The impact of Covid-19 on the capital structure in emerging economies: evidence from India

Nisha Prakash

Symbiosis Institute of Business Management, Symbiosis International University, Bengaluru, India, and

Aditya Maheshwari and Aparna Hawaldar

Christ University, Bengaluru, India

Abstract

Purpose – Capital structure is an important corporate financing decision, particularly for companies in emerging economies. This paper attempts to understand whether the pandemic had any significant impact on the capital structure of companies in emerging economies. India being a prominent emerging economy is an ideal candidate for the analysis.

Design/methodology/approach – The study utilizes three leverage ratios in an extended market index, BSE500, for the period 2015–2021. The ratios considered are short-term leverage ratio (STLR), long-term leverage ratio (LTLR) and total leverage ratio (TLR). A dummy variable differentiates the pre-epidemic (2015–2019) and pandemic (2020–2021) period. Control variables are used to represent firm characteristics such as growth, tangibility, profit, size and liquidity. Dynamic panel data regression is employed to address endogeneity.

Findings – The findings point out that Covid-19 has had a significant, negative effect on LTLR, while the impact on STLR and TLR was insignificant. The findings indicate that companies based in a culturally risk-averse environment, such as India, would reduce the long-term debt to avoid bankruptcy in times of uncertainty.

Research limitations/implications – The study covers the impact of the pandemic on Indian companies. Hence, generalization of the findings to global context might not be valid.

Practical implications – To maintain economic growth in the post-crisis period, Indian policymakers should ensure accessibility to low-cost capital. The findings provide impetus to deepen the insignificant corporate bond market in India for future economic revival.

Originality/value – Developing countries are struggling to revive the economies postpandemic. This is particularly true for Asian economies which are heavily reliant on banks for survival. This research finds evidence to utilize bond market as a source of raising capital for economic revival.

Keywords Covid-19, Capital structure, Leverage, Bankruptcy risk, Debt, Emerging economies

Paper type Research paper

1. Introduction

Maintaining an optimal capital structure is a fundamental function of the corporate finance team. Companies vary in their approach to capital structure decision-making. The ideal capital structure is a much-debated area among academicians and practitioners. One view proposes the irrelevancy of capital structure in determining the value of a company while a contrary view shows how capital structure affects risk and hence the firm value. Determining the proportion of debt in capital structure is a critical decision for enterprises, particularly in

emerging economies. Though debt is a cheaper form of capital offering tax benefits, higher debt reduces the liquidity of companies making it difficult to survive during contractions.

Capital structure theories on optimum capital structure have garnered much attention from academicians and practitioners alike since the seminal work conducted by Modigliani and Miller (1958, 1963). Extensive research has been carried out to understand the factors impacting the capital structure of companies. Empirical studies have reaffirmed that firm characteristics, the institutional settings and the macroeconomic uncertainty are strong influencers of capital structure (Demirgüç-Kunt and Maksimovic, 1999; Graham *et al.*, 2015). The approach to capital structure and leverage also differs between countries based on their risk appetite.

Empirical studies indicate that an external macroeconomic or financial uncertainty will influence the capital structure of companies in diverse ways (Kenc and Dibooglu, 2010; Atici and Gursoy, 2011). Generally, during any crisis, expected returns will weaken as risk and uncertainty increase. The borrowers and lenders become hesitant to advance funds for long-term projects. Considering the higher probabilities of default during a crisis, the lenders would demand a higher term premium on their lending. This high-cost of long-term borrowing makes them less appealing compared to short-term borrowing (Demirgüç-Kunt *et al.*, 2020). According to the economic theory, the degree of impact of any external shock on the leverage of companies depends on the features of the financial systems of that country as well as on the institutional ecosystem in which the companies function. Whenever there are higher uncertainty and risk, the reduction of debt maturities and the resultant change in leverage is most likely to occur in ecosystems where bankruptcy laws and procedures are expensive. As the risk or uncertainty build-up and business potentials become more and more ambiguous, the companies may also desire to reduce their debt (Demirgüç-Kunt *et al.*, 2020). Consequently, during period of turbulent economy there may be a drop in debt levels.

While research on the capital structure decisions during uncertainty in developed markets has been extensive (de Jong *et al.*, 2008; Rajan and Zingales, 1995), research in the context of emerging economies is still nascent. The debt levels of emerging economies are fast approaching that of the developed countries. The findings of the developed economies cannot be extended to emerging markets as the dynamics, practices and the approach to capital structure decisions are distinct. Researchers argue that the capital structure decisions could be influenced by the regulatory framework, tax systems and corporate governance requirements (Bhaduri, 2002). Hence, it is essential to study individual economies rather than aggregating as a group. This study analyses the capital structure decisions in the Indian context. Postliberalization of 1991, Indian companies overleveraged to raise capital to meet market requirements (Dawar, 2014; Ganguli, 2013). The pandemic raised many questions about how the economic and financial uncertainty affects corporate decision-making. This study attempts to answer one of these questions: whether the pandemic had a significant impact on the capital structure of Indian companies? The study considers nonfinancial companies included in BSE Sensex 500 index.

This research enhances the literature by developing an understanding of how the pandemic impacted the capital structure of Indian-listed nonfinancial companies and attempts to identify changes in leverage ratio during uncertainty. The paper is organized into sections covering literature review, research methodology, results, discussion and conclusion.

2. Theoretical framework and literature review

In this paper, we attempt to understand whether the companies responded differently to its short-term debt (STD) and long-term debt (LTD) decisions during the pandemic. This section briefly explains the theories followed by the empirical studies, which explain the factors influencing capital structure decisions.

2.1 Theoretical framework

Initiated by Modigliani and Miller (MM) (1958), the current framework for understanding the factors influencing debt levels was set by the pioneering work conducted by many researchers. Popularly called MM theory, the initial theory postulates that if one excludes the influence of taxes, information asymmetries and transaction costs, the capital structure does not influence the firm value. They concluded that the value of a firm under these conditions remain the same whether the firm is unleveraged or leveraged. The absence of taxes made the initial model unrealistic. In subsequent studies, the researchers introduced modified MM models including the impact of tax (Miller, 1977; Modigliani and Miller, 1963). The tax-based models recommend profitable companies to raise more debt as the presence of debt was found to enhance the firm value. MM models became popular for its optimal capital structure at which the cost of financing was the lowest.

The theories to explain capital structure can be grouped into two broad approaches, namely, trade-off theory and pecking order theory. Each theory explains the decision between debt and equity by understanding its effect on firm value from different viewpoints. Trade-off theory suggests that optimal capital structure would depend on the balancing of firm costs and debt benefits. For instance, the classical trade-off theory weighed the tax shield of debt with bankruptcy costs to determine the optimal debt levels (Kraus and Litzenberger, 1973). According to this theory, the optimal debt level is when the tax benefits of debt neutralize the cost of bankruptcy. Copeland and Weston (1983) also argued that bankruptcy cost could be used to explain the differences in capital structure. Another variation of trade-off theory postulates that the agency structure and related costs would have a significant influence on the capital structure (Jensen and Meckling, 1976). This theory identified the possibility of disputes between the shareholders and their agents. Jensen (1986) proposed that the agency cost can be reduced by issuing equity to managers or raising the volume of debt in the capital structure.

Another approach to explain the capital structure was based on information differences between different stakeholders (Leland and Pyle, 1977). Pecking order theory utilized the concept of information asymmetries to explain the capital structure (Myers and Majluf, 1984). The capital structure can be viewed as an indication given by manager to investors or as a way of reducing inefficiencies due to information asymmetry. According to this theory, companies prefer internal sources, debt and equity in that order to minimize the cost of information asymmetries. Harris and Raviv (Harris and Raviv, 1990) extended the information asymmetry to suggest that debt acts as a disciplining device for managers. The assumption of this theory is that managers are reluctant to publicize information detrimental to their position. In case of debt default, the firm is forced into liquidation which makes information publicly available, reducing the asymmetry. Information asymmetry has also been used by researchers (Diamond, 1989; Hirschleifer and Thakor, 1989) to explain the preference for debt or equity for specific projects. Management typically prefers debt to finance high risk projects, instead of equity financing. As companies mature, their credit ratings improve which lowers the cost of debt. Therefore, the researchers argued that younger firms will have lower debt compared to older ones.

In spite of the large volume of theoretical and analytical studies testing these theories in different geographies and contexts, no agreement has been reached on their relevance. The results are inconclusive and indicate that the relevance of these theories is highly contextual (Graham, 2000; Leary and Roberts, 2010).

2.2 Literature review

Several empirical studies have linked capital structure to internal and external factors. This section provides a brief outline of the empirical studies covering capital structure and its determinants. In this paper, we adopt the view followed by the existing literature that the

preference between the different financing options depends on firm characteristics. The primary factors suggested by the literature are asset tangibility, tax levels, size, profitability, growth, liquidity, cash flow and the industry (DeAngelo and Masulis, 1980; Rajan and Zingales, 1995; Stulz, 1990; Titman and Wessels, 1988). Since we are doing a country-specific study, we exclude the tax levels in our analysis.

Asset tangibility refers to the proportion of fixed assets in the asset side of the balance sheet. Tangible assets can be used as collateral for raising debt which can lower the financing cost (Myers, 1977). During insolvency, intangible assets such as goodwill face value erosion and hence debt holders will demand lower risk premiums from companies with higher tangible assets. Following trade-off theory, the lower cost of financing suggests that leverage levels should increase with asset tangibility. Jensen and Meckling's agency theory supports this hypothesis as firms with low tangible assets in their balance sheet would increase agency cost of debt (Jensen and Meckling, 1978). Hence, the financing cost of companies with low asset tangibility will be high due to the higher cost of debt linked to weak collateral or higher reliance on equity (Scott, 1977). Companies with higher tangible assets would also find it easier to raise capital through banking debt or other external financing source (Sbeti and Moosa, 2012). Researchers also note that firms with higher tangible assets will have better liquidation value, which further reduces the risk to debt holders (Harris and Raviv, 1990; Titman and Wessels, 1988). Empirical evidence also suggests a positive relationship between LTD and tangibility, i.e. companies with higher proportion of tangible assets have higher proportion of debt in their capital structure (Hall *et al.*, 2000; Michaelas *et al.*, 1999; Scott, 1977; Titman and Wessels, 1988). The existing evidence is inconclusive on the impact of asset tangibility on STD with some researchers reporting a positive impact (Esperança and Matias, 2005; Michaelas *et al.*, 1999) while others a negative one (Hall *et al.*, 2000). The positive relation between asset tangibility and capital structure is prominent in emerging economies. Creditors demand tangible collaterals in these economies as the credit protection regulations are generally weak (Porta *et al.*, 1998). In line with the existing theories and empirical evidence, we expect asset tangibility to have a positive impact on leverage.

H1. Asset tangibility has a significant positive impact on long-term leverage.

H2. Asset tangibility has no significant impact on short-term leverage.

The size of a company is another factor that influences its capital structure. Several researchers have studies on the significance of this relationship (Hall *et al.*, 2000; Harris and Raviv, 1991). Empirical findings indicate a positive influence of firm size on their debt levels (Titman and Wessels, 1988). Further studies have established firm size has a positive relationship with LTD and a negative one with STD (Esperança and Matias, 2005; Hall *et al.*, 2000). According to Warner (1977), size of a company determines its transactional costs with external entities – larger the size, lower the transactional cost. According to trade-off theory, the higher transactional costs make it harder for the smaller companies to raise capital through debt (Ang *et al.*, 1982). From the bankruptcy point of view, larger companies are typically better diversified with a lower chance of insolvency (Ang *et al.*, 1982; Pettit and Singer, 1985). The lower risks reduce the cost of debt for larger companies, making debt an attractive financing option for such companies (Titman and Wessels, 1988). Also, higher transparency requirements from regulators improve the creditworthiness of larger companies, thereby further lowering the cost of raising debt (Diamond, 1989; Rajan and Zingales, 1995). Based on the earlier arguments, we expect the firm size to have a positive influence on leverage.

H3. Size of a company has a significant positive impact on long-term leverage.

H4. Size of a company has a significant impact on short-term leverage.

The pecking order theory (Myers, 1984) suggests that a profitable company would substitute external debt with internal funds. This suggests that profitable companies would have lower levels of debt, ceteris paribus. Having said that, if the choice is between debt and external equity (non-proprietary), they would still prefer debt because of its lower cost. Raising capital through debt also avoids potential dilution of ownership. Profitable companies have a lower chance of bankruptcy. Hence, in contrast to the pecking order, trade-off theory proposes a positive relationship between profitability and leverage (Fama and French, 2002). Financially stable companies reporting consistent profits will have higher flexibility to raise capital through debt to avail tax shield benefits (Frank and Goyal, 2003). Research also indicates that creditors prefer giving loans to profitable companies, especially in developing economies (Rajan and Zingales, 1995). Based on the empirical evidence, the relationship between profitability and capital structure is inconclusive.

H5. Profitability has no significant impact on long-term leverage.

H6. Profitability has no significant impact on short-term leverage.

Though growth of an investment or a project leads to improved sales or/and profits, its impact on capital structure is inconclusive based on past studies (Abu Mouamer, 2011). According to Ross (1977), the future growth opportunities should increase leverage as the creditors would be willing to offer favourable terms of credit. This theory was supported by subsequent empirical studies (Jensen, 1986; Stulz, 1990). A contrarian view was presented by Hovakimian *et al.* (2001) according to which profitable companies would finance growth through retained earnings rather than through external debt. This theory was in line with some of the existing literature connecting profitability and capital structure (Myers, 1977; Myers and Majluf, 1984; Rajan and Zingales, 1995). Myers argued that investment in growth would increase the agency cost of debt, lowering external-borrowing. Hence, high-growth firms would retain financial flexibility which will enable them to raise further capital in the future, indicating that high-growth firms would prefer equity over debt. It would be unlikely that high growth companies raise capital through debt due to the attached *ex ante* distress costs, e.g. higher borrowing costs (Harris and Raviv, 1991). The higher risks involved with high-growth companies would raise costs of debt making it less attractive. However, the contradicting findings suggest that the dependence of debt on growth opportunities requires specific investigation on the context studied.

H7. Growth opportunities have no significant impact on long-term leverage.

H8. Growth opportunities have no significant impact on short-term leverage.

The impact of liquidity on capital structure is another area of interest for researchers. Empirical studies indicate a positive relationship between debt and liquidity (Ozkan, 2001). This relationship is usually explained in literature using the agency theory. Companies with lower liquidity would face higher chances of liquidation and hence have higher bankruptcy costs. According to the agency theory, the higher bankruptcy cost advances the agency cost and decreases the debt financing threshold accessible to firms (Myers and Rajan, 1998). Considering the above, the researchers expect a positive relationship between liquidity and debt level.

H9. Liquidity has a significant positive impact on long-term leverage.

H10. Liquidity has a significant positive impact on short-term leverage.

The primary concern for corporates during any unexpected crisis is the increased possibility of financial distress. According to researchers, the costs linked to bankruptcy were a primary reason for the difference in debt levels between firms (Copeland and Weston, 1983).

Theoretical models suggest an optimal capital structure by considering the benefits and costs of leverage. Following this principle, when bankruptcy risk and costs increase, the optimal capital structure will shift in favour of equity (Kraus and Litzenberger, 1973). Research shows a similar behaviour during the past crises, during which companies consistently reduced leverage to address the higher bankruptcy costs. For instance, debt ratios in Portugal showed a downward tendency during the financial crisis of 2018 (Proença *et al.*, 2014). Given the current economic crisis triggered by Covid-19 across economies, this paper investigates whether the pandemic had an impact on the financing decisions of companies in India.

H11. Pandemic had a significant negative impact on total leverage.

H12. Pandemic had a significant negative impact on long-term leverage.

H13. Pandemic had a significant negative impact on short-term leverage.

Literature during the pandemic years have focused on the challenges faced by organizations in maintaining the target leverage ratio (Vo *et al.*, 2022), impact of the capital structure on firm survival during crisis (Arianpoor and Tajdar, 2022) and the capital structure and its impact on firm recovery strategies (Yost *et al.*, 2021). As organizations stayed away from debt, researchers also explored non-conventional sources of capital such as crowdfunding to raise capital during crisis years. A few country-specific studies have analysed the impact of the pandemic on the capital structure of enterprises. The findings of these studies are varied depending on the country characteristics. For instance, empirical studies conducted on European countries have shown a significant increase in debt levels during 2020 while no significant changes in debt levels were reported in a few other countries. Hence, it is essential to conduct country-specific studies to understand the impact of pandemic on the capital structure.

3. Research methodology
Based on the theoretical framework and empirical studies, we have considered firm-specific growth, tangibility, size, profitability and liquidity. A dummy variable is used to differentiate between the pre-pandemic and pandemic period. The variables used for the study are described in Table 1.

To understand the impact of Covid-19 on the leverage ratio, we consider the firm-specific characteristics of the constituents of an index, BSE 500. BSE 500 represents about 93% of the US$3.5tn market capitalization of Bombay Stock Exchange (BSE). BSE is the eighth largest stock exchange in the world. BSE 500 covers all the major industries of the Indian economy and hence is representative of corporate India as existing research shows that the basis of capital structure decisions during crisis remains consistent across markets with similar institutional characteristics (Alves and Francisco, 2015; Harrison and Widjaja, 2014). Hence, the findings of this study can be generalized and applicable to emerging economies similar to India.

Financial institutions are excluded because of their particular characteristics (King and Santor, 2008). The period considered for analysis is 2015–2020. The descriptive statistics are provided in Table 2. Debt formed only 25% of the assets, on average. It could be due to the shallow debt market in India which makes it difficult for companies to raise capital through debt instruments. The companies are heavily reliant on banks for raising debt capital. With the central bank tightening regulations around non-performing assets, banks are reluctant to give loans to companies.

3.1 Modelling
We have constructed three unbalanced panel data regression models. Each of these models would assess the impact of the pandemic on one of the three leverage ratios, namely, TLR,

Variables	Units	Definition
Dependent variables		
TLR	Ratio	Total debt/total assets
STLR	Ratio	Short-term debt/total assets
LTLR	Ratio	Long-term debt/total assets
Independent variables		
Growth	Ratio	Tobin's Q is used as the measure of growth. It is calculated as the ratio of the market value of assets to its book value
Tangibility	Ratio	Ratio of gross block, i.e. book value of plant and machinery to total assets is used as a proxy of tangibility
Size	INR (ln)	Total assets in Indian Rupee after log transformation is used to represent the size of the company
Profitability	%	Return on assets
Liquidity	Ratio	Total current assets/total current liabilities
Covid-19	Dummy	To differentiate between pre-epidemic and epidemic periods
Source(s): Author's Analysis		

Table 1.
Variables used for
analysis

Variable	Mean	Median	Maximum	Minimum	SD	Obs.
TLR	0.2017	0.1493	1.7439	0.0000	0.2131	2,664
STLR	0.0714	0.0385	1.3543	0.0000	0.0973	2,664
LTLR	0.1303	0.0511	1.6969	0.0000	0.1762	2,664
Growth	44.23	29.76	2715.54	−1358.77	93.72	2,664
Tangibility	0.5531	0.5546	1.0000	0.0000	0.2416	2,664
Size	8.9690	8.7568	14.3073	−11.5129	1.7064	2,664
Profitability	0.0693	0.0573	2.8984	−1.0632	0.0955	2,664
Liquidity	1.7675	1.3722	58.5519	0.0000	2.2436	2,664
Source(s): Authors' analysis						

Table 2.
Descriptive statistics of
the variables

STLR and LTLR. However, endogeneity is a recurring problem in corporate financial data analysis. To account for endogeneity, this study utilizes a dynamic panel data regression model, a technique commonly employed in literature. Following the prevailing literature on the regressors of leverage, the dynamic panel data model can be written as follows:

$$\text{Capital Structure}(t) = f(\text{Capital Structure}(t-1), \text{Growth, Tangibility, Size,} \\ \text{Profitability, Liquidity, Covid} - 19) \tag{1}$$

Substituting the capital structure variables – TLR, LTLR and STLR – in (1), the models can be rewritten as follows:

$$\text{R1}: \text{TLR}_t = f(\text{TLR}_{t-1}, \text{Growth, Tangibility, Size, Profitability, Liquidity, Covid} - 19) \tag{2}$$

$$\text{R2}: \text{STLR}_t = f(\text{STLR}_{t-1}, \text{Growth, Tangibility, Size, Profitability, Liquidity, Covid} - 19) \tag{3}$$

$$\text{R3}: \text{LTLR}_t = f(\text{LTLR}_{t-1}, \text{Growth, Tangibility, Size, Profitability, Liquidity, Covid} - 19) \tag{4}$$

An appropriate diagnostic test was run to check for model fit and stability.

4. Results

The results of the Levin–Lin–Chu unit-root test are provided in Table 3 (Levin *et al.*, 2002). We reject the null hypothesis of non-stationarity and conclude that all the variables are stationary at level. We can now proceed to establish the long-term relationship between TLR and the independent variables.

The correlation between the variables given in Table 4 shows the absence of multicollinearity.

Now, we move to Step 3 i.e. building a dynamic unbalanced panel data regression model to determine the influence of Covid-19 on the leverage ratios. For each regression, we conduct the Hausman test to determine whether to consider fixed or random effect estimation models. The null hypothesis of the Hausman test is that the appropriate model is the random effect model (Hausman, 1978). Depending on the p-value of the Hausman test, we proceed with a fixed- or random-effect model. According to the chi-square statistic and the p-value of the Hausman test as given in Table 5, we reject the null hypothesis for regressions R1, R2 and R3 and proceed with the fixed effect estimation model.

The results of the fixed effect models are provided in Table 6. Table 7 provides a summary of hypothesis testing.

Variables	LLC statistic$^{\downarrow}$ (at level)
TLR	-85.51^{***} (0.0000)
STLR	-60.75^{***} (0.0000)
LTLR	-444.56^{***} (0.0000)
Growth	-34.00^{***} (0.0000)
Tangibility	-69.62^{***} (0.0000)
Size	-41.97^{***} (0.0000)
Profitability	-79.53^{***} (0.0000)
Liquidity	-57.70^{***} (0.0000)
Note(s): $^{\downarrow}$Levin–Lin–Chu statistic with the p-value in bracket; $^{***}p < 0.01$	
Source(s): Authors' analysis	

Table 3. Results of Levin, Lin and Chu unit root test at level

	Growth	Tangibility	Size	Profitability	Liquidity
Growth	1				
Tangibility	-0.1114	1			
Size	-0.1062	0.4252	1		
Profitability	0.1605	-0.2544	-0.2549	1	
Liquidity	0.0209	-0.2826	-0.1603	0.1779	1
Source(s): Authors' analysis					

Table 4. Correlation matrix

Regression	Chi-sq statistic	p-value	R^2 – fixed	R^2 – random	Final model
R1	712.14	0.0000	0.9356	0.8775	Fixed effect
R2	335.95	0.0000	0.7821	0.7013	Fixed effect
R3	772.63	0.0000	0.9127	0.8562	Fixed effect
Source(s): Authors' analysis					

Table 5. Hausman test result for the three-unbalanced panel data regression models

Unbalanced panel: $N = 433$, $T = 6$
Number of observations: 2,273

Independent variables	TLR (R1)	Dependent variable STLR (R2)	LTLR (R3)
Lag of dependent	0.4558*** (0.0000)	0.4221*** (0.0000)	0.3881*** (0.0000)
Growth	8.6E−06 (0.5946)	−3.02E−06 (0.8235)	1.14E−05 (0.4628)
Tangibility	0.0948*** (0.0000)	−0.0350** (0.0267)	0.1312*** (0.0000)
Size	0.0465*** (0.0000)	0.0098** (0.0473)	0.0396*** (0.0000)
Profitability	−0.1235*** (0.0000)	−0.0990*** (0.0000)	−0.0237 (0.1645)
Liquidity	0.0020** (0.0265)	−0.0033*** (0.0000)	0.0050*** (0.0000)
Covid-19	−0.0278*** (0.0000)	−0.0119*** (0.0000)	−0.0173*** (0.0000)
		Diagnostic test statistic (p-value)	
R-squared	0.3039	0.1712	0.2129
F-statistic (p-value)	114.34*** (0.0000)	54.11*** (0.0000)	70.85*** (0.0000)
Durbin–Watson statistic	2.0782 (0.9693)	2.0839 (0.9775)	2.0878 (0.9821)

Note(s): ***$p < 0.01$; **$p < 0.05$
Source(s): Authors' analysis

Table 6.
Dynamic panel data
regression results

Hypothesis	Result
H1: Asset tangibility has a significant positive impact on long-term leverage	Accepted
H2: Asset tangibility has no significant impact on short-term leverage	Rejected
H3: Size of a company has a significant positive impact on long-term leverage	Accepted
H4: Size of a company has a significant impact on short-term leverage	Accepted
H5: Profitability has no significant impact on long-term leverage	Accepted
H6: Profitability has no significant impact on short-term leverage	Rejected
H7: Growth opportunities have no significant impact on long-term leverage	Accepted
H8: Growth opportunities have no significant impact on short-term leverage	Accepted
H9: Liquidity has a significant positive impact on long-term leverage	Accepted
H10: Liquidity has a significant positive impact on short-term leverage	Rejected
H11: Pandemic had a significant negative impact on total leverage	Accepted
H12: Pandemic had a significant negative impact on long-term leverage	Accepted
H13: Pandemic had a significant negative impact on short-term leverage	Accepted

Source(s): Authors' Analysis

Table 7.
Summary of findings

5. Discussion

The regression models strongly suggest the reduction of debt levels by Indian companies during the pandemic. Consistent with our earlier expectations, any uncertainty reduces the confidence of companies to undertake capital expenditure projects. Further, companies would tend to pay back their debt to avoid bankruptcy during worsening times. The findings are in agreement with existing literature which suggests that bankruptcy costs have a strong influence on the leverage of companies (Copeland and Weston, 1983; Kraus and Litzenberger, 1973). The results are also in agreement with empirical studies conducted during the 2008 financial crisis (Proença et al., 2014). Companies in India are heavily reliant on banks for raising capital; hence, debt is the primary choice of capital for future expansion. The preference of debt over equity is in agreement with the pecking order theory and other empirical studies.

Future growth opportunities are not a significant determinant of leverage. Companies with tangible assets are expected to lean towards debt as fixed assets are worth more than intangible assets during liquidation (Huang, 2006; Williamson, 1988). As expected, results

indicate that tangibility has a significant positive impact on the long-term debt preference of Indian companies. Companies with more fixed assets can use it as security to borrow debts which will reduce the borrowing costs, i.e. asset tangibility reduces the agency cost of debt making them more attractive. Hence, our results are in agreement with the agency theory (Jensen and Meckling, 1978). It also supports some of the empirical studies in the literature (Rajan and Zingales, 1995). Interestingly, the results indicate that collateral is a necessity for long-term borrowing in India. Similar to tangibility, firm size also has a positive influence on leverage, though not significant. The results support the findings of previous studies (Wald, 1999). Return on assets has a significant, negative impact on debt levels, i.e. profitable companies tend to prefer equity over debt in India. Companies reporting consistent profits would find it easy to attract equity investors. The results are in line with existing literature (Friend and Lang, 1988; Jensen, 1986; Wiwattanakantang, 1999). However, the impact is significant only for short-term leverage. Liquidity has a positive impact on long-term leverage and negative for short-term leverage. The reliance on external debt for short-term needs would be lower for liquid companies, whereas liquidity increases the credit worthiness for raising long-term debt. To summarize, the debt levels of companies in India are positively impacted by asset tangibility, size and liquidity, while profitability tends to lower leverage. In addition to all the control variables, an external crisis such as Covid-19 significantly lowers debt levels.

6. Policy implications

For consistent growth and development, it is essential to ensure that economies remain robust. Companies are major contributors in rebuilding economies post the pandemic. Hence, policies should cater to ensure their smooth operations and performance. One of the factors which impact the performance of companies is their capital structure decisions, both for long-term and short-term investments. These decisions are crucial, particularly during uncertainty as the natural tendency of firms is to postpone their capital purchase decisions and pay back debt to avoid bankruptcy. Our results provide empirical proof that Covid-19 had a significant impact on the debt levels of Indian companies. This bankruptcy-aversion behaviour could be troublesome for policymakers in developing economies recovering from the pandemic. Companies would need to be incentivized to raise capital for future growth. Increased government expenditure in the form of subsidies and loans during the initial phase of the pandemic received lacklustre response. Companies were uncertain about the extent and longevity of the crisis and hence put all expansion plans at bay. After almost two years since the first wave, there is now a general acceptance that business can go back to usual. Availability of cheaper forms of capital becomes key to boost investments. In this regard, the policymakers should look at alternative forms of raising debt, in addition to bank loans. The corporate bond market could be an attractive alternative. For a smoother revival of the economy, Indian policy makers should look at the proposals to deepen the corporate bond market.

7. Conclusion and limitations

Considering the importance of emerging economies to global trade, it is critical to ensure their access to cheaper sources of capital. Hence, further investigation into the leverage decisions of companies in emerging economies is essential. Traditional theories have tried to explain the factors influencing the optimal capital structure of companies in emerging economies. However, the literature is weak on how the preference between debt and equity of these companies changes during a crisis. The main objective of this study is to ascertain how the approach of companies towards debt in a prominent emerging economy changes during a

global crisis such as Covid-19. The results of this study show that companies shift away from debt, thereby reducing the leverage ratio during a crisis. Despite the findings being significant in the Indian context, the authors are cognizant of the limitations of the study. The study focuses on an emerging economy; hence, the generalization of its results in the global context might not be relevant. Recent literature has also shown that the impact of the pandemic on capital structure depends on country characteristics. For instance, the dependence of an economy on debt financing influences the impact of crisis on capital structure. Hence, further research can focus on how country characteristics influence the financing decisions during a global crisis.

References

Abu Mouamer, F.M. (2011), "The determinants of capital structure of Palestine-listed companies", *Journal of Risk Finance*, Vol. 12 No. 3, pp. 226-241.

Alves, P. and Francisco, P. (2015), "The impact of institutional environment on the capital structure of firms during recent financial crises", *The Quarterly Review of Economics and Finance*, Vol. 57, pp. 129-146, doi: 10.1016/j.qref.2014.12.001.

Ang, J.S., Chua, J.H. and McConnell, J.J. (1982), "The administrative costs of corporate bankruptcy: a note", *The Journal of Finance*, Vol. 37 No. 1, pp. 219-226.

Arianpoor, A. and Tajdar, S.S.N. (2022), "The relationship between firm risk, capital structure, cost of equity capital, and social and environmental sustainability during the COVID-19 pandemic", *Journal of Facilities Management*, Vol. ahead-of-print No. ahead-of-print.

Atici, G. and Gursoy, G. (2011), "Financial crises and capital buffer: evidence from the Turkish banking sector", *Business Perspectives, Banks and Bank Systems International Research Journal*, Vol. 6 No. 1.

Bhaduri, S.N. (2002), "Determinants of capital structure choice: a study of the Indian corporate sector", *Applied Financial Economics*, Vol. 12 No. 9, pp. 655-665, doi: 10.1080/09603100010017705.

Copeland, T.E. and Weston, J.F. (1983), *Financial Theory and Corporate Policy*, Addison Wes-Ley, Reading, MA.

Dawar, V. (2014), "Agency theory, capital structure and firm performance: some Indian evidence", *Managerial Finance*, Vol. 40 No. 12, pp. 1190-1206, doi: 10.1108/MF-10-2013-0275.

de Jong, A., Kabir, R. and Nguyen, T.T. (2008), "Capital structure around the world: the roles of firm-and country-specific determinants", *Journal of Banking & Finance*, Vol. 32 No. 9, pp. 1954-1969, doi: 10.1016/j.jbankfin.2007.12.034.

DeAngelo, H. and Masulis, R.W. (1980), "Optimal capital structure under corporate and personal taxation", *Journal of Financial Economics*, Vol. 8 No. 1, pp. 3-29.

Demirgüç-Kunt, A. and Maksimovic, V. (1999), "Institutions, financial markets, and firm debt maturity", *Journal of Financial Economics*, Vol. 54 No. 3, pp. 295-336, doi: 10.1016/S0304-405X(99)00039-2.

Demirgüç-Kunt, A., Martinez Peria, M.S. and Tressel, T. (2020), "The global financial crisis and the capital structure of firms: was the impact more severe among SMEs and non-listed firms?", *Journal of Corporate Finance*, Vol. 60, 101514, doi: 10.1016/j.jcorpfin.2019.101514.

Diamond, D.W. (1989), "Reputation acquisition in debt markets", *Journal of Political Economy*, Vol. 97 No. 4, pp. 828-862, doi: 10.1086/261630.

Esperança, J. and Matias, F. (2005), "Finanças Empresariais", *Dom Quixote*.

Fama, E.F. and French, K.R. (2002), "Testing trade-off and pecking order predictions about dividends and debt", *The Review of Financial Studies*, Vol. 15 No. 1, pp. 1-33.

Frank, M.Z. and Goyal, V.K. (2003), "Testing the pecking order theory of capital structure", *Journal of Financial Economics*, Vol. 67 No. 2, pp. 217-248.

Friend, I. and Lang, L.H.P. (1988), "An empirical test of the impact of managerial self-interest on corporate capital structure", *The Journal of Finance*, Vol. 43 No. 2, pp. 271-281.

Ganguli, S.K. (2013), "Capital structure – does ownership structure matter? Theory and Indian evidence", *Studies in Economics and Finance*, Vol. 30 No. 1, pp. 56-72, doi: 10.1108/10867371311300982.

Graham, J.R. (2000), "How big are the tax benefits of debt?", *The Journal of Finance*, Vol. 55 No. 5, pp. 1901-1941, doi: 10.1111/0022-1082.00277.

Graham, J.R., Leary, M.T. and Roberts, M.R. (2015), "A century of capital structure: the leveraging of corporate America", *Journal of Financial Economics*, Vol. 118 No. 3, pp. 658-683, doi: 10.1016/j.jfineco.2014.08.005.

Hall, G., Hutchinson, P. and Michaelas, N. (2000), "Industry effects on the determinants of unquoted SMEs' capital structure", *International Journal of the Economics of Business*, Vol. 7 No. 3, pp. 297-312.

Harris, M. and Raviv, A. (1990), "Capital structure and the informational role of debt", *The Journal of Finance*, Vol. 45 No. 2, pp. 321-349, doi: 10.1111/j.1540-6261.1990.tb03693.x.

Harris, M. and Raviv, A. (1991), "The theory of capital structure", *The Journal of Finance*, Vol. 46 No. 1, pp. 297-355.

Harrison, B. and Widjaja, T.W. (2014), "The determinants of capital structure: comparison between before and after financial crisis", *Economic Issues*, Vol. 19 No. 2, pp. 55-82.

Hausman, J.A. (1978), "Specification tests in econometrics", *Econometrica: Journal of the Econometric Society*, pp. 1251-1271.

Hirschleifer, D.I. and Thakor, A. (1989), "Managerial reputation, project choice and dept", Working Paper, Anderson Graduate School of Management at UCLA, pp. 14-89.

Hovakimian, A., Opler, T. and Titman, S. (2001), "The debt-equity choice", *Journal of Financial and Quantitative Analysis*, Vol. 36 No. 1, pp. 1-24.

Huang, G. (2006), "The determinants of capital structure: evidence from China", *China Economic Review*, Vol. 17 No. 1, pp. 14-36.

Jensen, M.C. (1986), "Agency costs of free cash flow, corporate finance, and takeovers", *The American Economic Review*, Vol. 76 No. 2, pp. 323-329.

Jensen, M. and Meckling, W. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3, pp. 305-360.

Jensen, M.C. and Meckling, W.H. (1978), "Can the corporation survive?", *Financial Analysts Journal*, Vol. 34 No. 1, pp. 31-37, doi: 10.2469/faj.v34.n1.31.

Kenc, T. and Dibooglu, S. (2010), "The 2007–2009 financial crisis, global imbalances and capital flows: Implications for reform", *Economic Systems*, Vol. 34 No. 1, pp. 3-21.

King, M.R. and Santor, E. (2008), "Family values: ownership structure, performance and capital structure of Canadian firms", *Journal of Banking and Finance*, Vol. 32 No. 11, pp. 2423-2432.

Kraus, A. and Litzenberger, R.H. (1973), "A state-preference model of optimal financial leverage", *The Journal of Finance*, Vol. 28 No. 4, pp. 911-922.

Leary, M.T. and Roberts, M.R. (2010), "The pecking order, debt capacity, and information asymmetry", *Journal of Financial Economics*, Vol. 95 No. 3, pp. 332-355, doi: 10.1016/j.jfineco.2009.10.009.

Leland, H.E. and Pyle, D.H. (1977), "Informational asymmetries, financial structure, and financial intermediation", *The Journal of Finance*, Vol. 32 No. 2, p. 371, doi: 10.2307/2326770.

Levin, A., Lin, C.F. and Chu, C.S.J. (2002), "Unit root tests in panel data: asymptotic and finite-sample properties", *Journal of Econometrics*, Vol. 108 No. 1, pp. 1-24.

Michaelas, N., Chittenden, F. and Poutziouris, P. (1999), "Financial policy and capital structure choice in UK SMEs: empirical evidence from company panel data", *Small Business Economics*, Vol. 12 No. 2, pp. 113-130.

Miller, M.H. (1977), "Debt and taxes", *The Journal of Finance*, Vol. 32 No. 2, pp. 261-275, doi: 10.2307/2326758.

Modigliani, F. and Miller, M.H. (1958), "The cost of capital, corporation finance and the theory of investment", *The American Economic Review*, Vol. 48 No. 3, pp. 261-297.

Modigliani, F. and Miller, M.H. (1963), "Corporate income taxes and the cost of capital: a correction", *The American Economic Review*, Vol. 53 No. 3, pp. 433-443.

Myers, S.C. (1977), "Determinants of corporate borrowing", *Journal of Financial Economics*, Vol. 5 No. 2, pp. 147-175.

Myers, S.C. (1984), "The capital structure puzzle", *The Journal of Finance*, Vol. 39 No. 3, pp. 574-592, doi; 10.1111/j.1540-6261.1984.tb03646.x.

Myers, S.C. and Majluf, N.S. (1984), "Corporate financing and investment decisions when firms have information that investors do not have", *Journal of Financial Economics*, Vol. 13 No. 2, pp. 187-221, doi: 10.1016/0304-405X(84)90023-0.

Myers, S.C. and Rajan, R.G. (1998), "The paradox of liquidity", *The Quarterly Journal of Economics*, Vol. 113 No. 3, pp. 733-771.

Ozkan, A. (2001), "Determinants of capital structure and adjustment to long run target: evidence from UK company panel data", *Journal of Business Finance & Accounting*, Vol. 28 Nos 1-2, pp. 175-198.

Pettit, R.R. and Singer, R.F. (1985), "Small business finance: a research agenda", *Financial Management*, pp. 47-60.

Porta, R.L., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R.W. (1998), "Law and finance", *Journal of Political Economy*, Vol. 106 No. 6, pp. 1113-1155.

Proença, P., Laureano, R.M.S. and Laureano, L.M.S. (2014), "Determinants of capital structure and the 2008 financial crisis: evidence from Portuguese SMEs", *Procedia-Social and Behavioral Sciences*, Vol. 150, pp. 182-191.

Rajan, R.G. and Zingales, L. (1995), "What do we know about capital structure? Some evidence from international data", *The Journal of Finance*, Vol. 50 No. 5, pp. 1421-1460, 10.1111/j.1540-6261.1995.tb05184.x.

Ross, S.A. (1977), "The determination of financial structure: the incentive-signalling approach", *The Bell Journal of Economics*, pp. 23-40.

Sbeti, W.M. and Moosa, I. (2012), "Firm-specific factors as determinants of capital structure in the absence of taxes", *Applied Financial Economics*, Vol. 22 No. 3, pp. 209-213.

Scott, J.H. (1977), "Bankruptcy, secured debt, and optimal capital structure", *The Journal of Finance*, Vol. 32 No. 1, pp. 1-19.

Stulz, R. (1990), "Managerial discretion and optimal financing policies", *Journal of Financial Economics*, Vol. 26 No. 1, pp. 3-27.

Titman, S. and Wessels, R. (1988), "The determinants of capital structure choice", *The Journal of Finance*, Vol. 43 No. 1, pp. 1-19.

Vo, T.A., Mazur, M. and Thai, A. (2022), "The impact of COVID-19 economic crisis on the speed of adjustment toward target leverage ratio: an international analysis", *Finance Research Letters*, Vol. 45, 102157, doi: 10.1016/j.frl.2021.102157.

Wald, J.K. (1999), "How firm characteristics affect capital structure: an international comparison", *Journal of Financial Research*, Vol. 22 No. 2, pp. 161-187.

Warner, J.B. (1977), "Bankruptcy costs: some evidence", *The Journal of Finance*, Vol. 32 No. 2, pp. 337-347.

Williamson, O.E. (1988), "Corporate finance and corporate governance", *The Journal of Finance*, Vol. 43 No. 3, pp. 567-591.

Wiwattanakantang, Y. (1999), "An empirical study on the determinants of the capital structure of Thai firms", *Pacific-Basin Finance Journal*, Vol. 7 Nos 3-4, pp. 371-403.

Yost, E., Kizildag, M. and Ridderstaat, J. (2021), "Financial recovery strategies for restaurants during COVID-19: evidence from the US restaurant industry", *Journal of Hospitality and Tourism Management*, Vol. 47, pp. 408-412.

Corresponding author
Nisha Prakash can be contacted at: nisha.prakash@gmail.com