***Athens University of Business and Economics***
***MSc in Banking and Finance***

# *The Relevance of Earnings and Book Values in Equity Valuation*



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ΓΙΑ ΣΤΕΛΕΧΗ

# The Relevance of Earnings and Book Values in Equity Valuation

**Σιουγλέ Γεωργία**



Διατριβή υποβληθείσα
προς μερική εκπλήρωση των απαραίτητων προϋποθέσεων
για την απόκτηση του Μεταπτυχιακού Διπλώματος

Αθήνα, Φεβρουάριος 2000

Εγκρίνουμε την διατριβή της Σιουγλέ Γεωργίας

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Αθήνα, Φεβρουάριος 2000

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**Abstract**

This study is dealing with the problem of the anomalous negative price-earnings relation using the simple earnings capitalization model for firms that report losses. This study verifies a negative price-earnings relation for those firms that report losses (loss firms) and a positive price-earnings relation for those firms that report profits (profit firms). These findings are consistent with the results of recent studies which claim that investors consider losses temporary thus they are not affected in their investments by the appearance of reported losses. They consider losses as temporary due to the fact that they have the option to liquidate the firm when current losses are projected to perpetuate. This can be observed by the low explanatory power in the coefficient of loss firms in comparison with the coefficient of profit firms. Furthermore, this study seeks to examine whether the inclusion of book value of equity in the simple earnings capitalization model eliminates the negative price-earnings relation for loss firms. In the last stage pooling estimations are performed based on the error component model in an effort to take into consideration the different attributes of specific firms of the sample.

## *I. Introduction*

Equity valuation models have been used extensively in accounting research to examine the value relevance of accounting data. In these models returns or stock prices are regressed on a scaled earnings variable or on an earnings per share variable. Both price and return models rely on the hypothesis that current earnings contain information about expected future net cash flows. Since the market's expectation of future cash flows are unobservable, empirical specifications of the price earnings relation often use current earnings as a proxy for the market's expectations. One equity valuation model is the simple earnings capitalization model. In this model stock price is expressed as a function of earnings under the assumption that earnings reflects information about expected future cash flows[1].

In earlier studies it has been suggested by Beaver, Lambert and Morse (1980), that earnings do not reflect the underlying economic events in a timely manner and, therefore, are not synchronized with stock price movements.

Carla Hayns (1995) suggests that there is a different return-earnings relation when firms report losses from that when firms report profits. This is due to the fact that because shareholders have a liquidation option, losses are not expected to perpetuate and thus are less informative than profits about the firm's future prospects.

Daniel Collins, Morton Pincus and Xong Xie in a very recent paper (January 1999) are also trying to provide an explanation for the negative price to earning relation in the simple capitalization model for loss firms. Daniel W. Collins in a previous paper of his (1997) is also trying to investigate the changes in the value – relevance of earnings and book value over the past forty years.

Furthermore, Kothari and Zimmerman (1995) evaluate return-earnings and price-earnings models, trying to show whether the coefficient on earnings is biased or not.

Using both the simple earnings capitalization model and its modifications this study will try to answer the question that raises in most of the recent studies about the assumption of a positive relation between price and earnings across profit and loss firms. Also, the intercept and the slope, commonly referred as the earnings response coefficient, will be estimated. Furthermore, there will be investigated the hypothesis whether book value of equity is a correlated omitted variable in the simple earnings capitalization model thus the simple earnings capitalization model is misspecified due to this problem. Finally, pooling estimations will be performed, using the error component model, which allows flexibility and variation on different sets of parameters.

There is a great interest in the scientific world about the price to earnings relation and the uses of the simple earnings capitalization model.

[1] Studies using this type of model includes Bowen (1981), Daley (1984), Olsen (1985), Tse (1989), kothari (1992) and Kothari and Zimmerman (1995).

## *II. Sample Selection and Data*

Part of the necessary data of this study are obtained from the annual report published by the Athens Stock Exchange, which includes the Economic Statements of all the listed companies in the ASE. These data sets span the 12-year period from 1985 to 1996. Data are, also, collected from the daily press and especially the "Ναυτεμπορική» newspaper. These data regard stock prices and stock dividends. All data[2] are measured in real terms, are uniform and are not adjusted.

All data are collected in hard copies and then entered in the SPSS and EVIEWS program for further investigation.

This paper identifies a total of 40 * 12 (480) firm-year observations for both profit and loss[3] firms for 12 years. There has been an exclusion of extreme observations, which is consistent with a similar practice in previous research. The resulting sample size is 36 * 12 (432) firm-year observations for the cross-sectional analysis. All variables are measured on a per-share basis and adjusted for stock splits and stock dividends.

The structure of the simple earnings capitalization model that is used for the purposes of this study has the following form:

$$P_t = \alpha + \beta X_t + e_t$$

where :

- $P_t$ is the firm's stock price 6 months after the end of fiscal year t (approximately 28$^{th}$ of June) in order to reflect more precision and reality

- $X_t$ is the earnings per share of its company. For the computation of earnings per share the following formula is used:

$$\textbf{Earnings per Share} = \frac{\text{Net income} - \text{preferred dividends}}{\text{Weighted average of common shares outstanding}}$$

The numerator is the net income available to common stockholders minus dividends for preferred stocks and in the denominator is the weighted average of common shares outstanding.

[2] All data are available at any request.

The structure of the simple earnings capitalization model including book value appears to be:

$$P_t = \alpha + \beta X_t + \gamma BV_t + e_t$$

where :

- **$BV_t$** is the book value of equity per share for its firm at period t. For the computation of book value of equity we use the following formula:

$$\textbf{Book Value of Equity} = \frac{\text{Total common Shareholders' equity}}{\text{Number of shares outstanding}}$$

The numerator is the total number of Shareholders' equity and the denominator is the number of shares outstanding as published in the annual balance sheet of its company.

Figures 1 and 2 show the percentages of firms reporting negative earnings (loss firms) and firms reporting positive earnings (profit firms) in the total of this sample.

Figure 1 reveals a general increase in the proportion of firms reporting positive earnings. In particular, the percentage of profit firms in the population increases from a range of 20 percent in the 1985 – 86 period to a range of 30 to 35 percent from 1987 to 1993. The magnitude falls sharply in year 1994 and 1996 but remains at the same levels in year 1995.

Figure 2 reveals an almost steady proportion of firms reporting negative earnings in the 1986 – 1996 period to a 75 – 80 percent. These percentages highlight the growing significance of negative earnings.

[3] **Calra Hayns separates** firms to those reporting losses and those reporting profits for cross sectional analysis

**Figure 1**

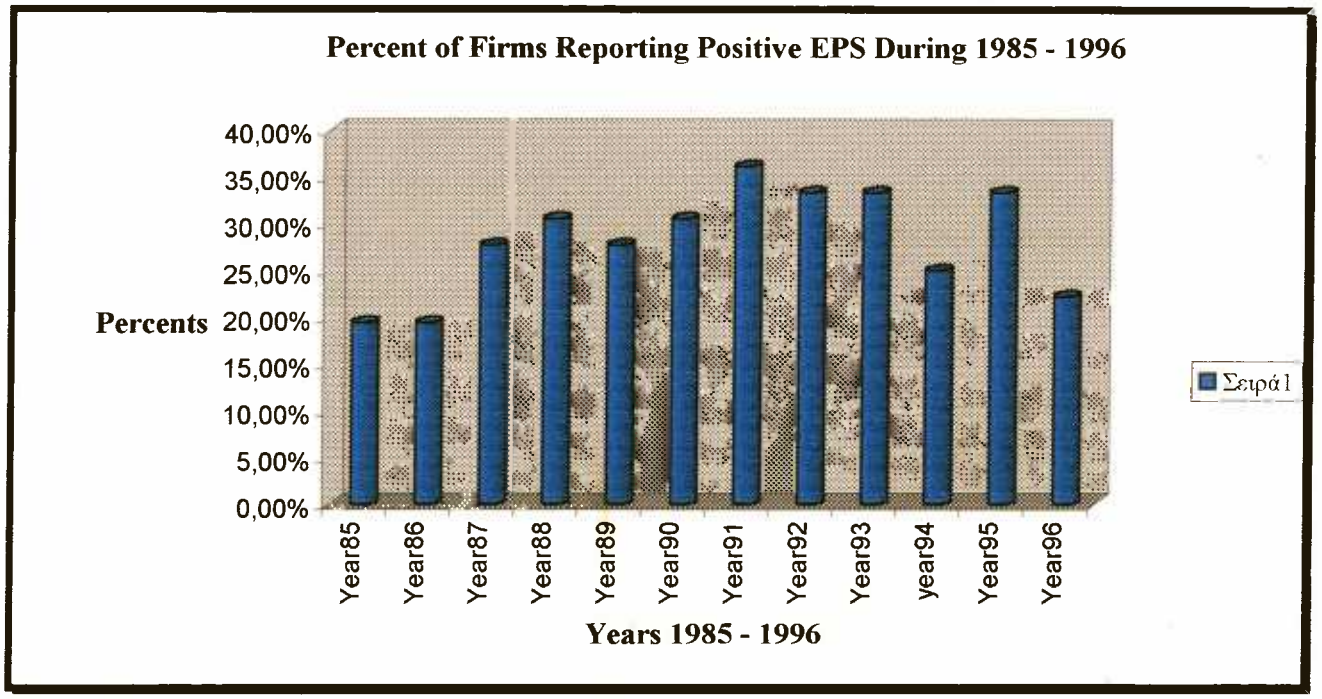
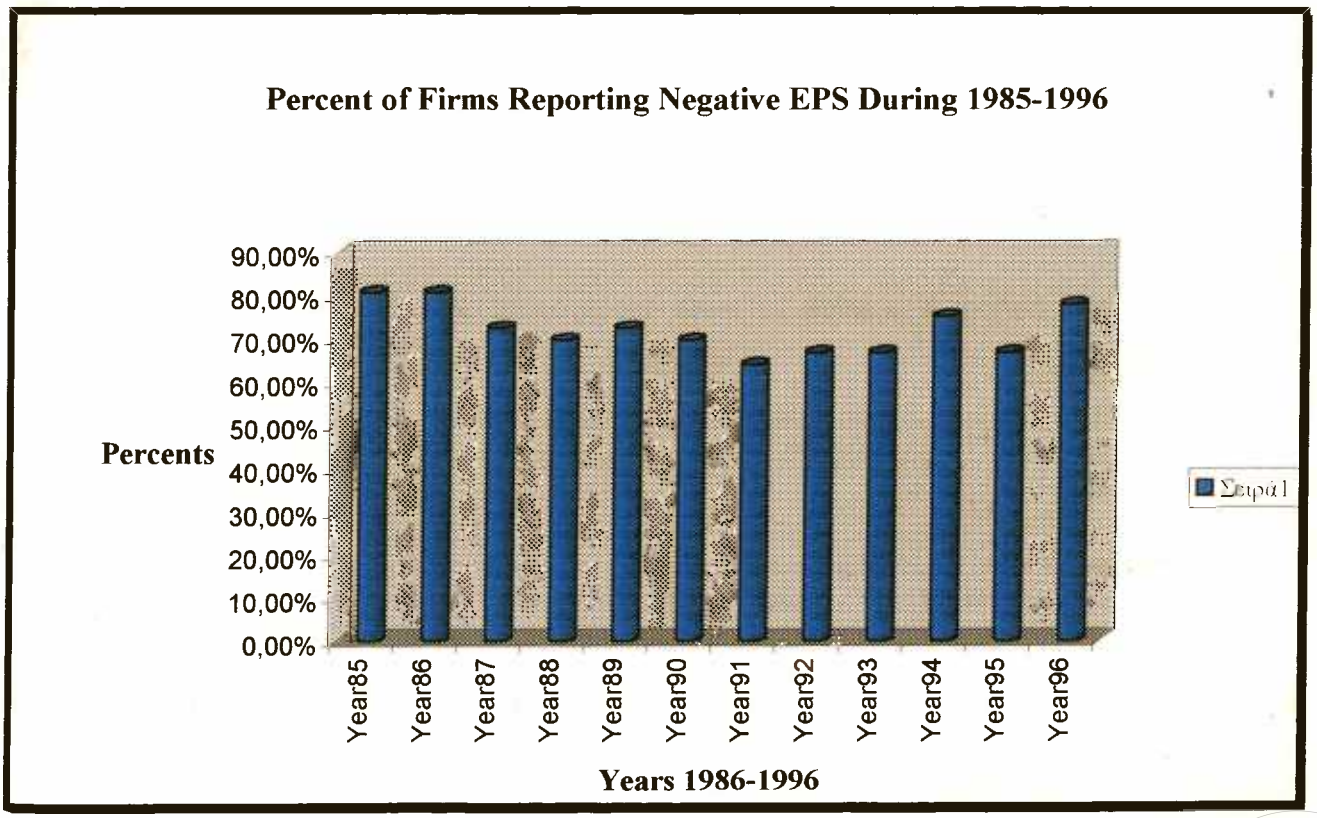



**Figure 2**



### *III. Methodology and Models Proposed*

The simple earnings capitalization model that is used for the purposes of this study has the following structure:

$$P_{it} = \alpha + \beta X_{it} + e_{it} \qquad (1)$$

where :

- **i** = 1,2,…,n (number of firms),
- **t** = 1985 – 1996 (years),
- $P_{it}$ = is the stock price of the firm i at time $t_1$ and the dependent variable,
- $\alpha$ = is the constant,
- $\beta$ = is the slope, referred as earnings response coefficient,
- $X_{it}$ = is the earnings per share of firm i in period t and the independent variable.
- $e_{it}$ = is assumed to be white noise (w.n.)

Initially, cross-sectional regression is run for the total of 36 firms in this sample (loss and profit firms together – *all firms*) using the model referred in equation (1). Periodical (right hand column of table 1) and annual (right hand column of table 2) estimates are taken for the coefficients α and β and t-statistic and $R^2$ values for those estimates.

In a following step the sample is separated to those firms reporting losses (loss firms) and those firms reporting profits (profit firms) and the above simple earnings capitalization model (equation 1) is run for profit and loss firms separately.

Therefore, cross sectional regression is run only for those firms of the sample that report positive earnings (*profit firms*) using model 1:

$$P_{it} = \alpha + \beta X_{it} + e_{it}$$

where :

$X_{it}$ = is the *positive* earnings per share of firms i in period t and the independent variable

Periodical (middle column of table 1) and annual (middle column of table 2) estimates are taken for the coefficients α and β and t-statistic and $R^2$ values for those estimates.

The experiment is replicated by running cross sectionals for only those firms that report negative earnings (*loss firms*) of the sample. The model mentioned in equation (1) is used for the regressions:

$$P_{it} = \alpha + \beta X_{it} + e_{it}$$

Where this time:

$X_{it}$ = is the *negative* earnings per share of firm i in period t and the independent variable

Periodical (left hand column of table 1) and annual (left-hand column of table 2) estimates are taken for the coefficients α and β and t-statistic and $R^2$ values for those estimates.

In a following step the simple earnings capitalization model is modified with the use of dummy variables for the constant and the earnings per share variable for two purposes:

1. In order to verify the results taken when separating the sample to those firms reporting positive earnings and those reporting negative earnings

2. Because the use of dummy variables allows to have more information about the difference in the slope between the two cases (loss and profit firms).

The structure of the simple earnings capitalization model using dummy variables is the following:

$$\mathbf{P_{it} = \alpha + \alpha' DC_{it} + \beta X_{it} + \beta' DX_{it}}$$

where :

- $\alpha'$ = the difference of the constant between the two cases
- $\beta'$ = is the difference in the slope of EPS between the two cases
- $\mathbf{DC_{it}}$ = 1 if $X_{it}$<=0, 0 otherwise
- $\mathbf{DX_{it}}$ = $X_t$ if $X_{it}$<=0, 0 otherwise

The interpretation of the relative coefficients is straightforward if we consider the expected value of price on each of the two cases. So, α′ accounts for the incremental or the difference in constant as we move from a profit case (with constant α) to the loss case (the constant being α + α′). The meaning of β′ which accounts for the difference in the slope is analogous.

If the case where earnings per share are positive (profit firms) is considered then equation (2) (If $X_{it}$ >0) reduces to the following:

$$\mathbf{P_{it} = \alpha + \beta X_{it}}$$

Similarly, if the case where earnings per share are negative (loss firms) is considered then equation (1) (If $X_{it}$<0) reduces to the following:

$$\mathbf{P_{it} = ( \alpha + \alpha' ) + ( \beta + \beta' ) X_{it}}$$

Results (table 3) are taken for the slope and the constant for profit and loss firms separately for the 12-year period of this sample.

The simple earnings capitalization model is a restricted model in the sense that it implicitly accounts for a common constant and a common slope over all firms and throughout the time range. Moreover, it imposes the implicit restriction that the marginal effect of book value to price is zero. To the extent that this is not true, the omission of the book value of equity leads to inefficient estimates of the earnings per share effect or even to bias. More precisely the bias depends on the correlation between earnings per share and book value and on the true effect of the relative contribution of book value in explaining the variations of price.

So, in a second stage we consider the simple earnings capitalization model including book value of equity by removing the restriction $\gamma = 0$ so as to test its significance. Therefore, there will be investigated the hypothesis whether the simple earnings capitalization model is misspecified due to the correlated omitted variable problem.

The structure of the simple earnings capitalization model including book value of equity is the following:

$$P_{it} = \alpha + \beta X_{it} + \gamma BV_{it} + e_{it} \qquad (2)$$

where $P_{it}$ is the stock price of firm i at time t and $X_{it}$ is the earnings per share of firm i in period t, $BV_{it}$ is the book value of equity per share of firm i at period t and $e_{it}$ is white noise.

This paper will test whether the negative coefficient on earnings for loss firms results from omitting book value of equity in the simple earnings capitalization model. If this hypothesis is true then incorporating book value of equity in equation (2) should eliminate the negative coefficient on earnings per share. (January 1999 Collins είναι στη σελίδα 19)

We run periodical and annual cross sectional regressions based on equation (2) for the total (profit and loss firms together – all firms), profit and loss firms (separately) of the sample and estimate coefficients α, β, γ and, also, t-statistic values and $R^2$ values for those estimates.

Since there is an argument in recent studies that loss firms exhibit a different behavior we augment the above (2) model by inserting appropriate dummies to capture this attribute.

The structure of the simple earnings capitalization model including book value of equity and the dummy variables has the following form:

$$P_{it} = \alpha + \alpha' DC_{it} + \beta X_{it} + \beta' DX_{it} + \gamma BV_{it} + \gamma' DBV_{it} + e_{it} \qquad (3)$$

where :

- $\alpha'$ = the difference of the constant between the two cases (profit and loss firms)
- $\beta'$ = is the difference in the slope of earnings per share between the two cases

- $\gamma'$ = is the difference in the slope of book value between the two cases
- $\mathbf{DC_{it}}$ = 1 if $X_{it}$ <=0, 0 otherwise
- $\mathbf{DX_{it}}$ = $X_{it}$ if $X_{it}$ <=0, 0 otherwise
- $\mathbf{DBV_{it}}$ = $BV_t$ if $X_{it}$ <=0, 0 otherwise

Therefore, $\alpha'$ accounts for the incremental or the difference in constant as we move from a profit case to the loss case. The meaning of $\beta'$ and $\gamma'$, which account for the corresponding slopes, is analogous. The advantage of this approach is that the significance of the different effects can be tested easily by examining the t-values of the coefficients.

If the case where earnings per share are positive (profit firms) is considered (If $X_{it}>0$) then equation (3) reduces to the following:

$$\mathbf{P_{it} = \alpha + \beta X_{it} + \gamma BV_{it} + e_{it}}$$

Similarly if the case where earnings per share are negative (loss firms) is considered (If $X_{it}<0$) then equation (3) reduces to the following:

$$\mathbf{P_{it} = ( \alpha + \alpha' ) + ( \beta + \beta' ) X_{it} + ( \gamma + \gamma' ) BV_{it} + e_{it}}$$

Results are taken (table 6) for the slope and the constant for profit and loss firms separately for the 12 year period of our sample.

However, even the last model is very restrictive in the sense that it doesn't allow to take into consideration the different effects over firms and time effects, if there are any. Based on this observation we use the error component model trying to incorporate in the estimations the above effects. The analysis of this approach is presented in the appendix.

## *IV. Estimations and Results*

### *1. The Simple Earnings Capitalization Model*

Price – Earnings Relations for All Firms

After running the simple earnings capitalization model for the total of the firms of the sample (profit and loss firms together) for a 12-year period the estimations of the coefficients are:

$$\alpha = 1928{,}69$$

and

$$\beta = 1{,}393$$

$$P_{it} = 1928{,}69 + 1{,}393\ X_{it}$$

These results reveal a positive price – earnings relation between stock prices and earnings for 36 firms listed on the ASE for a 12-year period (right hand column of table 1).

The same positive relation is observed when running 12 annual cross sectional regressions for the total (loss and profit) firms of this sample as β (coefficient on earnings per share) is reliably positive (right hand column of table 2).

Price – Earnings Relations for Profit Firms

In a following step we run the simple earnings capitalization model for the same 12-year period only for profit firms (earnings per share - $X_{it} > 0$).

The results

$$\alpha = 1501,\ 326$$

and

$$\beta = 2{,}38$$

$$P_{it} = 1501{,}326 + 2{,}38\ X_{it}$$

Confirm that there is a positive price – earnings relation when we regress stock prices to earnings for profit firms (middle column of table 1).

The same conclusion is reached when running 12 annual cross sectional regressions (one for each year 1985 to 1996) for only profit firms (middle column of table 2).

The coefficient on earnings is reliably positive in all the 12-years in our study (table 2).

Price – Earnings Relations for Loss Firms

The coefficient estimations for only the firms that report losses (loss firms), after running the following simple earnings capitalization model

$$P_{it} = \alpha + \beta X_{it} + e_{it}$$

for a 12-year period (earnings per share - $X_{it} < 0$) are:

$$\alpha = 1080{,}162$$

and

$$\beta = -5{,}704$$

$$P_{it} = 1080{,}162 - 5{,}794\ X_{it}$$

These results confirm a negative coefficient on earnings for loss firms. This means that there is a negative price earnings relation for the whole 12-year period for loss firms (left hand column of table 1).

Furthermore the experiment is replicated by running 12 annual cross – sectional regressions (one for each year 1985 to 1996) for loss firms (left hand column of table 2).

We find that when stock price is regressed on earnings for loss firms the coefficient on earnings is reliably negative in 11 for the 12 years in this study (table 2). In all tables of this paper the number in parenthesis is the t-statistic value for the corresponding estimation.

**TABLE 1**

**Coefficient estimates on earnings for the 12-year period**

$$P_{it} = \alpha + \beta X_{it} + e_{it}$$

| *Loss Firms* | | | *Profit firms* | | | *All Firms* | | |
|---|---|---|---|---|---|---|---|---|
| $\alpha$ | $\beta$ | $R^2$ | $\alpha$ | $\beta$ | $R^2$ | $\alpha$ | $\beta$ | $R^2$ |
| 080,162 | -5,04 | 0.1534 | 1501,326 | 2,38 | 0.1902 | 1928,691 | 1,393 | 0.0465 |
| (2,454) | (-4,664) | | (8,383) | (8,507) | | (11,027) | (4,578) | |

**TABLE 2**

**Annual coefficient estimates from regressing price on earnings**

$$P_{it} = \alpha + \beta X_{it} + e_{it}$$

| *Loss Firms* | | | *Profit Firms* | | | *All Firms* | | |
|---|---|---|---|---|---|---|---|---|
| $\alpha$ | $\beta$ | $R^2$ | $\alpha$ | $\beta$ | $R^2$ | $\alpha$ | $\beta$ | $R^2$ |
| 662,81 | -0,083 | 0.0005 | 276,99 | 1,326 | 0.2417 | 461,89 | 0,186 | 0.0051 |
| (1.18) | (-0.053) | | (3.33) | (2.933) | | (4.506) | (0.417) | |
| 407,49 | -0,162 | 0.0055 | 297,36 | 0,925 | 0.1510 | 399,89 | 0,534 | 0.0742 |
| (1.48) | (-0.166) | | (2.47) | (2.192) | | (4.350) | (1.651) | |
| 845,42 | -0,40 | 0.0002 | 365,37 | 2,966 | 0.7903 | 863,41 | 1,040 | 0.1657 |
| (1.51) | (-0.045) | | (3.199) | (9.512) | | (4.779) | (2.598) | |
| 1149,48 | -12,435 | 0.1377 | 72,05 | 6,287 | 0.7501 | 1377,83 | 3,299 | 0.1365 |
| (0.76) | (-1.199) | | (0.245) | (8.308) | | (2.911) | (2.318) | |
| -371,28 | -14,691 | 0.9129 | 190,32 | 5,022 | 0.877 | 2250,05 | 0,066 | 0.00007 |
| (-0.495) | (-9.158) | | (0.844) | (13.132) | | (3.128) | (0.051) | |
| -1088,02 | -27,592 | 0.7534 | 1334,62 | 13,804 | 0.5914 | 4456,61 | 2,969 | 0.0261 |
| (-0.582) | (-5.243) | | (1.319) | (5.770) | | (3.558) | (0.956) | |
| 359,08 | -17,698 | 0.6781 | 250,64 | 9,434 | 0.8415 | 2517,99 | 3,659 | 0.1141 |
| (0.3622) | (-4.814) | | (0.570) | (10.560) | | (3.385) | (2.093) | |
| 1709,38 | -0,447 | 0.0016 | 244,69 | 11,135 | 0.8775 | 1655,02 | 7,489 | 0.5248 |
| (1.789) | (-0.128) | | (0.674) | (12.556) | | (3.665) | (6.128) | |
| 1498,95 | 0,50 | 0.0087 | 2081,87 | 0,753 | 0.1858 | 1897,31 | 0,787 | 0.1744 |
| (1.99) | (0.297) | | (3.391) | (2.241) | | (4.26) | (2.680) | |
| 2945,66 | -0,064 | 0.000009 | 730,04 | 9,151 | 0.5796 | 2081,31 | 5,162 | 0.1646 |
| (1.207) | (-0.007) | | (1.375) | (5.871) | | (3.157) | (2.588) | |
| 969,06 | -2,744 | 0.1017 | 1660,20 | 3,818 | 0.1968 | 1975,85 | 1,634 | 0.0509 |
| (1.117) | (-1.064) | | (3.235) | (2.322) | | (5.098) | (1.350) | |
| -879,00 | -19,119 | 0.8494 | 2161,56 | 0,894 | 0.4114 | 2174,95 | 0,480 | 0.0084 |
| (-1.309) | (-5.818) | | (4.857) | (1.056) | | (5.145) | (0.537) | |

*Variable definition*: $P_t$ = the firm's stock price 6 months after the end of fiscal year t (approximately 28th of June) measured on a per-share basis and adjusted for stock splits and stock dividends; $X_t$ = the earnings per share in period t (net income minus preferred dividends divided by weighted average of common shares outstanding adjusted for stock splits and stock dividends). The value in parenthesis is the t-statistic of the corresponding estimation.

Price – Earnings Relations with Dummy Variables

Initially, a cross-sectional regression for the total of 36 firms (loss and profit firms together) of the sample is run for the 12-year period. In a following step, in order to verify the previous results, with the help of dummy variables for the earnings per share variable, the observations for loss and profit firms are separated and the experiment is replicated for the same 12-year period.

The results, after running the modified model, are the following:

$$\alpha = 1501{,}326$$

$$\beta = 2{,}38$$

and

$$\alpha' = 1501{,}326$$

$$\beta' = 2{,}38$$

These results are consistent with the results that were taken when running loss firms and profit firms separately as equation (1) for profit firms is

$$P_{it} = \alpha + \beta X_{it} + e_{it}$$

thus

$$P_{it} = 1051{,}326 + 2{,}38 X_{it}$$

and for loss firms equation (1) becomes

$$P_{it} = ( \alpha + \alpha' ) + ( \beta + \beta' ) X_{it}$$

thus

$$P_{it} = ( 1501{,}326 - 421{,}1638 ) + ( 2{,}48 - 8{,}085 ) X_{it}$$

$$P_{it} = 1080{,}102 - 5{,}70 X_{it}$$

**TABLE 3**

**Slope and constant estimations using dummy variables in the simple earnings capitalization model**

$$P_{it} = \alpha + \alpha' DC_{it} + \beta X_{it} + \beta' DX_{it}$$

| $\alpha'$ | $\beta'$ |
|---|---|
| -421,1638 | -8,085 |

## *2. The Simple **Earnings Capitalization Model Including** Book Value*

Empirical Model

The simple earnings capitalization model modified by the inclusion of book value[5] of equity as a correlated omitted variable is the following:

$$P_{it} = \alpha + \beta X_{it} + \gamma BV_{it} + e_{it} \qquad (2)$$

where $P_{it}$ is the stock price of firm i at time $t_1$ and $X_{it}$ is the earnings per share of firm i in period t and $BV_{it}$ is the book value of equity per share of firm i at period t. Equation (2) is estimated using the same data set we use to estimate the simple capitalization model without book value (equation 1).

This study seeks to examine whether the negative coefficient on earnings for loss firms results from omitting book value of equity in the simple earnings capitalization model. If this correlated omitted variable hypothesis is true, then incorporating book value of equity should eliminate the negative coefficient on earnings. In addition the coefficient on book value should be reliably positive (Daniel W. Collins, Morton Pincus, Xong Xie - January 1999). So, in order to explain the anomalous negative – price earnings relation for loss firms, we modify the simple earnings capitalization model including book value of equity.

Replicating the experiment for profit firms as well, this study will try to reveal whether the coefficient of earnings is biased or not due to the omission of book value for profit firms too.

All Firms (Empirical Results)

After running the model for the total of firms in the sample (profit and loss firms together) for a 12 year period we take the following results:

$$\alpha = 1544{,}87$$

$$\beta = 1{,}1948$$

$$\gamma = 0{,}3505$$

$$P_t = 1544{,}87 + 1{,}1948X_t + 0{,}3505BV_t$$

These results reveal a positive price – earnings relation between stock price and earnings and a positive price – book value relation between prices and book value of equity for all firms of our sample (right hand column of table 4).

The same conclusion is reached when running 12 annual cross sectional regressions (one for each year 1985 to 1996) for all the firms of our sample (right hand column of table 5).

[5] We have excluded negative book value obsetvations for our analysis purposes

Loss Firms (Empirical Results)

Equation (2), the earnings capitalization model augmented by book value of equity, using loss firms is estimated. The earnings coefficient (left hand column of table 4) remains reliably negative for all the 12-year of the study. Furthermore, the coefficient on book value is also reliably negative. Book value of equity is a statistical significant variable. These results are inconsistent with the hypothesis.

There is no apparent bias in the coefficient on earrings in the simple capitalization model for loss firms. The direction of the expected sigh in the coefficient of earnings remains the same, thus, is not revealing a bias. The same results are taken whether we run 12 annual cross sectional regressions (left hand column of table 5) or one cross sectional regression for the total of the years. Furthermore, the inclusion of book value of equity in the simple earnings capitalization model increases the explanatory power of the model as, for example, $R^2$ for loss firms in (left hand column) of table 11 is a little less than $R^2$ for loss firms in (left hand column) of table 12 (in the appendix). Thus the model provides more efficient estimations in the presence of book value dispite the fact that it doesn't introduce a bias. The fact remains that the negative coefficient on earnings per share for loss firms was not eliminated, so the omission of book value of equity is not the only reason for this anomalous relation.

$$\mathbf{P_{it} = \alpha + \beta\, X_{it} + \gamma\, BV_{it} + e_{it}}$$

Earnings per share - $X_{it} < 0$

$$\mathbf{P_{it}} = 1419{,}299 - 6{,}963\ X_t - 0{,}649\ BV_{it}$$

Profit Firms (Empirical Results)

The experiment is replicated for profit firms as well. However, for profit firms the earnings coefficients are slightly smaller (middle column of table 5) in each year compared to the earnings coefficients when book value is omitted in the simple earnings capitalization model (middle column of table 2). This does not suggest a bias in the coefficient of earnings because the difference is insignificant.

The results after running one cross sectional regression for the total of our firms for the 12 year in this study are the following:

$$\mathbf{P_{it} = \alpha + \beta\, X_{it} + \gamma\, BV_{it} + e_{it}}$$

Earnings per share - $X_{it} > 0$

$$\mathbf{P_{it}} = 943{,}29 + 1{,}979\ X_{it} + 0{,}514\ BV_{it}$$

The results after running 12 annual cross-sectional regressions (one for each year 1985 to 1996) for the profit firms are presented in table 5 (middle column of table 5).

**TABLE 4**

**Coefficient estimates on earnings and book value of equity for the 12-year period**

$$P_{it} = \alpha + \beta X_{it} + \gamma BV_{it} + e_{it}$$

| *Loss Firms* | | | | *Profit Firms* | | | | *All Firms* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\beta$ | $\gamma$ | $R^2$ | $\alpha$ | $\beta$ | $\gamma$ | $R^2$ | $\alpha$ | $\beta$ | $\gamma$ | $R^2$ |
| 99 | -6,963 | -0,649 | 0.207 | 943,29 | 1,979 | 0,514 | 0.251 | 1544,87 | 1,194840 | 0,3505 | 0.0712 |
| ) | (-5.493) | (-2.852) | | (4.601) | (7.042) | (5.030) | | (7.4735) | (3.9010) | (3.3836) | |

**TABLE 5**

**Annual coefficient estimates on earnings and book value of equity for profit firms versus loss firms**

$$P_{it} = \alpha + \beta X_{it} + \gamma BV_{it} + e_{it}$$

| *Loss Firms* | | | | *Profit Firms* | | | | *All Firms* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $\alpha$ | $\beta$ | $\gamma$ | $R^2$ | $\alpha$ | $\beta$ | $\gamma$ | $R^2$ | $\alpha$ | $\beta$ | $\gamma$ | $R^2$ |
| 831,58 | -0,488 | -0,454 | 0.0374 | 77,82 | 0,502 | 0,383 | 0.5435 | 241,31 | -0,024 | 0,322 | 0.1212 |
| (1.108) | (-0.24) | (-0.39) | | (0,95) | (1,22) | (4,14) | | (1,676) | (-0,05) | (2,08) | |
| 396,42 | -0,139 | 0,024 | 0.0060 | 185,93 | 0,322 | 0,270 | 0.2193 | 244,74 | 0,167 | 0,277 | 0.1718 |
| (1.029) | (-0.11) | (0.04) | | (1,34) | (0,56) | (1,50) | | (1,79) | (0,46) | (1,97) | |
| 707,45 | -7,39 | -1,259 | 0.4060 | 377,44 | 2,987 | -0,011 | 0.7909 | 708,45 | 1,228 | 0,097 | 0.2086 |
| (1.52) | (-2.14) | (-2.18) | | (2,99) | (9,08) | (-0,25) | | (3,32) | (2,92) | (1,33) | |
| 1373,05 | -12,56 | -0,147 | 0.1444 | 157,94 | 6,571 | -0,074 | 0.7594 | 1379,74 | 3,302 | -0,001 | 0.1365 |
| (0.75) | (-1.14) | (-0.25) | | (0,51) | (8,02) | (-0,92) | | (2,54) | (2,16) | (-0,007) | |
| 122,01 | -14,84 | -0,285 | 0.9435 | 191,51 | 5,023 | -0,0009 | 0.8778 | 2303,37 | 0,065 | -0,034 | 0.0007 |
| (0.17) | (-10.7) | (-1.94) | | (0,77) | (12,8) | (-0,01) | | (2,82) | (0,05) | (-0,14) | |
| 2933,20 | -26,35 | -6,784 | 0.8427 | 493,29 | 8,569 | 1,982 | 0.6336 | 948,35 | -5,699 | 4,828 | 0.2425 |
| (1.19) | (-5.86) | (-2.13) | | (0,44) | (2,13) | (1,59) | | (0,59) | (-1,43) | (3,070) | |
| 2271,15 | -17,01 | -4,073 | 0.7403 | -101,39 | 7,455 | 0,720 | 0.8561 | 528,55 | -2,728 | 2,880 | 0.3018 |
| (1.46) | (-4.87) | (-1.54) | | (-0,20) | (4,55) | (1,42) | | (0,55) | (-1,02) | (2,97) | |
| 1742,70 | -0,43 | -0,040 | 0.0018 | 108,75 | 10,736 | 0,177 | 0.8781 | 946,25 | 6,136 | 0,766 | 0.5491 |
| (1.40) | (-0.11) | (-0.45) | | (0,118) | (6,83) | (0,31) | | (1,36) | (3,88) | (1,33) | |
| 1519,35 | 0,50 | -0,034 | 0.0089 | -446,15 | 0,165 | 2,084 | 0.5671 | 283,64 | 0,292 | 1,572 | 0.4135 |
| (1.52) | (0.28) | (-0.03) | | (-0,59) | (0,57) | (4,30) | | (0,48) | (1,02) | (3,66) | |
| 5627,48 | -13,86 | -5,971 | 0.2380 | 974,41 | 10,289 | -0,396 | 0.5871 | 1792,49 | 4,660 | 0,314 | 0.1696 |
| (1.86) | (-1.08) | (-1.36) | | (1,493) | (4,408) | (-0,661) | | (1,92) | (2,014) | (0,414) | |
| 2073,81 | -6,78 | -3,222 | 0.0374 | 386,64 | 1,649 | 1,220 | 0.5435 | 799,98 | 0,403 | 1,128 | 0.1212 |
| (2.14) | (-2.16) | (-1.89) | | (0,830) | (1,284) | (1,284) | | (1,70) | (0,36) | (0,36) | |
| -236,12 | -20,35 | -1,342 | 0.0060 | 1299,20 | 0,036 | 0,736 | 0.2193 | 1414,17 | -0,404 | 0,710 | 0.1718 |
| (-0.46) | (-9.03) | (-2.86) | | (2,495) | (0,043) | (0,043) | | (2,69) | (-0,43) | (-0,43) | |

*Variable definition:* $P_t$ = the firm's stock price 6 months after the end of fiscal year t (approximately 28th of June) measured on a per-share basis and adjusted for stock splits and stock dividends; $X_t$ = the earnings per share in period t (net income minus preferred dividends divided by weighted average of common shares outstanding adjusted for stock splits and stock dividends); $BV_t$ = book value of equity at the end of year t divided by total number of shares outstanding adjusted for stock splits and dividends; D=1 if (EPS>=0); D=0 otherwise. The value in parenthesis is the t-statistic of the corresponding estimation.

Dummy Variables (Empirical Results)

With the use of the model which includes dummy variables we verify that the results (table 6) are consistent with our previous conclusions.

$$P_{it} = \alpha + \alpha' DC_{it} + \beta X_{it} + \beta' DX_{it} + \gamma BV_{it} + \gamma' DBV_{it} + e_{it} \quad (3)$$

where :

- $\alpha'$ = the difference of the constant between the two cases (profit and loss firms)
- $\beta'$ = is the difference in the slope of earnings per share between the two cases
- $\gamma'$ = is the difference in the slope of book value between the two cases
- $DC_{it} = 1$ if $X_{it} <= 0$, 0 otherwise
- $DX_{it} = X_{it}$ if $X_{it} <= 0$, 0 otherwise
- $DBV_{it} = BV_t$ if $X_{it} <= 0$, 0 otherwise

For profit firms (If $X_{it}>0$) the modified model reduces to the following:

$$P_{it} = \alpha + \beta X_{it} + \gamma BV_{it} + e_{it}$$

$$P_t = 943,29 + 1,979 + 0,514$$

For loss firms (If $X_{it}<0$) the modified model reduces to the following:

$$P_{it} = (\alpha + \alpha') + (\beta + \beta') X_{it} + (\gamma + \gamma') BV_{it} + e_{it}$$

$$P_t = (943,29 + 476) + (1,979 - 8,942) X_t + (0,514 - 1,164) BV_t$$

$$P_t = 1419,299 - 6,963 X_t - 0,649 BV_t$$

**TABLE 6**

**Slope and constant estimations using dummy variables in the simple earnings capitalization model with book value**

$$P_{it} = \alpha + \alpha' DC_{it} + \beta X_{it} + \beta' DX_{it} + \gamma BV_{it} + \gamma' DBV_{it} + e_{it}$$

| $\alpha'$ | $\beta'$ | $\gamma'$ |
|---|---|---|
| 476,00 | -8,942 | -1,164 |

In a final step, the median coefficients of earnings per share ($\bar{\beta}$) and book value of equity ($\bar{\gamma}$) are computed for the 12 year period for loss, profit and all firms (table 7). Using the new t-statistic $\frac{\bar{\beta} - \beta_o}{\sigma^* / \sqrt{n}}$ and $\frac{\bar{\gamma} - \gamma_o}{\sigma / \sqrt{n}}$ from the valuation of the hypothesis

that $\beta \neq \beta_o$ and $\beta_o = 0$ and $\gamma \neq \gamma_o$ and $\gamma_o = 0$ it is found that the medians for earnings per share and the median for book value are statistically significant for profit, loss and all firms. (The value in parenthesis in table 7 is the t-statistic of the corresponding estimation).

**TABLE 7**

**Median of 12 annual coefficient estimations on earnings and book value of equity for profit firms versus loss firms**

$$P_{it} = \alpha + \beta X_{it} + \gamma BV_{it} + e_{it}$$

| *Loss Firms* | | *Profit Firms* | | *All Firms* | |
|---|---|---|---|---|---|
| *Median of* $\beta$ | *Median of* $\gamma$ | *Median of* $\beta$ | *Median of* $\gamma$ | *Median of* $\beta$ | *Median of* $\gamma$ |
| $\bar{\beta} = -9{,}97475$ (-8,195) | $\bar{\gamma} = -1{,}96558$ (-4,987) | $\bar{\beta} = 4{,}52533$ (13,00) | $\bar{\gamma} = 0{,}59700$ (5,652) | $\bar{\beta} = 0{,}6165$ (1,518) | $\bar{\gamma} = 1{,}07158$ (7,049) |

* $\sigma$ = the median standard error for the 12 year period

## *V. Conclusions*

In this study, there is verified a negative relation between price and earnings for loss firms and a positive relation between price and earnings for profit firms. These findings are consistent with the results of recent studies which claim that investors consider losses temporary thus they are not affected in their investments by the appearance of reported losses. They consider losses as temporary due to the fact that they have the option to liquidate the firm when current losses are projected to perpetuate. This can be observed by the low explanatory power in the coefficient of loss firms ($R^2$ in table 2) in comparison with the coefficient of profit firms. For the total of firms in the sample the price – earnings relation is reliably positive as is and the price – book value relation.

Furthermore, it is found that when stock price is regressed on earnings for loss firms the coefficient on earnings is reliably negative in 11 of the 12 years. Also, the coefficient on earnings remains negative for each year in our 12-year sample period even when the simple earnings capitalization model is augmented with book value of equity. This provides evidence that the simple earnings capitalization model is not misspecified due to the omission of book value of equity, therefore the omission of book value of equity doesn't induce a negative bias in the coefficient on earnings for loss firms. These results are consistent with the conclusion reached by Kothari and Zimmerman (1995) that the coefficient on earnings in the simple earnings capitalization model is unbiased.

Additionally, it is found that book value of equity is a statistically significant variable and that the inclusion of book value in the simple earnings capitalization model increases the explanatory power of the model and leads to more efficient estimations for the coefficients, dispite the fact that it doesn't introduce a bias. However, the anomalous negative coefficient on earnings for loss firms cannot be attributed to the omission of book value of equity from the simple earnings capitalization model. The estimated coefficient from using such a model keeps the same direction whether we use book value of equity as an omitted variable or not both for profit and loss firms.

For future research we propose to further investigate the factors which have to do with specific attributes of companies. This may be referred to the size of the firm the future perspectives it may have, good will and clientele, the feature of the company and others.

## *VI. Appendix*

### *1. The Error Component Model*

In this final step we consider, even, the simple earnings capitalization model including book value of equity as a quite restrictive model in the sense that it doesn't allow to take into consideration the different effects over firms and time effects, if there are any.

Therefore, the less restrictive approach would be to consider one model estimation for each firm of the sample. This implies that the estimation of the model:

$$\mathbf{P_{it} = \alpha_i + \beta_i X_{it} + \gamma_i BV_{it} + e_{it}} \qquad \mathbf{(4)}$$

for a given i becomes the following :

$$\mathbf{P_t = \alpha + \beta X_t + BV_t + e_t} \qquad \mathbf{(5)}$$

Since we have to estimate n, where n is the number of firms, (time series models) the appropriate method for efficient estimations in this case is the SUR (Seemingly Unrelated Equations). However, this approach is the final stage of an intermediate procedure the so-called error component model, rather than the start of our estimation.

The error component model is a generalization of model (3) (or model 2). This model assumes common constant and common slopes over all firms. So, the corresponding estimates have an "average" meaning. Deviations from this "average" are implicitly considered as random effects and are included to the stochastic term e, which is assumed to be white noise. However, to the extent that these deviations are associated with specific firms and with more or less systematical time cycle effects, e will no longer be white noise but a variable, in which except from the random errors there have been embodied systematic factors as well.

The error component model can be viewed as the model (5) described above. The difference with that model lies in the kind of the restrictions that are removed from the estimation procedure (which is a single estimation) each time. The restrictions that can be removed during the estimation are the following:

- Fixed (constant) effects over firms versus a common constant
- Slope effects over firms versus a set of common slopes
- Encountering time effects

We are not going to present in detail all the implications of this model and especially its estimation procedures which are rather complicated. It is not our purpose here.

For reasons, which pertain to the precision of our statistical computation, there is proposed a slightly different approach based on the dummy – variable use to capture such effects. For example:

$$P_{it} = \alpha + \Sigma\alpha_i' \, DC_{it} + \beta \, X_{it} + \Sigma\beta_i' \, DX_{it} + \gamma \, BV_{it} + \Sigma\gamma_i' \, DBV_{it} + \quad (6)$$
$$+ \alpha'' \, \Sigma\alpha_i'' \, DCNE_{it}$$
$$+ \beta'' \, \Sigma\beta_i'' \, DXNE_{it}$$
$$+ \gamma'' \, \Sigma\gamma_i'' \, DBVNE_{it}$$

where :

- $\Sigma$ = the summation is over the total firms except the one considered as reference basis
- $DX_{it} = X_{it}$ for a given i (=firm), 0 otherwise
- $DBV_{it} = BV_{it}$ for a given i (=firm), 0 otherwise
- $DCNE_{it} = 1$ if $X_{it} <= 0$, 0 otherwise
- $DXNE_{it} = X_{it}$ if $X_{it} <= 0$, 0 otherwise
- $DBVNE_{it} = BV_t$ if $X_{it} <= 0$, 0 otherwise

However, this model includes a large set of variables and can lead to imprecise estimations of the parameters. Before the practical approach to the estimation of this model is described we find it appropriate to clarify the following:

- A model is a representation of the real world in a formal way with a prospect to be quantified
- The explanation of the variation of the dependent variable is attempted in terms of two sets of factors-variables : systematic (explanatory) and random
- To the extend that what is assumed as random (e) term is purely random (white noise) no more reduction of the uncertainty or increment of the efficiency of the estimation can be attained within the framework of the model
- The systematic factors must be either quantitative variables or dummy variables and in any case expressed in terms of the observed variables
- The whole (and the maximum) information is spread over all the raw data
- Large sets of explanatory variables can have large $R^2$ but usually lead into imprecise estimations of the specific contributions (parameters) due to multicollinearity problems. The degrees of freedom are another task under care. These are necessary but not sufficient to ensure preciseness. The last depends on the condition index, which gives a norm measurement of the quality of the sample data regarding a specific estimation procedure.

A model estimation is used in order to get a piece of information as much as compact and elegant. This, however, contradicts with precision. The choice of the model is a compromise of the two trends.

Having all these in mind we propose the estimation of a truncated model of equation (6) where only the significant variables have been retained. The stepwise procedure is described as follows:

1. Perform a pooling estimation of equation (4) trying different sets of restrictions and have an indication of the difference being made by individual firms
2. After that we use model (5) we activate only these dummies for which there was an indication that they make a difference
3. Perform the estimation disregarding those variables which are either (tested) non-significant or have at least t-value less that unit (t-value < 1 which means that they do not increase the adjusted $R^2$)

Therefore, we run the truncated model of equation (6). This model is based on equation (6) but there have been activated (used) only those dummy variables that correspond to the significant variables of specific firms of our sample. We have concluded to these variables of these firms after performing pooling estimations with different sets of restrictions and observed the difference made (contributed) by each firm.

$$P_{it} = \alpha + \Sigma\alpha_i' DC_{it} + \beta X_{it} + \Sigma\beta_i' DX_{it} + \gamma BV_{it} + \Sigma\gamma_i' DBV_{it} + \quad (6)$$
$$+ \alpha'' \Sigma\alpha_i'' DCNE_{it}$$
$$+ \beta'' \Sigma\beta_i'' DXNE_{it}$$
$$+ \gamma'' \Sigma\gamma_i'' DBVNE_{it}$$

The significant variables are related with 18 of the 36 (total number of firms) firms of our sample. In table 8 are presented the significant variables (for which dummy variables have been used) and the corresponding firms.

**TABLE 8**

**The significant variables for which dummy variables have been activated in the error component model**

| *Significant Variables* | *Corresponding Firms* |
|---|---|
| LAMPSA | Constant |
| TITAN | Constant, Earnings per share |
| KARELIA | Constant, Earnings per share, Book value |
| HRAKLHS | Constant |
| TRIA ALFA | Constant, Earnings per share |
| ERMHS | Constant |
| NHNATEMPORIKH | Constant |
| KEKROPS | Constant, Earnings per share |
| KILINDROMILOI | Constant |
| ALLATINI | Constant |
| KERAMIA-ALLATINI | Constant, Earnings per share |
| DHMHTRIADHS | Earnings per share |
| LEBENTERIS | Constant |
| GENIKWN APOTHIKWN | Constant |
| XYLEMPORIA | Constant |

| | |
|---|---|
| ESKIMO | Constant |
| PAYLIDIS | Constant |
| ELAIS | Constant |
| ATHINAIA | Constant |

Therefore, we run the time-series cross sectional regression model for the total of the firms of our sample including dummy variables only for the significant variables of 18 of the firms. Estimations are taken for the coefficients of the constant (α), earnings per share (β) and book value of equity (γ) (table 9).

**TABLE 9**

**Coefficient, $R^2$ and T-statistics estimates from time series cross sectional regressions using the error correction model**

$$P_{it} = \alpha + \Sigma\alpha_i' DC_{it} + \beta X_{it} + \Sigma\beta_i' DX_{it} + \gamma BV_{it} + \Sigma\gamma_i' DBV_{it} + \\ + \alpha'' \Sigma\alpha_i'' DCNE_{it} \\ + \beta'' \Sigma\beta_i'' DXNE_{it} \\ + \gamma'' \Sigma\gamma_i'' DBVNE_{it}$$

*All Firms*

| *α* | *β* | *γ* |
|---|---|---|
| 656.1465 | **0.336535** | **0,073455** |

*Profit Firms*

| | *t-statistics* | | |
|---|---|---|---|
| $R^2$ | *α* | *β* | *γ* |
| 0,761810 | **4.830269** | 1,755181 | 1,236986 |

These results (table 9) reveal a positive price – earnings relation between stock price and earnings and a positive price – book value relation between prices and book value of equity for all firms of our sample. Furthermore, this final model appears to have incremental explanatory power as $R^2$ (0,76) has the highest value of all estimations. Thus the model provides more efficient estimations.

From the estimation results there is reached the conclusion that the estimations are determined by the special characteristics of specific firms.

The final conclusion is that earnings per share and book value of equity play an important role in the variations of the stock's price. However, there are observed significant deviations for specific companies, especially those concerning the constant (fixed effects) and less the earnings per share. This means that in a unified estimation, where common parameters have been used, estimations are shaped by the prevailing trends of specific firms. The fact that a firm reports losses or profits plays a statistically important role in the formation of the stock's price. However, when we take into consideration the different attributes (characteristics) of specific firms (as we

did while using the error correction model) then the estimation (the result) appears to be attributed to those effects and is no longer statistically significant as a separate explanatory variable.

## *2. Supplementary Tables*

**TABLE 10**

**Sample firms**

| Firms |
|---|
| BIOSWL |
| BIS |
| LAMPSA |
| TITAN |
| FINTEXPORT |
| XALYBDOFYLLA |
| PAPOYTSANHS |
| KLAOUDATOS |
| LAMPROPOULH |
| ALOYMINIO |
| KARELIA |
| HRAKLHS |
| ELAIS |
| TRIA ALFA |
| XALYPS |
| METKA |
| PARNASSOS |
| ERMHS |
| NHNATEMPORIKH |
| KEKROPS |
| KILINDROMILOI |
| MILOI AGIOU GEORGIOU |
| ALLATINI |
| ZAMPA |
| KERAMIA-ALLATINI |
| KILINDROMILOI LOULI |
| DHMHTRIADHS |
| IPPOTOUR |
| PETZETAKIS |
| LEBENTERIS |
| GENIKWN APOTHIKWN |
| XYLEMPORIA |
| ESKIMO |
| RADIO-ATHINAI |
| PAYLIDIS |
| ATHINAIA |

**TABLE 11**

**$R^2$ and T-statistics estimates on the coefficients of earnings for the 12-year period**

$$P_{it} = \alpha + \beta X_{it} + e_{it}$$

| | *Loss Firms* | | | *Profit Firms* | | | *All Firms* | | |
|---|---|---|---|---|---|---|---|---|---|
| | | *t-statistics* | | | *t-statistics* | | | *t-statistics* | |
| *Years* | $R^2$ | $\alpha$ | $\beta$ | $R^2$ | $\alpha$ | $\beta$ | $R^2$ | $\alpha$ | $\beta$ |
| 1985 | 0.0005 | 1.18 | -0.053 | 0.2417 | 3.33 | 2.933 | 0.0051 | 4.506 | 0.417 |
| 1986 | 0.0055 | 1.48 | -0.166 | 0.1510 | 2.47 | 2.192 | 0.0742 | 4.350 | 1.651 |
| 1987 | 0.0002 | 1.51 | -0.045 | 0.7903 | 3.199 | 9.512 | 0.1657 | 4.779 | 2.598 |
| 1988 | 0.1377 | 0.76 | -1.199 | 0.7501 | 0.245 | 8.308 | 0.1365 | 2.911 | 2.318 |
| 1989 | 0.9129 | -0.495 | -9.158 | 0.877 | 0.844 | 13.132 | 0.00007 | 3.128 | 0.051 |
| 1990 | 0.7534 | -0.582 | -5.243 | 0.5914 | 1.319 | 5.770 | 0.0261 | 3.558 | 0.956 |
| 1991 | 0.6781 | 0.3622 | -4.814 | 0.8415 | 0.570 | 10.560 | 0.1141 | 3.385 | 2.093 |
| 1992 | 0.0016 | 1.789 | -0.128 | 0.8775 | 0.674 | 12.556 | 0.5248 | 3.665 | 6.128 |
| 1993 | 0.0087 | 1.99 | 0.297 | 0.1858 | 3.391 | 2.241 | 0.1744 | 4.26 | 2.680 |
| 1994 | 0.000009 | 1.207 | -0.007 | 0.5796 | 1.375 | 5.871 | 0.1646 | 3.157 | 2.588 |
| 1995 | 0.1017 | 1.117 | -1.064 | 0.1968 | 3.235 | 2.322 | 0.0509 | 5.098 | 1.350 |
| 1996 | 0.8494 | -1.309 | -5.818 | 0.4114 | 4.857 | 1.056 | 0.0084 | 5.145 | 0.537 |

*Variable definition*: $P_t$ = the firm's stock price 6 months after the end of fiscal year t (approximately 28th of June) measured on a per-share basis and adjusted for stock splits and stock dividends; $X_t$ = the earnings per share in period t (net income minus preferred dividends divided by weighted average of common shares outstanding adjusted for stock splits and stock dividends). The value in parenthesis is the t-statistic of the corresponding estimation.

## TABLE 12

**$R^2$ and T-statistics estimates on the coefficients of earnings and book value of equity for the 12-year period**

$$P_{it} = \alpha + \beta X_{it} + \gamma BV_{it} + e_{it}$$

| | *Loss Firms* | | | | *Profit Firms* | | | | *All Firms* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *t-statistics* | | | | *t-statistics* | | | | *t-statistics* | | |
| *Year* | $R^2$ | $\alpha$ | $\beta$ | $\gamma$ | $R^2$ | $a$ | $\beta$ | $\gamma$ | $R^2$ | $\alpha$ | $\beta$ | $\gamma$ |
| 1985 | 0.0374 | 1.108 | -0.24 | -0.39 | **0.5435** | **0,95** | **1,22** | **4,14** | **0.1212** | 1,676 | -0,05 | **2,08** |
| 1986 | 0.0060 | 1.029 | -0.11 | 0.04 | **0.2193** | **1,34** | **0,56** | **1,50** | 0.1718 | 1,79 | 0,46 | 1,97 |
| 1987 | 0.4060 | 1.52 | -2.14 | -2.18 | **0.7909** | **2,99** | **9,08** | **-0,25** | **0.2086** | 3,32 | **2,92** | 1,33 |
| 1988 | 0.1444 | 0.75 | -1.14 | -0.25 | **0.7594** | **0,51** | **8,02** | **-0,92** | **0.1365** | **2,54** | **2,16** | -0,007 |
| 1989 | 0.9435 | 0.17 | -10.7 | -1.94 | **0.8778** | **0,77** | **12,8** | -0,01 | **0.0007** | **2,82** | **0,05** | -0,14 |
| 1990 | 0.8427 | 1.19 | -5.86 | -2.13 | **0.6336** | **0,44** | **2,13** | 1,59 | **0.2425** | **0,59** | **-1,43** | 3,070 |
| 1991 | 0.7403 | 1.46 | -4.87 | -1.54 | **0.8561** | **-0,20** | **4,55** | 1,42 | **0.3018** | 0,55 | **-1,02** | 2,97 |
| 1992 | 0.0018 | 1.40 | -0.11 | -0.45 | **0.8781** | **0,118** | **6,83** | 0,31 | 0.5491 | 1,36 | **3,88** | 1,33 |
| 1993 | 0.0089 | 1.52 | 0.28 | -0.03 | **0.5671** | **-0,59** | **0,57** | 4,30 | 0.4135 | 0,48 | 1,02 | 3,66 |
| 1994 | 0.2380 | 1.86 | -1.08 | -1.36 | 0.5871 | **1,493** | **4,408** | -0,661 | 0.1696 | 1,92 | 2,014 | 0,414 |
| 1995 | 0.3588 | 2.14 | -2.16 | -1.89 | 0.5965 | **0,830** | **1,284** | 4,561 | 0.3138 | 1,70 | 0,36 | 3,55 |
| 1996 | 0.9431 | -0.46 | -9.03 | -2.86 | 0.2464 | **2,495** | **0,043** | 2,609 | 0.1386 | 2,69 | -0,43 | 2,23 |

*Variable definition:* $P_t$ = the firm's stock price 6 months after the end of fiscal year t (approximately 28th of June) measured on a per-share basis and adjusted for stock splits and stock dividends; $X_t$ = the earnings per share in period t (net income minus preferred dividends divided by weighted average of common shares outstanding adjusted for stock splits and stock dividends); $BV_t$ = book value of equity at the end of year t divided by total number of shares outstanding adjusted for stock splits and dividends; D=1 if (EPS>=0); D=0 otherwise. The value in parenthesis is the t-statistic of the corresponding estimation.

### *3. Data*

| Year | Stock Price | Earnings per Share | Book Value | Firm Name |
|---|---|---|---|---|
| 1985 | 100 | 15,29 | 1131,72 | **BIOSWL** |
| 1986 | 125 | 32,36 | 1131,72 | |
| 1987 | 220 | 30,83 | 11404,51 | |
| 1988 | 360 | 32,88 | 11805,26 | |
| 1989 | 530 | 48,85 | 13061,89 | |
| 1990 | 1350 | 43,58 | 672,35 | |
| 1991 | 650 | -0,96 | 663,85 | |
| 1992 | 350 | 1,38 | 685,32 | |
| 1993 | 432 | -5,27 | 853,44 | |
| 1994 | 424 | -38 | 847,93 | |
| 1995 | 132 | -0,12 | 672,42 | |
| 1996 | 128 | 0,11 | 695,27 | |
| 1985 | 300 | 201,1 | 911,05 | **BIS** |
| 1986 | 385 | 386,13 | 1088,15 | |
| 1987 | 1350 | 218,78 | 1230,07 | |
| 1988 | 1670 | -39,08 | 2128,63 | |
| 1989 | 1350 | 118,4 | 820,44 | |
| 1990 | 1900 | -33,34 | 818,92 | |
| 1991 | 850 | 34,73 | 820,13 | |
| 1992 | 750 | -4,07 | 1223,25 | |
| 1993 | 760 | 0,83 | 1219,02 | |
| 1994 | 903 | 115,21 | 1232,6 | |
| 1995 | 1130 | 338,17 | 2142,03 | |
| 1996 | 1200 | 1,25 | 2990,75 | |
| 1985 | 1175 | 4,83 | 162,8 | **LAMPSA** |
| 1986 | 1400 | -51,01 | 162,8 | |
| 1987 | 1750 | 17,66 | 123,96 | |
| 1988 | 1875 | -5,46 | 419,93 | |
| 1989 | 1500 | 21,48 | 155,51 | |
| 1990 | 3100 | -15,05 | 145,7 | |
| 1991 | 1220 | -56,95 | 91,59 | |
| 1992 | 870 | -0,01 | 276,78 | |
| 1993 | 610 | 0,13 | 153,01 | |
| 1994 | 380 | 0,12 | 157,6 | |
| 1995 | 355 | -4,09 | 153,98 | |
| 1996 | 465 | -0,28 | 297,79 | |
| 1985 | 485 | 89,14 | 1104,82 | **TITAN** |
| 1986 | 450 | 73,18 | 1134 | |
| 1987 | 840 | 151,25 | 2070,98 | |
| 1988 | 2340 | 428,25 | 2953,96 | |
| 1989 | 5000 | 1162,29 | 3156,1 | |
| 1990 | 28200 | 1292,76 | 4920,21 | |
| 1991 | 16600 | 1432,84 | 5775,19 | |
| 1992 | 14700 | 1122,68 | 3818,69 | |
| 1993 | 8200 | 518,73 | 4131,31 | |
| 1994 | 7780 | 662,77 | 4554,95 | |

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|---|---|---|---|---|
| 1995 | 8510 | 730,93 | 4969,51 | |
| 1996 | 6040 | 1067,74 | 6276,97 | |
| 1985 | 100 | 24,46 | 224,38 | **FINTEXPORT** |
| 1986 | 170 | 74,56 | 228,94 | |
| 1987 | 500 | 167,44 | 376,95 | |
| 1988 | 1000 | 49,77 | 516,38 | |
| 1989 | 850 | 28,33 | 533,86 | |
| 1990 | 1050 | 3,4 | 362,91 | |
| 1991 | 800 | 18,6 | 367,17 | |
| 1992 | 590 | 7,47 | 363,04 | |
| 1993 | 460 | 5,11 | 366,65 | |
| 1994 | 720 | 2,68 | 357,62 | |
| 1995 | 602 | 6,26 | 390,45 | |
| 1996 | 1160 | 61,44 | 502,8 | |
| 1985 | 42 | 10,92 | 158,01 | **XALBDOFYLLWN** |
| 1986 | 30 | -20,84 | 158,01 | |
| 1987 | 50 | -3,16 | 107,41 | |
| 1988 | 290 | 33,42 | 221,47 | |
| 1989 | 415 | -0,94 | 200,22 | |
| 1990 | 500 | 27,04 | 211,26 | |
| 1991 | 1850 | 28,22 | 751,55 | |
| 1992 | 900 | 24,65 | 61,86 | |
| 1993 | 577 | 5,98 | 588,86 | |
| 1994 | 125 | 210,42 | 367,18 | |
| 1995 | 421 | 13,97 | 367,64 | |
| 1996 | 320 | 7,53 | 354,85 | |
| 1985 | 110 | -25,26 | 319,48 | **PAPOYTSANHS** |
| 1986 | 90 | 48,8 | 333,54 | |
| 1987 | 305 | 23,15 | 345,85 | |
| 1988 | 900 | -1,65 | 871,7 | |
| 1989 | 500 | -39,36 | 301,36 | |
| 1990 | 2300 | -146,09 | 385,92 | |
| 1991 | 1100 | -14,53 | 377,75 | |
| 1992 | 720 | -14,88 | 511,94 | |
| 1993 | 600 | -13,13 | 50,68 | |
| 1994 | 1190 | 39,02 | 535,65 | |
| 1995 | 866 | -355,69 | 247,01 | |
| 1996 | 472 | 7,14 | 445,42 | |
| 1985 | 150 | 49,66 | 302,33 | **KLAOYDATOS** |
| 1986 | 165 | 72,22 | 306,55 | |
| 1987 | 410 | 2,1 | 308,29 | |
| 1988 | 480 | 108,37 | 549,79 | |
| 1989 | 850 | 608,38 | 328,44 | |
| 1990 | 900 | 0,08 | 317,85 | |
| 1991 | 410 | -11,06 | 307,27 | |
| 1992 | 290 | -91,36 | 280,65 | |
| 1993 | 395 | -10 | 237,86 | |
| 1994 | 420 | 1,46 | 216,19 | |
| 1995 | 273 | 11,05 | 226,78 | |
| 1996 | 220 | -95,5 | 180,77 | |

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|---|---|---|---|---|
| 1985 | 270 | 74,75 | 1227,65 | **LAMPROPOYLH** |
| 1986 | 380 | 215 | 1323,07 | |
| 1987 | 780 | 161,09 | 1376,9 | |
| 1988 | 1140 | 33,84 | 1403,13 | |
| 1989 | 900 | 0,35 | 1179,74 | |
| 1990 | 1500 | -50,59 | 1130,24 | |
| 1991 | 1300 | -300,73 | 863,54 | |
| 1992 | 790 | -299,96 | 626,37 | |
| 1993 | 600 | -9,99 | 616,96 | |
| 1994 | 780 | 14,45 | 631,71 | |
| 1995 | 1040 | 84,09 | 716,12 | |
| 1996 | 1500 | 164,03 | 992,65 | |
| 1985 | 3100 | -182,12 | 83,7 | **ALOYMINIO** |
| 1986 | 2400 | 1,32 | 81,39 | |
| 1987 | 5000 | -285,06 | 85,52 | |
| 1988 | 13000 | -247,76 | 103,94 | |
| 1989 | 21500 | -1372,8 | 84,77 | |
| 1990 | 33000 | -993,36 | 87,25 | |
| 1991 | 19500 | -798,98 | 90,4 | |
| 1992 | 9900 | -188,49 | 99,29 | |
| 1993 | 7900 | -6,02 | 94,62 | |
| 1994 | 18200 | -143,51 | 93,46 | |
| 1995 | 9290 | -382,37 | 89,23 | |
| 1996 | 9850 | -479,17 | 86,75 | |
| 1985 | 440 | 261,83 | 1203,32 | **KARELIA** |
| 1986 | 460 | 458,13 | 1481,45 | |
| 1987 | 1880 | 913,46 | 2064,99 | |
| 1988 | 6320 | 1068,54 | 3005,08 | |
| 1989 | 7200 | 1549,18 | 1691,24 | |
| 1990 | 2600 | 974,1 | 1813,84 | |
| 1991 | 7600 | 851,28 | 2030,65 | |
| 1992 | 7150 | 757,3 | 2743,24 | |
| 1993 | 7330 | 8857,01 | 3386,41 | |
| 1994 | 7000 | 1080,43 | 4158,44 | |
| 1995 | 6410 | 62,64 | 4485,11 | |
| 1996 | 5200 | 906,78 | 5367,36 | |
| 1985 | 310 | -913,46 | 1102,15 | **HRAKLHS** |
| 1986 | 270 | -422,01 | 651,34 | |
| 1987 | 400 | 3,88 | 487,02 | |
| 1988 | 595 | 28,19 | 665,8 | |
| 1989 | 835 | 68,62 | 748,25 | |
| 1990 | 3850 | 91,31 | 814,43 | |
| 1991 | 3150 | 112,44 | 892,03 | |
| 1992 | 2520 | 101,89 | 1189,34 | |
| 1993 | 1965 | 108,91 | 1276,2 | |
| 1994 | 2020 | 110,29 | 1225,72 | |
| 1995 | 2385 | 127,7 | 1255,69 | |
| 1996 | 2815 | 150,58 | 1455,67 | |
| 1985 | 850 | 259,82 | 2040,86 | **ELAIS** |
| 1986 | 1000 | 814,18 | 2523,08 | |

| | | | | |
|---|---|---|---|---|
| 1987 | 4500 | 1287,98 | 3607,9 | |
| 1988 | 10500 | 1042,52 | 5340,55 | |
| 1989 | 11500 | 1761,65 | 2074,34 | |
| 1990 | 15400 | 1033,29 | 2505,11 | |
| 1991 | 13150 | 1265,44 | 3032,66 | |
| 1992 | 16300 | 1222,28 | 2829,59 | |
| 1993 | 13800 | 887,98 | 3026,32 | |
| 1994 | 16850 | 910,54 | 1660,8 | |
| 1995 | 7300 | 637,58 | 1826,72 | |
| 1996 | 7780 | 494,41 | 2078,13 | |
| 1985 | 410 | 89,03 | 810,94 | **TRIA ALFA** |
| 1986 | 360 | 160,12 | 765,81 | |
| 1987 | 450 | 68,34 | 910 | |
| 1988 | 400 | 23,48 | 959,04 | |
| 1989 | 450 | 124,58 | 1007,57 | |
| 1990 | 740 | 202,48 | 108,49 | |
| 1991 | 750 | 318 | 1228,73 | |
| 1992 | 850 | 58,62 | 1367,42 | |
| 1993 | 2250 | 31,34 | 1376,44 | |
| 1994 | 2250 | 17,44 | 1386,1 | |
| 1995 | 1461 | -197,92 | 1212,28 | |
| 1996 | 1900 | 81,11 | 1500,98 | |
| 1985 | 120 | -72,62 | 48,33 | **XALYPS** |
| 1986 | 120 | -59,68 | 483,37 | |
| 1987 | 175 | -37,8 | 219,98 | |
| 1988 | 400 | -35,95 | 1062,69 | |
| 1989 | 550 | -18,53 | 493,65 | |
| 1990 | 3000 | -27,56 | 607,02 | |
| 1991 | 1500 | -443,69 | 522,38 | |
| 1992 | 1100 | -854,27 | 698,02 | |
| 1993 | 635 | -1164,77 | 532,04 | |
| 1994 | 835 | -80,26 | 611,16 | |
| 1995 | 770 | -58,65 | 567,64 | |
| 1996 | 500 | 0,56 | 659,85 | |
| 1985 | 95 | 205,41 | 495,03 | **METKA** |
| 1986 | 95 | 169,46 | 523,39 | |
| 1987 | 230 | 115,35 | 766,97 | |
| 1988 | 650 | 184,22 | 865,65 | |
| 1989 | 550 | 93,92 | 548,67 | |
| 1990 | 1850 | 79,66 | 591,82 | |
| 1991 | 2000 | 71,14 | 977,22 | |
| 1992 | 1600 | 39,05 | 1236,66 | |
| 1993 | 1480 | 144,8 | 1396,6 | |
| 1994 | 1750 | 273,74 | 1901,34 | |
| 1995 | 2185 | 205,64 | 1582,4 | |
| 1996 | 2360 | 99,04 | 1350,53 | |
| 1985 | 680 | 33,39 | 613,14 | **PARNASSOS** |
| 1986 | 680 | 2,28 | 615,42 | |
| 1987 | 680 | 14,45 | 837,69 | |
| 1988 | 600 | 202,7 | 1079,8 | |

| | | | | |
|---|---|---|---|---|
| 1989 | 580 | 289,43 | 917,01 | |
| 1990 | 700 | 321,91 | 1106,92 | |
| 1991 | 3000 | 544,66 | 1001,05 | |
| 1992 | 2300 | 466,51 | 1425,71 | |
| 1993 | 4500 | 448,66 | 1268,28 | |
| 1994 | 3395 | 16,57 | 534,05 | |
| 1995 | 2750 | 36,24 | 538,98 | |
| 1996 | 2895 | 27,5 | 539,78 | |
| 1985 | 270 | 1,93 | 832,44 | **ERMHS** |
| 1986 | 230 | 267,42 | 1009,54 | |
| 1987 | 400 | 57,91 | 1062,98 | |
| 1988 | 840 | 125,14 | 1587,34 | |
| 1989 | 760 | -28,29 | 827,22 | |
| 1990 | 400 | 60,78 | 866,27 | |
| 1991 | 500 | 422,33 | 1201,4 | |
| 1992 | 590 | 163,42 | 1807,72 | |
| 1993 | 1650 | 70,21 | 1852,37 | |
| 1994 | 2504 | 81,39 | 940,72 | |
| 1995 | 4002 | 83,57 | 953,61 | |
| 1996 | 4531 | 78,68 | 1304,71 | |
| 1985 | 360 | 102,16 | 319,04 | **NHMATEMPORIKH** |
| 1986 | 400 | 130,96 | 320 | |
| 1987 | 770 | 130,06 | 343,35 | |
| 1988 | 1070 | 131,46 | 645,89 | |
| 1989 | 900 | 104,37 | 219,09 | |
| 1990 | 700 | 90,42 | 223,95 | |
| 1991 | 600 | 42,57 | 226,58 | |
| 1992 | 610 | 18,89 | 404,06 | |
| 1993 | 1300 | 15,88 | 405,93 | |
| 1994 | 4085 | 14,71 | 423,2 | |
| 1995 | 2785 | 16,67 | 425,49 | |
| 1996 | 7145 | 15,03 | 463,07 | |
| 1985 | 280 | 138,22 | 348,7 | **KEKROPS** |
| 1986 | 360 | 120,67 | 389,37 | |
| 1987 | 900 | -47,04 | 304,66 | |
| 1988 | 1200 | 47,21 | 383,67 | |
| 1989 | 1850 | 107,37 | 250,57 | |
| 1990 | 4400 | 29,19 | 230,62 | |
| 1991 | 4600 | -86,27 | 144,56 | |
| 1992 | 2100 | -46,25 | 188,3 | |
| 1993 | 1500 | 214,91 | 348,34 | |
| 1994 | 1550 | -68,51 | 453,47 | |
| 1995 | 1593 | -12,57 | 440,79 | |
| 1996 | 4310 | 159,39 | 916,48 | |
| 1985 | 900 | -188,71 | 1500,86 | **KILINDROMILOI** |
| 1986 | 500 | -65,64 | 1500,86 | |
| 1987 | 400 | -20,69 | 1205,01 | |
| 1988 | 400 | -10,82 | 2734,18 | |
| 1989 | 380 | 198,65 | 1584,88 | |
| 1990 | 380 | -440,71 | 1375,13 | |

| | | | | |
|---|---|---|---|---|
| 1991 | 2000 | 35,38 | 191,86 | |
| 1992 | 700 | -7,85 | 302,39 | |
| 1993 | 1620 | 127,93 | 406,18 | |
| 1994 | 1850 | 33,6 | 506,79 | |
| 1995 | 2050 | 50,05 | 680,62 | |
| 1996 | 2220 | 44,42 | 852,26 | |
| 1985 | 170 | -64,92 | 535,07 | **MILOI AG** |
| 1986 | 175 | 113,78 | 527,37 | |
| 1987 | 460 | -121,56 | 685,94 | |
| 1988 | 950 | -61,55 | 1077,95 | |
| 1989 | 640 | 33,91 | 663,01 | |
| 1990 | 4400 | 76,6 | 881,54 | |
| 1991 | 2850 | 94,85 | 923,06 | |
| 1992 | 1580 | 46,54 | 859,52 | |
| 1993 | 1190 | 55,88 | 882,95 | |
| 1994 | 1350 | 83,85 | 936,07 | |
| 1995 | 1310 | 132,93 | 1006,5 | |
| 1996 | 1615 | 161,36 | 1117,49 | |
| 1985 | 680 | 134,43 | 1131,72 | **ALLATINI** |
| 1986 | 680 | -588,23 | 1131,72 | |
| 1987 | 480 | -1917,37 | 11404,51 | |
| 1988 | 1100 | 579,57 | 11805,26 | |
| 1989 | 1450 | -292,94 | 13061,89 | |
| 1990 | 4000 | -340,36 | 672,35 | |
| 1991 | 1050 | -11,34 | 663,85 | |
| 1992 | 365 | 13,54 | 685,32 | |
| 1993 | 725 | -15,03 | 853,44 | |
| 1994 | 475 | -73,97 | 847,93 | |
| 1995 | 640 | -35,94 | 672,42 | |
| 1996 | 644 | 28,6 | 695,27 | |
| 1985 | 240 | 60,85 | 244,16 | **ZAMPA** |
| 1986 | 230 | 135,6 | 272,46 | |
| 1987 | 700 | 209,41 | 333,67 | |
| 1988 | 1350 | 441,46 | 623,84 | |
| 1989 | 4700 | 804,55 | 1029,62 | |
| 1990 | 13000 | 554,18 | 1314,26 | |
| 1991 | 3600 | 548,63 | 1593,26 | |
| 1992 | 2700 | 603,18 | 1898,54 | |
| 1993 | 2325 | 401,38 | 2093,78 | |
| 1994 | 2500 | 523,21 | 2370,2 | |
| 1995 | 2850 | 483,8 | 2621,02 | |
| 1996 | 3295 | 534,18 | 2985,19 | |
| 1985 | 340 | 11,89 | 640,29 | **KERAMIA-ALL** |
| 1986 | 240 | 0,13 | 640,42 | |
| 1987 | 230 | -169,33 | 531,9 | |
| 1988 | 150 | -195,67 | 852,13 | |
| 1989 | 270 | -46,55 | 468,24 | |
| 1990 | 700 | -49,68 | 413,74 | |
| 1991 | 700 | -7,14 | 404,92 | |
| 1992 | 550 | -176,46 | 553,19 | |

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|---|---|---|---|---|
| 1993 | 676 | -194,41 | 358,78 | |
| 1994 | 426 | 78,04 | 1368 | |
| 1995 | 2300 | 4,22 | 1144,13 | |
| 1996 | 1530 | 5,45 | 1401,83 | |
| 1985 | 430 | 0,11 | 0,72 | **LOYLI** |
| 1986 | 450 | 0,15 | 0,85 | |
| 1987 | 550 | 0,03 | 0,96 | |
| 1988 | 600 | 0,04 | 1,49 | |
| 1989 | 720 | 209,95 | 1,49 | |
| 1990 | 10000 | 67,29 | 1,49 | |
| 1991 | 2900 | 89,25 | 682,14 | |
| 1992 | 1200 | 89,13 | 731,41 | |
| 1993 | 1195 | 89,29 | 825,85 | |
| 1994 | 1785 | 125,71 | 882,64 | |
| 1995 | 1000 | 51,8 | 891,91 | |
| 1996 | 914 | 72,96 | 924,75 | |
| 1985 | 82 | 13,09 | 218,93 | **DHMHTRIADHS** |
| 1986 | 30 | 0,48 | 242,45 | |
| 1987 | 165 | 31,36 | 258,31 | |
| 1988 | 430 | 38,24 | 487,55 | |
| 1989 | 395 | 44,63 | 504,02 | |
| 1990 | 690 | 26,42 | 504,33 | |
| 1991 | 510 | -33,58 | 476,63 | |
| 1992 | 740 | -51,83 | 695,8 | |
| 1993 | 580 | -64,48 | 631,84 | |
| 1994 | 845 | -82,97 | 313,72 | |
| 1995 | 402 | -82,18 | 234,31 | |
| 1996 | 500 | -103,52 | 327,65 | |
| 1985 | 75 | 29,8 | 303,77 | **IPPOTOYR** |
| 1986 | 90 | 22,72 | 307,85 | |
| 1987 | 165 | 38,79 | 320,43 | |
| 1988 | 400 | 179,88 | 584,57 | |
| 1989 | 770 | 9,69 | 294,65 | |
| 1990 | 670 | -25,92 | 287,42 | |
| 1991 | 460 | 109,58 | 335,98 | |
| 1992 | 460 | 2,6 | 384,6 | |
| 1993 | 380 | -31,43 | 355,19 | |
| 1994 | 394 | -59,5 | 201,97 | |
| 1995 | 410 | -60,82 | 541,69 | |
| 1996 | 380 | -45,14 | 250,95 | |
| 1985 | 300 | 22,95 | 591,38 | **PETZETAKIS** |
| 1986 | 280 | 49,89 | 618,26 | |
| 1987 | 455 | 75,23 | 898,81 | |
| 1988 | 1075 | 68,15 | 796,09 | |
| 1989 | 780 | 141,31 | 668,99 | |
| 1990 | 4000 | 153,34 | 1127,67 | |
| 1991 | 2725 | -83,28 | 1097,85 | |
| 1992 | 1900 | 44,84 | 1476,3 | |
| 1993 | 2025 | 45,88 | 1470,64 | |
| 1994 | 2400 | -41,1 | 1469,62 | |

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|---|---|---|---|---|
| 1995 | 1050 | 29,85 | 1197,93 | |
| 1996 | 945 | 41,1 | 1308,13 | |
| 1985 | 455 | 194,81 | 780,91 | **LEBENTERIS** |
| 1986 | 425 | 252,27 | 899,91 | |
| 1987 | 920 | 165,21 | 932,08 | |
| 1988 | 1275 | 219,4 | 1248,4 | |
| 1989 | 1700 | 350,6 | 693,46 | |
| 1990 | 2700 | 131,83 | 755,23 | |
| 1991 | 1600 | 79,18 | 805,97 | |
| 1992 | 840 | 82,61 | 1120,84 | |
| 1993 | 800 | 86,82 | 1154,78 | |
| 1994 | 1345 | 83,14 | 601,76 | |
| 1995 | 800 | 44,19 | 622,93 | |
| 1996 | 585 | 19,46 | 903,05 | |
| 1985 | 1650 | 73,56 | 3012,09 | **GEN APOTH** |
| 1986 | 1500 | 160,93 | 3019,39 | |
| 1987 | 1900 | 514,01 | 3378,51 | |
| 1988 | 3400 | -190,35 | 7370,62 | |
| 1989 | 2400 | -449,28 | 2814,79 | |
| 1990 | 3000 | 286,98 | 3067,77 | |
| 1991 | 2600 | 276,62 | 3067,77 | |
| 1992 | 2800 | -45,27 | 3781,17 | |
| 1993 | 2438 | -354,96 | 2651,03 | |
| 1994 | 1500 | -859,69 | 2545,02 | |
| 1995 | 1565 | -1013,59 | 1958,74 | |
| 1996 | 1050 | -133,27 | 1444,26 | |
| 1985 | 280 | 95,87 | 430,56 | **XYLEMPORIA** |
| 1986 | 290 | 239,4 | 512,8 | |
| 1987 | 790 | 104,41 | 528,79 | |
| 1988 | 1050 | 59,74 | 706,96 | |
| 1989 | 800 | 205,69 | 781,38 | |
| 1990 | 6000 | 68,91 | 1002,75 | |
| 1991 | 1700 | 127,43 | 1042,47 | |
| 1992 | 1200 | 43,2 | 894,9 | |
| 1993 | 970 | 81,63 | 902,14 | |
| 1994 | 830 | 94,38 | 922,54 | |
| 1995 | 949 | 111,86 | 963,62 | |
| 1996 | 1465 | 119,82 | 1235,62 | |
| 1985 | 85 | 71,48 | 237,54 | **ESKIMO** |
| 1986 | 70 | -130,97 | 314,64 | |
| 1987 | 190 | -210,52 | 259,97 | |
| 1988 | 200 | -299,15 | 135,49 | |
| 1989 | 140 | -73,78 | 103,58 | |
| 1990 | 250 | 10,16 | 146,84 | |
| 1991 | 140 | 17,78 | 159,71 | |
| 1992 | 150 | 0,89 | 161,08 | |
| 1993 | 115 | 1,37 | 160,16 | |
| 1994 | 182 | 0,15 | 160,16 | |
| 1995 | 298 | -37,74 | 133,59 | |
| 1996 | 239 | -12,79 | 123,29 | |

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|---|---|---|---|---|
| 1985 | 75 | 68,14 | 356,1 | **RADIO-ATHINAI** |
| 1986 | 105 | 108,48 | 403,92 | |
| 1987 | 330 | 39,67 | 415,23 | |
| 1988 | 650 | 86,16 | 443,91 | |
| 1989 | 680 | 135,75 | 642,67 | |
| 1990 | 4700 | 178,83 | 812,59 | |
| 1991 | 1350 | 154,05 | 862,59 | |
| 1992 | 990 | 146,72 | 1028,27 | |
| 1993 | 1335 | 271,97 | 1178,63 | |
| 1994 | 3540 | 285,61 | 1321,77 | |
| 1995 | 3100 | 296,89 | 1460,3 | |
| 1996 | 2465 | 112,71 | 808,13 | |
| 1985 | 51 | -7,88 | 304,01 | **PAYLIDIS** |
| 1986 | 57 | 25 | 329,53 | |
| 1987 | 685 | -15,74 | 620,12 | |
| 1988 | 3375 | -12,3 | 883,13 | |
| 1989 | 3000 | -39,29 | 242,4 | |
| 1990 | 2700 | -241 | 166,66 | |
| 1991 | 2150 | -1,71 | 84,59 | |
| 1992 | 1900 | 43,19 | 175,6 | |
| 1993 | 1220 | -912,04 | 135,3 | |
| 1994 | 825 | 389,57 | 182,62 | |
| 1995 | 615 | 917,36 | 254,51 | |
| 1996 | 595 | 2253,7 | 495,37 | |
| 1985 | 1480 | 787,46 | 1955,15 | **ATHINAIA** |
| 1986 | 1710 | 953,98 | 2209,11 | |
| 1987 | 3570 | 686,98 | 2546,9 | |
| 1988 | 3650 | 762,05 | 2995,11 | |
| 1989 | 4050 | 838,81 | 2471,14 | |
| 1990 | 7100 | 361,26 | 2532,39 | |
| 1991 | 2200 | 371,83 | 2634,22 | |
| 1992 | 2350 | 127,95 | 2765,93 | |
| 1993 | 1470 | 90,93 | 2781,86 | |
| 1994 | 1405 | 49,07 | 2324 | |
| 1995 | 1230 | 27,17 | 2325,81 | |
| 1996 | 1750 | -254,08 | 2157,15 | |

## *VII. References*

### *1. Papers*

1. Collins Daniel, Edward Maydew, Ira Weiss 1997, "*Changes in the Value – Relevance of Earnings and Book Values Over the Past Forty Years*", Journal of Accounting and Economics 24, 39-67

2. Collins Daniel, Morton Pincus, Xong Xie 1999, "*Equity Valuation and Negative Earnings: The Role of Book Value of Equity*", The Accounting Review 74, 29-61

3. Carla Hayns 1995, "*The Information Content of Losses*", Journal of Accounting and Economics 20

4. Kothari S.P. 1992, "*Price Earnings Regressions in the Presence of Prices Leading Earnings: Earnings Level versus Change Specifications and Alternative Deflators*", Journal of Accounting and Economics 15, 173-202

5. Kothari S.P. and Richard G. Sloan 1992, "*Information in Prices about Future Earnings: Implications for Earnings Response Coefficients*", Journal of Accounting and Economics 15, 143 – 171

6. Kothari S.P. and Jerold Zimmerman 1995, "*Price and Return Models*", Journal of Accounting and Economics 20, 155 - 192

7. Ravi Jagannathan, Ellen R. Mc Grattan, "*The CAPM Debate*", Federal Bank of Minneapolis Quarterly Review, Fall 1995

### *2. Books*

1. Laurence G. Grimm, "*Statistical Applications for the Behavioral Sciences*"

2. Leopold A Bernstein, John J. Wild, "*Financial Statement Analysis, Theory, Application and Interpretation*"

3. Glyde P. Stickney, Roman L. Weil, *"Financial Accounting: an Introduction to Concepts, Methods and Uses"*

4. Eugene F. Brigham, Louis C. Gapenski, Michael C. Ehrhardt, "*Financial Management Theory and Practice*"

### *3. Newspapers*

1. "Ναυτεμπορική" Newspaper June 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996

2. Annual Report of the ASE 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996

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