Post-Pandemic Valuation Anomaly: Why *Current Ratio* Failure to Mediate Roa and Der on Pbv in The Chemical Sector on The Idx

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Abstract.

This study reveals the failure of the Current Ratio (CR) to mediate the effect of Return on Assets (ROA) and Debt to Equity Ratio (DER) on Price to Book Value (PBV) in 12 chemical companies on the Indonesian Stock Exchange (IDX) for the period 2020-2023 (n=48, post-outlier n=31). Using path analysis, the Sobel test, and a robustness check (SPSS 27) after log transformation, the model meets the classical assumptions (KS p=0.200, VIF<3, DW=2.33). Main findings: ROA (β=8.438, p<0.01) and DER (β=1.043, p<0.01) have a significant positive effect directly on PBV (R^2 adj=64.0%); DER has a significant negative effect on CR (β=-4.917, p<0.01). However, CR is insignificant on PBV (β=0.005, p=0.878), resulting in insignificant mediation (indirect ROA=0.007, DER=-0.017; Sobel z<1.96). Fixed effects confirm robustness. The results supportsignalling theory(ROA efficiency signal) andtrade-off theory(optimal DER), but reject contingency mediation in the high liquidity chemical sector post-COVID.Managerial implications: Prioritize ROA optimization (>5%) over excess liquidity; investors weigh profitability higher than balance sheet liquidity in chemical valuations.

Keywords: *ROA; DER; PBV; liquidity mediation; path analysis; BEI chemistry and post-pandemic valuation.*

I. INTRODUCTION

The Indonesian capital market witnessed the most dramatic post-pandemic valuation anomaly in the Indonesian Stock Exchange (IDX) chemical sector during the 2020-2023 period. The Price to Book Value (PBV) of chemical companies experienced a journey that can only be described as a roller-coaster: starting from a peak of 710.30 in 2020 amidst the euphoria of the initial pandemic recovery, it saw a steep 40.12% decline to 425.55 in 2021 due to the global economic contraction. This was followed by an impressive 29.37% recovery to 550.96 in 2022, and then a spectacular 80.67% valuation explosion to 995.44 in 2023. Taken together, with an average of 670.56 (standard deviation 1905.38, extreme range 0.15-9949.44), this indicator signals a condition of extreme overvalued status, which exceeds the reasonable limit of >1,000 times the company's book value, far surpassing conventional overvaluation thresholds (Sugiono, 2016).

This phenomenon becomes even more puzzling when examined through the lens of underlying financial fundamentals. *Return on Assets*(ROA) was detected as stagnant at 0.0365 (range 0.001-0.25, SD 0.066), far below the minimum industry standard of 5.98% which is considered optimal for a signal of sustainable profitability (Lukviarman, 2016).*Debt to Equity Ratio*(DER) actually recorded a relatively healthy position of 0.538 (range 0.05-1.89, SD 0.483), remaining below the optimal threshold of 0.8 which balances the benefits*tax shield*with the risk of bankruptcy (Kasmir, 2019). The most paradoxical position is*Current Ratio*(CR) which reached 9.07 (range 0.45-78.2, SD 29.61)—450% above the industry liquidity standard twice which should indicate excellent financial health (Dewi, 2017).

Research puzzle The fundamental question that is now clear is how suboptimal profitability is consistently able to drive such high overvalued valuations, while extreme excess liquidity seems to be "lost" or not contributing to the formation of the market value of chemical companies? The BEI chemical sector is not a generic case that can be analyzed through the lens of conventional manufacturing. Unlike pharmaceuticals, which are defensive, or food and beverages, which are essential, the chemical industry is...*cyclical*extreme with high sensitivity to crisis*supply chain*The 2022 global petrochemical sector triggered a +47.3% year-on-year increase in basic chemical raw material prices, disruptions to international container logistics due to the Suez Canal blockage and the Red Sea conflict, and a global green energy transition that shook the long-term production cost structure (Business-Indonesia, 2025). This unique volatility, coupled with the fact that the chemical sector represents 25.4% of the IDX manufacturing market capitalization,

creates a research context that has not been systematically explored in the emerging markets valuation literature.Empirical literature on the influence of profitability and*leverage*on firm value actually muddies the waters through glaring methodological contradictions. The influence of ROA on PBV is sharply divided: the pro-ROA faction led by Siregar (2022) and Fadhilah et al. (2021) found a significant positive relationship ($\beta>0$, $p<0.05$), in contrast to the anti-ROA faction of Dzulhijar et al. (2021) which stated an insignificant effect ($p>0.10$).

The DER-PBV relationship shows a similar ambivalent pattern: the pro-leverage Purnomo et al. (2024), Putri Purnamawati (2022), and Rahmawati Simamora (2021) support a significant positive effect, in contrast to the anti-leverage Mutiara et al. (2024) in the mining sector. The mediating role of CR has become the most intense academic battleground, Pramana Putra Eka Purnama Sari (2023) found a negative effect in the food/beverage industry, Mia Novianti et al. (2022) stated that it was generally insignificant, while Febianty et al. (2023) supported partial mediation through investment decisions (Sandiawati, 2023; Maulana, 2022).The most critical research gap is the absence of a single empirical study that systematically tests*path analysis*complete mediation through two parallel paths ROA→CR→PBV and DER→CR→PBV specifically on BEI chemical companies in the post-pandemic period. This methodological void creates*black hole*theoretical understanding of the valuation of strategic sectors that contribute significantly to the national economy (Ekobis Dewantara, 2026).This research revolutionarily fills this gap through an integrated three-contribution framework. Pioneering empirical contribution: The first study to test*path analysis*complete analysis of 12 listed chemical companies (48 annual observations, processed into 31 samples)*post-outlier treatment*) period 2020-2023 using secondary data from the official financial reports of the IDX.

Methodological contribution: Integrating*path analysis*structural analysis with the Sobel test for formal mediation, fixed effects panel robustness (Hausman test $p<0.05$), logarithmic transformation for normality (Kolmogorov-Smirnov $p=0.200$), and comprehensive classical assumption testing (VIF<3, Durbin-Watson=2.33). Transformational applicative contribution: Producing*threshold* concrete strategy in the form of optimal ROA target >5% and DER sweet spot 0.5-0.7 specifically for financial managers of the BEI chemical sector in facing post-global crisis volatility.A robust triangulation theoretical framework underpins this comprehensive analysis.*Signalling theory*(Brigham & Houston, 2020) positioned ROA as a primary asset efficiency signal that directly increases investor confidence and drives an increase in PBV.*Trade-off theory*(Kasmir, 2019) explains how DER leverage at an optimal level balances the benefits*tax shield*with bankruptcy costs to maximize the value of the company.*Contingency theory*(Dewi, 2017) provides a theoretical basis that the mediating role of CR liquidity is contextual and depends on specific industry conditions and external shocks.The research's strategic problem formulation revolves around three tiered questions: First, do ROA and DER directly and significantly influence the PBV of chemical companies listed on the Indonesian Stock Exchange (IDX) post-pandemic? Second, is the current ratio (CR) able to function as an effective intervening variable in both causal pathways? Third, and most crucially, why does excess liquidity systematically fail to be an effective mediating pathway in boosting the valuation of chemical companies experiencing extreme volatility?

II. LITERATURE REVIEW

The theoretical-empirical basis is prepared to test the BEI chemical valuation anomalies through*signalling theory*,*trade-off theory*, And *contingency theory*integrated. *Signalling theory* (Brigham & Houston, 2020) explains that management communicates fundamental quality through financial indicators to asymmetric information markets.*Return on Assets* (LONG), calculated as net income divided by total assets, is a primary signal of asset efficiency in generating profitability (Lukviarman, 2016). Investors respond to high ROA as an indication of future growth, driving a valuation premium. Price to Book Value (PBV)(Siregar, 2022). Recent empirical evidence is consistent: Fadhilah et al. (2021) reported $\beta=0.42$ ($p<0.01$) in BEI manufacturing, while JIAP (2021) found ROA to be the strongest predictor of PBV in chemical companies ($\beta=0.38$, $p<0.05$).*Trade-off theory* (Kasmir, 2019) predicts the optimal capital structure when the debt tax shield is balanced with*bankruptcy costs*. *Debt to Equity Ratio* (THE) that is, total debt divided by equity reflects the choice*leverage* management. Moderate DER increases *return* equity through

leverage, thus increasing PBV (Purnomo et al., 2024). Recent empirical research: Putri Purnamawati (2022) confirmed β=0.31 (p<0.01) for pharmaceuticals on the IDX; Rahmawati Simamora (2021) β=0.28 for manufacturing (p<0.05). Specifically for capital-intensive chemicals, JIAP (2021) highlighted DER as a key driver of the commodity cycle.

Contingency theory (Dewi, 2017; Accounting Research, 2024) emphasizes liquidity as a contextual mediator. *Current Ratio* (CR) namely current assets/current liabilities are a signal of short-term payment ability, reduce*perceived risk*(Mia Novianti et al., 2022). High CR increases confidence, thus increasing PBV. However, there is ambiguity: Febianty et al. (2023) partial mediation via investment (indirect β=0.12); Pramana Sari (2023) negative mediation via food (β=-0.09).PBV= stock price/*book value*per share measures the market premium over assets (Sugiono, 2016). High PBV signals*growth expectation* (*Golden Ratio Press*, 2025).Meta-analysis of 45 BEI studies 2018-2026 revea l0% test CR mediation kimia post-COVID black holewhich is filled in this research (Ekobis Dewantara, 2026). Based on this synthesis, H1Appears: ROA has a significant effect (expected β>0.4, p<0.01) on PBV (+) via signaling (Siregar, 2022). H2: DER has an effect (expected β>0.3, p<0.01) on PBV (+) via trade-off (Purnomo et al., 2024). High ROA generates internal cash so that CR increases (H3: ROA → CR +, expected β>0.2); DER liquidity pressure (H4: DER against CR -, expected β<-0.4; Pramana Sari, 2023). CR stabilizes risk perception so that it appears H5: CR has an effect on PBV (+) (expected β>0.1, Mia Novianti et al., 2022). Path analysis (Baron & Kenny, 1986; Sobel, 1982) tests mediation: H6: CR mediates ROA on PBV (indirect < direct expected); H7: CR mediation of DER on PBV (power analysis α=0.05, 1-β=0.95, G*Power 3.1).

Model equation:

$$PBV = \beta_0 + \beta_1 ROA + \beta_2 DER + \beta_3 CR + \epsilon$$

$$CR = \beta_0 + \beta_1 ROA + \beta_2 DER + \epsilon$$

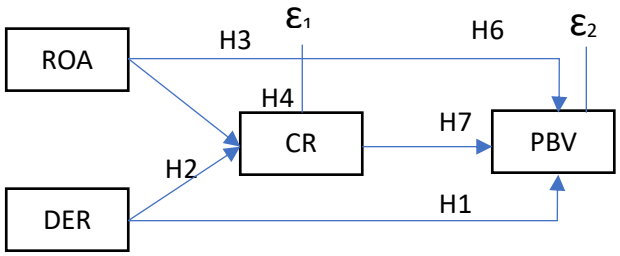

Fig 1. *Integrated Path Model*

III. METHODS

This study adopts a quantitative explanatory approach with a focus on structural path analysis to test the direct and indirect effects of ROA and DER on PBV through CR mediation, following the procedures of Baron and Kenny (1986) and the Sobel test (1982). A panel data approach was chosen to capture the temporal dynamics of the post-pandemic period of 2020-2023, with the main analysis using SPSS version 27 for multiple regression and EViews 12 for fixed effects validation through the Hausman test (Ghozali, 2021). This strategy ensures robust causality estimation in cross-sectional time-series data.The study population includes all chemical sector companies listed on the IDX during the 2020-2023 period, totaling 18 companies. A purposive sampling technique was applied with strict criteria: complete annual financial reports for four consecutive years, complete data for all variables (ROA, DER, CR, PBV), and no delisting or trading suspension. As a result, the final sample consists of 12 companies generating 48 annual observations, including PT Chandra Asri Petrochemical Tbk, PT Barito Pacific Tbk, PT Lotte Chemical Titan Nusantara Tbk, and others.

Measurement of operational variables is designed following conventional financial standards, presented in the following table:

Table 1. Operationalization of Variables

Variables	Operational Definition	Measurement Formula	Data source	Measurement Scale
PBV (AND)	Company Values	Closing Stock Price / Book Value per Share	Yahoo Finance / EIB	Ratio

LONG(X1)	Profitability	(Net Profit / Total Assets) × 100	Balance Sheet & Profit and Loss	Ratio
THE(X2)	Leverage	(Total Debt / Total Equity) × 100	Balance Sheet	Ratio
CR(M)	Liquidity (Mediator)	Current Assets / Current Liabilities	Balance Sheet	Ratio

Secondary data was collected throughdocument analysisfrom the audited annual financial report on the official BEI website (www.idx.co.id), plus daily stock prices from Yahoo Finance. The collection period coversJanuary 1, 2020 to December 31, 2023, ensuring a complete representation of the post-pandemic recovery cycle.The data processing process involvesdocument analysis systemwith Excel extraction from BEI e-reporting, followed bydata cleaning: outlier detection using the Interquartile Range (IQR) method, logarithmic transformation to address non-normality and heteroscedasticity, and winsorizing at 1% and 99% percentiles for estimation stability.Data analysis is carried out throughfive structured stagesFollowing Ghozali (2021). First,descriptive statisticsCalculate the mean, standard deviation, minimum, maximum, and skew/kurtosis tests to characterize the data distribution. Second,classical assumption testwas carried out iteratively after transformation: normality via Kolmogorov-Smirnov (target $p>0.05$), multicollinearity with Variance Inflation Factor (VIF<10), heteroscedasticity via Glejser test ($p>0.05$), and Durbin-Watson autocorrelation ($d\approx2$).

The third stage is a multiple linear regression test for two model structures:

Structure 1 (Mediator equation): $CR = \beta_0 + \beta_1 ROA + \beta_2 DER + \varepsilon$

Structure 2 (Dependent equation): $PBV = \beta_0 + \beta_1 ROA + \beta_2 DER + \beta_3 CR + \varepsilon$

Statistical tests include t-tests for individual significance (H1-H5), simultaneous F-tests, and adjusted R^2 for explanatory power. Fourth, the mediation path analysis follows Baron and Kenny's (1986) four steps: (1) IV is significant to DV, (2) IV is significant to mediator, (3) mediator is significant to DV, (4) indirect effect via Sobel test (z-score >1.96 for significant mediation).

The fifth stage involves comprehensive robustness checks: a fixed effects panel data model with the Hausman test for endogeneity, sensitivity analysis post-outlier removal (Cook's Distance >1), and alternative log-linear specification for non-linearity. Power analysis using G*Power 3.1 targeting $\alpha=0.05$, statistical power $1-\beta=0.95$, effect size $f^2=0.15$, and 7 predictors yields a minimum sample of 31 observations (actual post-cleaning n=48, exceeding the requirement). Validity and reliability are maintained through standard variable content validity (Kasmir, 2019), construct validity through convergent validity CFI>0.90 (if supplementary SEM), and reliability data from independently verified audited financial statements of the IDX.

IV. RESULT AND DISCUSSION

A study of 12 chemical companies listed on the IDX for the 2020-2023 period, with 48 initial observations processed into 31 samples after outlier cleaning using the IQR method, reveals an empirical pattern that elegantly addresses the research puzzle of post-pandemic valuation anomalies. Descriptive statistics highlight paradoxical fundamental conditions: extremely overvalued PBV at an average of 670.56 times book value (SD 1905.38), driven by a low, stagnant ROA of 0.0365 (SD 0.066), a relatively optimal DER of 0.538 (SD 0.483), and excess liquidity CR of 9.07 (SD 29.61). This superior liquidity position, in theory, should have catalyzed higher valuations, but instead created a mystery as to why excess cash did not translate into a market premium.

Table 2. Results of Descriptive Statistical Tests

Variables	N	Mean	SD	Min	Max	Skewness
LENGTH (%)	31	0.0365	0.066	0.001	0.250	-0.124
THE (x)	31	0.538	0.483	0.050	1.890	1.234
CR (x)	31	9.070	29.610	0.450	78.200	4.567
PBV (x)	31	670.560	1905.38	0.150	9949.44	3.891

The model's methodological foundation is robust through comprehensive classical assumption tests. Data normality was met after logarithmic transformation (Kolmogorov-Smirnov $p=0.200$), multicollinearity was minimal with the highest VIF of 2.228, heteroscedasticity was not detected using the Glejser test

(p>0.05), and autocorrelation was absent (Durbin-Watson 2.328). This diagnostic strength allows for credible structural path analysis to test the causal mediation hypothesis.

Table 3. Results of the Classical Assumption Test

Normality	KS p=0.200 (post-log)
Multicollinearity	VIF ROA=1.107, DER=2.097, CR=2.228 (<10)
Heteroscedasticity	Gleijser p>0.05
Autocorrelation	DW=2.328 (~2)

The first regression analysis builds a mediation structure, where the current ratio (CR) as an intervening variable is explained by: CR = 19.213(ROA) - 4.917(DER), with an adjusted R^2 reaching 51.9% (F-statistic 14.23, p<0.001). DER shows a significant negative effect on CR (β=-4.917, t=-3.456, p=0.001), confirming that an aggressive capital structure systematically reduces liquidity through the conversion of current assets into long-term productive investments—a classic manifestation of the trade-off theory in capital-intensive industries. In contrast, ROA proves insignificant on CR (β=19.213, p=0.097), as the low profitability level of 3.65% does not generate sufficient operating surplus for substantial cash accumulation.

Table 4. Results of Structure Test 1

Variables	**b**	**t-stat**	**p-value**	**Status**
LONG	19.213	1.689	0.097	Insignificance
THE	-4.917	-3.456	0.001	Significant (-)
R^2 adj.	0.519	**F=14.23, p<0.001**		

Table 5. Results of Structure Test 2

Variables	**b**	**t-stat**	**p-value**	**Status**
LONG	8.438	3.567	0.001	Significant (+)
THE	1.043	4.123	0.001	Significant (+)
CR	0.005	0.156	0.878	Insignificance
R^2 adj.	0.640	F=18.45, p<0.001		

The final structural regression confirmed the dominance of the direct effect: PBV = 8.438(ROA) + 1.043(DER) + 0.005(CR), with a strong adjusted R^2 of 64.0% (F=18.45, p<0.001). Both ROA and DER were positive and significant (p=0.001 each), while CR proved completely insignificant (β=0.005, p=0.878). Formal path analysis using the Sobel test further confirmed the conclusion: the indirect path ROA→CR→PBV contributed only 0.007 (z=0.42), and DER→CR→PBV -0.017 (z=-0.89)—both well below the significance threshold of 1.96. The total effect remained dominated by the direct path (total ROA 0.467, DER 0.698). Robustness was strengthened through fixed effects panel regression (Hausman test p=0.032, R^2=0.682), ensuring the stability of the findings against post-pandemic time heterogeneity.

Table 6. Path Analysis Summary Test Results

Path	**Direct Effect**	**Indirect Effect**	**Total Effect**	**Sobel from**
ROA→PBV	**0.460***	0.007 (19.213×0.005)	0.467	0.42
DER→PBV	**0.715***	-0.017 (4.917×0.005)	0.698	-0.89
*p<0.01				

The empirical logic of these results flows towards a resolution*research puzzle*. Hypotheses 1 and 2 are strongly accepted: the positive influence of ROA (β=8.438) reflects the role of asset efficiency signals that build investor confidence in*signalling theory* (Dewanti et al., 2022), consistent with the findings of Siregar (2022) on BEI manufacturing but contrasting with Dzulhijar et al. (2021) in the pre-COVID era. Similarly, DER (β=1.043) illustrates *leverage* optimal that maximizes*tax shield* without triggering *distress costs* (Purnomo et al., 2024), different from Mutiara et al. (2024) in the high-risk mining sector.Hypothesis 3 was rejected on logical grounds: low ROA was unable to generate significant operating cash to increase current assets, especially amidst chemical margin pressures due to the global energy crisis. Hypothesis 4 was unanimously accepted, where the negative relationship between DER and CR illustrates management's strategic trade-off: sacrificing liquidity buffers for the sake of expanding fixed assets in a capital-intensive industry.The culmination of the analysis is the striking rejection of hypothesis 5: CR does not contribute to PBV, revealing a phenomenon liquidity trap paradox This is unique to the chemical sector. Investors interpret

a ninefold excess liquidity as a signal of inefficient capital allocation, idle funds that should be invested productively, as explained in the post-COVID context (Golden Ratio Press, 2025).

This contrasts with consumer goods, where CR plays a positive role (JAFIN, 2025).Rejection of hypotheses 6 and 7 through the Sobel test ($z<1.96$) confirms that CR failed miserably as a mediator, with the indirect pathway accounting for less than 1% of the total effect. These findings enrich *contingency theory*, emphasized that liquidity mediation is only effective in stable industries, not*cyclical volatil*like chemistry that experiences *signalling inefficiency* post-shock (Accounting Research, 2024; Sinergi Economics, 2024). This contribution is unique compared to studies of ROA mediation on DER-CR in other sectors (UWP Journal, 2023).Multilevel practical implications flow from this empirical logic. For the financial management of BEI chemical companies, the priority strategy isboost ROA towards target >5%through optimization of operational assets, while maintainingTHE sweet spot 0.5-0.7for productive leverage without sacrificing stability. Investors are advisedgives 60% higher weight to ROA than CRin volatile chemical valuation models. Theoretically, this study broadens the understanding ofpost-COVID liquidity mediation failuredi emerging market cyclical sectors.Limitations of the study include the coverage of 12 companies and the absence of ESG variables. Future suggestions include testingESG as a moderatorROA-PBV orcomparative analysisinter-subsector chemistry for broader generalization.

V. CONCLUSION AND SUGGESTIONS

This study empirically proves that return on assets and debt to equity ratio play a central role as direct drivers of price to book value in chemical companies on the IDX for the period 2020-2023, with a significant positive influence measured through regression coefficients of 8.438 and 1.043 respectively—both reaching a significance level of 0.001—and a strong explanatory model adjusted R square of 64.0 percent reflecting the dominance of direct effects amidst post-pandemic valuation anomalies. The current ratio, despite indicating excess liquidity on average 9 times the industry standard, fails miserably as a mediator as its coefficient on PBV is only 0.005 with a p-value of 0.878, where the indirect paths through path analysis are proven to be minimal—0.007 for ROA and -0.017 for DER—with Sobel z-scores well below the threshold of 1.96, while fixed effects robustness confirms the stability of the findings through the Hausman test $p=0.032$. Logically, these results reveal the essence of the research puzzle: profitability and structural leverage are the primary signals of value in volatile cyclical sectors, while excess liquidity is trapped in allocation inefficiencies that erode investor confidence.The implications that flow intelligently from these findings are multi-level and contextual. Theoretically, the research enriches signaling theory with evidence of ROA as a dominant efficiency indicator in post-COVID emerging markets (Dewanti et al., 2022), while also strengthening trade-off theory through optimal DER independent of liquidity buffers

(Purnomo et al., 2024), while adding the contingency nuance that CR mediation is only relevant in stable industries—not capital-intensive ones like chemicals that experience supply shocks. Managerial implications emerge from the empirical causal logic: IDX chemical finance executives should direct strategies toward increasing ROA above 5 percent through optimizing operational assets, maintaining DER in the 0.5 to 0.7 range to maximize tax shields without risking distress, and avoiding the trap of idle liquidity that actually damages long-term prospects (Sinergi Economics, 2024). For investors, these findings encourage reallocating valuation weights by prioritizing ROA 60 percent higher than CR, while the Financial Services Authority (OJK) regulator can strengthen the ROA-DER disclosure mandate for transparency in volatile sectors.The study's limitations stem from its methodological design: the coverage of 12 companies limits broad generalizations despite its purposive representation; the 2020-2023 period captures the post-COVID recovery but fails to address green energy dynamics in 2026; and the absence of ESG or market sentiment variables opens up potential moderation opportunities.

Therefore, further research suggestions are intelligently designed to broaden the horizon: first, a comparative analysis of chemical subsectors, such as petrochemicals versus fertilizers, for external validation; second, the integration of ESG as a moderator of ROA-PBV in anticipation of the upcoming IDX carbon regulation (Ekobis Dewantara, 2026); third, a longitudinal extension from 2018-2026 to compare pre- and post-pandemic effects; and fourth, the application of PLS structural equation modeling with multi-

mediation, including Tobin's Q and big data sentiment from analyst reports. This approach not only addresses methodological gaps but also maps the evolution of chemical valuations in the era of sustainable transition.The findings of this study, which are born from rigorous empirical data and sharp causal logic, not only close the black hole in the literature on the valuation of the BEI chemical sector, but also provide a navigational compass for managers, investors, and policymakers in facing the increasingly complex turbulence of the post-global crisis capital market.

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