
Financial Fragility and Liquidity Risk in Public Hospitals: A Comparative Ratio Analysis Before and During the COVID-19 Pandemic in Hatay Province, Turkey

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Abstract: This study examines the financial vulnerability and liquidity risk of Dörtöyl State Hospital, located in the Dörtöyl district of Hatay Province, Turkey, using the hospital's financial data from 2015 to 2022. The hospital's financial performance was compared with the average financial ratios of three similar public hospitals. The findings indicate that public hospitals are exposed to structural financial risks due to regulated reimbursement mechanisms, central budget allocations, and limited managerial discretion. It was determined that these risks were further exacerbated by external shocks such as administrative reforms and the COVID-19 pandemic. A significant deterioration in liquidity indicators was observed; the current ratio declined from 1.07 in 2015 to 0.26 in 2022, while the cash ratio fell to near-zero levels. The debt-to-assets ratio rose from 0.65 to 4.48 during the same period, while the equity-to-liabilities ratio fell to -0.78. Net profitability was negative in six of the past eight years, and return on assets stood at -2.17 in 2022. The findings indicate that the 2017 administrative restructuring and the COVID-19 pandemic have exacerbated existing financial weaknesses. The study recommends centralized liquidity management, crisis-focused financial planning, and a reassessment of target equity levels for public hospitals.

Keywords: Administrative restructuring, COVID-19, financial fragility, liquidity risk, public hospitals, Turkey.

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INTRODUCTION

As public organisations are entities operating in the long term, the financial sustainability of their hospitals is becoming increasingly important. Contemporary sustainability accounting does not focus solely on environmental and social disclosures. It also emphasises the economic stability of organisations and the ability of public services to continuously provide added value (Bebbington & Unerman, 2020; Schaltegger & Burritt, 2001). Financial sustainability is a fundamental function of organisational sustainability. Organisations experiencing persistent financial difficulties may lose their capacity to maintain operations and deliver services effectively. Within the healthcare sector, the most prominent financial challenge is the sustainability of public hospitals. While patients' income levels are a significant factor in the private sector, public hospitals provide services equally to all.

Public hospitals operate on a non-profit basis, funding their activities through resources allocated from the central public budget. In contrast, the private sector generates revenue from fees charged to patients. Consequently, price flexibility is utilised only in the private sector.

In particular, the increased service burden associated with pandemics and other extraordinary circumstances places further strain on the financial structures of public institutions. This can lead to financial deficits in public hospitals becoming a persistent problem over time (Pink et al., 2006; Ramamonjiarivelo et al., 2015). The body of academic research on the financial sustainability of hospitals has expanded considerably, highlighting shortcomings in management practices and financing structures as persistent sources of financial vulnerability.

Deterioration in financial performance is often caused not by temporary developments but by problems within the institutions' management and financing systems (Dubas-Jakóbczyk, Ndayishimiye, Szetela, Sowada, & Kocot, 2025; Hollingsworth, 2008).

The theoretical framework used in this study to examine financial fragility is based on the Financial Instability Hypothesis (FIH) developed by Minsky (1992). Originally proposed to explain capitalist financial systems, this hypothesis describes a process that progresses from a financing structure in which a firm's revenues are sufficient to meet its payment obligations, known as hedge finance, to Ponzi finance, in which revenues are insufficient to cover even interest payments.

Economic entities take on greater risks during normal periods, increasing the fragility of the financial structure. Institutions that initially cover their expenses with operating revenues gradually lose this ability over time, thereby depleting their equity. Consequently, they are forced to take on external debt. Findings from public hospitals also clearly illustrate this situation (Çil Koçyiğit & Kocakoç, 2019; Sağlam & Orhan, 2018). Once a Ponzi-type dependency has been adopted, subsequent regulatory measures cannot compensate for the loss of external public funding.

Although the changes made to healthcare reform in 2017 did not bring about any significant developments, the COVID-19 pandemic that struck Turkey in March 2020 placed a significant financial burden on the country.

A decline in revenue from sources such as non-urgent interventions occurred simultaneously with a rapid increase in costs for protective equipment, intensive care services, and staff arising from the pandemic (Blumenthal, Fowler, Abrams, & Collins, 2020; Wang, Witman, Cho, & Watson, 2022). The disruptions caused by pandemic-related costs became strikingly apparent; the rise in fixed costs, a major source of expenditure for hospitals, meant that no surplus remained from revenue to cover potential expenditure in other areas (Bai & Zare, 2020).

For public hospitals operating with near-zero cash reserves and negative equity, the failure to implement pandemic governance reforms on time further exacerbated their vulnerabilities (Oksuz et al., 2021). It is estimated that the treatment costs of COVID-19 in Turkey significantly exceed those of similar diseases (Küçük, 2022). International evidence indicates that the adequacy of cash reserves is the most important institutional determinant of survival during acute health shocks (Hu, Jin, Yang, & Hu, 2022).

Accordingly, this study conducted a financial ratio analysis of Dörtyol State Hospital, a Group B public hospital affiliated with the Hatay Provincial Health Directorate, covering the period from 2015 to 2022. The performance of 13 ratios, organised into four sections, was compared with the arithmetic means of comparable institutions within the same province (İskenderun, Kırıkhan and Samandağ State Hospitals). This research explains and interprets the observed financial trends, taking the restructuring carried out in 2017 and the COVID-19 pandemic as reference points. This study makes three contributions: first, it provides long-term comparative ratio data for Group B state hospitals against peer institutions; second, it offers a detailed assessment of the contribution of each structural event; and third, it presents policy recommendations based on quantitatively measured financial imbalances rather than normative principles (Sagan et al., 2021).

This perspective is closely linked to the governance dimension of Environmental, Social and Governance (ESG) frameworks. Public hospitals, as non-profit providers of equitable healthcare services, are required to demonstrate prudent financial management, transparent resource allocation and robust governance. In this context, declining liquidity, rising debt and persistent operating deficits are not merely issues of financial management. They reflect a decline in organisational sustainability and a reduced capacity to cope with future economic or public health crises (Eccles & Klimenko, 2019; International Federation of Accountants, 2021). Consequently, financial sustainability should be recognised as an indispensable element of accounting and governance.

ANALYTICAL PROPOSITIONS

The descriptive methodology used in this study does not allow for formal hypothesis testing. Instead, the study presents four theory-based propositions, each focusing attention on a specific financial dimension.

P1: The COVID-19 pandemic caused a decline in the hospital's capacity to meet its short-term liabilities, as already reflected in its low liquidity ratios (current, acid-test, and cash) compared with the averages of similar institutions.

P2: The increase in financial leverage and the decline in equity levels resulting from the restructuring carried out in 2017 coincided with this period; however, no significant improvement in the equity structure was achieved.

P3: The COVID-19 pandemic led to a deterioration in profitability ratios, including return on assets and profit margin, as the rise in operating expenses could not be offset by an increase in operating revenue.

P4: Throughout the entire 2015–2022 period, the hospital's reliance on external financing rose gradually. Consequently, rising debt-to-asset ratios and increasing short-term liabilities relative to total assets, coupled with progressively growing net working capital shortfalls, manifested as financial fragility.

These propositions are based on evidence regarding liquidity and capital structure issues arising in public hospitals in Turkey (Acaravcı & Gazi, 2019; Aksoylu & Cavmak, 2023; Sağlam & Orhan, 2018) and the cost shocks caused by the pandemic (Jalilian, Mohammad Riahi, Heydari, & Taji, 2023; Küçük, 2022; Oksuz et al., 2021).

LITERATURE REVIEW AND ANALYTICAL FRAMEWORK

Financial performance in hospital organisations has consistently remained a focus of academic interest in health economics, accounting, and public administration. The challenge of maintaining financial equilibrium in public hospitals occurs under constraints that are unique within the private-sector context. Public tariffs have prevented price-based revenue adjustments. Non-profit patient categories, mandatory service obligations, central budget controls that prevent the accumulation of surpluses, and public-interest expectations, which are explicitly subject to patient access and the principles of equity, are all factors at play (Rosko, 2001). These deliberate, institutionally embedded constraints have created an environment in which financial fragility is chronic rather than exceptional.

The international literature consistently reports persistent liquidity shortfalls, rising leverage ratios, and ongoing operating losses. For example, Dubas-Jakóbczyk et al. (2020) attributed the losses observed among

the majority of public hospitals in Poland to structural funding shortfalls rather than management errors (Dubas-Jakóbczyk, Kocot, & Koziół, 2020).

A study of public hospitals in Poland conducted between 2013 and 2017 examined liquidity trends and concluded that maintaining current and liquidity ratios at adequate levels is the most significant current issue (Maślach, Markiewicz, Warelis, & Krzyżak, 2019).

According to Rosko (2001), legal and regulatory constraints tend to increase the inefficiency of public hospitals by dampening the incentive signals that would otherwise encourage cost-reducing adjustments.

Nagendran, Kiew, Raine, Atun, and Maruthappu (2019) found that deteriorating financial performance in National Health Service (NHS) trusts was associated with progressive levels of inefficiency before the emergence of clinically identifiable patient harm. Specifically in Turkey, the structural characteristics of the revolving fund financing model have been identified in detail. A study of 948 public hospitals covering the period 2008–2017 noted that accumulated losses from previous years had turned equity negative across the sector, that debt service ratios were progressively deteriorating, and that credit risk had remained at a critically high level for over a decade (Sağlam & Orhan, 2018).

Çil Koçyiğit and Kocakoç (2019), in their research at Ankara Provincial Hospital, demonstrated that, regardless of constantly changing reforms, leverage ratios consistently remained above the acceptable threshold. In a study covering the years 2017–2021 across 52 hospitals under the Ministry of Health, a panel analysis was carried out, confirming a statistically significant negative relationship between leverage ratios and financial performance (Ünüvar & Boztosun, 2025). By applying the fuzzy clustering statistical method in Turkish training and research hospitals, it was demonstrated that the general budget reimbursement system and financial insolvency rates, together with managerial pricing, constitute the fundamental structural elements (Öner, 2024).

The COVID-19 pandemic has left international hospitals facing a simultaneous shock on both sides of their financial balance sheets (Blumenthal et al., 2020; Wang et al., 2022). Jalilian et al. (2023), in research conducted in Iran, noted statistically significant decreases in hospital occupancy rates, liquidity, and profitability ratios. A study conducted in Indonesia indicates that the increase in patient numbers did not offset the losses caused by rising costs (Rexana & Widjaja, 2023).

Oksuz et al. (2021) quantified the direct cost burden in Turkey. Küçük (2022), meanwhile, highlights the financial difficulties arising from this situation. He identifies the adequacy of liquid reserves as the primary institutional determinant of operational continuity during crises (Hu et al., 2022). Kruk, Myers, Varpilah, and Dahn (2015) defined resilience as the capacity to maintain core functions while addressing disruptions. In their study, Sagan et al. (2021) define organisational financial flexibility as an indispensable prerequisite for this. Yuniarti, Paryanti, and Tejaningsih (2021), by examining the effects of the COVID-19 pandemic on the financial and service performance of Bayu Asih Purwakarta Hospital, found significant declines in revenue due to isolation measures. The research revealed that the conversion of bed capacity and restrictions negatively affected operational efficiency.

Conceptual Framework

The conceptual framework positions financial fragility as the cumulative result of imbalances across four interrelated and mutually reinforcing dimensions. Declining liquidity has increased the difficulty of repaying short-term debt, leading to reliance on external funding. Consequently, this has led to a deterioration in the capital structure and a gradual restriction of activities financed by internal resources, creating a vicious cycle that further reduces liquidity. Two types of disruption interact with these internal dynamics: structural shocks and acute shocks (the COVID-19 pandemic).

This framework draws on Minsky (1992) FIH model. The hospital's progression from high-risk hedging finance in 2015 to speculative finance from 2016 onwards, and subsequently into 'Ponzi scheme' territory, illustrates a typical transition described in Minsky's theory. As shown in Figure 1, external shocks interact with the four dimensions of financial ratios; the dashed arrow illustrates the internal feedback loop whereby a disruption in any one dimension affects the others.

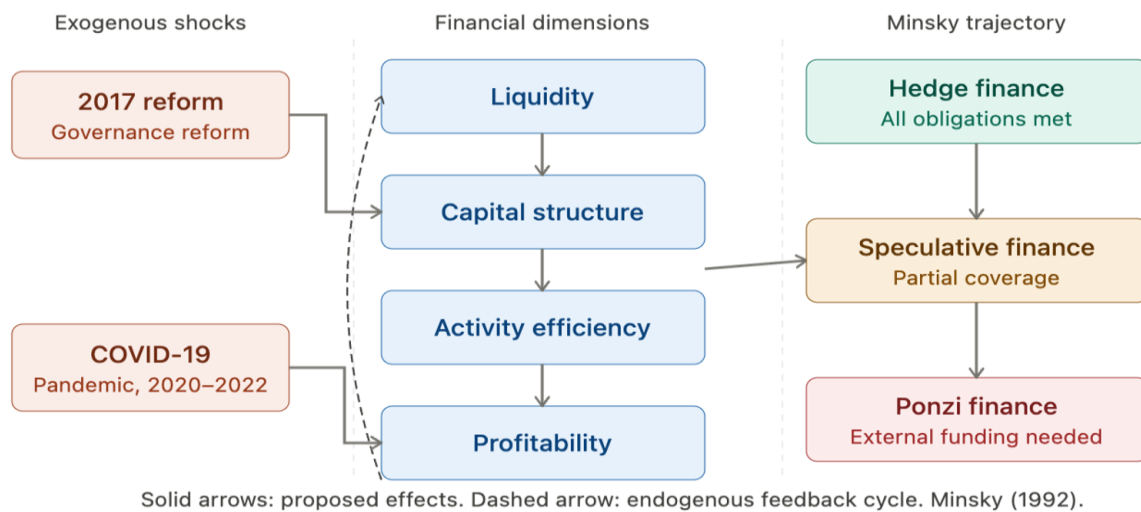


Figure 1: Conceptual framework of financial fragility in public hospitals

Note: External shocks, including the administration’s restructuring in 2017 and the COVID-19 pandemic, interact with the four financial ratios. These ratios are: liquidity, capital structure, operating, and profitability ratios. Solid arrows represent theoretically defined directional relationships, whilst the dashed curved arrow illustrates the internal feedback loop. Consequently, within the framework of the Financial Instability Hypothesis (Minsky, 1992), a transition has been formed, moving from risk-hedging finance to speculative finance and, from there, to Ponzi finance.

Source: Minsky (1992).

Financial Performance Assessment and Ratio Analysis

Financial ratio analysis plays a significant role in the empirical assessment of hospitals’ financial performance, in evaluating long-term trends in the relationships between the balance sheet and the income statement, and in facilitating cross-organisational comparisons, owing to the interpretable nature of these indicators (Curtis & Roupas, 2009; Zeller, Stanko, & Cleverley, 1997). The value of a specific ratio does not convey meaning on its own; it provides analytical insight when considered in terms of its trend over time and when compared with sector averages (Delen, Kuzey, & Uyar, 2013; Zeller et al., 1997). Cross-comparing ratios with sector averages over time and analysing trends will significantly enhance the quality of interpretation (Bülüç, Özkan, & Ağırbaş, 2017; Karadeniz & Koşan, 2017). In the Turkish literature on hospital finance, structural liquidity gaps have been empirically linked to cascading financial deterioration, as explained here (Aksoylu & Cavmak, 2023; Sağlam & Orhan, 2018). Return on equity (ROE) has been included to ensure the rigour and transparency of the study. However, negative equity has no financial significance; this ratio should only be interpreted in years in which it takes a positive value. This is clearly explained in the note accompanying Table 5.

In Table 1, 13 ratios across four categories have been used. The complete list is provided in Table 1.

Table 1: Financial ratios used in the analysis

Category	Ratio	Formula	Benchmark	Interpretation
Liquidity	Current Ratio	Current Assets / Current Liabilities	≥ 1.00 –1.50	Ability to meet short-term obligations
	Quick Ratio	(Current Assets – Inventories) / Current Liabilities	≥ 0.65 –0.80	Immediate liquidity excluding inventories
	Cash Ratio	Cash and Cash Equivalents / Current Liabilities	≥ 0.20	Ability to settle obligations using cash alone

Category	Ratio	Formula	Benchmark	Interpretation
Financial Structure	Debt-to-Asset Ratio	Total Liabilities / Total Assets	≤ 0.50	Overall financial leverage; a ratio greater than 1.00 indicates negative net assets
	Equity-to-Liabilities Ratio	Equity / Total Liabilities	≥ 0	Equity buffer relative to total external liabilities; negative values indicate accumulated deficits exceeding the original equity base
Activity	Short-Term Liabilities Ratio	Short-Term Liabilities / Total Assets	≤ 0.30	Maturity mismatch and liquidity pressure
	Inventory Turnover	Cost of Goods Sold / Average Inventory	35–50	Efficiency in inventory management
	Receivables Turnover	Net Sales / Accounts Receivable	Higher = better	Speed of accounts receivable collection
	Asset Turnover	Net Sales / Total Assets	Higher is better	Revenue generated per unit of invested capital
Profitability	Gross Profit Margin	Gross Profit / Net Sales	> 0	Revenue retained after direct service costs
	Net Profit Margin	Net Income / Net Sales	> 0	Overall profitability after all expenses
	Return on Equity (ROE) [†]	Net profit / Equity	> 0	Only applicable when equity is positive; see note
	Return on Assets (ROA)	Net Income / Total Assets	> 0	Profitability relative to the asset base

Note: The comparison thresholds reflect the sector averages for hospitals in Turkey (Sağlam & Orhan, 2018). The Equity-to-Liabilities Ratio (Equity / Total Liabilities) measures the equity buffer relative to total external debt and differs from the traditional Equity-to-Assets Ratio (Equity / Total Assets). It should not be interpreted as the sum of the Debt/Assets ratio and the Equity/Assets ratio equalling one. It is not interpreted and is excluded in the event of negative equity (see Table 5).
[†] ROE is presented for transparency purposes and can only be interpreted when equity is positive.

DATA AND METHODOLOGY

Research Design and Objective

This study employs a descriptive, long-term design based on financial ratio analysis. The institution analysed is Dörtüol State Hospital, a Group B state hospital affiliated with the Hatay Provincial Health Directorate. This hospital was compared with the average performance of three similar institutions, namely, the state hospitals in İskenderun, Kırıkhan, and Samandağ, over the period 2015–2022. For each year, the peer-group benchmark was calculated as the arithmetic mean of the corresponding ratios for the three comparator hospitals. Where the distribution of individual peer-institution ratio values was excessively skewed, particularly in years when the equity-to-liabilities ratio and ROE were significantly negative, the arithmetic mean was presented with a clear cautionary note rather than being treated as a representative benchmark for comparison. This limitation is detailed in Restrictions Section. Four hospitals hold Group B status, operate under the same provincial administrative umbrella, and benefit from the same reimbursement framework (system). This situation makes a systematic comparison of peer institutions methodologically justifiable (Çil Koçyiğit & Kocakoç, 2019; Karadeniz & Koşan, 2017). The study does not aim to establish causal relationships; rather, it seeks to identify and interpret temporal patterns in financial ratios in relation to major structural and external events. The period consists of four phases: the pre-reform phase (2015–2016), the administrative transition year (2017), the post-reform and pre-pandemic phase (2018–2019), and the pandemic phase (2020–2022).

Data Sources and Collection

Data from the four hospitals, including balance sheets and income statements, were obtained from the Ministry of Health's Uniform Accounting System (UAS) following authorisation by the provincial health directorate. Due to the administrative transition process in 2017, the financial statements were reconstructed

from two separate ledger sources. Consequently, comparability is somewhat limited for the 2017 sub-period. The stock turnover rate for 2017 could not be reliably recalculated and was therefore classified as a missing observation. All thirteen ratios used here were calculated using Microsoft Excel, based on balance sheet and income statement figures, and cross-checked against sector averages (Pink et al., 2006). No information has been provided regarding statistical inferences. As explained in the ‘Declarations’ section, institutional research authorisation was obtained for data collection.

APPLICATION

A financial ratio analysis was conducted using the year-end balance sheet and income statement figures for 2015–2022 from Dörtyol State Hospital and three comparable institutions. The results are presented in four subsections, and trends in the selected ratios are shown graphically in Figures 2–4. The shaded vertical bars indicate the 2017 administrative transition period and the COVID-19 period (2020–2022).

Liquidity Ratios

Table 2 shows the annual values of three liquidity ratios. Figure 2 graphically illustrates trends in the current and acid-test ratios.

Table 2: Liquidity ratios of Dörtyol State Hospital and the average for comparable institutions (2015–2022)

Ratio	Institution	2015	2016	2017	2018	2019	2020	2021	2022
Current Ratio	Dörtyol	1.07	0.63	0.64	0.47	0.63	0.44	0.46	0.26
	Peer average	1.78	0.96	0.63	0.64	0.85	0.77	0.47	0.26
Quick Ratio	Dörtyol	0.82	0.48	0.55	0.38	0.47	0.33	0.13	0.03
	Peer average	1.64	0.84	0.53	0.58	0.75	0.64	0.30	0.06
Cash Ratio	Dörtyol	0.25	0.01	0.03	0.00	0.01	0.01	–0.01	0.00
	Peer average	0.64	0.01	0.04	0.01	0.01	0.01	–0.01	0.01

Note: Benchmark thresholds: current ratio ≥ 1.00 –1.50; quick ratio ≥ 0.65 –0.80; cash ratio ≥ 0.20 (Pink et al., 2006). The 2021 cash ratio of –0.01 reflects a negative balance recorded under the ‘cash and cash equivalents’ accounts in the UAS ledger. Under international accounting standards (IFRS, US GAAP), such overdraft positions would ordinarily be reclassified as short-term liabilities; the negative asset balance is attributable to the mechanics of the Turkish Uniform Chart of Accounts (Tek Düzen Hesap Planı) applied to revolving fund institutions, and is reported as recorded in the source financial statements. Peer average = arithmetic mean of İskenderun, Kırkhan, and Samandağ State Hospitals.

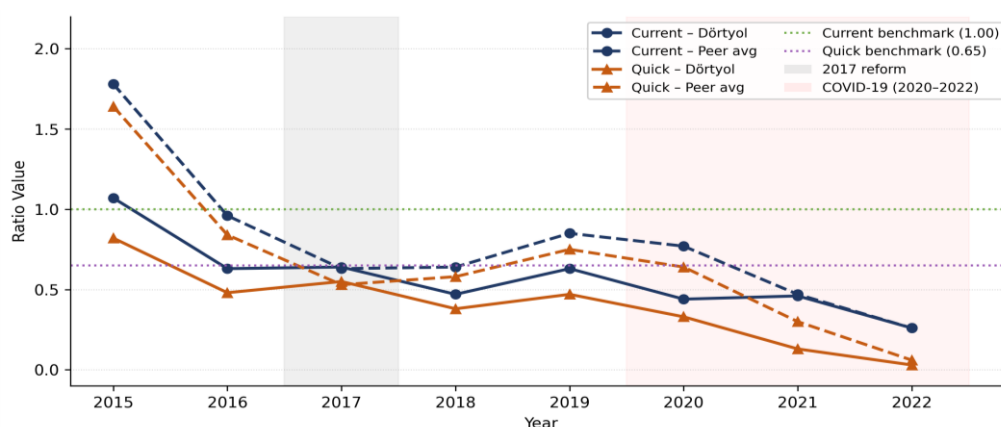


Figure 2: Current and liquidity (Acid test) ratios of Dörtyol State Hospital and the peer average

Note: The grey shading represents the 2017 administrative transition period; the pink shading represents the COVID-19 period (2020–2022); the horizontal dotted lines indicate the minimum comparison thresholds for the current ratio (1.00, green) and the liquidity ratio (0.65, purple).

Current Ratio

The current ratio began the study period at 1.07 in 2015, the only year in which Dörtyol State Hospital met the minimum criterion, and subsequently fell to 0.26 by 2022. The most pronounced decline occurred between 2015 and 2016, when the ratio fell from 1.07 to 0.63. This decline coincided with an increase in short-term liabilities and a decrease in current assets. The partial stabilisation observed in 2017 (0.64) and 2019 (0.63) proved to be temporary. After falling again to 0.44 in 2020, the current ratio declined to its lowest level of 0.26 in 2022. The averages for comparable hospitals generally followed a similar trend, falling from 1.78 to 0.26. However, in 2020, Dörtyol's ratio remained below this average. The fact that the figures for 2021–2022 converged closely with these values reflects the contraction experienced by comparable institutions rather than a recovery at Dörtyol.

Quick (Acid-Test) Ratio

The quick ratio fell from 0.82 in 2015 to 0.03 in 2022. In all other years, it remained below the reference value of 0.65–0.80. Throughout the period, the small difference between the current ratio and the quick ratio was due to inventories accounting for only a small proportion of current assets. The liquidity gap indicates an absolute and increasing shortage of liquid assets rather than a lack of liquidity in inventories. The fall to 0.03 in 2022, representing a 77 per cent drop in a single year, is consistent with significant working capital requirements and indicates a rapid decline in receivables and cash-equivalent assets.

Cash Ratio

This ratio hovered slightly above the reference value of 0.20 in 2015 but fell sharply to 0.01 in 2016. In the other years of the period, it remained at zero or near-zero levels, reaching -0.01 in 2021. A negative balance of -100,753 TL is recorded in the cash and cash-equivalent accounts within the Uniform Accounting System (UAS). Under IFRS or US GAAP, this situation is generally reclassified as a short-term liability. The negative asset balance is not intentional but stems from the operation of the TDP-based working capital accounting system. In 2022, total cash rose to 119,083 TL, covering approximately 0.3 per cent of the total current liabilities of 35.9 million TL for the same year. Since 2015, the hospital has not had the capacity to cover unexpected expenditures with its available cash.

Financial Ratios

Table 3 shows the annual figures for the financial structure ratios (3 ratios). Figure 3 illustrates the trend in the debt-to-assets ratio graphically.

Table 3: Financial structure ratios and peer group averages for Dörtyol State Hospital (2015–2022)

Ratio	Institution	2015	2016	2017	2018	2019	2020	2021	2022
Debt-to-Asset Ratio	Dörtyol	0.65	1.59	1.66	2.07	1.75	2.49	2.67	4.48
	Peer average	0.76	1.27	1.46	1.51	1.64	1.26	2.37	3.57
Equity-to-Liabilities Ratio	Dörtyol	0.54	-0.35	-0.38	-0.52	-0.43	-0.60	-0.63	-0.78
	Peer average *	-0.91	-0.88	-0.47	-4.20	-1.53	-8.56	-1.50	-1.12
Short-Term Debt Ratio	Dörtyol	0.65	1.26	1.42	1.85	1.46	2.13	2.08	3.79
	Peer average	0.75	1.35	1.32	1.65	1.32	2.01	1.95	3.52

Note: Debt-to-asset ratio: Values > 0.50 indicate debt dependency; values > 1.00 indicate that liabilities exceed total assets. Equity-to-liabilities ratio (Equity / Total Liabilities): negative values indicate accumulated deficits exceeding the original equity base, denoting technical insolvency. This ratio is not the classical equity-to-assets ratio and does not add up to unity when combined with the debt-to-asset ratio. The 2015 debt-to-asset ratio of 0.65 has been verified against the raw UAS balance sheet totals; the equity-to-liabilities ratio of 0.54 is internally consistent with this value (i.e., $(1-0.65)/0.65 = 0.54$). Short-term liabilities ratio benchmark ≤ 0.30 (Sağlam & Orhan, 2018). * Peer average equity-to-liabilities values in certain years (notably 2018: -4.20; 2020: -8.56) reflect the arithmetic influence of extreme negative equity positions in one or more comparator hospitals; these should be interpreted as distributional rather than representative measures.

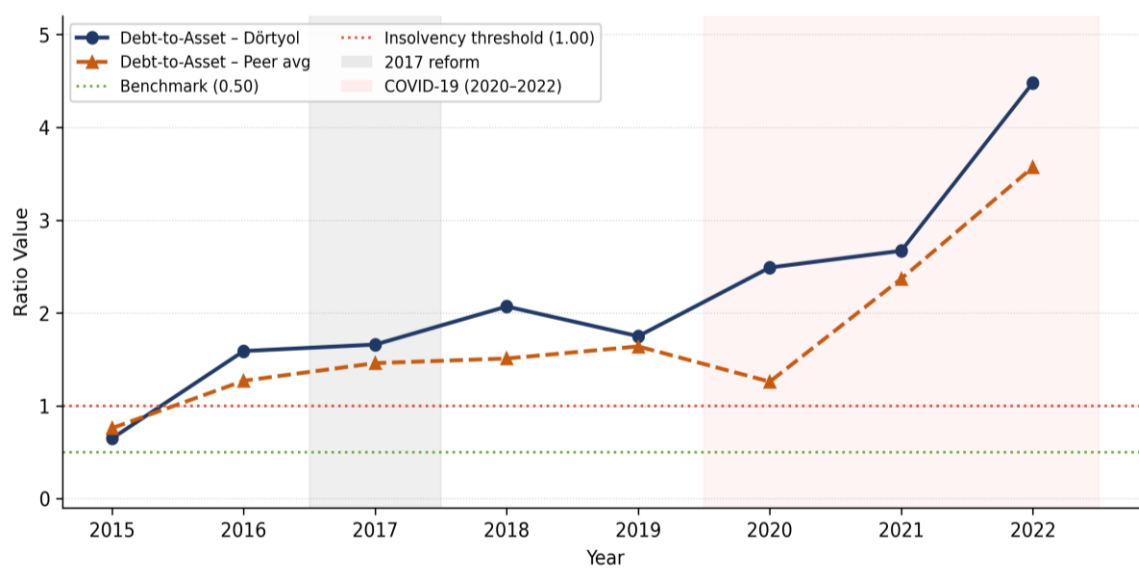


Figure 3: Debt-to-asset ratio of Dörtyol State Hospital and the benchmark average

Note: Grey shading indicates the 2017 administrative transition period; pink shading indicates the COVID-19 period (2020–2022). The green dotted line represents the comparison threshold (0.50); the red dotted line represents the insolvency threshold (1.00).

Debt-to-Asset Ratio

The debt-to-asset ratio, which stood at 0.65 in 2015, rose to 4.48 in 2022. This corresponds to a 6.9-fold increase over the period under review. As of the end of 2022, this indicates that total debt was 4.48 times greater than total assets. The critical threshold of 1.00 was exceeded in 2016 (at 1.59), before the restructuring in 2017. This indicates that the hospital fell into a negative net asset position, stemming from accumulated hospital losses. The ratio has not fallen below 1.00 in subsequent periods. Throughout the study period, Dörtyol State Hospital's debt-to-asset ratio consistently exceeded the benchmark average, rising from 0.76 to 3.57, indicating that Dörtyol Hospital bears a structurally more significant leverage burden. This difference peaked in 2022, coinciding with a net loss of 19.7 million TL (3.57 versus 4.48).

Equity-to-Debt Ratio

The equity-to-debt ratio, which stood at 0.54 in 2015, the only positive value observed, fell to 0.35 in 2016, as accumulated operating losses of 5.45 million TL exceeded existing equity. This ratio deteriorated progressively in subsequent years, falling to 0.78 by 2022. The shift from positive to negative in 2016 marked the most significant structural turning point during the hospital's eight-year period. From that year onward, the institution's financial statements suggest that it was in a state of insolvency. The figures reported are exactly in line with the averages for other comparable institutions. The overall picture revealed by the data is that comparable hospitals in the province also have negative equity. Such a situation is a structural characteristic consistent with the broader trends reported in the literature on Turkish public hospitals (Öner, 2024; Sağlam & Orhan, 2018).

Short-Term Debt Ratio

The short-term debt ratio rose from 0.65 in 2015 to 3.79 in 2022. This ratio indicates that, in the final year of the study, short-term liabilities alone amounted to 3.79 times total assets. The reason this ratio exceeded the 0.30 threshold every year since 2015 is unpaid supplier invoices and deferred welfare and social assistance payments. This situation is characterised by chronically mismatched payment terms and a steadily shrinking net asset position. Values above 1.00 indicate negative equity and mean that total liabilities exceed equity. The

emergence of these figures from 2016 onwards indicates this situation rather than signifying insolvency, as determined by the equity-to-liabilities ratio. The averages for comparable institutions are very close to those of Dörtyol State Hospital, ranging from 0.75 to 3.52.

Operating Ratios

Table 4 shows the annual values of three operating ratios.

Table 4: Operating ratios for Dörtyol State Hospital and the peer group average (2015–2022)

Ratio	Institution	2015	2016	2017	2018	2019	2020	2021	2022
Inventory	Dörtyol	48.56	43.95	—	48.90	45.44	46.04	26.50	26.31
Turnover	Peer average	89.38	53.24	37.02	39.06	41.84	36.11	32.85	35.67
Receivables	Dörtyol	16.99	11.67	8.79	7.26	12.83	11.55	25.52	149.76*
Turnover	Peer average	31.57	20.56	14.75	12.71	29.19	67.88	37.86	118.72*
Asset Turnover	Dörtyol	6.03	4.92	4.07	5.27	6.77	6.79	11.85	16.40
	Peer average	5.83	5.82	4.40	4.77	6.04	5.59	13.07	17.09

Note: In 2017, the stock turnover rate was considered incomplete due to the administrative transition period. (*) The 2022 accounts receivable turnover figures for Dörtyol (149.76) and the benchmark average (118.72) are abnormal. As at year-end, the average collection period was calculated as 2.4 days (Dörtyol) and 3.1 days (benchmark average), respectively. These figures are entirely inconsistent with the 30–90-day payment cycles for need-based/social assistance payments associated with the revenue streams of public hospitals in Turkey. It is more likely that these figures reflect a one-off, system-level accounting event affecting all four institutions simultaneously, rather than a structural improvement in collection efficiency. Any interpretation of long-term trends has been avoided. According to Sağlam and Orhan (2018), the annual threshold value for the stock turnover ratio is 35–50 days.

Inventory Turnover Ratio

The inventory turnover ratio at Dörtyol State Hospital fluctuated between 43.95 and 48.90 during the 2015–2022 period and fell within the annual range of 35–50 days typical of comparable institutions. Although the average for comparable institutions was quite high at 89.38, it showed a sudden drop to 53.24 in 2016 and gradually converged towards Dörtyol's figures. Both at Dörtyol Hospital (to 26–27) and at comparable hospitals (to 33–36), a marked decline was observed in 2021–2022. During the pandemic, this situation was consistent with the rise in inflation in terms of inventory build-up and inventory turnover figures.

Accounts Receivable Turnover Ratio

The 2022 data should be interpreted with caution before analysing and interpreting the accounts receivable turnover figures. This situation, which indicates that collection periods at Dörtyol and comparable institutions lasted only a few days, resulted in a very high accounts receivable turnover ratio. These figures are inconsistent with the Social Security Institution's comparable reimbursement periods, which typically last between 30 and 90 days. The results should therefore be interpreted as stemming not so much from a shortening of the collection period for receivables, but rather from potential system-wide reconciliations or year-end accounting irregularities. For this reason, the 2022 figures have not been used in long-term analyses and assessments.

In Dörtyol, the receivables turnover ratio stood at 16.19 in 2015 but fell to 7.26 by 2018. This indicates that the collection of welfare/social assistance payments had gradually slowed down during the pre-pandemic period. The recovery rate, which stood at 12.83 in 2019, rose to 25.52 in 2021 and subsequently reached 149.76 in 2022. The reason for this anomalous figure is that the implied collection period, standing at 2.4 days at year-end, is inconsistent with the reported 30–90-day cycles of welfare/social assistance payments that determine the revenue flows of public hospitals. By contrast, the average for comparable institutions was 118.72–3.1 days. The fact that such a situation arose simultaneously across all four comparable institutions during the same period suggests, rather than genuine collection efficiency, a very high likelihood that it was a system-level accounting event, such as the reclassification of receivables under the needs-based/social assistance scheme.

or the partial write-off of receivables. Both figures are included in Table 4 for the sake of transparency and have been excluded from trend analyses.

Asset Turnover Ratio

There is generally a parallel trend between the asset turnover ratio of Dörtyol Hospital and the average for comparable hospitals. It fell from approximately 6.0 to 4.1 in 2017, then rose gradually until 2022, reaching 16.40 for Dörtyol and 17.09 for comparable hospitals. Whilst the ratio continued to rise throughout 2020, the systems of the three institutions contributed to this without implying an actual increase in efficiency. The rise in revenue due to COVID-19 led to additional bed capacity coming into service at Dörtyol, increasing from 150 to 250 beds in May 2022. Most importantly, high inflation has had a greater impact on net sales than on the book value of assets. Whilst net sales and total liabilities are recorded at current values, total assets, particularly fixed assets, remain at historical (booked) cost. This discrepancy systematically increases the volatility of ROA and may have effectively amplified the leverage ratio in real terms during 2021–2022.

Whilst these three factors largely explain the significant rise in the asset turnover ratio following 2020, the remarkably high figure of 16.40 recorded in 2022 should not be interpreted as evidence of efficiency resulting from an extraordinary transaction. On the contrary, this figure reflects rapid nominal revenue growth, with fixed assets valued at their historical (book) values in a high-inflation environment. It illustrates the combined effect of the structural characteristics of public hospital financing within the framework of centrally managed reimbursement systems. Whilst hospital buildings, medical devices, and equipment continue to be recorded at their historical (book) values, service revenues have increased during inflationary years; this has caused the denominator of the ratio to rise much more slowly than the numerator, resulting in an upwardly distorted asset turnover ratio. Consequently, the 2022 figure does not represent a genuine increase in productive efficiency but primarily reflects accounting valuation effects.

Profitability Ratios

Table 5 provides annual figures for all four profitability ratios. Figure 4 meanwhile shows the trends in net profit margin and ROA in a separate panel to facilitate interpretation of each series on its own scale.

Table 5: Profitability ratios for Dörtyol State Hospital and peer averages (2015–2022)

Ratio	Institution	2015	2016	2017	2018	2019	2020	2021	2022
Gross Profit Margin	Dörtyol	0.14	−0.04	0.06	0.03	0.15	−0.02	0.16	−0.05
	Peer average	0.20	0.00	0.16	0.07	0.15	0.01	0.21	−0.02
Net Profit Margin	Dörtyol	−0.02	−0.17	−0.09	−0.06	0.05	−0.12	0.00	−0.13
	Peer average	0.00	−0.13	−0.10	0.01	0.06	−0.10	−0.03	−0.07
Return on Equity**	Dörtyol	−0.47	1.42	0.11	0.29	−0.41	0.53	−0.03	0.62
	Peer average	2.12	0.57	0.48	−0.02	−0.22	2.43	0.34	0.55
Return on Assets	Dörtyol	0.17	−0.85	−0.08	−0.31	0.31	−0.79	0.05	−2.17
	Peer average	−0.17	−0.80	−0.36	−0.08	0.26	−0.63	−0.41	−1.80

Note. (**) The ROE rows have been shaded grey to indicate that most of the values represent mathematically derived but economically uninterpretable values. When both net profit and equity have a negative sign, their ratio is positive but cannot be interpreted from a financial perspective. The ROE value for Dörtyol Hospital can be interpreted in the traditional sense, as its equity was positive in 2015. ROE values for subsequent periods have been retained for the sake of transparency and diagnostic purposes (the emergence of these values is consistent with the Ponzi financing scenario described in Conceptual Framework section. However, these values should not be interpreted as traditional returns based on equity). All remaining ROE values have been excluded from the main discussion. The ROA values for 2018 (−0.31) and 2019 (+0.31) have been verified by comparing them with the raw data from the UAS balance sheet records. All values are shown as decimal figures.

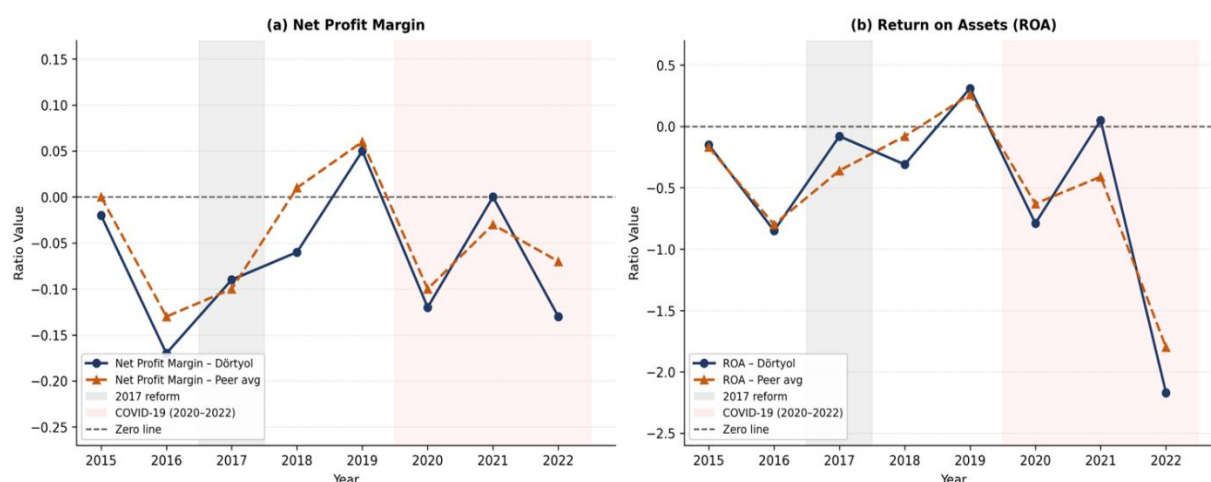


Figure 4: Profitability indicators and peer group averages for Dörtyol State Hospital (2015–2022)

Note: (a) Net Profit Margin, (b) Return on Assets (ROA). Separate y-axes have been created in the panels to prevent the visual suppression of variability in the net profit margin series due to the extreme ROA value for 2022 (-2.17). The grey shading indicates the 2017 administrative transition year, the pink shading indicates the COVID-19 year, and the dashed horizontal line at the zero point separates profitable years from loss-making years.

Gross Profit Margin

The gross profit margin recorded positive values in 2015 (0.14), 2017 (0.06), 2018 (0.03), 2019 (0.15), and 2021 (0.16). This indicates that, in these years, revenue directly covered service costs. Negative values were recorded in 2016 (-0.04), 2020 (-0.02), and 2022 (-0.05). These years correspond to periods when structural shocks occurred or to the years following such shocks. A negative profit margin confirms that operating revenue was insufficient to cover even variable costs. The average for comparable organisations has generally shown a similar trend.

Net Profit Margin

Net profitability was negative in six of the eight years. The most negative figures were recorded in 2016 (-0.17) and 2022 (-0.13). The pandemic year, 2020 (-0.12), was only slightly better than these. Based on the figures, the only year in which a positive net profit was recorded was 2019 (0.05). In that year, the hospital generated a net profit of 2.39 million TL on revenue of 52.4 million TL. The net profit margin for 2021 was effectively 0.00, equating to a net profit of 330,193 TL on revenue of 84.4 million TL. This surplus is very small and may not even be sufficient to cover minor costs. In the years following 2018, Dörtyol's net profit margin has remained below the averages of comparable hospitals.

Return on Equity

Return on equity (ROE) is included in the analytical framework for the purposes of transparency and diagnosis. However, its interpretative value within this corporate context is severely limited. ROE is meaningfully interpretable only for 2015, the only year in which the hospital reported positive equity (ROE: -0.47). ROE values for all subsequent years are retained for the sake of transparency, and the very fact that they appear serves as an indicator of the Ponzi financing situation described in Conceptual Framework section. However, given that equity was negative from 2016 onwards, none of these values should be interpreted as traditional returns on equity. The artificially positive values for 2016, 2017, 2018, 2020, and 2022, shown with grey shading in Table 5, have been recorded for the sake of completeness but excluded from all substantive analyses conducted throughout this article.

Return on Assets

Over the study period, return on assets (ROA) fell to its lowest level, reaching -2.17 in 2022. This strikingly low figure resulted from a net operating loss of ₺19.7 million in a context where total assets amounted to just ₺9.1 million. This situation indicates that the annual loss exceeded twice the hospital's book value of assets. The exceptionally high asset turnover rate observed in 2022 reflects the exceptionally high price increases resulting from the COVID-19 pandemic. The scale of this loss highlights the hospital's serious financial fragility and strongly indicates that, at the end of the eight-period study, the institution's financial sustainability is critically at risk. Although high inflation may systematically inflate this ratio under historical-cost accounting, the noticeable decline clearly demonstrates that the hospital's financial position has weakened significantly.

Summary of Findings

When the ratio data obtained from the four analytical dimensions are evaluated together, a coherent picture emerges of gradual and structurally rooted financial vulnerability. The current ratio has fallen below 1.00 since 2016 and has not recovered; the quick ratio decreased by 77 per cent between 2021 and 2022; and the cash ratio has been close to zero in seven of the past eight years. The debt-to-assets ratio has risen from 0.65 to 4.48; the equity-to-liabilities ratio turned negative in 2016 and reached -0.78 by 2022, while the current liabilities ratio has exceeded 1.00 since 2016. The net profit margin was negative in six of the eight years, and ROA reached -2.17 in 2022. No clear turning point attributable to the 2017 reform was identified. All four propositions (P1–P4) are generally consistent with the observed evidence.

DISCUSSION

Taken as a whole, the ratio data reveal a gradual and largely uninterrupted trend of financial deterioration over the 2015–2022 period, which is largely consistent with all four analytical propositions.

Regarding P1: The evidence regarding liquidity is extremely clear. The current ratio fell below the minimum threshold after 2015 and has not recovered since. The cash ratio, which reached a limited level of adequacy in 2015, remained at or near zero throughout the period and briefly entered technically negative territory in 2021. This situation can be attributed to the TDHP accounting systems. Most strikingly, the trend in the quick liquidity ratio, which intensified precisely during the pandemic period and plummeted by 91 per cent between 2020 and 2022, is consistent with growing international evidence that public hospitals within centralised systems are structurally in the weakest position to withstand simultaneous revenue and cost shocks (Hu et al., 2022; Wang et al., 2022). The fact that Dörtiyol's ratios resembled peer averages during the 2021–2022 period supports the interpretation that the liquidity collapse was not an institution-specific failure, but rather consistent with the broader structural trends reported in the Turkish public hospital literature. This interpretation has also been reinforced by Jalilian et al. (2023) and Küçük (2022).

In P2: Chronologically, the most significant observation is that the transition to a negative equity position and the rise in the asset-to-liability ratio above 1.00 occurred in 2016. This was clearly a full year before the 2017 restructuring. This timing invalidates any interpretation suggesting that the reform was a cause of the deterioration in the capital structure. The reform did not provide any corrective momentum. Leverage continued to rise, equity continued to sink deeper into negative territory, and the short-term liability ratio continued to increase at a rate indistinguishable from the pre-reform trend in the years following 2017. This result is consistent with the expectations set out by Langabeer et al. (2026) and Nagendran et al. (2019). Governance restructuring carried out without resolving the structural mismatch between administrative tariffs and actual service costs will not bring about financial improvement. Çil Koçyiğit and Kocakoç (2019) reached the same conclusion for hospitals in the province of Ankara across multiple reform cycles. Ünüvar and Boztosun (2025), meanwhile, confirmed that the determining factor of financial performance in Turkish public hospitals is not the management structure but the leverage ratio.

In P3: The gross profit margin turned negative (–) in three years: 2016, 2020, and 2022, each of which corresponded to a year of structural shock or its financial consequences. The only period of clearly positive

profitability was 2019. This indicates that the hospital's operating model retains the capacity to generate a low level of profit under sufficiently stable conditions. This represents a fragile margin structure rather than one that is structurally inadequate. Bai and Zare (2020) and Wang et al. (2022) document similar dynamics in US hospital data; Oksuz et al. (2021) estimates of the COVID-19 cost burden in Turkey suggest that the situation in Turkey is consistent with this international pattern.

P4 and Minsky-style analysis: The eight-year trend is broadly consistent with the financial dynamics described by the FIH. In 2015, the hospital was in a position close to marginal hedge financing. The current ratio was just over 1.00, equity was positive, and the debt-to-assets ratio stood at 0.65. By 2016, the hospital had entered a Ponzi scheme, as accumulated losses had completely wiped out its positive equity. From 2017 onwards, total liabilities have consistently exceeded total assets, and the continuation of operations has become dependent on implicit public-sector external refinancing. As of 2022, with a debt-to-assets ratio of 4.48, the hospital's continued operations would appear to be highly dependent on external public-sector support. The ROE artefact, mathematically positive values arising from negative net income and negative equity, serves less as a performance indicator than as a diagnostic indicator of this Ponzi-style financing situation. The parallel deterioration observed in the averages of similar institutions supports the interpretation that the trend documented here is consistent with broader structural patterns in the financing of Group B public hospitals in Turkey and cannot be attributed to institution-specific mismanagement (Öner, 2024; Ramamonjiravelo et al., 2015; Sağlam & Orhan, 2018).

A general conclusion concerns the distinction between structural fragility and acute shocks. The evidence shows that the hospital's financial trajectory was already following a negative course before both the 2017 reform and the pandemic, and that this trajectory subsequently accelerated. Rather than triggering the current deterioration, both events interacted with the pre-existing deterioration. However urgent the need for emergency liquidity support may be, it cannot resolve a solvency issue rooted in an eight-year structural mismatch between the set tariffs and the actual costs of service provision. These irregularities collectively emphasise the need to understand financial ratios within the context of institutional and accounting frameworks.

Whilst ratio analysis provides important insights into long-term financial sustainability, it is vital to take into account exceptional accounting events, the effects of inflation, and sector-specific reporting standards when drawing significant conclusions. Therefore, financial ratios should be assessed not as independent indicators of corporate performance, but as contextual indicators of corporate sustainability.

POLICY IMPLICATIONS

The policy implications of this study are based on concrete and quantifiable financial imbalances rather than general normative principles. They are directed at hospital management, provincial-level health management, and central health financing policy. Table 6, at the end of this section, summarises all five implications, together with the relevant management levels, priority classifications, and supporting evidence.

Restoring Minimum Liquidity Buffers through Central Mechanisms

The near-constant shortage of cash reserves throughout the study period implies that the hospital cannot cope with unexpected expenditure shocks without delaying payments to suppliers or restricting non-urgent services. This is a structural revenue shortfall that can only be resolved at the level of the funding system (Hu et al., 2022; Maślach et al., 2019). An appropriate policy measure is a central revolving liquidity mechanism, similar to the cash-advance mechanisms used by NHS trusts. Through this mechanism, hospitals experiencing chronic short-term payment shortfalls can access pre-approved drawdowns against future SGK receivables. Although such a mechanism would not resolve the underlying solvency issue, it would prevent liquidity crises from causing operational disruptions until structural solutions are implemented (Sagan et al., 2021).

Addressing the Structural Solvency Gap through Capital Restructuring

The negative equity-to-liabilities ratio of -0.78 recorded in 2022, combined with a debt-to-assets ratio of 4.48, indicates an accumulated solvency shortfall that cannot reasonably be rectified through gradual cost constraints under the current tariff structures. The hospital's total assets in 2022 were lower than its annual net loss. Restoring financial sustainability requires a one-off or phased equity recapitalisation operation, financed by central government funds to write off accumulated debts, alongside a reliable, index-linked system ensuring that future SGK price adjustments keep pace with input cost inflation. In the context of public hospitals, such refinancing would take the form of central budget-supported deficit coverage, the assumption of accumulated debts, or balance-sheet adjustments via structured revolving capital, rather than private-sector-style shareholder funding. Without an indexation system, any funding would be consumed by the same deficit dynamics that created the current situation. Malone, Pink, and Holmes (2025) identify negative equity as one of the strongest predictors of hospital closure. Ramamonjiravelo et al. (2015) meanwhile demonstrate that the likelihood of privatisation is significantly higher for public hospitals experiencing financial distress and that this has direct implications for access to healthcare services.

Revising SGK Reimbursement Tariffs to Reflect Actual Service Costs

Throughout the study period, the structural cause of operating deficits has been the persistent discrepancy between centrally set SGK tariffs and the actual cost of service provision. This discrepancy is not unique to Dörtyol; three other hospitals in a similar situation also exhibit the same chronic tendency to incur losses. Consequently, this issue cannot be resolved at the institutional level. From a policy perspective, what is required is a systematic review of the SGK fee schedules. In this process, particular attention must be paid to cost components attributable to high-volume secondary care procedures and imported inputs. A service cost study based on a representative sample of Group B hospitals will provide the necessary evidence base for adjusting tariffs and establishing a transparent adjustment methodology (Atun et al., 2013; Tatar et al., 2011).

Implementing a Hospital-Level Financial Monitoring and Early Warning System

From at least 2016 onward, all liquidity and leverage indicators had been trending negatively. This was a multi-year period during which a targeted intervention could have halted this trend. The fact that no such intervention was carried out points to a systemic failure in real-time financial monitoring. Provincial Health Directorates should be tasked with calculating and reporting the thirteen ratios examined in this study, or a simplified subset thereof, for all affiliated hospitals quarterly; automatic escalation processes should be established to be triggered if predefined threshold values are exceeded. A current ratio remaining below 0.50 or a debt-to-asset ratio exceeding 2.00 for two consecutive quarters could be considered a trigger for initiating a structured financial review (Rosko, 2001; Sağlam & Orhan, 2018).

Developing Financial Planning Protocols to Prepare for Future Shocks

The pandemic has revealed that hospitals lack sufficient buffer capacity to absorb a sudden cost shock. The fact that the gross profit margin turned negative in 2020 implies that even direct service delivery costs could not be fully covered by revenue. Healthcare systems that performed relatively better during the COVID-19 period had predetermined minimum liquidity reserves, pre-approved emergency procurement frameworks, and contingency staffing arrangements (Blumenthal et al., 2020; Kruk et al., 2015). Future pandemic preparedness planning for Turkish public hospitals should include explicit financial resilience targets as mandatory components of preparedness plans, comprising minimum current and cash ratio thresholds, pre-approved credit limits, and mandatory liquidity reserve requirements.

Table 6: Summary of policy implications

Implication	Level	Priority	Evidence base
Centralised revolving liquidity facility	National / Provincial	Immediate	Cash ratio ≈ 0 for 7 out of 8 years
Equity recapitalisation	National	Immediate	Debt-to-assets ratio = 4.48; equity-to-liabilities ratio = -0.78 (2022)
SSI tariff recalibration	National	Structural	Gross profit margin negative in years of economic shock
Quarterly ratio monitoring system	Provincial	Medium-term	Deterioration evident 6+ years before the crisis
Financial resilience targets in pandemic plans	National	Medium-term	Pandemic shock fully absorbed by the balance sheet

LIMITATIONS AND FUTURE RESEARCH

Limitations

A single primary institution: The findings cannot be generalised beyond the specific institutional context of a Group B state hospital in Hatay Province. The structural characteristics of the local health economy may distinguish this setting from those of other Turkish provinces.

Descriptive design and absence of causal inference: The study does not establish a causal relationship between the structural events examined and the observed financial outcomes. The division into sub-periods reflects theoretical expectations rather than officially defined breakpoints.

Discontinuity in the 2017 data: The administrative transition process required the reconstruction of financial statements from two separate ledger sources, leading to a limited caveat regarding comparability for this sub-period. The absence of inventory turnover data for 2017 is the most prominent consequence of this situation; this relates to book-value accounting and inflation. All ratios are derived from financial statements based on the historical-cost principle, unadjusted for inflation. In Turkey's high-inflation environment of 2021–2022 (when inflation rates exceeded 19 per cent and 72 per cent, respectively), the same historical-cost distortion affecting asset turnover also affects ROA and the debt-to-asset ratio. Compared with the results that would be provided by inflation-adjusted statements, leverage may be significantly overstated, and ROA volatility may have increased. Using period-averaged balance-sheet data would reduce this bias. However, as only year-end statements are available in the UAS system, calculating an average ratio is methodologically impractical within the data constraints of this study.

The peer average is used as a benchmark. It is not a sector-wide or national benchmark, but rather the arithmetic mean of the three hospitals. When $n = 3$, there is no statistically robust alternative measure of central tendency. In years when one of the hospitals under comparison exhibited outliers, particularly regarding the equity-to-debt ratio (2018: -4.20; 2020: -8.56) and ROE, the peer average did not adequately represent the central tendency of the group, as indicated in the relevant table headings and in Research Design and Purpose Section. The benchmark average should be regarded as a directional indicator rather than a normative reference point, and the commentary throughout the text has been presented accordingly.

Lack of operational and clinical data: The study focuses solely on financial ratios. No data on bed occupancy rates, patient numbers, staff numbers, or clinical quality indicators have been included. This limits the interpretation of changes in specific ratios and prevents an assessment of the relationship between financial deterioration and service quality outcomes.

Future Research

The most direct extension would be a multi-province panel study covering a representative sample of Group B public hospitals across Turkey. This research would enable formal statistical tests, inter-provincial comparisons, and the creation of national comparison series.

It would also include the application of stochastic frontier analysis or data envelopment analysis (Hollingsworth, 2008; Rosko, 2001). A difference-in-differences framework comparing hospitals that transitioned to the 2017 reform at different times could provide evidence approaching causality regarding the reform's financial impacts.

Specific methodological studies on inflation-adjusted rate series for Turkish public hospitals would significantly enrich the evidence base. Finally, as in the study by Nagendran et al. (2019), the empirical relationship between financial fragility and service quality outcomes in Turkish public hospitals remains a significant and under-researched topic.

CONCLUSION

This study has characterised and interpreted the financial performance of Group B state hospitals in Hatay Province, Turkey, over the 2015–2022 period, using thirteen financial ratios across four analytical dimensions and assessing the results in comparison with three similar institutions. The findings are consistent and thought-provoking. The hospital entered the study period in a state of limited financial sustainability. The current ratio was slightly above 1.00, equity was positive, albeit low, and the debt-to-assets ratio stood at 0.65. Eight years later, the hospital had reached a state of severe structural insolvency. The current ratio stood at 0.26, the equity-to-liabilities ratio at –0.78, the debt-to-assets ratio at 4.48, the cash position was effectively zero, and the return on assets was –2.17. The net profit margin was negative in six of the eight years. The gross profit margin turned negative in each of the three years most directly linked to structural shocks. The improvement in asset utilisation following 2020 can be attributed more to inflationary nominal revenue growth and capacity expansion than to a genuine recovery in efficiency.

Although they do not fully explain this situation, two structural events have shaped this process. The administrative reorganisation in 2017 did not leave a discernible positive fiscal footprint. This outcome is consistent with the expectation that governance reform, unaccompanied by price readjustments, cannot rectify structurally entrenched deficits. The COVID-19 pandemic acted as a factor that sharply accelerated this already well-advanced trend (Küçük, 2022; Wang et al., 2022). The parallel deterioration observed in the averages of similar institutions supports the interpretation that the observed trend is consistent with broader structural trends in the financing of Group B public hospitals in Turkey and does not stem from institution-specific mismanagement. Minsky's analytical framework provides a useful lens for interpreting these findings. The progression from marginal risk-hedging financing in 2015 to a Ponzi-scheme-like state of insolvency from 2016 onwards indicates that the continuation of operations depends on implicit public-sector external refinancing rather than institutional self-sufficiency. The hospital's financial position is characterised by a persistent inability to meet its liabilities without external support.

ROE (Return on Equity) anomalies, that is, mathematically positive values arising from the simultaneous occurrence of negative net income and negative equity, are themselves a diagnostic indicator of this Ponzi-style financing situation. Consequently, the policy implications are also structural in nature. These include a centralised liquidity system, equity recapitalisation, the systematic readjustment of Social Security Institution (SGK) prices, real-time financial oversight, and the incorporation of financial resilience requirements into pandemic preparedness planning.

These are not marginal adjustments to how the financing of public hospitals in Turkey is organised, monitored, and safeguarded, but fundamental restructuring measures. Without these measures, the trajectory documented here is likely to continue. Should this continue, the parties most exposed to the consequences will be patients dependent on Group B public hospitals for secondary care.

This study expands the scope of sustainability accounting by demonstrating that financial vulnerability must be treated as an integral dimension of public-sector sustainability assessment.

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TRANSPARENCY: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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DISCLOSURE OF AI USE: The author(s) used OpenAI's ChatGPT and its tool to edit and improve the text of some sections. All outputs have been reviewed and verified by the authors.

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