

Bankruptcy Risk, Debt Service Capacity and Price Performance of Manufacturing Firms: Evidence from Nigeria

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Corresponding Author Asian Asian Umobong, PhD	Abstract: The objective of research was to determine effect of bankruptcy risk, debt service capacity on price performance of manufacturing firms listed on Nigeria stock exchange between
Department of Accounting, University of Port Harcourt	2014 and 2023. Cross sectional ex-post facto research design with census sampling method was adopted. Secondary data was derived from firm financial statements obtained from NSE and firm websites. Hausaman test for selection of model while diagnosis was carried out using Ramsey Reset test, Period HeteroTest, Cross-section Hetero Test, Pesaran CD for serial correlation and Variance Inflation factor for test of multicollinearity. Multiple Regression was
Article History	used to determine relationship amongst variables of study. Results revealed Bankruptcy risk has
Received: 14 / 12 / 2024	positively influence market value of shares and the speed which the earnings of the company
Accepted: 30/12/2024	are converted to market price. Specifically, BCR and DSC have positive impacts on Tobin Q,
Published: 03 / 01 / 2025	Price earnings ratio, earnings yield and market price. Debt service capacity negatively affects market value of shares and the speed which firm earnings are converted to market price. There
	is a trade-off between bankruptcy risk and debt service capacity. Higher debt service capacity
	lowered the risk of bankruptcy. Inflation as a macro-economic factor dampens share prices
	whilst at the same time improving speed of conversion of earnings to price. Liquidity
	significantly improves Tobin Q while significantly limiting the speed of conversion of earnings
	Based on findings firms should formulate a policy that mediates the positive and negative trade-
	off effects of bankruptcy risks and debt service capacity whilst simultaneously monitoring
	liquidity to ensure adequacy in meeting maturing obligations and avoiding idle cash flows.
	Further, firms should consider impact of inflation while making investment and financing decisions.
	Keywords: Bankruptcy Risk, Debt Service Capacity, Earnings yield, Price earnings ratio, Market Price, Tobin Q
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Introduction

The classical economic theory situates wealth maximization to equity holders as the major thrust of the firm and this motive make firms profit oriented and driver of economic activity affected by investment and financing decision. Although later stakeholders' theory enlarges beneficiaries of economic activity of the firm to encompass community, suppliers, debt holders, employees and government agencies the firm was not stripped of its overriding objective of profit seeking. Profit motives expose the firm to many dimensions of risk. Risk is the uncertainty of future outcomes and the impact on the future of the entity. Corporate finance literature dimension risks into legal, operational, credit and market risks (Hull, 2015).

Funding decision involves a judicious mix of sources of financing its activities. In making financing decisions, Firms can borrow, raise equity capital or reinvest profit. Borrowing creates credit risks. According to Altman (1968) Credit risk is essentially the uncertainty of honoring financial obligations and failure to This is an open access article under the CC BY-NC license

repay borrowed funds potentially causing bankruptcy Financing decisions could possibly have two consequences. First, firms within same risk level could increase cost of capital with increased borrowing. Secondly, financing decision affect firm valuation because firms that borrow more incur higher debt take more risk and are valued less than firms who borrow less, have less risk with low debt portfolio.

Many theoretical predictions of how firm method of financing impacts firm has been recognized by literature on corporate finance. Modigliani and Miller (1958) first ignited debate on the irrelevance of the combination of debt with other sources of financing of firm. The argument put forward by scholars is that debt in the financing mix is irrelevant in determining firm value but rather the firms' assets. This proposition assumes perfect market. However, reality in economic world, revealed no perfection of market situations. Lawal (1989) posited that, Modigliani and Miller suggestions is confirmed when the perfect

market opinion have no corporate taxes. In reality market imperfections exist which encompasses corporate taxes, bankruptcy costs, agency costs, and the type of assets a firm holds. Corporate taxes for example contribute to how firm valuation is achieved whilst also impacting maximization of shareholders wealth and ultimately finance mix of a firm. Firms that borrow do so with interest payments on borrowed funds. However, taxes are waived from the interest payments thereby providing the firm with reliefs which ultimately enhances profit and maximizes value to owners of business. Bankruptcy risk makes finance mix useful because firms cannot incur debts perpetually as creditors evaluates relevant risks to ascertain credit credentials of borrower before advancing loans. Firms secure borrowings by giving assets to the lender in exchange for the loans. However, the type of assets firm is willing to exchange for the credit loans relevant to the financing decision. From another perspective Warner (1977), Chua and McConnel (1982) opine that larger firms have many sources of cashflows that reduces risks the occur thereby mitigating likelihood of failure caused by debt defaults. Myers (1977) argues that present valuation that investors give to market value of any firm is hinged on investors perception of future potentials and anticipated future growth opportunities which will occur within the firm. . These factors noted confirm market imperfections and concur that finance mix decision made by the firm is necessary in determining firm value

M&M theory failed to provide solution to the quagmire created by the interaction of investment and financing decision leading to severe criticisms. Although the original assumptions by M&M were later relaxed, the ensuing debate produced many theories such as pecking order theory, trade-off, signaling and capital structure substitution theory. The various theoretical predictions not only lack consensus as the underlying assumptions are conflicting but the literature failed to give a definite definition of the financing mix and many empirical studies produced mixed results. Exacerbating these debates is the conflict in results about determinants of the financing decision made by a firm. These conflicts could be associated with myriad factors. The ability to raise capital differs in countries which could be attributed to tax regimes, legal framework, nature of industry, firm specific factors such as incentive to minimize agency costs by equity holders, asset tangibility etc. The borrowing capacity of a firm may be constrained by the nature of its asset, availability of internal funding such as retained earnings and willingness of the lender to lend.

To borrow, firm must be found credit worthy by the lending institution. Credit worthiness is linked with the capacity to pay. Borrowing imply firms must have higher ability to pay back and must also possess ability to generate huge income that will be utilized in servicing the borrowed funds through paying principal sum and interests thereon. Agency theory suggests firm's ability to refund principal and accrued interests mitigates agency cost and encourages borrowers to borrow more so as to enjoy high tax shield benefit from higher operating income. According to tradeoff theory, firm with more operating income borrow more, ceteris paribus, to shield their income from corporate tax. Hence, the high debt capacity ratio (supported by high operating income) is deemed to have positive relation with the finance mix of the enterprises. Contrastingly, pecking order proposes that higher operating income improves retention of earnings and encourages firms to rely on internal financing other than debt. These theoretical contradictions demand for more researches on subject.

Borrowing to satisfy financing need confer the tax advantage to the firm as it is tax deductible. However, there is also the risk of insolvency or bankruptcy risk when interest payments associated with debt acquisition cannot be satisfied leading to violations of debt covenants. This motivates firms to use equity capital in its funding strategy because of bankruptcy costs, which encompasses legal, accounting, and other administrative costs attributable to financial readjustments and legal proceedings at bankruptcy. Supporting this idea Shapiro & Titman (1985) and Catania's (1983) contended that for fear of bankruptcy risk, managers would avoid rather than utilize debt choice in funding decisions. When firms default in payment obligations some indirect costs also arise before actual legal proceedings occur. Higher borrowings are linked to higher fixed charges and lower coverage of debt. Therefore, this limits amount of debt a firm can take. The poultry theory by Myers & Pogue (1974) suggested firms avoid bankruptcy because management is discouraged to raise debt. These fears of the risk of failure and possibility that it will reduce market value and prospects make owners chicken out. Debts are avoided due to risk of financial distress from greater borrowing and the believe that creditors may place the firm under watch and also it is avoided to prevent funds from being poorly utilized and put to risky uses. Empirical studies on the role debt plays in firm performance is mixed so are results on the factors that drive firm behavior in including debt as part of its finance mix. Considering the importance of the capacity to service debt and the fear of bankruptcy by equity owners the study of the effect of these two factors (debt service capacity and bankruptcy risk) on firm performance attracts intense interest from researchers.

The current world order, globalization and linkages between economies of different countries, capital market activities and liberty to invest across countries, uncertainty, risks, incomplete information, becomes a feature of modern business, not a state of emergency. No company, even during a period of prosperity, can be certain of its future. Thus, Managers continually weigh the risk associated with the business while taking decisions. Bankruptcy issues may be caused internally by inappropriate allocation of assets, poor financial structure and corporate governance failures. It could also be prompted by Macro economic factors that impact negatively on a viable business. Bankruptcy risks can be prompted by inability to provide necessary working capital, poor managerial acumen, building up inventory and poor sales, internal control incompetence, exchange rate changes, poor decision by policy makers, board incompetence, disagreement between countries in case of multinational enterprises, regulation from governments on import and export policies. Further, the firm's reputation is also a contributory factor to bankruptcy. Firms with poor image caused by management actions, poor quality of products and services will face declining fortune while good reputation is a valuable resource that can give an edge to leapfrog competition and achieve stellar performance (Melo and Garrido-Morgado, 2012). Generally, good reputation confers advantages to the firm in attracting outside employees with good skills sets, new customers and help the firms in negotiating with suppliers (Fieldman, Bahamonde and Bellido, 2014)

Generally, a discerning investor faced with a portfolio of investment choices will ordinarily examine the earnings potential, the going concern value, the finance mix of the firm, the assets and prospects of the firm during acquisition, mergers. consolidation or piecemeal purchase of shares. The investor therefore to make a sound decision will ask questions on stability and wellbeing of the entity. High debt and poor servicing capacity is argued run the firm to risk of bankruptcy although prior studies point to the potential tax advantage of debt in reducing interest payments. Managers on the other hand even during period of economic boom and prosperity of the business ecetri paribus continue to seek for ways to mitigate the risk of bankruptcy. Although in other instance as enunciated by Jensen & Mecklings. Managers may indulge in selfaggrandizement, pursuing personal goals in conflict with the organizational goal of self-sustenance and viability. However, a healthy firm from prior studies is likely to avoid bankruptcy through increased earnings while firms in poor health are more likely to go bankrupt.

The health of a firm affects its market valuation and the profitability level. Funding decisions is connected to performance and perception by investors. Performance measurement is an opportunity for Managers to fulfill the stewardship function to shareholders. In contemporary finance literature, there is no generally agreed strategy for measurement of performance. While many studies adopt financial methods of measurement such as returns on assets, returns on equity, returns on investment etc. There is a growing dissatisfaction by researchers that such measures are historical and failed to capture the peculiar need of the future. Further, it is more useful in satisfying the evaluation of management team hence accounting measures ae mostly internalized. However, investors are interested in the potentials of the future which makes them interested in futuristic measures and the perception of the firm by participants determined by forces of demand and supply. Hence such market yardsticks such as earnings per share, price earnings ratio, market price and Tobin Q will be more useful. While it is not out of place to deploy both accounting and market yardsticks simultaneously this study focuses on the market yardsticks because investors ordinarily will be interested in the survival level, the level of leverage and the risk of violation of debt covenants which could ultimately affect their investments

In Nigeria, declining fortune of firms caused by inflation, poor economic growth, unemployment, low purchasing power all have negative consequences on the wellbeing of the firm. There is buildup of inventories, low-capacity utilization and poor demand of goods and services. The import dependent economy and ostentatious life style of the rich coupled with penchant for consumption of foreign goods further negatively impacts the fortune of manufacturing firms. Poor source of power such as electricity and high cost of alternative source of energy increases cost of production while bad roads dampen distribution of finished goods and increases cost of movement of raw materials to site. Recent statistics that 80% of Nigerians live below poverty line is no cherry news as this dovetail to low consumption and demand This gargantuan problem is scenario which manufacturing firms in Nigeria grapple with to return value to stakeholders. The market capitalization on the stock exchange declined over thirty five percent between 2015- 2019 even as many firms are delisted from trading activities. The bearish nature of Share prices consistently affects investors wealth and loss of value. Many studies conducted on the effect of debt service capacity and bankruptcy risk are of foreign origin with little or no empirical studies in Nigeria. This study is further justified by available researches which confirm substantial disparity in ability of firms to raise capital in different countries. LaPorta, Lopez-de-Silanes, Shleifer & Vishny (1998) fingered disparity in legal regimes and create an index of creditor rights in bankruptcy for a large sample of countries. In prior work (1997), these authors revealed legal regimes have myriad effects on

rights have significantly smaller local debt markets. Rajan & Zingales (2003)) suggested that there is little disagreement that financial development varies widely according to countries. Nigeria has different legal regimes from countries which prior studies were carried out. Weak creditors protection rights and weak capital market in Nigeria illustrates the difficulty in raising finance and present symptoms of under development. These factors coupled with scant empirical studies, conflicting outcomes in areas where prior studies were carried out create gaps for a study in Nigeria. Previous studies (Chaiyakul ,2021; Foo 2015, Akbar et.al ,2020; Foo and Pathak ,2016; Liang and Pathak ,2018) discovered financial health positively relate performance of firms in stock markets of Singapore, Hong Kong, South Korea, and Taiwan. Conversely. other researchers found insignificant relation of bankruptcy risk and financial performance while some other studies Mahmood et al. (2018; Hillary et al. (2018) found no effect. In terms of debt service capacity, studies are concentrated at the macro and household level mainly concentrating on mortgages Slaymaker.2021; default. For instance, (Toole and Slaymaker et al. 2019; Gerardi et al. 2017; Mocetti and Viviano ,2017) and Slaymaker et al. (2019) made house hold studies on income and default on mortgages. Therefore, there is paucity of studies at firm level in third world economies and at firm level. This study therefore fills this gap. The objective therefore is to ascertain effect of debt service capacity and bankruptcy risk on performance. In sum how does the risk of bankruptcy and debt service capacity affect the market performance of manufacturing firms.

size and breadth of capital markets; countries with weak creditor

Literature

Conceptual Framework

Bankruptcy Risk

Bankruptcy risk can be explained as probability or possibility that a borrower whether a business or an individual will fail to fulfill financial obligations thereby creating potentially bankruptcy proceedings or liquidation. This can be caused by illiquidity, business and market conditions, economic downturn, excessive borrowing, management inefficiency and conflicts of interest. Bankruptcy risk is a credit risk embedded on inability to pay and sometimes arise as a result of excessive charges, low returns from investment, over trading and wrong business decisions. Bankruptcy risk can result from debt covenant violations and gearing

Debt service capacity

Debt service capacity connotes lack of capacity to garner sufficient cash flow to meet expected debt payments both principal and interest payments which covers principal and interests. The capacity to pay is a major factor that reveals the state of health of the finances of the firm and serves a s a guide to the lender and a cover to the borrower for future borrowings. It indicates the credit worthiness and trust worthiness of the borrower and impinges on the integrity of the business or individual. The Debt Service Coverage Ratio is commonly utilized in evaluating a debt service capacity, comparing a borrower's available cash flow to their debt obligation. Income level, expenses, tax rate and interest rates affect debt service capacity and a debt service ratio. Debt service capacity of 1.0 or higher indicates that firm has enough cash flow to cover its debt obligations, while a debt service capacity of less than 1.0 indicates difficulty in satisfying payment obligations

Performance

Performance assessment is a stewardship function perform by Managers. Even prior to the era of separation of management from control, owners of business were interested on how well the business is operated and achievement of targets. The advent of shareholding and separation of ownership from control further exacerbates the need. However, there is no generally agreed method of performance measurement. Performance is a means of evaluation of the achievement of goals of an enterprise. It is the life-blood of the organization. It enhances comparison, analysis of strength and weakness and reveals reasons for achievement and non-achievement of set targets and enforces planning and budgeting for future needs. However, the literature x-rays the advantages and disadvantages of each strategy used for performance evaluation. The differences in modus operandi notwithstanding, performance metrics are tailored to meet the need of the business entity and accounting regulators recognize financial statements as a springboard for performance evaluation. From the standpoint of empirical review, accounting methods, market-based methods or mixed methods can be deployed. However, the choice and used of performance evaluation techniques are generally subject to biases by the researcher. Whilst the argument is enthused that accounting measures are majorly historical and does not reflect the future potentials of the business, the protagonists argue that it reflects reality without bias and captures the intrinsic value of the transactions expressed in monetary terms. On the other hand, protagonists of the market methods suggest that market measures support investors perspective and captures the future potentials of the business which investors are interested in. After financing decisions are taken, whether debt or equity should be utilized in funding, the outcome and assessment must be expressed in terms of returns and impact on firm value. Thus, performance measures are relevant in gauging the achievement of the funding or investment goals of the business. Therefore, it is relevant in evaluating impact of bankruptcy risk and debt service capacity on performance. Many theoretical predictions already predicted a positive or negative outcome of the relationship of these variables on firm value and profitability thereby igniting a debate on the subject. This makes the variables of investigation interesting and a subject for study

Theoretical Propositions

Many theoretical underpinnings are relevant to this study, First, the concept of debt service capacity and bankruptcy risk are embedded on borrowing which is a subset of financing decision. The spring board for funding decisions is embedded on the concept of capital structure which defines a combination of debt and equity. Miller &Modigliani (M&M) 1958 propositions assert that there would be arbitrage opportunities in the perfect capital market if the value of the firm depends on its capital structure. They also argue that if investors and firms can borrow at the same rate, investors can neutralize any capital structure decisions the firm's management may take (home-made leverage). Though their proposition theoretically sounds good, but it is only valid under perfect market conditions (no tax is one of them) which were not actually possible in real world. They corrected this proposition in 1963 incorporating the effect of tax on value and cost of the capital of the firm (Modigliani and Miller 1963). Their new proposition contends that, in the world of corporate tax, the value of the firm depends on the variation of the debt level and tax shield benefit on interest payments. In 1976, Miller brought forward the next version of

irrelevance theory of capital structure. He appealed that, capital structure decisions of firms with both corporate and personal taxes circumstances are irrelevant (Miller 1977).

The Pecking order theory Myers and Majluf (1984) contrastingly recognized impact of information disorder on pricing newly issued shares and identifies no defined target of debt equity ratio. First, investors believe managers have superior information and will not disclose all to investors leading to information misalignment between that of investors and managers. Second, investors being aware managers have superior information and will over price risky securities under that circumstance will underprice to mitigate the overpricing by managers. However, perception of investors causes severe underpricing and substantial loss to existing shareholders. To mitigate or avoid problem associated with information asymmetry firms fulfill their financing needs by first adopting retained earnings, next debt and finally external equity in that order. Thus, despite possession of high debt service capacity, firms may not borrow and therefore according to pecking order theory debt service capacity is negatively related to borrowing and any advantages that arise therefrom. Further bankruptcy risk is also negatively related to borrowing, the higher the risk of default and bankruptcy the lower the need to borrow. Thus theoretically, debt service capacity and bankruptcy risk are negative.

From the perspective of signaling theory (Ross, 1977) suggested managers as insiders have clear understanding of distribution of future returns from firms whereas investors do not. Investors will in response perceive high leverage as a signal of firm's present stable income, high future cash flows and managerial confidence about high future earnings. Therefore, high debts signal high profitability and performance and leverage is positively related to performance thus high debts service capacity is positively related to performance. The static trade-off theory advocates (Kraus and Litzenberger 1973; Jensen and Meckling ,1976; Miller ,1977; Jarrel and Kim ,1984; Jensen 1986); Harris and Raviv ,1990); Stulz, 1990) firm's optimal debt-equity mix occurs when marginal present value of tax on extra debt equals increases in present value of financial distress costs. From this perspective, targeted debt equity ratio is encouraged by taxes, costs of financial distress (bankruptcy costs), and agency costs. Thus, by this theory high bankruptcy cost is negatively related to borrowing and associated benefits while high debt servicing capacity is positively related to borrowing. Contributing to the debate is Jensen and Mechlings (1976) recognizing the misalignment of objects taking place between business owners and managers, he suggested that free cash flows encourage managerial bad behavior and therefore should be reduced either through making managers part owners of the business or by increasing borrowing to reduce free cash. Therefore, debt service capacity is positive to borrowing and associated benefits whilst bankruptcy risk is negative. The various theoretical suggestions and the linkages to bankruptcy risks and debt service capacity are highlighted in a tabular form below:

Table 1: Summary of Theoretical Predictions with Borrowing

Independent Variables	Expected Sign		
	Agency Theory	Trade-off Theory	Pecking order
	1	1	01401

			Theory
BankruptcyRisk(BR)	(-)ve	(-)ve	(-)ve
DebtServiceCapacity(DSC)	(+)ve	(+)ve	(-)ve

Empirical Review

Rahman et.al (2025) examined correlation between ESG and bankruptcy of Chinese firms for years 2011 and 2021. Using Z-score for bankruptcy risk measurement and two staged regressions model the study found negative association of ESG performance with bankruptcy. Karavar and Yaman (2024) evaluates relation between financial performance and bankruptcy risk of insurance firms in Turkey for 2018 to 2022 period. Determining bankruptcy risk through Altman-Z model, the study revealed financial performance impact bankruptcy risk although not the sole factor. Chaiyakul (2021) investigating effect of bankruptcy risk on financial performance of financial institutions registered on Thailand Exchange for 2015 to 2019. Results revealed bankruptcy risk and firm size have positive impacts on accounting methods; return on assets and return on equity, and market performance Tobin Q. Akbar et.al (2020) tried to determine bankruptcy-risk relations through life cycle of Pakistani non-financial firms from twelve business segments. Using hierarchical Linear Mixed Regression Model outcome confirmed risk at early and growth stages of firm lifecycle, risk contributes positively to performance. However, at maturity stage and declining stages of firm life, additional risks negate current and future profits largely due to risk-averse and non-diversified managerial behavior. Gols et.al (2020) explored relations between company reputation and bankruptcy risk of public firms using a sample of 441 firms covering the period 2005-2016 from Compustat Global data base. Study confirmed company reputation negatively influenced bankruptcy risk. Increase reputation decreases risk of bankruptcy and boost credit worthiness and market share. Hillary et al. (2018) examined distress on financial performance of listed manufacturing firms on Nairobi Stock Exchange, Kenya, from 2011 to 2015. Regression, outcome showed distress financially does not impact performance. Kajavi and Arani (2018) tried to determine impact of managerial ability on bankruptcy risk and mediating role of performance of Iranian companied registered on Tehran Stock Exchange using 103 non-financing firms for 2004 to 2015. Using Demirjian's model (2012) to evaluate managerial ability and Altman's Z" score for bankruptcy risks, managerial ability negatively impacts bankruptcy risk while performance played its moderating role confirming good managerial skills improve performance and reduces bankruptcy risks. Mahmood et al. (2018) studied the correlation financial distress, financial flexibility and firm performance for period 1992 to 2014 in Pakistan. Using Altman's Z-score to evaluate financial bankruptcy risk with performance measures. The results revealed financial distress does not affect financial performance. In the other vein, ROA, market-to-book value, cash holdings, dividend policy, and financial flexibility significantly impact performance. Liang and Pathak (2018) assessed through two studies financial health impact on performance of manufacturing companies listed on China and Singapore stock

exchange respectively between 2013 and 2017 using Altman's Zscore as proxy for financial health. Both studies confirmed positive association of state of health with performance. Thus, revealing firms with low susceptibility to bankruptcy have high state of health and are associated with high performance. Similarly, studies by FO and Pathak (2016) while studying relationship between financial health and performance for manufacturing companies listed on South Korean and Taiwan exchanges between 2000 and 2013 found positive association. In another study Foo (2015) determined financial health and financial performance nexus of Singapore and Honkong manufacturing companies between 2000 and 2013. Deploying Altman (1968) Z-score on ROE the study found positive correlation amongst variable of study while the firms exhibited moderate to high state of health. Toole and Slaymaker (2021) assessed the evolving relations between existing household repayment capacity and mortgage loans default during crisis and non-crisis periods in Ireland. The study measured repayment capacity through changes in the current debt-service to income ratio to directly established how affordability impact default. Result signify reduction in present debt servicing ability have positive increasing effect on default which depends on extent of indebtedness or absorptive capacity. Also, the study found correlation between deteriorations in repayment capacity and further confirmed default grew worse in periods of crisis as a result of negative equity and cash flow limitations in these times. Gerardi et al. (2017) studied US firms to determine relative significance of negative equity compared to affordability concerns for US and found changes in ability to pay, for example due to job loss, have substantial effects on probability of default. In sum the capacity to pay impact negatively the willingness to pay

Methods

Design

The study adopts ex-post facto method with census sampling technique in accessing a cross section of the population of manufacturing firms which require no sample size determination. Secondary data for the period 2014 to 2023 are obtained from the financial statement of manufacturing firms listed on the NSE for the period. Hausman test was conducted to select appropriate strategy. Various diagnosis was carried out to ascertain propriety and stability of data set to prevent multicollinearity, serial correlation and cross dependence. Multiple Regression and correlation were used in analysis the level of correlation and nature of relationships

Variables

Variables are classified into independent and dependent. Independent variable encompasses the risk of default measured by bankruptcy risk and ability to pay debts and interest as it matures measured by debt service capacity. However, the dependent variables denoted by price performance are measured by price earnings ratio which identifies the speed of conversion of earnings to market price, the reciprocal earnings yield, market price which is the exchange value of the shares and tobin Q a market valuation of the worth of the shares. These measures are summarized on table 2 below:

 Table 2: Measurement of Variables

Independent Variables	
DebtServiceCapacity(DSC)	EBIT
	Interest Charges
BankruptcyRisk(BCR)	Coefficient of Variation of ratio of EBIT to TotalAssets
Dependent variables	
Price earnings ratio (PERR)	P/E ratio = <u>Market price per share</u>
	Earnings per share

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Market Price	Equity price as traded on the last day of the financial year
Tobin Q	Market value of firm
	Total book value of asset
Earnings yield	Earnings per share
	Market price per share
Control	
Liquidity	Current Assets
	Current liability
Infation	As reported by the Federal office of statistics

Model Specification

PERR	=	$z_0 + z_1 DSC + z_2 BCR + z_6 INF + z_7 LIQ + + U_1, t$	(i)
ERNY	=	$\alpha_0 + \alpha_1 DSC + \alpha_2 BCR + \alpha_2 INF + \alpha_3 LIQ + + U_2, t$	<i>(ii)</i>
MAPR	=	$\beta_0 + \beta_1 DSC + \beta_2 BCR + \beta_6 INF + \beta_7 LIQ + U_{3,t}$	(iii)
TOBQ	=	$w_0 + w_1 DSC + w_2 BCR + w_6 INF + w_7 LIQ + U_{4,t}$	(iv)

RESULTS

Descriptive Statistics

Table 3: Descriptive Statistics

	Mean	Maximum	Minimum	Std. Dev.	Obs
DSC	500.2006	38758.25	-84.9377	3862.908	105
BCR	5.8135	2902.878	-2611.45	393.504	105
INFLATION	11.55	16.5	8.06	3.754	105
LIQ	1.7281	56.5694	0.07398	5.461	105
TOBINQ	36.54161	206.058	1.1472	232.6033	105
MPR	87.064	1555.99	0.5	239.4947	105
PE	87.9046	8100	-64.3125	789.6841	105
ERNY	0.81976	57.0612	-52.6318	9.423148	105

Descriptive statistics shows mean for DSC is 500.20 and standard deviation of 3862.91. The mean of BCR stood at 5.8135 with a standard deviation of 393.504. The average Inflation rate for the period under review was 11.55% with a standard deviation of 3.75. For Liquidity, mean is 1.7281, standard deviation 5.461. Tobin Q had mean 36.5416, standard deviation 232.6033. MPR has a mean value of 87.064 and standard deviation 239.4947. PE mean value 87.9046 and standard deviation o789.68 and earnings Yield mean value is 0.81976 and standard deviation 9.4231.

Correlation Analysis

Table 4. Correlation Statistics

	DSC	BCR	INFLATION	LIQ	TOBINQ	MPR	PE	ERNY
DSC	1							
BCR	0.0053	1						
p-value	0.9568							
INFLATION	0.0904	-0.146	1					
p-value	0.359	0.1371						
LIQ	0.0069	0.0270	0.099015	1				
p-value	0.9447	0.7845	0.3149					
TOBINQ	-0.0201	-0.0018	0.029436	0.0758	1			
p-value	0.8391	0.9854	0.7656	0.4421				
MPR	-0.03329	0.02819	-0.0060	-0.045	0.0612	1		
p-value	0.736	0.7753	0.9513	0.6519	0.5349			
PE	-0.0127	-0.0259	0.1069	-0.021	-0.0155	0.3049	1	
p-value	0.8976	0.7933	0.2779	0.8307	0.875	0.0016*		
ERNY	-0.0095	0.0153	0.1451	-0.006	0.01982	-0.0158	-0.0096	1
p-value	0.9233	0.877	0.1397	0.9551	0.841	0.8728	0.9222	

Pearson correlation reveals relationship between Debt Service Capacity, Bankruptcy Risk and Price Performance. Results show DSC positively correlated TOBINQ (r=-0.0201) though not significant at 5% (p=0.8391), negatively correlated MPR (r=-0.0333) though not significant at 5% (p=0.736). Additionally, DSC negatively correlated ENRY (r=-0.0095) significantly at 5% (p=0.9233). BCR is negatively correlated with PE (r=-0.0259) though not significant at 5% (p=0.7933), positively correlated with ERNY (r=0.0153) though not significant at 5% (p=0.877). The correlation although provided insight into direction and degree of the relationship amongst variables is limited in its inferential capacity as it does necessarily imply functional dependence between the variables. Regression estimations are more suited for this purpose.

Multicollinearity Test

Table 5: Variance Inflation Factor Statistics					
Variable	Variance	VIF			
DSC	3.86E-05	1.023285			
BCR	0.003708	1.002884			
INFLATION	4.378562	1.137565			
LIQ	19.42984	1.114001			

Multicollinearity is often one of the common statistical challenges with variables resulting from similar corporate fundamentals. Multicollinearity among the independent variables implies that they are perfectly correlated. If there exists perfect correlation between the independent variables, the parameter coefficients will be indeterminate. The variance inflation factor test is constructed to test for multicollinearity and result is depicted on table 5. As depicted on the table, no variables have VIF's values above 10 and is confirmed no multicollinearity.

Regression Result

1 40	Table 6. Debi Service Capacity, Bankrupicy Risk and Price Performance							
Variable	Aprori Sign	TOBINQ	MPR	PE	ERNY			
С		365097.9*	87.2337*	79.7238*	0.3281*			
		(1609.02)	(0.3980)	(20.0115)	(0.1810)			
		{0.000)	{0.000}	{0.000}	{0.0751}			
DSC		-0.04452*	-0.0002	-0.0015	-7.21E-06			
	+	(0.01515)	(0.0006)	(0.0004)	(4.58E-06))			
		{0.0043}	{0.6937}	$\{0.000\}$	{0.1209}			
BCR		5.2686*	0.01726	0.00273	0.00449			
	+	(1.1243)	(0.0036)	(0.0009)	(0.0008)			
		{0.000}	{0.000}	{0.000}	{0.000}			
INFLATION		-221.6797*	-0.01358	1.3744	0.06133			
	+	(99.0451)	(0.01363)	(0.3225)	(0.0153)			
		{0.0280}	{0.3220}	$\{0.000\}$	{0.000}			
LIQ		1661.05*	-0.0010	-0.18546	-0.0003			
	+	(640.094)	(0.0013)	(0.0703)	(0.0043)			
		{0.0112}	{0.4246}	{0.0121}	{0.9452}			
AR(1)					-0.17554			
					(0.17806)			
					{0.3283}			
Ar(2)				-0.5261				
				(0.3896)				
				{0.1851}				
	Mode	el Parameters						
<u>R</u> ²		0.5448	0.945	0.4872	0.5433			
Adjusted R ²		0.4082	0.929	0.1406	0.3466			
F-statistic		3.989	57.5709	1.4059	2.76085			
Prob(F-stat)		0.000	0.00	0.000	0.00			
Durbin-Watson		2.2	1.99	1.7	2.1			
	1	Model Diagnos	tics		-			
Hausman		0.034	0.000	0.016	0.045			
Ramsey Reset test		0.112	0.425	0.982	0.521			
Period Hetero.Test		0.209	0.526	0.422	0.198			
Cross-section		0.121	0.451	0.181	0.690			
Hetero.Test								
Pesaran CD for serial		0.106	0.117	0.665	0.7314			
correlation								

Table 6. Debt Service Capacity, Bankruptcy Risk and Price Performan

. * Sig @ 5%, **sig@10%

Discussion of Findings

The goal of the study is to determine the impact of bankruptcy risk, debt service capacity and price capacity of manufacturing firms in Nigeria. The independent variables in the study are bankruptcy risk, debt service capacity and market measures of performance Tobin Q, earnings yield, price earnings ratio and market valuations.

The Hausman test statistic is used tin choosing either fixed or random effects based on the identified correlations between the error and the coefficients. From the result on table 6, the regression results examining the impact of Debt Service Capacity, Bankruptcy Risk and Price Performance of manufacturing firms revealed many outcomes

In column 3 of table 6 the relationship between Bankruptcy risk, debt service capacity and Tobin Q is examined. From the table, the Hausman test revealed Fixed effect strategy (Hausman, p=0.034) is appropriate, the R² is 54.5% with a degree of freedom adjusted R^2 of 40.8%. The F-stat is 3.989 (p-value = 0.00) is significant at 5% and suggest that the null hypothesis which states no significant linear relationship between the dependent and independent variables is rejected. The result revealed a positive coefficient of 5.2686 indicating a significant positive relationship between bankruptcy risk and Tobin Q. Conversely, the analysis showed debt service capacity has a negative co-efficient (-0.04452) with p value (p=0.000) and statistically significant at 5%. The macroeconomic factor inflation has negative co-efficient -221.6797 and p-value 0.0280 indicating inflationary pressure negatively and significantly affect market valuation Tobin Q. The liquidly of the firm revealed availability of cash flow for meeting short term obligations has a positive co-efficient 1661.05 and p-value 0.0112 thereby signifying positive significant relationship. Increase liquidity impact market value positively and enhances ability to meet short term maturing obligations thereby reducing risk of default. Furthermore, for statistical precaution, both panel period heteroskedasticity and cross-sectional heteroskedasticity was examined with p-values of 0.209 and 0.121 confirming the unlikelihood of their persistence in the estimation outcome. The Peseran cross-dependence test for serial correlation in the errors and the Ramsey Reset Test for model specification also showed pvalues of 0.112 and 0.106 indicates that the null hypothesis of no cross-dependence in errors and proper functional specification is accepted.

In column 4 of table 6, the relationship between BCR, DSC and price performance is examined using market price as the dependent variable. The model performance indicators show that fixed effect strategy is appropriate [Hausman, p=0.000], the R² is 94.5% with a degree of freedom adjusted the R^2 of 92.9%. The Fstat is 57.571(p-value = 0.00) is significant at 5%. The analysis of coefficients reveals DSC has a negative (-0.0002) effect on market capitalization though not statistically significant at 5% (p=0.6937). BCR has a positive (0.001726) impact on market valuation and statistically significant (p=0.000) at 5%. Both inflation and liquidity are not significant at 5%. Panel period heteroskedasticity and cross-sectional heteroskedasticity p-values confirms the unlikelihood of their persistence in the estimation outcome. The Peseran cross-dependence test for serial correlation in the errors and the Ramsey Reset Test for model specification also showed pvalues indicating that the null hypothesis of no cross-dependence in errors and proper functional specification is accepted.

In column 5 of Table 6, the relationship between BCR, DSC and price earnings ratio is examined. From Hausman test outcome (Hausman, p=0.016), the fixed effect strategy is preferred, the result further indicate R^2 is 48.72% with a degree of freedom adjusted R^2 of 14.06%. The F-stat is 1.4059 (p-value = 0.00) is significant at 5%. The analysis of coefficients reveals DSC has a negative (-0.0015) effect on PE which statistically significant at 5% (p=0.000) while BCR has a positive (0.00273) impact on PER and statistically significant (p=0.000) at 5%. Both inflation and liquidity are significant at 5% with beta values of 1.3744 and -0.18546 respectively. Inflation positively impacts the speed which earnings are converted to market price while excess liquidity mitigates earnings conversion to market price. The relevant diagnostics such as Panel period heteroskedasticity and crosssectional heteroskedasticity p-values suggest that the errors are homoscedastic. The Peseran cross-dependence test for serial correlation in the errors and the Ramsey Reset Test for model specification also showed p-values indicating that the null hypothesis of no cross-dependence in errors and proper functional specification is accepted.

In column 6 of table 6, the relationship between BCR, DSC ERNY and earnings yield is examined. Analysis of model using Hausman test Hausman, p= 0.045] revealed preference for fixed effect strategy. Other statistics' outcome showed R² is 54% with a degree of freedom adjusted R² of 34.66%. The F-stat is 2.7609 (p-value = 0.00) is significant at 5%. The analysis of coefficients reveals DSC has a negative (-7.21E-06) effect on ERNY though not statistically significant at 5% (p=0.1209) while BCR has a positive (0.00449) impact on ERNY and statistically significant (p=0.000) at 5%. Looking at the control variables, only inflation is significant at 5%.

The diagnostics relevant tests, Panel period heteroskedasticity and cross-sectional heteroskedasticity p-values suggest that the errors are homoscedastic while both Peseran crossdependence test for serial correlation in the errors and Ramsey Reset test for model specification also showed p-values indicating null hypothesis of no cross-dependence in errors and proper functional specification is accepted. Thus, relevant tests confirm stability and lack of multicollinearity in data and confirm appropriateness of the outcome of the study. In summary, bankruptcy risk has significant positive relationship with Tobin Q, Market price, earnings yield and price earnings ratio. These findings agree with study of. Liang and Pathak ,2018; FO and Pathak, 2016 and Foo (2015) who found similar positive result of bankruptcy risk with China and Singapore firms, south Korean firms and Singapore and Honkong respectively. Other studies (Chaiyakul, 2021; Akbar et.al ,2020; Karavar and Yaman ,2024) also confirmed positive relationship of bankruptcy risk with performance Contrastingly, debt service capacity has negative effects on Tobin q, earnings yield, market valuation and price earnings ratio. From result bankruptcy risk and debt service capacity have an inverse relationship as the coefficients move in separate directions. Inflation has negative effect on market valuation using Tobin and market capitalization while contrastingly positively impacting the speed of conversion of earnings to market price and its reciprocal.

Conclusion

The objective of study was to determine effect of bankruptcy risk and debt service capacity on price performance of manufacturing firms. From the result we make the following inferences:

- Bankruptcy risk positively influenced market values and speed which the earnings of the company are converted to market price
- Debt service capacity has negative effect on market value of shares and the speed which firm earnings are converted to market price
- There is a trade-off between bankruptcy risk and debt service capacity. Higher debt service capacity lowered risk of bankruptcy
- Inflation as a macro economic factor dampens share prices whilst at the same time improving speed of conversion of earnings to price
- Liquidity significantly improves Tobin Q while significantly limiting the speed of conversion of earnings to market price. However, it insignificantly affects market capitalisation and earnings yields.

Recommendations

- To maintain a healthy state of health of the firm and avoid the risk of bankruptcy firms should formulate a policy that enhances sufficient liquidity and avoid overtrading whilst at the same time avoiding the dangers of keeping too much idle funds that contributes nothing to profitability
- Firms should adopt a leverage policy that avoids excessive borrowing and determine a judicious capital structure that combines equity and debt to mitigate bankruptcy risk and improve the health of the firm
- In making financing and investment decisions, changes in the price level within the economy should be considered and its likely impacts on debt covenants.
- Although, high debt service capacity can motivate a firm to borrow, its negative relationship with profit should be examined with caution with a deliberate strategy to avoid over borrowing.
- Firms should design a strategy that mediates the trade-off effect of bankruptcy risk and debt service capacity

Implication to Theory and Practise

Theoretically, the result of this study has serious implications. Agency theory, trade-off theory and pecking order theory suggests a negative linkages of bankruptcy risk to borrowing and hence performance. The study however finds positive link thereby negating the theories and supporting a positive relationship advocated by signalling theory. Agency theory and Trade-off theory advocates a positive relationship of debt service capacity to borrowing and performance while pecking order theory suggests negative association. The result of this study confirms negative association in line with pecking order theory whilst simultaneously negating agency theory and trade-off theory.

In practise the result of this study has implications for scholars and create room for further studies. Similarly, corporate executives will have to rely on this study and find a common ground for achievement of profitability through formulation of policies that will enhance optimum liquidity and funding needs of the business entity in the context of galloping inflation besieging the Nigeria economy

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