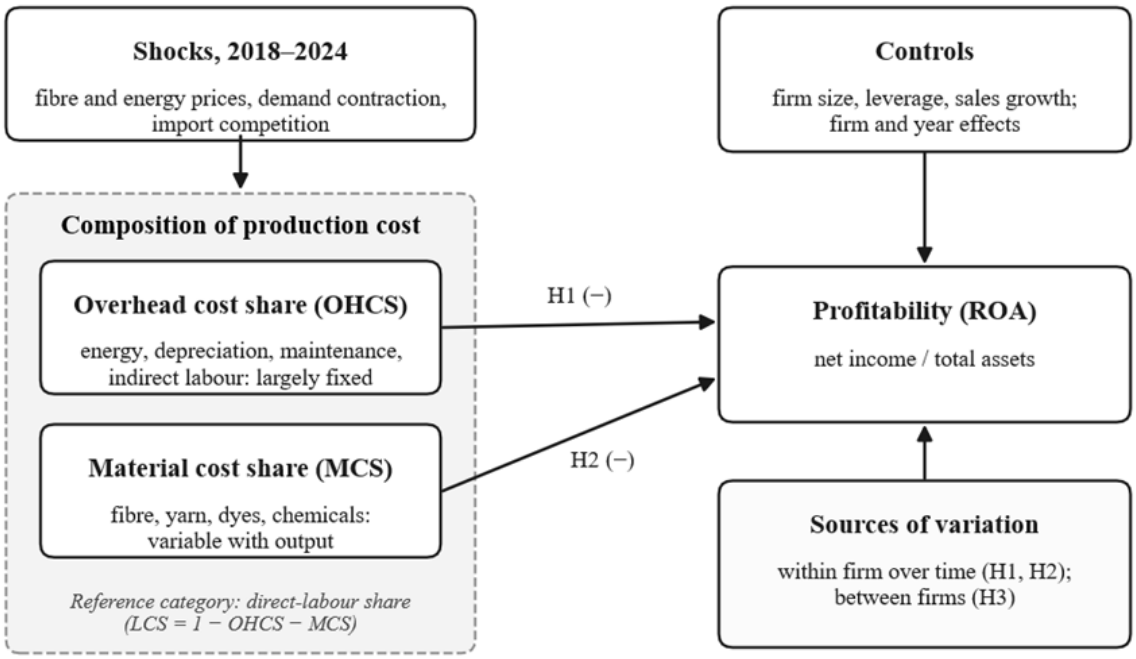


Figure 1. Conceptual framework

RESULTS

Profitability and Cost Composition, 2018–2024

Mean ROA fell from 1.9% in 2018 to −7.2% in 2024 (Figure 2). The median stayed closer to zero because a few large losses pull the mean down: SRIL moved from an ROA of 6.2% in 2018 to −87.1% in 2021 and −51.7% in 2022, and POLY recorded −44.5% in 2024. Only five firms (INDR, ESTI, INOV, TFCO, and, marginally, SSTM) kept an average ROA near or above zero.

The average overhead share rose from 20.6% in 2018 to 25.2% in 2021 and eased to 22.9% in 2024, while the material share fell from 69.0% to 62.3% in 2020 (Figure 3). The largest single shift was SRIL's, whose overhead share jumped from 12.1% in 2020 to 39.8% in 2021, the year its ROA collapsed. Ever Shine Tex (ESTI) shows the opposite pattern in levels: it carried the highest overhead share in the sample (47–59%), yet its ROA was positive in most years.

Descriptive Statistics and Diagnostics

Table 3 reports the descriptive statistics. Overhead accounts for 23.1% of production cost on average and materials for 64.8%. For both cost shares, variation between firms (standard deviations of 0.102 and 0.098) is much larger than variation within firms (0.040 and 0.061); for ROA, within-firm variation (0.118) exceeds between-firm variation (0.074). Fixed-effects estimates therefore rest on a modest amount of within-firm movement in cost composition. Leverage is highly skewed (median 0.70, maximum 10.20 for POLY in 2024) because of negative equity in distressed firms.

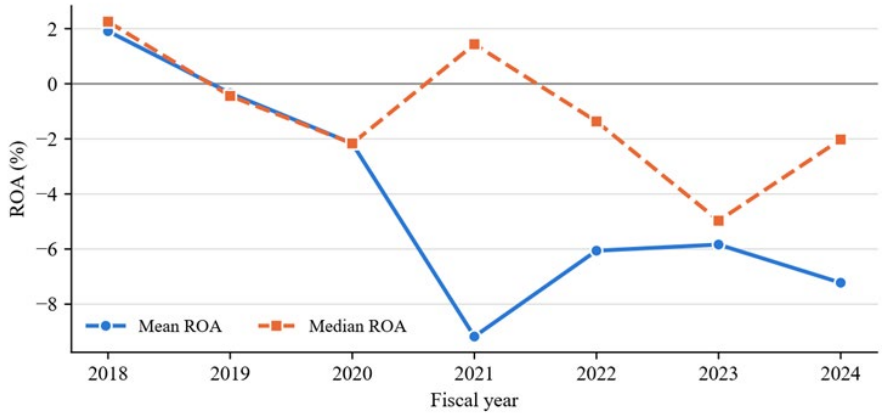


Figure 2. Mean and median ROA, 2018–2024 (LSEG Workspace; 11 firms per year (10 in 2024)).

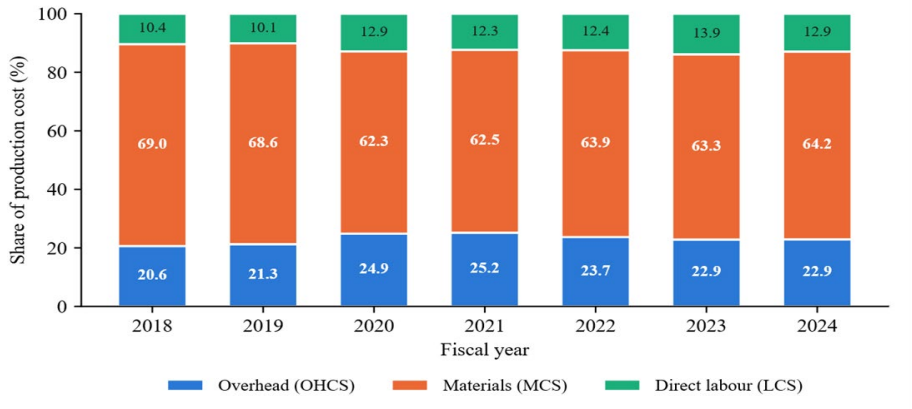


Figure 3. Average composition of production cost, 2018–2024

The correlation between OHCS and MCS is −0.82 (Table 4), which is expected for parts of the same total and means that the two coefficients are estimated imprecisely; the log-ratio specification and a joint test of the two shares address this. Firm effects are jointly significant ($F(10, 54) = 8.41$, $p < 0.001$), and the Mundlak test rejects equality of within and between coefficients ($F(5, 10) = 10.59$, $p < 0.001$), so a random-effects estimator that imposes equality is inappropriate. Year effects are jointly insignificant ($F(6, 54) = 0.64$, $p = 0.694$) but are retained because the period contains common shocks. The Wooldridge test does not reject the null of no first-order serial correlation ($F(1, 10) = 1.96$, $p = 0.192$), and the Pesaran CD test finds no cross-sectional dependence ($CD = -0.50$, $p = 0.619$).

Within-Firm Estimates

Table 5 reports pooled OLS and three fixed-effects specifications. In the preferred two-way model with sales growth (column 4), the OHCS coefficient is −1.847. Read literally, moving one percentage point of the cost base from direct labour to overhead is associated with an ROA 1.85 percentage points lower, and a within-firm change of one standard deviation in OHCS (4.0 percentage points) with an ROA about 7.4 percentage points lower. The coefficient is significant at the 10% level (firm-clustered $p = 0.097$), as it is in the one-way model ($p = 0.082$) and in the two-way model without sales growth ($p = 0.063$). The wild cluster bootstrap p-values are larger (0.115 to 0.268), so the evidence is moderate rather than strong. The MCS coefficient is −0.354 and not significant at any conventional level ($p = 0.135$), and the two shares are not jointly significant ($F(2, 10) = 1.69$, $p = 0.233$). H1 is therefore supported at the 10% level, and H2 is not supported. Of the controls, leverage is negative and significant at the 1% level and size is positive and significant at the 10% level; sales growth is positive but not significant once firm and year effects are included. The within-R2 of the preferred model is 0.625.

The pooled estimates tell a different story: the OHCS coefficient is close to zero (0.040, $p = 0.871$) and the MCS coefficient is positive (0.229, $p = 0.027$). This difference is the subject of H3.

Table 3. Descriptive statistics

Variable	N	Mean	Median	SD	Min	Max	SD between	SD within
ROA	76	−0.041	−0.014	0.138	−0.871	0.120	0.074	0.118
OHCS	76	0.231	0.190	0.111	0.110	0.594	0.102	0.040
MCS	76	0.648	0.676	0.117	0.330	0.840	0.098	0.061
LCS	76	0.121	0.098	0.068	0.026	0.324	0.056	0.038
SIZE	76	18.608	18.472	1.313	16.328	21.340	1.308	0.184
LEV	76	1.192	0.703	1.638	0.070	10.203	1.506	0.590
SG	76	−0.007	0.025	0.269	−0.580	0.826	0.061	0.260

Note: SD between is the standard deviation of firm means; SD within is the standard deviation of deviations from firm means. Minimum ROA: SRIL 2021; maximum LEV: POLY 2024.

Table 4. Correlation matrix and diagnostic tests

Panel A. Correlation	OHCS	MCS	SIZE	LEV	SG
OHCS	1.000				
MCS	−0.821	1.000			
SIZE	−0.059	0.296	1.000		
LEV	−0.110	0.009	0.115	1.000	
SG	−0.138	0.257	−0.001	−0.143	1.000
Panel B. Diagnostic tests	Statistic	d.f.	p-value		
Firm effects (F)	8.41	(10, 54)	< 0.001		
Year effects (F)	0.64	(6, 54)	0.694		
Mundlak, within = between (cluster-robust F)	10.59	(5, 10)	< 0.001		
Wooldridge serial correlation (F)	1.96	(1, 10)	0.192		
Pesaran CD	−0.50		0.619		

Note: Tests refer to the two-way specification with SIZE, LEV, and SG. Standard errors in the Mundlak test are clustered by firm.

Within-Firm and Between-Firm Coefficients

Table 6 reports the within–between model. The within coefficients reproduce the fixed-effects estimates. The between coefficients are positive for both cost shares (0.373 for OHCS and 0.492 for MCS), although neither is significant on its own with 11 firms. The contrast between the two is significant for MCS (difference 0.849, p = 0.016) and at the 10% level for OHCS (difference 2.223, p = 0.050), and the joint Mundlak test rejects equality for all regressors at the 1% level (p < 0.001). H3 is supported: firms with structurally higher overhead or material shares are not the less profitable firms, whereas within firms the point estimates are negative. Figure 4 shows both patterns.

Table 5. Pooled and fixed-effect estimates (dependent variable: ROA)

	(1) Pooled OLS	(2) FE one-way	(3) FE two-way	(4) FE two-way + SG
OHCS	0.040	−2.009*	−1.990*	−1.847*
	(0.244)	-1.039	(0.952)	-1.008
		[0.268]	[0.115]	[0.248]
MCS	0.229**	−0.315	−0.290	−0.354
	(0.103)	(0.271)	(0.231)	(0.218)
		[0.473]	[0.411]	[0.215]
SIZE	−0.016	0.116***	0.101*	0.099*
	(0.023)	(0.030)	(0.055)	(0.053)
LEV	−0.017**	−0.075***	−0.077***	−0.071***
	(0.008)	(0.007)	(0.007)	(0.013)
SG	0.237			0.067
	(0.158)			(0.075)
Firm effects	No	Yes	Yes	Yes
Year effects	Yes	No	Yes	Yes
R^2 / within-R^2	0.373	0.642	0.614	0.625
Observations / firms	76 / 11	76 / 11	76 / 11	76 / 11

Note: Coefficients with firm-clustered standard errors (11 clusters, CR1) in parentheses and wild cluster restricted bootstrap p-values (Webb weights, 9,999 replications) in brackets for the cost shares. *** p < 0.01, ** p < 0.05, * p < 0.10, based on clustered t-tests with 10 degrees of freedom. Column (1) reports R2; columns (2)–(4) report within-R2. LCS is the reference category.

Table 6. Within–between estimates (dependent variable: ROA)

	Within	p	Between	p
OHCS	−1.850*	0.097	0.373	0.166
	-1.116		(0.270)	
MCS	−0.356	0.145	0.492	0.105
	(0.244)		(0.304)	
SIZE	0.111**	0.035	−0.025	0.268
	(0.053)		(0.022)	
LEV	−0.073***	< 0.001	−0.005	0.561
	(0.014)		(0.009)	
SG	0.062	0.439	0.333	0.416
	(0.080)		(0.410)	
Between − within: OHCS	2.223*	0.050		
Between − within: MCS	0.849**	0.016		
Joint Mundlak test, F(5, 10)	10.59***	< 0.001		

Note: Within–between random-effects specification with year effects (Bell et al., 2019); firm-clustered standard errors in parentheses. Within coefficients use deviations from firm means; between coefficients use firm means. *** p < 0.01, ** p < 0.05, * p < 0.10. N = 76, 11 firms.

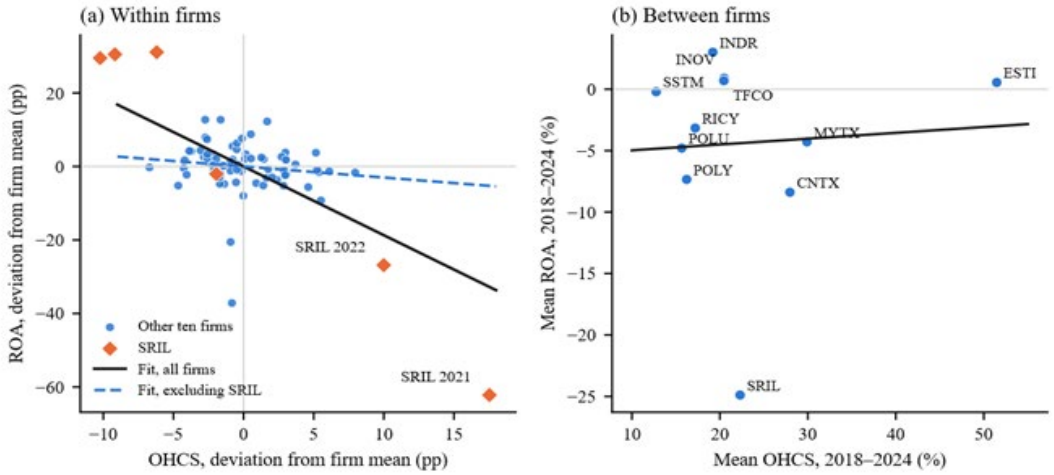


Figure 4. Overhead cost share and ROA within and between firms (Panel (a) plots deviations from firm means; panel (b) plots firm means. Lines are least-squares fits).

Robustness

Table 7 reports the sensitivity of the within-firm OHCS estimate. Without controls the coefficient remains negative and significant at the 10% level (−1.918, p = 0.055). With lagged controls (−1.762, p = 0.101), log-ratio shares (p = 0.105), and gross margin as the outcome (−2.138, p = 0.123), it keeps its sign and similar magnitude but falls just outside the 10% level, and none of the wild bootstrap p-values falls below 0.10. Excluding the SRIL 2021–2022 and POLY 2024 observations, or excluding SRIL altogether, moves the coefficient to about +0.05 with p-values above 0.8. Dropping one firm at a time, the coefficient ranges from −1.80 to −2.14 for every firm except SRIL, whose removal sets it to +0.05. The interaction between OHCS and a sales-decline year is positive and insignificant (0.173, p = 0.200), so the data do not show the overhead association concentrating in ordinary years of falling sales. The material share is not significant at the 10% level in any specification except the interaction model, where it is negative and significant at the 10% level (−0.387, p = 0.083).

Overhead Share: A Distress Signal Rather than a General Driver

The negative within-firm estimate, significant at the 10% level, is consistent with the absorption argument, but the evidence that supports it comes largely from one episode. In 2021 SRIL's overhead share more than tripled, its sales fell by a third, and it reported a loss of 87% of assets; the next year was similar. In the other ten firms, year-to-year movements in the overhead share are small and unrelated to ROA (Figure 4a). The magnitude itself points the same way. A coefficient of −1.85 implies that a one-standard-deviation shift in composition goes with a fall in ROA of more than half the within-firm standard deviation, which no reallocation of cost could produce on its own: at constant total cost, moving spending from labour to overhead does not change profit. The coefficient must therefore reflect volume and price changes that coincide with composition shifts, and in this sample those changes are concentrated in a collapse.

The more defensible reading is that a sharp rise in the overhead share is a marker of severe underutilisation, the situation the cost-stickiness literature describes when committed resources stay in place after demand falls (Anderson et al. 2003; Banker & Byzalov, 2014), and that it coincides with distress, financing costs, and impairments that also depress ROA. This is consistent with the large idle-capacity costs documented by Ederhof et al. (2021) and with the energy-intensity evidence of Alavani et al. (2024), but the present data cannot show that overhead absorption is a systematic driver of profitability across ordinary years. The insignificant interaction with sales decline supports this reading.

Table 7. Robustness of the within-firm estimates

Specification	N	OHCS	p CR1	p WCR	MCS	p CR1	p WCR	R2 within
Preferred model, column (4) of Table 5	76	−1.847*	0.097	0.248	−0.354	0.135	0.215	0.625
		-1.008			(0.218)			
Without SIZE, LEV, and SG	76	−1.918*	0.055	0.156	−0.006	0.974	0.974	0.407
		(0.883)			(0.181)			
SIZE and LEV lagged one year	76	−1.762	0.101	0.269	−0.291	0.153	0.141	0.464
		(0.975)			(0.188)			
Log-ratio shares, ln(OHCS/LCS) and ln(MCS/LCS)	76	−0.269	0.105	0.414	0.162	0.134	0.519	0.627
		(0.151)			(0.100)			
Outcome: gross margin	76	−2.138	0.123	0.294	−0.002	0.995	0.994	0.526
		-1.271			(0.309)			
Excluding SRIL 2021–2022 and POLY 2024	73	0.055	0.822	0.811	−0.193	0.454	0.862	0.507
		(0.236)			(0.248)			
Excluding SRIL	70	0.054	0.810	0.801	−0.186	0.502	0.845	0.643
		(0.216)			(0.266)			
OHCS × sales-decline year (interaction term)	76	0.173	0.200	0.550				0.645
		(0.126)						
Leave one firm out: range excluding SRIL / SRIL dropped		−2.139 to −1.802 / 0.054						

Note: Two-way fixed-effect models with SIZE, LEV, and SG unless stated otherwise; firm-clustered standard errors in parentheses; CR1 = firm-clustered t-test; WCR = wild cluster restricted bootstrap (Webb weights, 9,999 replications). *** p < 0.01, ** p < 0.05, * p < 0.10, based on CR1. For the log-ratio row, the OHCS and MCS columns report the coefficients on ln(OHCS/LCS) and ln(MCS/LCS). Excluding SRIL leaves 10 clusters.

Material Share and the Pass-Through Argument

The material share is unrelated to ROA within firms in all but one specification, including the gross-margin model, even though it varies more within firms than the overhead share does. The null result fits the pass-through argument, under which fibre and yarn prices follow input prices, but the study has no price data with which to test that mechanism directly. It agrees with findings for Indonesian consumer-goods and food producers (Tarigan & Siagian, 2022; Alfiah & Suparno, 2023; Jemita & Kurnianingsih, 2026) and differs from samples in which material cost was positively related to profit (Prihatni & Ulupui, 2025; Akinleye & Fakorede, 2025). Those positive results come from pooled designs, and the positive pooled and between-firm coefficients for MCS in this study suggest why: firms whose cost base is dominated by materials, and therefore by variable cost, were on average more profitable through the 2018–2024 downturn.

Between-Firm and Within-Firm Evidence

The clearest result is the difference between the two sources of variation. Between firms, a heavier overhead structure goes with equal or higher profitability, as the operating-leverage literature predicts for firms that carry more fixed cost (Novy-Marx, 2011; Chen et al. 2019); ESTI is the example in this sample. Within firms, the point estimates are negative. Pooled regressions, the design used in most of the Indonesian studies reviewed above, average the two and can produce positive, null, or negative coefficients depending on the mix of firms and years. This offers one explanation for the conflicting signs in the earlier literature and argues for reporting within and between estimates separately in cost–profit studies.

The control variables carry a related warning. Contemporaneous leverage has a strongly negative within-firm coefficient, but lagged leverage does not, which suggests that much of the contemporaneous association is mechanical: losses reduce equity and assets in the same year in which they reduce ROA. Studies that include contemporaneous balance-sheet controls when profitability is the outcome should report lagged versions as well.

Implications

For theory, the study adds to the cost-behaviour and operating-leverage literature a demonstration that the association between cost composition and profitability depends on the level at which it is measured: across

firms it is non-negative, and within firms it is negative but driven mainly by a collapse episode. For managers and analysts, the practical message is modest. A sharp rise in the overhead share relative to a firm's own history is worth monitoring as an early sign of under-utilised capacity, and measures that match committed factory resources to realistic volumes, such as energy use measured per unit of output, consolidation of lines in weak demand, and leasing or selling idle assets, are consistent with the cost-behaviour literature. These suggestions are informed by the literature rather than tested here, because the data contain no component-level overhead information. The results do not support treating the material share as a target for profitability management.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study asked whether the composition of production cost is associated with the profitability of textile firms listed on the IDX between 2018 and 2024, and whether the association differs between and within firms. Within firms, the overhead share has a negative association with ROA, significant at the 10% level, that rests largely on the collapse of a single firm; the material share has none. Between firms, neither share is associated with lower profitability, and the within and between coefficients differ significantly. Pooled estimates of cost composition and profitability therefore combine two different relationships, and in small panels of listed firms the within-firm evidence can hinge on one distress episode.

Recommendations

Researchers who study cost structure and profitability in small listed-firm panels should report within and between estimates, cluster by firm, complement cluster-robust tests with wild cluster bootstrap p-values, and show influence diagnostics. Analysts can treat an abrupt rise in a firm's overhead share as a warning sign rather than as evidence of a general cost lever. The study has limitations that bound these conclusions. The panel has 11 firms and 76 observations, limited to firms that disclose overhead separately, so statistical power is low. Overhead is taken as reported and cannot be split into energy, depreciation, and other components. The estimates are associations: demand shocks can raise the overhead share and reduce profit at the same time, and firm-level output and utilisation data were not available. SRIL's 2024 statements could not be obtained. Future research could use a larger panel of asset-intensive manufacturers, firm-level utilisation and energy data, and price series to test the absorption and pass-through mechanisms directly.

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