

Factors Effecting Capital Structure Analytical Study: Industry Sector, ASE

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Abstract

This study aims to examine the impact of some factors on the capital structure in the industrial sector, Amman Stock Exchange during the period (2012-2021). The researcher chose four factors: (tangible assets, risk, profitability and tax). The study sample reached 62 industrial companies. Financial analysis was used to calculate the variables of the study; the hypotheses were tested according to the appropriate statistical methods using the SPSS software. The most important results of the study: a statistically significant effect of the independent variables combined on the capital structure, as well as a statistically significant impact of the independent variables (tangible assets, risk, and profitability) individually on the capital structure, and no statistically significant effect of the tax variable on Capital structure. As the model was able to explain 20% of the changes in capital structure, and 80% is attributable to other factors.

Keywords: capital structure, profitability, tangible assets, risk, tax, finance, industrial companies, ASE

1. Introduction:

The decision to choose the capital structure is one of the most difficult and crucial decisions made by any investment organization, the importance of this decision stems from the need to provide financing for investment activities in a manner that maximizes returns at an acceptable level of risk, to enhance the sustainability of the business and increase its competitiveness, it also helps in achieving the strategic financial management objectives of maximizing profits or earnings per share, maximizing the owners' wealth and maximizing the market value of shares (Al-Zubaidi, 2008).

The role of efficient financial management is highlighted in the selection of appropriate sources of financing, and this role is reflected in the decision of competent managers to build a solid and strong corporate capital structure by determining the optimal volume of

indebtedness by balancing the expected benefits of debt and the cost of these debts as a source of funding. However, the formulation of the capital structure faces several limitations that need to be carefully analyzed and examined to reveal the impact of each on the decision to formulate the capital structure.

Since the pioneers of modern financial thought, Modigliani and Miller (M&M), presented their theory of the cost of capital, corporate finance and investment theory in 1958, financial thought has entered into a great intellectual debate and still exists among financial researchers about the nature of the relationship between the most important variables affecting the company's value. One of the most important topics that deepen the research is the way in which the structure of capital in the business companies and its impact on the market value of these companies, note that debt is the main determinant of the capital structure and increases the market value of the company by the amount of tax savings that arise and offset by financial default, so there must be a state of balance and trade between tax savings and financial default when choosing capital structure. (Hanafi & Qaryas, 2002) (Rose, Westerfield, Jaffe, 2008)

The remarkable development witnessed by the Jordanian economy recently as a result of its openness to the countries of the outside world has been reflected in the increase of domestic and foreign investments in the field of industry and the development of the business of Jordanian industrial companies, where these financing operations faced several determinants, considerations and factors (Delikanlı, & Kılıç, 2021), (Rajha, 2016), hence the researcher found that there is a case worth studying by seeking to test the impact of some of the most important and more prominent factors that are fundamental determinants of the formulation and determination of the capital structure, and measure its impact on the capital structure of business companies or This analysis is applied to the Jordanian industrial companies listed on the Amman Stock Exchange during the period 2009-2018 to determine their behavior in formulating the capital structure and test their dependence on leverage to improve their financial performance.

The problem of the study is that managers seek to select the capital structure that achieves the highest return at an acceptable level of risk within the strategic objective of financial management, which is to maximize the wealth of owners and maximize the market value of the company in addition to reducing the weighted average cost of capital (Al-Afeef, 2017). On the other hand, the company's increased reliance on leverage in the capital structure is increasingly riskier, so companies are optimally planning their capital structure. Each company should consider its operational nature, size, working conditions and a range of factors that have a direct impact on the choice of the optimal structure that adopts in its operations, which means that the final decision of financial management within companies must be based on clear analytical (Nuaimi, 2009).

Several studies that have discussed and talked about the capital structure have shown that access to an optimal capital structure is a requirement sought by financial management as it works to achieve and maximize the strategic objectives of business companies, (Delikanl & Kılıç 2021; Yasin, 2021; Salim & Susilowati 2019; Ha & Tu 2021), so the subject of this study is very important to highlight the impact of the most important factors subject to the decision Management in the formulation of the capital structure, which is a very important decision for business companies in general, including the Jordanian industrial companies in the Amman Stock Exchange, in order to be able to maximize the objectives of shareholders and support the competitive environment in which these companies operate, as these companies It supports an important aspect of Jordan's economic development, and the decision of the capital structure will ultimately lead to success or failure and bankruptcy.

The researcher identified the objectives of the study in:

1. Identify the most important factors from the researcher's point of view that can have a direct impact on the capital structure.
2. Test the impact of the most important factors adopted by the researcher in the analysis of tangible assets, risk, profitability, tax in the formulation of capital structure.
3. To reach the set of criteria and determinants that the Jordanian industrial companies take into consideration when selecting the sources of funds that constitute their capital structure.
4. Provide a clear and comprehensive perception of the Jordanian industrial companies and the owners of the decisions of the passage of the importance of financing debt or what is known as financial leverage.

2. Hypotheses

According to the study problem, the researcher presented a few hypotheses as follows:

Main hypothesis: There is no statistically significant effect of factors (tangible assets, risk, profitability, tax) on the capital structure in the industrial sector, Amman Stock Exchange.

Several sub-hypotheses are branching out of this hypothesis:

1st sub-hypothesis: There is no statistically significant impact of tangible assets factor on the capital structure in the industrial sector, Amman Stock Exchange.

2nd sub-hypothesis: There is no statistically significant impact of risk factor on the capital structure in the industrial sector, Amman Stock Exchange.

3rd sub-hypothesis: There is no statistically significant impact of profitability factor on the capital structure in the industrial sector, Amman Stock Exchange.

4th sub-hypothesis: There is no statistically significant impact tax factor effect on the capital structure in the industrial sector, Amman Stock Exchange.

Figure 1. Descriptive model of the relationship between independent and dependent study variables..

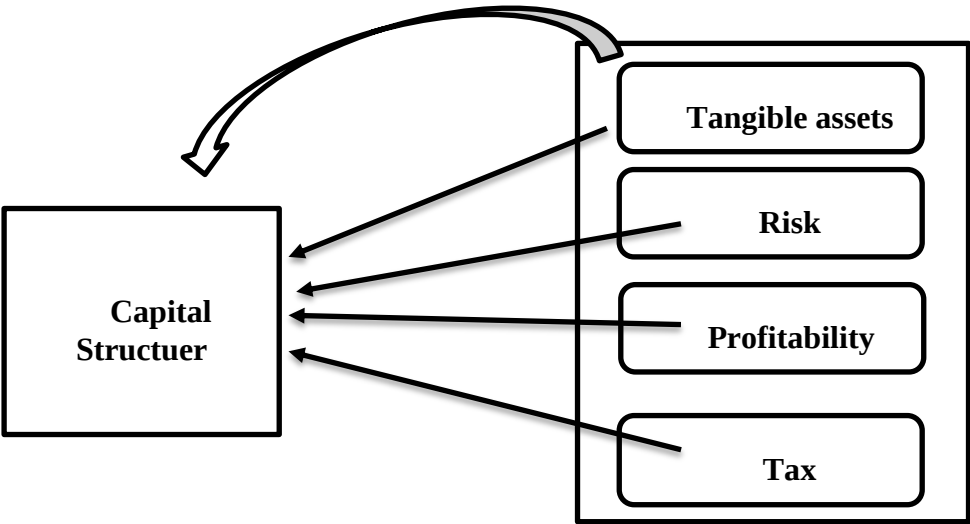


Figure 1: Figure description (TNR 10pt., centered, italics)

Source: (researcher preparation (2021).)

In the light of the study variables shown in Figure (1), the researcher used the most suitable model to achieve the objectives of the study and test the effect of independent factors on the dependent factor in a simple and multiple way to detect the extent of the problem of linear extension between the model variables.

Whereas Jong, Kabir & Nguyen adopted this model in 2007 to demonstrate the effect of factors on financial leverage, the mathematical model is as follows (Jong, Kabir & Nguyen, 2008):

$$Lev = a + Bi Tang + Bj Risk + Bl Profit + Bn Tax + \acute{e}i \tag{1}$$

Where is:

a: Equation constant	Lev = Leverage
Bi: Tangible asset coefficient	Tang: Tangible asset Tangibility
βj: Risk Factor	Risk: Risk
βl: Profit Coefficient	Profit: Profitability
βn: tax coefficient	Tax: tax
εi: Residuals	

3. Study variables

3.1.Capital Structure

The capital structure consists of long-term loans, preferred shares and equity, which are intended for permanent financing of the company, and therefore the capital structure is part of the financial structure (Frank & Sanati, 2020), (Hanafi, 2002). It is worth mentioning that there are many explanatory theories of the capital structure on which researchers and financial managers relied on the choice of capital structure and sources of funding, both internal sources represented by retained earnings and equity consisting of common stock and preferred shares, or external sources of long-term loans and bonds. As well as issuing new shares and introducing new partners. (Jayantyet al., 2021; Sutomoet al., & Muharam, 2020 ; PHAM, 2020).

Through the researcher review of some of the literature in financial thought it was noted that there are some use the term financial structure and the term capital structure in the same position with no clear distinction between them, note that there is a difference in the two concepts.

The balance sheet of companies usually consists of two aspects: asset side and liabilities plus equity side, where the liabilities and equity side represents the financial structure of the company (Kim,1978), while the capital structure is part of the financial structure of the company where it consists of long-term loans and equity and preferred shares (Hindi, 1999). The degree of leverage will be adopted to reflect the capital structure (AL-Shatnawi et al., 2021). which is calculated by the ratio of long-term loans to total assets according to the following formula:

$$\text{The degree of leverage} = \frac{\text{long – term loans}}{\text{Total Assets}} \tag{2}$$

A wide range of theories have tried to explain the use of debt in companies and its impact on their market value and cost of capital. These theories sought to find the most successful ways

in mixing sources of financing structure to maximize the wealth of owners and increase the market value of their investments, the most important of these theories are: (Traditional theory, theory of Mdliani and Miller (M&M), the trade-off Theory and signal theory (Adawiyah et al., 2022).

It is known that the greater the reliance of companies on long-term loans, the higher the leverage ratio, and the most important decision for those interested in financial management is to reach an optimal leverage ratio that has positive results on the market value of businesses as the increase in market value is the strategic objective that seeks All businesses.

Financial Thought References stated that financial leverage is the ratio of long-term debt to total assets. Since the cost of debt is lower than the cost of issuing new shares, an increase in debt due to higher leverage ratios should affect the WACC and make it down. (Jonget al., 2008). The analytical logic indicates that greater pressure on the weighted average cost of capital lead to maximization of market value of company greater the market value of the company and increased financial leverage in high degree may lead the companies to financial insolvency risk within the Bankruptcy Cost. (Jong et al., 2008).

3.2.Tangible assets

are fixed assets held by the company for the purpose of generating revenue and there is no intention of the company to sell them. Increasing in the ratio of these assets in the company enables it to increase its ability for borrowing (Harris & Raviv,1991; Campello & Giambona, 2011). The ratio of tangible assets can have calculated through the fixed assets to total assets ratio as the following equation:

Tangible Assets Ratio = $\frac{\text{Fixed Assets}}{\text{Total Assets}}$ (3)

3.3.Risk

the uncertainty of achieving returns and instability, which companies are exposed to through their activities. These risks are increased by increasing the percentage of leverage as a result of financial decisions. (Jong et al., 2008), (Tahir, 2020) it can be calculated through the following equation:

Risk = $\frac{\text{Stander Deviation of Net Income}}{\text{Total Assets}}$ (4)

3.4.Profitability

the return that is achieved as a result of investment in the company's assets, and will be measured by the ratio of profit before interest and taxes to total assets (Fama & Frinch, 2002), (Mujiatun, Rahmayati & Ferina, 2021), which is known as the rate of return on assets, and will be calculated by the following formula:

$$\text{Profitability} = \frac{\text{Profit before interest and Taxes}}{\text{Total Assets}} \dots\dots\dots (5)$$

3.5.Tax

This is the percentage of tax imposed on business companies which is deducted from corporate income for the benefit of the government after deducting interest according to the Jordanian tax law (Herdiyana & Wahid, 2019), which in turn guarantees what is known as tax savings due to this accounting procedure which has positive effects on the market value of the company (Graham, 1999), will be measured by the following equation:

$$\text{Tax Ratio to net Income} = \frac{\text{Taxes}}{\text{Net Income Befor Taxe}} \dots\dots\dots (6)$$

4. Previous studies:

Many researchers have discussed the determinants of the capital structure, However, the relationship between the major variables that play an influential role in the capital structure and the weighted cost of the capital structure, and the impact of all this on the market value of the company, but they represent axes that still arouse a lot of debate and scientific debate in contemporary financial thought, which helped in the emergence of intellectual currents and theories Multiple explanatory (Jayanty et al., 2021; Salim & Susilowati, 2019; Khaki & Akin, 2020; Kythreotis et al., 2018).

The subject of the capital structure and the determinants of it remains characterized by disagreement and is always controversial. The scientific uproar that has arisen since the pioneers of the modern school of financial management, Medgliani and Miller, presented their theory. Since 1958, when they presented the theory of the relationship between the cost of capital, corporate finance and investment theory, it also raised Durand's theories of determining the structure of capital, known as the net profit theory, and the second the theory of net operating profit, which dealt with how to deal with the leverage and levels of change in it and its impact on the market value of the company (Jong et al., 2008). In addition to the

treatments provided by the traditional theory and balance theory of capital structure, which emphasizes the balance between the positive effects and advantages of the tax savings derived from debt dependence in financing operations and considering the interest of such debt as an expense borne by the income statement, and the negative impact of the cost of bankruptcy arising due to increased dependence on Debt (Adawiyah et al.,2022 ; Bangun & Natsir, 2022; Zubaidi, 2008).

Phooi M'ng et al (2017), investigate the determinants of the capital structure of public listed companies on Bursa Malaysia, Singapore Stock Exchange, and Thailand Stock Exchange from 2004 to 2013. Also investigate how firm-specific factors such as profitability, firm size, the tangibility of assets and depreciation to total assets along with the macroeconomic factor such as inflation influence the capital structure decisions of public listed companies. The findings supported capital structure theories such as trade-off and pecking order theories and are consistent with prior empirical studies. We find all the factors examined in this study provide strong explanatory power for the capital structure decisions of the sampled public listed companies across all three countries. Acaravci (2015), examined the determinants of capital structure in Turkey. From 1993 to 2010 for 79 companies in the trading sector in the Istanbul Stock Exchange. This study compares the effects on the capital structure according to the sectors and the size of the variables used in the models. Growth opportunities, size, profitability, tangible and non-debt tax shields are used as company-specific variables that influence the company's capital structure decision. Empirical results show that there are important relationships between growth opportunities, volume, profitability, tangible and leverage variables. Sunitha and Vijayakumaran (2018), examine the determinants of leverage in the context of China using a sample of 1844 Chinese non-financial firms over the period 2003 to 2010. The study finds that size, tangibility, volatility, and firm age are positively and significantly associated with leverage. Furthermore, the firm's profitability has a statistically significant negative impact on leverage. Furthermore, we find that we find that firm size, profitability, tangibility, volatility, and firm age are the robust determinants of leverage of Chinese listed firms. Al-Momani and Hassan (2011), aimed to find out the extent of the decisions of financial managers of companies on the factors of the company, this study was applied to the services sector companies in the Amman Stock Exchange during the period between 1996 and 2007, the study showed a statistically significant impact between the special factors The Company's (size, asset structure, return on assets, growth rate) and financial structure, and no impact of the capital market factors (tax rate, interest rate, market capitalization in the capital market), in the decisions of financial managers in companies, And that these factors do not explain the changes that occur in the financial structure. The study of Adawi (2011), showed that the choice of optimal financing structure is taking into account several factors specific to the institution and its surroundings, and must be within the framework of political, financial and strategic overall, the most important of these factors are the cost of borrowing, return, asset structure, growth rate, size of the institution One of the most important results is the existence of a statistically significant correlation between the

size of the institution and the financial structure, and the inverse significant relationship between the rate of return and the financial structure, that the size of the institution and the rate of return are the main determinants of the financial structure of the institution. Parlak, (2010), aimed at identifying the institutional factors affecting the capital structure policies of Turkish industrial companies. For this purpose, the total leverage ratios and short and long-term debt of 145 listed companies were calculated and reviewed on seven factors including Profitability, risk size, growth, tax rate, and amount of collateral, as a means for 2003-2007 and 2008 alone, concluded that profitability was an important determining factor with a negative signal both for years of economic growth and turmoil, and the analysis also showed that in times of Economic expansion Prefer companies to choose Short-term when it has the risk of running low and the value of a relatively large guarantee, which was a sign of the importance of bankruptcy costs and deals. Agyenim (2008), suggests that the capital structure has attracted intense debate and scientists' attention in financial management for decades and the capital structure in sub-Saharan Africa is of great importance. This study attempts to analyze this situation by looking at the factors that influence the capital structure. The results indicate that the size and type of joint ventures and the level of ownership of the joint venture partner have a positive impact on the capital structure of the joint ventures in Ghana.

5. Methodology:

The researcher adopted the descriptive-analytical method in preparing this study. The financial statements were analyzed for the targeted companies. The program (SPSS) and financial analysis were used to extract the results. Bulletins and previous literature about the study. The study population consisted of (57) public sector companies, Amman Stock Exchange (2012-2021), The study population consisted of the industrial sector, Amman Stock Exchange (2012-2021), which number (57) public shareholding companies, of which 38 companies achieved the conditions of the study, it was 67% of the study population.

6. Statistical analysis

Autocorrelation test: Durbin – Watson test was used to test the existence of a correlation between the data where it was found that the value of D-W is good (0.80) which indicates the absence of Autocorrelation.

This study is based on the basic hypothesis that "there is no statistically significant effect of variables (tangible assets, risk, profitability, tax) on the capital structure of the industrial sector, Amman Stock Exchange during the period (2012-2021)."

The effect of independent explanatory variables on the dependent variable (capital structure) can be identified by estimating this relationship as follows:

$$\text{Lev} = f \text{ (Tang, Risk, Profit and Tax) (6)}$$

Table 1: Model Summary

Model	R	R Square	F	Sig.
1	.37	. 137	2.01	.000

Source: Researcher preparation based on analysis outputs 2021.

Table (1) indicates the results of the multiple regression analysis between the dependent variable (capital structure) and the independent variables (tangible assets, size, risk, profitability, liquidity, tax) on the industrial sector during the period (2012-2021), which were extracted through Looking at the results, there is an effect of the factors (tangible assets, size, risk, profitability, liquidity, tax) on the dependent variable capital structure.

The relationship is medium (R = 37%) where independent variables accounted for (13.7%) of the change in capital structure and (86%) due to other factors. The model can be written mathematically as follows:

$$\text{Lev} = -0.018+ 0.176 \text{ Tang}+0.174 \text{ Risk}-0.106 \text{ Profits} +0.014\text{Tax} \quad (7)$$

Table 2: Statistical Analysis of Sub - Hypotheses

Model		R Square	T	Sig.
1	Tangible assets	0.18	2.754	0.00
	Risk	0.093	4.457	0.00
	Profitability	0.014	2.642-	0.020
	Tax	0.001	0.368	0.714

Source: Researcher preparation based on analysis outputs 2021.

Table (2) indicates the results of regression analysis that there is a statistically significant impact of tangible assets, risk and profitability on the capital structure in the industrial sector. As for the tax variable, the results of the analysis showed that there is no statistical significance of the tax on the capital structure.

The independent variable tangible assets accounted for 19% of the change in capital structure. Variable risk accounted for 9.3% of the change in capital structure. The profitability variable was able to account for 1.4% of the change in the capital structure.

7. Results:

Through financial and statistical analysis and testing the hypotheses of the study, the researcher has reached very important results showing the impact of independent factors on the capital structure as follows:

1. The results of the analysis showed that Jordanian industrial companies listed on the Amman Stock Exchange during the period (2012-2021) rely heavily in financing their assets and investments on ordinary shares as a long-term financing source rather than on debt; the ratio of long-term loans to total assets only (5 %).
2. Jordanian industrial companies rely more on short-term loans than on long-term borrowing.
3. The analysis showed that there is a statistically significant effect of the variables (tangible assets, risk, profitability, tax) on the capital structure in the industrial sector. The relationship was medium, and this result is consistent with the analytical logic and previous studies.
4. There is a statistically significant effect on tangible assets on the capital structure. This is consistent with previous studies that have shown that there is a positive relationship between tangible assets and capital structure, as tangible assets are a guarantee for loan grantors to industrial companies in Jordan, although there are some opinions to support that companies with higher assets rely more on property funds in financing operations.
5. There is a statistically significant impact of risk on the capital structure. This is consistent with previous studies that have shown that there is an inverse relationship between risk and capital structure.
6. There is a statistically significant impact of profitability on the capital structure. This is consistent with previous studies, where the theory of financing priority has shown that there is an inverse relationship between the profitability of companies and the structure of capital that companies that make a high profit will reduce dependence on external sources of financing. The theory of equilibrium relationship indicates that there is a direct relationship because the cost of bankruptcy, taxes and agency costs drive profitable companies to increase and structure capital.
7. The results of the analysis showed that there is no statistically significant tax effect on the capital structure. This factor does not explain the changes in the capital structure and thus the financial managers of the Jordanian industrial companies do not to consider the changes that occur in the tax rates that companies pay on profits. Contrary to M&M theory and other analyzes, tax benefits encourage companies to finance their operations through loans because interest is an income-producing expense. Perhaps this is because the financial managers in these companies did not have a full understanding of the potential benefits of loans that would have a positive impact on the market value of each share.
8. The analysis shows that there are other variables and factors that affect capital structure because the factors tested according to the multiple linear regression model were able to

explain (13.7%) of the change in the capital structure, and 86% of the changes due to other factors.

9. Recommendations

1. The researcher recommends working to improve the performance of the companies in question and focus on the important factors that have clearly been shown to have an impact on the identification and formulation of the capital structure, such as increasing the proportion of assets, and focus on the factors affecting the support and increase profitability ratios, and improve liquidity that contribute to achieving More flexibility for companies to choose the capital structure more efficiently and effectively.
2. The public shareholding industrial companies should take care not to borrow to deal with immediate problems or to invest in uncertain and high-risk projects and unnecessary expansions. And resort to sources of self-financing and property financing because of the lower costs compared with sources of debt financing, and the positive impact on the financial performance of these companies.
3. The need to rely on long-term borrowing finance more than short-term borrowing in the capital structure of companies and direct this type of loans towards investments with a proven return because this type of financing contributes to reduce the cost of capital and maximize the value of the enterprise.
4. The researcher believes the importance of urging financial managers in the Jordanian industrial companies to study the theories of capital structure and knowledge of the factors influencing its identification, which allows them a deeper understanding of these theories and increase their ability to determine the optimal capital structure and debt management in a more efficient manner and in line with scientific concepts and theories that I discussed these concepts.
5. The need for industrial companies to arrange their financing needs in accordance with the theory of prioritization of financing, in which retained profits are the first source of internal financing sources because of the low cost compared to the issuance of new shares, and then go to external sources and attention to study the reasons behind the low leverage ratios in companies Jordan's industrial bond market is weak compared to the stock market in Amman.
6. The need to look for other more important factors that affect the determination and formulation of the capital structure in the Jordanian industrial companies listed on the Amman Stock Exchange, because the factors selected in the study model explained a small percentage of the changes that may occur in the variable dependent capital structure.

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