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Competition Impacts on the Financial Distress of Firms in the Healthcare Sector in India

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Abstract

Competition assures improved products and services to meet customers' needs. The soundness of a firm's financial health is crucial for the country's economic well-being. Distressed companies cause investor panic, which has a knock-on effect on the economy and leads to a deterioration in the image and value of the companies. This paper aims to empirically investigate the influence of competition on financial distress (FD) in the healthcare industry using the Altman Zscore values as the proxy for FD. This study uses secondary data from ten healthcare companies operating in India between 2016 and 2020. The study's findings indicate a significant negative relation with the exogenous variables of the study, implying that a higher level of competition enhances a firm's FD or adversely affects financial health. The main implication of the study is two-pronged. Firstly, the firms' managers and decision-makers need not worry about competition as a deterrent to stability. Secondly, the policymakers need not be concerned that high competition may lead to financial stress for the firms. Therefore, this paper concludes that competition is good for firms operating in India.

Keywords: Financial Distress, Competition, Healthcare, Firms, India

JEL Classification Code: G01, G18, G23

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1. Introduction

Measuring competition is becoming increasingly crucial in studying healthcare markets and policies. The breadth of potential issues under investigation, the scarcity of required data, and the rapid changes in healthcare financing and delivery make measuring competition in healthcare difficult (Baker, 2001). FD is a term used to describe a bad financial situation in which a company is confronted with liquidity issues and difficulties repaying outstanding debts, resulting in insolvency (Outecheve, 2007). A company is said to be in distress when it struggles to keep its liquidity and then loses the trust of its creditors (Foster, 1986). All of the incidents involving distressed companies raised queries in investors' minds. Investors begin to sidestep investing in companies, resulting in decreased economic investment. Disclosure concepts cannot be avoided while discussing distress (Srivastava & Rastogi, 2010).

The Indian economy's healthcare sector has been rapidly expanding. The rise in human health hazards caused by outbreaks of various diseases and viruses in recent years emphasizes the critical need to connect strategic thinking to health and management processes in a globalized world. Healthcare providers must adopt new approaches to remain competitive with other sector firms and stay in business. In

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January 2008, the Indian stock market experienced the first signs of the global financial crisis (Rastogi, 2013, 2014; Athaley et al., 2020; Rastogi & Kanoujiya, 2022; Rastogi et al., 2021; Kanoujiya et al., 2021). Competition impacts several relational perspectives in the healthcare industry, with numerous studies (Zwanziger & Melnick, 1996; Chassin, 1997) reporting the impact of increased competition. Rivers and Glover (2008) examined the relationship between competition and healthcare quality. Distressed companies have long been a source of concern in global economies.

The presence of FD influences how investors construct their portfolios. Investors avoid companies with a history of being distressed or are currently in a distressing situation. Shingade and Rastogi (2020) and Rastogi et al. (2020) believed that reducing asymmetrical information between the firm and stakeholders will help investors make more informed investment decisions and help corporations develop investor retention strategies. Before making any investment decision, investors thoroughly read the entire set of reports they rely on, including its financial statements and annual reports (Rastogi, 2014, 2015; Singh et al., 2020; Gautam et al., 2021). Competition and FD in the healthcare sector are considered in the literature present with many considerations, such as competition as a tool to enhance the quality of the products or services of the corporate firms (Gaynor, 2007; Rivers & Glover, 2008); key issues in competition measurement (Baker, 2001), the impact of competition on performance of the firms (Helms, 2001), and the influence of the competition on changes in the structure of the health care industry (Gaynor & Haas-Wilson, 1999; Schut, 1992).

Concerning the issue of FD, researchers have conducted studies on strategies used by healthcare leaders to prevent FD and improve organizational performance for sustainability (Musmar, 2016), the relationship between employee relations and the onset of FD (Kane et al., 2005), the strategies

used by healthcare leaders to prevent FD and improve organizational performance for sustainability (Mazumder & Miller, 2016; Monti & Garcia, 2020), and significant financial consequences due to the current healthcare finance system structure (Jacoby & Warren, 2006; Platt et al., 1995). However, none of the researchers has conducted a study that considered the influence of the competition on the FD of the firms in healthcare. This gap provides the authors to explore this area and derives novel results.

The study primarily helps healthcare firms analyze their financial health and take necessary steps to protect themselves from the adverse condition of being bankrupt or insolvent. Secondly, firms can understand how badly a distressing situation can impact a company’s whole image and the role of competition in financially distressed situations.

The study introduces the concepts of competition and FD, covering the conceptual model adopted for the study and explaining the literature available on the studies, which helps identify the gap and raises the study’s hypothesis in the second part. The paper’s third and fourth parts deal with data, methodology, and explanation of the empirical work results.

2. Literature Review

The current segment of the article is organized systematically; first, it highlights the theoretical concept used for the study using a conceptual model depicted in Figure 1. Then, it discusses in detail the critical studies available in the literature on the issues of competition and FD in the healthcare sector, highlights the gaps identified, and formulates the hypothesis for the study.

Figure 1 portrays the tactic implemented for the study to achieve the obtained results of the study. Figure 1 shows that the study has considered variables ZE (The Altman Zscore measures firms’ FD in emerging economies). Furthermore,

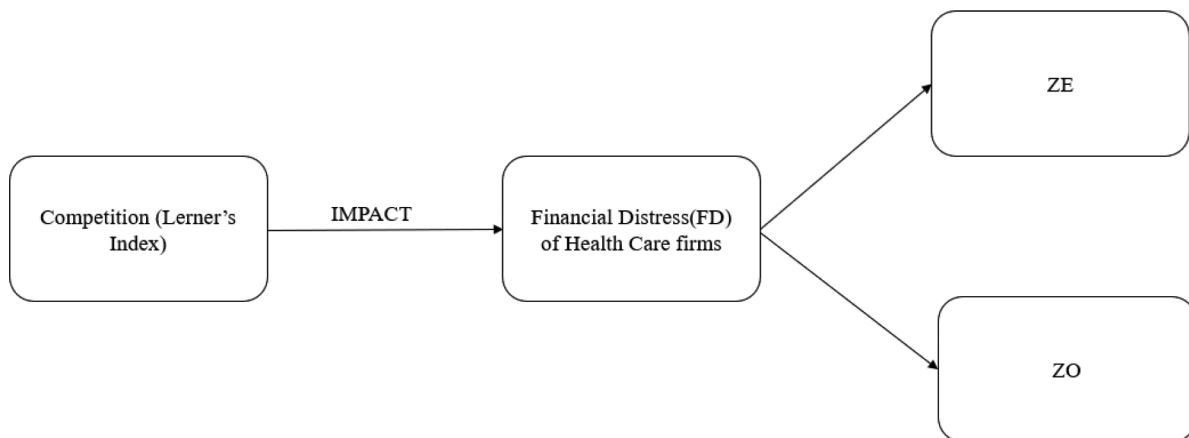


Figure 1: Conceptual Model

ZO (Altman Zscore initially developed it to measure FD). The Lerner index is used as the measure of the level of competition. A high value shows low competition as the proxy for knowing the FD of the healthcare firms. Being in FD is one of the prime reasons that reduce a company's value. Investors interested in investing in a company always focus on its performance in its respective industry. However, some business environments factors, such as FD or bankruptcy, harm the overall profile of firms, eventually worsening their situation because people are hesitant to invest their hard-earned money in distressed firms.

Literature abounds with examples of how competition, in and of itself, does not help. In bits and pieces, it may benefit some sectors while harming others, and as a whole, it is a net economic loss. Allen and Gale (2004) concluded that it is difficult to determine whether competition adds or depletes value because such generalization may not be practically possible. According to Alam et al. (2019), excessive competition can lead to solvency issues. Furthermore, there have been numerous instances where competition has failed for a few financial firms. Studies on competition and FD can be found in the literature. They are either empirical research on the influence of competition on the healthcare sector on enhancing the quality of the product/service (Gaynor, 2007; Rivers & Glover, 2008; Singh et al., 2022; Sharma et al., 2022; Rastogi et al., 2022;) or using competition as a measure to improve performance and structuring the healthcare sector (Helms, 2001; Gaynor & Haas-Wilson, 1999; Schut, 1992; Jadwani et al., 2022; Parkhi et al., 2022). However, no studies in the literature evaluate the competition impact on FD in healthcare firms. From this point of view, the study proves its novelty in the study conducted.

Very few studies are available in the literature on the issue of competition and FD, and studies that are available explore diverse concepts, which are presented in the section in detail. Helms (2001) discovered that market competition in healthcare markets effectively provides consumers with cost-effective healthcare and quality improvements but that current tax and payment policies in public programs do not allow competition's effects to reach their full potential. Gaynor (2007) found that effective leadership, training, skill development, and continuous learning can help improve performance and focus strategies to increase customer satisfaction. This was supported by Musmar (2016) and Monti and Garcia (2020). Schut (1992) analyzed the Dutch healthcare market and found that competition can improve performance outcomes of healthcare firms and suggested that policymakers should appropriately set game rules. Kane et al. (2005) found that employee relations are incrementally valuable for assessing the likelihood that firms will experience the onset of FD.

According to Mazumder and Miller's (2016) empirical research, healthcare changes have implications that go well

beyond the well-being of people who purchase insurance. Using data on individual bankruptcy filers, the hospital misbehavior model inadequately accounts for the FD that can accompany problems in the healthcare sector (Gaynor & Haas-Wilson, 1999; Schut, 1992). According to Platt et al. (1995), a company's revenues and assets must increase if it wants to retain its capital structure without selling further shares. Many private firms and the vast majority of firms in FD have limited or no access to debt markets. Most empirical evidence for Medicare patients shows that quality is higher in more competitive markets. The empirical findings for privately insured patients vary across studies (Gaynor, 2007; Rivers & Glover, 2008). Hirth (1997) outlined a competition theory between for-profit and nonprofit healthcare providers and concluded that firms in the healthcare sector should know how the competition has influenced ownership in the market.

Baker (2001) examined critical issues in measuring competition and intended to acquaint researchers and policymakers with the subject. Careful identification of the products and market areas to be studied and consideration of econometric problems are critical components of successful measurement. From the above studies, it is evident that even though the literature is available on competition and FD in the healthcare industry, but then none of the researchers have tried to focus on evaluating how the competition influences FD empirically, considering the gap identified by the detailed literature review, authors have formulated the hypothesis of the study.

H1: Competition has a significant impact on the financial distress of the healthcare firms.

3. Data and Methodology

3.1. Sources of Data and Variables Studied

This study works on the data of healthcare firms for five years (2016–2020). This period is critical for Indian firms due to the implementation of the Insolvency and Bankruptcy Code (2016) and several reforms in the present healthcare industry. The data is sourced from the CMIE Prowess database. The variables have an explanation in Table 1.

3.2. Methodology

As per Hsiao (2005) and Wooldridge (2010), this study applies the panel data analysis because it exhibits the features of cross-section and time series. Furthermore, the dynamic model is used to take advantage of both short-run and long-run effects (Wooldridge, 2010). The following model is developed to test the framed hypothesis:

Table 1: List of Variables

S. No.	Variables	Type	Code	Explanation	Citations
1.	Altman Zscore (FD in emerging economies)	DV	ZE	The Altman Zscore measures firms' FD in emerging economies.	Altman (1968), Pradhan (2014)
2.	Altman Zscore (FD original)	DV	ZO	It is the originally developed Altman Zscore for measuring FD	Altman (1968), Pradhan (2014)
3.	Competition (Lerner index)	EV	LI	It is used as a measure of the level of competition. A high value shows low competition.	Lerner (1934), Zhang et al. (2020)
4.	Market Capitalization	CV	l_mcap	It represents a firm's value and is assessed as a product of the number of a bank's equities by the current market price of the quality. The natural log value is taken.	Dias (2013), Jayadev (2013)
5.	Sales	CV	l_sales	It also indicates the firm's value. The amount of sales is taken in INR. The natural log of sales is used.	Jayadev (2013) Dias (2013)

DV, EV, and CV represent the dependent variable, explanatory variable, and control variable, respectively.

$$FD_{it} = \beta_1 FD_{it}(-1) + \beta_2 LI_{it} + \beta_3 l_mcapit + \beta_4 l_salesit + u_{it} \quad (1)$$

$$u_{it} = \mu_{it} + v_{it}$$

Where β_s are coefficients, FD is financial distress used as a dependent variable. It can take ZE or ZO as its proxies. LI is the Lerner index used as an explanatory variable indicating competition. l_mcap and l_sales are the control variable to keep the model a good fit (please refer to Table 1 for variable definitions). u_{it} is the error term that includes μ_{it} (individual effect) and v_{it} (regular error-term). 'it' signifies firm 'i' at time t . (-1) indicates lagged value.

3.3. Financial Distress

The firm's FD is proximate by Altman's Zscore (Altman, 1968), as we are using the sample of health firms in India. Therefore, the amended version of Zscore for emerging economies is employed (Pradhan, 2014). The model is given as follows:

$$ZE = 3.25 + 6.56E1 + 3.26E2 + 6.72E3 + 1.05E4 \quad (2)$$

Where:

- E1 = working capital/Total assets
- E2 = Retained Earnings/Total assets
- E3 = Operating income/total assets
- E4 = market value of total equity/book value of total liabilities

Classification:

- If $ZE > 2.6$, then safe firm
- If $1.1 < ZE < 2.6$, then the firm likely to be in FD

If $ZE < 1.1$, then the distressed firm
This study has also used the originally developed model by Altman (1968) for measuring FD. This Zscore (ZO) is used to test the robustness of the results. The model is given as follows:

$$ZO = 1.2E1 + 1.4E2 + 3.3E3 + 0.6E4 + 1.0E5 \quad (3)$$

E1, E2, E3, and E4 are the same as Eq. 2.

However, E5 = sales/total assets

Classification:

If $ZO > 2.67$, then safe firm

If $1.81 < ZO < 2.67$, then the firm likely to be in FD

If $ZO < 1.81$, then the distressed firm

3.4. Competition

The Lerner index (Lerner, 1934) quantifies the competition level. The following expression is used for the computation of competition level:

$$LI_{it} = (P_{it} - MC_{it})/P_{it} \quad (4)$$

Where P is the net profit, MC is the marginal cost proximate to the operating cost of the firm. LI represents the Lerner index. The higher value of LI shows a lower level of competition. 'it' is for firm 'i' and time 't.'

4. Results

4.1. Measures of Dispersion and Multicollinearity

Descriptive statistics of the variables are demonstrated in Table 2. ZE and ZO have mean values of 17.67 and 6.25, respectively. On average, it signals no FD risk in sample

Table 2: Measures Of Dispersion And Correlation Matrix

Correlation Matrix							
	ZE	ZO	LI	l_mcap	l_sales	Mean	SD
ZE	1					17.67	12.41
ZO	0.998*	1				6.25	6.72
LI	0.254	0.255	1			0.25	0.11
l_mcap	0.136	0.122	0.002	1		10.45	0.65
l_sales	0.000	-0.007	-0.66	0.475	1	8.70	0.79

*Indicates significance at 0.05.

Table 3: Dynamic Panel Data Model (Model 1)

DV: ZE (Financial Distress)			
	Co-efficient	Standard Error	p-value
ZE(-1)	0.003	0.021	0.862
LI	-6.847*	1.784	0.000
l_mcap	7.446*	1.706	0.000
l_sales	-4.643*	0.947	0.000
Sargan Test	4.033 (0.544)		
Arnello-Bond AR (1)	1.28 (0.238)		

Sargan test is the test of over-identification issues under the GMM framework. The null hypothesis of the Sargan test is that over-identification restrictions are valid in a dynamic panel data model. The Arnello-Bond test used in the analysis is for serial autocorrelation in the first differenced error terms of the order. (value) presents p-value * significant at a 5% level of significance. ZE(-1) shows a coefficient at 1 lag indicating the association of current ZE with previous ZE.

healthcare firms in India. LI has a mean value of 0.25, which is relatively low. Hence, it shows that healthcare firms in India are highly competitive. l_mcap and l_sales show a moderate firm value on average.

The correlation matrix (Table 2) shows a significant positive correlation (0.998) between ZE and ZO, but it is between exogenous variables. Other correlations are not found to be significant. Hence, the issue of multicollinearity does not exist (Wooldridge, 2010).

4.2. Dynamic Model Estimation

Table 3 portrays the results of the model. For the model's diagnostics, the Arellano-Bond test and the Sargan test confirm no autocorrelation and validity of overidentification

Table 4: Dynamic Panel Data Model (Model 2)

DV: ZO (Financial Distress)			
	Co-efficient	Standard Error	p-value
ZO(-1)	0.054*	0.018	0.003
LI	-5.436*	1.451	0.000
l_mcap	4.933*	0.917	0.000
l_sales	-3.010*	0.652	0.000
Sargan Test	5.140 (0.399)		
Arnello-Bond AR (1)	1.14 (0.252)		

Sargan test is the test of over-identification issues under the GMM framework. The null hypothesis of the Sargan test is that over-identification restrictions are valid in the dynamic panel data model. The Arnello-Bond test used in the analysis is for serial autocorrelation in the first differenced error terms of the order. (value) presents p-value * significant at a 5% level of significance. ZO(-1) shows a coefficient at 1 lag indicating the association of the current ZO with the previous ZO.

control, respectively (as having insignificant p-values > 0.05) (Baltagi, 2008). The coefficient of ZE(-1) is 0.0037 with an insignificant p-value (0.862 > 0.10). Hence, the current status of the firm's FD (ZE) is not affected by its previous FD status. LI has a negative and significant coefficient having a value of -6.847 with a p-value of 0.000. It indicates a negative relation of LI to Z. This implies that a higher level of competition enhances a firm's FD or adversely affects financial health. Both the control variables (l_mcap and l_sales) have a significant p-value of 0.000. However, l_mcap has a positive coefficient (7.446), and l_sales has a negative coefficient (-4.643).

On checking for ZO as FD (Table 4), the coefficient of ZO(-1) is negative (-0.0547) but significant with a p-value of 0.003. It indicates that previous financial stability negatively

impacts current financial stability. LI also shows a negative and significant coefficient (-5.436 with a p -value of 0.000). Hence, a negative connection between LI and ZO is found. Both control variables are significant. However, l_mcap has a positive coefficient (4.933), and l_sales has a negative coefficient (-3.010).

4.3. Robustness Test

In both cases of FD measure (ZE and ZO) (Table 3 and 4), similar results are found, indicating a negative relation of LI to Zscore (ZE and ZO). It gives enough evidence for the robustness of the results. Control variables also have similar outcomes in both cases.

5. Conclusion

The findings of the current paper are quite surprising. The coefficient of LI is negatively significant with the FD. This result implies that low competition (higher values of LI) leads to financial instability. In other words, more competition brings financial stability to the firms.

The findings are the main contribution of the study. This result is not seen in the literature. The main implication of the study is two-pronged. Firstly, the firms' managers and decision-makers need not worry about competition as a deterrent to stability. On the contrary, the findings of the current paper suggest that high competition increases financial stability in Indian firms. Secondly, the policymakers need not be concerned that high competition may lead to financial stress for the firms. Therefore, this paper concludes that competition is good for firms operating in India.

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