Users' perceptions and investment strategies employed in Athen's Stock Exchange

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ICAFT,
Kavala, July 2004

Abstract

This study explores investors' perception about their investment strategy employed in Athen's Stock Exchange. Especially, we examine the extend they use fundamental analysis, technical analysis, or portfolio analysis, the degree of the attention they pay to other information sources such as financial press, noise in the market / rumors, foreign markets, government policy and how their instinct drives them. We also investigate, under the fundamental analysis umbrella, how profit based measures (earnings, EPS, ROI, ROE, P/E), value based measures (EVA, SVA, MVA) or capital budgeting techniques are affecting their investment strategy. We also examine what methods of technical analysis used by the interested investors or traders. Finally, we explore the perceptions of the various user groups regarding the level of performance of their adopted investment strategies. Six user groups have been selected to respond to the survey questionnaire: (i) official members of ASE; (ii) mutual funds management companies; (iii) portfolio investment companies; (iv) listed companies in Athen's Stock Exchange; (v) brokers; and (vi) individual investors. The questionnaire survey conducted from mid December 2003 to mid June 2004. The results are interesting but quite contradictory among the subjects groups, with portfolio investment companies and mutual funds management companies providing a higher investment performance while individual investors to be considered as the most poorly performed user group.

Keywords*:* Investment strategies, Fundamental analysis, Technical analysis, Portfolio analysis, Performance measures.

1. Introduction

Globally, in every stock market, investors have the opportunity to choose among a wide range of investment products, but up to now, the research in the field of how they express their investment behaviours is still very limited. The exploration and understanding of these behaviours and a consistent and specific education and training are regarded as of high importance in order to assist them and their successful financial future. Since the financial decisions have became more and more complex and risky, investors have to protect themselves from all possible difficulties in the stock markets. Additionally, they have to be informed and trained how all other investment groups are performing in capital markets.

A great deal of financial theory considers investors as rational and wealth maximisers (Peirson *et al.,* 1998). They are acting following the basic financial rules and base their strategy on the risk-return consideration. However, the level of risk investors are willing to undertake isn't the same, depending mainly on their personal attitudes towards risk. According to finance theory, rational investors, after comparing the level of risk between two investment alternatives, and since their risk is at the same level, they select that alternative which is going to offer them higher return. Research in psychology and finance has been of high interest in recent years providing evidences that investors' financial decisions are also affected by internal and external behavioural factors (Shefrin, 2000; Shleifer, 2000). As an internal behaviour factor somebody can consider investors' knowledge of themselves while as an external behaviour factor somebody can consider the way a choice is presented or structured.

Overall, the sense that little has been written about the behaviour of individual investors, and other investors' groups, is obvious and strongly referred by Warneryd (2001) in his review of theory both in finance and in psychology.

The present study tries to add to this area, mainly in the field of investment strategies employed by various user groups in Athens Stock Exchange, one of which is the individual investors.

Since the Greek stock market is considered to be on the way to reach the levels of sophisticated markets, it would be of great interest to conduct a survey among all user groups involved in this market exploring their behaviours and

perceptions in employing their investment strategies. The importance of the study steams from the fact that no similar study has been published demonstrating empirical results in the field. It is also important to mention that since comparatively few studies have been undertaken about the experiences of less developing capital markets, this study can be regarded as a guide for those countries following the development of Greek capital market and especially those countries, which have joined recently the European Union. In this way, stock market crisis, such as this in Portugal in 1996 and then in Greece in 1999, could be avoided.

The rest of the paper is structured as follows: section 2 contains the literature review and the development of the research questions, in section 3, we describe the research method, in section 4, we demonstrate our findings from the research, and, finally in section 5, we conclude the study.

2. Literature Review and research questions' development

Individuals' investment strategies have been explored through a body of studies performed in the past. Green and Maheshwari (1969: 442), examined whether '*mean and variability of return represent salient attributes in respondent's perceptions of similarities and differences among a group of stocks*'. They provided evidences that mean and variance were consistent. Potter (1971), found that six factors such as dividends, rapid growth, investment for saving purposes, quick profits through trading, professional investment management, and long-term growth, are affecting the individual investors' attitudes towards their investment decisions. Barker and Haslem (1973), resulted that investors are primarily concerned with expectations about the future, considering earnings projection and historical data to be of high interest to investors in implementing their investment strategies. Barker and Friend (1978), in their study conducted in the New York Stock Exchange in 1975 for the American individual investors, provided evidence that both price and earnings volatility were the primary measures of risk undertaken by individual investors. Schlarbaum, Lewellen, and Lease (1978), exploring individual investors' investment performance in New York Stock Exchange, compared to that of professional fund managers, reveal that they have considerable skills in their investment decisions. Lease, Lewellen, and Schlarbaum (1974), describe individual investors as 'investors' rather than 'traders', since they are long term minded and give little interest in short term yields. More,

Lewellen, Lease and Schlarbaum (1977), reveal that investors' main source of information is through fundamental or technical analysis. Antonides and Van Der Sar (1990: 236), exploring the individual investors' characteristics in Dutch stock market, argue that '*the perceived risk of an investment is lower the more the stock price has increased recently*', which is consistent to Blume and Friend's (1978) findings. Nagy and Obenberger (1994), searching the extend to which a listing of 34 variables influence shareholders' perception, in Fortune 500 companies, provide evidence to a mix of financial and non-financial variables. Additionally, they found that each shareholder considers in a different way the seven different factors arisen from their factor analysis. Fisher and Statman (1997), relying on the general agreement that investment decision is a complex one, reveal that investors are not only concerned about risk and return when buying shares since there are other parameters to take in to consideration. All the above studies have been conducted in developed stock markets such as USA, Australia and Dutch.

On the other hand there are few studies examining the way that various investor groups are making their investment decisions, especially in less developed countries with a moderately sophisticated capital market. Two of these studies have been conducted by Nassar and Rutherford (1996) for Jordan, and Naser and Nuseibeh (2003) for Saudi Arabia. They asked the user groups to explain their attitudes towards annual reports and the usage of these reports in supporting their investment decisions. Evidences show that investors employ annual reports in about the same way as those in developed countries with sophisticated capital markets, but they rely more on information obtained directly from the companies (Nassar and Rutherford, 1996) and do not consult intermediary sources of corporate information in order to make informed decisions (Naser and Nuseibeh, 2003). Overall, investors seem to use mainly components of fundamental analysis (financial statements and ratios) and in a lesser degree portfolio analysis (mean-variance).

Other studies concerning mainly professional investors in sophisticated capital markets, such as Hong Kong (Wong, 1993; Lui and Mole, 1996; Lui and Mole, 1998; Wong and Cheung, 1998), UK (Allen and Taylor, 1989; Grinyer, Russell and Walker, 1991; Taylor and Allen, 1992; Collison, Grinyer and Russell, 1996) and US (Frankel and Froot, 1986 and 1990; Carter and Van Auken, 1990) reveal that these groups of investors rely more on fundamental and technical analysis and less on portfolio analysis. Additionally, many authors (Prakash and Rappaport, 1977; Ronen and

Sadan, 1981; Myers and Majluf, 1984; Black, 1986; Watts, Ross and Zimmerman, 1986; Campbell and Shiller, 1988; Fama and French, 1989; Shiller, 1989; Frankel and Froot, 1990a; Shleifer and Summers, 1990; Copeland, Koller and Murrin, 1991; Mac Donald and Taylor, 1991; Theodossiou, 1991; Bromwich, 1992; Renshaw, 1993; Theodossiou, Kahya, Saida and Philippatos, 1996) contributed to the fields of fundamental analysis, technical analysis, portfolio analysis and noise in the markets. They also provide insights that investment professionals may have different practices in different markets and may use different techniques for market forecasting in different time horizons, (Wong and Cheung 1998).

In a survey among US investment managers, Carter and Van Auken (1990), provided evidence that fundamental analysis was the most popular and most commonly used technique, followed by technical analysis. Portfolio analysis rated third in their perceptions and considered as the less used analysis. More analytically, their findings show that: (a) Price/Earnings (P/E), ratio analysis, business cycle, and monetary analysis were the most highly ranked (used) approaches of fundamental analysis; (b) The contrary opinion rules and the point and figure charts were the most highly ranked approaches of technical analysis, and (c) computer simulation techniques and the return-variance analysis were the most highly ranked approaches of the portfolio analysis. From their findings we realise that professional investors consider technical analysis very useful even though the weak form efficient market hypothesis does not support such ideas. More, we realise that the investment world use methods and techniques different from those proposed by academics (e.g., CAPM, APT, and Market Value Based measures). Many other studies (Balvers, Cosimano and McDonald, 1990; Breen, Glosten and Jagannathan, 1990; Campbell, 1987; Campbell and Shiller, 1988; Cochrane, 1991; Fama and French, 1989; and Renshaw, 1993) supported the usefulness of fundamental analysis and provide evidence that P/E, dividends, business conditions and economic variables can predict monthly, quarterly and annual returns, violating the semi strong efficient market hypothesis.

However, fundamental analysis has been widely criticized in the past three decades. Many studies (Dornbusch, 1976, 1987; Meese and Rogoff, 1983; MacDonald and Taylor, 1991), provide evidences that fundamental based models fail to explain the past performance adequately, or to predict the future performance with reliability. These findings led researchers to start exploring the usefulness of other

techniques such as technical analysis. Frankel and Froot (1986, 1990b), and, Goodhart (1988), provide evidence for the significant role of technical analysis, especially in cooperation with fundamental analysis (Goodhart, 1988). Studies from Allen and Taylor (1989) and Taylor and Allen (1992), provide evidence for the significant role of technical analysis in foreign exchange markets. Allen and Taylor (1989), surveyed more than 200 bank foreign dealers in UK. They demonstrated quite interesting results showing that bank dealers used different tactics in short, medium, and long term horizons for market forecasting. For the short term horizon, 90% of respondents used technical analysis, and 60% of them considered technical analysis as important as fundamental analysis. But as the time horizon increases, this high percentage (90%) starts declining significantly. This result is consistent with Frankel and Froot (1986, 1987, 1990) assertions that the information of technical analysis significantly determines the short-term equilibrium prices in foreign exchange market.

Technical analysis has been widely used and influenced perceptions and behaviours of investors acting for other financial markets such as stock market. Shiller (1989) considers technical analysis as a significant factor playing an important role for the international stock market crash in October 1987. Wong (1993), provide evidence that technical analysis influence investors' perceptions in Hong Kong stock market. The research community has to demonstrate many studies in the field. For instance, Black (1986), Campbell and Kyle (1988), and Shleifer and Summers (1990), De Long *et al*., (1991), contribute to the role of the traders who do not use or misperceive the fundamentals (noise traders). Additionally, Frankel and Froot (1990a), and Kirman (1991), demonstrate the relationship between fundamental and non-fundamental approaches. Recent studies (Wong and Cheung, 1999; Lui and Mole, 1988) conducted for Hong Kong market, provide evidence that analysts in this market rely more on fundamental and technical analyses and less on portfolio analysis. The extend to which either the fundamental analysis or technical analysis are used depends on many factors. For instance, analysts from large firms in Hong Kong, especially those with high positions and high experience, rely more on fundamental analysis and less on technical analysis. The opposite result concerns analysts in brokerage firms where they rely more on technical and less on fundamental analysis and portfolio analysis (Wong and Cheung, 1999). The time horizon also plays significant role on the implementation of fundamental and technical analyses. At shorter horizons, technical analysis is more frequent used than fundamental analysis

while the opposite occurs when the time horizon tends to increase (Wong and Cheung, 1999; Lui and Mole, 1988).

A great deal of theoretical literature exhibits the use of financial statements (Gordon, 1962; Ohlson, 1995; Rees, 1995; Palepu, Bernard, and Healy 1996; Watts, 1996; White, Sondhi, and Fried 1997; Holms and Sugden, 1999; Brealey, and Myers 2000, 2003; Copeland, Koller, and Murrin, 1991, 2000; Penman, 2001; White, Sondhi, and Fried, 2003). They are mainly focused on traditional accounting based performance measures, with most demonstrated Earnings, Earnings per Share (EPS), return on investment (ROI), return on equity (ROE), and price earnings ratio (E/P).

On the other hand, accounting based performance measures have been extensively criticised by many academics and professionals who were focused on the shareholder value creation of the company. Rappaport (1986, 1987, 1998) argued that since earnings increases do not guarantee increases in shareholder value, and since ROI and ROE use this unreliable numerator, they cannot be considered as wealth creation ratios. Additionally, Rappaport (1986), introduced and demonstrated his value based measure which is widely known as shareholder value analysis (SVA).

Stewart (1991), advocated a trademarked variant of residual income, the economic value added (EVA) performance measure and argued that it could be used instead of earnings or cash from operations as a measure of both internal and external performance of the company. More, he criticised earnings, earnings per share, earnings growth, ROI and ROE, demonstrating the EVA concept as the unique, which could drive stock prices best. Stewart (1991) also introduced the market value added concept (MVA), witch is related to EVA in the sense that is calculated as the present value of a company's all future EVAs.

Shareholder value concepts has also been examined and demonstrated by many academics (Wallace, 1997; de Villiers, 1997; Black, Wright, and Bachman, 1998; Ehrbar, 1998; Mills, 1999). EVA, MVA, and SVA have been popular concepts among academics, professionals, media and newspapers in USA and in recent years started to increase the interest of the financial community in many developed countries around the world, from Germany and Japan to Singapore and South Africa (Ehrbar, 1998).

Even though these modern value-based measures are demonstrating as the hottest financial ideas, only a few studies have been conducted around the word surveying their relevance to value and the extend of their usage by the various

investor groups. Studies, especially from their contributors (Rappaport, 1986; Stewart, 1991; O'Byrne, 1996) provide evidence for the considerable reliance of these measures towards value creation. Potential researchers are facing difficulties in conducting comparable studies on those measures mainly for the reasons as different accounting systems among countries, complicated estimation for the charge for capital and more than hundreds possible customized accounting adjustments (especially for EVA). Cheng, Cheung, and Gopalakrishnan (1993), surveyed US firms, showing that operating income and net income dominate comprehensive income. Biddle, Bowen, and Wallace (1997), surveying the same market provided evidence that, earnings generally outperform EVA. De Villiers, and Auret (1998), exploring South Africa market, found EPS to has more explanatory power than EVA in explaining share prices. Gunter, Landrock, and Muche (1999), searching German DAX-100 companies, found profit based measures to be higher correlated to returns than value based measures did. But, in contradiction to the above evidences, Forker, and Powell (2004), from the survey they conducted for US and UK firms using Schiller's (1981) methodology, provided clear evidence that investors' factor a cost of capital into equity pricing and that residual based metrics, such as EVA, are superior to conventional accounting metrics in providing a basis for investors to confirm or revise their expectations in the valuation process.

Much of academic literature is focused on capital budgeting techniques and valuation models (Williams, 1938; Gordon, 1962; Rappaport, 1986; Edwards, Kay, and Mayer, 1987; Stewart, 1991, Lev and Thiagarajan, 1993; Damodaran, 1994; Sougiannis, 1994; Feltham and Ohlson, 1995; Ohlson, 1995; Palepu, Bernard and Healy, 1996; Penman, 1996; Holmes and Sugden, 1999; Madden, 1999; Copeland, Koller and Murrin, 2000; Barker, 2001; Penman, 2001), demonstrating the need for their use. Experimentally, there are also many studies (see Aggarwal, 1980; Hayes and Garvin, 1982; Yard, 1987; Sangster, 1993; Baldwin and Clark, 1994; Arnold and Chatzopoulos, 2000; Hellman, 2000; Sandahl and Sjögre, 2002), which reveal the usefulness of DCF and payback techniques and the most recent of them indicate the introduction of value based management (EVA, MVA, SVA) approaches in companies. Sandahl and Sjögren (2002: p.52), in their wide capital budgeting survey for Swedish companies, state: "*It is our experience that management literature, business magazines, scientific journals and papers have recently focused on shareholder value. The shareholder perspective forces management to meet the*

demand from the owners to a higher extent than before. The objective of shareholder wealth maximisation becomes more important. The added value principle ought then to have some impact on the use of capital budgeting methods". They found that payback method is the most popular method, followed by DCF methods (mainly NPV and IRR). They also found that although value-based management (VBM) appear to be introduced and used from a quite low number of listed companies, it has not been yet adopted of the vast majority of companies.

From the above stated literature review we decided to construct and examine the following research questions:

- *Research question 1*: What are the perceptions of the various user groups regarding the level of importance they attach to different factors-methods[1] in their approach of stock price valuation?
- *Research question 2*: What are the perceptions of the various user groups regarding the level of accuracy they attach to the three most important methods (fundamental, technical, and portfolio analyses) for stock price valuation and forecasting in the short and long term[2]?
- *Research question 3*: What are the perceptions of the various user groups regarding the level of usage they attach to different factors-methods in their approach of evaluating-predicting future stock prices before, during, and after 1999[3]?
- *Research question 4*: What are the perceptions of the various user groups regarding the level of reliance (usage) individual non-professional investors attach to different factors-methods in attempting to build their stock portfolio?
- *Research question 5*: What are the perceptions of the various user groups regarding the level of usage they attach to different traditional accounting

[1] See Table A1

[2] See Table A2

After consultation with representatives of the various user groups we agreed to define short-term the period of less than one month, and long-term the period between one month and one year). Very few suggested to add medium-term (from one to six months) too, but the majority did not agreed, since their meaning of long term included the medium term and they were not using this term.

[3] Since the Greek capital market had an extreme fluctuation during the last years, with the General Index below 2000 before 1999, an extreme increase up to 6480 during 1999, and a very deep decrease below 1700 in years following 1999, we decided to separate our research to these three examining periods with the hope to catch some possible differences between these periods.

measures[4] for the evaluation of current and future performance of the Greek listed companies in ASE, before, during, and after 1999?

- *Research question 6*: What are the perceptions of the various user groups regarding the level of usage they attach to different modern value-based measures[5] for the evaluation of current and future performance of the Greek listed companies in ASE, before, during, and after 1999?
- *Research question 7*: What are the perceptions of the various user groups regarding the level of usage they attach to different capital budgeting techniques[6] for the evaluation of current and future performance of the Greek listed companies in ASE, before, during, and after 1999?
- *Research question 8*: What are the perceptions of the various user groups regarding the level of usage they attach to different techniques of technical analysis[7] for the evaluation of current and future performance of the Greek listed companies in ASE, before, during, and after 1999?
- *Research question 9*: What are the perceptions of the various user groups regarding the level of performance of their adopted investment strategy (ies) in the last 10 years, compared to the performance of the Greek General Index?

3. Study method

In order to survey investors' perceptions of various user groups concerning the implementation of their investment strategy, a questionnaire was distributed to six different groups: official members of ASE, mutual funds management companies, portfolio investment companies, listed companies of ASE, brokers, and individual investors. We decided to investigate all those groups since they constitute the frame of investors contributing to the investment process in Athens Stock Exchange. They were all assumed to have the required knowledge to accurately respond to the questions of the questionnaire.

The questionnaire was consisted of four different sections. Section one sought general information on the respondents' background profile such as education and

[4] See Table A3
[5] See Table A4
[6] See Table A5
[7] See Table A6

years of experience in the field. Section two was mainly focused on investors' perceptions about the level of importance and usage they attach to different factors-methods such as fundamental analysis, technical analysis, portfolio analysis or other approaches to value or predict share prices (rumors, media, instinct, foreign markets, and government policy). Section three focused on investors' perceptions about the level of usage attached to different methods of fundamental analysis, such as accounting based measures, value based measures and capital budgeting techniques. Finally, section four explores the investors' perceptions about the level of usage they attach to different methods of technical analysis. The respondents were asked to indicate their opinion on a five point Likert scale in terms of 'not at all' or 'not accurate' or 'not at all' (1) to 'very much', or 'very accurate', or 'always' (5). Only the last question of the questionnaire, witch asks from the investors of each user group to evaluate their performance, is based on a ten point Likert scale in terms of 'very unsuccessful' to 'very successful'. The survey lasted six months. It started mid December 2003 and finished by mid June 2004. An early draft of questionnaire was piloted by a small number of potential respondents from every user group. After the feedback from respondents, we modified the wording where needed and reformulated a few questions. The final version of the questionnaire constituted of ten pages. To make it easy for response we translated it into Greek and additionally we created an abbreviation and terminology list.

First, we created a data base which was constituted of all official members of ASE, all mutual funds management companies, all portfolio investment companies, and all listed companies in ASE except banks or those companies which were under suspend. To distribute the questionnaire to brokers and individual investors was quite complicated. We created a separate database for the brokerage companies, selected ten of them from each of the thirteen regions in the country, and targeted one questionnaire to each company (130 questionnaires in total). To distribute the questionnaire to individual investors we used the same database and the same selected brokerage companies, targeting four questionnaires to each company (520 in total), asking from them to randomly select four of their potential respondents-customers.

We distributed the questionnaires in three phases: The fist survey phase started in December 2003 and finished by the end of January 2004. We personally visited a great number of official members of ASE, mutual funds management companies, portfolio investment companies, listed companies in ASE and brokerage firms asking

for response. Simultaneously, we sent the questionnaire, using e-mail, to all target groups. Response rate was quite satisfactory. We counted up to 29.07%, 23.33%, 7.14%, 11.36%, 19.23% for official members of ASE, mutual funds management companies, portfolio investment companies, listed companies in ASE and brokers respectively, while no special attempt had been done for individual investors. Next survey phase started February 2004 and finished by the end of March 2004. It was mostly oriented to a postal communication with the potential respondents, where we sent the questionnaires with a return pre paid envelope. These responses increased the total response rate to 31.40%, 26.67%, 10.71%, 15.91%, and 26.92% respectively. Responses from individual investors started to appear. Last survey phase, started in April 2004 and ended by mid June 2004. It was totally focused on a direct communication with telephone. That increased significantly the response rate up to 52.33%, 56.67%, 60.71%, 21.36%, 65.38%, respectively, while the response rate of individual investors reached finally the level of 43.08% (see table A7).

Table A7
Response rate

Subject groups	Distributed Questionnaires	Returned Questionnaires	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

4. Analysis of the results

4.1. Respondents' background

We sought information about the user group's position within the company, educational background and years of experience in the field. Examining the position within the company (see table A8) for the respondents of the first four user groups

(Official members of ASE, Mutual fund management companies, Portfolio investment companies and Listed companies) we find that on average for all groups, 20.4% are CEOs, 17.7% are CFOs, 2.7% are shareholders, 32.3% are analysts, and 26,9% others.

Table A8
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

Examining the position within the company separately for each category, we find that for the user group of official members of ASE, responses come mostly from analysts (73.3%), for the user group of mutual fund management companies, responses come in balance from all potential respondents, for the user group of portfolio investment companies, responses come mostly from CEOs (47.1%), followed by analysts (23.5%), and finally, for the group of listed companies most responses come from the category of others (56.5%) followed by CFOs (23.9%). As for their educational background (see table A9), we find that for all six user groups, on average, the respondents hold a master degree (57.3%) followed by those holding a bachelor degree (26.5%). Looking the results for each category, we find that respondents from the first three user groups hold a master degree (71.1%, 88.2% and 82,4%) respectively. Respondents from listed companies are mainly master and bachelor holders (48.9% and 42.6% respectively). The previous rank tends to appear in reverse form for brokers (35.3% and 45.9% respectively). Finally, the respondents from individual investors group appear to hold mainly a bachelor degree (41.1%), followed by those who are high school graduates (29.9%).

Table A9
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

As for the respondents' year of experience, we find that nearly eleven years (10.8) of experience seems to be the average for all user groups (see table A10).

Table A10
Years of experience

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

4.2. Research questions' results

Research question 1. This research question tries to outline the perceptions of all six-user groups regarding the level of importance they attach to a list of nine factors-methods in their approach to valuation of stocks. On average (see Table B1), respondents rank first their instinct/experience, followed by fundamental analysis and foreign markets, while they consider the noise in the market and portfolio analysis as the least important approaches, which is in direct contrast to the theory developed by researchers and academics.

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 comes 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 the 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). An interesting result for individual investors is that newspapers and the media are strongly affecting their approach, ranking them in the second position with a high mean value of (3.30). The results also reveal that despite the perception differences between groups, institutional investors are mainly interesting more in fundamental than technical analysis while brokers and individual investors do not consider it as their first choice. Brokers have the technical analysis (3.65) as a priority, while media and newspapers mostly influence individual

investors. Noise in the market, is considered as the least important factor, except for individual investors who rank it in the fifth position.

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. The highest degree of agreement on the ranking of different approaches is achieved by mutual fund investment companies (0.73), followed by official members of ASE (0.72), and by listed companies (0.71).

Research question 2. For stock price valuation and forecasting in the short term, table B2a shows that on average, all user groups rank first the technical analysis (3.36), followed by fundamental analysis (2.84), the combination of both analyses (2.75), and finally portfolio analysis (2.18). ANOVA test reveals significant differences between the responses of various user groups for all four alternatives they had to answer. Examining each group separately, official members of ASE (3.42), portfolio investment companies (3.59), brokers (3.36), and individual investors (3.36) consider technical analysis as the first important method for short term use, while mutual fund investment companies rank it second (3.35) after fundamental analysis (3.41) and listed companies rank technical analysis in the last position (2.68). Portfolio analysis ranks last for all user groups' perceptions and only the listed companies consider it as the second most important. The combination of both fundamental and technical analyses reveals an important level of accuracy ranking either second or third for all user groups with a mean of each group above the average (2.5). Cronbach's alpha test quantifies the degree of agreement among the responses of a group, revealing that listed companies (0.80), brokers (0.70) and official members of ASE (0.60) achieve the higher degree of agreement among their respondents.

Examining the user groups' perception for long term horizon we find different results. As table B2b shows, on average, fundamental analysis ranks first (3.80), followed by the combination of fundamental and technical analysis (3.11). Technical analysis ranks in the third place with a mean of (2.98), very near to that of portfolio analysis (2.95), which is still in the last place. The important findings here are that the combination of fundamental and technical analyses is considered as the second important approach while portfolio achieves a mean of (2.95) which is above the average (2.5) and higher than achieved in the short term (2.18). This lead us to conclude that, portfolio analysis plays a more important role for valuation and

forecasting in the long term. The ANOVA test reveals, again, significant differences between the groups and only portfolio analysis seems to reveal an agreement of perceptions between groups (sign. 0.074). Cronbach's alpha test reveals that listed companies (0.75), individual investors (0.70) and official members of ASE (0.61), show the highest degree of agreement among the respondents.

As a conclusion we could say that fundamental analysis is considered as the most important approach in long term valuation and forecasting, while technical analysis takes the first place in the short term. The combination of fundamental and technical analyses seems to be more interesting in the long term. Similarly, portfolio analysis also earns more reputation in the long term, but still ranks in the last position.

Research question 3. Table B3 shows the results both on average for all user groups and for each user group separately, for each of the three different time periods. Findings reveal that fundamental analysis, technical analysis, both fundamental and technical analysis, portfolio analysis, and foreign markets rank in the first place for the third time period (after 1999). On the other hand, noise in the market, newspapers/media and instinct/experience rank in the first place during the second time period (during 1999) where the crisis of Greek stock market appeared. This is an indication that factors such as noise in the market, newspapers/media and instinct/experience can drive investors to wrong decisions. An interesting finding is that noise in the market and newspapers/media rank last for the third time period, which means that investors realised that these factors led them to wrong decisions. Examining the use of these factors-methods for each user group separately, we come to the same results.

In general, this research question reveals that noise in the market and newspapers/media were the most important sources of information for all groups during the second time period where the crisis occurred while they rank them last in the third period. Fundamental analysis, technical analysis, both fundamental and technical analysis, portfolio analysis, foreign markets and government policy rank in the first place in the third period, which means that investors are becoming more sophisticated in their investment strategy.

Research question 4. This research question tries to outline all user groups' perceptions regarding the implementing investment strategy of individual non-professional investors. Table B4 shows that, on average, all user groups believe that

newspapers/media (4.00) and the noise in the market (3.96) are the two factors that drive the individual investors' strategy mostly. Comparing this result to what individual investors believe for themselves, we realise that they have the same opinion with mean values near to the average response (3.96 and 3.90 respectively). Additionally, portfolio analysis ranks last (1.52) among all user groups' perceptions, something which is consistent with what the individual investors believe (1.40). These low means show that individual investors are far from the use of portfolio analysis. The same apply for other sophisticated methods such as the combination of fundamental and technical analyses (2.08), the fundamental analysis (2.23), and the technical analysis (2.36). ANOVA test reveals that there are significant differences between user groups regarding the technical analysis, portfolio analysis, instinct/ experience, and foreign markets. That means that different user groups have not the same perceptions for those factors-approaches. Cronbach's alpha test reveals that the user groups of brokers (0.74), official members of ASE (0.69), and portfolio investment companies (0.61) achieve the highest degree of agreement.

Research question 5. Respondents were asked to determine the level of usage they attached to different traditional measures for the three different periods. Table B5a shows that, on average, for all user groups, net operating profit after taxes (3.27), earnings per share (3.48), return on investment (3.03) and return on equity (3.11), are the mostly used indicators in the third period, while P/E ratio (3.87) seems to be most popular in the second time period. Not surprisingly, all traditional accounting measures rank in the last place during the second period, except P/E ratio. Since the ANOVA test reveals significant differences between groups, we demonstrate the use of each measure for each user group separately.

Net operating profit after taxes, for all user groups, ranks in the first place for the third time period and in the last place during the second period, except for the listed companies which rank it in third place in the first period and first in the third period. Earnings per share, ranks in the first place for the third period, except portfolio investment companies, which rank it in second place for this time period, but regard it as the best choice in first time period. Return on investment and return on equity rank in the first place for all groups, in the third period, while are not used so much in the second period. P/E ratio seems to be popular in second time period for the groups of mutual fund management companies (4.50) and individual investors (4.04) while

ranks first for the use of all other user groups. As a conclusion, we can argue that all traditional accounting measures are used mostly during the period after 1999, while there were not so popular in the first and second time periods, except the P/E ratio. Moreover, the high values of the means achieved by the official members of ASE, mutual fund management companies, and portfolio investment companies, compared with the low means achieved by the rest of the user groups, reveal to us that those measures are most popular among institutional investors than individual investors and brokers. Finally, Table B5b, shows that, on average, when taking all periods as one and for all user groups, P/E ratio (3.65), EPS (3.01), and NOPAT (2.90) rank in the first three places, while ROE (2.40), and ROI (2.33) ranks in fourth and fifth place with means below the average.

Research question 6. Respondents were asked to determine the level of usage they attached to different modern value-based measures during the three separated periods. Table B6a shows that on average, for all user groups, EVA (2.32), SVA (1.91) and MVA (2.16), compared to all three time periods, are mostly used in the third period, with EVA taking the first place. On the other hand, all modern value-based measures rank in the last place during the second period with relatively low means. ANOVA test reveals significant differences between groups for the way they consider those measures.

EVA is the most preferred measure for all groups in the third time period, while official members of ASE, public companies, brokers and individual investors rank it in the third place during the second period. Mutual fund management companies and portfolio investment companies seem to use it more in the second period. MVA reveals nearly the same results since it is a measure directly calculated from the discounted of future EVAs. SVA demonstrates low means which result low usage, with mutual fund management companies, portfolio investment companies, listed companies and individual investors to demonstrate the same rank for this measure, which increases period after period. In general, we can argue that that modern value-based measures are more used as the time period tends to reach the recent days, while there were not so popular in the second time period. More, the fact that official members of ASE, mutual fund management companies and portfolio investment companies, achieved higher means than the means achieved of the rest of the user groups, reveal that modern value-based measures are most popular among

institutional investors than public companies, brokers, and individual investors. Finally, Table B6b, shows that on average, taking all periods as one and for all user groups, EVA (1.86) ranks first followed by MVA (1.75). SVA (1.62) ranks in the third and last place. Examining each user group separately, we find the same ranking and only individual investors show a preference for MVA. After all, the overall low means achieved reveal the limited use of those measures.

It is of interest to compare the usage of traditional accounting measures to modern value-based measures. Table B6c, shows the usage of all performance measures under examination during the three examining periods. There is a decrease of use for all measures in the second period, which can be considered as an argument for the unorthodox performance of the stock market in that period. Not surprisingly, there is an increase of use of all measures in the last period. Only P/E does dot follow this rank, showing a higher use in the second period. Table B6d, considering the three periods as one, shows the degree of use of all measures both for all user groups and separately. On average, all traditional accounting measures rank higher than modern value-based measures, with P/E ratio (3.65) and EPS (3.01) taking the first two places. EVA (1.86), MVA (1.75) and SVA (1.62) rank in the three last places. Examining each user group separately, we find nearly the same results. Only portfolio investment companies rank EVA (3.12) in the third place and NOPAT (2.50) in the seventh place. This can be considered as an argument that portfolio investment companies consider the economic value added as an important measure for the valuation of stocks.

Research question 7. Respondents were asked to determine their perceptions regarding the level of usage they attached to different capital budgeting techniques during the three different periods. Table B7a shows that on average, for all user groups, DDM (2.67), NPV (2.56), CFROI (2.45), IRR (2.26), Payback (2.06), EP (1.86), EVM (1.81), CVA (1.76), DCA (1.73), are most used mostly in the third period, with DDM being in the first place. Consistent to the results of the research questions 5 and 6, all capital budgeting techniques rank in the last place of use during the second period, except DDM and CFROI which are placed second, with mean values similar to those of the first period. This result makes stronger the argument that during the year 1999 investors did not pay much attention to fundamental analysis and capital budgeting techniques, looking for short term speculative yields, coming,

mainly, from the so called "bubble" companies. Findings for the use of each capital budgeting technique, shows that NPV, Payback, CFROI, EVM and CVA rank in first place during the third period, for all user groups, with mean values higher than the previous periods.

Examining each user group separately, we find out that the use of capital budgeting techniques is higher in third period and generally lower in the second period. More, official members of ASE, mutual fund management companies portfolio investment companies and public companies with their higher means, reveal a higher use of those techniques compared to that of brokers and individual investors.

Table B7b shows that on average, taking all periods as one and for all user groups, DDM (2.29) ranks first followed by NPV (2.13), and IRR (1.94). CVA (1.61) and DCA (1.57) rank in last places. Examining each user group separately, we find that official members of ASE prefer the use of NPV, DDM and IRR. Mutual fund management companies and portfolio investment companies seem to implement nearly the same strategy, preferring DDM, NPV, CFROI, and IRR more than the other techniques. As it was expected, public companies rank higher IRR, NPV, and Payback while they rank last DCA and CVA, perhaps because they do not even know these techniques. Finally, brokers and individual investors seem to prefer NPV, DDM, and CFROI, while they rank DCA in the last place.

Thus, we can conclude that NPV, DDM, IRR, and CFROI are used mostly by of institutional investors with mean values above the average, with an exception of CFROI (2.48) for the official members of ASE, and of IRR (2.22) for the mutual funds management companies. Moreover, brokers and individual inventors, with low means in all cases, reveal a minor use of all capital budgeting techniques.

Research question 8. This research question deals with the use of technical analysis by all user groups. First, respondents of each user group were asked to indicate their level of usage for chart analysis and technical indicators. Table B8a, shows that official members of ASE and portfolio investment companies use mostly the chart analysis, while all other groups prefer the technical indicators. Next, respondents were asked to indicate their level of usage for the most common technical indicators. Table B8b shows that for all user groups, MACD (2.86) ranks first followed by moving averages (2.83), and RSI (2.65). Parabolic share (1.69) and OBV (1.83) rank in the last places with very low means. Examining each user group separately we reveal that official members of ASE, mutual fund management

companies, and portfolio investment companies, prefer the moving averages, followed by RSI and MACD. On the other hand, listed companies, brokers and individual investors prefer MACD indicator followed by moving averages and RSI. For all user groups Parabolic share is placed in the last place, except for individual investors who rank it in the seventh position.

Research question 9. Last research question examines the level of performance of each user group, asking from respondents to valuate their performance indicating their opinion on a ten point Likert scale in terms of 'not very successful' to 'very successful'. Table B9 shows that, portfolio investment companies (7.29) and mutual fund management companies (7.24) perform best, followed by official members of ASE (7.18). Public companies performance (6.32), ranks in the fourth place followed by brokers (5.94). Individual investors (4.54) are placed last with a mean value lower than the average. This results show that the implemented strategy of portfolio investment companies, mutual fund management companies, and official members of ASE was the most successful, while the strategy of individual investors, based mainly on noise in the market, information of media and low use of fundamental analysis, led to the lower performance.

5. Conclusions

In general all user groups are relying most on fundamental and technical analysis and less on portfolio analysis. Fundamental analysis is most used from mutual fund management companies, official members of ASE, portfolio investment companies and public companies, while the brokerage and individual investors' group consider it as less important. Technical analysis is most popular among brokers while is less popular among all other user groups. The combined use of both fundamental and technical analyses earns more and more confidence among all user groups. The above revealed evidences are consisted to many studies conducted for many sophisticated stock markets such as US, UK, Australia and Hong Kong.

Individual investors seems to be a trimming user group compared to the other user groups for the main reason that those investors are basing their investment strategy on factors such as newspapers/media, noise in the market (rumors) and their instinct/experiences.

Traditional accounting performance measures are most used compared to modern value based performance measures, among all user groups. The interest evidence from

this comparison is that modern value based performance measures earns increasingly reputation and use in recent years compared to the past. The extend of use of all performance measures are higher in the user groups of official members of ASE, mutual fund management companies, portfolio investment companies and public companies while brokers and individual investors express a lower use. Findings show that the same result stands for the use of capital budgeting techniques where DDM, NPV and IRR are most used among investors. Users of technical analysis provide evidence of preference on technical indicators than chart analysis while MACD, moving averages and RSI are the most used technical indicators.

Since we divided our research in three periods, we found that during the second period (year 1999) the use of fundamental analysis, capital budgeting techniques and portfolio analysis were of very low use, while technical analysis and factors such as noise in the market and the information from media drove the investors' strategy. Perhaps this was one of the reasons for the capital crisis at this year. Not surprisingly, we found that in the third period the use of fundamental anlysis (all measures except P/E ratio), the combination of fundamental and technical analyses, portfolio analysis, and capital budgeting techniques, nearly in all groups, are increasing their use in a considerable degree. Technical analysis still plays its role, but factors such as noise in the market and the information from media are decreasingly used from all user groups.

Finally, the self assessment of performance of each user group reveals that portfolio investment companies, mutual fund management companies and official members of ASE has performed best revealing means higher that 7 (scale 1 to 10). Individual investors have performed worse with a self-assessment below the average. That evidence may suggest that one of many ways to achieve a successful investment strategy is to follow the investment strategy implemented mainly from portfolio investment companies and mutual fund management companies.