
The Effect of Operational and Financial Leverage on Economic Performance Indicators: Evidence from industrial companies listed on the Amman Stock Exchange

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Abstract: *The aim of study was to examine the impact of the operational and financial leverage on the economic performance indicators in the industrial companies listed on the Amman Stock Exchange (ASE). The financial reports for the financial statements of the industrial companies were collected during the period of five years 2014-2018 for the listed companies whose shares are in the Amman Stock Exchange, and the study population were 62 Industrial companies until 31st December 2018. The sample of the study population was presented by 13 companies distributed over four industrial sectors such as Tobacco and Cigarettes, Medicine and Medical Industries, Chemicals, Food and Beverages. This study depends on data processing (Panel Data) using the STATA program. The results of the study showed that the economic value-added came in a medium degree for the industrial investment companies. Meanwhile, the market value-added came as a second order, there was no statistically significant effect of the operational and financial leverage on the economic value-added and the market value-added in the Jordanian industrial companies listed on the Amman Stock Exchange (ASE). The Study recommended the increase of caution when using loans for financing due to the effect of increasing operational risks in industrial companies.*

Keywords: *Operating leverage, Leverage, Economic Value Added, Market Value Added*

1. INTRODUCTION

The financial structure of the organization is considered one of the important topics in the field of financial management. It has gained importance through its impact and link with the objectives of financial management related to maximizing profit and reducing risks. This will affect the economic performance indicators in the profitable organizations and maximizing the wealth of owners. The financial structure is the basic core of the financial planning of the

project; because the organizations, in the general, and economic projects, in the particular, seeks to obtain the necessary funds to fulfill their requirements at the lowest possible cost and at the right time. It helps them to achieve productivity and increase efficiency. It also gives a clear vision in dealing and negotiating with financial organization to get loans. Therefore, the decision of choosing financing will affect the return and risks of the organization. Hence, the leverage represents the use of assets or funds with fixed costs in the organization in order to maximize the wealth of owner's shares. The organization seeks to reduce fixed and variable cost and increase profits through the management of the two leverage. It will achieve tax savings and maximize returns for shareholders represented by dividend policies. Therefore, this study came to identify the impact of operational and financial leverage on indicators of economic performance in the companies listed on the Amman Stock Exchange (ASE).

2. PROBLEM STATEMENT

Recent financial studies show that economic performance indicators depend on the lack of increasing the level of operational and financial leverages. On the other hand, the financing of organizations for their investments requires a balance between the operational and financial leverages. In addition to reducing the risk of both leverages; in order to maximize sales revenue and reduce fixed and variable costs. Increasing risks will increase the size of borrowing finance to the extent that will affect profitability and that will have reflected in the performance of indicators. This requires answering the following main question:

What is the effect of the operational and financial leverages on the economic performance indicators in the Jordanian industrial companies listed on the Amman Stock Exchange (ASE)?

And this leads to the following sub-questions:

- What is the extent of the impact of the operational leverage on the economic performance indicators in the Jordanian industrial companies listed on the Amman Stock Exchange (ASE)?
- What is the extent of the impact of leverage on the economic performance indicators in the Jordanian industrial companies listed on the Amman Stock Exchange (ASE)?
- Do the departments of Jordanian industrial companies maximize economic performance indicators in a way that attracts new shareholders?

3. THE IMPORTANCE OF THE STUDY

This study focusses on finding the relationship between the operational leverages and financial leverages and their impact on the economic performance indicators in the Jordanian industrial companies listed on the Amman Stock Exchange (ASE). Therefore, the results of this study will serve all interested parties, they are given below:

- Investors in the shares of those companies, whether current investors or prospective investors who have the intention to invest in Jordanian industrial companies.

- Corporate lenders from banks and financing organizations.
- The supervisory authorities of the Jordanian industrial companies, such as the securities commission and the commercial registration of companies in the ministry of industry and trade.

Objectives of the Study

The study seeks to show the impact of operational leverage and financial leverage on the economic performance indicators. The following sub-goals are given below:

1. Show the degree of influence of the operating leverage on the economic performance indicators.
2. Indicate the degree of leverage impact on economic performance indicators.
3. The level of application of economic performance indicators and their percentages in Jordanian industrial companies.

Hypotheses of the study

By reviewing problem of the study and its questions, the researcher developed the hypotheses of the study in the form of a main hypothesis and 2 sub-hypotheses as follows:

- **The general hypothesis (H₀):** there is no statistically significant effect at the significance level ($0.05 \leq \alpha$) of the operational leverage and financial leverage on the economic performance indicators in the Jordanian industrial companies listed on the Amman Stock Exchange (ASE).
- **H₀₁:** There is no statistically significant effect of the operational leverage and financial leverage on the economic value added in the Jordanian industrial companies listed on the Amman Stock Exchange (ASE).
- **H₀₂:** There is no statistically significant effect of the operational leverage and financial leverage on the market value added in the Jordanian industrial companies listed on the Amman Stock Exchange (ASE).

The dependent variable for this study is economic performance indicators and independent variables are operational leverage and financial leverage.

The graphical representation of both dependent and independent variables is given below:

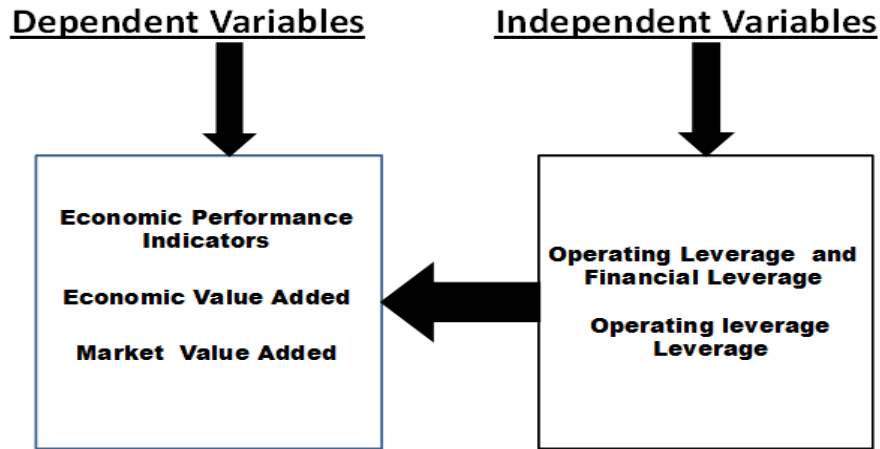


Figure 1: Overview of dependent and independent variables

Study Terms and Standards

- a. The independent variable (the operational and financial leverage).

It is the association of the risks that result from the operations practiced by the establishment and which represent the expected change in the income of the organization before tax expenditures and expenditures of depreciation of fixed assets, administrative and public expenditures is called financial raising. The high cost structure is known as operational lift. The full leverage is the leverage equivalent point for operational leverage is the fixed cost coverage reference. The leverage equivalent point is the coverage for borrowing interest such as the leverage equivalent point is a combination of fixed cost and variable costs, interest expenses and fluctuations in sales revenue.

The changes in the degrees of total leverage can be found through the following relationship:

- The relative change in the net profit
- The relative change in sales revenue

The dimensions of the leverages consist of the metrics which are given below:

- 1- Operational leverage: it is the capital intensity in the organization. It can be calculated through

$$\text{Profits before the Fixed Costs} = \text{Profits before the Total Cost} \quad \dots\dots (1)$$

It is related to the level of the total cost structure and the volume of sales and represents break-even point between sales and profits operating degree. Hence:

$$\text{The Degree of Operational Lift} = \frac{\text{profit before interest and tax}}{\text{profit before interest and tax} - \text{interest or preference share}} \quad \dots\dots (2)$$

Reference for the above equation is based on:

b. Dependent variable

economic performance indicators are focus on the amount of addition in the value of investments that maximizes the division of the word. Its division is not clear established in the economic and market. It is measured by:

- 1- Economic Value Added (EVA): it is based on deduction of the adjusted net operating profit of the company by the amount of the cost of the capital used in it. Economic Value Added, EVA = Net Operating Profit after Tax – Cost of Capital
..... (3)
- 2- Market Value Added (MVA): the difference between the market value and the nominal value multiplied by the number of shares. It is measured by the following formula: -

$$MVA = \text{Market Value} - (\text{Nominal Value} * \text{Number of Shares}) \quad \text{..... (4)}$$

Theoretical Framework and literature review

This part provides a definition of the basic terms in the research and how to estimate the value of each variable. It includes the personal opinion, references and the clarifications.

a. Theoretical Framework

i. Operating Leverage and Financial Leverage

The financing structure of the organization means such that there are two leverages; the operating leverage and the financing leverage. The operational leverage covers the fixed costs in the organization's cost structure. It means achieving revenues that contribute to covering all expenses before taxes and benefits. And, any slight change in the amount of sales leads to a greater change in the operating profit of the company. A small increase in sales results in a significant increase in operating profits such as it will maximize operating profit in the event of increased sales. But in the case of low sales, it will achieve losses. The operating leverage is more sensitive to the effects of the changes in the increase in sales because of any slight change in the sales leads to a change in profits. It meant that, the profits of the organization are more stable in the case of low operating leverage. Especially the industrial companies, whose cost is fixed such as mining, iron and steel companies as well as airlines (Marsali, 2016).

The effectiveness of the operational lift increases, whether the increase in the fixed costs is less than the reduction in the Total Variable Costs (TVC) of the foundation. Its fixed costs are covered when the sales volume is less than the previous size before the use of the operating lift and thus the transfer of the break-even point down. This is considered a good achievement for the organization which leads to maximizing profits of the foundation (Patel, 2014).

The use of operating leverage will lead to an increase in fixed costs. It will lead to a break-even point moving up, and the organization needs a larger sales volume in order to cover its fixed costs (Ahmed, 2011). The use of the idea of operational lift by substituting fixed costs for variable costs to maximize profits may apply to the industrial sector, which will have dominated by capital costs.

As for the leverage, it represents the use of fixed costs funds or assets in the establishment in order to contribute to maximizing the wealth of the shareholders. In general, the increase in leverage leads to an increase in both return and risk and vice versa, the decrease in leverage leads to a decrease in both return and risk (Saleem, Rahman and Sultana, 2014). The degree of leverage in the capital structure of the corporation, while it depends mostly on property rights. According to (Abwaini and Al-Omari, 2016), property rights have a positive impact on the corporation's market and economic value as well as the return and risk.

Moreover, the financial leverage reflects the ratio of loans to total liabilities, therefore it is the value of using financing by borrowing to finance for some fixed assets. It is financing through which the level of working capital is increased through the external borrowing. However, some have considered as limited to the Impact of debt or long-term obligations only. It is clear from the above definitions that Leverage: It includes measuring the total of long-term and short-term liabilities to the lease of financial assets (Achchuthan and Jasinthan, 2012).

There are two models of the first leverage, the First Model depends on the measuring the sum of long-term financial liabilities to the total assets, while the Second Model sees Leverage depends on long-term obligations only, ignoring short-term debt reference. According to Al Barakat (2015), it is calculated as follows:

$$\text{Leverage} = \frac{\text{Debt or Net Debt}}{\text{EqAuity of the Organization}} \dots\dots\dots (5)$$

ii. Economic performance indicators

All performance indicators contribute to clarifying the company's financial capacity and the extent of their future continuity and expanding their investments. Perhaps the most prominent of these standards or indicators that are relied upon in measuring the value of the company (Nader, 2016).

Economic standards focus on the amount of addition in the value of investments and includes two measures (Kaddumi, Kilani and Amarna, 2012).

- **Economic value added (EVA):** the economic value-added measure is based on discounting the adjusted operating net profit of the company by the cost of the capital used in its (Faisal, Khan and Al-Aboud, 2018).

The Rate means the removal of accounting effects that have a positive or negative impact on the accounting number of operating net profit after tax. It is expressed by the following equation.

$$\text{Economic Value Added} = \text{Net Operating Profit after Tax} - \text{Cost of Capital} \dots\dots (6)$$

$$\text{Economic Value Added} = \text{Operating Profit} * (1 - \text{Tax Rate}) - (\text{Net Operating Capital} * \text{predicted Average Cost of Capital}) \dots\dots (7)$$

If the value is positive, then there is value for the company incline and if it is negative then the value of the company is in decline (Marangu and Jagongo, 2014).

This measure is considered as one of the most important economic measures in evaluating companies. It takes into account of the cost of capital for all sources of financing and studies the amount of return based on what was added to the company of unclear value / water errors. This scale is important for shareholders as the water line is just like management. They can judge the performance of management. In addition, each company are competing for a competitive position. It is considered by the accountants and financial managers as a basis for calculating the value of traded shares in the market.A.

The Economic Value Added (EVA) helps the administration to correct its operational policies in order to maximize the market value. But it is difficult to deal with it in the financial companies and modern companies, a whole incomplete and unclear (Ahmadi, 2017).

- **Market Value Added (MVA):** It represents a comprehensive evaluation of performance since the establishment of the company until the date of calculating its market value. It is defined as the difference between the market value and the nominal value is multiplied by the number of shares. It is a direct relationship between the market and economic values. Hence, any increase in the economic value added is followed by an increase in the market value added. This measure will reflect the performance of the administration and maximizing the value of the wealth of the shareholders, in other say, it's the scale that reflects the efficiency senior management (Shittu, Ahmad and Ishak, 2016).

4. LITERATURE REVIEW

a. Arabic studies

1. **Study (Al-Omari, 2017)** The study aimed to find out the effect of the two leverages on the net profit margin and asset turnover and 29 companies from the industrial companies listed in the Amman Market were studied. The study showed that there is no positive indication of the operating leverage on both the turnover rate of the asset and the return

on the asset. The presence of a positive indication of the operating leverage on the operating profit in the manufacturing industrial companies and found that there was no effect of the leverage on the profit margin and the rate of rotation of the asset and the presence of a leverage effect on the return on assets in extractive industries companies.

2. **A study of (Reem, 2015).** The study aimed to test the effect of independent variables such as total debt to total assets, long-term debt to total assets, total debt to equity, long-term debt to equity on dependent variables such as return on assets, return on equity, and market value. The study sample included 20 organizations during the period from 2009 to 2013. The use of a simple and multiple linear regression model to test the study hypotheses. The study found that there was no significant relationship with statistically significant among the variables of the study. The results of the study also show that, the relationship between independent variables and the return on assets. A statistically significant relationship between independent variables such as long-term debt to total assets, total debt to property rights and long-term debt to property rights.
3. **A study (Al-Muhtadi, 2014)** This study aimed to analyses traditional financial performance evaluation indicators and measures of economic value added and market value added as indicators to evaluate performance and use them in measuring the change in the market value of the shares of 'bank of Palestine'. This study has been applied to the financial statements of the bank of Palestine during the years of 2004 to 2012 study shows that, the relationship between financial indicators and economic changes in the market closing price of bank of Palestine shares. It was one of the most important results of the study. It was the market value of the bank of Palestine shares were strongly related to the conventional financial performance metrics combined and better than if they were irregular. This is used to measure the changes in the market value of a share.
4. **A study (Kaddumi, Kilani and Amarna, 2012).** The study aimed to analyses the relationship between economic value added and traditional measurement methods and the market values of stocks during the period of (2000-2009) for a sample consisting of 41 public joint stock companies listed on the Amman Stock Exchange (ASE) for securities. The results showed that, the market values of shares are linked to evaluate traditional performance stronger. It is related to the economic value added. The traditional performance evaluation criteria have an explanatory ability to change that occurs in the market values of stocks greater than the 'interpretive capacity' of the economic value-added standard.

4.1 Foreign studies

1. **A study (Faisal, Khan and Al-Aboud, 2018).** This study aimed to determine the effect of operating income and income before interest and taxes on earnings per share. It has been assumed that the capital structure of stocks and debt is assumed. The interest rate and tax have been assumed taking into consideration in the American economic

conditions. The relationship between operational and financial leverage, such that it gives greater attention to the role of financial leverage. The results of the study have shown the importance of operational and financial leverage in an influencing the level of profit and return on wealth shareholders. It is clear from this hypothetical study defined that, the decrease in operating income is made at the beginning. Then the income increases after taxes and the profitability of the shareholders can earn in companies.

2. **Study (Ahmadi, 2017).** This study aimed to provide a comparative analysis between the accounting profits and the market value of the share. The book value of companies listed on the Tunis Stock Exchange (TSE). The sample consisted of 28 listed banks and financial services companies listed on the Tunisian market during the period of 2010-2015. The duration of the study is 6 years. The results showed that, the book value is more appropriate to the return on the stock in commercial banks and did not show an impact on financial service companies. Meanwhile the total value of the book value on the return on earnings per share has decreased for companies that did not make profits from book value. It is the changes in share prices.
3. **A study (Shittu, Ahmad and Ishak, 2016).** The study aimed to know the prediction of the share price through a study on the book value of companies listed on the stock market in Nigeria. The study was conducted in 100 companies on the Nigerian Stock Exchange (NSE) for the period from 2009 to 2013. The results showed that, a positive relationship between price to the book value and price of the market share for these companies. The results also showed that local financial analysts and investors can apply the book value of Nigeria's share price and can predict the stock price in Nigeria.

5. THE METHODOLOGY OF THE STUDY

The analytical descriptive approach has been relied upon in conducting this study, by identifying the impact of operating leverage and financial leverage on economic performance indicators. This approach is based on the explanation of the phenomenon or problem by defining its dimensions with the aim of completing an accurate scientific description of the problem. This approach is not limited to a process description of the phenomenon. But it includes analyzing data, measuring and explaining that. It is also providing solutions and proposals to address it.

5.1 Study population and sample

The study community is one of the Jordanian industrial companies listed on the Amman Stock Exchange (ASE). There are 62 industrial companies of which 46 are listed in the first and second markets and other companies 16 are listed in the third market to clarify the concept of the third market. Meanwhile, the study sample has been selecting a representative sample of industrial companies corresponding with the nature of the study. Here, Roscoe (2004) indicated that there is no typical number of sample size. But the sample size from 30- less than 500 views is acceptable for many pieces of research. It is considered (15% - 25%) from the community is suitable in

most probability samples. The Table (1) shows 13 companies were chosen from the total number of companies in the industrial sector.

Table (1): The samples of the study

Industrial Sector	Number of Companies	The Study Sample	Industrial Sector	Number of Companies	The Study Sample
Medicine and Medical Industries	4	1	Extractive and mining industries	10	3
Chemical Industries	7	2	Engineering and construction industries	8	2
Food and Drinks	9	2	Electrical industries	3	1
Tobacco and Cigarette	2	1	Leather, textile and clothing industries	3	1

5.2 Sources of data and information collection

To achieve the goals of the study, the researcher resorted to using two main sources of information gathering. The primary sources were obtained from the annual financial reports of Jordanian industrial companies from the Amman Stock Exchange (ASE) website during the period of 2014-2018 by five years.

The secondary sources are address the theoretical framework; secondary data sources have been used. These are represented in Arab & foreign books and references, refereed academic periodicals, publications, official documents, research, university theses, electronic information sources, newspapers, and internet sites of the global information network. It dealt with the topic of research to obtain information and learn concepts related to the study for to know the latest developments.

5.3 Normal distribution test

The normal distribution test of the collected data was done to check whether the data fall under the normal distribution or not, “Kolmogorov-Smirnov test” was used, which is used to test the

normal distribution of data if the number of observations is greater than 50 watch construction, 2017. Among the conditions for normal distribution is that the p-value of the data is greater than 0.05 and the value of K-S is less than 5 typographical error, which means that the data is naturally distributed (hair et al., 2018) and the results are as shown in Table (2).

Table (2): Normal Distribution of Data Depending on (K-S)

Variables	K-S	p-value
Economic Value Added (EVA)	1.157	0.137
Market Value Added (MVA)	0.646	0.799
Operating Leverage	0.831	0.495
Leverage	1.294	0.070

According to the above table, it is based on the test data shown in Table (2), which indicates that the data is distributed naturally, as the value of significant for all study variables reached values greater than 5% (0.05).

5.4 Presentation of the Study Results

The mean and standard deviation were extracted to describe the study results for each of the independent and dependent variables during the study period from 2014-2018. It shows in Table (3).

Table (3): Presentation of the study results for the period between 2014-2018

Variable	Obs.	Mean.	Std. Dev.	Min	Max
Economic value added	65	7.27E+07	1.81E+08	2161250	9.60E+08
In economic value added	65	16.90339	1.316033	14.5862	20.68244
Market value added	65	4.84E+07	1.77E+08	-2.56E+07	9.30E+08
Modified market value	65	7.40E+07	1.77E+08	1	9.56E+08
In economic value added	65	16.82216	2.46326	0	20.67785
Operating leverage	65	1.080278	0.7083605	-3.923589	3.507054
Leverage	65	1.181688	1.643609	-4.83748	9.268661

The results indicate that the mean economic value added is (7.27e + 07). Standard deviation (1.81e + 08) and the lowest value was (2161250) due to Jordanian industrial resources in (2017) and the highest value (9.60e + 08) was for 'Al-Eqbal' company in 2017, while the arithmetic mean of the market value added was (4.84) e + 07) with a standard deviation of (1.77e + 08) and the lowest value was (-2.56e + 07) and belong to united cable industries in (2016) and the highest value (9.30e + 08) was for 'Al-Eqbal' investment company in 2017. The mean of the operating leverage is (1.080278) and with a standard deviation (0.7083605) and the lowest value was (-3.923589) and belongs to the Jordanian industrial resources company in (2018) and the highest value (3.507054) was for the Jordanian pharmaceutical production company in (2015). As for the average leverage, it reached (1.181688) with a standard deviation (1.643609) and the lowest value was (-4.83748) and it belongs to the Arab aluminum industry in (2018) and the highest value (9.268661) was for cable factories in (2014).

5.5 Study hypotheses test.

The study adopted the data processing (panel data), using the 'STATA' data analysis and statistical software, after unloading the indicators, ratios and financial data from the financial statements to the program tables to test the study hypotheses and the results were as follows:

Results of testing the first main hypothesis: "there is no statistically significant effect of the operational and financial leverage on the economic value added in Jordanian industrial companies listed on the Amman Stock Exchange (ASE)."

Choosing the Appropriate Standard Model

Examining the most appropriate model between fixed effects and random effects vs. Random effects, the 'Hausman' test shows that the value of $p = 0.003$ is less than 0.05, indicating the choice of the fixed effects test, where the results will be commented based on the fixed effects table.

Table (4): Results of the first main hypothesis test

Interval	95% Conf.	P>t.	T	Std. Err.	Coef.	
-3.122	-44.409	0.03	-2.2	10.76	-23.26	Operating Leverage
-119.068	-178.019	0.0000	-9.9	15.009	-148.454	Leverage
1764.34	933.847	0.0000	6.9	201.871	1394.91	Cons.

The Table (4) shows that the operating and financial leverages have a negative impact with a level of significance (0.03) operating leverage and (0.0000) for the leverage. That is, all elements in this test have a visible and statistically significant effect.

Results of the second main hypothesis: "There is no statistically significant effect of the operational and financial leverage on the market value added in the Jordanian industrial companies listed on the Amman Stock Exchange."

Choosing the right standard form test:

Examining the most appropriate model between Fixed Effect Vs. Random Effect, where 'HAUSMAN' shows that the value of $P = 0.015$ is less than 0.05, which indicates the choice of the fixed effects test, where the results will be commented based on the table of fixed effects.

Table (5): Results of the second main hypothesis test

Interval	95% Conf.	P>t.	T	Std. Err.	Coef.	
-9.503	-43.404	0.007	-2.73	9.276	-25.384	Operating Leverage
-103.734	-145.881	0.0000	-13.05	10.412	-135.875	Leverage
1328.135	757.051	0.0000	7.37	142.516	1050.09	Cons.

Table (5) shows that, the operational and financial leverages have a negative impact with the level of significance (0.007) operating leverage and (0.0000) for the leverage. It meant that, all elements in this test have a visible and statistically significant effect.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Review the Results of the Study.

To answer the questions of the study: the arithmetic mean indicated the variables of the study as follows for the period (2014-2018).

- Economic Value Added: The highest value of the arithmetic average of economic value added was for ‘Al-Eqbal’ company during the study period, and the lowest value was for Jordanian industrial resources.
- Market Value Added: The highest value of the arithmetic average was also attributed to ‘Al-Eqbal’ Investment company, and the lowest value was for united cable industries.
- Operating leverage: the highest value of the arithmetic average was for the Jordanian pharmaceutical production company and the lowest value was for the Jordanian industrial resources company.
- Leverage: the highest value of the arithmetic average was for cable factories, and the lowest value belongs to the Arab aluminum manufacturing company.

Answer the test of study hypotheses for the period (2014-2018).

- The results of the first major hypothesis test indicating the acceptance of the nihilistic hypothesis indicated that there is no statistically significant impact of the operating and financial leverage on the economic value added in the Jordanian industrial companies listed on the Amman Stock Exchange. The evidence is that, the fixed effects and random effects of the operating and financial leverage were subjected to all value data economic added companies listed on the Amman Stock Exchange (ASE) during the study period.

- The results of the second major hypothesis test indicated acceptance of the ‘nihilistic hypothesis’. It is explained that, there is no statistically significant effect of the operating and financial leverage on the market value added in the Jordanian industrial companies listed on the Amman Stock Exchange (ASE) with evidence that the fixed effects and random effects of the operational and financial leverage were subjected to all value data the added market of companies listed on the Amman Stock Exchange during the study period.

6.2 Recommendations

- It is necessary for the management of industrial companies to align funding sources, especially operational financing. While using loans for financing, it will increase the operational risks in industrial companies.
- Take advantage of the benefits of financial leverage and avoid financial risks when demanding additional funds towards expansion in investment, especially in pharmaceutical companies, as they came as the lowest arithmetic mean during the study period.
- The adoption of financial statements by investors and users to focus on economic and market performance indicators other than those associated with the operational and financial risks of this study to assess the performance of Jordanian industrial companies.
- Conducting extensive studies related to the financial and operational lifting and evaluation of the financial and economic performance of investment company projects other than economic and market indicators in Jordan.

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