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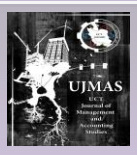

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# The Impact of EBITDA on the Market Value of the Company

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ABSTRACT

Typically, bankers and investors focus on cash flow, net income, and revenues as the basic corporate health and value measures. But over the years, another measure has crept into reports and accounts EBITDA (Earnings Before Interest, Taxes, Depreciation, and Amortization) is a measure of profits. This study deals with the impact of EBITDA on the market value of the company. For this research, a sample of 91 companies listed on the Tehran Stock Exchange was selected from the period 1390 (Solar Hijri) to 1395 (Solar Hijri), which has a total of 546 observations available for research. The statistical method used in this research is the multivariate regression method using the data panel method. The results of the research hypotheses show that EBITDA has a significant direct effect on the company's market value.

*Keyword:*

EBITDA, Taxes, Earnings Before Interest, Depreciation and Amortization, Market Value of Company

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**1 Introduction**

The economy, fiscal policies, and monetary laws of the country as external factors and the ratio of price to share income, stability in profitability, liquidity of stocks, and many other factors as internal factors affect the company's market value. Researchers are always trying to provide a full vision of the market for investors and stakeholders by measuring and comparing the impact of each of these factors. In this study, one of the types of profits as Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) has been used to measure the company's market value. This statistic is entirely quantitative and, unlike many other parameters in measuring market value, can be easily extracted from companies' reports and financial statements.

Typically, bankers and investors focus on cash flow, net income, and revenues as the basic corporate health and value measures. But over the years, another measure has crept into reports and accounts EBITDA is a measure of profits. While there is no legal requirement for companies to disclose their EBITDA, according to the U.S. generally accepted accounting principles (GAAP), it can be worked out using the information found in a company's financial statements.

EBITDA first came to prominence in the mid-1980s as leveraged buyout investors examined distressed companies that needed financial restructuring. They used EBITDA to calculate quickly whether these companies could pay back the interest on these financed deals. Leveraged buyout bankers promoted EBITDA as a tool to determine whether a company could service its debt in the near term, say over a year or two. Looking at the company's EBITDA-to-interest coverage ratio could give investors a sense of whether a company could meet the heavier interest payments it would face after restructuring. In the context of earnings-based financial covenants, such as IC and FCC covenants, contracting parties prefer certain definitions of the accounting ratios, such as using EBITDA in the ratio calculation.

In previous domestic research, the relationship between economic value-added and profit before interest and tax with market value has been examined. The results had shown that profit before interest and tax with a slight advantage over economic value-added was better in relation to market value. Early evidence of a relationship between accounting profit and securities prices was provided by University of Chicago professors Ray Ball and Philip Brown. The conclusion was that there was a relationship between securities prices and accounting profits. Economists and accountants have long discussed the profitability and profitability of a for-profit unit. In fact, the philosophy of creating a for-profit unit is the same as profitability. But is the profit the same as the profit shown in the financial statements? No, the profit that the shareholders and investors want is different from the profit that is shown in the profit and loss statement. Accounting profit cannot be a basis for measuring performance. [3]

**2 Background Research**

Ningzhong, in a study entitled The Impact of Wealth Created for Shareholders, EBITDA and company performance on the market value of the company, examined the impact of mentioned factors on the market value of the active companies in US Stock Exchange. The results of his research show that EBITDA affects the market value of companies. [4]

Navissi, F. & Naiker, V., in a study, examined the relationship between EBITDA and company value in New Zealand. Their findings EBITDA and company performance with company value will be positive, but institutional investors may persuade the board to make non-optimal decisions at high levels of ownership. In other words, the acquisition of shares by institutional investors at lower levels of ownership creates a positive relationship between pre-interest and the tax and performance of the company has become the value of the company. [5]

Arab Salehi et al., in a study entitled The study of the effect of operating profit and market value of the company on GDP state that the growth of operating profit and growth of market value of the company on GDP growth Domestic have a positive and significant effect, so according to the results, it can be said that increasing operating profit and market value of the company increases GDP. [6]

Mahmoud Bani and Roya Darabi, study the degree of correlation (in Tehran Stock Exchange companies during the years of 2004 to 2007) apart from investment and financial intermediation companies, economic value added with the stock market value of companies and comparing it with the correlation of two other critical accounting indicators, namely net profit and operating profit with the stock market value of companies, the results show. It has been said that although the correlation between economic value-added and market value is considerable, it has less potential compared to net profit and operating profit. [7]

**3 Research Procedure Method**

**3.1 Research Method**

This research is in terms of purpose classification of applied research. Also, from the point of view of classification based on method, it is of causal research type (cause and effect). The research will be conducted within the framework of deductive-inductive reasoning. Thus, the theoretical foundations and research background have been done through library studies, articles, and sites in the form of deduction and data collection to confirm and reject the hypotheses inductively.

**3.2 Study population**

The statistical population of this research is the companies listed on the Tehran Stock Exchange. Using the following constraints that will be considered, we will reach the size of the community that can be studied:

1. Have been listed on the Tehran Stock Exchange before 2011.
2. Not be part of investment companies, banks, financing and credit companies, and holding companies.
3. Their fiscal year was related to the end of March.
4. Do not have a trading interval of more than three months.
5. Disclose the information required to conduct this research.

Due to the considered limitations, the number of statistical samples was 91 companies.

**3.3 Information and Data Collecting Method**

The method of data collection in this research was for the theoretical foundations and background of library research and for collecting data and analyzing them in the field.

Stock Exchange (compiled in Rahavard Novin software and the database of the Stock Exchange Company Statistics Office) has been used.

### 3.4 Research hypothesis

According to the researcher's questions, the following hypothesis has been explained:

EBITDA* affects the market value of the company.

## 4. Research variables and how to calculate them

A regression model will be used to examine EBITDA (independent variable) on the market value of the company (dependent variable) as follows:

$$Corporate\ Market\ Value_{it} = \beta_0 + \beta_1 EBITDAUse_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 Credit\ Risk_{it} + \beta_5 Operating\ Cash\ Flow_{it} + \varepsilon_{it}$$

Control Variables are defined as follows:

*Size: The Company's size is equal to the natural logarithm of the company's total assets.

*Leverage: Debt ratio (equal to total liabilities divided by total assets).

*Credit risk: The default risk using the Richard Toffler model and the native Altman model by Mr. Kurdistani et al. see [8]

$$CR = 1 - \frac{e^{-Z-score}}{1 + e^{-Z-score}}$$

*Adjusted-Z'-score = $0.717Y_1 + 0.847Y_2 - 3.107Y_3 + 0.42Y_4 + 0.998Y_5$*

## 5. Results and Discussion

### 5.1 Descriptive indicators of variables

Descriptive statistics includes a set of methods used to collect, summarize, classify, and describe numerical facts. In fact, these statistics represent the research data and information and provide an outline of the data for faster and better use. In summary, with the appropriate use of descriptive statistics, the characteristics of a group of information can be expressed. Central and dispersion parameters are used for this purpose. The function of these criteria is that the main features of a set of data can be described as a number, and thus, in addition to helping to understand the results of a test better, compare the results of that test with the test. It also facilitates other observations. Descriptive statistics of research variables are presented in the table 1.

* Operating cash flow: The logarithm of cash derived from the company's operations.

**Table 1:** Descriptive statistics of research variables

| | SIZE | OPERATING_CASH_FLOW | LEVERAGE | EBITDA_USE | CORPORATE_MARKET_VALUE |
|---|---|---|---|---|---|
| Mean | 13.54606 | 11.16648 | 0.622395 | 0.205686 | 26.67447 |
| Median | 13.37635 | 11.18591 | 0.634511 | 0.154951 | 26.54582 |
| Maximum | 18.43763 | 16.19970 | 1.937754 | 0.999605 | 31.02155 |
| Minimum | 9.821464 | 4.262680 | 0.129128 | -0.897896 | 23.29359 |
| Std. Dev. | 1.421268 | 1.886827 | 0.179737 | 0.236560 | 1.476339 |
| Skewness | 0.660259 | 0.026648 | 0.575081 | 0.970077 | 0.468759 |
| Kurtosis | 2.902391 | 2.512674 | 2.097214 | 2.404952 | 2.807092 |
| Jarque-Bera | 58.19623 | 6.044100 | 621.1764 | 349.3921 | 20.84248 |
| Probability | 0.000000 | 0.048701 | 0.000000 | 0.000000 | 0.000030 |

The primary central indicator is the mean, which represents the equilibrium point and center of gravity of the distribution and is a good indicator of data centrality. For example, the average value for the variable (company size) is 13.546, which indicates that most of the data is centered around this point. The middle is another central indicator that shows the state of society. As can be seen, the median of the firm size variable is 13.376, which indicates that half of the data is less than this value and the other half is more than this value. Also, the proximity of the mean and middle value for the company size variable indicates that this variable is standard. In general, dispersion parameters are a criterion for determining the degree of dispersion from each other or their degree of dispersion relative to the mean. One of the most critical scattering parameters is the standard deviation. The value of this parameter for the company size variable is equal to 1.421, which shows that the company size variable is one of the variables with the lowest dispersion among the research variables.

The degree of asymmetry of the frequency curve is called skewness. If the skewness coefficient is zero, the society is entirely symmetrical, and if this coefficient is positive, the skewness is to the right, and if the coefficient is negative, it is skewed to the left. For example, the skewness coefficient for the firm size variable is 0.660, which means that this variable is almost skewed to the right and deviates from the center of symmetry by 0.660. The elongation or inclination parameter of the frequency curve relative to the standard normal curve is called protrusion or elongation. If the elongation is about zero, that is, the frequency curve is balanced and standard in terms of elongation; if this value is positive, the curve is prominent, and if it is negative, it is a wide curve.

### 5.2 Stationary & Durability test of research variables

Before estimating the model, it is necessary to examine the stationary of the variables. When a variable is durable, the mean, variance, and autocorrelation coefficients remain constant over time. In general, if the temporal origin of a variable changes and its mean, variance, and covariance do not change, then the variable is durable, otherwise the variable will not be durable. In the present study, Fisher test is used to diagnose Stationary & durability.

$H_0$: There is a single root, and the variable is not durable.

$H_1$: There is not a single root, and the variable is durable.

The stationary of the variables can be checked in three modes: "on the level," "on first difference," and "on the second difference." Variables whose probability of being tested "at the level" is less than 5%, the null hypothesis is rejected, and that variable at the level is durable. If it is more than 5%, the variable is not durable. In this case, stationary is examined on the first difference, and if it was also not durable in that case, stationary is examined on the second difference. Stationary & Durability test results are listed in Table 2.

**Table 2:** Stationary & Durability test results

| Variable Type | Variables List | Statistics | P-Value |
|---|---|---|---|
| Dependent V | CORPORATE_MARKET_VALUE | 255,534 | 0,000 |
| Independent V | EBITDA_USE | 280,135 | 0,000 |
| Control V | SIZE | 285,859 | 0,000 |
| | OPERATING_CASH_FLOW | 333,182 | 0,000 |
| | LEVERAGE | 278,236 | 0,000 |
| | CREDIT_RISK | 355,374 | 0,000 |

As can be seen in all independent and dependent variables and the P-value adjustment in the unit root test is less than 0.05, which indicates that the variables are constant. This means that the mean and variance of the variables have been stable over time and the variables' covariance between

different years. As a result, the use of these variables in the model does not cause false regression.

### 5.3 Regression Assumptions

Testing the research hypothesis requires establishing the hypotheses of normality of the dependent variable, homogeneity of variance, and self-correlation. Because if not established, the results obtained are not reliable, and this leads to erroneous conclusions. After making sure that the regression hypotheses are established, the research hypotheses are tested. In the following, statistical tests will be described.

#### 5.3.1 EBITDA model estimation method using F-Leamer test and Hausman test

After examining the Stationary & Durability of the variable, it is time to determine the estimation method. According to the data of this study, the estimation method is a combination. But before estimating the EBITDA model, it is necessary to specify the estimation method (combined or panel). For this purpose, F -Leamer test is used. For observations with a probability of more than 5%, or in other words, their test statistics are less than the table statistics, the combined method is used, and for observations with a probability of less than 5%, the panel method is used to estimate the model. Will be. The panel method itself can be done using two models, "random effects" and "fixed effects". The Hausman test was used to determine which model to use. . Observations with a probability of less than 5% from the fixed effects model and observations with a probability of more than 5% from the random-effects model are used to estimate the model. Consider the following diagram in figure 1

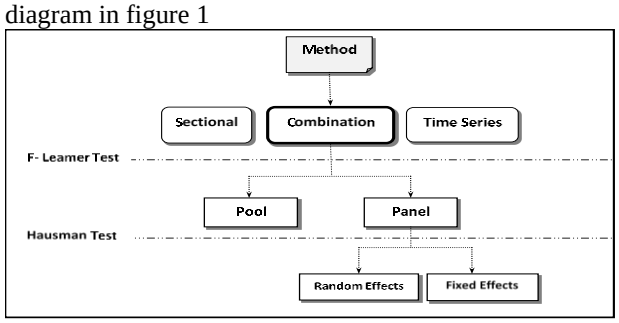


**Fig. 1:** F- Leamer and Hausman test†

#### 5.3.2 Diagnostic tests in combined data

The Chow and Hausman tests have been used to determine the model used in the combined data.

$H_0$: All intercept elevation in the model are equal, so the Pool structure is used.

$H_1$: At least one of intercept elevation is different from the rest, so the Panel structure is used.

Hypothesis $H_0$ is based on the absence of individual and group effects, and $H_1$ hypothesis is based on the existence of individual and group effects. The Hausmann test is based on the presence or absence of an association between regression error and the independent variable of the EBITDA model. If there is such a relationship, the fixed-effect model will be used, and if there is no such relationship, the random-effect model will be used. Hypothesis $H_0$ indicates the lack of correlation between the independent variable and the estimation error, and Hypothesis $H_1$ indicates the existence of a correlation.

$H_0$: Random Effects Model

$H_1$: Fixed Effects Model

To determine the estimation method, F- Leamer and Hausman test for EBITDA model was performed. The test results are as follows:

#### 5.3.3 F- Leamer test for research EBITDA model (study of intercept elevation)

To choose between panel data methods and pool, F-Leimer 1 test was used. In the F- Leamer test, the $H_1$ hypothesis is that the width of the sources is the same (integrated data) as opposed to the H1 hypothesis that the width of the sources is the same (panel data method). A summary of the results of the F- Leamer test is given in Table 3 as follows:

**Table 3:** F- Leamer test results

| | **Research Model** | **F-Leamer Statistic** | **P-Value** | **Test Result** |
|---|---|---|---|---|
| $H_0$ | EBITDA Model | 14.875 | 0.000 | $H_0$ Rejected |

$H_0$: All intercept elevation in the model are equal, so the Pool structure is used.

$H_1$: At least one of intercept elevation is different from the rest, so the Panel structure is used.

As the table shows, the probability of F-Leamer test for all research models is less than 5%; Therefore,the $H_0$ assumption (integrated model) is not validated for any of the models. In other words, there are individual, or group effects and the panel data method should be used to estimate the models.

#### 5.3.4 Hausman test (To choose between fixed and random effects)

As mentioned in the previous section, the Hausmann test statistic, which is calculated to determine whether cross-sectional differences are constant or random, has a chi-square distribution with a degree of freedom equal to the number of independent variables. A summary of the results of the Hausman test for the research model is presented in Table 4 as follows:

† Source: (Book of Applied Econometrics Data Panel by Dr. Ali Faghh Majidi and Salah Ebrahimi)

**Table 4:** F- Leamer test results

| $H_0$ | Research Model | Hausman Statistic | P-Value | Test Result |
|---|---|---|---|---|
| | EBITDA Model | 5.362 | 0.2895 | $H_0$ Approved |

$H_0$: Random Effects Model

$H_1$: Fixed Effects Model

As the results show, according to the research models, the probability of Hausman test to determine the use of the fixed effects model versus random effects is more than 5%. Therefore, $H_1$ hypothesis (fixed-effects model) is rejected. This means that there is no correlation between the estimated regression error and the independent variable.

## 6 Conclusion

### 6.1 Discussion and Conclusion

The result of testing the research hypothesis:

$H_0$: EBITDA has impact on the market value of the company

$H_1$: EBITDA has not impact on the market value of the company

See Model estimation results for EBITDA in table 5. The results show that the t Prob for the independent and adjustment variable is less than 5%; therefore; The estimation Coefficient of the above variable is statistically significant. This means that the above variable is essential factor in determining the market value of the company. The relationship between EBITDA and the market value of the company is direct, and therefore with 95% certainty, the research hypothesis is confirmed despite the control variables, i.e., EBITDA has a direct effect on the market value of the company. R2 , Indicates that the independent variable is able to explain 82.80% of the dependent variable changes.

The F-Prob statistic indicates that the whole model is statistically significant (because the probability of F is less than 5%). Since the Durbin-Watson stat is between 1.5 and 2.5, there is no autocorrelation in the model. Also, no Collinearity was observed in the model. You can see Collinearity of the EBITDA Model in table 6.

Table 5: Model estimation results for EBITDA

$$corporate\ market\ value_{it} = \beta_0 + \beta_1 EBITDA\ Use_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 credit\ risk_{it} + \beta_5 Operating\ cash\ flow_{it} + \varepsilon_{it}$$

| Variable | Coefficient | Std. Error | t-Statistic | Prob |
|---|---|---|---|---|
| EBITDA_USE | 0.665148 | 0.086199 | 7.716432 | 0.0000 |
| SIZE | 0.745581 | 0.030089 | 24.77907 | 0.0000 |
| LEVERAGE | -0.988095 | 0.251890 | -3.922728 | 0.0001 |
| CREDIT_RISK | -0.139281 | 0.058954 | -2.362526 | 0.0185 |
| OPERATING_CASH_FLOW | 0.080829 | 0.022512 | 3.590514 | 0.0004 |
| C | 16.11761 | 0.303675 | 53.07517 | 0.0000 |
| R2 | 0.828060 | Durbin-Watson stat | | 1.675474 |
| R2 Adj | 0.826468 | | | |
| F-statistic | 520.1266 | | | |
| Prob (F-statistic) | 0.000000 | | | |

Table 6: Collinearity of the EBITDA Model

| OPERATING_CASH_FLOW | CREDIT_RISK | LEVERAGE | SIZE | EBITDA_USE | CORPORATE_MARKET_VALUE | |
|---|---|---|---|---|---|---|
| | | | | | 1 | CORPORATE_MARKET_VALUE |
| | | | | 1 | 0.4892 | EBITDA_USE |
| | | | 1 | 0.18833 | 0.13877 | SIZE |
| | | 1 | 0.07061 | -0.22177 | -0.23913 | LEVERAGE |
| | 1 | -0.25911 | -0.16776 | -0.08841 | -0.16716 | CREDIT_RISK |
| 1 | -0.09347 | -0.15256 | 0.25598 | 0.31686 | 0.1417 | OPERATING_CASH_FLOW |

### 6.2 Conclusion and Recommendations

This study deals with the impact of EBITDA on the market value of the company. For this research, a sample of 91 companies listed on the Tehran Stock Exchange was selected from the period 1390(Solar Hijri) to 1395(Solar Hijri), which has a total of 546 observations available for research. The statistical method used in this research is the multivariate regression method using the data panel method.

The results of the research hypotheses show that EBITDA has a significant direct effect on the company's market value.

In the field of accounting studies, business unit valuation methods based on the use of financial statement items is one of the most important topics in financial and accounting research. To this end, in the Fair Value Establishment Hierarchy, Statement 157 of the Financial Accounting Standards Board on Financial Instruments for Recognizing and Measuring Fair Value states: "The market value for assets or liabilities is the best estimate of fair value." Thus, the market price satisfies the definition of fair value. In other words, market value is the price obtained in a real transaction between the buyer and the willing seller, and valuation methods such as profit before interest and taxes and depreciation can help the investor determine the rationale for payment and fair value as the best value.

Profit has always been the main factor in evaluating the performance of companies, but identifying and estimating its different types will lead to a more accurate study of performance. From an internal perspective, this will lead to the improvement of managers' approach, and from an external perspective, it will increase the company's value in the market.

The popular use of an EBITDA-related measure in an earnings-based covenant could also be due to the fact that D&A expenses are more likely subject to manipulation. Leftwich [1983] and Watts [2003b] argue that performance measures are adjusted in debt contracts to restrict managers' ability to circumvent covenant violation through income-increasing accounting manipulation. This argument, however, is unlikely to fully explain the dominant use of an EBITDA-related measure, because tax expenses are likely less subject to manipulation but are also excluded from most of the performance measures. Future studies can explore to what extent concerns about accounting manipulation drive the contractual definitions of performance measures.

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