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Impact of Capital Structure on Firms' Performance: Evidence from Sample Nests Emerging Countries

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Abstract: Making correct and effective decisions on the capital structure by influencing capital costs can play an important role in improving the company's performance and increasing its value. Therefore, companies that consider capital structure important, by using an effective combination of financing sources, seek to achieve their primary goal: maximizing the value of the company. This study aims to investigate the impact of capital structure on the performance of companies operating in the five sample NEST emerging countries (Poland, Thailand, Sri Lanka, Saudi Arabia, and Chile) from 2010 to 2019. In this study, a multiple regression model has been used to examine the effects of high financial leverage on company performance. In this paper, we define the capital structure using short-term debt (STD) and long-term debt (LTD) indicators, as well as the operating performance indicators of return on assets (ROA) and return on equity (ROE) for the mentioned companies. The Earnings Before Interest, Tax, Depreciation, and Amortization (EBITDA) margin has been used. The findings of this study show that the financial leverage and performance of these companies in all sample NEST emerging countries are negatively associated; any increase in the level of debt in the capital structure of these companies causes damage to their operating performance and lowers the value of the mentioned firms.

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INTRODUCTION

Capital structure decisions are among the strategic decisions for companies. By adopting these decisions efficiently, a company can reach its ultimate goals, which are increasing the value of the company and enhancing the ownership of its shareholders (Detthamrong et al., 2017). Capital structure, by influencing the costs of capital, plays a crucial role in enhancing the company's value. Capital structure refers to the combination of equity and debt that a company utilizes to finance its business activities. Companies can meet their financial needs

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by referring to various financing sources, such as issuing shares and bonds or borrowing from banks. However, since the primary goal of a company is to maximize its value, companies consider a specific source or a combination of financial resources that can help them achieve their primary objective (Abor, 2007).

Due to the importance of capital structure, it has been a topic of discussion among researchers for many years as one of the most significant financial issues. As a result of these efforts, several theories have been presented in this regard. Modigliani and Miller were the first to discuss capital structure in their 1958 article, proposing a theory in this regard. In their opinion, in the case of a perfect capital market, applying any combination of capital structure will not change the value of the company (Modigliani & Miller, 1958). However, in 1963, by incorporating a tax into their previous theory, they introduced the second MM theorem. They argued that if there is a tax, firms can obtain tax savings by going into debt, thereby helping these firms to increase their values (Modigliani & Miller, 1963). Following that, the trade-off theory was proposed by Mayer, according to which a company can create a balance between the benefits of debt (tax savings) and the costs of debt (Agency and bankruptcy costs) to form and design an optimal capital structure for its firm (Myers et al., 1984).

Similarly, the pecking order theory proposed by Stewart Myers and Nicolas Majluf based on asymmetrical information; argue that raising a company's capital by publishing new equity is not a good option, because when the company's managers which assuming that they have more information compared to the investors, issue new equity, the investors think that this action of the company's managers may be due to the over-valuation of the firm. Firm managers want to capitalize on this overvaluation. Therefore, it is highly probable that investors may give a low value to the new shares issued by the company's managers (Myers et al., 1984).

Similarly, the market timing theory presented by Baker and Wurgler (2002) suggests that Market timing is the most important indicator guiding a company in deciding which type of financing (equity and debt) to pursue. According to this theory, due to the higher valuation of the company's shares, its managers are better equipped to determine when the issuance costs of the shares decrease. This means that companies are interested in issuing shares when the market value of the equity exceeds its book value and repurchasing them when the market value of these equities decreases.

It is noteworthy that most studies on the relationship between capital structure and firm performance focus on developed or developing countries. Regarding emerging markets, most existing studies have examined these countries individually. Group studies conducted in this area have primarily focused on emerging countries that are at the forefront in terms of GDP growth. Comprehensive studies examining a group of emerging countries with a lower share of global GDP are rare. Consider the following research gap: this study aims to investigate the impact of capital structure on the performance of companies operating in the five sample NEST emerging countries (Poland, Thailand, Sri Lanka, Saudi Arabia, and Chile) from 2010 to 2019. It is expected that the result of this study will help the existing and potential investors,

shareholders, creditors, company directors, and other interested parties which are somehow affected by the relationship of capital structure and financial performance in NEST emerging countries to make the right decisions and design effective policies to ensure that their current and future benefits are not at risk. In addition to enriching the relevant literature, this research will also serve as a basis for future researchers who wish to conduct further studies and investigations in this area.

This study will attempt to answer the following main research questions;

1. Is there a relationship between financial leverage and the performance of firms in each of the sample NEST emerging countries?
2. If so, what is the nature of this relationship in each of the sample NEST emerging countries?
3. Is the impact of the financial leverage on the performance of firms in all sample emerging markets the same?

The following hypotheses are developed to provide answers to the research questions posed above.

Using ROA and ROE as a firm's performance measures, given the hypothesis below:

H0 - There is no significant relationship between a firm's financial leverage and its ROA and ROE in each of the sample NEST emerging countries.

H1 - There is a significant relationship between a firm's financial leverage and its ROA and ROE in each of the sample NEST emerging countries.

Using STD and LTD as a firm's financial leverage measures, given the hypothesis below:

H0: Short and long-term debt does not significantly affect the performance of firms in each of the sample NEST emerging countries.

H1: Short and long-term debt significantly affect the performance of firms in each of the sample NEST emerging countries.

Using Sales growth and Firm size as explanatory variables, given the hypothesis below:

H0: Sales growth and firm size do not significantly affect the firm's performance in the sample of NEST emerging countries.

H1: Sales growth and firm size significantly affect the firm's performance in the sample of NEST emerging countries.

Theoretical Framework

At the end of the 1980s, with the advancement of globalization and information technology together with the movement of goods and services, the opportunity to transfer capital from one country to another also eased, and over time, with the growth of global trade, investors and international organizations have been able to access a country's domestic markets and as a result of these expansions, emerging markets altered from a stagnant state into rapidly

growing markets. These rapid changes have drawn the attention of many economists to these markets. According to Van Agtmael's definition (2007), emerging markets refer to economies that are in transition from a developing phase to a developed phase—these markets. Emerging markets, characterized by the presence of attractive investment opportunities, high returns and volatility, and independence, are considered the most attractive markets for international investors. These markets, due to their significant share in global GDP growth, play a crucial role in world economic development. Emerging markets, based on various economic and financial indicators, have been categorized into distinct groups and subgroups by different institutions, notably the grouping referred to by the multinational banking institution BBVA. Banco Bilbao Vizcaya Argentaria (BBVA) is a Spanish worldwide banking association founded in 1999 in Spain. BBVA, alongside providing various financial services worldwide, primarily in Spain, Romania, Turkey, and South and North America, also conducts valuable scientific studies on emerging markets. In 2010, the BBVA Scientific Research Department categorized emerging countries into two groups based on their expected GDP growth: EAGLEs (emerging and growth-leading economies) and NESTs (countries poised to replace EAGLEs in the future). NESTs' emerging economies include those emerging countries whose share in the global growth is expected to be higher than the average share of non-G7 developed economies. These emerging countries are expected to contribute 10 percent to the world's economic growth from 2015 to 2025. Based on the latest BBVA report, 20 countries, including Poland, Thailand, Sri Lanka, Saudi Arabia, and Chile, are included in the NEST emerging group (EAGLEs Outlook, 2016).

For years, researchers have been trying to determine whether a company's capital structure affects its performance, if so, how it affects it, and what the nature of this effect is. In response to this question, various answers have been provided. The findings of several studies indicate that the capital structure of companies, whether it consists of equity or debt, has a similar effect on their performance. Exactly what Modigliani and Miller's theory has dealt with. Modigliani and Miller discussed the irrelevance theory of capital structure in their famous 1958 article. They summarized the results of their discussion in a way that suggests the capital structure has no relationship with the company's performance. This means that a company's performance is independent of its capital structure. If a company allocates its capital structure between equity and debt, it can expect similar performance. Therefore, companies are indifferent between the choice of equity and debt while determining the source of financing for their capital structure. Ebaid (2009) empirically investigated the effects of leverage on the value of Egyptian firms operating in the manufacturing sector from 1997 to 2005. He found that there was very little to no impact of debt on the financial performance of the mentioned companies.

On the other hand, some researchers who have studied this case report a positive result. According to them, when a company provides a large amount of capital through debt, the performance of its activities improves, and the company's value increases. These results align with the theoretical predictions of agency cost theory. Jensen and Meckling, in their 1973

agency cost theory of capital structure, exposed a conflict of interest between shareholders and company directors within a company. They stated that increasing the proportion of debt in the company's capital structure will prevent the self-interested actions of the company's managers from being undermined, and ultimately, it will pave the way for the company's increasing value. Therefore, Jensen and Meckling believe that increasing the level of debt in a company's capital structure will help improve its operational performance.

Pal Singh et al. (2019) used a multiple regression model to study the effects of capital structure on the profitability of Nifty 50 companies listed on the National Stock Exchange from 2008 to 2017. He found that all OLS fixed effect and Random effect models show that the capital structure of sample Indian companies has a positive impact on firms' profitability, meaning that as the level of debt in the capital structure increases, the profitability of the mentioned companies also increases.

Vijayakumaran (2017) empirically examined the impact of capital structure on the financial performance of 1481 Chinese non-financial companies from 2003 to 2010. He found that increasing the level of leverage in the capital structure of Chinese manufacturing companies also increases their financial performance.

Similarly, several other researchers who have examined the relationship between capital structure and a company's value in various cases claim that companies' reliance on debt reduces their operational performance. These results are primarily inspired by the pecking order theory of capital structure, which states that if there are internal sources of funding (Retained earnings), referring to external funding sources or issuing new shares, will lower the value of the company. Therefore, these researchers suggest that companies seeking financial resources would be better off referring to their internal financing sources.

Mauwa et al. (2016) investigated the impact of capital structure on the financial performance of firms listed on the Rwanda Stock Exchange in 2014. He found a negative association between capital structure and the ROA and ROE of the mentioned companies. He suggests that Rwandan companies can improve their financial performance by controlling their leverage and properly managing their working capital.

Mwangi et al. (2014) examined the relationship between capital structure and firm value in 42 non-financial companies listed on the Nairobi Stock Exchange from 2006 to 2012.

The results obtained using the Feasible Generalized Least Squares (FGLS) regression model show that the capital structure and operational performance of the mentioned firms are negatively related. He suggests that Kenyan manufacturing companies should reduce their reliance on long-term debt in their capital structure to increase their operational performance.

Pouraghajan et al. (2012) empirically examined the influence of capital structure on the financial performance of listed companies on the Tehran Stock Exchange from 2006 to 2010. He found a significantly negative relationship between the capital structure and the

performance of the mentioned sample companies. He suggests that reducing the level of debt in the capital structure of these companies can increase their profitability.

RESEARCH METHOD

A quantitative research design was used in the study to investigate the relationship between company performance and capital structure. In particular, the researchers statistically evaluated the effects of several capital structure indicators (such as debt ratios) on performance metrics (such as return on equity and return on assets) of the chosen businesses using econometric modeling approaches, including regression analysis. The design prioritized the collection of numerical data, objectivity, and the ability to test hypotheses empirically. This method enabled the accurate estimation of the extent and direction of the capital structure's impact on company performance.

Data Source and Sample

The required data for this study are provided from secondary data sources. The required data has been prepared from the official websites of financial companies, including Morningstar & Finbox, which deal with data on companies worldwide, as well as from the annual reports of companies operating in the above sample emerging countries.

This research is based on the industrial companies registered in the five NEST emerging countries (Poland, Thailand, Sri Lanka, Saudi Arabia, and Chile) from 2011 to 2019. In this study, a stratified sampling method has been used to select a sample from the population. Based on the stratified sampling method, a certain percentage of the total population is selected as the sample, and the results obtained from analyzing this sample are applied to the entire population. By December 2019, the total number of registered manufacturing companies operating in the above-mentioned emerging countries had almost reached 755. In this study, using the stratified sampling method, out of the total population of 755 companies, 20% (151 companies) were selected as the sample. This sample illustrates all the sub-manufacturing sectors that operate in the economies of the aforementioned countries.

Variables

Since the purpose of this research is to examine the relationship between capital structure and firm performance, after revising similar work done in the past (Herciu, 2017; Das & Tas, 2018; Nirajini, 2013; Narsaiah, 2020; Domnick, 2018), it was decided that for the capital structure of firms, each of the short-term debt (STD) and long-term debt (LTD), for the operating performance of the companies each of return on asset (ROA), return on equity (ROE) and EBITDA margin as a control variable each of the sales growth and company size variables will be used.

Data Analysis and Research Model

To identify the relationship between capital structure (Short-Term and long-term debt) and the performance (ROA, ROE, and EBITDA) of relevant companies, the prepared data for this

study, which was procured from secondary data sources, will be analyzed using the following regression equations.

$ROA = \beta 0 + \beta 1 STDA + \beta 2$ LTDA$+ \beta 3\ GRW + \beta 4\ SIZE + \epsilon$

$ROE = \beta 0 + \beta 1 STDA + \beta 2$ LTDA$+ \beta 3\ GRW + \beta 4\ SIZE + \epsilon$

EBITDA.M $= \beta 0 + \beta 1 STDA + \beta 2$ LTDA$+ \beta 3\ GRW + \beta 4\ SIZE + \epsilon$

Where,

STDA – shows the short-term debt (STD) to total assets (TA) ratio

LTDA – shows the long-term debt (LTD) to total assets (TA) ratio

GRW - Shows sales increase compared to last year. (Current year's sales - Previous year's sales) / (Previous year's sales)* 100

SIZE - indicates the size of the company, as measured by its sales log.

ϵ - the error term.

To obtain the study's results, data analysis is performed in three main steps using Stata 16 software. In the first step, a summary of the statistics for the variables used in the study is presented through descriptive analysis. In the second stage, correlation analysis is performed to determine the bilateral relations between the dependent and independent variables. In the third stage, to obtain the final result of the analysis, the prepared data is subjected to regression analysis. It should be noted that before moving on to regression analysis, a series of essential tests, such as unit root and Multicollinearity tests, are performed to support the accuracy of the data and the results obtained from the analysis. In this study, to select the appropriate model for regression analysis (Ordinary least squares, fixed effects, and random effects), the Breusch-Pagan Lagrange (LM) coefficients, F, and Hausman tests are performed. After using the Modified Wald and Wooldridge test, if there are problems with Heteroscedasticity and Autocorrelation, Robust Standard error regression models have been used to prevent and control these problems.

FINDINGS

Descriptive Analysis

Table 1 presents the statistical summary of dependent variables (STD, LTD), independent variables (ROA, ROE, EBITDA), and control variables (Sales growth, firm size) for a sample of manufacturing firms operating in Poland, Thailand, Sri Lanka, Saudi Arabia, and Chile from 2010 to 2019.

The descriptive statistics of Polish manufacturing companies, as shown in the first table, indicate that the capital structure of these companies, with an average value of 34.76 and 15.86, respectively, consists of short-term and long-term debt. The performance variables, including ROA, ROE, and EBITDA margin, with mean values of 4.5, 9.9, and 9.8, respectively,

indicate a relatively good operating performance of these companies during the study period. Similarly, the control variables, sales growth and company size, have an average value of 12.3 and 6.7, respectively. Among all the variables used in this study, sales growth and ROE have the most significant standard deviations, at 23 and 16, respectively, while the company size has the lowest standard deviation of 2.2 throughout the 2010-2019 period.

The descriptive statistics of Thai manufacturing companies, as shown in the table below, indicate that Thai companies, on average, prepared 35.45% and 16.81% of their required assets through short-term and long-term debt, respectively. Similarly, the mean values of performance measures for each ROA and ROE indicate that these companies, on average, earned 4.2 and 8.7 percent in earnings in exchange for the value of each dollar of common equity investment and the company's assets, respectively. The mean value of the EBITDA margin indicates that the mentioned firms generate 11.5% earnings before interest, taxes, depreciation, and amortization (EBITDA) as a percentage of their income. The maximum value of firm size is almost a close approximation to its mean value, which suggests that these companies did not experience a decrease in size growth during the study period.

The descriptive statistics of Sri Lankan manufacturing companies, as shown in the table below, indicate that these companies, on average, allocate 34.79% and 15.74% of their capital structure to short-term and long-term debt, respectively. On the other hand, their ROA, ROE, and EBITDA, with mean values of 8.8, 19, and 13.5, respectively, indicate an excellent operational performance of these companies during the study period. The changes in sales growth values show that during the study period, one of the companies experienced a decrease in revenue of -18.9, while another company had an increase in revenue of up to 58.7, indicating an expansion of this company over the period.

The descriptive statistics of Saudi Arabian manufacturing companies, as shown in the table below, indicate that these companies, on average, secured 55.5% of their capital through debt, where 29.5% relates to short-term debt and the remaining 26% is provided through long-term debt. Similarly, the Performance figures of these companies indicate that the shareholders of the sample Saudi Arabian manufacturing companies earned an average of 4.9% earnings for each dollar of common equity investment during the years 2010-2019. The mean value of ROA indicates that these firms received 3.7% of the income in exchange for the value of each dollar of their assets. The average value of the EBITDA margin indicates that the mentioned firms generated approximately 18.9% operating cash for every dollar of revenue.

The descriptive statistics of Chilean manufacturing companies, as shown in the table below, indicate that these firms have an average value of 20.4% and 29.6% for short-term and long-term debt, respectively. They devote approximately 50% of their capital structure to debt capital. The average values of each ROA and ROE indicate that Chilean manufacturing firms earned 6.2% and 12.2% of their earnings in exchange for investing every dollar of the firm's assets and capital provided by shareholders. Regarding control variables, it is worth noting that Sales growth during the study period had a mean value of 5.9, with a standard

deviation of 15.8, which is relatively high. The difference in its value indicates that, among the investigated companies, one company experienced a negative growth of 35%, while another firm showed a positive growth of 53% in sales, indicating expansion during the study period. The size of the companies, with a mean value of 9.97, Minimum and Maximum values of 5.2 and 14.4, respectively, shows that even though these companies operate in different fields of the manufacturing sector, they are almost similar in size. Among all the variables used in this study, sales growth has the most significant standard deviation of 15. 86, while the company's size had the lowest standard deviation of 2.5 during the study period (2010-2019).

Table 1: *Descriptive Statistics by Country (2010–2019)*

Country	Variable	Mean	Std. Dev.	Min	Max
All Countries	ROA	4.58	7.95	-37.92	43.92
	ROE	9.99	15.95	-37.3	64.68
	EBITDA.M	9.84	14.2	-59.65	64.93
Poland	STD	34.76	15.63	1.9	84.32
	LTD	15.87	9.75	0.0	49.45
	Sales growth	12.36	23.03	-28.22	83.47
	Firm size	6.79	2.27	1.39	15.52
	ROA	4.27	7.16	-59.14	37.34
	ROE	8.78	16.64	-66.66	52.82
	EBITDA.M	11.54	9.15	-20.79	44.55
Thailand	STD	35.45	15.46	3.3	76.54
	LTD	16.82	12.56	0.15	64.04
	Sales growth	7.2	20.02	-24.93	68.69
	Firm size	8.99	1.76	4.47	14.8
	ROA	8.81	10.98	-12.78	51.77
	ROE	19.09	20.45	-2.76	81.44
	EBITDA.M	13.59	9.5	-11.5	60.69
Sri Lanka	STD	34.8	15.4	0.01	65.38
	LTD	15.75	11.31	-1.1	48.55
	Sales growth	13.24	17.23	-18.89	58.72
	Firm size	9.55	1.43	3.64	11.85
	ROA	3.78	7.25	-19.35	21.77
	ROE	4.91	18.33	-79.86	36.65
	EBITDA.M	18.91	19.46	-39.26	66.97
Saudi Arabia	STD	29.49	20.56	6.14	74.06
	LTD	25.99	17.8	2.19	68.4
	Sales growth	6.57	23.86	-31.61	69.56
	Firm size	8.03	1.77	5.25	12.15
	ROA	6.2	7.39	-31.99	42.34
	ROE	12.2	11.29	-10.13	47.44
	EBITDA.M	15.22	13.19	-39.86	71.83
Chile	STD	20.43	6.81	7.19	58.6
	LTD	29.6	13.95	0.19	65.62
	Sales growth	5.91	15.86	-35.29	53.18
	Firm size	9.98	2.55	5.26	14.45

Note: *ROA = Return on Assets; ROE = Return on Equity; EBITDA.M = Earnings Before Interest, Tax, Depreciation, and Amortization Margin; STD = Short-Term Debt; LTD = Long-Term Debt.*

Correlation Analysis

Below table 2 shows the nature of the bilateral relationship between each of the dependent (Short-term debt, Long-term debt, Sales growth, and Firm size) and independent (ROA, ROE, EBITDA.M) variables of 151 sample manufacturing firms operating in Poland, Thailand, Sri Lanka, Saudi Arabia, and Chile during the study period of 2010-2019.

The correlation results of Polish manufacturing companies, as shown in Table 2, indicate that each of the capital structure variables, including short-term and long-term debt, is negatively correlated with the performance of the mentioned companies. Short-term debt (STD) has a significantly negative impact of -0.12, -0.13, and -0.18 on the ROA, ROE, and EBITDA margin, respectively. In contrast, long-term debt (LTD) has a significantly negative impact of -0.18 and -0.10 on the ROA and ROE of the mentioned companies. Similarly, control variables (sales growth and firm size) are significantly positively correlated with firm performance.

The correlation results of Thai manufacturing companies, as shown in the two tables, indicate that short-term debt (STD) has a significantly negative effect on the ROA, ROE, and EBITDA margin of Thai companies during the study period. In contrast, long-term debt and control variables are inversely correlated with the operating performance of these companies.

The correlation results of Sri Lankan manufacturing companies, as shown in Table 2, indicate that, in general, short-term debt (STD) and long-term debt (LTD) have a significantly positive correlation with the performance measures of the mentioned companies during the study period. Regarding control variables, it is worth noting that sales growth and firm size are positively correlated with a firm's performance.

The correlation results of Saudi Arabian manufacturing companies, as shown in Table 2, indicate a negative association between debt and the operating performance of these companies. In contrast, the control variables, sales growth, and firm size, are positively correlated with the performance of Saudi Arabian manufacturing companies.

The correlation results of Chilean manufacturing companies, as shown in Table 2, indicate that STD has a significantly positive influence of 0.017 on the ROE of the mentioned companies. In contrast, long-term debt has a significantly negative influence of -0.22 on the ROA of these companies. Similarly, firm size has a significantly negative correlation with the ROA of the mentioned firms during the study period, while sales growth has a significantly positive relationship with the operating performance of these companies.

Before running regression analysis, we used the Im-Pesaran-Shin (IPS) unit root test and Variance Inflation Factor (VIF) tests to check the stationarity and freedom from multicollinearity of the data for companies in each of the sample countries.

***Table 2**: Pearson Correlation Coefficients Poland, Thailand, Sri Lanka, Saudi Arabia, Chile) 2010-2019*

Countries		ROA	ROE	EBDAM	STD	LTD	Sal. G	Firm.S
Poland	ROA	1.0000						
	ROE	0.86 ***	1.0000					
	EBITDA.M	0.74 ***	0.5 ***	1.0000				
	STD	-0.119**	0.13***	-0.18***	1.0000			
	LTD	-0.18***	-0.10**	-0.0466	-0.3***	1.000		
	Sales growth	0.22 ***	0.18***	0.118 **	-0.007	0.006	1.000	
	Firm size	0.204***	0.24***	0.13 ***	0.12**	0.1**	0.027	1.0000
Thailand	ROA	1.0000						
	ROE	0.86***	1.0000					
	EBITDA.M	0.66***	0.65***	1.0000				
	STD	-0.30***	-0.3***	-0.420***	1.0000			
	LTD	-0.0096	0.09 **	0.13***	-0.3***	1.0000		
	S. growth	0.30 ***	0.3 ***	0.19***	-0.0101	0.0439	1.000	
	Firm size	0.14***	0.14***	-0.0152	-0.1***	0.45***	0.054	1.0000
Sri Lanka	ROA	1.0000						
	ROE	0.92***	1.0000					
	EBITDA.M	0.43***	0.331***	1.0000				
	STD	-0.0006	0.1669**	-0.0594	1.0000			
	LTD	-0.28***	0.1639**	0.187***	0.0318	1.0000		
	Sales growth	0.0110	0.0903	0.0636	0.1166	0.1937	1.0000	
	Firm size	0.0225	0.1179	0.1574 **	0.43 ***	0.54***	0.0813	1.0000
Saudi Arabia	ROA	1.0000						
	ROE	0.847***	1.0000					
	EBITDA.M	0.60 ***	0.54 ***	1.0000				
	STD	-0.38***	-0.37***	-0.52***	1.0000			
	LTD	-0.18**	-0.09	0.0900	-0.5***	1.0000		
	Sales growth	0.23* **	0.313***	0.32***	-0.2***	0.26* **	1.0000	
	Firm size	0.117	0.266***	0.257**	-0. 060	0.3***	-0.0011	1.0000
Chile	ROA	1.0000						
	ROE	0.899***	1.0000					
	EBITDA.M	0.775***	0.76***	1.0000				
	STD	0.0950	0.017**	-0.0622	1.0000			
	LTD	-0.221***	-0.0680	0.0060	-0.1162	1.0000		
	Sales growth	0.1761**	0.18**	0.12*	0.023	0.013	1.0000	
	Firm size	-0.0591*	-0.025	-0.1195	0.17**	0.230***	-0.05	1.0000

Note: * significant at 0.10, ** significant at 0.05, and *** significant at 0.01 level.

The results obtained from the Im-Pesaran-Shin (IPS) test show that the P-value of no country is greater than 5%. Similarly, the results of the Variance Inflation Factor (VIF) test show that the mean VIF for any country is not larger than 5. Therefore, in short, it can be said that the data prepared for regression analysis is stationary and free of multicollinearity. Also, using the Modified Wald and Wooldridge test, we observe heteroscedastic problems arising from cross-sectional data and autocorrelation problems arising from time series. Thus, to control and remove these problems, we employ Robust Standard error regression models for dependent variables to obtain suitable results.

Regression Analysis

Table 3 shows the impacts of capital structure (Short and long-term debts) on the performance (ROA, ROE, EBITDA.M) of Polish companies engaged in the manufacturing sector from 2010 to 2019. The figure below shows that the short-term debt, with coefficient values of -0.290, -0.399, and -0.251, is statistically significantly negative concerning ROA, ROE, and EBITDA margin of the mentioned companies at a 1% level, respectively.

***Table 3**: Fixed and Random (Robust) Regression Model – Poland*

Explanatory Variables	ROA (F.Effect)	P.Value	ROE (F.Effect)	P.Value	EBITDAM (R.EFCT)	P.Value
STD	-0.290351 (-3.92)	0.000	-0.399922 (-3.61)	0.001	-0.2513325 (-3.17)	0.002
LTD	-0.211344 (-2.45)	0.019	-0.2633268 (-1.86)	0.071	-0.2106411 (-1.60)	0.110
Sales growth	0.0844821 (5.81)	0.000	0.1691968 (5.63)	0.000	0.0848589 (3.45)	0.001
Firm size	0.2629896 (1.71)	0.095	0.132979 (1.86)	0.070	1.391988 (1.93)	0.054
Constant	2.975244 (0.44)	0.666	4.720821 (0.50)	0.617	11.41322 (1.48)	0.138

Model Statistics

	ROA	**ROE**	**EBITDAM**
F-Statistic (FE)	11.12	13.74	–
Wald-Statistic (RE)	–	–	23.67
R^2	0.1701	0.0149	0.0875
Breusch–Pagan. (RE)	–	–	44.46 (0.0000)
Hausman STC. (RE vs. FE)	11.50 (0.0096)	7.06 (0.0076)	9.04 (0.0060)
Number of companies	40	40	40
Observations	400	400	400
Duration	2010–2019	2010–2019	2010–2019

Note: * significant at 0.10, ** significant at 0.05, and *** significant at 0.01 level.

Similarly, long-term debt (LTD) with the coefficient values of -0.211 and -0.263 has a significantly negative impact on the ROA and ROE of Polish manufacturing companies during the study period. Regarding the control variables, it is worth noting that sales growth, with coefficients of 0.08, 0.169, and 0.084, has a significantly positive impact on the performance of the mentioned companies. Additionally, the size of the companies has a significantly positive impact on the performance of all sample companies.

The findings of this study indicate that the performance of Polish industrial companies is negatively related to debt. This means that by increasing the level of debt in the capital structure of these companies, their performance decreases. Therefore, Polish manufacturing companies must rely more on their internal capital to increase their operational efficiency.

This result aligns with the findings of Ewa Majerowska et al. (2017), who studied the impact of leverage on the performance of Polish companies. He found that increasing the level of debt in the capital structure of Polish firms reduces the value of these firms. This means that increasing the amount of debt in the capital structure of these firms decreases their operating performance. Therefore, these manufacturing companies must focus more on their internal capital, rather than external sources, to increase their operational efficiency.

Table 4 below shows the effects of capital structure on the financial performance of Thai manufacturing companies from 2010 to 2019. The results obtained from the fixed effects regression model show that the capital structure variables of Thai manufacturing companies, including both short-term and long-term debt ratios, have a negative and significant impact on the performance of these companies during the study period. The short-term debt (STD) ratio, with coefficients of -0.18, -0.406, and -0.257, is statistically significant at the 1% level for the ROA, ROE, and EBITDA margin of Thai manufacturing companies, respectively.

***Table 4**: Fixed and Random Fixed and Random (Robust) Regression Model – Thailand*

Explanatory Variables	ROA (R.Effect)	P-Value	ROE (R.Effect)	P-Value	EBITDAM (R. Effect)	P-Value
STD	-0.1807914	0.000	-0.4068	0.003	-2.579651	0.000
	(-5.38)		(-3.90)		(-5.33)	
LTD	-1.710736	0.000	-2.082239	0.030	-0.060831	0.934
	(-4.25)		(-2.17)		(-0.08)	
Sales	0.1044557	0.000	0.2750164	0.000	0.0881489	0.001
growth	(5.30)		(6.01)		(3.45)	
Firm size	1.235704	0.111	1.308606	0.157	-2.708757	0.038
	(1.59)		(1.41)		(-2.08)	
Constant	1.698085	0.829	12.09695	0.148	22.98515	0.000
	(0.22)		(1.45)		(5.68)	

Model Statistics

	ROA	**ROE**	**EBITDAM**
Wald-Statistic (RE)	102.82	71.28	80.00
R^2	0.2277	0.2000	0.2199
Breusch–Pagan STC. (RE)	230.78 (0.0000)	404.73 (0.0000)	448.09 (0.0000)
Hausman STC.	7.66 (0.1801)	1.30 (0.8603)	0.92 (0.9402)
Number of companies	57	57	57
Observations	570	570	570
Duration	2010–2019	2010–2019	2010–2019

Note: * significant at 0.10, ** significant at 0.05, and *** significant at 0.01 level.

The long-term debt (LTD) ratio, with coefficients of -0.171 and -0.208, has a negative and significant relationship with ROA and ROE of the mentioned companies. Regarding control

variables, it should be noted that sales growth has a significantly positive relationship with all performance measures, while for the size of the companies, no evidence has been found to show any significant relationship with the performance of these firms. The results of this study can be summarized as follows: the capital structure and operational performance of sample Thai manufacturing companies are negatively related. Specifically, increasing the proportion of debt in the capital structure of these companies decreases their operating performance. This result is in line with the findings of Chancharat et al. (2015), who found that the level of debt and performance of Thai firms operating in the manufacturing sector are negatively associated.

Table 5 below shows the influence of capital structure on the performance of Sri Lankan manufacturing companies from 2010 to 2019.

***Table 5**: Fixed and Random (Robust) Regression Model – Sri Lanka*

Explanatory Variables	ROA (R. Effect)	P-Value	ROE (R. Effect)	P-Value	EBITDAM (F. Effect)	P-Value
STD	-0.05912 (-0.80)	0.426	0.405141 (0.28)	0.779	0.1108802 (0.85)	0.408
LTD	-0.3702531 (-3.40)	0.001	-0.5137459 (-2.90)	0.004	-0.0395077 (-0.26)	0.794
Sales growth	0.1376279 (4.64)	0.000	0.3201614 (3.76)	0.000	-0.0060335 (-0.14)	0.886
Firm size	1.000772 (0.99)	0.324	2.508036 (1.98)	0.047	-3.63854 (-0.96)	0.352
Constant	5.319553 (0.54)	0.588	-2.4266 (-0.16)	0.872	45.43567 (1.47)	0.159

Model Statistics

	ROA	**ROE**	**EBITDAM**
F-Statistic (FE)	—	—	1.44 (0.2605)
Wald-Statistic (RE)	40.71 (0.0000)	25.90 (0.0000)	—
R^2	0.1020	0.0833	0.1277
Breusch–Pagan STC. (RE)	566.77 (0.0000)	513.25 (0.0000)	—
Hausman STC. (RE vs. FE)	2.82 (0.5878)	3.41 (0.5114)	13.28 (0.0100)
Number of companies	19	19	19
Observations	190	190	190
Duration	2010–2019	2010–2019	2010–2019

Note: * significant at 0.10, ** significant at 0.05 and *** significant at 0.01 level

Based on the results of the study, the short-term debt (STD) ratio has no any significant impact on the performance measures of these firms during the study period, while long-term

debt ratio with the coefficient values of -.370 and -.513 has negative significant impact on the ROA and ROE of these companies at the level of 1%.

Similarly, sales growth has a significantly positive relationship with the ROA and ROE, while the size of the firm has a positive impact on the ROE of these firms. In short, it can be said that the level of long-term debt and the firm performance of Sri Lankan manufacturing companies are negatively related; any increase in the level of this debt will result in a decrease in the operating performance of these companies. Therefore, to increase their operating performance, these firms should devote more of their capital structure to internal finance sources and short-term debt. This result is consistent with Chandrasiri et al.'s (2018) finding of a negative relationship between leverage and the performance of Sri Lankan industrial firms.

Table 6 below shows the effect of capital structure on the performance of Saudi Arabian manufacturing companies from 2010 to 2019. The regression results show that the short-term debt with the coefficient of -.278,-.631, and -.742 significantly negative affect the performance variables of mentioned companies at the level of 1 %, while the long-term debt ratio with coefficient values of -.257,-.685 and -.489 has significantly negative impact on the ROA, ROE and EBITDA margin measures of these companies. Similarly, control variables, including sales growth and firm size, have a significantly positive association with the performance of these companies. The findings of this study report a negative relationship between the capital structure and the performance of Saudi companies during the study period. This result aligns with the findings of Ewayed et al. (2014), who discovered a negative correlation between debt and the performance of 74 Saudi Arabian industrial firms from 2004 to 2012.

Table 6: *Random Effects (Robust) Regression Model – Saudi Arabia (2010–2019)*

Explanatory Variables	ROA (R.Effect)	p-value	ROE (R.Effect)	p-value	EBITDAM (R. Effect)	p-value
STD	-2.786984 (−5.69)	.000	-6.310466 (−4.06)	.000	-7.424367 (−6.23)	.000
LTD	-2.579728 (−5.39)	.000	-6.853434 (−3.11)	.002	-4.894443 (−4.19)	.000
Sales Growth	0.690898 (2.37)	.018	1.985784 (3.09)	.002	1.38906 (4.25)	.000
Firm Size	1.030905 (1.90)	.058	4.350745 (2.20)	.028	2.569785 (1.60)	.109
Constant	9.381169 (1.98)	.048	5.076597 (0.40)	.690	31.96541 (2.61)	.009
Wald. St	37.48	.000	28.87	.000	48.14	.000
R^2	0.4434		0.4667		0.4452	
Breusch–Pagan STC	45.37	.000	39.61	.000	33.59	.000
Hausman	8.27	.0822	8.63	.0710	2.29	.6828
Number of Companies	16		16		16	

Observations	60	60	60
Duration	2010–2019	2010–2019	2010–2019

Note: * significant at 0.10, ** significant at 0.05 and *** significant at 0.01 level

Table 7 presents the impact of capital structure measures (STD, LTD) on the performance measures (ROA, ROE, EBITDA) of Chilean companies in the manufacturing sector for the period 2010-2019. Based on the regression results, except for the significantly negative association between long-term debt and the ROA of Chilean firms, debt has no significant impact on the performance of Chilean manufacturing companies. Similarly, sales growth has a significantly positive impact on the firm's performance.

Table 7: *Fixed and Random Effects (Robust) Regression Model (2010–2019) – Chile*

Explanatory Variables	ROA (R. (R.Effect)	p-value	ROE (R.Effect)	p-value	EBITDAM (R.Effect)	p-value
STD	-0.945175 (−0.74)	.457	1.007459 (0.42)	.978	0.188667 (0.08)	.935
LTD	-2.36415 (−2.38)	.017	-1.636272 (−0.98)	.336	-2.158143 (−1.02)	.310
Sales Growth	0.684862 (1.42)	.157	0.973874 (2.01)	.054	2.219865 (1.82)	.069
Firm Size	0.839622 (0.86)	.392	1.045926 (0.20)	.583	-0.727161 (−0.09)	.932
Constant	11.33211 (2.97)	.003	12.40756 (0.27)	.978	18.5567 (3.40)	.002
Wald Statistic	29.99	.0000	13.99	.0087	40.84	.0027
R^2	0.0598		0.0338		0.0601	
Breusch–Pagan STC (RE)	164.75	.0000	232.37	.0000	315.47	.0000
Hausman STC (RE, FE)	5.78	.2159	2.82	.5883	2.29	.6831
Number of Companies	19		19		19	
Observations	190		190		190	
Duration	2010–2019		2010–2019		2010–2019	

Note: * significant at 0.10, ** significant at 0.05 and *** significant at 0.01 level

DISCUSSION AND CONCLUSION

In this study, we investigated the impact of capital structure on the performance of sample manufacturing companies in five emerging countries (Poland, Thailand, Sri Lanka, Saudi Arabia, and Chile) throughout 2010-2019. The empirical results obtained from this study show that the performance of companies in all five countries investigated is influenced by financial leverage. Based on the study results, debt generally hinders the operating performance of manufacturing companies in all five sample NESTs in emerging countries during the study period. This means that if these countries increase the proportion of debt in their capital structure, they must also be willing to sacrifice a portion of their companies' operational

performance and value. This result is consistent with the findings of Mauwa et al. (2016), who investigated the impact of capital structure on the financial performance of firms listed on the Rwanda Stock Exchange in 2014 and found a negative association between financial leverage and the performance of the mentioned companies. The above result is inconsistent with the results of Vijayakumaran (2017), who empirically examined the impact of capital structure on the financial performance of Chinese non-financial companies and found a positive association between capital structure and financial performance.

The results of this study suggest that companies with a higher debt reliance in their capital structure tend to have lower operating performance compared to those that have been more conservative in their capital financing. This result is in line with the pecking order hypothesis which explains that financing through debt is quite expensive and has more information asymmetry compared to internal financing, which means, if a company for the financing of their assets, in the availability of sufficient retained earnings, goes to debt, surly it will lower its value, therefore, in case of financing, internal financing must be preferred over external financing (Myers & Majluf, 1984). Based on descriptive statistics, among the five countries investigated, Saudi Arabia is the country with the most indebted capital structure compared to the other countries in the group. Similarly, in these five emerging countries, short and long-term debt has the most negative impact on the performance of Saudi Arabian manufacturing companies.

Regarding the control variables, it should be noted that, in general, sales growth and firm size have a positive effect on the performance of manufacturing companies across all sample emerging countries, indicating that as companies grow in sales and expand their operating range, their performance also improves. In general, the results obtained from this study are consistent with the alternative hypotheses and show a significant effect of financial leverage on each of the performance measures of sample companies, except for some limited, insignificant relationships that exist for specific variables and sample countries, such as Chile and Sri Lanka.

Limitations of the Study

In this study, due to the lack of access to financial databases for the manufacturing sector of all emerging countries under study, a sample of 20% of companies has been selected. This means that the mentioned study does not include all manufacturing companies operating in the sample emerging countries.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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AUTHORS CONTRIBUTIONS

In conducting this research, the contributions of the authors were as follows:

- **Dr. Ehsanullah Barakzai**: Drafting the theoretical framework of the research, collecting data and figures from various sources, writing the introduction, research methodology, and data analysis sections, performing statistical analyses using STATA software, and drawing final conclusions.
- **Prof. Dr. Hatice DOĞUKANLI**: Providing scientific guidance, research methodology, reviewing the research structure, final editing of the text, consulting on writing the findings, preparing practical recommendations, interpreting statistical results, and aligning them with the existing literature.

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DATA AVAILABILITY STATEMENT

If you have any concerns regarding the data supporting the findings of this research, you may contact the author via the following email address. (a.barakzay@yahoo.com).

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