

Capital Structure, Profitability, Liquidity, and Firm Size in Indonesia's Healthcare Sector: A Dynamic Panel Data Approach

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Abstract

This study investigates the effect of profitability, liquidity, and firm size on capital structure among healthcare companies listed on the Indonesia Stock Exchange, employing the theoretical framework of Pecking Order Theory. The sample was selected purposively based on specific criteria, and the data were analyzed using a dynamic panel regression model with a System-GMM two-step estimator to address endogeneity and structural dynamics. Capital structure is proxied by the Debt to Equity Ratio (DER), while the independent variables include Return on Assets (ROA), Current Ratio (CR), and the natural logarithm of total assets (LnTA). The empirical results indicate that profitability has a statistically significant negative effect on capital structure, affirming the core proposition of Pecking Order Theory that firms prioritize internal financing. In contrast, liquidity demonstrates a significant positive effect, suggesting that firms with stronger cash positions are more capable of securing external funding. Firm size does not exhibit a significant influence on capital structure. These findings suggest that financing preferences within Indonesia's healthcare sector are more strongly influenced by internal financial efficiency than by scale economies. This study contributes both theoretically and methodologically and calls for future research to incorporate non-financial determinants, such as corporate governance and ownership structure, in analyzing capital structure decisions.

Keywords: Capital Structure, Profitability, Liquidity, Firm Size, System-Generalized Method of Moments.

1. Introduction

In corporate finance theory, capital structure decisions are understood as the outcome of a complex interplay between a firm's internal conditions and the external pressures exerted by market dynamics and institutional environments (Neves et al., 2020). Among the most influential theoretical frameworks explaining corporate financing behavior is the Pecking Order Theory (Myers, 1984), which posits that firms do not explicitly pursue an optimal capital structure. Instead, they follow a financing hierarchy determined by the degree of information asymmetry. Within this hierarchy, firms prioritize internal financing through retained earnings, followed by debt, and consider issuing new equity only as a last resort, due to the high costs of information disclosure and adverse signaling associated with external financing. This theoretical orientation is particularly relevant in the context of emerging markets such as Indonesia, where transparency, capital market efficiency, and access to reliable information remain limited, thereby compelling

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firms to adopt more conservative financing strategies (Akhtar, 2025). Within this framework, profitability and liquidity are theoretically regarded as key determinants of a firm's capacity to rely on internal funding sources, making them central variables in the conceptual structure of the Pecking Order Theory.

In the healthcare sector—particularly within the pharmaceutical, private hospital, and medical equipment distribution subsectors—the dynamics of capital structure exhibit unique characteristics due to the dual pressures of business imperatives and regulatory as well as social obligations (Faulconbridge & Muzio, 2016). Firms operating in this domain often face constraints such as reliance on government-imposed retail price ceilings (HET), delayed reimbursements from the national health insurance agency (BPJS), and the need for long-term financing to support research and product development initiatives. These structural realities incentivize companies to prioritize profitability as the principal basis for financing, consistent with the predictions of the Pecking Order Theory. High levels of profitability enable firms to avoid costly debt markets and minimize reliance on external equity investors, which often entails dilution of control (Nenu et al., 2018). Concurrently, liquidity plays a critical role in maintaining short-term operational continuity, particularly in capital-intensive and asset-heavy service environments (Ludwiczak et al., 2024). Meanwhile, firm size may influence the degree of information asymmetry, as larger firms typically possess more established reputations and higher transparency, thereby improving their access to external financing when necessary (Ahmad et al., 2023). Nevertheless, the financing hierarchy remains the analytical core, positioning Pecking Order Theory as the most coherent framework for interpreting capital structure decisions within Indonesia's healthcare industry.

Although the determinants of capital structure have been extensively examined in prior literature, most studies adopt cross-sectoral perspectives with static models that overlook the evolving nature of corporate financing behavior over time. Research focusing specifically on the healthcare sector in Indonesia remains scarce, despite the industry's distinctive features—such as high regulatory dependence, cash flow volatility arising from public reimbursement schemes, and acute short-term liquidity pressures. Furthermore, the prevailing reliance on static panel regression in past studies limits the capacity to address endogeneity and the persistent dynamics inherent in capital structure decisions. This study addresses these gaps by employing a dynamic panel data regression approach, specifically the System-GMM two-step estimator, which remains underutilized in Indonesian healthcare finance scholarship. By adopting this methodology, the research contributes not only to the sectoral contextualization of the Pecking Order Theory but also offers a more robust methodological framework aligned with the inherently dynamic nature of capital structure formation.

2. Literature Review

The theoretical foundation of this study is grounded in the Pecking Order Theory (Myers & Majluf, 1984), which challenges the normative assumptions of capital structure optimization proposed by the Trade-Off Theory. Rather than targeting an optimal debt-equity ratio, Pecking Order Theory posits that firms follow a hierarchical preference in financing decisions, primarily driven by the degree of information asymmetry between corporate managers and external investors. In this hierarchy, internal financing (retained earnings) is prioritized, followed by debt, with equity issuance considered only as a last resort due to its high signaling and information costs. This framework suggests that capital structure choices are not the outcome of a theoretical equilibrium between tax shields and bankruptcy costs, but rather a strategic response to market imperfections (Adair & Adaskou, 2015). In the Indonesian healthcare sector—where firms operate under stringent regulatory constraints, rely heavily on reimbursements from the national health insurance scheme (BPJS), and face volatile profit margins due to government pricing interventions—the explanatory power of Pecking Order Theory is particularly salient. Within this context, profitability and liquidity serve as critical indicators of a firm's capacity to minimize reliance on external debt, while firm size influences the level of information asymmetry and access to capital markets.

Based on the conceptual framework, the first hypothesis is formulated to test the core implication of Pecking Order Theory, which asserts that higher profitability reduces a firm's reliance on debt financing, as firms with stronger earnings capacity are more likely to fund investments through retained earnings (Adair & Adaskou, 2015; Nazir et al., 2021). Accordingly, the first hypothesis is proposed as follows: (H1) Profitability has a negative effect on capital structure. Furthermore, liquidity, which reflects a firm's ability to cover its short-term operational needs through cash and liquid assets, is also expected to reduce dependence on external financing. Within the pecking order perspective, greater liquidity enhances a firm's ability to internally finance its activities, thereby lowering the necessity to incur debt (Nazir et al., 2021). This leads to the second hypothesis: (H2) Liquidity has a negative effect on capital structure. Although firm size is often associated with reduced information asymmetry and improved access to external capital, within the framework of Pecking Order Theory, larger firms still tend to prioritize internal funding due to their stable income streams and greater flexibility in capital allocation (Kedzior et al., 2020). Hence, the third hypothesis is articulated as: (H3) Firm size has a negative effect on the capital structure of healthcare companies in Indonesia.

3. Research Method

This study employs a quantitative explanatory approach to empirically examine the influence of profitability, liquidity, and firm size on capital structure among healthcare sector firms listed on the Indonesia Stock Exchange (IDX). The population consists of all firms classified under the healthcare sector by the IDX. The sample was selected using purposive sampling (Sekaran & Bougie, 2016), based on the following criteria: (i) firms were consistently listed on the IDX throughout the observation period; (ii) firms had not undergone delisting; (iii) firms were publicly listed prior to and remained active during the study period; and (iv) annual financial reports were complete and publicly accessible. Capital structure was proxied by the Debt to Equity Ratio (DER), serving as a representation of external financing preference. Profitability was measured using Return on Assets (ROA) (Matuszewska-Pierzynka et al., 2023), liquidity was captured through the Current Ratio (CR) (Hartono et al., 2020), and firm size was proxied by the natural logarithm of total assets (Ln Total Assets) (Hartono, Robiyanto, et al., 2024). To address potential simultaneity bias, individual heterogeneity, and serial autocorrelation commonly present in panel data on financial performance, the analysis utilized a dynamic panel data regression model, estimated through the two-step System-Generalized Method of Moments (System-GMM). This method was selected to yield consistent and efficient parameter estimates, particularly in panel datasets characterized by a longitudinal time dimension relative to the number of entities (Biørn, 2017). The data are estimated by STATA version 14.

4. Finding and Discussion

Descriptive statistics for all measured variables are presented in Table 1. The presence of negative values in the Debt to Equity Ratio (DER) indicates that certain firms reported negative total equity, a condition typically arising from cumulative losses that exceed shareholders' capital. This signals a structural imbalance within the firm's balance sheet and potentially reflects its inability to fulfill financial obligations on a sustainable basis. Furthermore, the data distribution exhibits characteristics of overdispersion for both DER and Return on Assets (ROA), suggesting substantial variance relative to their respective means. In contrast, Current Ratio (CR) and log-transformed Total Assets (LnTA) demonstrate properties of equidispersion, aligning closely with uniform variance expectations (Hartono et al., 2021).

Table 1. Descriptive Statistics

Proxy	Obs.	Mean	St. Dev.	Min.	Max
DER	120	0.770	3.603	-31.039	16.765
ROA	120	0.084	0.142	-0.279	0.949
CR	120	0.605	0.182	0.263	1.435
LnTA	120	12.445	0.518	11.203	13.435

The estimation results derived from the dynamic panel regression are presented in Table 2. The model specification test confirms the validity of the instrument set, as indicated by the rejection of the null hypothesis in the Sargan test. Furthermore, the Arellano-Bond test for second-order autocorrelation fails to reject the null hypothesis, satisfying the assumption of no serial correlation in the error terms. Additionally, the goodness-of-fit, assessed through the Chi-square test for joint significance, rejects the null hypothesis, thereby affirming that at least one predictor variable significantly influences the dependent variable (Hartono, Tinungki, et al., 2024; Hartono & Robiyanto, 2023). The one-tailed partial tests reveal that Profitability exerts a statistically significant negative effect on Capital Structure, Liquidity shows a significant positive relationship, while Firm Size does not exhibit any statistically significant impact. Consequently, the study confirms H1, while H2 and H3 are statistically rejected.

Table 2. System-Generalized Method of Moments Estimation

Variable & Model Test	Coefficient	p-Value (one-tailed)	Decision
Lag-DER	-0.210	0.000	-----
ROA	-8.852	0.007	H1 accepted
CR	11.199	0.035	H2 rejected
TA	1.227	0.409	H3 rejected
Constant	-20.050	0.389	-----
Wald-chi ²	33.85	0.000	Ho rejected
Z AR-1	-1.374	0.170	Ha rejected
Z AR-2	0.140	0.889	Ha rejected
Chi ² Sargan	7.476	0.999	Ha rejected

The empirical findings reveal that Profitability has a statistically significant negative effect on Capital Structure, indicating that firms with higher profitability tend to rely less on debt financing (Chang et al., 2019). This outcome aligns with the central tenet of the Pecking Order Theory, which posits that companies prioritize internal sources—such as retained earnings—over external

financing methods like debt issuance or equity offerings (DeAngelo, 2021). In the context of Indonesian healthcare firms, this pattern appears especially rational due to heightened uncertainty in third-party reimbursements (e.g., from BPJS), persistent margin pressures stemming from government-imposed price controls, and long-term expectations for operational continuity. Firms with strong profitability profiles are more inclined toward financial conservatism to safeguard liquidity flexibility and mitigate the risk of financial distress—both of which are critical for sustaining service quality and operational resilience in the highly essential healthcare sector (Moridu & Abidin, 2023).

Conversely, the finding that Liquidity exerts a positive influence on Capital Structure suggests that firms with higher liquidity ratios tend to increase their reliance on debt financing. Although this result appears to diverge from the foundational premise of the Pecking Order Theory, it may be interpreted through the lens of opportunistic short-term financing strategies (Ghasemi & Hisyam Ab Razak, 2016; Kedzior et al., 2020). In the healthcare industry, a high level of liquidity is often perceived by creditors as an indicator of efficient cash management and stable operational performance, thereby facilitating access to credit facilities at relatively lower costs. In this context, liquid firms possess greater bargaining power to secure debt-based financing under favorable terms (Bassey Edem, 2017). Additionally, the empirical evidence indicating that Firm Size does not significantly impact capital structure implies that, within this sector, asset scale is not the primary determinant of financing decisions. Instead, institutional and external factors—such as ownership structure, vertical affiliations among private hospitals, and government regulatory interventions—tend to exert a more pronounced influence on both financing access and preferences than firm size per se (Hogan et al., 2019).

5. Conclusion

This study concludes that Profitability has a significant negative effect on Capital Structure, Liquidity exerts a significant positive effect, while Firm Size does not have a statistically significant impact. These findings suggest that in the context of Indonesia's healthcare sector, financing decisions are more strongly influenced by internal financial capacity and cash efficiency than by corporate scale. From a managerial standpoint, the results underscore the strategic importance of strengthening profit-generating capabilities and liquidity management as essential levers for maintaining prudent leverage amid institutional pressures and fluctuations in public financing—such as delays in reimbursement from the BPJS social security system. Given the sector's inherent exposure to financial risks and the public expectation for uninterrupted service delivery, finance managers are advised to prioritize retained earnings as a primary source of funding and preserve high liquidity as a reputational asset in negotiations with creditors (Adair & Adaskou, 2015). Nevertheless, this research is constrained in its generalizability, as it exclusively

focuses on healthcare firms listed on the Indonesia Stock Exchange (IDX) and does not incorporate non-financial dimensions such as corporate governance, ownership structure, or vertical integration—factors that may moderate the observed relationships. Future research is therefore encouraged to broaden the analytical scope using a mixed-methods approach and to incorporate institutional variables in order to explore a more comprehensive configuration of capital structure within the complex and evolving healthcare economy.

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