



The Impact of Capital Structure on Firm Performance: Empirical Evidence from Egypt

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Abstract

The potential impact of capital structure on firm performance has gained considerable interest from many researchers and practitioners in the corporate finance field. The interest in capital structure decision stems from its critical impact on firm performance and shareholder wealth. The aim of this study is to examine the impact of capital structure on firm performance in Egypt. For this purpose, this study uses a sample of 40 companies listed on the Egyptian stock exchange during the period from 2019 to 2023. Return on assets (ROA), return on equity (ROE) and Tobin's Q (TQ) are used as performance measures, while short-term debt ratio (STD), long-term debt ratio (LTD), and debt to equity ratio (DE) are represented as capital structure variables. Fixed effects regression model is applied to assess the impact of capital structure on firm performance variables. The results show that there is a significant negative impact of STD and LTD on ROA and a significant positive impact of DE on ROA. Moreover, there is a significant positive impact of LTD on ROE and a significant negative impact of DE on ROE. When using TQ as a dependent variable, the results reveal that there is a significant negative impact of LTD and DE on TQ and there is a positive and significant impact of STD on TQ. The results suggest that capital structure theories, such as pecking order theory and trade-off theory, can be applied to explain the impact of capital structure on firm performance in Egypt. This study contributes to corporate finance literature by providing empirical evidence regarding the impact of capital structure on firm performance from Egypt as an emerging market.

Subject Areas

Finance

Keywords

Capital Structure, Firm Performance, Egypt

1. Introduction

Corporate capital structure is a fundamental issue in corporate finance field. Several studies have examined the potential impact of capital structure on firm performance from different views and in different environments. It has been the subject of a great deal of study and discussion in the corporate finance literature. Many researchers have defined capital structure of firms in their research. According to [1], capital structure of a firm refers to the proportion of equity and debt used to finance the formation of a firm's assets. [2] defined capital structure as the mix of a company's long-term debt, short-term debt, preferred stock, common stock, and retained earnings that are used to finance its operations and growth. Moreover, [3] defined the capital structure as the mix of equity and debt that the company uses to finance its operations, productive assets and further growth. However, capital structure decision is considered a big challenge for corporate management as it plays a vital role in the company's survival. Wrong decision on capital structure may lead to financial distress for the companies and even bankruptcy. Thus, the positive and negative consequences of this decision play a significant role in determining the future of every company [4] [5].

Capital structure is a direct factor in determining the total cost of capital and contributes to the overall level of risk to which the company is exposed. Choosing different debt ratios among the mixed financing sources can have significant effects on the value of the company and hence on shareholder wealth [3]. Therefore, companies should use an appropriate mix of equity and debt that minimizes the cost of capital and maximizes the value of the firm, which is referred to as the optimal capital structure. [1] stated that when the capital structure is at the optimal point, the business experiences the lowest cost of capital, which maximizes the value of the owners' assets. To create an optimal capital structure, determining the optimal amount of debt is vital. Various market factors, such as financial constraints, taxes, asymmetric information, and agency costs, affect the achievement of the optimal capital structure. According to [6], an optimal capital structure reduces the cost of financial resources, improves net economic returns and increases the value of the share. The optimal capital structure of a company is a function of various variables that include the business risks faced by the company and the tax rate. However, the decision of capital structure is a continuous process, whenever the company needs finance for the project. Thus, it is ideal when it is structured in a way that maximizes the market value of the involved company. It is considered a framework that represents how debt and equity are employed in order to finance the firm operations [7].

Research Objective and Question

Several studies have examined the potential impact of capital structure on firm performance from different views and in different environments, yet these studies have revealed inconsistent findings. Moreover, it is observed that most of the research about the impact of capital structure on firm performance is conducted in developed countries. However, the research on this topic in emerging markets is

limited. The objective of this study is to provide empirical evidence regarding the impact of capital structure on firm performance from Egypt as an emerging market. In order to fulfil the research objective, this study attempts to answer the following question: *Does capital structure have an impact on firm performance in Egypt?*

2. Literature Review

2.1. Reviewing Theoretical Literature

Various theories of capital structure have been proposed to explain the relationship between capital structure decision and firm performance and value. Modigliani and Miller theory, Agency theory, Trade-off theory and pecking order theory are examples of key capital structure theories.

1) Modigliani and Miller Theory

M&M theory was first introduced in 1958, and it raised the most interesting question regarding the relevance of financing decisions in relation to firm performance. They claimed that any changes in the current ratios of equity and debt cannot affect firm value, which means that there is no better or worse capital structure, and firm values are irrelevant to different levels of financial leverage [3]. Modigliani and Miller (1958) in their initial irrelevance proposition explained that in a perfect capital market, a company's choice of how to formulate its capital structure has no effect on its value. Moreover, in the nonexistence of taxes and bankruptcy costs, the weighted average cost of capital should remain constant. This means that, M&M proposition assumes that the market value of a company does not depend on how it distributes its earnings and allocates funds to investment, but is instead assessed by the underlying risks of its assets as well as the power of its earnings [8] [9].

However, in a later study in 1963, Modigliani and Miller proposed that by using debt, firms incur interest expenses, which can be partially deducted when calculating corporate income tax. They found a positive relationship between financial leverage and firm value, meaning that firms are capable of maximizing their values by raising their debt levels [2] [3]. Modigliani and Miller (1963) suggested that firms should use the maximum possible amount of debt in their capital structure because interest payments can be tax deductible. Thus, the company's performance can be improved by using the maximum amount of debt and stockholders can access greater earnings [10].

2) Agency Theory

Agency theory investigates the potential conflict of interests between managers and shareholders within a firm. It emphasized the significant role of capital structure in mitigating this conflict. [11] defined agency relationship as a contract between one or more persons (the principal) and another person (the agent). Under this contract the agent performs some service on behalf of the principal, which involves that the principal delegates some authority concerning the decision making

to the agent. According to [12], agency theory has two main assumptions with regard to the behavior of agent and principle. The theory assumes both of them are rational and take the decisions that maximize its benefits; moreover, both parties can also engage in opportunism and act in his or her own interest. As [2] [10] illustrated, the agency costs theory suggests that, the agency problem arises from a conflict of interest between managers and shareholders or between debt holders and shareholders. Therefore, the use of debt will decrease the agency cost because the interest payment reduces the cash surplus; hence, debt can reduce agency issues between principal and agent and enhance firm value. [13] explained that, debt decreases agency costs due to free cash flow by decreasing the cash flow available to corporate managers which can be spent at the managers' discretion. These debt control effects are considered a potential determinant of corporate capital structure.

3) Trade-Off Theory

Trade-off theory suggests that companies trade off the benefits and costs associated with debt and equity financing and reach to the point of optimal capital structure even though with market imperfections such as bankruptcy costs, taxes, and agency costs [2]. Therefore, trade-off theory can be considered as a summarized balance of different costs and benefits related to debt for the optimal capital structure [7]. The theory assumes that each source of money has its particular cost and return, and that these costs and returns are related to the company's earning capacity and the risks of its business and bankruptcy [4]. When implementing the trade-off theory, each company tends to determine its target mix of debt and equity and attempts to achieve the expected optimal mix which differs according to the characteristics of different companies [3]. However, the static trade-off theory excludes some factors, such as adjustment costs, market expectations and uncertainty, which are usually continuously developing, so in order to take these factors into account, the static trade-off model should be developed into a dynamic model [14]. Compared to the static model, the dynamic trade-off theory model emphasizes that a firm's capital structure cannot be optimal at all times and deviates from its optimal level. Moreover, market factors such as financial imperfection, adjustment cost and market frictions move the firm away from its optimal level of capital structure and return to its optimal capital structure level after necessary adjustment [8].

4) The Pecking Order Theory

The pecking order theory (Myers and Majluf, 1984) suggests that companies prefer to use internal financing over external financing [1]. The pecking order theory assumes that there is information asymmetry between managers and investors, as managers always having privileged information about the business prospects. The theory proposes a hierarchy of financing that begins with sources of financing that are least affected by the costs of information and also have the least risk. This hierarchy begins with internal funds followed by short-term debt and finally long-term debt [2] [15]. The pecking order theory (as described by Myers, 1984) proposes that

companies first prefer internal sources of financing, and then adjust their target dividend payments ratio to suit their investment opportunities. If companies seek external financing, because of unexpected fluctuations in corporate profitability, dividend policies, or investment opportunities, debt will be the first choice followed by hybrid securities, and equity will be considered as the last resort [16]. The theory suggests that profitable companies which generate high earnings use lower levels of debt in their capital structure than companies that do not generate high earnings, because they have the ability to finance their investment opportunities from retained earnings. So, a negative association between debt level and firm performance could be expected [17]. However, the pecking order theory does not invalidate the importance of other factors such as tax shields and the financial constraints on debt, yet it emphasizes that the order in which firms access financing sources is more important than these factors [1].

2.2. Reviewing Empirical Literature

Many researchers have studied the relationship between capital structure and firm performance from different perspectives and in different environments. These studies have revealed inconsistent results, yet most of them agreed on the important effect of capital structure on firm performance. In the context of India, [18] examined the impact of capital structure on the value of hospitality firms. For this purpose, they used a sample of 22 Indian hotel listed companies over the period from 2001-2015. To analyze the data, pooled ordinary least squares, fixed effects, and random effects regression models were applied. The results showed a significant positive relationship between leverage and both the firm's value and the firm's price-to-book ratio. Moreover, Market capitalization of the firm was found to have a negative relationship with leverage, which is consistent with pecking order theory. They concluded that Modigliani and Miller theory of capital structure irrelevance does not apply to the Indian hospitality sector. [9] in Jordan performed an empirical analysis to study the effect of capital structure and profitability on the firm value. They used a sample of 41 manufacturing firms listed on Amman Stock Exchange over the period 2014-2018. Leverage, debt to equity ratio, ROA and ROE were used as independent variables, while market value and Tobin's Q were used as measurements of firm value. Two regression models were estimated to test the research hypotheses. The results of the first model revealed that, debt to equity ratio has a significant positive effect on market value, while the results of the second model revealed insignificant effect of all independent variables on TQ.

Moreover, [19] examined the impact of capital structure on firm performance in Hong Kong SAR. For this, a sample of 202 companies during the period from 2014 to 2018 was analyzed. The result indicated a small effect of capital structure on the firm performance. In Germany, [20] examined the impact of capital structure on firm performance using a sample of German listed companies over the period from 2012 to 2017. He used fixed effects model to analyze the collected data. ROA,

ROE and TQ were used as firm performance measures, while total debt, long-term debt and short-term debt ratios were used as capital structure variables. The results revealed that capital structure has a positive effect on ROA and ROE and insignificant effect on TQ. Moreover, the influence of capital structure differs across the analyzed industries. [21] studied capital structure determinants and firm performance using a sample data from three countries, Thailand, Indonesia and Malaysia. They used a sample of 94 Indonesian firms, 74 Thailand firms and 153 Malaysian firms during the period from 2008 to 2012. The examined variables were firm size, profitability, growth opportunity, gross domestic product, volatility, inflation rate, and corporate governance. They used path analysis of two-multiple regressions to examine the leverage behavior. They found that profitability has a negative significant relationship to the capital structure. Moreover, the results revealed a significant relationship between capital structure and firm performance.

[22] conducted their research with the aim of evaluating the effect of capital structure decisions and asset structure on the performance of East African listed non-financial companies. They used a sample of 31 companies over the period 2005-2019. The results indicated that, short-term debts and long-term debts have a positive and significant effect on the ROA. Total debt ratio has a positive and significant impact on ROE, while long-term debt has a negative impact ROE. [1] in Vietnam studied the association between capital structure and firm value using a sample of 769 listed companies during the period from 2012 to 2022. The results revealed that debt ratio has a positive impact on firm value as measured by ROA, ROE and TQ. Long-term debt was found to have insignificant effect on firm value. Short-term debt and long-term debt ratios were found to have a negative impact on all firm value measurements.

[2] in Bangladesh investigated the impact of capital structure on firm performance using a sample of 36 listed companies over the period 2007-2012. EPS, ROA, ROE, and TQ were used as measurements of firm performance, while total debt ratios, short-term debt and long-term debt were used as independent variables. The results revealed a positive and significant impact of short-term debt on EPS, while long-term debt impacts EPS negatively. Also, there is a negative and significant impact of capital structure on ROA. However, the results revealed insignificant relationship between capital structure and ROE and TQ. They conclude that capital structure has a negative impact on firms' performance which is consistent with the suggestion of pecking order theory. In Pakistan, [23] analyzed the impact of capital structure on firm performance using a sample of 63 listed companies during the period from 2007 to 2011. Using fixed effects model, the result revealed a significant relationship between capital structure and firm performance, yet the result was mixed; total debt ratio has a positive impact on ROA and ROE and a negative impact on return on sales. Long-term debt ratio has a negative impact on ROE and a positive impact on return on sales.

[24] provided empirical evidence from Vietnam regarding the impact of capital

structure on firm performance. Generalized least squares method was used to analyze a sample of 488 non-financial listed firms from 2013 to 2018. ROA, ROE and EPS were used as firm performance measurements, while the ratios of total debt, short-term debt and long-term debt to total assets were used as capital structure variables. The results revealed that capital structure has a negative and significant impact on the firm performance. In the same vein, [25] conducted their research in Indonesia with the aim of examining the impact of capital structure on firm value using the profitability as an intervening variable. They used a sample of 17 public companies over the period 2013-2017. The results revealed that capital structure has a negative significant impact on profitability. Additionally, capital structure and profitability have a significant impact on firm value. The results also revealed that profitability is able to mediate the impact of capital structure on firm value. Moreover, [26] studied the impact of capital structure on firm performance using a sample of 466 British high-tech companies over the period 2015-2018. OLS regression model was used to analyze the research sample. The results revealed a negative effect of capital structure on all firm performance measures. Furthermore, [10] investigated the moderating effect of agency cost on the relationship between capital structure and firm performance. For this, they used a sample of 152 companies listed on Tehran Stock Exchange over the period from 2011 to 2019. Fixed effects model was used to examine the association between capital structure and firm performance. ROA, TQ, and EPS were used as firm performance measurements. Empirical results revealed that capital structure is negatively related to firm performance. Also, agency cost has a negative effect on corporate performance; yet, in the case of EPS and ROA, the relationship is positive.

Using a large sample of Ukrainian firms, [27] studied and analyzed the association between capital structure and firm performance for a sample of 16500 firms over the period 2001-2010. The results showed a negative relationship between capital structure (leverage) and firm performance. He concluded that the result supports the pecking-order theory. [3] studied the relationship between capital structure and firm performance by conducting meta-analysis study with the aim of achieving a synthesized result out of debatable studies as well as the sources for this contradiction. For this purpose, they analyzed 50 research papers with 340 studies over the period from 2004 to 2019. The data of analyzed studies ranges from 1998 to 2017. The results of their research revealed that firm performance is negatively related to capital structure decisions.

Conceptual Framework:

Based on reviewing previous theoretical and empirical literature, the conceptual framework of this study is presented in **Figure 1**.

In the proposed framework, short-term debt ratio, long-term debt ratio and debt-to-equity ratio represent capital structure variables. Return on assets, return on equity and Tobin's Q are used as performance measures. Moreover, firm age, tangibility and liquidity are used as control variables. Based on the conceptual framework of this study, the following hypotheses can be addressed:

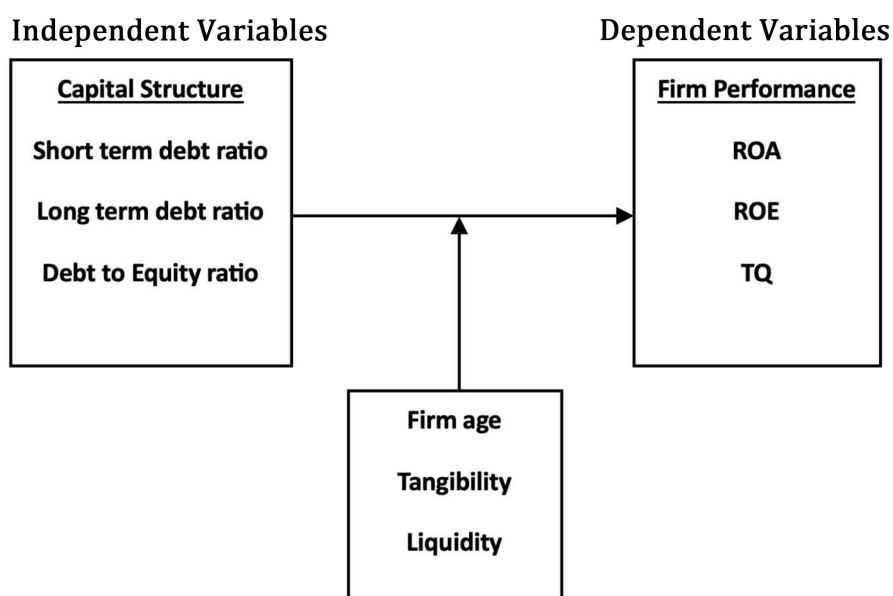


Figure 1. Conceptual framework of this study.

H1: Short-term debt has a significant impact on firm performance.

H1a: Short-term debt to total assets ratio has a significant impact on ROA.

H1b: Short-term debt to total assets ratio has a significant impact on ROE.

H1c: Short-term debt to total assets ratio has a significant impact on TQ.

H2: Long-term debt has a significant impact on firm performance.

H2a: Long-term debt to total assets ratio has a significant impact on ROA.

H2b: Long-term debt to total assets ratio has a significant impact on ROE.

H2c: Long-term debt to total assets ratio has a significant impact on TQ.

H3: Debt to equity ratio has a significant impact on firm performance.

H3a: Debt to equity ratio has a significant impact on ROA.

H3b: Debt to equity ratio has a significant impact on ROE.

H3c: Debt to equity ratio has a significant impact on TQ.

3. Methodology

3.1. Research Sample and Data Collection

This study examines the impact of capital structure on firm performance in Egypt using a sample of the Egyptian listed companies. The Egyptian Stock Exchange has 217 listed companies in 2023. These companies represent 18 different sectors. The final sample used in this study includes 40 listed companies over the period from 2019 to 2023 representing 200 firm-year observations. The sampled companies cover major sectors, such as Food and Beverages, Health Care, Media, Real Estate, Energy, Trade and Distributors, Travel and Leisure, Textile & Durables and Basic Resources. All companies included in the research sample are nonfinancial companies. Financial companies are excluded due to their special nature that differs from traditional companies. Financial companies have distinctive capital structures and their financial statements, guidelines and regulations differ from those of

nonfinancial companies [20] [22]. The main source of the data used in this study was the firms' websites and the financial website Mubasher Info. This study uses secondary data that extracted from annual reports, audited financial statements, and the historical stock prices of the sampled companies.

Research Variables:

This study aims to examine the impact of capital structure on firm performance. In this study, return on assets (ROA) and return on equity (ROE) are used as accounting-based performance measures, while TQ is used as a market-based performance measure. Thus, this study utilizes both accounting-based and market-based measures of firm performance. ROA is an accounting measure for measuring firms' performance, which measures the operations' profitability of a firm [28]. Also, ROE is considered an important indicator of firm's profitability as it measures the return a company generated by managing shareholders' equity, which is quite important for investors [29]. ROA is defined as net income divided by total assets and ROE is defined as net income divided by total equity.

ROA = net income/total assts.

ROE = net income/total equity.

Moreover, Tobin's Q ratio is a popular market-based measure of firm performance in empirical studies; it is used to point out the market sensitivity of the company's performance [30] [31]. TQ is used in this study as a market-based measure of firm performance and calculated as follows:

TQ = (market value of a firm's equity + total debt)/total assets

Regarding independent variables, short-term debt ratio (STD), long-term debt ratio (LTD) and debt to equity ratio (DE) are represented as capital structure variables in this study and calculated as follows:

STD = short-term debt/total assts.

LTD = long-term debt/total assets.

DE = total debt/total equity.

In addition, firm age (AGE), tangibility (TANG) and liquidity (CR), as measured by current ratio, are used as control variables. AGE is defined as the number of years since the establishment of a firm, TANG is calculated as fixed assets divided by total assets, and CR is calculated as current assets divided by current liabilities.

3.2. Research Model

Panel data regression models will be used in this study in order to test the research hypotheses. Each firm performance variable (ROA, ROE, TQ) will be regressed against capital structure variables (STD, LTD, DE) and control variables, which are Firm age, Tangibility and Liquidity.

$$FP_{it} = \beta_0 + \beta_1 STD_{it} + \beta_2 LTD_{it} + \beta_3 DE_{it} + \beta_4 AGE_{it} + \beta_5 TANG_{it} + \beta_6 CR_{it} + E_{it}$$

where:

FP: ROA, ROE, TQ. STD: short-term debt ratio. LTD: long-term debt ratio. DE: debt to equity ratio. AGE: firm age. TANG: tangibility. CR: current ratio

(liquidity).

Table 1 indicates all variables used in this study and explains the measurement of each variable.

Table 1. Variables and measurements.

Variables	Symbol	Measurements
Return on assets	ROA	Net income/total assets
Return on equity	ROE	Net income/total equity
Tobin's Q	TQ	(Market value of a firm's equity + total debt)/total assets
Short-term debt ratio	STD	Short-term debt/total assets
Long-term debt ratio	LTD	Long-term debt/total assets
Debt to equity ratio	DE	Total debt/total equity
Age	AGE	Firm age (the number of years since the establishment of a firm)
Tangibility	TANG	Fixed assets/total assets
Liquidity	CR	Current assets/current liabilities

3.3. Data Analysis

In this study, descriptive statistics will be used to summarize and describe the key features of the research variables. According to [32], The purpose of descriptive statistics analysis is to provide a systematic, accurate and realistic description of data statistics such as mean value, minimum value, maximum value, mode, median and others, which can help in simplifying the data into a more understandable form. Moreover, correlation analysis will be used to determine the strength of the association among the research variables. [33] explained that the main objective of correlation analysis is to measure the strength of linear relationship between two variables, as the correlation coefficient measures this strength of linear relationship. Further, panel data regression models will be used to examine the potential impact of capital structure on the performance of the sampled firms. Three estimation methods are carried out to test the research hypotheses: pooled OLS model, fixed effects model and random effects model. The collected data is analyzed using Microsoft Excel, SPSS and Eviews software. The F-test is used to select the appropriate model between the Pooled OLS and the Fixed Effects Models. Moreover, the Hausman test is performed to select the appropriate model between Fixed Effects and random effects models. Based on the F-test and the Hausman test outcomes, fixed effects regression model will be used in this study to test the research hypotheses.

4. Results

4.1. Descriptive Statistics

Table 2 presents the summary statistics of the of the dependent, independent and

control variables during the sample period. The table shows a relatively high average of ROE (0.20) compared to ROA (0.08); this can be explained by the average short-term debt ratio (31%). The average of TQ ratio is greater than one (accounts for 1.58); meaning that, on average, the market value of sampled companies is greater than their book values during the period of this study. The average of short-term debt ratio accounts for 0.31 reflecting that, on average, 31% of operations was financed by short-term debt, while the average of long-term debt ratio and debt to equity ratio are 0.09 and 0.75 respectively.

Table 2. Descriptive statistics.

	ROA	ROE	TQ	STD	LTD	DE	AGE	TANG	CR
Mean	0.08	0.20	1.58	0.31	0.09	0.75	39.20	0.39	2.70
Median	0.06	0.13	1.23	0.31	0.03	0.56	36.00	0.36	1.94
Maximum	0.53	7.71	21.57	2.35	0.82	5.43	77.00	0.95	36.29
Minimum	-1.32	-1.03	0.14	0.01	-0.01	-16.66	18.00	-4.80	0.11
Std. Dev.	0.16	0.58	1.69	0.22	0.14	1.62	14.48	0.44	3.15
Observations	200	200	200	200	200	200	200	200	200

4.2. Correlation Analysis

Table 3 provides correlation matrix of all variables used in this study and summarizes the correlation results of the research models. As can be seen in the table, STD has a negative and significant relationship with ROA and a positive relationship with TQ. Further, LTD has a significant negative relationship with ROA and a significant positive relationship with ROE. Moreover, DE has a significant positive relationship with ROA, a significant negative relationship with ROE and a negative relationship with TQ. The table shows that, the correlation coefficients between the independent variables are within the acceptable range (lower than 0.70), which means that no multicollinearity problem. The results of the correlation analysis indicate, in most cases, that there is a significant relationship between the capital structure variables and the firm performance variables, which supports the main research hypotheses.

Table 3. Correlation analysis.

Variable	STD	LTD	DE	Age	TANG	CR	ROA	ROE	TQ
STD	1								
LTD	0.348**	1							
DE	0.158*	0.009	1						
Age	0.241**	0.147*	-0.131	1					
TANG	-0.157*	0.086	-0.114	-0.142*	1				
CR	-0.340**	-0.106	-0.098	-0.087	-0.186**	1			

Continued

ROA	-0.556**	-0.496**	0.176*	-0.092	-0.059	0.161*	1		
ROE	0.098	0.248**	-0.757**	0.201**	0.039	-0.048	-0.130	1	
TQ	0.095	0.048	-0.066	-0.043	0.009	-0.025	-0.093	0.016	1

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

4.3. Regression Analysis

Panel data regression analysis is employed in this study. Three estimation methods are carried out to test the research hypotheses: pooled OLS model, fixed effects model and random effects model. The F-test is used to select the appropriate model between the Pooled OLS and the Fixed Effects Models. Moreover, Hausman Test is performed to select the appropriate model between Fixed effects and random effects models. **Table 4** presents the results of these tests. Based on the F-test and the Hausman Test, fixed effects regression is the appropriate model to test the research hypotheses.

Table 4. The results of tests.

Research Model	F-test (P-value)	Hausman test (P-value)	Selected Model
Model (1) ROA	0.00000	0.00070	Fixed effects
Model (2) ROE	0.00000	0.00000	Fixed effects
Model (3) TQ	0.00000	0.00000	Fixed effects

In order to test the research hypotheses, each dependent variable is regressed against capital structure variables and control variables. Fixed effects regression model is applied to analyze the impact of capital structure on firm performance variables. **Table 5** shows regression results of the research models. As can be seen in the table, the results of the first model confirm the significance of this model as the probability of F statistics = 0.0000. Moreover, the adjusted R_squared = 0.757, which means that this regression model explains about 76% of the variation in ROA.

Table 5. Regression analysis.

	Model 1 (ROA)	Model 2 (ROE)	Model 3 (TQ)
STD	-0.443477	-0.150707	4.169606
Sig.	0.0000	0.2560	0.0000
LTD	-0.368976	1.079745	-9.616241
Sig.	0.0001	0.0000	0.0000
DE	0.011252	-0.371540	-0.253151
Sig.	0.0213	0.0000	0.0045
Age	0.013375	0.033819	0.273971
Sig.	0.0008	0.0039	0.0002

Continued

Tang	-0.009097	-0.031487	0.275729
Sig.	0.5797	0.5164	0.3560
CR	-0.007348	-0.016003	0.007002
Sig.	0.0045	0.0353	0.8801
R_squared	0.812	0.877	0.474
Adjusted R_squared	0.757	0.844	0.321
F-statistic	14.791	25.006	3.088
(prop.)	0.0000	0.0000	0.0000
Durbin-Watson stat	2.267	2.011	2.083

As shown in the table, STD and LTD variables are found to have a significant negative impact on ROA as a measure of firm performance at 1% level, while DE indicates a significant positive impact on ROA at 5% level. This means that H1a, H2a and H3a are accepted. The regression results of the second model indicate the significance of this model ($F(\text{prop.}) = 0.0000$) and this model explains 84% of the variation in ROE as the adjusted $R_squared = 0.84$. The table shows that there is a positive significant impact of LTD on ROE and a negative significant impact of DE on ROE, while the impact of STD on ROE is found to be insignificant. Therefore, H2b and H3b are accepted, while H1b is rejected. Regarding the third model, the results reveal the significance of this model ($F(\text{prop.}) = 0.0000$) and the model explains about 32% of the variation in TQ as the adjusted $R_squared = 0.32$, all capital structure variables have a significant impact on TQ at 1% level. LTD and DE impact TQ negatively, while STD impacts TQ positively. This means that H1c, H2c and H3c are accepted. Regarding control variables, firm age is found to have a positive significant impact on ROA, ROE and TQ at 1% level. Tangibility is found to have insignificant impact on firm performance variables in all models. Current ratio has a negative significant impact on ROA and ROE, while it is found to have insignificant impact on TQ.

5. Conclusions and Discussion

This study investigated empirically the impact of capital structure on firm performance using a sample of 40 listed Egyptian firms over the period 2019-2023. For this purpose, three regression models are developed using fixed effects method to examine the impact of capital structure variables and control variables on firm performance measures. The results reveal that: there is a negative impact of STD and LTD on ROA and a positive impact of DE on ROA. There is a negative impact of STD and DE on ROE and a positive impact of LTD on ROE. There is a negative impact of LTD and DE on TQ and a positive impact on STD on TQ. These results can be explained in the context of pecking order theory and trade-off theory of capital structure.

The results of this study are consistent with [1] [2] [24], who found a negative

effect of short-term debt and long-term debt on ROA and ROE. Also, the results are in line with [20], who reported a positive impact of LTD on ROE, and [26], who showed a negative impact of STD and LTD on ROA. However, the current results are contradictory with [1], who reported a negative effect of STD on TQ, and [9], who showed that DE has an insignificant effect on TQ. Also, the results are inconsistent with [23] and [25], who found an insignificant effect of DE on ROA.

In conclusion, the findings of this study reveal that capital structure has a significant impact on firm performance, which emphasizes the importance of capital structure decision in maximizing firm performance and value. The results suggest that capital structure theories, such as the pecking order theory and the trade-off theory, can be applied to explain the impact of capital structure on firm performance in Egypt. The findings encourage corporate managers to use less debt to finance their businesses and to be careful when deciding on the proportion of debt they use to finance their corporations. This study contributes to corporate finance literature by providing empirical evidence regarding the impact of capital structure on firm performance from Egypt as an emerging market. The findings of this study could be beneficial to financial managers in designing the appropriate capital structure for their firms, which enhances firm's performance and value. It could also help investors in making better investment decisions.

Conflicts of Interest

The author declares no conflicts of interest.

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