

The Effect of Capital Structure, Total Assets Turnover, and Liquidity on The Financial Performance of Companies Listed on The Egyptian Stock Exchange

أثر هيكل رأس المال، معدل دوران الأصول، والسيولة على الأداء المالي للشركات المدرجة في البورصة المصرية

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Abstract:

This research seeks to investigate the impact of capital structure, total assets turnover, and liquidity on the financial performance of companies listed on the Egyptian Stock Exchange. The researcher relied on a sample of 48 companies across five sectors, according to the nature of each of these sectors in terms of type of industry, as follows: food Sector, manufacturing sector, pharmaceutical sector, real estate sector, and services sector from 2019 to 2022. The researcher used the panel data from these companies in panel regression analysis. The research findings highlighted three key outcomes. First, higher debt levels, measured by debt ratio, are found to have a significant negative impact on profitability measured by RoA and RoE across most sectors. Second, total assets turnover has a significant positive effect on RoA but mixed results for RoE and Tobin's Q across sectors. Third, liquidity positively influences RoA, however, no consistent impact is seen on long-term shareholder value measured through RoE and Tobin's Q. Finally, control variables firm size and assets tangibility have varying effects depending on the sector and performance measure. Their impact on financial performance is thus contingent on context.

Keywords: Capital structure- Assets Turnover- Liquidity Tobin's Q, Debt, Assets Tangibility, Profitability, Performance, ROA, ROE.

ملخص البحث:

يسعى هذا البحث إلى معرفة تأثير هيكل رأس المال، ومعدل دوران الأصول، والسيولة على الأداء المالي للشركات المقيدة بالبورصة المصرية. واعتمدت الباحثة على عينة مكونة من 48 شركة موزعة على خمس قطاعات، حسب طبيعة كل قطاع من هذه القطاعات من حيث نوع الصناعة، وذلك على النحو التالي: قطاع الأغذية، قطاع الصناعات، قطاع الأدوية، قطاع العقارات، وقطاع الخدمات من عام 2019 إلى عام 2022. استخدمت الباحثة تحليل الارتباط والسلاسل الزمنية المقطعية من هذه الشركات. وسلطت نتائج البحث الضوء على ثلاث نتائج رئيسية. أولاً، وجد أن مستويات الدين المرتفعة، مقاسة بنسبة الدين، لها تأثير سلبي كبير على الربحية المقاسة بالعائد على الأصول والعائد على حقوق المساهمين في معظم القطاعات. ثانياً، كان لمعدل دوران الأصول تأثير إيجابي كبير على العائد على الأصول ولكنه حقق نتائج متباينة بالنسبة للعائد على حقوق الملكية و Tobin's Q عبر القطاعات. ثالثاً، تؤثر السيولة بشكل إيجابي على العائد على الأصول، ومع ذلك، لا يوجد تأثير ثابت على قيمة المساهمين على المدى الطويل والتي يتم قياسها من خلال العائد على حقوق المساهمين و Tobin's Q. وأخيراً، فإن متغيرات التحكم في حجم الشركة، والأصول الثابتة لها تأثيرات متفاوتة اعتماداً على القطاع ومقياس الأداء. وبالتالي فإن تأثيرها على الأداء المالي مشروط بعوامل أخرى.

الكلمات الافتتاحية:

هيكل رأس المال- معدل دوران الأصول- السيولة- الدين-الأصول الثابتة- الربحية- الأداء- العائد على الأصول- العائد على حقوق الملكية.

Introduction:

The capital structure, total assets turnover, and liquidity are critical components that significantly influence the financial performance of a company. These financial metrics play a crucial role in determining how efficiently a company utilizes its resources and manages its financial obligations, as it directly affects the company's ability to generate sustainable value for its shareholders and stakeholders (Hussein, A., 2020). The relationship between capital structure and financial performance in the field of corporate finance is considered one of the most important topics that researchers have focused on and has been a topic of enduring interest and debate. Managers who are responsible for the management of companies are faced with two important decisions - investment and funding (Santoso, H., 2019) 45. Companies, regardless of their size or industry, constantly strive to achieve an optimal balance between debt and equity financing to enhance their financial well-being and create sustainable value for shareholders (Hundal, S., Eskola, A., & Lyulyu, S., 2020).

Capital structure refers to the way a company finances its operations and growth through a combination of debt and equity (Ivascu, E. V., & Barbuta-Misu, N., 2017). Capital Structure encompasses the sources of funds a firm utilizes to support its investments, operations, and growth prospects. The right investment decisions and choice of funding sources are important because they affect the financial performance of the company (Santoso, H., 2019).

The decision regarding the optimal capital structure is a complex one and requires careful consideration. It involves finding the right balance between debt and equity to maximize shareholder value while minimizing financial risk. A company with too much debt may face difficulties in meeting its financial obligations, whereas a company with too much equity may not be utilizing its resources efficiently.

There are several factors that influence the choice of capital structure. These factors include the company's industry, size, growth prospects, profitability, and risk tolerance (Kruk, S., 2021).

Total Assets Turnover is considered to be a key efficiency metric that directly influences a company's performance and indirectly affects RoA, RoE, and Tobin's Q. Analyzing these interconnections provides a holistic view of how well a company is utilizing its assets to generate value for shareholders and investors. Investors and analysts often use Total Assets Turnover as a valuable tool in assessing a company's operational efficiency and making informed decisions about its financial health and future prospects.

Liquidity is considered to be a critical factor that underpins the financial performance of a company. The ability to efficiently manage liquidity not only ensures short-term solvency but also contributes to improved performance metrics such as RoA, RoE, and Tobin's Q. Investors, analysts, and managers closely monitor these relationships to gauge the overall health and effectiveness of a company in creating value for its stakeholders. Understanding the intricate balance between liquidity and performance metrics is essential for making informed financial decisions and assessing the long-term sustainability of a business.

The relationship between firm size and performance metrics is multi-faceted. While larger firms may benefit from certain advantages, such as access to resources and economies of scale, they may also face challenges related to complexity and agility. Smaller firms, while potentially more agile, may have limitations in terms of resources. The impact of firm size on financial performance is context-dependent, and investors and analysts need to consider a range of factors to assess how size influences a company's ability to generate returns and create value for its stakeholders.

Assets tangibility is a critical factor that intersects with various aspects of a company's financial performance. The nature of a firm's assets can affect its operational efficiency, financial risk, and market valuation. Investors and analysts consider the

composition of assets when evaluating a company's ability to generate returns, manage risks, and create shareholder value. The relationship between assets tangibility and performance metrics provides valuable insights into the underlying dynamics of a company's financial health and its competitive positioning in the market.

The financial performance serves as the ultimate barometer of a company's operational efficiency and value creation capabilities (Al-Matari, E. M., et. al., 2014). Metrics such as profitability, liquidity, and solvency, among others, are utilized to gauge how effectively a firm utilizes its resources to generate returns and meet its financial obligations. Therefore, understanding the intricate interplay between capital structure decisions and financial performance outcomes becomes paramount for both academic researchers and practitioners in the field of finance.

1. Literature Review:

In the framework of the researchers' interests in the capital structure, some researchers have dealt with it from the capital structure determinants (considering the capital structure as a dependent variable), while other researchers have dealt with the capital structure as an independent variable and its impact on the dependent variables such as: the company's performance, the company's profitability, or the company's value.

On the other hand, some researchers focused in their studies on capital structure theories, while other studies studied the relationship between capital structure and innovation of performance, the impact of capital structure on company sustainability, and the impact of capital structure on financial performance during Covid-19, as well as determinants of capital structure in startup companies.

In terms of the relationship between capital structure and profitability, many researchers were interested in this relationship, as Singh, N. P., & Bagga, M. (2019) analyzed the impact of capital structure on corporate profitability by applying it to 50 companies and 7 banks in Jordan. They used ROA and ROE, as dependent variables. The independent variables were the

ratios of total liabilities to total assets (TLTA) and the ratio of total equity to total assets (TETA). The results of this study showed that the increase in total debt results in a decrease in return on assets, while increase in equity results in an increase in return on assets. These results were consistent with the results of Amoah-Gyarteng, K., & Dhliwayo, S. (2022) study which was applied to 1106 companies for a period of five years in Ghana. Olaoye, C. O., & Adesina, O. D. (2022) agreed with the aforementioned researchers who studied the impact of the capital structure on the profitability of companies in Nigeria by applying it to 10 companies. As for the study done by Perri, R. S., & Cela, S. (2022), it contrasted with previous studies and confirmed that there is no effect of the capital structure on profitability.

Regarding the relationship between capital structure and financial performance, the results of a number of studies showed that there is a positive significant relationship among these variables, such as, Nwannunu, S. E.,(2023) who applied on companies on the Nigerian Stock Exchange during the period (2018-2021) using a random sample, Olaoye, C. O., & Adesina, O. D. (2022), who applied on a sample of 10 industrial companies selected from the Nigerian Stock Exchange from (2009 - 2020), Manurung, A. H. (2022), who applied on industrial sector companies in Indonesia during the Covid-19 period, and Muhammad, H., et al. (2021) who applied on a sample of 224 Italian non-financial companies listed on the stock exchange during the period from 2013 to 2017.

In contrast to the previous studies, the results of a number of studies showed that there is a positive significant relationship between capital structure and financial performance, such as, Kofi, O. A., Winful, E. C., & Neubert, M. (2022) that used a sample of 425 companies in Ghana and Nigeria from 2014 to 2019, as well as Olusola, B. E., et al. (2022) who applied on the financial performance of British companies during the period from 2006 to 2015, in addition to an application on 202 companies in Hong Kong during the period from 2014 to 2018, (Muhammad, H., et al., 2021) and (Bui, T. N., et al., 2023).

As for total assets turnover, Nurlaela, S., et al., (2019) analyzed the relationship between asset turnover (TATO) and the

financial performance of consumption industry sector companies in the Indonesia Stock Exchange in 2016-2018. Consistent with the results of the previous study was Munawar, A. (2019) who applied on a research sample that consisted of 18 companies. As for the effect of total assets turnover on Tobin's Q, Simorangkir, R. T. M. C. (2019) analyzed this effect on manufacturing companies listed on the Indonesia Stock Exchange for the period 2013-2017, and the results showed that total asset turnover (TATO) has a significant positive effect on Tobins Q.

From another perspective, Nurlaela, S., et al., (2019) analyzed the relationship between Liquidity (CR) and financial performance (RoA and RoE) of consumption industry sector companies in the Indonesia Stock Exchange in 2016-2018. The results suggested that liquidity had a significant positive effect on financial performance (RoA and RoE). Similar to the results of the previous study, were, Vătavu, S. (2015) who applied on 196 Romanian companies listed on the Bucharest Stock Exchange and operating in the manufacturing sector, from (2003-2010), Munawar, A. (2019) who applied on 18 manufacturing companies in Indonesia Stock Exchange 2012 – 2017, and Farooq, M. A., & Masood, A. (2016) who applied on all cement companies listed on the Karachi Stock Exchange during 2008-2012. In contrast to the results of the previous studies, Wahid, R. R. (2022) showed that the current ratio has no significant effect on Tobin's Q.

As for assets tangibility, Wahid, R. R. (2022) analyzed the relationship between assets tangibility and financial performance in 196 Romanian companies listed on the Bucharest Stock Exchange and operating in the manufacturing sector, over a period of eight-years (2003-2010). The results showed that there is a negative relationship between assets tangibility and performance (RoA, and RoE), while Farooq, M. A., & Masood, A. (2016) studied the relationship between assets tangibility and firm value and applied on all cement companies listed on the Karachi Stock Exchange during 2008-2012, and the results showed that asset tangibility has a negative effect on Tobin's Q.

From a different perspective, Bui, T. N., et al. (2023) investigate the relationship between firm size and firm value for 769 companies listed on the Vietnamese stock market from 2012 to 2022, the results indicate that firm size has a positive effect on firm value (ROA, ROE, and Tobin's Q). while Bui, T. N., et al. (2023) aimed to analyze the effect of firm size on financial performance (RoE), applied on audited financial statements of 769 companies spanning from 2012 to 2022, and the results showed that size in terms of sales has a significantly negative effect on ROE. Whereas Wahid, R. R. (2022) examined the effect of firm size on firm value (Tobin's Q) in the food and beverages sub-sector listed on the Indonesian stock exchange in the 2016-2020, and the results indicated that firm size has a negative and significant effect on Tobin's Q.

One major research gap identified in the existing literature is the absence of comprehensive studies that examine the effect of all variables of the current study which are capital structure, total assets turnover, and liquidity, with firm size and assets tangibility as control variables. In addition to the lack of application of these studies on the companies listed on the Egyptian stock market, especially during the study period from 2019 to 2022.

This research aims to fill the previous gap in the existing literature by studying the extent of the effect of independent variables on dependent variables using indicators with the addition of control variables.

Therefore, these are the three main hypotheses to be tested:

H1: Capital structure has a significant negative effect on the financial performance of companies.

H2: Total assets turnover has a significant negative effect on the financial performance of companies.

H3: Liquidity has a significant negative effect on the financial performance of companies.

2. Variables of the study:

2.1 Dependent Variables: The dependent variables are:

Financial Performance of the companies; several variables were used to study different dimensions of financial performance; it was measured by the following indicators:

- **Return on Assets (RoA):** which is measured by net profit to total assets. RoA measures how efficient the management of the company is in generating profit from the total assets listed on the balance sheet.
- **Return on Equity (RoE):** which is measured by net profit to total equity. RoE is a fundamental evaluation of how efficiently the management of the company utilizes the capital invested by shareholders, and whether the management is increasing the company's value at an acceptable rate.
- **Tobin's Q:** which is measured by the result of number of shares multiply share price divided by total assets. It provides valuable observations into the investment decisions of the company, market expectations, competitive advantage, and long-term financial performance, and measures the overall health and performance of a firm.

2.2 Independent Variables:

- **Capital Structure:** measured by debt ratio (total liabilities divided by total assets), as measured by Singh, N. P., & Bagga, M. (2019), Olaoye, C. O., & Adesina, O. D. (2022), and Donkor, M. and Musah, M. (2023), Measuring capital structure is vital for enhancing a company's value by determining the most effective financial leverage.
- **Total Assets Turnover:** which is measured by sales divided by total assets, as measured by Munawar, A. (2019), Nurlaela, S., et al., (2019), and Simorangkir, R. T. M. C. (2019). Total assets turnover measures the efficiency of asset utilization in generating revenue. This ratio assesses the effectiveness of circulating the company's owned assets in the marketplace.

- **Liquidity:** measured by current liabilities divided by current assets, as measured by Nurlaela, S., et al., (2019), and Wahid, R. R. (2022). The liquidity ratio determines the company's ability to convert its assets into cash in comparison to its debt obligations.

2.3 Control Variables: Control variables improve the internal validity of the study by reducing the effects of extraneous variables.

- **Firm Size:** which is measured by natural log of total assets.
- **Assets Tangibility:** which is measured by fixed assets divided by total assets.

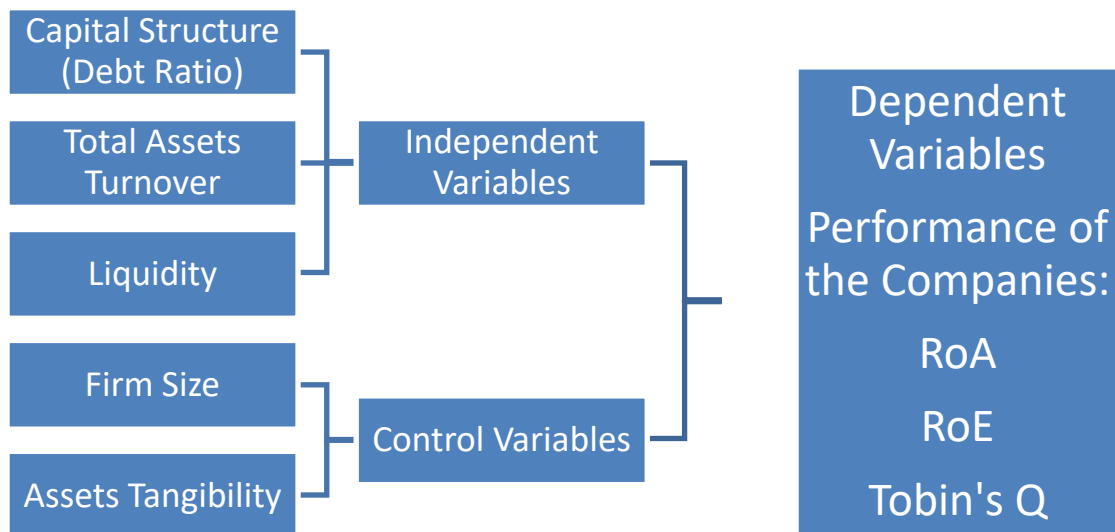


Figure 1: Research model
Source: the researcher

3. Description of Data and Sample:

The researcher relied on a sample of 48 companies listed in the Egyptian stock market. The researcher divided the companies under study into five sectors, according to the nature of each of these sectors in terms of type of industry, as follows: Food Sector (6 companies), Manufacturing sector (13 companies), Pharmaceutical sector (4 companies), Real estate sector (13 companies), and services sector (12 companies). The categorization of these companies was done because the nature of capital structure changes according to the nature of the sectors (Ojah Patrick, 2013). The data was collected from Egypt for Information Dissemination (EGID). The duration of the study was 4 years from 2019 to 2022. The selection of the companies for analysis was based on the availability of data and the lack of complete time series data for other companies across various industries. The exclusion of the financial sector was deliberate, as it deviates significantly in its examination compared to other sectors.

4. Results:

Table 1. The Controlled variables in the Dynamic Panel Analysis models

Variables	Symbols
ROA	Y1
ROE	Y2
Tobin's Q	Y3
Debt Ratio (DR)	X1
Total Assets turnover	X2
Liquidity	X3
Firm Size	W1
Assets Tangibility (TAN)	W2

Source: the researcher

4.1 Correlation:

Table 2. Food Industries

Covariance Analysis: Ordinary								
Sample: 2019 2022 - Included observations: 24								
Probability	Y1	Y2	Y3	X1	X2	X3	W1	W2
Y1	1.000000							

Y2	0.910562	1.000000						
	0.0000	-----						
Y3	0.254852	0.217332	1.000000					
	0.2294	0.3077	-----					
X1	-0.374008	0.023964	-0.227121	1.000000				
	0.0718	0.9115	0.2858	-----				
X2	-0.091743	-0.377870	-0.033284	-0.673083	1.000000			
	0.6698	0.0687	0.8773	0.0003	-----			
X3	0.695069	0.416313	0.283690	-0.708408	0.383275	1.000000		
	0.0002	0.0430	0.1791	0.0001	0.0645	-----		
W1	0.079270	0.372415	-0.062119	0.532776	-0.597673	-0.508962	1.000000	
	0.7127	0.0731	0.7731	0.0074	0.0020	0.0111	-----	
W2	-0.260489	-0.386648	0.350035	-0.322155	0.403135	-0.019443	-0.187882	1.000000
	0.2189	0.0620	0.0936	0.1247	0.0508	0.9281	0.3793	-----

Source: The researcher

3. Manufacturing

Covariance Analysis: Ordinary								
Sample: 2019 2022 - Included observations: 52								
Correlation	Y1	Y2	Y3	X1	X2	X3	W1	W2
Probability	Y1	Y2	Y3	X1	X2	X3	W1	W2
Y1	1.000000							

Y2	0.887098	1.000000						
	0.0000	-----						
Y3	-0.137742	-0.098762	1.000000					
	0.3302	0.4861	-----					
X1	-0.369769	-0.013534	0.156837	1.000000				
	0.0070	0.9241	0.2668	-----				
X2	0.305819	0.329369	0.039109	0.128424	1.000000			
	0.0275	0.0171	0.7831	0.3642	-----			
X3	0.352801	0.142445	-0.120166	-0.557672	0.132272	1.000000		
	0.0103	0.3138	0.3961	0.0000	0.3499	-----		
W1	0.367389	0.438085	-0.126830	0.289177	0.412204	0.040414	1.000000	
	0.0074	0.0012	0.3703	0.0376	0.0024	0.7761	-----	
W2	-0.092689	-0.262534	0.076390	-0.285538	-0.475156	-0.340969	-0.199623	1.000000
	0.5134	0.0601	0.5904	0.0402	0.0004	0.0134	0.1559	-----

Source: the researcher

Table 4. Pharmaceutical

Covariance Analysis: Ordinary								
Sample: 2019 2022 - Included observations: 16								
Correlation								
Probability	Y1	Y2	Y3	X1	X2	X3	W1	W2
Y1	1.000000							

Y2	0.977540	1.000000						
	0.0000	-----						
Y3	-0.311035	-0.320411	1.000000					
	0.2410	0.2263	-----					
X1	0.962723	0.972850	-0.171853	1.000000				
	0.0000	0.0000	0.5245	-----				
X2	0.975191	0.948798	-0.285311	0.922853	1.000000			
	0.0000	0.0000	0.2841	0.0000	-----			
X3	-0.420409	-0.404403	0.195350	-0.281518	-0.480471	1.000000		
	0.1049	0.1203	0.4684	0.2908	0.0596	-----		
W1	0.856466	0.857033	-0.631150	0.740704	0.878108	-0.659737	1.000000	
	0.0000	0.0000	0.0087	0.0010	0.0000	0.0054	-----	
W2	-0.216133	-0.195110	-0.611509	-0.400517	-0.178503	-0.479864	0.268470	1.000000
	0.4214	0.4690	0.0118	0.1242	0.5083	0.0600	0.3147	-----

Source: The researcher

Table 5. Real Estate

Covariance Analysis: Ordinary								
Sample: 2019 2022 - Included observations: 52								
Correlation								
Probability	Y1	Y2	Y3	X1	X2	X3	W1	W2
Y1	1.000000							

Y2	0.839411	1.000000						
	0.0000	-----						
Y3	0.580836	0.297579	1.000000					
	0.0000	0.0322	-----					
X1	-0.481245	-0.082735	-0.565008	1.000000				
	0.0003	0.5598	0.0000	-----				
X2	0.042659	0.035812	0.057958	-0.066118	1.000000			
	0.7640	0.8010	0.6832	0.6414	-----			
X3	0.442251	0.182995	0.195318	-0.442740	-0.043532	1.000000		
	0.0010	0.1941	0.1653	0.0010	0.7593	-----		
W1	-0.233547	0.064867	-0.467724	0.643519	0.198622	-0.271984	1.000000	
	0.0956	0.6478	0.0005	0.0000	0.1581	0.0511	-----	
W2	0.110664	0.209782	0.368150	-0.058620	0.298131	-0.412993	0.010256	1.000000
	0.4348	0.1355	0.0072	0.6798	0.0318	0.0023	0.9425	-----

Source: The researcher

Table 6. Service

Covariance Analysis: Ordinary								
Sample: 2019 2020 - Included observations: 24								
Correlation								
Probability	Y1	Y2	Y3	X1	X2	X3	W1	W2
Y1	1.000000							

Y2	0.818298	1.000000						
	0.0000	-----						
Y3	-0.292361	-0.298707	1.000000					
	0.1656	0.1562	-----					
X1	0.143054	0.600571	-0.307313	1.000000				
	0.5049	0.0019	0.1441	-----				
X2	-0.224565	-0.143865	0.582665	-0.110932	1.000000			
	0.2914	0.5024	0.0028	0.6058	-----			
X3	-0.195059	0.038244	0.463152	-0.056409	0.322526	1.000000		
	0.3610	0.8592	0.0227	0.7935	0.1243	-----		
W1	0.326731	0.494060	-0.278011	0.359687	0.140365	-0.226661	1.000000	
	0.1192	0.0141	0.1884	0.0843	0.5130	0.2868	-----	
W2	-0.015695	-0.321648	-0.031656	-0.675710	0.109248	-0.115177	0.166226	1.000000
	0.9420	0.1254	0.8833	0.0003	0.6113	0.5920	0.4376	-----

The researcher analyzes the correlation matrices statistically for each industry mentioned: Food industries, Manufacturing, Pharma, and Real state.

Food Industries:

The correlation matrix for food industries shows the correlation bcoefficients between variables Y1, Y2, Y3, X1, X2, X3, W1, and W2. The largest correlation coefficient in this matrix is 0.910562, which indicates a strong positive correlation between variables Y2 and Y1. Other notable correlations include 0.695069 between X3 and Y1, and 0.532776 between W1 and X1.

Manufacturing:

The correlation matrix for Manufacturing shows the correlation coefficients between variables Y1, Y2, Y3, X1, X2, X3, W1, and W2. The largest correlation coefficient in this matrix is 0.887098, indicating a strong positive correlation between variables Y2 and Y1. Other notable correlations include 0.438085 between W1 and Y2, and 0.412204 between W1 and X2.

Pharma:

The correlation matrix for Pharma shows the correlation coefficients between variables Y1, Y2, Y3, X1, X2, X3, W1, and W2.

The largest correlation coefficient in this matrix is 0.977540, indicating a strong positive correlation between variables Y2 and Y1.

Other notable correlations include 0.972850 between X1 and Y2, and 0.975191 between X2 and Y1. The statistical significance of these correlations is not provided.

Real estate:

There are strong positive correlations between Y1 and Y2 (0.84), Y2 and Y3 (0.58) significant at the 0.01 level. X1 has a moderate negative correlation with Y1 (-0.48) and Y3 (-0.57) both significant at the 0.01 level.

Here are some additional insights from analyzing the correlation data across sectors:

- The food and pharma industries show the strongest correlations overall, indicating higher interdependence between the different variables measured within those sectors.
- Manufacturing and real estate generally have moderate strength correlations, suggesting a more balanced relationship between factors in those industries.
- The service industry data shows fewer significant correlations, meaning the variables may be less directly linked for that sector.
- Output measures like Y1 and Y2 consistently correlate strongly and positively with each other across all sectors. This demonstrates a direct relationship between different productivity or sales metrics.
- Input factors like X1-X3 sometimes correlate negatively with outputs, implying potential bottlenecks or inefficiencies in converting inputs to outputs.
- Intermediate variables like W1-W2 act as both inputs and outputs, with their direction and strength of correlations varying more between sectors. This points to their more complex, intermediary roles. Factors relating to external market environment like W2 can correlate negatively or not at all with output and input metrics in some sectors. This indicates less direct influence of outside market forces.
- Sectors with sample sizes over 50 observations (manufacturing, real estate) generally show more significant correlations versus those with fewer data points. Larger samples provide more statistical power.

4.3 Panel Regression Random Effect Analysis:

4.3.1 Food Sector:

The researcher conducted this analysis to test the research hypotheses and determine the effect of capital structure, total assets turnover, and liquidity on the performance of the companies in a panel of the 6 companies in the food industry through 2019 – 2022. The statistical methods utilized are random panel analysis, the researcher conducted this test for the variables with and without the control variables; estimation was applied by the Eviews backage version 10 and the equation to be sure that panel regression is the best-fit model. The results, output of the estimation and the coefficients for the model are as follow:

Estimation Equation:

$$ROA_{it} = \beta_{i1} - \beta_{it}X1_{it} + \beta_{it}X2_{it} + \beta_{it}X2_{it} + \beta_{it}W1_{it} - \beta_{it}W2_{it} + \varepsilon_{it}$$

Substituted Coefficients:

$$ROA_{it} = -0.226460957026 * X1_{it} + 0.140526573266 * X2_{it-1} - 0.0123755366296 * X3_{it-1} + 0.0933011863676 * LN W1_{it} - 0.186982766234 * W2_{it} + 0.0150572096111$$

Model 1:

The researcher examines the effect of capital structure, total assets turnover, and liquidity on **return on equity (ROE)**

Table 7. Panel Regression Random Effect Analysis (RoA Model with and without Control Variables)

Panel Regression Random Effect Analysis (RoA Model without Control Variables)			Panel Regression Random Effect Analysis (RoA Model with Control Variables)		
Method: Panel EGLS (Period random effects)			Method: Panel EGLS (Cross-section random effects)		
Swamy and Arora estimator of component variances			Swamy and Arora estimator of component variances		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	-0.145211	0.4614	X1	-0.173229	0.3830
X2	-0.100586	0.0070	X2	-0.046202	0.2206
X3	0.149449	0.0002	X3	0.171348	0.0002
C	0.138425	0.3959	W1	0.075388	0.0071
R-squared	0.641628		W2	-0.079886	0.3641
Adjusted Rsquared	0.587872		C	-0.572830	0.0788
F-statistic	11.93596		R-squared	0.777203	
Prob(F-statistic)	0.000106		Adjusted R squared	0.715315	
			F-statistic	12.55821	
			Prob(F-statistic)	0.000024	

Source: the researcher

Table 7 shows that – before embedding the control variables - the model has an explanatory power (coefficient of determination) with 64%, and the model was significant where the prob of F-statistic (0.000106) was lower than 5%. The model also showed that the explanation variable total assets turnover has a significant negative effect on the return of assets (RoA), that may be because of inefficient operating expense management, while the liquidity has a positive significant effect on the return of assets, that may be because of working capital management or debt servicing and interest costs. Whereas debt ratio has no effect on the return of assets, that may be because of the fact that companies may be less sensitive to changes in the debt ratio and be able to generate consistent cash flows regardless of their debt levels.

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 77%, and the model was significant where the prob of F-statistic (0.000024) was lower than 5%. The model also showed that the explanation variable liquidity has a positive

significant effect on the return of assets, while total assets turnover has no significant effect on the return of assets (RoA), that may be because of regulatory constraints in the food industry, such as quality standards, safety regulations, that may limit the ability of companies to make rapid adjustments in total assets turnover, or because of the consumers loyalty to specific brands. Whereas debt ratio has no effect on the return of assets. As for firm size as a control variable, it has a significant positive effect on the return on assets, and this may be because of economies of scale, access to resources, or diversification. While assets tangibility has no significant effect on RoA, and that may be because the food industry may rely more on intangible assets, such as brand reputation, intellectual property, distribution networks, proprietary recipes, product formulations, and technological advancements rather than tangible assets.

Model 2:

The researcher examines the effect of capital structure, total assets turnover, and liquidity on **return on equity (ROE)**

Table 8. Panel Regression Random Effect Analysis (RoE Model with and without Control Variables)

Panel Regression Random Effect Analysis (RoE Model without Control Variables)			Panel Regression Random Effect Analysis (RoE Model with Control)		
Method: Panel EGLS (Period random effects)			Method: Panel Least Squares		
Swamy and Arora estimator of component variances			White period standard errors & covariance (d.f. corrected)		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	0.360212	0.4126	X1	0.530920	0.2801
X2	-0.202832	0.0132	X2	-0.084222	0.1816
X3	0.282413	0.0012	X3	0.362549	0.0000
C	-0.019934	0.9558	W1	0.166155	0.0018
R-squared	0.525937		W2	-0.087245	0.2325
Adjusted Rsquared	0.454827		C	-1.781442	0.0006
F-statistic	7.396160		R-squared	0.778165	
Prob(F-statistic)	0.001599		Adjusted R squared	0.659853	
			F-statistic	6.577236	
			Prob(F-statistic)	0.000918	

Source: the researcher

Table 8 shows that -before embedding the control variables - the model has an explanatory power (coefficient of determination) with 52%, and the model was significant where the prob of F-statistic (0.001599) was lower than 5%. The model also showed that the explanation variable **total assets turnover** has a significant negative effect on the return on equity (RoE), competition and pricing pressure, or high fixed costs, that may be because of the inefficiencies in production processes or supply chain management. While the **liquidity** has a positive significant effect on the return on equity, and this may be due to the fact that companies with surplus liquidity may engage in share repurchase programs when their stock is undervalued, by reducing the number of outstanding shares, earnings per share (EPS) can increase, leading to an improvement in RoE, or because of investing in research and development, marketing initiatives that optimize returns and contribute positively to RoE. Whereas **debt ratio** has no effect on the return on equity, and this may be due to low cost of debt, or operational efficiency.

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 77%, and the model was significant where the prob of F-statistic (0.000918) was lower than 5%. The model also showed that the explanation variable **liquidity** has a positive significant effect on the return on equity. Whereas **debt ratio** has no effect on the return on equity. As for total assets turnover, it has no significant effect on return on equity. As for firm size as a control variable, it has a significant positive effect on the return on equity, while assets tangibility has no significant effect on RoE.

Model 3:

The researcher examines the effect of capital structure, total assets turnover, and liquidity on **Tobin's Q**.

Table 9. Panel Regression Random Effect Analysis (Tobin’s Q Model with and without Control Variables)

Panel Regression Random Effect Analysis (Tobin’s Q Model without Control Variables)			Panel Regression Random Effect Analysis (RoE Model with Control)		
Method: Panel Least Squares			Method: Panel Least Squares		
White period standard errors & covariance (d.f. corrected)			White period standard errors & covariance (d.f. corrected)		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	-412520.0	0.7631	X1	1518245.	0.3396
X2	554303.6	0.0176	X2	2320905.	0.0142
X3	82195.69	0.7886	X3	384918.8	0.2373
C	620967.3	0.6513	W1	-3214892.	0.0291
R-squared	0.679431		W2	-5821732.	0.0745
Adjusted Rsquared	0.508461		C	27076890	0.0270
F-statistic	3.973975		R-squared	0.802054	
Prob(F-statistic)	0.010335		Adjusted R squared	0.649787	
		F-statistic	5.267438		
			Prob(F-statistic)	0.003356	

Source: the researcher

Table 9 shows that – before embedding the control variables - the model has an explanatory power (coefficient of determination) with 67%, and the model was significant where the prob of F-statistic (0.010335). The model also showed that the explanation variable total assets turnover has a significant positive effect on Tobin’s Q, this may be because brand strength and consumer perception, market share and competitive positioning, or operational efficiency. While the liquidity has no significant effect on Tobin’s Q. This may be because of important factors like long-term growth prospects, brand strength, and operational efficiency other than short-term liquidity. Whereas debt ratio has no effect on Tobin’s Q, and this may happen when the companies in the food industry adopt conservative financial policies, keeping debt levels within manageable limits to

prioritize financial stability and avoid excessive leverage, so the variations in debt ratio might not strongly affect market valuation.

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 80%, and the model was significant where the prob of F-statistics (0.003356). The model also showed that the explanation variable total assets turnover has a significant positive effect on Tobin's Q. While the liquidity and debt ratio have no significant effect on Tobin's Q. As for firm size and assets tangibility, both have significant negative effect on Tobin's Q. Firm size may affect Tobin's Q negatively because larger firms in the food industry may face challenges in identifying new opportunities and achieving significant growth due to intense competition and a mature market leading to a lower market valuation. As for assets tangibility, it may be because of the importance of intangible assets, or consumer trends and preferences. A higher proportion of tangible assets may be indicative of a less adaptive business model, that may be negatively impacting Tobin's Q as consumer trends evolve.

4.3.2 Manufacturing Sector:

The researcher conducted this analysis to test the research hypotheses and determine the effect of capital structure, total assets turnover, and liquidity on the performance of the companies in a panel of the 13 companies in the manufacturing sector through 2019 – 2022. The researcher conducted this test for our variables with and without the control variables.

Table 10. Panel Regression Random Effect Analysis (RoA Model with and without Control Variables)

Panel Regression Random Effect Analysis (RoA Model without Control Variables)			Panel Regression Random Effect Analysis (RoA Model with Control Variables)		
Method: Panel Least Squares			Method: Panel Least Squares		
White cross-section standard errors & covariance (d.f. corrected)			White cross-section standard errors & covariance (d.f. corrected)		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	-0.457328	0.0000	X1	-0.505935	0.0000
X2	0.111736	0.0008	X2	0.072217	0.0000
X3	-0.001376	0.8736	X3	-0.026365	0.0272
C	0.208820	0.0005	W1	0.051846	0.0002
R-squared	0.641645		W2	-0.115360	0.1233
Adjusted R-squared	0.492330		C	-0.052003	0.3155
F-statistic	4.297267		R-squared	0.719442	
Prob(F-statistic)	0.000167		Adjusted R-squared	0.579163	
		F-statistic	5.128648		
		Prob(F-statistic)	0.000026		

Source: the researcher

Table 10 shows that – before embedding the control variables - the model has an explanatory power (coefficient of determination) with 64%, and the model was significant where the prob of F-statistic (0.000167) was lower than 5%. The model also showed that the explanation variable debt ratio has a significant negative effect on the return on assets (RoA), which maybe because of an increase of financial leverage, resulting in higher interest payments and decreased profitability, while total assets turnover has a significant positive effect on the return on assets (RoA) due to effective management that generates revenue from total assets, ultimately enhancing overall RoA, whereas liquidity has no significant effect on the return on assets, which may be because the manufacturing sector may have a longer-term investment horizon and may be less influenced by short-term liquidity fluctuations.

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 72%, and the model was significant where the prob of F-statistic (0.000026) was lower than 5%. The model also showed that the explanation variable debt ratio has a significant negative effect on RoA, while total assets turnover has a significant positive effect on RoA, whereas liquidity has a significant negative effect on the return on assets, and that may be because high levels of debt can lead to higher interest costs, and a negative impact on asset returns. Firm size as a control variable has significant positive effect on RoA which may be due to economies of scale, access to resources, and diversification. While assets tangibility has no significant effect on RoA, and this may be because of intangibles dominance, or technological investments.

Table 11. Panel Regression Random Effect Analysis (RoE Model with and without Control Variables)

Panel Regression Random Effect Analysis (RoE Model without Control Variables)			Panel Regression Random Effect Analysis (RoE Model with Control Variables)		
Method: Panel Least Squares			Method: Panel Least Squares		
White cross-section standard errors & covariance (d.f. corrected)			White cross-section standard errors & covariance (d.f. corrected)		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	-0.694723	0.0000	X1	-0.841226	0.0000
X2	0.251929	0.0036	X2	0.152100	0.0001
X3	-0.009733	0.5137	X3	-0.079971	0.0002
C	0.292900	0.0163	W1	0.124903	0.0000
R-squared	0.478703		W2	-0.358765	0.0293
Adjusted R-squared	0.261496		C	-0.272070	0.0000
F-statistic	2.203903		R-squared	0.604508	
Prob(F-statistic)	0.026271		Adjusted R-squared	0.406762	
			F-statistic	3.056995	
			Prob(F-statistic)	0.002705	

Source: the researcher

Table 11 shows that - before embedding the control variables- the model has an explanatory power (coefficient of determination) with 47%, and the model was significant where the prob of F-statistic (0.026271) was lower than 5%. The model also showed that the explanation variable debt ratio has a significant negative effect on RoE which may be because of interest expenses, financial leverage, or risk perception by investors. While total assets turnover has a significant positive effect on RoE and this may be due to effective working capital management, innovation and technology, economies of scale, or effective resource utilization. Whereas liquidity has no significant effect on the return on equity, which may be because companies may prefer to invest in growth opportunities, or capital expenditures rather than maintaining high liquidity levels.

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 60%, and the model was significant where the prob of F-statistic (0.002705) was lower than 5%. The model also showed that the explanation variable debt ratio has a significant negative effect on RoE, while total assets turnover has a significant positive effect on RoE, whereas liquidity has a significant negative effect on the return on equity, that may be because of opportunity cost of holding cash. Firm size as a control variable has a positive effect on RoE and this may be because of economies of scale, access to capital, or diversification, while assets tangibility has a significant negative effect on RoE, and this may be because of depreciation and maintenance costs, or because companies with a high proportion of tangible assets may face challenges in adapting to new technologies, which can impact efficiency and competitiveness negatively affecting RoE.

Table 12. Panel Regression Random Effect Analysis (Tobin’s Q Model with and without Control Variables)

Panel Regression Random Effect Analysis (Tobin’s Q Model without Control Variables)			Panel Regression Random Effect Analysis (Tobin’s Q Model with Control Variables)		
Method: Panel Least Squares			Method: Panel Least Squares		
White cross-section standard errors & covariance (d.f. corrected)			White cross-section standard errors & covariance (no d.f. correction)		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	1.49E+08	0.0187	X1	52129130	0.5647
X2	-31294763	0.0000	X2	-93342293	0.0175
X3	-35518907	0.2907	X3	-13178284	0.2833
C	2.78E+08	0.0008	W1	46316434	0.0103
R-squared	0.974764		W2	25990325	0.3156
Adjusted R-squared	0.960999		C	-12849091	0.8803
F-statistic	70.81427		R-squared	0.972503	
Prob(F-statistic)	0.000000		Adjusted R-squared	0.958754	
			F-statistic	70.73393	
			Prob(F-statistic)	0.000000	

Source: the researcher

Table 12 shows that - before embedding the control variables - the model has an explanatory power (coefficient of determination) with 97%, and the model was significant where the prob of F-statistic (0.00000) was lower than 5%. The model also showed that the explanation variable debt ratio has a significant positive effect on Tobin’s Q and that may be because of tax shield, or investment opportunities. While total assets turnover has a significant negative effect on Tobin’s Q, which may be because of operational inefficiencies, or market saturation, whereas liquidity has no significant effect on Tobin’s Q, and this may be because of prioritizing investment opportunities in machinery, and technology, over maintaining high levels of liquidity.

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 97%, and the model was significant where the prob of F-statistic (0.0000) was lower than 5%. The model also showed that the explanation variable debt ratio has no significant effect on Tobin's Q, and this may be because companies in the manufacturing industry with stable and predictable cash flows may be less influenced by changes in debt ratios. If the firm can consistently meet its financial obligations and fund growth initiatives, variations in debt levels may have a limited impact on Tobin's Q. Meanwhile, total assets turnover has a significant negative effect on Tobin's Q, and liquidity has no significant effect on Tobin's Q. Firm size as a control variable has a significant positive effect on Tobin's Q, and that may be because of diversification, or access to capital. While assets tangibility has no significant effect on Tobin's Q, which may be because of manufacturing companies that can adapt to new technologies and because production methods might not be significantly impacted by changes in the tangibility of assets. If investors are more concerned with a company's ability to innovate and stay competitive, the effect of assets tangibility on Tobin's Q may be limited.

4.3.3 Pharmaceutical Sector:

The researcher conducted this analysis to test the research hypotheses and determine the effect of capital structure, total assets turnover, and liquidity on the performance of the companies in a panel of the 4 companies in the pharmaceutical sector through 2019 – 2022. The researcher conducted this test for our variables with and without the control variables.

Table 13. Panel Regression Random Effect Analysis (RoA Model with and without and with Control Variables)

Panel Regression Random Effect Analysis (RoA Model without Control Variables)			Panel Regression Random Effect Analysis (RoA Model with Control Variables)		
Method: Panel EGLS (Cross-section random effects)			Method: Panel Least Squares		
White period standard errors & covariance (d.f. corrected)			White period standard errors & covariance (d.f. corrected)		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	2.104998	0.0125	X1	-5.592527	0.0562
X2	0.733184	0.0145	X2	-0.877920	0.0942
X3	-0.021197	0.5533	X3	-0.077050	0.0912
C	-1.314015	0.0000	W1	-0.290644	0.0027
R-squared	0.978051		W2	-5.429138	0.0003
Adjusted R-squared	0.972564		C	7.793635	0.0061
F-statistic	178.2446		R-squared	0.995947	
Prob(F-statistic)	0.000000		Adjusted R-squared	0.991315	
			F-statistic	215.0239	
			Prob(F-statistic)	0.000000	

Source: the researcher

Table 13 shows that -before embedding the control variables- the model has an explanatory power (coefficient of determination) with 97%, and the model was significant where the prob of F-statistic (0.00000) was lower than 5%. The model also showed that the explanation variable debt ratio has a significant positive effect on the return on assets (RoA), and total assets turnover has a significant positive effect on the return on assets (RoA), while liquidity has no significant effect on the return on assets.

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 99.5%, and the model was significant where

the prob of F-statistic (0.00000). The model also showed that the explanation variable debt ratio, total assets turnover, and liquidity have a significant negative effect on RoA. The negative effect of liquidity on RoA may be because of high research and development (R&D) costs, or intensive capital expenditures. Firm size and assets tangibility as control variables have a significant positive effect on RoA.

Table 14 shows that -before embedding the control variables- the model has an explanatory power (coefficient of determination) with 96.8%, and the model was significant where the prob of F-statistic (0.00000) was lower than 5%. The model also showed that the explanation variable debt ratio, ana total assets turnover have a significant positive effect on RoE, while liquidity has a significant negative effect on the return on equity.

Table. 14 Panel Regression Random Effect Analysis (RoE Model with and without Control Variables)

Panel Regression Random Effect Analysis (RoE Model without Control Variables)			Panel Regression Random Effect Analysis (RoE Model with Control Variables)		
Method: Panel EGLS (Cross-section random effects)			Method: Panel Least Squares		
			White period standard errors & covariance (d.f. corrected)		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	28.03821	0.0000	X1	37.05371	0.0000
X2	2.274587	0.0316	X2	2.531621	0.0963
X3	-0.464701	0.0192	X3	-0.045150	0.7390
C	-13.50336	0.0000	W1	-0.670999	0.0871
R-squared	0.968919		W2	27.97030	0.0010
Adjusted R-squared	0.961149		C	-19.38906	0.0000
R-squared	0.968919		R-squared	0.996993	
Sum squared resid	20.78742		Adjusted R-squared	0.993556	
			F-statistic	290.1113	
			Prob(F-statistic)	0.000000	

Source: the researcher

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 99.6%, and the model was significant where the prob of F-statistic (0.0000) was lower than 5%. The model also showed that the explanation variable debt ratio, and total assets turnover have a significant positive effect on RoE, while liquidity has no significant effect on the return on equity. Firm size as a control variable has a significant negative effect on RoE, and this maybe because larger pharmaceutical companies may face challenges in finding new growth opportunities, as market saturation can limit the potential for revenue and profit growth, impacting RoE negatively. While assets tangibility has a significant positive effect on RoE, and that may be because of efficient utilization of tangible assets, operational efficiency, or long-term investments such as research facilities and production plants, or well-equipped laboratories that represent long-term investments. Companies that strategically invest in and maintain these assets for the long term may experience sustained profitability and a positive effect on RoE.

Table 15 shows that – before embedding the control variables - the model has an explanatory power (coefficient of determination) with 95%, and the model was significant where the prob of F-statistic (0.00002) was lower than 5%. The model also showed that the explanation variable debt ratio, and total assets turnover have no significant effect on Tobin's Q, while liquidity has a significant negative effect on Tobin's Q.

Table 15. Panel Regression Random Effect Analysis (Tobin’s Q Model with and without Control Variables)

Panel Regression Random Effect Analysis (Tobin’s Q Model without Control Variables)			Panel Regression Random Effect Analysis (Tobin’s Q Model with Control Variables)		
Method: Panel Least Squares			Method: Panel Least Squares		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	-37947645	0.5572	X1	15564805	0.4292
X2	5022084.	0.7467	X2	21879408	0.0242
X3	-7696758.	0.0009	X3	-6291395.	0.0005
C	38480544	0.4619	W1	-15292097	0.0024
R-squared	0.951603		W2	-2967317.	0.9488
Adjusted R-squared	0.919338		C	1.03E+08	0.0000
F-statistic	29.49359		R-squared	0.959843	
Prob(F-statistic)	0.000020		Adjusted R-squared	0.913949	
			F-statistic	20.91428	
		Prob(F-statistic)	0.000316		

Source: the researcher

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 96%, and the model was significant where the prob of F-statistic (0.000316) was lower than 5%. The model also showed that the explanation variable debt ratio has no significant effect on Tobin’s Q, while total assets turnover has a significant positive effect on Tobin’s Q, whereas liquidity has a significant negative effect on Tobin’s Q. Firm size as a control variable has a significant negative effect on Tobin’s Q, while assets tangibility has no significant effect on Tobin’s Q.

4.3.4 Real Estate Sector:

The researcher conducted this analysis to test the research hypotheses and determine the effect of capital structure, total assets turnover, and liquidity on the performance of the companies in a panel of the 13 companies in the manufacturing sector through 2019 – 2022. The researcher conducted this test for our variables with and without the control variables.

Table 16 shows that – before embedding the control variables - the model has an explanatory power (coefficient of determination) with 30.7%, and the model was significant where the prob of F-statistic (0.00048). The model also showed that the explanation variable debt ratio has a significant negative effect on RoA, while total assets turnover has a significant positive effect on RoA. As for liquidity, it has no significant effect on RoA.

Table 16. Panel Regression Random Effect Analysis (RoA Model with and without Control Variables)

Panel Regression Random Effect Analysis (RoA Model without Control Variables)			Panel Regression Random Effect Analysis (RoA Model with Control Variables)		
Method: Panel EGLS (Cross-section random effects)			Method: Panel EGLS (Period SUR)		
Swamy and Arora estimator of component variances			Linear estimation after one-step weighting matrix		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	-0.132450	0.0005	X1	-0.111345	0.0004
X2	0.039886	0.0993	X2	-0.016967	0.3162
X3	-0.002614	0.5784	X3	0.012949	0.0002
C	0.118215	0.0001	W1	0.005980	0.0462
R-squared	0.307502		W2	0.072378	0.0020
Adjusted R-squared	0.264221		C	0.038802	0.0832
F-statistic	7.104776		R-squared	0.508043	
Prob(F-statistic)	0.000480		Adjusted R-squared	0.416516	
			F-statistic	5.550745	
			Prob(F-statistic)	0.000077	

Source: the researcher

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 50%, and the model was significant where the prob of F-statistic (0.00007). The model also showed that the explanation variable debt ratio has a significant negative effect on RoA, while total assets turnover has no significant effect on RoA, and liquidity has a significant positive effect on RoA. Firm size and assets tangibility as control variables have a significant positive effect on RoA.

Table 17. Panel Regression Random Effect Analysis (RoE Model with and without Control Variables)

Panel Regression Random Effect Analysis (RoE Model without Control Variables)			Panel Regression Random Effect Analysis (RoE Model with Control Variables)		
Method: Panel Least Squares			Method: Panel Least Squares		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	-0.077228	0.6103	X1	-0.340842	0.0407
X2	0.148694	0.0987	X2	0.047912	0.6343
X3	-0.006185	0.7279	X3	0.003231	0.8460
C	0.126880	0.2241	W1	0.065266	0.0543
R-squared	0.723150		W2	0.672602	0.0320
Adjusted R-squared	0.572140		C	-0.254960	0.2118
F-statistic	4.788777		R-squared	0.789230	
Prob(F-statistic)	0.000050		Adjusted R-squared	0.653250	
			F-statistic	5.804004	
			Prob(F-statistic)	0.000007	

Source: the researcher

Table 17 shows that – before embedding the control variables - the model has an explanatory power (coefficient of determination) with 72%, and the model was significant where the prob of F-statistic (0.000050). The model also showed that the explanation variable debt ratio and liquidity have no significant effect on RoE, while total assets turnover has a significant positive effect on RoE.

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 78.9%, and the model was significant where the prob of F-statistic (0.000007). The model also showed that the explanation variable debt ratio has a significant negative effect on RoE, while total assets turnover and liquidity have no significant effect on RoE. Firm size and assets tangibility as control variables have a significant positive effect on RoE.

Table 18. Panel Regression Random Effect Analysis (Tobin’s Q Model with and without Control Variables)

Panel Regression Random Effect Analysis (Tobin’s Q Model without Control Variables)			Panel Regression Random Effect Analysis (Tobin’s Q Model with Control Variables)		
Method: Panel Least Squares			Method: Panel Least Squares		
			White cross-section standard errors & covariance (d.f. corrected)		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	-4093935.	0.0001	X1	-3401942.	0.0545
X2	362601.6	0.6901	X2	766088.8	0.3874
X3	-54543.92	0.6910	X3	-175316.6	0.5983
C	3377832.	0.0001	W1	-443768.5	0.1104
R-squared	0.347877		W2	-5386365.	0.0000
Adjusted R-squared	0.260928		C	6922189.	0.0001
F-statistic	4.000905		R-squared	0.831840	
Prob(F-statistic)	0.002712		Adjusted R-squared	0.723350	
			F-statistic	7.667433	
			Prob(F-statistic)	0.000000	

Source: the researcher

Table 18 shows that – before embedding the control variables - the model has an explanatory power (coefficient of determination) with 34%, and the model was significant where the prob of F-statistic (0.000000). The model also showed that the explanation variable debt ratio has a significant negative effect on Tobin’s Q, while total assets turnover and liquidity have no significant effect on Tobin’s Q.

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 83%, and the model was significant where the prob of F-statistic (0.00000). The model also showed that the explanation variable debt ratio has a significant negative effect on Tobin’s Q, while total assets turnover and liquidity have no significant effect on Tobin’s Q. Firm size as control variable has no significant effect on Tobin’s Q, while assets tangibility, as control variables, has a significant negative effect on Tobin’s Q.

4.3.5 Services Sector:

The researcher conducted this analysis to test the research hypotheses and determine the effect of capital structure, total assets turnover, and liquidity on the performance of the companies in a panel of the 12 companies in the manufacturing sector through 2019 – 2022. The researcher conducted this test for our variables with and without the control variables.

Table 19. Panel Regression Random Effect Analysis (RoA Model with and without Control Variables)

Panel Regression Random Effect Analysis (RoA Model without Control Variables)			Panel Regression Random Effect Analysis (RoA Model with Control Variables)		
Method: Panel Least Squares			Method: Panel Least Squares		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	0.140837	0.0528	X1	0.028016	0.5760
X2	0.155592	0.0620	X2	0.300226	0.0012
X3	0.006842	0.6843	X3	0.000356	0.9735
C	-0.086050	0.1907	W1	-0.019275	0.0053
R-squared	0.970311		W2	-0.323466	0.0268
Adjusted R-squared	0.924129		C	0.190731	0.0661
F-statistic	21.01042		R-squared	0.991344	
Prob(F-statistic)	0.000036		Adjusted R-squared	0.971557	
			F-statistic	50.10300	
			Prob(F-statistic)	0.000012	

Source: the researcher

Table 19 shows that – before embedding the control variables - the model has an explanatory power (coefficient of determination) with 97%, and the model was significant where the prob of F-statistic (0.000036). The model also showed that the explanation variable debt ratio and total assets turnover have a significant positive effect on RoA, while liquidity has no significant effect on RoA.

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 99%, and the model was significant where the prob of F-statistic (0.000012). The model also showed that the explanation variable debt ratio and liquidity have no significant negative effect on RoA. While total assets turnover has a significant positive effect on RoA. Firm size and assets tangibility as control variables have significant negative effect on RoA.

Table 20. Panel Regression Random Effect Analysis (RoE Model with and without Control Variables)

Panel Regression Random Effect Analysis (RoE Model without Control Variables)			Panel Regression Random Effect Analysis (RoE Model with Control Variables)		
Method: Panel Least Squares			Method: Panel Least Squares		
			White cross-section standard errors & covariance (d.f. corrected)		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	0.573355	0.0012	X1	0.531097	0.0000
X2	0.584288	0.0026	X2	0.643191	0.0000
X3	0.015607	0.6331	X3	0.000148	0.0000
C	-0.384361	0.0098	W1	-0.008459	0.0000
R-squared	0.983488		W2	-0.184317	0.0000
Adjusted R-squared	0.957803		C	-0.226131	0.0000
F-statistic	38.29028		R-squared	0.986734	
Prob(F-statistic)	0.000003		Adjusted R-squared	0.949147	
			F-statistic	26.25178	
			Prob(F-statistic)	0.000306	

Source: the researcher

Table 20 shows that – before embedding the control variables - the model has an explanatory power (coefficient of determination) with 98%, and the model was significant where the prob of F-statistic (0.000003). The model also showed that the explanation variable debt ratio, and total assets turnover have a significant positive effect on RoE, while liquidity has no significant effect on RoE.

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 98.6%, and the model was significant where the prob of F-statistic (0.000306). The model also showed that the explanation variable debt ratio, total assets turnover, and liquidity have a significant positive effect on RoE. Firm size and assets tangibility as control variables have a significant negative effect on RoE.

Table 21 shows that – before embedding the control variables - the model has an explanatory power (coefficient of determination) with 49.8%, and the model was significant where the prob of F-statistic (0.008188). The model also showed that the explanation variable debt ratio has a significant negative effect on Tobin's Q, while total assets turnover and liquidity have a significant positive effect on Tobin's Q.

Table 21. Panel Regression Random Effect Analysis
(Tobin’s Q Model with and without Control Variables)

Panel Regression Random Effect Analysis (Tobin’s Q Model without Control Variables)			Panel Regression Random Effect Analysis (Tobin’s Q Model with Control Variables)		
Method: Panel Least Squares			Method: Panel Least Squares		
White cross-section standard errors & covariance (d.f. corrected)			White period standard errors & covariance (d.f. corrected)		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
X1	-582266.3	0.0000	C	920893.4	0.0044
X2	1208313.	0.0029	X1	-996187.8	0.1615
X3	198725.3	0.0617	X2	1375682.	0.0420
C	99584.10	0.6932	X3	133685.9	0.1705
R-squared	0.498229		W1	-33486.31	0.5193
Adjusted R-squared	0.392593		W2	-849340.7	0.1930
F-statistic	4.716470		R-squared	0.587982	
Prob(F-statistic)	0.008188		Adjusted R-squared	0.442565	
			F-statistic	4.043397	
			Prob(F-statistic)	0.010638	

Source: the researcher

After embedding control variables, the table shows that the model has an explanatory power (coefficient of determination) with 58.7%, and the model was significant where the prob of F-statistic (0.010638). The model also showed that the explanation variable total assets turnover has a significant positive effect on Tobin’s Q, while debt ratio and liquidity have no significant effect on Tobin’s Q. Firm size and assets tangibility as control variables have no significant effect on RoE.

Conclusion:

This study examined the effect of capital structure, total assets turnover, and liquidity on the financial performance of companies listed on the Egyptian Stock Exchange for the period 2019-2022. The sample consisted of 48 companies across five sectors - food, manufacturing, pharmaceuticals, real estate, and services.

The results provide several key insights. First, higher debt levels, measured by debt ratio, are found to have a significant negative impact on profitability measured by RoA and RoE across most sectors. This indicates that increased financial leverage can hamper profitability, likely due to higher interest expenses.

Second, total assets turnover has a significant positive effect on RoA but mixed results for RoE and Tobin's Q across sectors. This implies that efficient utilization of assets enhances returns on assets but the impact on shareholder value depends on sector dynamics.

Third, liquidity positively influences RoA, highlighting the benefits of managing working capital to ensure short-term returns. However, no consistent impact is seen on long-term shareholder value measured through RoE and Tobin's Q.

Finally, control variables, firm size and assets tangibility have varying effects depending on the sector and performance measure. Their impact on financial performance is thus contingent on context.

The findings provide several implications for managers of Egyptian listed firms aiming to improve financial performance through optimal capital structure, asset use, and liquidity management policies tailored to their sector. Further research can build on these results by examining a broader sample over an extended time period. The impact of macroeconomic factors and regulations also merits investigation.

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