The Use of Traditional and Modern Value-Based Performance Measures to evaluate Companies' Implemented and Future Strategies in the Greek Capital Market: The Case of EPS and EVA®

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Abstract

Traditional accounting performance measures, such as EPS, ROI, ROE, have long been used by investors to evaluate companies' implemented and future strategies. However, in recent years the appearance of shareholder value approach and its modern value-based performance measures, such as EVA® and SVA, gave an incentive to investors to consider those measures as important ones to evaluate companies' strategies. This is the first study in Greece on the practice of investment management in terms of stock market forecasting and stock selection. Our respondents come from six different groups of investors: official members of the Athens Stock Exchange (ASE), mutual funds management companies (MF), portfolio investment companies (PIC), listed companies (LC), brokers (BR), and individual investors (ININ). ASE has become one of the developed stock market centres thus, it is important for international investors to acquire a better knowledge and understanding of how investors in Greece practice their trades. Results of this study confirm the importance of traditional accounting performance measures but at the same time reveal the significant attention investors should pay to modern value-based performance measures. For limitation reasons this study focuses only on EPS and EVA®.

Key words: Traditional Performance measures, Value-based Performance Measures, Implemented and Future Strategies.

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1. Introduction

Traditional performance measures have existed since the early 1900s and have been used since then, in various forms, to measure the financial performance of companies. However, a new concept, the shareholder value (SHV) approach appeared in early 1980s (Rappaport, 1986; Stewart, 1991). As a consequence, value-based performance measures, such as Shareholder Value Added (SVA), Economic Value Added (EVA®), Economic Profit (EP), and cash flow return on investment (CFROI), based on SHV approach gained increasing popularity in recent years.

Several empirical studies have been conducted in the last two decades, first in the US and later in the rest of the international market community, to answer questions such as: *is it really better to use value-based measures than traditional accounting performance measures to measure the financial performance of corporations?,* or *which performance measure best explains corporations' change of market value?.* However, the reported results are quite mixed and controversial. This study is motivated by the controversial results of the previous research and aims to conduct a research for the ASE to assess (a) *the investment behaviors of different market participants* and (b) *the use of traditional performance measures and the value-based ones to evaluate companies' implemented and future strategies related to the financial performance of the market participants in the ASE.*

Since performance measures (traditional and value-based ones) are many and appeared in different variations, this study firstly examines all the measures of each category as one entity and secondly examines the most popular mentioned in the literature. Those are, from the traditional performance measures, EPS, and from the modern value-based ones, EVA®.

EVA® is a representative measure of modern value-based performance measurement. It has been introduced in the corporate world accompanied by assertions such as: 'Forget EPS, ROE and ROI. EVA® is what drives stock prices' (Stewart 1991; 1999; Stern *et al.* 1995). However, results from the empirical research to date are not consistent with those assertions. They are in fact mixed and controversial. This study is stimulated by both the EVA® proponents'

assertions and by the mixed empirical results for its value relevance reported up until now.

The structure of the paper is as follows: Section two presents a summary of the related literature review, section three describes the methodology followed, section four presents and discusses the results of the statistical analysis, and section five concludes the paper with the most important findings.

2. Theoretical background

During the last three decades there has been a global momentum in the economy. Capital markets became more and more global in outlook. Investors are more sophisticated than ever and want to be informed on all possible details about each company. What the company has been paying for dividends in the past is not enough for investors. Financial statements, such as the balance sheet and profit and loss account, prepared in the traditional way, are no longer enough. Cash flow has become a more important measure. Many consulting firms, academics and practitioners observe such global trends. They are moving forward from the traditional audit, on which they were focused for so many years, in order to keep pace with the new trends. Indeed the essential purpose for many companies has become the maximisation of their value so as to keep their shareholders satisfied as well as their employees, customers, suppliers, and their communities (Black, Wright and Bachman, 1998).

The idea that the primary responsibility for management is to increase their company's value, gained prominence and became widely accepted in the US after the Rappaport's (1986) publication of *Creating Shareholder Value*. Moreover, accounting earnings were under attack. Rappaport (1981; 1986; 1998) argued that earnings fail to measure the real change in economic value. Arguments, such as alternative accounting methods that could be used, the investment requirements exclusion of the calculation of profits and ignorance of the time value for money, brought earnings under hard criticism.

To overcome problems associated with earnings-based measures, several scholars proposed alternative theories and new (modern) performance measures. As a consequence, the Shareholder Value approach was developed in the late 1980s

and early 1990s. Shareholder Value approach estimates the economic value of an investment by discounting forecasted cash flows by the cost of capital (Rappaport, 1998, p. 32). Proponents of shareholder value approach, either academics or consulting firms, grounded their analysis on free cash flows (FCF) and the cost of capital and produced a variety of such measures. The most common referred variants of those measures are: (a) Shareholder Value Added (SVA) by Rappaport and LEK / Alcar Consulting group (Rappaport, 1986; 1998), (b) Cash flow return on investment (CFROI®)[1] by Boston Consulting Group (BCG) and HOLT Value Associates (Black, Wright and Bachman, 1998; Madden, 1999; Barker, 2001), (c) Cash Value Added (CVA) by Boston Consulting Group (BCG) and the Swedes Ottoson and Weissenrieder (Ottoson and Weissenrieder, 1996; Madden, 1999; Barker, 2001), and (d) Economic Value Added (EVA®) by Stern Stewart & Co. (Stewart 1991; 1999; Ehrbar, 1998; 1999; Stern, 2001).

2.1. The EVA® Financial Management System

EVA® is considered as the centerpiece of a completely integrated financial framework for financial management and incentive compensation (Stewart, 1994; Stern, Stewart and Chew, 1995). It is a technique for value creation measurement and has been developed and trademarked by the New York consultant group Stern Stewart & Co. (Stewart 1991). Stern Stewart & Co. (established by Joel Stern and Bennett Stewart), promoted the EVA® technique not only as a simple performance measure but as an integrated Financial Management System as well, which associates the value creation with incentive compensations (Stewart 1991; 1994; 1999; Stern, Stewart and Chew, 1995; Ehrbar 1998).

Stewart (1999, p. 2) determined EVA® as 'operating profits less the cost of all of the capital employed to produce those earnings'. He also claimed that EVA® is the financial performance measure that comes closer than any other measure to capturing the true economic profit of an enterprise. EVA® is calculated as the product of the economic book value of the capital committed to the business multiplied by the spread between the rate of return on capital, defined as *r*, and

[1] CFROI® is a registered trademark of Holt Value Associates, LLP

the cost of capital, defined as c^* (Stewart, 1991). Therefore, the formula for EVA® calculation becomes as follows:

$$EVA = (r - c^*) \times \text{capital} \quad (2\text{-}1)$$

or

$$EVA = (\text{rate of return} - \text{cost of capital}) \times \text{capital} \quad (2\text{-}2)$$

where r is the rate of return, and c^* is the cost of capital, or more correctly stated, the WACC.

The rate of return, r, is computed by dividing a company's NOPAT by the total capital employed in operations:

$$r = \frac{\text{NOPAT}}{\text{Capital}} \quad (2\text{-}3)$$

According to Stewart (1991; 1999) the rate of return measures the productivity of capital employed without taking into consideration the method of financing, and it is free from accounting distortions that arise from accrual bookkeeping entries, from the conservative bias in accounting statements, and from the tendency to understate capital by writing off unsuccessful efforts. It may be compared directly to the company's overall cost of capital employed and therefore it is able to indicate whether value has been created or destroyed. However, Stern Stewart & Co. has proposed up to 164 adjustments in order to eliminate financing distortions in a company's NOPAT and Capital (Stewart, 1991; 1994; 1999).

Rearranging equation (2-1), EVA® becomes: $EVA = (r \times \text{capital}) - (c^* \times \text{capital})$ and rearranging equation (2-3), NOPAT becomes: $NOPAT = r \times \text{capital}$

Thus, replacing the $(r \times \text{capital})$ in formula (2-1) with NOPAT, EVA® becomes:

$$EVA = NOPAT - (c^* \times \text{capital}) \quad (2\text{-}4)$$

where NOPAT is operating profits and $(c^* \times \text{capital})$ is the capital charge. Therefore, we can define EVA® as operating profits less a capital charge.

EVA® is based on accounting items such as net income, interest bearing debt and capital. Compared to the other traditional accounting measures, EVA® differs to the degree that it includes the cost of capital in its calculation. Additionally, Stewart (1991, p. 3) argued that 'algebraically EVA® produces the same results in valuation as DCF or NPV', valuation methods that are widely accepted as the

theoretically best valuation mechanisms from the shareholders' point of view (Hirschleifer, 1958; Miller and Modigliani, 1961; Stern, 1974; Gordon, 1962).

The empirical research for the value relevance of traditional accounting performance measures and modern value-based performance measures is broad but with controversial results. Several studies proved the superiority of EVA® as a performance measure (Stewart, 1991; O'Byrne, 1996; Uyemura, Kantor and Petit, 1996; Milunovich and Tseui, 1996; Bao and Bao, 1998; Forker and Powell, 2004; Worthington and West, 2004) while others (Biddle, Bowen and Wallace, 1997; Chen and Dodd, 1997; de Villiers and Auret 1998; Turvey *et al.* 2000; Chen and Dodd, 2001; Worthington and West, 2001; Copeland 2002; Sparling and Turvey, 2003; Maditinos, Šević and Theriou, 2004; Maditinos, Šević and Theriou, 2005; Maditinos, 2005) provided different and opposing results. Thus, the question of the value relevance still holds well and the empirical research continues.

3. Methodology

To examine the previously mentioned questions a questionnaire was developed asking the market participants to describe their investment behaviour, their level of usage of traditional and value-based performance measures and to assess their financial performance (Appendix I shows the questions).

3.1. The Questionnaire

Testing the validity of the questionnaire, six professional analysts (2 from Official Members of the ASE, 2 from Portfolio Investment Companies, and 2 from Mutual Fund Management Companies), four financial analysts from Listed Companies in the ASE, six brokers from brokerage companies, and ten individual investors were contacted and interviewed during October 2003. They were asked to identify the factors that, in their view, distinguished one stock from another and the sources of information that were most significant to them when evaluating stocks. Professional analysts rated fundamental analysis as the most significant factor in their assessment of a stock while brokers rated the technical analysis as most important. Financial analysts of the listed companies considered that both fundamental and technical analysis played an important role in a stock

assessment. However, they considered that other factors, such as noise in the market, newspapers/media and experience are significant for assessing a stock.

All interviews revealed that professional and individual investors employed different investment practices during the last 5 years and especially during the year 1999 when the Composite Share Price Index (CSPI) reached its highest level, 6,484 units. In general, the aim of this preliminary study was to determine the factors that investors (professionals and individuals) considered most significant when selecting stocks and when investing in the Greek stock market. After the qualitative preliminary study, the questions in the first draft of our questionnaire were improved.

3.2. The Sample

The sample consists of six different user groups: official members of the ASE, mutual fund management companies, portfolio investment companies, listed companies in the ASE, brokers, and individual investors. We decided to investigate all those groups since they constitute the framework of investors contributing to the investment process in the ASE. Results from this survey will reveal the investment practices of each user group separately and of all user groups as a total. All respondents were assumed to have the required knowledge to accurately respond to the questions of the questionnaire.

For the selection of our sample we proceeded as follows. We first created a database, which included all official members (86) of the ASE, all mutual funds management companies (30), all portfolio investment companies (28) and all listed companies (220) in the ASE. We excluded the banks[2] from this database, companies that were under suspension or companies with less than five years participation in the ASE. This population of 364 members/companies constituted the first part of our sample. We planned to send one questionnaire to each of them.

[2] Most of the banks are included in the other user groups (official members, mutual fund management companies, portfolio investment companies, brokerage companies).

The second part of our sample consisted of brokers and individual investors. Selecting them was quite complicated. We created a new database with all brokerage companies in the country. Since Greece is divided into 13 regions, we randomly selected 10 brokerage companies from each region and planned to send a questionnaire to each of them (130 questionnaires in total). To distribute the questionnaire to individual investors, we used the same selected brokerage companies (130), sending four questionnaires to each of them (520 in total) kindly requesting them to randomly select four of their customers (individual investors) to complete the questionnaire. Thus, the second part of our sample consisted of 130 brokers and 520 individual investors, 650 respondents in total. The final number of questionnaires delivered was up to 1,014 (364+650). As we can see from the table 3-1 the response rate was very satisfactory. We received 435 responses representing a response rate of 42.90 per cent.

Table 3-1: The Response Rate

Subject groups	Distributed Questionnaires	Returned Question-naires	Response rate (%)
Official members of ASE (OMOA) (All population)	86	45	52.33
Mutual Funds management companies (MF) (All population)	30	17	56.67
Portfolio Investment companies (PIC) (All population)	28	17	60.71
Listed companies (LC) (All population)	220	47	21.36
Brokers (BR) (Sample)	130	85	65.38
Individual investors (ININ) (Sample)	520	224	43.08
Total send and received questionnaires	1,014	435	42.90

As shown, the response rate of BR and PIC is over 60 per cent, the response rate of OMOA and MF is over 50 per cent, while that of ININ is over 40 per cent. Only the group of listed companies revealed a relatively low response rate, which is marginally over 20 per cent. The survey lasted from December 2003 till June 2004.

4. Analysis of the Results

4.1. Respondents' Background

We sought information about the respondents' position within the company, educational background and years of experience in the field. Examining the position within the company (table 4-2) of the respondents of the first four user groups (OMOA, MF, PIC, and LC) we found that on average for all groups, 20.4 percent were CEOs, 17.7 were CFOs, 2.7 were shareholders/owners, 32.3 were analysts, and 26.9 percent held other titles.

Table 4-2: Position within the Company

	OMOA	MF	PIC	LC	Average
CEO	8.9	23.5	47.1	2.2	20.4
CFO	0.0	29.4	17.6	23.9	17.7
Shareholder	2.2	0.0	0.0	8.7	2.7
Analyst	73.3	23.5	23.5	8.7	32.3
Other	15.6	23.5	11.8	56.5	26.9
					100.0

As for their educational background (table 4-3), we found that for all six user groups, on average, the respondents held a master's degree (57.3 per cent) followed by those holding a bachelor's degree (26.5 per cent). Moreover, the vast majority of the official members of ASE (71.1), mutual funds management companies (88.2) and portfolio investment companies (82.4) hold a master's degree.

Table 4-3: Educational Background

	OMOA	MF	PIC	LC	BR	ININ	Average
High School	0	0	0	0	17.6	29.9	7.9
Diploma	0	0	0	0	0	2.2	0.4
BA/BSc	17.8	5.9	5.9	42.6	45.9	41.1	26.5
MBA/MSc	71.1	88.2	82.4	48.9	35.3	17.9	57.3
PhD	11.1	5.9	11.7	8.5	1.2	8.9	7.9
							100.0

Finally, concerning the respondents' years of experience, we found (table 4-4) that the average for all user groups was nearly eleven years (10.8).

Table 4-4: Years of Experience

OMOA	7.1
MF	10.4
PIC	12.8
LC	13.0
BR	8.9
ININ	11.6
Average	10.8

Thus, more than 90 per cent of the respondents were university graduates (table 4-3) with less than eleven years of experience (table 4-4). The latter is mainly due to the fact that although the ASE is a long established institution (since 1963), its real role as a financial institution started at the end of 1980s.

4.1. Factors Affecting all User Groups' Investment Strategy

Table 4-5 outlines the perceptions of the six user groups regarding the level of importance they attach to a list of nine factors in their approach to valuation of stocks. On average, respondents rank first their instinct/experience (3.47), followed by fundamental analysis (3.44) and the movement of the foreign stock markets (3.44), while they consider the noise in the market (2.72) and portfolio analysis (2.25) as the least important approaches, which is in direct contrast to the theories developed by many scholars.

Since the ANOVA test shows that there are significant differences between user groups' responses, it is interesting to examine separately the perceptions of each group. Fundamental analysis ranks first in the perceptions of the official members of ASE (4.56), the mutual fund management companies (4.71), the portfolio investment companies (4.29) and the public companies (3.74), while it is ranked in fourth and sixth position for brokers and individual investors respectively.

Technical analysis ranks in sixth place for the first three groups but it is considered as an interesting approach for brokers, who rank it in third place. Portfolio analysis seems to be of some interest only to mutual fund management companies whose respondents rank it in fifth place, but with a mean value above the average (3.18). Our results seem to agree with previous research undertaken for developed stock markets (Carter and Van Auken, 1990; Frankel and Froot, 1986 and 1990; Grinyer, Russell and Walker, 1991; Taylor and Allen, 1992;

Collison, Grinyer and Russell, 1996; Lui and Mole, 1998; Wong and Cheung, 1999) revealing that these groups of investors rely more on fundamental and technical analysis and less on portfolio analysis.

The results also reveal that despite the perception differences between groups, institutional investors are mainly interested more in fundamental than technical analysis while brokers and individual investors do not consider it as their first choice. Brokers specified technical analysis (3.65) as a priority, while media and newspapers (3.30) mostly influence individual investors. Noise in the market is considered the least important factor, except for individual investors who rank it in fifth position. An interesting result for individual investors is that instinct/experience (3.47) strongly affects their investment practices, ranking in the first position followed by newspapers and the media (3.30). This is a particularly dangerous behavior and our suggestion is that investors in countries such as Bulgaria and Rumania, that are going to follow the same monetary policy as Greece followed to join the Euro zone, should avoid basing their investment practices only on information coming from media.

Our results about individual investors come in direct contrast to previous research, which identifies other important factors influencing the forecasting and selection decisions of individual investors: dividends, rapid growth, investment for saving purposes, quick profits through trading, professional investment management, and long-term growth (Potter, 1971), earnings projection and historical data (Baker and Haslem, 1973), price and earnings volatility (Blume and Friend, 1978), fundamental or technical analysis (Lewellen, Lease and Schlarbaum, 1977).

The degree of agreement among the respondents of each group concerning their choice of the listed factors is quantified by performing the Cronbach's Alpha test. On the ranking of different approaches, the highest degree of agreement is achieved by mutual fund management companies (0.73), followed by official members of ASE (0.72), and by listed companies (0.71). Cronbach's Alpha test for the whole sample is relatively similar (0.71) to previously mentioned levels.

Table 4-5: Level of Importance Attached to Different Methods of all User Groups

	Item	OMOA (45)	Rank	MF (17)	Rank	PIC (17)	Rank	LC (47)	Rank	BR (85)	Rank	ININ (224)	Rank	Mean whole sample (435)	Rank	ANOVA Sign. level
1	Fundamental analysis	4.56	1	4.71	1	4.29	1	3.74	1	3.61	4	2.92	6	3.44	2	0.000***
2	Technical analysis	3.20	6	2.88	6	3.41	6	2.38	9	3.65	3	2.48	7	2.82	6	0.000***
3	Both Fundamental and Technical	3.62	3	3.76	2	4.06	3	2.83	5	3.51	5	2.12	8	2.76	7	0.000***
4	Noise in the market	2.31	9	2.18	9	1.94	9	2.48	8	2.64	8	2.99	5	2.72	8	0.000***
5	Portfolio analysis	3.16	7	3.18	5	2.94	7	2.53	7	2.48	9	1.80	9	2.25	9	0.000***
6	Newspapers / media	2.60	8	2.82	8	2.35	8	2.77	6	2.81	7	3.30	2	3.02	5	0.000***
7	Instinct / Experience	3.40	4	3.65	4	3.65	4	3.09	2	3.67	2	3.47	1	3.47	1	0.000***
8	Foreign markets	3.80	2	3.71	3	4.12	2	3.04	3	3.75	1	3.26	3	3.44	2	0.000***
9	Government policy	3.27	5	2.88	6	3.47	5	3.02	4	3.31	6	3.06	4	3.14	4	0.117
	Cronbach's Alpha test	0.72		0.73		-0.07		0.71		0.59		0.66		0.71		

4.2. Use of Performance Measures/Techniques for Strategy Evaluation

To reveal the dynamics of the traditional accounting performance measures, and the value-based performance measures we asked respondents to indicate *to what degree they use the above measures/techniques for the evaluation of the companies' implemented and proposed (future) strategies*. To investigate it we developed four equations associating the revealed performance to the use of the traditional accounting performance measures, or the value based performance measures for the evaluation of the implemented or future strategies. As a dependent variable we employed the reported performance of the respondents, while as independent variables we used the answers given for the evaluation of the implemented and future strategies. The equations are as follows:

$$P_t = a_0 + a_1\, IMPstr\_tapm_t + u_1 \quad (4\text{-}1)$$

$$P_t = b_0 + b_1\, FUTstr\_tapm_t + u_2 \quad (4\text{-}2)$$

$$P_t = c_0 + c_1\, IMPstr\_vbpm_t + u_3 \quad (4\text{-}3)$$

$$P_t = d_0 + d_1\, FUTstr\_vbpm_t + u_4 \quad (4\text{-}4)$$

Where

P_t is the dependent variable revealing the investors' performance

$IMPstr\_tapm_t$ is the independent variable concerning the use of the traditional accounting performance measures (tapm) for the evaluation of the companies' implemented strategies

$FUTstr\_tapm_t$ is the independent variable concerning the use of the traditional accounting performance measures (tapm) for the evaluation of the companies' future strategies

$IMPstr\_vbpm_t$ is the independent variable concerning the use of the value based performance measures (vbpm) for the evaluation of the companies' implemented strategies

$FUTstr\_vbpm_t$ is the independent variable concerning the use of the value based performance measures (vbpm) for the evaluation of the companies' future strategies

Results from the regression of equations (4-1) to (4-4) are shown in table (4-6), panels A and B.

Table 4-6: Regressions of Performance to Implemented and Future Strategies

Panel A

Regression model (4-1) : $P_t = a_0 + a_1\, IMPstr\_tapm_t + u_1$

Regression model (4-2) : $P_t = b_0 + b_1\, FUTstr\_tapm_t + u_2$

Regression model		a_0	a_1	b_0	b_1	R^2	F
	Coef.	2.991	0.766			**0.176**	
(4-1)	t	(10.965)***	(9.610)***				(92.359)***
	Sign.	[0.000]	[0.000]				[0.000]
	Coef.			3.454	0.628	**0.128**	
(4-2)	t			(12.842)***	(7.974)***		(63.578)***
	Sign.			[0.000]	[0.000]		[0.000]

Panel B

Regression model (4-3) : $P_t = c_0 + c_1\, IMPstr\_vbpm_t + u_3$

Regression model (4-4) : $P_t = d_0 + d_1\, FUTstr\_vbapm_t + u_4$

Regression model		c_0	c_1	d_0	d_1	R^2	F
	Coef.	3.889	0.757			**0.264**	
(4-3)	t	(25.906)***	(12.433)***				(154.582)***
	Sign.	[0.000]	[0.000]				[0.000]
	Coef.			3.909	0.733	**0.260**	
(4-4)	t			(26.073)***	(12.310)***		(151.534)***
	Sign.			[0.000]	[0.000]		[0.000]

All regression models (4-1) to (4-4) are significant at 1 per cent with significantly high F values. The coefficients are all positive, thus, we can discuss the variations of R^2 in explaining investors' performance. Models (4-1) and (4-2) reveal that although traditional accounting performance measures are accepted as important performance measures, their use declines regarding the evaluation of companies' future strategies. The fact that R^2 decreases from 0.176 to 0.128 confirms our suggestion. On the other hand, value-based performance measures, (4-3) and (4-4), reported higher R^2 both for the evaluation of implemented strategies and for the future strategies.

Value-based performance measures vary from 0.264 to 0.260. These results are consistent with the theory where value-based performance measures are important and of increasing interest and use. Thus, we can conclude that value-based performance measures should be considered by investors as significant tools for strategy evaluation and consequently for stock valuation. These results are

consistent with those revealed by Maditinos, Šević and Theriou (2005). Moreover, as we know from the theory the strategy evaluation results directly affect the companies and investors' decision and thus the price of the companies' share (Rappaport, 1984).

4.3. The Dynamics of EPS and EVA®

The previous study of Maditinos, Šević and Theriou (2005) provided evidence that EPS (0.019) outperforms EVA® (0.009) in explaining stock returns. Moreover, the combination of EPS and EVA® in a model increases the power in explaining stock returns to that of 7.2 per cent. This low explanatory power led us to explore through this questionnaire survey the dynamics of these two performance measures and the intrinsic force they probably convey. Thus, we developed the following equations:

$$P_t = j_0 + j_1 EPS_{<99} + u_{<99} \quad (4\text{-}5)$$

$$P_t = k_0 + k_1 EPS_{=99} + u_{=99} \quad (4\text{-}6)$$

$$P_t = l_0 + l_1 EPS_{>99} + u_{>99} \quad (4\text{-}7)$$

$$P_t = m_0 + m_1 EVA_{<99} + ue_{<99} \quad (4\text{-}8)$$

$$P_t = n_0 + n_1 EVA{=}_{99} + ue_{=99} \quad (4\text{-}9)$$

$$P_t = o_0 + o_1 EVA_{>99} + ue_{>99} \quad (4\text{-}10)$$

$$P_t = p_0 + p_1 EPS_{<99} + p_2 EVA_{<99} + uee_{<99} \quad (4\text{-}11)$$

$$P_t = q_0 + q_1 EPS_{=99} + q_2 EVA_{=99} + uee_{=99} \quad (4\text{-}12)$$

$$P_t = r_0 + r_1 EPS_{>99} + r_2 EVA_{>99} + uee_{>99} \quad (4\text{-}13)$$

Where

P_t	is the dependent variable revealing the investors' performance
$EPS_{<99}$ and $EVA_{<99}$	are the independent variables concerning the use of EPS and EVA® before 1999
$EPS_{=99}$ and $EVA_{=99}$	are the independent variables concerning the use of EPS and EVA® during 1999
$EPS_{>99}$ and $EVA_{>99}$	are the independent variables concerning the use of EPS and EVA® after 1999

Since the Greek capital market had an extreme fluctuation during the last years, with the Composite Share Price Index (CSPI) below 2,000 units before the year 1999, an extreme increase up to nearly 6,484 units during the year 1999, and a very deep decrease below 1,700 units in subsequent years, it was decided to separate the research to these three examining periods hoping to spot some possible differences between the periods. CSPI is reported in Appendix II.

Table (4-7), panel A, shows the dynamic of EPS during the three periods. All models, (4-5) to (4-7), are significant at the 1 per cent level with positive coefficients. However, the decreasing R^2s from the first period (0.141) to the third period (0.049), shows that the intrinsic force of EPS is relatively low. On the other hand, in panel B, from models (4-8) to (4-10), we can see that the results for EVA® are reversed compared to that of EPS. The increasing R^2s (0.143, 0.164, 0.228) suggest that EVA® tends to be a valuable tool for investors in the future.

Combining both EPS and EVA® (models 4-11 to 4-13) consistent to our findings (Maditinos, Šević and Theriou, 2005), we notice that the power in explaining investors' performance increases. In fact, what is interesting here is that in period three we achieve the highest R^2 (0.228), which is equal to that achieved for EVA® alone in the third period (0.228). The decline of R^2 (0.175) in the second period reveals the low use of these measures during this period, which is consistent with our findings up to now. Table (4-8) summarises the results.

Table 4-7: Regressions of Performance to EPS and EVA® for each of the Three Periods

Panel A

Regression model (4-5) : $P_t = j_0 + j_1 EPS_{<99} + u_{<99}$
Regression model (4-6) : $P_t = k_0 + k_1 EPS_{=99} + u_{=99}$
Regression model (4-7) : $P_t = l_0 + l_1 EPS_{>99} + u_{>99}$

Model		j_0	j_1	k_0	k_1	l_0	l_1	R^2	F
	Coef.	3.875	0.565					**0.141**	
(4-5)	t	(18.709)***	(8.278)***						(68.523)***
	Sign.	[0.000]	[0.000]						[0.000]
	Coef.			4.369	0.388			**0.073**	
(4-6)	t			(21.156)***	(5.744)***				(32.990)***
	Sign.			[0.000]	[0.000]				[0.000]
	Coef.					4.245	0.360	**0.049**	
(4-7)	t					(15.166)***	(4.713)***		(22.210)***
	Sign.					[0.000]	[0.000]		[0.000]

Panel B

Regression model (4-8) : $P_t = m_0 + m_1 EVA_{<99} + ue_{<99}$
Regression model (4-9) : $P_t = n_0 + n_1 EVA_{=99} + ue_{=99}$
Regression model (4-10) : $P_t = o_0 + o_1 EVA_{>99} + ue_{>99}$

Model		m_0	m_1	n_0	n_1	o_0	o_1	R^2	F
	Coef.	4.447	0.601					**0.143**	
(4-8)	t	(30.557)***	(8.349)***						(69.710)***
	Sign.	[0.000]	[0.000]						[0.000]
	Coef.			4.376	0.662			**0.164**	
(4-9)	t			(30.457)***	(9.057)***				(82.033)***
	Sign.			[0.000]	[0.000]				[0.000]
	Coef.					4.065	0.616	**0.228**	
(4-10)	t					(27.325)***	(11.307)***		(127.840)***
	Sign.					[0.000]	[0.000]		[0.000]

Table 4-8: Regressions of Performance to EPS + EVA® for each of the Three Periods

Panel A

Regression model (4-11) : $P_t = p_0 + p_1 EPS_{<99} + p_2 EVA_{<99} + uee_{<99}$
Regression model (4-12) : $P_t = q_0 + q_1 EPS_{=99} + q_2 EVA_{=99} + uee_{=99}$
Regression model (4-13) : $P_t = r_0 + r_1 EPS_{>99} + r_2 EVA_{>99} + uee_{>99}$

Model		p_0	p_1	p_2	R^2	F
	Coef.	3.692	0.383	0.414	**0.194**	
(4-11)	t	(18.108)***	(5.139)***	(5.259)***		(50.186)***
	Sign.	[0.000]	[0.000]	[0.000]		[0.000]

Model		q_0	q_1	q_2	R^2	F
	Coef.	4.039	0.169	0.580	**0.175**	
(4-12)	t	(20.066)***	(2.379)***	(7.209)***		(44.302)***
	Sign.	[0.000]	[0.000]	[0.000]		[0.000]

Model		r_0	r_1	r_2	R^2	F
	Coef.	3.967	0.040	0.600	**0.228**	
(4-13)	t	(15.611)***	(0.523)	(9.969)***		(63.327)***
	Sign.	[0.000]	[0.601]	[0.000]		[0.000]

5. Conclusions

All user groups rely more on fundamental and technical analysis and less on portfolio analysis, consistent with Lewellen, Lease and Schlarbaum (1977), Allen and Taylor (1989), Frankel and Froot (1990), Lui and Mole (1998), Clark-Murphy and Soutar (2003). Fundamental analysis is mostly used by mutual fund management companies, official members of the ASE, portfolio investment companies and public companies, while the brokerage and individual investors' group consider it less important. Technical analysis is more popular among brokers while it is less popular among all other user groups. The combined use of both fundamental and technical analysis earns more and more confidence among all user groups. These results are largely consistent with those reported for international markets by Theodossiou (1991), Taylor and Allen (1992), Lui and Mole (1998), Wong and Cheung (1999), Naser and Nuseibeh (2003).

Since the stock market is based on expectations, markets discount events that are going to happen in the future. It is proved that Greek capital market followed the market paradigm of countries that discounted such important expectations and events (e.g. Portugal and Spain) with considerable fluctuations of their stock returns. Thus, this study gives significant information to countries that are going to follow the monetary policy of Greece (e.g. countries that are going to join the Euro zone) to avoid, if possible, the bad performance of their stock markets.

Finally, exploring the dynamics of the measures and techniques of fundamental analysis, and market value analysis we suggest that: (a) while traditional accounting performance measures are important tools for the implemented companies' strategies, they do not maintain this dynamic for the evaluation of future strategies, (b) value-based performance measures are considered as important tools for the evaluation both of implemented and future companies' strategies, which reveal the instinctive force of these measures/techniques and the significant role they are going to play in the future.

EPS and EVA® have been thoroughly discussed in this study. While they seem to explain stock returns for the Greek stock market in a relatively low degree

(Maditinos, Šević and Theriou, 2005), results for their dynamics reveal their instinctive force with EVA® to be considered as an important tool for the evaluation of companies' future strategies. This finding is in line with those reported from EVA® proponents (e.g. Stewart, 1991; 1999, Stern, Stewart and Chew, 1995; Ehrbar, 1998) who considered EVA® as the most important tool for firms' valuation.

6. Bibliography

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Appendix I- The questionnaire

SECTION A: GENERAL QUESTIONS

1. INFORMATION ON THE PERSON WHO IS COMPLETING THE QUESTIONNAIRE

A1 Position within the company.

CEO ☐ CFO ☐ Shareholder ☐

A2 Education.

High School ☐ Associate degree/ Diploma ☐ Degree/ BA ☐ Masters/ MSc MBA ☐ Doctorate/ PhD ☐

A3 Years of experience in Finance (in total).

A4 Years of experience with the current company.

2. INFORMATION ON THE COMPANY

A5 Official name of the company.

A6 Year of incorporation.

A7 Number of employees in 2004.

A8 Company's sector in the ASE.

A9 Main Market or Parallel Market.

Main Market ☐
Parallel Market ☐

SECTION B: MAIN QUESTION

B1 To what degree are these factors affecting your approach to valuate stock prices? **(Please fill in each box for every factor)** **1 = not at all** **2 = very little** **3 = equal** **4 = much** **5 = very much**	Fundamental Analysis	1	2	3	4	5
	Technical Analysis	1	2	3	4	5
	Both Fundamental & Technical Analysis	1	2	3	4	5
	Noise in the market	1	2	3	4	5
	Models for setting up the portfolio	1	2	3	4	5
	Newspapers / Media	1	2	3	4	5
	Instinct / Experience	1	2	3	4	5
	Foreign markets	1	2	3	4	5
	Government policy	1	2	3	4	5
	Other (specify)					

SECTION C: QUESTIONS TO BE ANSWERED BY THOSE WHO USE FUNDAMENTAL ANALYSIS

The following questions are to be answered only by those who use Fundamental Analysis in order to estimate the present and future performance of public companies.

C1 To what degree did you use EPS before 1999? **(Please fill in each box for every factor)**	EPS	1	2	3	4	5
C2 To what degree did you use EPS during 1999? **(Please fill in each box for every factor)**	EPS	1	2	3	4	5
C3 To what degree did you use EPS after 1999? **(Please fill in each box for every factor)** **1 = not at all** **2 = sometimes** **3 = often** **4 = very often** **5 = always**	EPS	1	2	3	4	5

C4 To what degree do you use traditional accounting performance measures for the evaluation of the companies' implemented strategies? **(Please fill in each box for every factor)**		1 2 3 4 5
C5 To what degree do you use traditional accounting performance measures for the evaluation of the companies' proposed (future) strategies? **(Please fill in each box for every factor)** **1 = not at all** **2 = sometimes** **3 = often** **4 = very often** **5 = always**		1 2 3 4 5
C6 To what degree did you use EVA before 1999? **(Please fill in each box for every factor)**	EVA	1 2 3 4 5
C7 To what degree did you use EVA during 1999? **(Please fill in each box for every factor)**	EVA	1 2 3 4 5
C8 To what degree did you use EVA after 1999? **(Please fill in each box for every factor)** **1 = not at all** **2 = sometimes** **3 = often** **4 = very often** **5 = always**	EVA	1 2 3 4 5
C9 To what degree do you use value-based performance measures for the evaluation of the companies' implemented strategies? **(Please fill in each box for every factor)**		1 2 3 4 5

C10 To what degree do you use value-based performance measures for the evaluation of the companies' proposed (future) strategies? **(Please fill in each box for every factor)** **1 = not at all** **2 = sometimes** **3 = often** **4 = very often** **5 = always**					1	2	3	4	5	

FINAL QUESTION

As compared to the performance of the market (CSPI), how would you term the performance of the strategy you have adopted in the past? **(you can use the full scale from 1 to 10)** **1 = unsuccessful** **5 = neutral** **10 = successful**	1	2	3	4	5	6	7	8	9	10

Appendix II

Figure II-1: ASE Composite Share Price Index, 1985 - 2004, Closing Prices

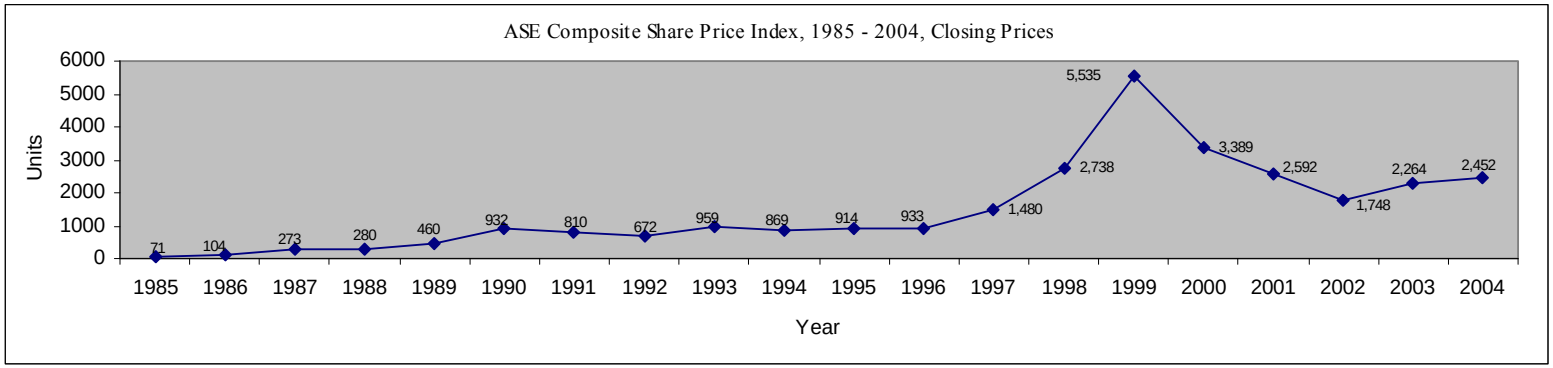
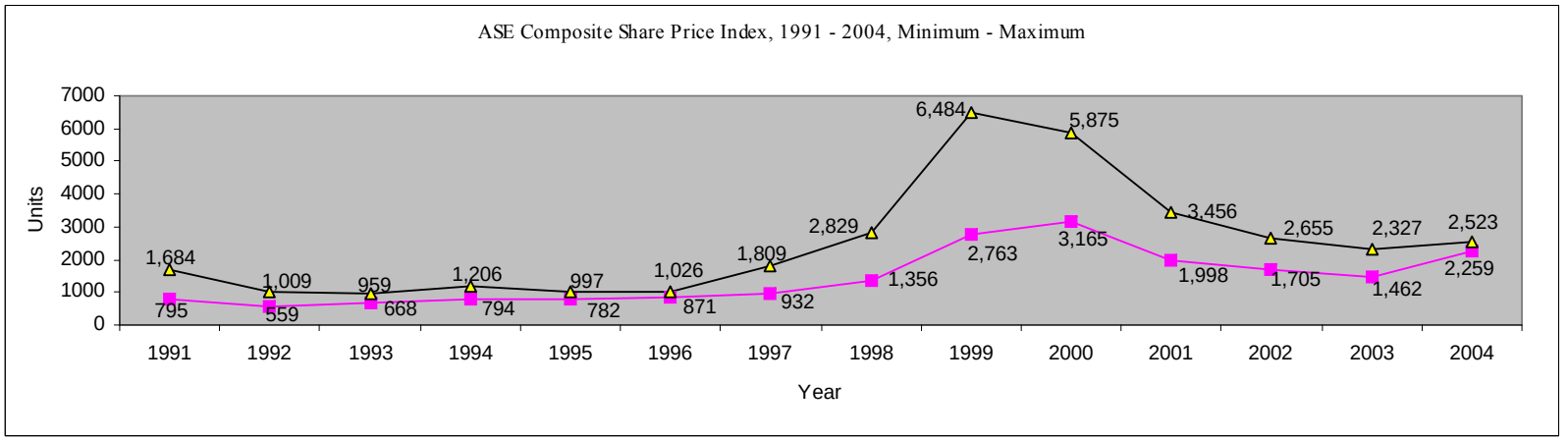


Figure II-2: ASE Composite Share Price Index, 1991 - 2004, Minimum - Maximum



Source: ATHEX, Annual Statistical Bulletin (2004)