

## **THE INTERDEPENDANCE BETWEEN EPS AND SHARE PRICE IN CROATIAN COMPANIES**

*Hrvoje Perčević<sup>1</sup>, Marina Mićin<sup>2</sup>, Marcela Samodol<sup>3</sup>*

<sup>1</sup>PhD, Associate Professor

<sup>2</sup> MA, Teaching and Research Assistant

<sup>3</sup>MA

*University of Zagreb, Faculty of Economics and Business*

### **ABSTRACT**

Earnings per share (EPS) is an indicator which tells the investors how high are the earnings of a company for one share purchased. It means that investors will buy shares of companies with higher net income, because the higher the net income is, the higher EPS will be calculated. EPS is an indicator which is calculated based on the financial result of the company observed and the number of shares. If the company has a good performance, then the net income of the company is higher, and so is EPS, which is calculated based on the net income. On the other hand, if the company is performing well, it should be reflected in the share prices because investors are keen on buying shares of companies who perform well. The aim of this paper is to test and prove that there is a positive correlation between EPS and share prices, in other words, that there is a correlation between the financial result of a company and share prices.

### **INTRODUCTION**

When making business decisions, investors rely on the financial statements and information given in those financial statements. Probably, the most important information for an investor is how profitable a company is, that is, the financial result of a company. Therefore, earnings per share (EPS) are an investment indicator which is important to the users of financial statements because it is based on the financial result of a company. When it comes to the different users of financial statements, in the context of this paper, the key figures are the owners of the shares. It is because they need information about the perspectives on earnings which could be gained by investing in a specific company. EPS for an investor means how much of the net income per ordinary share is left after deducting dividends to preferred shareholders [1, p. 425]. The aim of this paper is to present a theoretical overview of EPS, the importance of this indicator, ways of measurement and the usefulness of it. The correlation between EPS and share prices is examined on ten Croatian Companies which are included in the Crobex 10 index from Zagreb Stock Exchange.

In this paper, inductive, deductive, comparative and descriptive methods are used when analyzing relevant literature. As mentioned above, the correlation between EPS and price shares is analyzed for the companies from the Crobex 10 index in a five year period (from the year 2010 to the year 2014). The hypothesis that there is a positive statistical correlation between financial result measured by

EPS and share prices is set and tested. The results indicate that in most of the companies tested there is a positive correlation between EPS and share prices.

## LITERATURE REVIEW

### *Definition and importance of the EPS indicator*

The simplest form of calculating EPS is to divide the company's net income by the number of shares of common stock outstanding. When there is a complex equity structure, such as convertible preferred stock and stock option plan, the computation of EPS could be more complex. [2, p. 25, 711].

The calculation of EPS for the purpose of financial reporting is defined by International accounting standard 33 – Earnings per Share (IAS 33). IAS 33 prescribes principles for the determination and presentation of earnings per share, which enables a better comparison of performance of different entities in the same reporting period and between different reporting periods for the same entity. The methodology of calculating earnings per share (EPS) and the significance of this indicator of investment will be presented hereinafter in the paper.

IAS 33 shall be applied for entities whose ordinary shares or potential ordinary shares are publicly traded and for entities that are in the process of issuing ordinary shares or potential ordinary shares in public markets [3, p. 1]. According to this, in the Republic of Croatia, companies which apply International Financial Reporting Standards (IFRS) are also obliged to apply IAS 33.

For the purpose of consolidating financial statements, IAS 33 prescribes presenting EPS in these two ways [3, p. 1]:

1. EPS shall be calculated only on the basis of the consolidated financial statements when a parent entity presents both consolidated and separate financial statements;
2. EPS shall not be calculated in consolidated financial statements when a parent entity presents EPS only on the basis of separate financial statements

### *Calculation of EPS*

When calculating EPS, the net income for a year which is attributable to ordinary shareholders is divided by the average number of ordinary shares in circulation. It is simple when the company sells only ordinary shares and the number of shares in circulation is not changing during the year [4, p. 695]. Basic earnings per share (basic EPS) is calculated by dividing net profit or loss attributable to ordinary equity holders by the weighted average number of ordinary shares during the period.

So, the information about two values is needed for the calculation of EPS: net profit or loss adjusted for the amounts of preference dividends during the period and the weighted average number of ordinary shares, which shows that the value of shareholders' capital has possibly varied during the period. Namely, the weighted average number of shares presents the number of ordinary shares at the beginning of the period, adjusted by the number of ordinary shares bought back or issued during the period multiplied by a time-weighting factor [3, p. 2]. Some changes of the number of shares during the period (bonus issue; dividend shares, a share split or a

reverse share split – consolidation of shares) do not increase total capital. In this case earned capital is reallocated to subscribed capital. Consequently, in the mentioned examples the total value of capital does not change, but these changes of the number of shares affect the calculation of EPS [5, p. 43]. Except for potential ordinary shares, the number of ordinary shares can be also affected by options, proprietary contracts and convertible instruments which are dilutive securities. All of the specified dilutive securities affect the value of the denominator when calculating EPS.

Apart from the basic EPS, it is possible to calculate diluted EPS in terms of complex capital structure. Therefore, the net profit which belongs to ordinary shareholders and the weighted average number of shares should be adjusted by the effects of all the diluted potential ordinary shares, which means that the value of net profit or loss is to be adjusted by these effects after tax [3, p. 5]:

1. Dividends related to dilutive potential ordinary shares deducted in calculating net profit attributable to ordinary shareholders.
2. Interest recognized in the period related to dilutive potential ordinary shares.
3. Other changes in income or expense that would result from the conversion of the dilutive potential ordinary shares.

In terms of complex capital structure, apart from the already mentioned diluted EPS, it is possible to calculate primary EPS. Primary EPS includes all the equivalents of ordinary shares (options or warrants, convertible securities and all the issues of shares), while fully diluted EPS adds all potential new issues of diluted securities to all the equivalents of ordinary shares. Furthermore, there is a difference in presenting the numerator when calculating primary EPS compared to calculating the numerator of diluted EPS. Namely, the numerator of primary EPS represents the difference between net profit and dividends attributable to ordinary shareholders [5, p. 46].

Finally, an entity should represent basic and diluted earnings per share in the income statement for each group of ordinary shares. Also, regarding publishing information, the values used as a numerator in calculating basic and diluted earnings per share and the values of the weighted average number of ordinary shares that are used as a denominator when calculating EPS are to be published [3, p. 10].

## REASERCH METHODOLOGY AND RESULTS

### *Research methodology*

Stock indices are used for monitoring the behavior of a certain group of securities. By examining the average behavior of the group of securities, investors gain insight into the efficiency of a bigger group of shares. Indices are composed of a definite number of securities which are a representative sample of the observed market. There are two equity indices on Zagreb Stock Exchange – Crobex and Crobex 10. In this paper, the research is based on ten chosen entities which are currently included in the Crobex index. The initial composition of the Crobex 10 index includes only ten shares with the highest free float market capitalization and turnover, which are derived from the Crobex index.

In this research, the following hypothesis is proposed: *There is a positive statistical correlation between the financial result measured by earnings per share and the prices of shares included in the Zagreb Stock Exchange index Crobex 10.*

As it has been stated above, Earnings per share (EPS) is an indicator which is calculated by taking into consideration the achieved financial result and weighted average number of shares of an entity. Based on the earnings per share which reflect the financial result, it is going to be examined whether there is a positive correlation between this indicator and the share prices of the chosen listed joint stock companies. In table 1, there are share prices and earnings per share for each of the ten companies from the index Crobex 10. Analysis is carried out for the five year period (from the year 2010 to the year 2014).

Share prices are available on the web page of Zagreb Stock Exchange [6], while EPS is calculated using the publicly available financial statements. Correlation between share prices and EPS is calculated using the statistical program Wessa [7].

Table 1.  
Share prices and EPS

| Issuers          | 2010.    |        | 2011.    |        | 2012.    |        | 2013.    |         | 2014.    |         |
|------------------|----------|--------|----------|--------|----------|--------|----------|---------|----------|---------|
|                  | Price    | EPS    | Price    | EPS    | Price    | EPS    | Price    | EPS     | Price    | EPS     |
| AD Plastik       | 117,00   | 13,30  | 101,49   | 15,41  | 106,70   | 13,47  | 126,00   | 6,64    | 92,00    | 1,18    |
| Adris Grupa      | 315,00   | 29,24  | 240,00   | 30,85  | 285,00   | 30,63  | 310,00   | 23,29   | 370,00   | 23,77   |
| Atlantic Grupa   | 805,00   | 33,84  | 500,00   | 13,98  | 536,00   | 16,57  | 718,00   | 58,46   | 940,00   | 59,99   |
| Ericsson NT      | 1.361,00 | 18,07  | 1.080,00 | 21,02  | 1.385,00 | 95,63  | 1.470,00 | 108,67  | 1.299,00 | 65,78   |
| Hrvatski Telekom | 288,71   | 22,36  | 242,00   | 22,18  | 197,20   | 20,71  | 169,89   | 17,60   | 150,50   | 13,95   |
| INA              | 3.188,99 | 96,10  | 3.800,00 | 181,50 | 3.921,00 | 68,10  | 3.550,00 | -150,80 | 3.650,00 | -189,70 |
| Končar           | 530,00   | 60,25  | 514,00   | 63,15  | 650,00   | 58,53  | 665,00   | 52,52   | 689,00   | 34,86   |
| Ledo             | 5.830,00 | 324,03 | 5.050,00 | 403,95 | 7.600,00 | 696,92 | 8.230,00 | 594,25  | 8.170,00 | 429,71  |
| Podravka         | 302,68   | 16,07  | 231,00   | 13,22  | 240,02   | -2,69  | 254,55   | 12,70   | 293,47   | 18,11   |
| Valamar Riviera  | 169,98   | -1,02  | 9,40     | -0,34  | 12,68    | 0,42   | 13,00    | 1,03    | 19,87    | 0,47    |

Source: authors' work according to [6], accessed 4.8.2015.

Research results

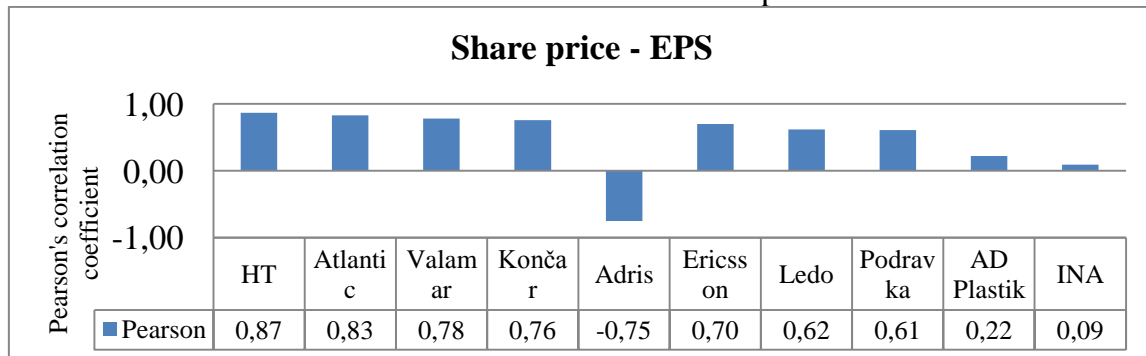
Table 2.  
Interdependence between share price and EPS

| Issuers    | Share price – Earnings per share (EPS) |         |         |
|------------|--|---------|---------|
|            | $R^2$                                  | Pearson | p-value |
| HT         | 0,76                                   | 0,87    | 0,05    |
| Atlantic   | 0,69                                   | 0,83    | 0,08    |
| Valamar    | 0,60                                   | 0,78    | 0,12    |
| Končar     | 0,57                                   | 0,76    | 0,14    |
| Adris      | 0,55                                   | -0,75   | 0,15    |
| Ericsson   | 0,49                                   | 0,70    | 0,18    |
| Ledo       | 0,38                                   | 0,62    | 0,27    |
| Podravka   | 0,37                                   | 0,61    | 0,27    |
| AD Plastik | 0,05                                   | 0,22    | 0,71    |
| INA        | 0,01                                   | 0,09    | 0,88    |

Source: calculation of the authors using statistical program [7]

Table 2 represents the results of the statistical analysis of variables share prices and earnings per share, whereas issuers are sorted from the highest to the lowest value of the coefficient of determination. Considering the presented companies, it is noticeable that HT has the highest values of the coefficient of determination and correlation coefficient. Values of the mentioned coefficient in the HT's case are close to number one, which indicates a strong relation between the movement of HT's share prices and earnings per share. Moreover, the p-value or the level of significance is 5% at HT, while in the examples of the other companies it is much higher and reaches 88% at INA, which means the hypothesis might have to be rejected. INA is also specific because of extremely low values of the coefficient of determination (0,01) and the correlation coefficient (0,09). Adris Grupa also stands out in table 2, which is the only presented company which has a negative correlation coefficient (0,75). In the graphical view in the figure 1 it is better spotted that the negative correlation between share prices and the EPS is only for the Adris Grupa.

Figure 1.  
Correlation coefficient between share price and EPS



Source: the work of author

According to the results presented in table 2, the proposed hypothesis is generally confirmed for all of the companies tested. It is not confirmed only for the Adris Group's share, where there is a negative correlation between share prices and earnings per share. However, all the other positive relations are of different strength, ranging from strong to weak positive correlation. Only HT's share has the level of significance of 5% ( $p\text{-value} \leq 0,05$ ) where the coefficient of determination is 0,76 and the correlation coefficient is 0,87, which shows a strong relation between the movement of earnings per share and the share's prices.

In the cases of other presented companies the coefficients of determination and correlation are considerably lower and p-values are higher. It can also be concluded that in the examples of AD Plastik and INA the relation between share prices and earnings per share actually does not exist due to exceptionally low values of the coefficient of determination.

Finally, this means that for most of the observed shares, the share price on the market is formed on the basis of the higher expected yield which notably differs from historically achieved earnings per share. Despite the fact that all the presented and researched companies equally apply the standards of financial reporting and use the same methodology of calculating earnings per share (EPS), some of the shares are more trusted, regardless of the mentioned facts and the values of indicators.

## CONCLUSION

As it has been stated at the beginning of this paper, the assumption that investors' decisions about the shares to invest their money in are determined by the financial result of a company is confirmed in this research. For almost all of the companies tested, it is proved that the EPS based on the financial result is positively correlated with the share price. This means that investors tend to buy shares of companies which have better financial results. In that case, the benefit of the share bought is higher when the company is performing better, and the more investors are buying shares of a specified company, the higher the share price is. It is hard to tell if investors themselves will benefit from the higher financial result. It is because the financial result of a company is a measure which can be manipulated. Therefore, it means that managers may overblow the financial result of a company for their own interests, not for the interests of the investors. In future research, this investigation should be expanded by including dividends per share because if the EPS and price per share are positively correlated, so are probably the dividends per share.

## LIST OF REFERENCES

- [1] GULIN, D., PERČEVIĆ, H.: **Financijsko računovodstvo: izabrane teme**, Zagreb, Hrvatska zajednica računovođa i financijskih djelatnika, 2013.
- [2] EDMONDS, T. P., et al.: **Fundamental Financial Accounting Concept**. New York, McGraw-Hill/Irwin, 2008.

- [3] **International Accounting Standard 33 – Earnings per share**, [http://ec.europa.eu/internal\\_market/accounting/docs/consolidated/ias33\\_en.pdf](http://ec.europa.eu/internal_market/accounting/docs/consolidated/ias33_en.pdf)
- [4] MEIGS, R.F., MEIGS, W.B.: **Računovodstvo: Temelj poslovnog odlučivanja**, Zagreb, MATE, 1999
- [5] GULIN, D.: **Izračun zarada po dionici za 2007. godinu prema MRS-u 33**, Računovodstvo i financije, br. 4, 2008.
- [6] Zagrebačka burza, <http://zse.hr/> **Godišnji financijski izvještaji**, 2010. – 2014.
- [7] WESSA, P.: **Free Statistics Software**, Office for Research Development and Education, version 1.1.23-r7, URL <http://www.wessa.net/>, 2015.