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EFFECT OF EVA AND CFROI METHODS ON SHAREHOLDERS VALUE MAXIMIZATION AND FINANCIAL PERFORMANCE ESTIMATION: AN EMPIRICAL STUDY[1]

EVA VE CFROI YÖNTEMLERİNİN HİSSEDARLARIN DEĞER MAKSİMİZASYONU VE FİNANSAL PERFORMANS TAHMİNİ ÜZERİNE ETKİSİ: AMPİRİK BİR ÇALIŞMA

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Öz

Hissedar değeri maksimizasyonu, küreselleşme ile artan rekabet nedeniyle şirketler için çok önemli hale gelmiştir. Bir şirketin finansal açıdan temel amacı, hissedarlarının değerini en üst düzeye çıkarmaktır. Ancak geleneksel muhasebe tabanlı performans önlemleri bu konuda yetersizdir. Bu nedenle şirketler, hissedar değerini yansıtan finansal performansı analiz etmek için uygun bir yöntem belirleyebilmelidir. Bu bakış açısından, hissedarların değerini en üst düzeye çıkarmak için Nakit Akışı Yatırım Getirisi (CFROI) ve Ekonomik Katma Değer (EVA) ile performans yöntemlerinin önemini vurgulamayı amaçlanmaktadır. 2015-2021 yılları arasında Borsa İstanbul'da (BIST) işlem gören sağlık sektörü şirketleri analiz edilmektedir. Çalışmada, CFROI ve EVA'nın bu şirketlerin hisse senedi getirileri üzerinde olumlu bir etkisi olduğu sonucuna varılmıştır, ancak CFROI'nin daha büyük etkisi vardır. Dolayısıyla, CFROI tekniği, hissedar değeri için en iyi finansal performans ölçüsüdür.

Anahtar Kelimeler: Sağlık Sektörü, Performans, CFROI, EVA, Hisse Senedi Getirisi

JEL Sınıflaması: G32, I11, L21, L25

Abstract

Shareholder value maximisation has become very important for companies due to increased competition with globalization. The main objective of a company in financial terms is to maximize the value of its shareholders. However, traditional accounting-based performance measures are insufficient in this regard. Therefore, companies should be able to determine an appropriate measure to analyze their financial performance that reflects shareholder value. From this point of view, it is aimed to emphasize the importance of the Cash Flow Return on Investment (CFROI) and Economic Value Added (EVA) performance methods in maximisation the value of the shareholders. For the periods including the years 2015-2021 companies in the healthcare sector traded in Stock Exchange Istanbul (BIST) are analyzed. In the study, it is concluded that CFROI and EVA have a positive effect on stock returns of these companies but CFROI has bigger impact. Thus, the CFROI technique is the best measure of financial performance for shareholder value.

Keywords: Healthcare Sector, Performance, CFROI, EVA, Stock Return

JEL Classification: G32, I11, L21, L25

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1. Introduction

Key figures are among the most important instruments of controlling, as they are used to adequately supply information to management. Reichmann describes them as highly condensed measures that report on quantitatively ascertainable facts that affect the company as a whole or concern business areas (Laier, 2011, p. 11 and Reichmann, 2006, p. 19). Reichmann says that the strengths of key figures are their ability to present complex issues in a simplified manner. Due to their accurate and quantifiable values, they are valuable tools and allow an objective impression of the economic situation of a company. At the same time, key figures make comparability of services possible. Moreover, they provide the necessary basis to define target values. That's why, key figures are efficient instruments for useful and effective controls. Using key figures helps to make strategies more tangible and more comprehensible in their implementation (Reichmann, 2006, p. 20 and Laier, 2011, p. 13). Financial performance measures are obtained in two methods. First method is classic accounting-based financial performance measures and the second method is named as modern value-based financial performance measures.

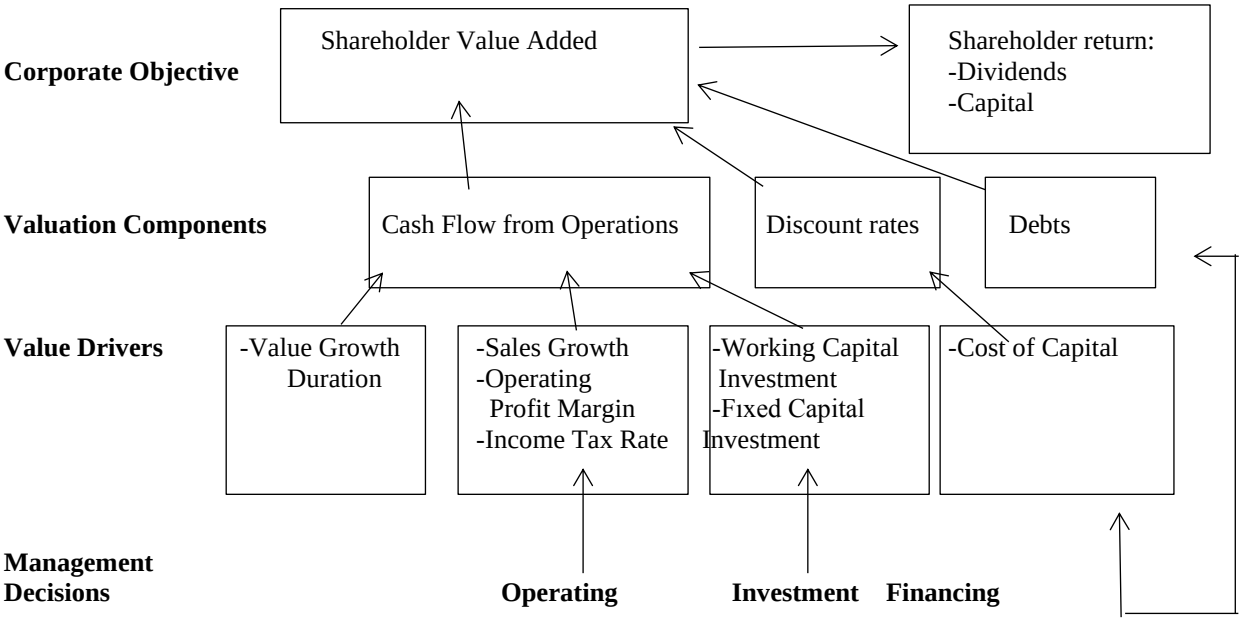
Classic financial performance measures are frequently criticized not for considering capital cost of a company and are for that reason not seen suitable for evaluating added value. Conventional methods determine an accounting profit based on the basis of accounting. As an outcome of the restrictions of conventional measures, value-based methods of financial performance are established. The main distinction in between both techniques is that value-based methods consider cost of capital of a company by determining the economic profit instead of accounting profit. Economic profit is derived from the difference between operating profit and the capital cost (Bognarova, 2016:784). The defintion of accounting profit and economic profit can be given as follows (Vahid et al., 2013):

Explicit costs - Income = Accounting profit

(Implicit costs + Explicit costs) - Income = Economic profit

Rappaport outlines the crucial correlation in the concept of shareholder value in a concise chart (Figure 1).

Fig. 1. Rappaport's shareholder value network (Rappaport, 1986)



In Figure 1, business management decisions regarding operation, investment and finance contributing to value creation are given. Operating decisions such as product and service variety, pricing policy, promotion, distribution and customer service have a certain impact on value factors such as "Sales Growth", "Business Margin" and "Income Tax Rate". Investing seems to be a value driver under working capital and fixed asset investments. Examples are high stock levels and increased capacity. The cost of capital value factor is defined by various risks arising from business activities, besides the financial risk of a company. This is determined by the correlation between debt, equity financing, and investment risk. The "Value Growth Duration" is the final value driver. This

describes the period of time in which according to management estimates and returns the costs of capital is exceeded (Rappaport, 1986:56).

A company's greatest concern is dedicated to choosing of financial performance methods. Performance measurement methods have a crucial function in developing strategic plans, measuring the accomplishment of corporate goals, and rewarding managing directors. Measuring financial performance with accounting-based ratios are deemed insufficient. Because businesses have started to focus on shareholder value as a long-term goal. Therefore, value-based methods have been developed to incorporate the cost of capital into performance calculations (Sakdiyah and Musfaya, 2022).

Value-based criteria are used to determine whether value is created for the shareholder or not. Two of these value-based criteria are EVA and CFROI.

EVA is equal to a company's return on capital minus the cost of capital. If EVA is above zero, the company earns more than the cost of capital which means that the firm creates value for its stockholders. However, a value below zero, means decrease in value. On the other hand, if EVA corresponds to zero, the firm reaches just the cost of its capital. EVA is similar to traditional profit accounting criteria, however it has two major discrepancy: EVA takes into account a company's total cost of capital and moreover a restriction by Generally Accepted Accounting Principles (GAAP) (Young, 1997;335).

The measure CFROI is developed by HOLT Value Associates. CFROI makes possible to investigate the financial situation of a company in order find out how cash is generated, how a company funds its operations and how financial providers are paid. Moreover, CFROI also considers inflation (HOLT Value Associates, 2011 and Mukhopadhyay et al., 2022). Furthermore, CFROI serves as an approximation for a commercial business's economic rate of return which is compared to the cost of capital in order to find out value-added potential. Thus, CFROI is the average rate of return on all of a company's investment projects in a given year. CFROI considers a firm's performance for the chosen interval of time in order to make comparison with competitors in its sector (Investopedia, 2022).

CFROI is normally calculated annually and compared to the inflation adjusted cost of capital to determine whether the company is earning a good return on its cost of capital and therefore if it creates added value for stockholders. Therefore, an important similarity is recognized between CFROI and EVA. Both methods presume that the invested capital increases wealth of its shareholders by generating a greater return than the cost of capital. For the owners or shareholders of a company, a high CFROI is an important benefit because less money needs to be provided in order to drive future increase (Young, 2000:383). An investment creates added value to stockholders if the CFROI is more than the opportunity cost of capital raised to finance that investment (Baltes and Vasiu, 2015:17).

Generally, a firm generates value for its stockholders when obtained return is more than the total cost of capital. Stockholders receive profits on their stock investments in two ways: dividends or capital gains. A share's market price is influenced by a few external and a few internal factors. Therefore, any company should work to increase the value of its shareholders. In addition, an effective technique should be used in the calculation of this created value (Subramanyam and Kiran Kumar, 2020:42). EVA has many application areas including compensation, capital budgeting, securities analysis, stock valuation. Also it can be used as a measure of corporate and departmental performance (Kramer and Peters, 2001:42).

When calculating the EVA, a rate of return is determined from which the cost of capital rate is subtracted. The difference is known as the value spread. The cost of capital has an opportunity cost character. It represents the return that the investor could have earned elsewhere with the same risk. In order to obtain the value contribution of a period, the value spread is multiplied by the book value capital (Voigt, 2016).

Gimeno and Juras (2016) write the management of a company using value-oriented control concepts enables a company management that is geared towards securing the long-term future and thus pursues sustainable growth. This article takes a look at the practice of SMI corporations and, on the basis of an empirical analysis, asks about the spread, the usage framework and the design of value-based management. Particular attention is paid to the concept of Economic Value Added (EVA) and the question of how the remuneration of the management with a sustainable increase in the value of the company. If you look at the result-based key figures, the EVA concept can be found in the value management of Adecco, Novartis and SGS.

2. Literature Review

First of all, the literature review of the articles covers the topics of value maximization for shareholders and financial performance estimation using EVA, CFROI and other methods is discussed below:

Subramanyam and Kiran Kumar (2020) find that EVA contributes significantly to the disclosure of the stock market return at 0.05%, and modern measures have a value equal to 40% and 8%. That is, EVA and CFROI explain that if EVA grows by one unit, shareholder returns increase 40% and when CFROI grows by one unit, shareholder returns increase 8%. Consequently, in this paper it is proven that positive value of EVA and CFROI means that shareholder value also grows.

Erasmus (2008) proves the relationship in between regulated market return and remaining profit, cash flow, EVA, CFROI, and CVA from 1991 to 2005. Corresponding to the outcomes of the analysis, it has been determined that value-based measures compared with traditional accounting measures do not give very good results.

Bayrakdaroglu and Ege (2009) calculates the CFROI values of 19 companies subordinated to the national industrial sub-index traded in Borsa Istanbul and find that manufacturing companies are performing somewhat positively.

Ünlü (2014) analyzes in his study the performances of 10 companies belonging to the cement sector traded in Borsa Istanbul for 2012 using CFROI and CVA methods. By comparing the CFROI and WACC values of the cement companies, it is examined whether these companies achieve a return above the cost of capital or not. It has been determined that cement sector companies, except for two companies, shareholder value added cannot be created. Ünlü explains that the unsatisfactory before-tax cash flows of the cement sector firms and usage of capital at big costs have contributed to this result.

Mert and Dil (2016) obtain financial information of diverse energy companies for 2014 and 2015 from Public Disclosure Platform (PDP). These informations are examined with respect to the modern performance measurement model Cash Flow Return on Investment (CFROI). A comparison of the CFROI and WACC values of these firms is realized. By analyzing individually, the industry companies it is seen that shareholder value do not increase in the same level. However, the same study shows that it creates value for shareholders when the sector average is considered.

Clinton and Chen (1996) investigate EVA, CFROI of BCG and RCF in connection with stock exchange profits. In their research, they choose the period 1991-1995 for 325 companies. One of the new performance evaluation measures, RCF, shows significant relationship with both stock prices and returns over a five-year analysis period using reliable and well-known information databases. They state that companies should consider remaining cash flow as an alternative to these widely promoted metrics in improving their performance appraisal systems. As a result of the research, it is found that EVA and CFROI are insignificantly related to stock returns.

According to Damodaran, there are several options for maximizing a variable associated with the value of the firm. These are (Damodaran, 2022):

- an accounting variable, such as earnings or return on investment
- a marketing variable, such as market share
- a cash flow variable, such as Cash Flow Return on Investment (CFROI)
- a risk-adjusted cash flow variable, such as Economic Value Added (EVA)

Teuscher says that the most widely in practice used concepts are the Economic Value Added concept and the Cash Flow Return on Investment concept. The goal of the Economic Value Added (EVA) concept of the management consulting company Stern Stewart & Co is the operationalization of the increase in company value for the equity providers through a periodic key figure. So, the EVA concept is used in corporate practice by many German companies, which include for example Deutsche Telekom, Metro or Siemens. The CFROI concept is currently used, for example by Lufthansa and Bayer for value-oriented corporate management. What the value-oriented key figure concepts have in common is that they show a result figure by taking into account the total cost of capital, i.e. the cost of equity and debt. However, there are differences concerning the definition of earnings and the determination of the cost of capital. In order to determine the cost of capital, the capital cost rate must be known. One possible way to calculate it is to do this with Capital Asset Pricing Model (CAPM) which was developed by Sharpe, Lintner and Mossin and it is based on Markowitz's portfolio theory. As a consequence, CAPM tries to explain how risky investment opportunities are evaluated in the capital market. Also it describes the positive linear dependency of the expected return on a capital investment from just one risk factor (Single-Factor-Model) (Kunz, 2007, p. 9-10).

Kunz assumes that conventionally the success of a company is calculated by applying key figures of accounting. Thereby, the focus is on the profit. For a comparison between different firms relative key figures such as Return on Investment (ROI) or Return on Equity (ROE) are used. In financial analysis the price-earnings ratio is the key criterion to evaluate stocks. Studies done by Rappaport and also a number of other authors show, however, that there is little correlation between owner or stock returns and accounting performance indicators. Due to their lack of informative value in relation to the value creation of companies, no key figures in accounting should be used as

a basis for success-oriented payments are used. Otherwise, short-term and risk-averse behavior of management will be promoted which is contrary to the interests of shareholders (Kunz, 1998, p. 393).

Lehn and Makhija examined EVA as a performance measure which is recognized useful as a signal for strategic change. They also say that the EVA is successful performance measure containing information about the quality of strategic decisions. Lehn and Makhija emphasize the application of EVA by many well-known U.S. companies. In their study, 241 firms from 1987 to 1993 are examined. They find out that EVA is significantly positively correlated with stock price performance and proves it's effectiveness as performance measure (Lehn and Makhija, 1996, p.6).

Chen and Dodd analyzed the ability of accounting measures and differend EVA-related measures. They determined that EVA values outperformed accounting earnings in clarifying stock returns. (Chen and Dodd, 1997).

Schäffer and Lewerenz (2011) discuss the concepts of value-based management. Management systems and key figures that are assigned to value-oriented corporate management also apply as management tools of the shareholder value approach. The most famous representatives of the management systems are EVA, CFROI and Return on Invested Capital (ROIC), Cash Value Added (CVA) including the valuation method of the Discounted Cash Flow.

For almost 10 years, the trend has been observed that more and more companies are using value-oriented key figures for corporate management. Value-oriented corporate management is a business philosophy for the diverse tasks in the company that creates a uniform regulatory and action framework. In particular, stock corporations have recognized that traditional key figures do not adequately express corporate success. These companies have designed their entire coporate policy to be value-oriented. However, the focus is on determining the status quo of the implementation of the value-oriented corporate management within the DAX 30 companies. The main disadvantage of traditional ratios is that they do not take into account the cost of capital. However, due to the increasing globalization of the capital markets and the resulting increase in competition for capital and capital costs should be taken into account appropriately. Investors only invest their capital where they also have a financial benefit from it. For example, in listed companies through dividends or price increases. However, the question for investors and companies is how the share price development and thus the company value can be determined and influenced. Investors and companies are jointly pursuing the goal of sustainably and permanently increasing the value of the company. This is exactly where the philosophy of value-oriented corporate management comes into play (Pilzecker, 2011).

If EVA is positive, then the capital invested by the company earns a reasonable return during the period under review. A necessary condition for the long-term existence of the company has thus been fulfilled. On the basis of the method used to calculate book values (capital employed), it is not yet possible to say whether the market value of the business has also developed positively. From the point of view of the shareholders, however, this is ultimately decisive. EVA increases are required in order to reach a higher market value, That's why increase of the EVA can be seen as a necessary requirement for increasing stock prices. Moreover, the relationship between EVA and market value can be derived theoretically. In general, the present value of all future EVAs (after taxes) plus today's capital employed gives exactly the market value (Discounted Cash Flow value) of the company as follows (Freidank et al, 2001, p. 278):

$$Value_{DCF} = \sum_{t=1}^{\infty} \frac{EVA_t}{(1+WACC)^t} + Capital\ Employed_0$$

Erasmus and Lambrechts (2006) write that EVA and CFROI aim to maximize the Net Present Value (NPV). In the paper, they find EVA not being appropriate all the time to determine financial performance. But, EVA and CFROI deliver a similar outcome in most examined cases.

3. Research Methodology

The data used in the research are obtained from the annual reports of 11 health sector companies (pharmaceutical, pharmaceutical warehouse, hospital and insurance) traded in Turkish stock market (Borsa Istanbul - BIST). The health sector is chosen because the subject is in the field of health management and there is a gap in the literature on the methods used. Also, the health sector is an important sector, but due to the pandemic, it has become one of the more important sectors. These companies are: MLPCare, LOKMAN HEKİM Sağlık Grubu, AK Sigorta, ANADOLU HAYAT EMEKLİLİK Anonim Şirketi (ANHYT), ANADOLU Sigorta (ANSGR), AGESA, RAY Sigorta, TÜRKİYE Sigorta, DEVA, ECZACIBAŞI and SELÇUK ECZA DEPO (SELEC), This study is done for the periods including the years 2015-2021 companies in the healthcare sector traded in the Stock Exchange Istanbul (BIST) are analyzed. Data has been used since 2015 in order to get more accurate results and also 2015 was a normal economic year for the Turkish health sector. Year-end closing prices are used for stock prices and in this case the dependent variable is stock's price.

EVA is an assessment of a company's economic profit after deducting its total cost of capital from Net Operating Profit After Tax (NOPAT). In this study, EVA is determined as follows (Stewart, 1991):

$$EVA_t = NOPAT_t - (WACC_t * CE_{t-1})$$

where:

EVA_t :	Economic Value Added in period t
$NOPAT_t$:	Net Operating Profit after Taxes in period t
$WACC_t$:	Weighted Average Cost of Capital in period t
CE_{t-1} :	Total invested Capital in period t-1

The calculation of WACC is as follows (Rehman et al, 2010):

$$WACC = w_d * K_d * (1 - T) + w_e * K_e$$

where:

w_d:	Debt ratio
K_d:	Cost of borrowing
T:	Tax rate
w_e:	Equity ratio
K_e	Cost of equity

CFROI is a technique to determine the anticipated return of an investment by paying attention to cash flows and money's time value. In this study, CFROI is calculated according to the formula below (Damadoran, 1999:61-62 and Chandra, 2011:814):

$$CFROI = \frac{Gross\ Cash\ Flow - Economic\ Depreciation}{Gross\ Cash\ Investment}$$

Gross Cash Flow = NOPAT + Depreciation Expenses + Interest Expenses + Leasing Expenses + /-Increases or Decreases in Monetary Reserves + Allowance for Retirement Pay + Minority Share Profit

Gross Cash Investment = Depreciable Assets + Net Monetary Assets + Non-Depreciable Assets

Economic Depreciation (ED) is the yearly investment, which gives the opportunity cost of funds of a firm to maintain a sum that is same as the depreciable assets' early cost at the ending of the asset's life. Thus, for an asset life of t years, ED is found as below (Martin & Petty, 2000):

Economic Depreciation = [WACC/(1+WACC)^t-1]x Depreciating Assets

The calculation method used to obtain CFROI is given below in detail (Madden, 2003: 112; Bayrakdaroğlu, 2009: 234):

1 - GROSS CASH FLOW
Net Profit After Tax (NOPAT)
+Depreciation Expenses (including amortization and depletion expenses)
+Interest Expenses (short and long term borrowing expenses)
+Financial Leasing Expenses
+/- Increases or Decreases in Monetary Reserves
-LIFO Reserves
+Provision for Severance Pay
+ Profit of Minority Shares
Gross Cash Flows
2 - GROSS CASH INVESTMENT
+Gross Plants Machinery and Equipment
+Vehicles
+Fixtures
+Construction in progress
+Gross Lease Values (Present Value)
+Intangible Assets
=Depreciable Assets
Monetary Assets (Current Assets Excluding Inventories) (a)
Non-Interest Payables (b) (I)
+Net Monetary Assets (a-b)
+Inventories
+LIFO Reserves
+Underground and Overland Plants
+Lands and Parcels
Non-Depreciable Assets (II)
Gross Cash Investment (I+II)
3 - ECONOMIC LIFE OF ASSETS
Gross Plants Machinery and Equipment
- Lands and Parcels
- Underground and Overland Plants
- Construction in progress
=Adjusted Tangible Assets (a)
Depreciation, Amortization and Depletion Expenses (b)
Economic Life of Assets (a/b)

In this study statistically F-Test, Regression and Correlation methods of data analysis are utilized. The equation of regression is (Subramanyam and Kiran Kumar, 2020:43-44):

$$StMRe = \alpha + \beta\_1EVA + \beta\_2CFROI + \mu$$

where:

StMr = Stock Market Returns of firms selected

α = Constant

EVA = Economic Value Added

CFROI = Cash Flows Return on Investment

μ = Error term

In order to find out the effect of performance measures EVA and CFROI on stock market returns, the following hypothesis are created:

H0 = Effect of EVA and CFROI on Stock Returns does not generate shareholder value.

H1 = Effect of EVA and CFROI on Stock Returns generates shareholder value.

4. Discussion and Results

In the research, EVA and CFROI performance measurement techniques are applied to the stock market returns calculated based on the data in the annual financial statements of the companies and the share price published in the Stock Exchange Istanbul (BIST). Descriptive statistics are utilized to summarize the mean, standard deviation, statistical techniques R2, regression, and coefficient of the study variables. The research applies hypotheses and tests by making use of Linear Regression by means of SPSS statistical software to forecast a variable's value depending on the financial performance variables' value.

Table 1. Model Summary

Model Summary									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	,442[a]	,196	,170	5,7600754	,196	7,778	2	64	,001
a. Predictors: (Constant), EVA, CFROI									

R2 is defined as the share of the change in the total variable that can be explained by the regression model. In other words, it expresses what percentage of the change in the dependent variable can be explained by the independent variable. R^2 value varies between 0 and 1, and its approach to 1 indicates that a large part of the change in the dependent variable is explained by the independent variables (Alpar, 2017:413).

In Table 1, it can be observed that shareholders value maximization, which is determined by adjusted R2, is 17% and the variations in the stock markets are described by EVA and CFROI.

Table 2. Anova

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	516,143	2	258,072	7,778	,001[b]
	Residual	2123,422	64	33,178		
	Total	2639,565	66			
a. Dependent Variable: Shareholder Value						
b. Predictors: (Constant), EVA, CFROI						

Looking at the Table 2 (Anova table), significance level is less than 0.05, so our model is statistically significant. So everything is fine. That is to say, the change in the stock return is caused by the change in the EVA and CFROI values.

Table 3. Coefficients

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,723	1,268		2,147	,036
	CFROI	15,673	5,094	,351	3,077	,003
	EVA	4,274E-9	,000	,211	1,848	,069
a. Dependent Variable: Shareholder Value						

In Table 3, the coefficients CFROI 15,673 and EVA 427x10-11 are given. This means that the independent variables CFROI and EVA have a positive effect on stock returns. The fact that the CFROI's significance level is less than 0.05 indicates that the CFROI independent variable has a significant and positive effect on stock returns. When an increase of one unit occurs in CFROI, the stock return increases by 15,673 units. Increases EVA by one unit, so the stock return grows by 427x10-11 units. However, due to the significance level of EVA which is more than 0.05; that means that the positive effect on stock returns is not significant. When EVA and CFROI are positive, economic profit is provided and shareholder value is expected to rise.

As a result, the study shows that positive EVA and CFROI have a positive effect on stock returns, but CFROI is the best financial performance measure compared to EVA. In particular, the positive CFROI has a great and significant effect on stock returns. Therefore, investors and shareholders can use the CFROI as a benchmark for their investments.

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