Debt structure and its impact on financial performance: An empirical study on the Palestinian stock exchange

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Abstract. The study aims to identify the impact that debt structure has on the financial performance of the organizations listed on the Palestinian Exchange (PEX). The sample of the study consists of 41 companies listed in the PEX, excluding the banking sector. The descriptive method is used, in addition to model measurement, to analyze the panel data using the multiple-regression method. The study concludes that the ROA increases when long-term debts are used for financing the assets in the insurance, investment, and industrial sectors. On the other hand, in the service sector, the ROA is negatively affected by the use of long-term debt, and only the industrial companies' ROA is significantly affected by the total debt. Furthermore, the study finds that the ROA of companies in the insurance and investment sectors is positively impacted by short-term debts. The main recommendation is that companies in the insurance, industrial, and investment sectors should depend on properly balanced long-term debts to increase their revenue.

Key words: capital structure, debt structure, ROA, financial performance.

JEL Classification: G32, F3, G12, L25

1. INTRODUCTION

Providing funds needed for institutions despite the scarcity of those funds is difficult, and it is becoming a more difficult task for the management of these institutions in developing countries, especially in the Palestinian territories (Al-Agha, 2005). The financing decision is an important decision that an organization has to make, which not only affects the company's future cash flows but their profitability and liquidity.

First, this decision determines the source of funding from either the financing of property rights or loan financing and second, the proportion of funding from each source (Hamdan and al-qadah, 2013). Anh and Thao (2019) state that there are many advantages that financing by loans can bring to the institution, such as tax savings, as the cost of interest is eroded by taxable profits. Also, if borrowing is cheaper than the cost of equity, it will be a preferred source of financing (Purohit and Khanna, 2012). However, according to Muritala (2012), increasing reliance on loans without the efficiency needed to use them properly would lead to negative results, especially if the predicted return on investment is lower than the cost of such funds. In light of the recent financial crises, institutions have depended increasingly on loans to finance part of their temporary assets, helping them to meet financial obligations, maintain a better level of return, and avoid financial bankruptcy (Yazdanfar and Öhman, 2015). This kind of financial decision only postpones the occurrence of the crisis but does not prevent it. This prompted the researchers to study the impact of the debt structure on the financial performance of companies listed on the PEX.

The debt structure is an important indicator used in measuring the financial performance of companies and their effectiveness in using available resources to optimize the profits for shareholders and to increase the value of these institutions (Hamdan and Judges, 2013).

The financial decision in an organization is an important topic that many researchers deal with, as theories of capital structure, such as trade-off theory, have emerged, which rely on the company's debt dependence with tax exemption enhancing the company's value (ANH et al., 2019). The basis of the signaling theory is due to the difference in the size and nature of information between management and the market (Tifow & Sayilir, 2015), and the asymmetric information theory (Zeitun and Tian, 2014) depends on the difference in information between the company and the investors. The pecking order theory (Singh and Kumar, 2008) mainly depends on financing priorities, and agency theory (Muritala, 2012) is the result of a conflict of interests between the administration and owners, and the rest of the stakeholders, all of which emerged after the study of Modigliani and Miller (1958), which concluded that the structure of the capital structure does not affect the value of the organization.

According to Shumali and Abuamsha (2019), the living conditions of occupation and political division in the Palestinian territories have led to a high risk of financing through borrowing. The researchers found that the indicators of profitability showed a clear weakness in companies listed on the PEX; therefore, it was necessary to look at the debt structure's impact on financial performance due to the scarcity of studies that dealt with the topic of debt structure and its impact on performance in organizations listed on the PEX (Abuamsha, 2017). The researchers will work to carry out this study to assist decision-makers in companies listed in Palestine and providers of capital.

Rehman and Sher (2012) state that to a certain extent borrowing maximizes the financial performance of an institution because the borrower is supposed to have a higher return on investment than the cost of borrowing; therefore, borrowing is expected to improve the financial performance.

Also, borrowing increases risk and the potential for default, causing financing problems for the company that may lead to the following two main questions: Does the composition of the debt structure affect the financial performance of an organization? What are the different impacts of the capital structure

on the three main sectors—the investment and insurance sector, the industrial sector, and the services sector?

The lack of studies on the debt structure and financial performance in the Palestinian territories was a source of motivation for taking up this study. It thus aims to test the impact of the debt structure on performance in companies listed on the PEX using the appropriate standard methods for the period of 2009–2019. The study will offer empirical proof from Palestine on how the debt structure is financed and benefits the banks and decision-makers to deal with the borrowing decision in PSE. This study is one of few that will examine the composition of the debt structure through indicators on the PEX and link them to the financial performance of the market and each sector separately. Researchers will also open the way for other studies to explain the impact debt has on financial performance.

As for the practical importance of this study, its results and recommendations are expected to serve the management of companies by providing information to help them choose the appropriate debt structure, as well as provide investors with information to help them choose the company and the best sector for investment.

This study defers from other studies because it studies the impact that debt structure has on ROA measured by long-term, short-term, and total debt. A few studies have addressed the debt structure of organizations listed on the PEX. These were not limited to the descriptive approach; rather, the standard model was used through regression methods. The studies relied on time-series data, cross section.

The present study is based on previous studies and has been enriched in several aspects, including the preparation of the theoretical framework for the study, methodology, and statistical tools; the selection of independent variables affecting the dependent variable; and how to display, discuss, and interpret the results.

2. LITERATURE REVIEW

In researching the impact of debt structure on the financial performance of organizations, Modigliani and Miller (1958) stated that financial performance is not impacted by an organization's debt structure. However, they stated in a later study that with deductible interest rates and high taxes, these organizations tend to borrow rather than finance through equity (Modigliani and Miller, 1963), which is consistent with the trade-off theory that states that debt gives a tax edge to the organization (Obim et al., 2014). Therefore, to increase performance, the company's debt level should be raised, resulting in fewer taxes and a positive impact on the ROA (Goh et al., 2016). Nirajini and Priya (2013) support this view as well.

In addition, Myers and Majluf (1984) also found that a company will prefer borrowing rather than equity financing due to the lower costs. Another study by Butt (2010) suggests that the debt structure and dividend payments are crucial parts of a company's performance and growth, and they find that the company's performance is highly impacted by its capital structure.

Safieddine and Titman (1999) found that borrowing has a positive impact on a company's performance. Hadlock and James (2002) stated that companies wanting to raise their ROA tend to rely on debt, while Myers (1984) found that companies choose debt structure rather than equity to finance their business. On the other hand, Roshan (2009) found that most businesses choose both the debt and equity held by a company in their business financing.

A company's value is highly influenced by its capital structure, which can be increased by increasing the debt structure (Sabin and Miras, 2015), which has a positive relationship with profitability (Nirajini and Priya, 2013).

Different results were found by several researchers that indicated that debt has an adverse impact on the ROA (Mwangi et al., 2014; Sabin and Miras, 2015; Pratheepkanth, 2011; Akeem et al., 2014; and Muhammad et al., 2014). Gleason (2000) also found that borrowing negatively impacts the company's

performance, and Salim and Yadav (2012) found that the financial performance of a company is negatively affected by its capital structure because the financial performance is decreased when the debt is increased, which raises the bankruptcy cost.

The company determines a target debt structure from the ratio of debt financing mix and equity required by management to maximize the value of the company's shares (Saif-Alyousfi et al., 2020) in other words, the composition of liabilities on the company's balance sheet on which to rely for the financing of assets, The composition varies according to the time and the circumstances; however, a certain structure must be adhered to at the time of the decision to finance the company (Naseh and Badran, 2014).

The trade-off between return and risk is one of the most important elements of capital formation. The increased risk of using debt at the same time on the value of the company's share adversely affects the use of large debt, which increases the expected return because of the so-called financial leverage (Flannery and Öztekin, 2019), leading to an increase in the value of the company's shares. Given that the goal of financial management is to maximize the wealth of the owners (the value of the stock in the market) (Pandey, 2004), it is important to balance both return and risk to achieve the most efficient combination of financing and to achieve the highest value of a market share (Najar, 2013).

In the end, we can see that difficulties with financing can slow the growth of a company (Beck and Demirguc-Kunt, 2006). Theories such as the pecking order theory (Myers and Majluf, 1984), trade-off theory, and M&M theory explain to a degree the debt structure and financial choices, but it is clear that there is no optimal theory that explains the total impact that debt structure has on financial performance (Martinez et al., 2019). And to find a better understanding of this topic, this paper will study the impact of the debt structure on the financial performance of the listed companies on the PEX in the Palestinian territories.

3. METHODOLOGY

Based on the objectives of the study and a review of previous literature, hypotheses were formulated as possible answers to the two main questions in the study problem as follows:

The main hypothesis:

The ROA of listed companies on the PEX is not significantly impacted by their debt structure.

The following sub-assumptions emerge:

1- The ROA of listed companies on the PEX is not statistically and significantly impacted by their long-term debt.

2- The ROA of listed companies on the PEX is not statistically and significantly impacted by their short-term debt.

3- The ROA of listed companies on the PEX is not statistically and significantly impacted by their total debt.

The second main hypothesis:

The ROA of listed companies within the investment and insurance sectors on the PEX is not statistically and significantly impacted by their debt structure.

The following sub-assumptions emerge:

1- The ROA of companies listed within the investment and insurance sectors on the PEX is not statistically and significantly impacted by their long-term debt.

2- The ROA of companies listed within the investment and insurance sectors on the PEX is not statistically and significantly impacted by their short-term debt.

3- The ROA of companies listed within the investment and insurance sectors on the PEX is not statistically and significantly impacted by their total debt.

The third main hypothesis:

The ROA of listed companies within the services sector on the PEX is not statistically and significantly impacted by their debt structure.

The following sub-assumptions emerge:

1- The ROA of listed companies within the services sector on the PEX is not statistically and significantly impacted by their long-term debt.

2- The ROA of listed companies within the services sector on the PEX is not statistically and significantly impacted by their short-term debt.

3- The ROA of listed companies within the services sector on the PEX is not statistically and significantly impacted by their total debt.

The fourth main hypothesis:

The ROA of listed companies within the industrial sector on the PEX is not statistically and significantly impacted by their debt structure.

1- The ROA of listed companies within the industrial sector on the PEX is not statistically and significantly impacted by their long-term debt.

2- The ROA of listed companies within the industrial sector on the PEX is not statistically and significantly impacted by their short-term debt.

3- The ROA of listed companies within the industrial sector on the PEX is not statistically and significantly impacted by their total debt.

The fifth main hypothesis:

There is no difference attributable to the type of sector in the impact of the debt structure on ROA.

Study methodology:

The researchers used the analytical descriptive approach, which describes and analyzes a particular phenomenon and collects information about it through a case study. To achieve the research objectives, the approach referenced various documents such as books, journals, and other materials. And for the analytical approach, the researchers used the ordinary least squares (OLS) regression model, which is a "statistical method of analysis that estimates the relationship between one or more independent variables and a dependent variable; the method estimates the relationship by minimizing the sum of the squares in the difference between the observed and predicted values of the dependent variable configured as a straight line" (Durbin, 1970). The nature of the study is a test study, as the problem of the study is predominantly analytical to the set of variables that affect the financial performance.

The population and sample study:

The population of the study consists of 49 companies that are listed on the PEX. Listed companies within the banking sector are different from the rest of the sector, and thus they will be excluded from this sector. The study sample consists of 41 companies divided into three sectors—the investment and insurance sectors, the services sector, and the industrial sector— which published their financial reports in 2019.

The study relied on secondary data sources, which are as follows:

- **Structure of finance and profitability:**
  This was collected through the annual financial statements of joint-stock companies published from 2009 until 2019 on the websites of trading securities, as well as the websites of the stock companies listed on the PEX, with the exception of banks.

- **Theoretical data:**
  Books, periodicals, scientific letters, and websites have been used as information sources.

Framework of the study:
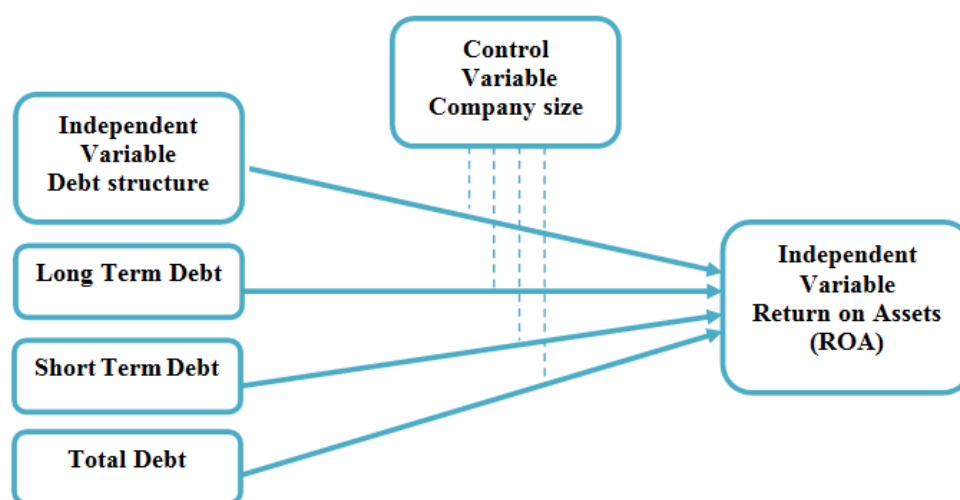
Independent and dependent variables:

In this section, we will show the independent and dependent variables and their measurements as follows**:**

Independent variables and measurements:

Table 1

Measured independent variables

Variable	Measured Variable in this Study	Some previous studies have measured the same way	Code
Short-term debt	It has been measured by dividing short-term debt (loans) by asset size.	Affaf, 2016 Naseh and Badran, 2014	ST-D
Long-term Debt	It has been measured by dividing long-term debt (loans) by asset size.	Affaf, 2016 Naseh and Badran, 2014	LT-D
Total Debt	It has been measured by dividing total debt (loans) by asset size.	Ohman, 2014	TD

Source: own elaboration

Dependent variables:

Table 2

Measured dependent variables

Variable	Measured Variable in this Study	Some previous studies have measured the same way	Code
ROA (ROA)	This variable is calculated by dividing the net profit by the total value of the assets in the form of a percentage.	Tohamy and Qurashy, 2009 Al-Najar, 2013	ROA

Source: own elaboration

Control variables:

Table 3

Measured control variables

Variable	Measured Variable in this Study	Some previous studies have measured the same way	Code
Size Company)	The natural logarithm of the revenue value is measured.	Ohman, 2014	Size

Source: own elaboration

Statistical technique used:

The researchers used the statistical analysis program EVIEWS to conduct statistical tests as follows:

1- Pearson correlation coefficient—to measure the degree of correlation between variables
2- The linear regression model was utilized to test the impact of the independent variables on the dependent variable.
3- Equation of dependent variable (ROA)

$ROA = \partial + \beta1\ (ST\text{-}D) + \beta2\ (LT\text{-}D) + \beta3\ (TD) + \beta4\ (Size) + e$

ROA: ROA.

ST-D: Short-Term Debt

LT-D: Long-Term Debt

TD: Total Debt

Size: Size Company

e: Random Error

4. EMPIRICAL RESULTS AND DISCUSSION

In this section, researchers will review the results of the applied study as follows:

Descriptive statistics of variables

Table 4

Variable long-term debt

Sector	Arithmetic Mean	Standard Deviation
Insurance and Investment Sector	0.24	0.53
Service Sector	0.28	0.46
Industry Sector	0.20	038
Total Sector	0.24	0.48

Source: own calculation

The table shows the ranking of the three sectors according to the long-term debt variable as follows:

- The services sector has an average of 0.28, which means the company's assets are financed by an average of 18% of the long-term debt. This ratio is acceptable if we know that 33% of the assets of companies listed on the PEX are financed by debt.
- The investment and insurance sector has an average of 0.24, which means that a large part of the assets of the investment and insurance sectors are financed by long-term debt.
- The industry sector has an average of 0.20, which reflects a balance between short and long-term financing in the industrial sector, as well as the low dependence of this sector on long-term financing compared to other sectors.

Table 5

Variable short-term debt

Sector	Arithmetic Mean	Standard Deviation
Insurance and Investment Sector	0.02	0.15
Service Sector	0.03	0.08
Industry Sector	0.02	006
Total Sector	0.02	0.12

Source: own calculation

The table shows the ranking of the three sectors according to the short-term debt variable as follows:
− Services sector, with an average of 0.03
− Investment and insurance sector, with an average of 0.02
− Industry sector, with an average of 0.02
− The previous results reflect a slight dependence of all sectors on short-term debt financing, which averaged 2–3% for all sectors.

Table 6

Variable total debt

Sector	Arithmetic Mean	Standard Deviation
Insurance and Investment Sector	0.15	0.28
Service Sector	0.05	0.20
Industry Sector	0.07	0.15
Total Sector	0.06	0.23

Source: own calculation

The table shows the ranking of the three sectors according to the variable of creditors as follows:

− Investment and insurance sectors, with an average of 0.15

− This means that the non-bank financial sectors are highly dependent on the financing of assets by relying on the balances of creditors, which represented 15% of the different financing sources for this sector.

− Industry sector, with an average of (0.07)

− Services sector, with an average of (0.05)

In the industrial, investment, and insurance sectors, the ratio of credit balances to total asset financing balances ranged from 5–7%, which is a reasonable percentage reflecting a balanced credit policy in difficult economic conditions.

Table 7

Variable ROA

Sector	Arithmetic Mean	Standard Deviation
Insurance and Investment Sector	0.06	0.31
Service Sector	0.05	0.73
Industry Sector	0.12	0.46
Total Sector	0.08	0.47

Source: own calculation

The table shows the ranking of the three sectors according to the variable rate of ROA as follows:

− Industry sectors, with an average of 0.12

− Investment and insurance sector, with an average of 0.06

− Services sector, with an average of 0.05

Thus, it is clear that the industrial companies were the highest in ROA and achieved double returns on the services sector and the investment and insurance sector. The average return on the industrial sector was 12% compared to 5% and 6% for the services sector and investment and insurance sectors. This is because these two sectors were more affected by the financial crisis, which has had a greater impact on the returns of the investment, insurance, and services sectors than on the industrial sector, whose revenues have been less affected by the global financial crisis.

Table 8

Variable size company

Sector	Arithmetic Mean	Standard Deviation
Insurance and Investment Sector	6.47	1.12
Service Sector	4.46	0.97
Industry Sector	6.80	0.73
Total Sector	6.56	1.00

Source: own calculation

The table shows the ranking of the three sectors according to the variable size of the company as follows:

- Industry sectors, with an average of 6.80
- Investment and insurance sector, with an average of 6.47
- Services sector, with an average of 6.46

The previous results show that the largest share of revenues in the main sectors goes to the industrial sector and then the investment and insurance sectors, while the lowest share is the share of the services sector, which is a logical result and consistent with the nature of the sectors.

Table 9

Collinearity test

Model	Collinearity Statistics (ROA)	
	Tolerance	VIF
Short-term debt ratio	0.90	1.1
`	0.263	3.8
Total debt ratio	0.30	3.3

Source: own calculation

To verify the validity and strength of the model, use the scale (statistics collinearity) by calculating the tolerance for each independent variable, and then find a coefficient (Variance Inflation Factor—VIF), which is a test measure of the effect of the correlation between independent variables. Table 9 shows that the VIF value of all the independent variables is less than 5, which indicates that the study models are free of the problem of interference and linear participation.

Table 10

Autocorrelation test: Correlation coefficient between the variables of the study

M	Variable	Size	TD	LT-D	ST-D	ROA
1	Size	1				*0.263360
2	TD	**0.087651	1			0.046236
3	LT-D	0.03677	0.038720	1		*0.250148
4	ST-D	-0.000940	-0.005674	0.271201	1	*0.117455

* significant at 5%, ** significant at 10%
Source: own calculation

The problem of the autocorrelation test does not appear in the form where contiguous views were not correlated. To verify that this problem did not exist in the model, a DURBIN WATSON (DW) TEST link was used, and the test values for the models ranged from 1.5–1.7 (Turner, 2020). There is statistical evidence

that the data is positively autocorrelated because the DW value is lower than the critical value, which means that the increase observed in the time interval leads to a proportionate increase in the lagged time interval.

Hypotheses testing:
First main hypothesis:
The ROA of companies listed on the PEX is not significantly impacted by their debt structure.

Table 11

Multiline linear regression analysis

	Variable	Regression coefficient	Value (T)	Value (Sig)	Significant
C	Constant	-0.15	-1.10	0.27	Non-Significant
LT-D	Long-Term Debt/Total Assets	0.24	5.21	0.00	Significant
ST-D	Short-Term Debt/Total Assets	0.23	1.23	0.22	Non-Significant
TD	Total Debt/Total Assets	0.04	0.47	0.64	Non-Significant
Size	Size Company	0.03	1.37	0.17	Non-Significant
R-squared				0.27	
Durbin-Watson stat				0.61	
F – Statistic				9.13	
P – Value				0.00	

Source: own calculation

Table 11 shows:

− 27% of change in the dependent variable is due to change in the independent variables mentioned in the table, and the remaining 73% is due to change in other factors.

− The regression equation for the three sectors is:

$$y = -0.15 + 0.24(x1*) + 0.23(x2) + 0.04(x3) + 0.03(x4) + e$$

- From the test above, it is shown that all the variables, except the long-term debt, do not have a statistical and significant impact on the ROA of the listed companies on the PEX, and thus the original null assumption is valid. Therefore, the following predictions can be made regarding the three sectors:

1- The ROA of companies listed on the PEX is not statistically and significantly impacted by their long-term debt.

From the results of the multiple linear regression analysis, the P-value is equal to 0.00≤0.05. Therefore, we reject the null hypothesis. That means a statistically significant impact from long-term debt on the ROA in the listed companies on the PEX is present.

2- The ROA of companies listed on the PEX is not statistically and significantly impacted by their short-term debt.

Based on the results of the multiple linear regression analysis, the P-value is equal to 0.22≥0.05. Therefore, we accept the null hypothesis. That is, there is no statistically significant impact from short-term debt on the ROA in the listed companies on the PEX.

3- The ROA of companies listed on the PEX is not statistically and significantly impacted by their total debt.

Based on the results of the multiple linear regression analysis, the P-value is equal to 0.64≥0.05. Therefore, we accept the null hypothesis. That is, there is no statistically significant impact from total debt on the ROA in the companies listed on the PEX.

From the above, it is clear that the only variable that has an impact on the ROA within the debt structure of the three sectors combined is long-term debt. Its impact has been positive, meaning that increased long-term financing increases corporate ROA. This is consistent with leverage theories that show that the cost of long-term debt financing reduces taxable income.

Thus, achieving tax savings that increase returns is established in many previous studies, such as those by Al-Subaie (2012) and Mehdi (2010), especially in the presence of political and economic conditions, as the dependence of companies on long-term borrowing in the financing of part of the temporary assets helps to make the commitment more profitable, maintaining a better level of return and avoiding financial risk.

The second main hypothesis:

The ROA of listed companies within the investment and insurance sectors on the PEX is not statistically and significantly impacted by their debt structure.

Table 12

Multilinear regression analysis of investment and insurance sectors

	Variable	Regression coefficient	Value (T)	Value (Sig)	Significant
C	Constant	0.09	0.95	0.34	Non-Significant
LT-D	Long-term Debt/Total Assets	0.32	9.53	0.00	Significant
ST-D	Short-term Debt/Total Assets	0.39	3.53	0.00	Significant
TD	Total Debt/Total Assets	0.01	0.15	0.88	Non-Significant
Size	Size Company	-0.01	-0.83	0.41	Non-Significant
F – Statistic					37.02
P – Value					0.00
R-squared					0.48
Durbin-Watson stat					0.61

Source: own calculation

Table 12 shows:

- 48% of the change in the dependent variable is due to the change in the independent variables mentioned in the table. The remaining 52% is due to change in other factors.
- The regression equation for the investment and insurance sectors is:
$$y = 0.09 + 0.32(x1*) + 0.39(x2*) + 0.01(x3) - 0.01(x4) + e$$
- From the test above, it is shown that all the variables, except the size of the company and the total debt, have a statistical and significant impact on the ROA of the listed companies within the insurance sectors. and thus the original null assumption is not valid. Therefore, the following predictions can be made for the insurance sector:

1- The ROA of companies listed within the investment and insurance sectors on the PEX is not statistically and significantly impacted by their long-term debt.

Based on the results of the multiple linear regression analysis, the P-value is equal to $0.00 \leq 0.05$. Therefore, we reject the null hypothesis. That is, there is a statistically significant impact from long-term debt on the ROA in the investment and insurance companies listed on the PEX.

2- The ROA of companies listed within the investment and insurance sectors on the PEX is not statistically and significantly impacted by their short-term debt.

Based on the results of the multiple linear regression analysis, the P-value is equal to 0.00≤0.05. Therefore, we reject the null hypothesis. That is, there is a statistically significant impact from short-term debt on the ROA in the investment and insurance companies listed on the PEX.

3- The ROA of companies listed within the investment and insurance sectors on the PEX is not statistically and significantly impacted by their total debt.

Based on the results of the multiple linear regression analysis, the P-value is equal to 0.88≥0.05. Therefore, we accept the null hypothesis. That is, there is no statistically significant impact from total debt on the ROA in the investment and insurance companies listed on the PEX.

The two variables (short-term debt and long-term debt) have a positive impact on the ROA within the debt structure of the investment and insurance sectors, consistent with leverage theories that show that the taxable income is reduced by the cost of long-term debt financing.

Thus, achieving tax savings increase returns, which has been established in many previous studies such as al-Subaie (2012) and Mehdi (2010). It emphasizes the importance of diversification in sources of asset financing between long-term and short-term loans.

The third main hypothesis:

The ROA of listed companies within the services sector on the PEX is not statistically and significantly impacted by their debt structure.

Table 13

Analysis of the multiple linear regression of the service sector

	Variable	Regression coefficient	Value (T)	Value (Sig)	Significant
C	Constant	-1.78	-3.72	0.00	Non-Significant
LT-D	Long-term Debt/Total Assets	-0.48	-2.77	0.01	Significant
ST-D	Short-term Debt/Total Assets	-1.22	-1.25	0.22	Significant
TD	Total Debt/Total Assets	-0.11	-0.34	0.73	Non-Significant
Size	Size Company	0.30	4.05	0.00	Significant
F – Statistic				2.71	
P – Value				0.00	
R-squared				0.33	
Durbin-Watson stat				0.71	

Source: own calculation

Table 13 shows:

- 33% of the change in the dependent variable is due to the change in the independent variables mentioned in the table. The remaining 67% is due to change in other factors.
- The regression equation for the service sectors is:

$$y = -1.78 - 0.48(x1*) - 1.22(x2*) - 0.11(x3) + 0.30(x4*) + e$$

- From the test above, it is shown that all the variables, except the total debt, have a statistical and significant impact on the ROA of the listed companies within the service sector, and thus the original null assumption is not valid. Therefore, the following predictions can be made for the service sectors:

1- The ROA of listed companies within the services sector on the PEX is not statistically and significantly impacted by their long-term debt.

Based on the results of the multiple linear regression analysis, the P-value is equal to 0.01≤0.05. Therefore, we reject the null hypothesis. That is, there is a statistically significant impact from long-term debt on the ROA in the services companies listed on the PEX.

2- The ROA of listed companies within the services sector on the PEX is not statistically and significantly impacted by their short-term debt.

Based on the results of the multiple linear regression analysis, the P-value is equal to 0.22≥0.05. Therefore, we accept the null hypothesis. That is, there is no statistically significant impact from short-term debt on the ROA in the services companies listed on the PEX.

3- The ROA of listed companies within the services sector on the PEX is not statistically and significantly impacted by their total debt.

Based on the results of the multiple linear regression analysis, the P-value is equal to 0.73≥0.05. Therefore, we accept the null hypothesis. That is, there is no statistically significant impact from total debt on the ROA in the services companies listed on the PEX.

From the above, it is clear that the only variable impacting the ROA within the debt structure of the services sector is long-term loans, which had a negative impact, and that means the increase in long-term funding will decrease the rates of ROA of these companies and vice versa. This result confirms the theories of leverage assumptions, which state that the low level of long-term loans reduces risks and increases the returns of service sector companies, which has been found in some previous studies such as Najar (2013) and Mehdi (2010).

The fourth main hypothesis:

The ROA of listed companies within the industrial sector on the PEX is not statistically and significantly impacted by their debt structure.

Table 14

Analysis of the multiple linear regression of the industry sector

	Variable	**Regression coefficient**	**Value (T)**	**Value (Sig)**	**Significant**
C	Constant	-0.12	-0.36	0.72	Non-Significant
LT-D	Long-term Debt/Total Assets	0.59	6.57	0.00	Significant
ST-D	Short-term Debt/Total Assets	0.93	1.60	0.11	Significant
TD	Total Debt/Total Assets	0.71	2.93	0.00	Significant
Size	Size Company	0.02	0.32	0.75	Non-Significant
F – Statistic					16.8
P – Value					0.00
R-squared					44
Durbin-Watson stat					0.51

Source: own calculation

Table 14 shows:

− 44% of the change in the dependent variable is due to the change in the independent variables mentioned in the table, and the remaining 56% is due to change in other factors.

− The regression equation for the industrial sector is:

$$y = -0.12 + 0.59(x1*) + 0.93(x2) + 0.71(x3*) + 0.02(x4) + e$$

- From the test above, it is shown that all the variables, except the size of the company, have a statistical and significant impact on the ROA of the listed companies within the industrial sector, and thus

the original null assumption is not valid. Therefore, the following predictions can be made for the industrial sectors:

1- The ROA of listed companies within the industrial sector on the PEX is not statistically and significantly impacted by their long-term debt.

Based on the results of the multiple linear regression analysis, the P-value is equal to 0.00≤0.05. Therefore, we reject the null hypothesis. That is, there is a statistically significant impact from long-term debt on the ROA in the industrial companies listed on the PEX.

2- The ROA of listed companies within the industrial sector on the PEX is not statistically and significantly impacted by their short-term debt.

Based on the results of the multiple linear regression analysis, the P-value is equal to 0.11≥0.05. Therefore, we accept the null hypothesis. That is, there is no statistically significant impact from short-term debt on the ROA in the industrial companies listed on the PEX.

3- The ROA of listed companies within the industrial sector on the PEX is not statistically and significantly impacted by their total debt.

Based on the results of the multiple linear regression analysis, the P-value is equal to 0.00≤0.05. Therefore, we reject the null hypothesis. That is, there is a statistically significant impact from total debt on the ROA in the industrial companies listed on the PEX.

The two variables (long-term loans and total debt) have a positive impact on ROA within the capital structure of the industrial sector. This is consistent with leverage theories that show that the cost of long-term debt financing reduces taxable income. Thus, achieving tax savings that increase the returns has been established in many previous studies, such as Yadev (2012) and Mehdi (2010).

In addition to the importance of long-term debt financing, industrial companies that tend to favor concessional credit policies through forward selling have a higher ability to generate more profits than their counterparts.

The fifth main hypothesis:

There is no difference attributable to the type of sector in the impact of the debt structure on ROA.

From the statistical analysis and testing of the four main hypotheses, there is a difference in the impact of the debt structure on the financial performance of the sector, and this result is similar to what was reached by Singapurwoko (2010).

This is evidenced by the impact of long-term debt on the ROA for all three sectors. It was found that the long-term debt positively impacted the statistical ROA of the companies in the three sectors combined, as well as the investment and insurance sectors and the industrial sector alone, but it had a negative impact of statistical significance on the ROA in the companies of the services sector.

This means that long-term loans have an adverse effect on financial performance in the services sector, unlike other sectors. Also, there was a difference in the impact of short-term debt variables and total debt on the ROA (for the three sectors combined and individually).

While the total debt variable had a statistically significant impact on the ROA only for companies listed in the industrial sector, this reflects that the loose credit policy through more forward selling positively impacts the performance of companies listed in the industrial sector as a result of the nature of their work, which requires more long-term selling as opposed to other sectors where forward sales impact financial performance to a lesser degree.

Only companies listed in the investment and insurance sectors, which regard short-term lending and borrowing as one of their most important financial instruments and investment keys, saw a positive impact on ROA.

DISCUSSION

There is a positive impact from long-term debt financing on the combined ROA of the combined sectors, the investment and insurance sectors, and the industrial sector independently, which means that Palestinian companies can increase their performance rates by relying on long-term debt financing. This is consistent with the findings of studies by Abor (2005); Abor (2007); Zeitun and Tian (2007); Ebaid (2009); Lara and Mesquita (2008); Pratheepkanth (2011); Nguyen and Nguyen (2015); and Banerjee and Anupam De (2015). We explain this because the banking and finance sectors are developing, and this means that the Palestinian economy is beginning to stabilize politically, and most of the time it seems to adapt to the political situation in the long run. Likewise, financing long-term borrowing is cheaper than short-term borrowing in Palestine.

There is a negative impact of long-term debt financing on the ROA of companies listed in the service sector, which means that Palestinian service firms are increasingly impacted by long-term debt financing, contrary to the findings of previous studies by Kudlawicz, et al., (2015); Pratheepkanth (2011); and Sorana (2015). We explain that the service sector does not depend on long-term debt financing but depends on equity financing.

There is a statistically significant positive impact from short-term debt ratio and ROA only for listed companies in the investment and insurance sectors. This is consistent with the studies of Tristan and Huy-Cuong (2015) and Ben Said (2017) and inconsistent with the studies of George et al., (2012), Do and Wu (2014), and Víctor (2013). This means that investment and insurance depend in finance on debt financing; it is considered the cheapest type of financing compared to equity financing.

There is a statistically significant positive impact from the ratio of total debt on ROA only on listed companies within the industrial sector. This is supported by the studies of Tristan and Huy-Cuong, (2015) and Ben Said (2017) and not supported by the studies of George et al., (2012); Do and Wu (2014); Víctor (2013); Kudlawicz et al., (2015); Pratheepkanth (2011); and Sorana (2015). We explain this because the banking and finance sectors are developing, and this means that the Palestinian economy is beginning to stabilize politically, and most of the time it seems to adapt to the political situation in the long run. Likewise, financing long-term borrowing is cheaper than short-term borrowing in Palestine.

During the period of this study, the ratio of short-term debt to total assets for companies listed on the PEX in the sectors of investment, insurance, and industry was 2%, while it was 3% in the services sector. This disagrees with the findings of Abor (2005); Abor (2007); Zeitun and Tian (2007); Ebaid, (2009); Lara and Mesquita (2008); Pratheepkanth (2011); Nguyen and Nguyen (2015); and Banerjee and Anupam De (2015). This percentage is low if we compare that with the literature review above, as the ratio of financing short-term debt in studies reached between 10–15%.

The ratio of long-term debt to total assets during the study period for companies listed on the PEX was 24% in the investment and insurance sectors, 20% in the industrial sector, and 28% in the services sector, reflecting the heavy dependence of companies listed on the PEX on long-term debt within its capital structure. This is consistent with findings in the studies of Tristan and Huy-Cuong, (2015) and Ben Said (2017). It is inconsistent with the findings in studies by George et al., (2012); Do and Wu (2014); Víctor (2013); Kudlawicz et al., (2015); Pratheepkanth (2011); and Sorana (2015), as this ratio is equal with studies where the average was between 20–30%.

The ratio of total debt to total assets during the study period for companies listed on the PEX was 15% in the investment and insurance sectors, 7% in the industrial sector, and 5% in the services sector. This is in line with the nature of the economic activities provided by the three sectors. These findings disagree with studies by Abor (2005); Abor (2007); Zeitun and Tian (2007); Ebaid (2009); Lara and Mesquita (2008); Pratheepkanth (2011); Nguyen and Nguyen (2015); and Banerjee and Anupam De (2015). This percentage

is low if we compare that with the literature review above, as the ratio of financing short-term debt in studies reached between 10–15%.

During the period of this study, the rate of ROA for companies listed on the PEX in the sectors of investment and insurance was 6%. In the industrial sector, it was 12% and was 5% for the services sector. This reflects a lower performance in the insurance, investment, and service sectors as a result of the impact of domestic and international political and economic repercussions, while the industrial sector was the least affected during the study period. These findings are not consistent with studies by Tristan and Huy-Cuong (2015); Ben Said (2017); George et al., (2012); Do and Wu (2014); Víctor (2013); Kudlawicz et al., (2015); Pratheepkanth (2011); and Sorana (2015). This means that the profitability of the Palestinian companies listed on the PEX is relatively small if compared to the profitability and returns of international companies due to the small size of companies in Palestine and the small size of the Palestinian economy that suffers from the occupation and the Israeli authorities, which prevents Palestinian companies from exporting and controlling crossings, and this is what increases production costs, while Israeli companies enjoy a high competitive advantage over Palestinian companies (Sammoudi, 2019).

It was found that there was a fluctuation in the debt ratio, as well as in the rate of ROA at the level of companies and sectors, as the ratios varied from one company to another and from sector to sector. We explain that this is what increases production costs compared to Israeli companies that enjoy a highly competitive advantage over the Palestinian companies (Sammoudi, 2019).

5. CONCLUSION

The study recommends that the relevant parties, based on the study results, should:

− Rely on financing with long-term loans at appropriate rates in the insurance, investment, and industrial sector companies, due to the positive impact that those loans have on their ROA.

− Follow the companies listed in the industrial sector with a flexible sales policy to increase reliance on future sales so as not to harm the rights of these companies because the financial performance of companies will be positively impacted.

− Advocate for Palestinian companies to focus on improving their relatively low financial performance based on long-term borrowing and to look for other determinants that would improve their financial performance.

− Allocate future research to search for other factors that are most influential on financial performance.

− Encourage the adoption of the results of this study by investors when dealing in the PEX because these results provide indicators of expected performance, and are expected to serve the Palestinian investor.

Examine the companies reviewed, which also should reconsider their administrative and financial policies and take advantage of the results of this study to improve performance.

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