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# The Relationship between Stock Price and EPS: Evidence Based on Tehran Stock Exchange

SiroosKorahiMoghadam[1], YasanulahPorashraf[2], Razierahim[3], Reza ahmadi[4]

[1.] Assistant profosor of Islamic Azad University
[2.] Assistant profosor of Ilam University
[3.] Master Of Accounting
[4.] CEO of industrial services

**Abstract:** In this study, we use cointegration methods to investigate the relationship between stock prices and earnings-per-share (EPS). Furthermore, we consider whether stock prices respond to EPS under the different level of growth rate of operating revenue. The empirical result indicated that the cointegration relationship existed between stock prices and EPS in the long-run. Furthermore, we found that for the firm with an average level of growth rate, EPS has less power in explaining the stock prices; however, for the firm with a low level of growth rate, EPS has a strong impact in stock prices.

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## 1. Introduction

Share price changes in capital market are affected by various factors beyond the company level and the market. One way to introduce capital market, the effect of dividends on common stock prices.

A main factor in the company's profit is Most of all, the stock price impact. Also included is information content of accounting information between all in an important discussion about the relationship between stock prices and profits are accounting. [23]

Given the importance of small savings and directing them to attract investment and development of existing companies And creation of new companies in the capital market is flourishing in our country And consider the following investors Suppliers to maximize their wealth necessary financial resources to acquire a better understanding of capital markets. [9]

Accounting information in capital markets has caused the stock price. Any correlation between accounting and stock price is higher, Stock prices react quickly to new information shows, the market is efficient.

Market is called efficient market in which securities prices (including price) of the complete reflection data are available. The market price of securities sensitive to new information quickly shows. In other words, information for determining the price, is available to the investor confidence

The securities board, at least as the market price is worth. If stock prices reflect all information disclosed about the economy, financial markets and securities of companies mentioned is released, it can be argued that financial markets are efficient.

In this study, we first examined the ratio between stock prices and earnings effects (EPS) positive and significant relationship in the long run there? Then we investigated the effect of stock prices under different levels of the growth rate of profit (EPS) reaction show.

In previous studies assumed that firms are homogeneous with each other all companies, such as economic factors, industry and firm characteristics such as size, industry type, size, quality and benefit accruals have to deal with dividend decisions The companies listed in this study is not homogeneous.

In this study three categories: companies with high growth rates, companies with moderate growth rates, companies with low growth rates are divided. First separately in each group is to investigate the relationship between groups, and then the test is performed to investigate the relationship. Today, one of the most important economic measures of a country's investment rate and the effects of this investment is investment in securities.

Can a country's economic system in this way, the investors receive capital and combining them to create jobs and increase pay?

In this regard it is evident that more investors are faced with uncertainty less about return on their investment, such investments tend to be more. One of the characteristics of the market is efficient, transparent information. Providing accurate

and timely information to investors, the decision is right for them

When the investor decides to invest in the stock, the first problem is that faced with the choice of purchase is required. So if relevant and timely information is available, investors are not confused and can safely use this information to make decisions. Thus, the present study as an academic research about the phenomena ofthe companies listed in Tehran Stock Exchange, the coefficient of relationship between earnings (EPS) and stock price could be a step towards these goals.

In developed countries, one of the major economic indicators, the stock market index.

During To the relative efficiency of capital market information as fast. In stock prices affect the poor, but in Iran there is capital market efficiency. With all the defects in the Tehran Stock Exchange.

Households and non-familiarity with financial investment, stock exchange now is one of the most attractive investments. And related studies can lead to resource allocation in the economy.

Different interests of investors in the stock dividend and increase the share price gain, also on the exchange of financial information used for assessment and analysis of stocks altogether. Stock price and earnings per share are the two main variables. Investors and managers that are considered in the capital market

And the relationship between variables is important for resource allocation in the economy. Relationship between earnings per share and stock prices in incomplete markets is very important because investors can easily choose their desired securities.

**Defined as dividends**

The dividend is part of that entity's interests the board recommended and approved by the General Assembly is divided among shareholders. Dividend is a distribution of cash, assets, cash or shares among shareholders in proportion to the number of shares outstanding of each stock. [8]

Dividends can be distributed to the following forms:

1-stock cash dividends
2 - Benefits in kind of shares
3 - Gains commitment
4 - Profit share (equity issue)
5 - The settlement

Dividends are usually paid in cash or in kind, but in some cases, the assets of the profit share are paid. Dividend payments of any kind that the company's equity will be reduced. Except that in this case the company profit share any decrease or increase in assets and liabilities not assumed And only seems to release more stock.[8]

The company, in addition to distribution of profits among shareholders, may be part of retained earnings to specific objectives such as the one

1) Cash held for future use

2) Development, expansion and modernization of equipment

And facilities and maintenance of accumulated profits

3) Develop resources to minimize the effects of economic crises and other unforeseen events and ... Or by law (which is called reserves) set aside. [8]

Earnings per share and loss per share

In accordance with Statement No. 128 FASB, public company are required EPS (earnings per share) or LPS (loss per share) must report the income statement in the text. [19]

By shareholders and potential investors to assess important indicators, EPS of the company each ordinary share of the profits obtained through the show.

The EPS only for rights holders, the holders of outstanding common stock is reported. In other words, in the income statement for shareholders only normal EPS is reported. [2]

It is worth mentioning that we can calculate EPS (LPS) was applied to the details as follows:

- Profit (loss) from operations
- Profit (loss) from discontinued operations, net of tax
- Profit (loss) before items, unexpected
- Profit (loss) unexpected, net of tax

Earnings per share (EPS) in the simple structure of capital

If the company's capital stock consists of common stock only, or include the conversion or exercise of potential ordinary shares into ordinary shares of EPS can reduce, not Capital structure as it is simple.

Purpose of calculating basic EPS, measured performance during a reporting entity is that its formula is as follows:

Preferred dividends - net profit = EPS (main profit share)

Weighted average number of ordinary shares issued

In calculating EPS under Statement No. 128 FASB replaced the APB No. 18 is that the following is noteworthy:

1) If the Company had net income, cumulative preferred stock dividends for the year are deducted from net income, whether declared or not.

If the non-cumulative preferred dividends may be deducted only if the net profit.

2) If the Company had a net loss, the cumulative preferred stock dividends for the current year only LPS is added to the net loss formula, whether declared or not.

3) Preferred stock in paragraphs 1 and 2 described above,

Contain all the outstanding shares of common stock are convertible into or impossible,Dividends to be considered in the calculation of EPS or LPS income or loss available to common shareholders to be obtained.

4) In the formula, EPS, another important point, is the weighted average number of common stock outstanding. Due to the increase or decrease in shares outstanding (whether temporary or permanent) during the fiscal year is calculated as the average clipping.Such logic is acting to increase and decrease Shares during the fiscal year profit increase or reduce the power.

5) The benefits of preferred stock outstanding at the year-ago EPS calculations have been considered, therefore, not considered in the current year. [2]

Earnings per share (EPS) in the complex structure of capital

In addition to common stock if the company's capital stock, including common stock, which could potentially reduce the impact on EPS of common stock have .It is a complex capital structure 128 FASB Statement No. According to the capital structure is complex, this dual presentation of EPS to necessitate the following:

1) The basic earnings per share

2) Earnings per share decreased

The main earnings per share, the earnings per share are calculated in the simple structure of capital. [2]

Externalinvestigation

Ansotegui and Esteban (2002)established a long-run relationship between the Spanish stock market and itsfundamentals, and checked to which extent this relationship helps in forecasting. Singet al. (2002) examined the relationship between the stock price and the fundamentalsfor Singapore and found that the mean-reversion of stock prices towards fundamentalvalue.

Freeman (1987) investigated therelationship between the accountings earnings and stock returns in big companies andsmall companies.

Beaver, Lambert and Morse (1980) reverse the direction of therelationship and examined the information content of prices with the change inearnings as the dependent variables and find the variations of stock prices havesignificant correlation with the variations of earnings.

Beaver, McAnally and Stinion (1997) considerthat both the earnings and stock prices are affected by information and interact witheach other. They use the simultaneous equations to review the relation between thestock prices and the earnings and find that the feedback relationship exists betweenthe two variations.

Internal investigation

H. (1379) to study the factors affecting stock prices and order and how it influences the relationship between stock prices and dividends and capital increase in order to explain the changes that occurred. Data analysis was paid after 95% cash dividend and stock price level to decrease inappropriate [9].

DolatabadiEbadi (1381) in a study entitled "Effect of financing methods on yields and stock prices of companies listed in Tehran Stock Exchange," concluded Effects of long-term loan on the equity price is more than [5].

Khvshtynt and Sarbanha (1382) to investigate the effect of dividends paid on stock prices. The results indicate that the relationship between dividends and stock prices in Iran in 1380, 1378, 1377, 1376, there are and in the years 1373, 1374, 1375, 1379, there was no significant relationship between dividends and stock price. Researcher with the relationship between stock prices and dividends as well as research (Gordon, Shapyr, Children, bucket, etc.) there was a direct relationship between dividends and stock price target in all years (1373 until 1380) was confirmed [4].

Vahhabi (1384) Arbtat estimate of earnings per share and earnings per share reached 43 companies for the years 1380-1377 were examined

Where there is a relation between two variables in this study was confirmed. [10]. Karimzadeh (1385) to examine the relationship between long-term stock price index of Tehran Stock Exchange paid with macro variables.

Results showed that the estimated stock price index and a vector Hmjmy between monetary macro variables there. The estimated long-run relationship significantly positive effect on liquidity significant negative effect on real interest rates and bankthe stock price index shows [7].

The research hypotheses

Given that our goal is to examine the relationship between earnings per share and stock price, the research hypotheses are formulated as follows:

Hypothesis 1 - the coefficient on earnings (EPS) and stock prices in the long run there is a positive and significant relationship had.

Hypothesis 2 - coefficient of interest is less in firms with high growth rates.

Methods

In this study, the necessary information to test the research hypotheses of the information contained in Tehran Stock Exchange, Financial statements of companies and databases available on the market as "Tdbirprdaz" were collected order to test the statistical model of a similar study by Hu-ling chang –Yan shir Chen, what his hand, Yavn Chang (2009) was performed [23],

Methods of ordinary least squares, least squares adjustment, the dynamic ordinary least squares and ordinary least squares has been completely revised to use this software «Eviews 6» is using.

The statistical

The statistical population consists of a set of people or objects that have at least one common trait. Common trait in this study consists of all firms listed on stock exchange in the period 1380 to 1388.

The study sample included all firms listed in Tehran Stock Exchange is that the fiscal year ended March 29 are not financial intermediation and investment companies, financial data were available. Our sample includes firms that have participated in the exchange from 1380 until 1388.

And data needed to test this hypothesis is provided by them. It should be noted that each of the models for the estimation of the maximum available data will be used.

**Sampling of the community**

This study was conducted to targeted sampling stage. In this case every step of all existing companies, Companies that meet specific conditions of each study were not removed. Finally, 241 companies were selected for testing.

**Research Variables**

1 - Coefficient of profit: This ratio measures the effect (response) of the stock price per share (EPS) are explored. In this study are expected in the model shown is the effect coefficient equal to 1 / r or close to it. r is the discount rate for future profits.

2 - Earnings per share: Net earnings per share of net income divided by the number of issued shares of acquired companies, its value was calculated for each year could be derived from financial statements of companies. Earnings per share in the research hypotheses independent variables and the dependent variable are price. Also classified in terms of size and growth companies, respectively, of net sales and stock market value to book value is used, and was selected because these factors are as follows:

1 - Compilation of Financial Accounting Standard Board has defined small companies as follows: "Company that its operations are relatively small and usually total sales or revenue to be less than five million dollars.purpose of the statement above about the selection as a criterion for measuring a company's sales. It is noteworthy that in a similar study that was conducted by Dlgan in 2003,

Net asset value as the company was considered [11], but given the high rate of inflation in Iran And considering the historical value of assets are included in the balance sheet, Also according to the definition provided by the Financial Accounting Standards Board has developed, The value of net sales as a measure of firm size is used.

**Analysis and testing hypotheses**

Models of research are needed before reliable estimates of the variables to be sure. The reliability of the data unit root tests for the combined data of Levine and colleagues (2002), Fuller Generalized (Fisher type) and Phillips and Peron test (Fisher type) is used [26]. The following models have been used to test the hypotheses:

(1) $S_{i,t} = \alpha_i + \beta_i EPS_{i,t} + e_{i,t}$

(2) $EPS_{i,t} = EPS_{i,t-1} + \mu_{i,t}$

(3) $S_{i.t} = S_{i,t-1} + u_{i,t}$

Here, Stis the stock prices, and EPS stands for earnings-per-share.e i,t, μi, t , andui,t, are normal distributed error-terms with zero expected mean .EPSi,t, is the earnings-per-share of firm i and P i.t, is the price of firm i at time t .

The above model is a benchmark in the value relevance studies firstly proposed by Ball and Brown (1968). The slope coefficient β is called earnings response coefficient (ERC) and is expected to be 1/r or close to 1/r, where r is the discount rate for future earnings.

The results show that the correlation between stock price and earnings per share in the companies, companies with low growth, medium and high, respectively ./67 , ./61 , ./74 , ./65 is. The results showed a positive correlation between stock price and earnings per share are at 1% level. This correlation between companies with more moderate growth and low growth companies is less.

All statistics were significantly different with regard to unit root tests presented in table (1), we come to the conclusion that the stock price and profits each share of companies with no unit root and the levels are reliable.

$$(4)\hat{LM}=\frac{1}{N}\sum_{i=1}^{N}\left(\frac{1/T^2\sum_{t=1}^{T}S_{it}^2}{\hat{\sigma}_{\varepsilon,i}^2}\right)$$

Panel v-Statistic

$$(5)Z_v=\left(\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11}^{-2}\hat{e}_{i,t-1}^2\right)^{-1}$$

Panel $\rho$ -Statistic

$$(6)Z_\rho=\left(\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11}^{-2}\hat{e}_{i,t-1}^2\right)^{-1}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11}\left(\hat{e}_{i,t-1}\Delta\hat{e}_{i,t}-\hat{\lambda}_i\right)$$

Panel non- parametric (PP) t-Statistic

$$(7)Z_{pp}=\left(\sigma^2\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11}^{-2}\hat{e}_{i,t-1}^2\right)^{-1/2}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11}^{-2}\left(\hat{e}_{i,t-1}\Delta\hat{e}_{it}-\hat{\lambda}_i\right)$$

Panel parametric (ADF) t-Statistic

$$(8)Z_t=\left(\hat{S}^{*2}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11}^{-2}\hat{e}_{i,t-1}^{*2}\right)^{-1/2}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11}^{-2}\hat{e}_{i,t-1}^{*}\Delta\hat{e}_{i,t}^{*}$$

Group $\rho-$ Statistic

$$(9)\tilde{Z}_\rho=\sum_{i=1}^{N}\left(\sum_{t=1}^{T}\hat{e}_{i,t-1}^2\right)^{-1}\sum_{t=1}^{T}\left(\hat{e}_{i,t-1}\Delta\hat{e}_{i,t}-\hat{\lambda}_i\right)$$

Group non- parametric (PP) t- Statistic

$$(10)\tilde{Z}=\sum_{i=1}^{N}\left(\sum_{t=1}^{T}\hat{e}_{i,t-1}^2\right)^{-1}\sum_{t=1}^{T}\left(\hat{e}_{i,t-1}\Delta\hat{e}_{i,t}-\hat{\lambda}_i\right)$$

Group parametric (ADF) t- Statistic

$$(11)\tilde{Z}_t=\sum_{i=1}^{N}\left(\sum_{t=1}^{T}\hat{S}_i^{-2}\hat{e}_{i,t-1}^{*2}\right)^{-1/2}\sum_{t=1}^{T}\hat{e}_{i,t-1}^{*}\Delta\hat{e}_{i,t}^{*}$$

Table (1)-The unit root test resulting on eps:

| | High- Growth frims statistics | | Medium- Growth frims statistics | | Low-Growth frims statistics | | All firms | |
|---|---|---|---|---|---|---|---|---|
| variables / test | EPS | stock price | EPS | stock price | EPS | stock price | EPS | stock price |
| Levine and colleagues | **-7/46** | **-19/86** | **-14/34** | **-30/87** | **-60/92** | **-25/69** | **-68/07** | **-53/61** |
| Fuller Generalized | **230/08** | **328/80** | **195/79** | **200/84** | **136/22** | **147/23** | **402/77** | **535/05** |
| Phillips and Peron | **357/60** | **439/52** | **294/40** | **302/12** | **136/09** | **223/89** | **766/09** | **844/22** |
| Note:indicatessignificancelevels at 1%. | | | | | | | | |

The results presented in table (2) of various test statistics also show that the combined group data, the 5% level and have less meaning.

Table (2)-Pedroni (1995; 1999; 2000) cointegration:

| | High- Growth frims statistics | Medium- Growth frims statistics | Low-Growth frims statistics | All firms |
|---|---|---|---|---|
| Panel v-Statistic | **3/06** | **4/21** | **1/99*** | **5/74** |
| Panel rho-Statistic | **-5/24** | **-4/25** | **-4/78** | **-8/23** |
| Panel PP-Statistic | **-9/32** | **-8/21** | **-8/14** | **-15/01** |
| Panel ADF-Statistic | **-5/78** | **-7/88** | **-5/10** | **-10/92** |
| Group PP-Statistic | **-11/30** | **-8/69** | **-6/52** | **-15/36** |
| Group ADF-Statistic | **-3/97** | **-7/77** | **-3/92** | **-9/01** |
| Note: significance levels at 5%**.** And the remaining indicates significance levels at 1%**..** | | | | |

Table (3) Kao and Chiang (2000) &Pedroni (2000) cointegration estimation

| Method: / Category: | OLS | Adjusted OLS | DOLS | FMOLS |
|---|---|---|---|---|
| All firms:<br>β<br>t-value | 5.47<br>(39.30) | 5.53<br>(35.28) | 5.91<br>(25.06) | 5.94<br>(27.78) |
| Low-Growth frims statistics:<br>β<br>t-value | 3.21<br>(19.34) | 5.35<br>(30.95) | 3.36<br>(12.75) | 3.40<br>(14.89) |
| Medium- Growth frims statistics:<br>β<br>t-value | 7.68<br>(27.45) | 8.01<br>(47.35) | 7.83<br>(18.44) | 7.81<br>(20.48) |
| High- Growth frims statistics:<br>β<br>t-value | 5.55<br>(22.54) | 5.83<br>(37.58) | 6.02<br>(13.83) | 5.91<br>(15.07) |
| Note:indicatessignificancelevels at 1%. | | | | |

To investigate the long-run relationship between stock prices and earnings per share, ordinary least squares method, least squares adjustment, the dynamic ordinary least squares and fully modified ordinary least squares is used. The results of the relationship between earnings per share and stock price estimates (slope coefficients and Student t-statistics) using methods in PD (4-4) is presented.

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The results of the relationship between earnings per share and stock price estimates (slope coefficients and Student t-statistics) using methods in PD (4-4) is presented.

**Limitations**

This is because of limitations to this study should be interpreted with caution. The main limitations of this study are as follows:

A) Due to some selection criteria (such as the Financial Year ending March, unchanged fiscal year etc.) vote and the incomplete data for some companies, the number of companies was reduced to 241. Thus, generalizing the results to other companies should be done cautiously.

B) Due to lack of access to information about companies in the pre-1380 years,the territory is limited to the years 1380 to 1388.

C) Conditions and lack of inflation adjustment of financial instruments, computed variables is very effective.

D) Other limitations, empirical studies based on specific characteristics of the control factors

The results of the effects of variables such as economic factors, political conditions, global economic conditions and ... Which is available outside of the researcher may be affecting the results.

Suggestions

A)It is recommended that the decision to invest long-term investors relying on the rate of price changes to achieve better evaluation of future trends.

B)It is recommended to analysts and investment advisors which provide a clear analysis of past price changes and its determinants and therefore relying on information from past events of the brightest. This decision will improve investors doubt the most investor confidence and satisfaction in their investment.

C) For which investors can exchange information such as profit and price

Be aware of stock is suggested that an appropriate information system should be established in Tehran Stock Exchange and other cities. To analysts, finance students and researchers can use the integrated information system for analyzing their own end. It is evident, it requires that researchers are. Due to their real needs that information should be readily available to them.

C) Comparing the results of this study is based on the classification of industries and in different industries

D) Conduct research with higher sensitivity coefficient of the second hypothesis is further subdivided into subgroups.

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