

# Product Market Competition and Debt Choice: A Study on Cement Companies Enlisted in Capital Market in Bangladesh

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**Abstract:** *Purpose:* This study aims to contribute to this body of knowledge by examining the effect of product market competitiveness on enterprises' dependence on bank loans. *Design/methodology/approach:* To examine the effect of product market rivalry on loan selection, we look at a sample of Bangladeshi firms from 2010 to 2020. We limit our research to publicly traded corporations since they often choose between public and private debt. The generalized least square (GLS) model is applied to identify the effect of product market competitiveness on enterprises' dependence on bank loans. *Findings:* Using a sample of 60 firms, between 2010 and 2020, we discovered that product market competition encouraged enterprises to rely less on bank loan funding. Additionally, we demonstrate that competitive pressure has a more significant impact on debt selection for firms that are more exposed to competition, face more significant financial constraints, and have less robust governance practices. Additionally, we observe a correlation between competition in the product market and long-term maturity debt. A critical insight we establish in our study is that external governance pressure from the product market can act as a replacement for the monitoring of bank debt. *Research limitations/implications:* Despite the DSE having 308 listed businesses, the study only considers the top 60 as market capitalization. As a result, the small sample size may limit the generalizations that can be derived from our findings. Another disadvantage is that the study only looked at cement businesses, even though the DSE has a variety of companies listed. *Originality/value:* Our research paper contributes to the existing literature on Product Market Competition and Debt Choice in an emerging market like Bangladesh. To the best of the authors' knowledge, no study has yet been conducted on the Product Market Competition and Debt Choice for taking five-year financial statements in Bangladesh.

**Keywords:** Competition in the Product Market, Capital Market, Debt Structure, Debt Choice, Corporate Governance, DSE

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## 1. Introduction

Because the debt has become a significant source of external assets for Bangladeshi businesses, experts place a premium on the composition of that debt, providing evidence that

organizations finance their international operations through various sources. [44, 38]. Several papers identify informational asymmetries at the firm level and administrative quality as sources of Cross-sectional heterogeneity that affect the choice between public and private debt.

A prior study shows that poor data quality is associated with a greater reliance on less data-sensitive debt instruments, such as private debt [6, 43], emphasizing the relative advantage of private money lenders to mitigate data quality issues. Second, current evidence indicates that when management systems are deficient, subsequent organizational issues fundamentally influence the requirement for private banks to adhere to their advantages. Thus, determining the optimal combination of private and public borrowing [25, 42]. While prior research has been exhaustive in examining the firm-level determinants of debt organization, it has paid scant attention to the effects of industry dynamics. We intend to fill this void in the literature by providing novel insight into a significantly under-researched factor: product market competition. Our paper identifies and analyzes several prior studies regarding the impact of competition on firm data asymmetry and administrative quality in corporations. The discussion is enriched by adding two opposing hypothetical perspectives on the ramifications of product market competition. To begin with, competition has been shown to increase informational imbalances by serving as a deflecting factor against directness [7]. The rationale is that organizations operating in more serious enterprises avoid disclosing private information to competitors to maintain a competitive edge [39, 45]. Almost all publicly disclosed data can be viewed by competitors, incentivizing them to use it against the disclosing firm intentionally. One study found that as industry competition increases, firms redact proprietary data from their material agreement filings to prevent it from being disclosed to the general public [7]. Firms are motivated by competitive pressure to deceive their rivals by inflating their financial reports to remain credible [37]. A second finding is that competition in the product market functions as an external disciplinary instrument, discouraging managers from pursuing personal goals. The different supervisory and investor premiums lead to improved administration quality and fewer office issues [41]. This finding is that because serious ventures share a large portion of their industry-wide benefits with competition, they have a reduced capacity to recognize high income, which increases their insolvency risk. Thus, competition constrains managers' ability to divert benefits to their benefit, motivating them to work efficiently for the benefit of shareholders. Product market competition is arguably the most powerful force for business success globally [1]. Empirical research backs it up as well, demonstrating how competition spans the utilization of private control advantages and resolving office conflicts [2, 3]. We aim to extend these arguments to the possibility that asymmetry in firm data and administrative quality may influence debt decisions in the competition. Based on previous studies on product market competition and fiscal contracting, we are exposed to two opposed perspectives on how competitive forces affect debt choices. Primary view: Competitive pressure has an inextricable link to bank debt reliance because of two arguments, we call "private information protection" and "fiscal stress avoidance." As a result of their

ability to assess borrowers without exposing their private data to leakage, banks gain a comparable data advantage [4]. Due to the ethical nature of their closer contact with borrowers, banks are preferable to educate but over-cautious public debtholders [5, 6]. Thus, they are less exposed to firm-specific information, ensuring confidentiality. Pecking order theory suggests that firms with more sensitive data prefer bank debt to open debt. Since data leakage is more prevalent in serious ventures, bank debt financing becomes more important for firms facing increased competitive pressure [7]. Hence, such businesses should rely more on debt than equity because banks can provide a secure communication channel to safeguard their private data. Accordingly, a positive correlation between product market competition and bank debt dependence is recommended. The financial distress avoidance argument asserts that bank loan specialists better manage fiscal distress than bondholders. Their exceedingly diffuse responsibility prevents them from being able to thoroughly screen borrowers, resulting in the borrower being compelled to sign stringent advance contracts [42]. On the other hand, bank moneylenders are defined by their concentrated liability for claims, making them significantly more flexible with their clients. A wealth of prior research has established that banks are more inclined to designate assets to enable debt renegotiation and avoid wasteful liquidation choices [8, 9]. More importantly, adaptability enables bank loan specialists to assist businesses during financial distress [10]. Firms that are more likely to fail through product-market pressure should seek financing from banks since these institutions are less likely to impose severe contracts on distressed firms [10]. They argue that the optimal money-related agreement in the face of extreme risks minimizes the likelihood of subsidizing being terminated in debt repayment default. Increased competition dilutes net revenues and raises the risk of being driven out of the market, requiring companies to rely more heavily on bank debt to avoid financial distress costs [11, 12]. Intriguingly, the subsequent view asserts that bank debt dependence is negatively correlated with the competition. In supporting this recommendation, the argument is that competition may compensate for the requirement to monitor banks' relative preferred status, reducing reliance on bank debt. The literature is replete with assertions that banks have an advantage in detecting and recognizing insider preoccupation with firm assets to the detriment of other investors [5, 13]. This prominence is frequently attributed to their ability to amass sensitive client information. Banks have more immediate access to borrowers' private information and account information than public moneylenders, relying on publicly available data [5, 14]. They are more willing to exert pressure on corporate insiders in this situation, thereby alleviating moral hazard concerns [15, 16]. Bank debt also enjoys a similar advantage as a checking enterprise due to its concentration, which encourages banks to engage in countless data creation exercises, resulting in fewer free-rider issues [42]. The value of this observed relative bit of leeway is highly dependent on the marginal benefit that using bank

debt confers on the borrower. As product market rivalry is likely to supplant other monitoring instruments, one could argue that organizations with highly competitive products are less likely to require the stringent checks provided by these models [17, 19]. We predict the negative relationship between firm debt reliance and product market competition. Given the two opposing viewpoints, the link between product market competitiveness and strong bank debt dependency must be beneficial or destructive to fulfill the justifications for protecting proprietary information and avoiding financial issues.

As a result, the influence of product market rivalry on loan selection is an experimental subject that we shall discuss in depth in the section beneath.

Our empirical study is based on sixty firms listed with the Bangladesh Securities and Exchange Commission between 2010 and 2020. We find that enterprises operating in an environment of intense rivalry, where external market discipline is most effective, require less bank debt monitoring, consistent with the bank monitoring argument.

## 2. Literature Review

Our work substantially contributes by combining the literature on two rapidly increasing research domains: product market rivalry and debt choice. Our admiration for the debt source selection literature allows us to comprehend better the factors that influence people's preference for bank debt over government debt. While a large amount of theoretical work, such as [4, 14, 16, 22], has given persuasive explanations for debt structure preferences. Due to a lack of data on debt structure, a little actual study has been done to back up these theoretical theories. We contribute to this flow of lookups by leveraging a freshly available database that delivers thorough information about various firms' debt structures [38].

Additionally, our study adds to the body of knowledge regarding why borrowing firms prefer bank debt over public debt. According to an earlier study, low-quality enterprises depend on banks to overcome information issues produced by firm-specific uncertainty [43]. Stock return [6], and a decline in analyst insurance [23]. Prior research indicates that, in the context of an agency relationship, the desire for debt supply is strongly related to the quality of firm governance, which includes the divergence of shareholding rights [24], the appearance of ownership concentration [25], and the effectiveness of peripheral governance structures [26]. We add to this research by delving deeper into the effects of industry dynamics on debt choice, particularly the importance of product competitiveness in the market. In addition, building on a large body of work on product-market rivalry, our paper investigates the impact of competitive pressure on business decisions and financial policies. It adds to previous studies that have discovered a link between a company's product market environment and its disclosure methods, such as deficient news disclosure [27], public financial management decisions [28], corporate funding

regulations, private equity investment [29], or infrastructure investments [39].

Furthermore, our findings complement current literature on the impact of competition on company financial strategies such as hedging decisions [30], leverage and stock offering decisions [31], and payment policies [20]. Our article is distinct from those previously mentioned. It aims to broaden the perspective on the competitive landscape by examining debt structure decisions, which have been mainly overlooked.

More crucially, our discovery that corporations have an alternative to bank debt in the face of intense market pressure backs up previous findings that competition acts as a substitute for the need for enterprises to self-discipline through other forms of governance [17]. Overall, these data indicate that corporate governance processes become less integrated when firms benefit from product market-imposed external governance pressures. Similarly, our data suggest that competition's regulatory authority serves as a governance mechanism without bank supervision.

## 3. Design of the Study

*Sample:* We looked at a sample of Bangladeshi enterprises from 2010 to 2020 to see how product market competitiveness affected loan selection. We focus our investigation on publicly traded companies since they frequently choose between public and private debt.

### *Measurements of the Variables*

*Debt Structure:* Our study uses the percentage of total debt in a company's debt structure as a dependent variable. We utilize total debt to total equity to evaluate a firm's reliance on bank loans, which aligns with recent research on debt selection variables.

*Product Market Rivalry:* We use HHI's to estimate the level of competition in product marketplaces developed by [20]. The Herfindahl-Hirschman Index (HHI) is a widely used metric for determining market concentration. It is computed by squaring each firm's market share in a market and then adding the resultant figures. It might be anything between zero and ten thousand. It is more precisely defined as the resemblance between a firm's language and the usual alternative usage of terminology by competitors in a particular industry. A more significant degree of similarity between rivals' business descriptions indicates that a firm confronts more serious competitive threats and, as a result, a higher level of product market competitiveness. Essentially, HHI is used to determine competitiveness in a specific business. If the ratio is low, the industry is considered competitive; if the percentage is large, the industry is classified as oligopolistic or monopolistic. The Herfindahl-Hirschmann Index (HHI) determines concentration ratios by squaring the market capitalization of the sector's fifty biggest businesses using the following formula:  $HHI = s_1^2 + s_2^2 + s_3^2 + \dots + s_n^2$ , where  $s_n$  is the prior firm's market share [32].

*Control Variable:* Based on earlier research, such as [42, 33], and [25], we manage a wide range of associations between variables that are thought to influence organizations'

decisions across bank loans and publicly traded debt. These variables are added to examine the real impact of competitiveness on debt selection.

**LEVERAGE:** Leverage is calculated by dividing the total liabilities by total assets. Highly leveraged enterprises have a lower demand for bank-supervised lending due to their credit market reputation [21, 22]. On the other hand, firms with higher leverage appear to have more debt because corporate insiders have less motive to protect themselves from lender monitoring, as leverage can operate as a kind of internal disciplinary action. As a result, leverage is projected to affect bank debt utilization substantially.

**TANGIBILITY:** Tangibility is the ratio of net property, plant, and equipment to total assets. Lender risk is reduced by using tangible assets to secure loans. As a result, businesses with a more extensive portfolio of outstanding fixed assets have superior deposit quality and a preference for treasury bonds [33]. We predict firms with tangible help to issue more Treasury bonds than banks based on borrower reputation models.

**ROA:** The ROA is a profitability statistic for businesses that measure project quality and creditworthiness [33]. The operating earnings ratio to total assets before depreciation is known as ROA. Profitable businesses have a higher credit rating and are thus more prepared to issue public debt. When profits fall, enterprises with a strong credit rating seek financing from banks [21, 22]. As a result, profitability is projected to decline as the association's reliance on bank loans grows.

**Tobin's Q:** Tobin's Q is a ratio that indicates a company's growth prospects. It is calculated as the sum of the stock's market price and the book value of debt divided by total assets. Businesses with more growth potential are more likely to be successful and lucrative in their operations. As a result, successful companies with more financing options are more inclined to shield themselves from bank examination to avoid delays that may alter companies' funding incentives [14]. As a result, we foresee a negative correlation between Tobin's Q and total debt to equity.

**SIZE:** The natural logarithm of an organization's total assets determines its size. The information asymmetry of significant firms improves, reducing the need for private lender monitoring [42]. Furthermore, larger companies have a greater debt capacity, allowing them to realize vast economies of scale by issuing more public debt [34]. As a result, we believe that size negatively correlates with total debt to equity.

**Z\_SCORE:** The Z SCORE is a metric that measures a company's financial health. It's calculated by using Z-score, which is calculated as follows:  $(1.2 * \text{working capital} + 1.4 * \text{retained profits} + 3.3 * \text{EBIT} + 0.999 * \text{sales}) / \text{total assets} + 0.6 * (\text{market capitalization of equity} / \text{book capitalization of debt}) / \text{total assets} + 0.6 * (\text{market capitalization of equity} / \text{book capitalization of debt})$  [35]. Smaller risk of distress is associated with higher levels. When a company is in financial trouble, it is more likely to default on loan payments. Banks' flexibility in rewriting debt arrangements attracts struggling businesses to borrow from them depending on the efficiency of liquidation choices [9]. As a result, we expect the Z-score to be negatively correlated with a company's reliance on bank loans.

**Descriptive Statistics:** The descriptive statistical analysis for the significant variables used in our empirical analysis is listed in Table 1. All corporate features are within a tolerable range, according to the data, and are typically consistent in size with previous research [20, 38]. In Bangladesh, for example, bank debt is frequently used. The majority of enterprises take out bank loans. Furthermore, we determine that the average HHI value for our sample businesses is 2079.4, which is similar prior studies [20].

Table 1 also includes descriptive information on our control variables. As shown in the table, our pattern comprises firms with varying degrees of leverage, ranging from less than 5% to more than 85%, making it a good sample for examining associate debt arrangements. Our sample has a standard profitability ratio of 4.1 percent, a typical business size of 22.92, a typical Tobin's Q of 14.78, and a typical degree of the tangibility of 0.377.

*Table 1. Summary Statistics.*

Variable	N	Mean	STD	5 <sup>th</sup> Percentile	25th Percentile	50th Percentile	75th Percentile	95th Percentile
DTERR	60	0.813	1.523	0.031	0.120	0.278	0.697	3.454
HHI	60	2079.4	303.08	1861	1877	1935	2153	2777
SIZE	60	22.920	0.701	21.951	22.306	22.971	23.451	23.904
Q	60	14.784	49.624	0.003	1.336	2.344	3.863	80.301
LEVERAGE	60	0.502	0.235	0.005	0.351	0.489	0.666	0.846
ROA	60	0.041	0.040	-0.002	0.005	0.354	0.608	0.138
TANGIBILITY	60	0.377	0.159	0.085	0.267	0.360	0.490	0.631
Z_SCORE	60	1.209	0.647	0.009	0.845	1.204	1.563	2.358
RATED	60	0.257	0.351	0	0	0	1	1
INVGRADE	60	0.113	0.229	0	0	0	0	1

The statistics for the variables we used in our regressions model are summarized in this table. There are 60 observations in the sample, spanning 2011–2020.

Table 2 shows the Pearson's correlation coefficients between the explanatory variables in our significant regression. Because the correlation coefficients are so small,

multicollinearity between the unbiased variables is rare, as shown by this correlation matrix. Furthermore, we can infer that we do not have detrimental multicollinearity because the VIFs are within reasonable values and do not exceed the crucial number of ten after computing the variance inflation factors (VIFs) for each regression.

This table shows the correlation coefficients between product competition and other parameters. There are 60 observations in the sample, spanning 2011 to 2020. The

symbols \*, \*\*, and \*\*\* imply significance at the 10%, 5%, and 1% levels, respectively.

*Table 2. Correlations.*

	DTER	HHI	SIZE	Q	LEVERAGE	ROA	TANGIBILITY	Z_SCORE
DTER	1.00							
HHI	0.19*	1.00						
SIZE	0.06*	0.1*	1.00					
Q	0.82***	0.02*	0.05*	1.00				
LEVERAGE	-0.32***	0.01*	-0.24**	-0.5***	1.00			
ROA	-0.38***	-0.16*	-0.43***	-0.19*	-0.16*	1.00		
TANGIBILITY	-0.15*	-0.7*	0.21*	-0.09*	-0.04*	-0.08*	1.00	
Z_SCORE	0.17*	-0.17*	-0.31***	0.3***	-0.37***	0.56***	-0.17*	1.00

*The Main Analysis: Effect of Product Market Competition and Debt Choice*

#### *Specification of the Model*

This section discusses a multivariate study conducted to

understand better the influence of product market competitiveness on debt selection. We use the following model to regress the bank-to-total debt ratio on product-market fluidity and other control variables:

$$DTER = \alpha_0 + a_1 HHI + a_2 SIZE + a_3 Q + a_4 LEVERAGE + a_5 ROA + a_6 TANGIBILITY + a_7 Z\_SCORE$$

DTER is the debt-to-equity ratio of total debt to total equity, and HHI is a proxy for product market competitiveness. Control variables are a collection of company characteristics that have been established in prior studies to be significant predictors of debt decisions. This collection of variables includes SIZE, Q, LEVERAGE, ROA,

TANGIBILITY, and Z SCORE. Finally, we use year and industry dummies to account for consistent debt choice variables across sectors and time. We cluster the model's errors by business throughout our empirical analysis to develop standard errors resistant to heteroscedasticity and cross-sectional correlation.

*Table 3. The impact of Product Market Competition on Debt Choice based on OLS.*

Source	SS	df	MS			
Model	104.385242	6	17.3975403	Number of obs = 60	Prob >F = 0.0000	Adj R-squared = 0.7361
Residual	32.4395675	53	.612067311	F(6, 53) = 28.42	R-squared = 0.7629	Root MSE = .78235
Total	136.82481	59	2.31906457			
DTER	Coef.	Std. Err.	t	p> t	95% Conf. Intervall	
HHI	.0007825	.0003429	2.28	0.027	.0000947	.0014702
SIZE	-.2136741	.1799992	-1.19	0.240	-.5747068	.1473586
Q	.0216246	.0027543	7.85	0.000	.0161002	.027149
LEV	-.0095272	.5816566	-0.02	0.987	-1.176183	1.157128
ROA	-13.69672	3.773597	-3.63	0.001	-.21.2656	-6.127845
ZSCO	.3526885	.222986	1.58	0.120	-.0945649	.7999418
cons	3.907648	4.428992	0.88	0.382	-4.975785	12.79108

## 4. Results

The primary findings on the link between product market competitiveness and a firm reliance on bank loans are summarized in Table 3. We begin by using ordinary least squares (OLS) to regress the bank-to-total debt ratio against the Herfindahl-Hirschmann Index (HHI) and other control variables at the company level, altering standard errors for heteroscedasticity and clustering. The Herfindahl-Harrimann Index (HHI) coefficient, our crucial variable of interest, indicates whether the quantity of bank debt in a firm's overall debt is influenced by product market competitiveness. According to the data, there is a link between competitiveness and reliance on bank loans. At the 5% level, the Herfindahl-Hirschmann Index (HHI) coefficient is positive and statistically significant, demonstrating that businesses view product market competition as an external governance

mechanism, evidenced by their increasing desire for bank lender supervision. Except for size and leverage, all control variables show statistically significant coefficients at the 5% level. We offer that smaller businesses, businesses with fewer development possibilities, and successful businesses all have a high proportion of bank debt in their total debt. These findings are mainly in line with previous research on the factors that influence loan source selection [21, 22, 25, 42, 43]. The negative SIZE coefficient, for example, is attributable to smaller enterprises' additional monitoring requirements as a result of their worsened information asymmetries [42], as well as their lesser returns from lower public debt transaction costs due to their lower debt capacity [34].

Furthermore, leverage's negative impact on bank debt dependency is at odds with leverage's disciplinary effect, which is supposed to increase management incentives to use bank loans to evade bank inspection. Our findings support the bank monitoring substitution effect, which is linked to the

disciplinary force of product market competition. Competitive pressure, to the extent that it acts as a corrective mechanism, forcing managers to reduce slack, serves as a substitute for the monitoring provided by bank lenders, who are well-positioned to access businesses' confidential information, as shown in [5, 13].

## 5. Conclusion

Numerous studies have demonstrated how product market rivalry affects corporate decisions and policies, including financing [31] and payout approaches [20]. According to some academics, competition harms firms' information environments because it prevents them from disclosing sensitive information to competitors [7]. Other studies, on the other hand, argue that competition is a suitable type of governance since it increases the likelihood of bankruptcy, forcing managers to work harder and spend less on themselves [1, 17, 18, 41]. This research aims to add to this body of knowledge by examining how product market competition affects businesses' reliance on bank loans. To address this issue, we discussed a sample of 60 observations for six Bangladeshi-listed cement producers from 2010 to 2020. We show that enterprises under significant competitive pressure are less likely to rely on bank debt financing, meaning that competition's disciplinary power substitutes for the stringent monitoring supplied by bank lenders, which is consistent with the bank monitoring substitution theory. These results pass a series of robustness tests, including resolving endogeneity concerns using difference-in-difference analysis and change regression and alternative proxies for product market competitiveness and control variables. Our findings suggest that competition's disciplinary authority is a stand-in for bank lenders' strict supervision as a governance tool. In another way, when faced with product market competition, firms shift their focus from bank lenders to bonds.

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