ANALYSTS' REPORTS AND STOCK RETURNS DO ANALYSTS' RECOMMENDATIONS ADD VALUE?

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ABSTRACT

This paper examines whether analysts' recommendations in terms of target prices can predict future share prices in the short run. It provides evidence for the case of the Greek capital market for the period of June 2000 to December 2007. The model accounts also for other factors such as company size, dividend policy, company replacement value, risk, earnings and also investigates the extend to which the origin of the analysts' investment houses affects the accuracy of the predictions. The empirical results are interesting since they demonstrate that analysts' reports can correctly predict share prices in the short run even when accounting for other factors. This indicates that analysts' recommendations are overall useful. At the same time it is derived that domestic investment house analysts outperform their foreign counterparts, which has certain implications for the target prices of the stocks. In general, these findings are in line with the findings for other markets.

JEL Classifications: G11, G12.

Keywords: Analysts' predictions, market returns

INTRODUCTION

Analysts' recommendations have recently attracted increasing attention by both regulators and market participants, probably due to the increasing role of institutional investors who are highly affected by these analyses. Despite the large attention given to analysts' recommendations empirical evidence is contradicting as to what is the magnitude and the degree of value of these recommendations in the market place.

An early study that examines this association, albeit before the advancement of modern finance theory, by Cowles (1933) who studied investment recommendations of 16 financial companies, demonstrates that recommended stocks had on average a negative performance when compared against a market benchmark, concluding that investment recommendations did not add value. In recent times, Womack (1996) who examined U.S. analysts' recommendations comes with statistically significant positive excess returns from investments on recommended stocks. Barber, Lehavy, McNichols and Trueman (2001) show that buying (selling short) stocks with the most (least) favourable consensus recommendations, together with daily portfolio re-balancing

and a timely response to recommendation changes, allows for a monthly abnormal return of 0.8 percent. The US data used in their paper included investment recommendations from 1985 to 1996. On the contrary, Jaffe and Mahoney (1999) conclude that recommendations made by investment newsletters do not outperform the market. Barber *et al.*, (2003) derive that in the years 2000 and 2001, a period entailing doubts as to the independence of some analysts' recommendations, analysts had a negative performance. Referring to other markets beyond US, there seems to also be contradictory evidence. Ribeiro *et al.*, (2005) who examine recommendations for the Portuguese market during the 1999-2003 period derive a significant positive return on the day the recommendations are published, although in the long run analysts' recommendations are not associated with positive market returns. Contradictory findings over the predictive ability of research analysts' recommendations gradually switch the interest of related studies to the investigation of analysts' recommendations along with the addition of control variables (Ramnath, Rock and Shane, 2006). Control variables suggested focus mainly on factors that account for company size, dividend policy, fundamental book value and expected earnings.

This study investigates whether analysts' recommendations are useful alone or in conjunction with other factors or not useful at all. It focuses on the examination of six factors, two relating to analysts' recommendations and four relating to fundamental values. If fundamental factors alone can predict market value, then the value of analysts' recommendations is questioned. On the other side, if both analysts' recommendations and these fundamental factors explain part of market value, then analysts' recommendations add value to the market. We examine analysts recommendations for the case of the Athens Exchange (ATHEX) market during the period from June 2000 till June 2007 and use price data from June 2000 till December 2007 to investigate these issues.

DATA ISSUES AND METHODOLOGY

Data

Daily share prices are used adjusted for capital increases. The prices are taken from the EFFECT S.A. database covering transactions that took place from June 2000 till December 2007. There are 14 companies whose shares fitted the criteria for inclusion in the data set, namely, that, (a) the companies are traded during the examined period, (b) there are more than one analysts covering the companies during the examined period, (c) the recommendation for the analysed company has been released on the press within a day after the analysis was conducted, and, (d) there exists availability of company fundamentals and market data[1]. The econometric package E-views is used in order to regress the variables. Table 1, presents the examined companies as well as their economic sector. It should be mentioned that this group represents high

capitalization companies of ATHEX whose stocks are also characterised by high daily transaction liquidity. Although ATHEX contains around 350 listed companies, the abovementioned 14 companies represent almost 60% of its total capitalisation.

Table 1
Companies Included in the Sample

No	Company Name	Sector
1	Ellaktor	Construction
2	Alpha Bank	Bank
3	Cosmote	Telecom
4	Public Power Corporation	Utilities
5	EFG Eurobank	Bank
6	Folli Follie	Fashion Industry
7	Germanos	Retailer
8	Coca Cola HBC	Beverages
9	Intralot	IT
10	National Bank of Greece	Bank
11	OPAP	Lottery
12	Hellenic Telecom (OTE)	Telecom
13	Piraeus Bank	Bank
14	TITAN	Cement Producer

Analysts' reports come from 26 investment houses, 13 of which are domestic/Greek, while the remaining 13 are foreign. The names of the investment houses are presented in Table 2. Table 3 presents the distribution of the number of examined recommendations per annum. In total, 235 cases are examined for the 7-year period under review.

Table 2
Investment Houses Included in the Study

No	Investment house name domestic	No	Investment house name foreign
1	AGRICULTURAL	14	HSBC
2	ALPHAFINANCE	15	JPMORGAN
3	ARTION	16	LEHMAN BROTHERS
4	CFS	17	CITIBANK
5	MARFIN	18	CSFB
6	EUROCORP	19	Deutsche Bank
7	EUROLINK	20	Dresdner
8	NATIONAL	21	MERRIL LYNCH
9	Pentedekas Securities	22	MORGAN STANLEY
10	PK	23	FOX PITT KETTON
11	EUROXX	24	Salomon Bros
12	PRAXIS	25	SOCIETE GENERALE
13	FASMA	26	UBS

Table 3
Number of Examined Cases Per Annum

Year	No of Cases
2000	3
2001	8
2002	57
2003	90
2004	22
2005	23
2006	21
2007	11
2000-2007	235

Methodology

We use regression analysis to examine the association between stock prices and the investigated factors. To account for the relation between the target price and current price as defined by the analysts' premium or discount, we compute the following:

$$Target = (\text{Target Price}/\text{Share Price})\text{-}1$$

Similarly to Chen and Cheng (2005), we separate analysts' reports from different countries in order to better capture the value of these factors instead of conducting a simple array of averages. Furthermore, over the years a debate seems to be growing among market participants and journalists over the role of foreign investment house analysts relating to market performance and share price evaluation. We include an origin/nationality dummy variable (ND) in the regressions to investigate if the nationality affects the accuracy of the predictions. If the analyst of the recommendation belongs to a Greek investment house the value of the dummy is 1, while if the analyst belongs to a foreign investment house the dummy variable has zero value. Therefore, if Greek analysts provide superior predictions, "ND" should be positive and significant. In addition, as in Bennett et al. (2003) and Chen and Cheng (2005), we focus on factors that account for firm size, dividend policy, expected profitability and replacement value. To investigate these variables, BM is defined by the book value divided by the market value, DY is defined by the ratio of dividends over market value, EP is defined by the ratio of net income over market value and the size factor is presented by the logarithm of market value. By dividing dividends, net income and book value with the market value we deflate these factors, following thus the standard methodology of decomposition of the value of the firm, used by researchers according to Ohlson (1995), known as "residual income theory" . However, we do not proceed further to the examination of residual income theory since it goes beyond the scope of our study which is to evaluate analysts' predictions. Furthermore, since many researchers use both earnings to price as well as book-to-price indices to account also for risk we do not include additional risk factors. Earnings, dividends and book value used are the respective values for the forthcoming fiscal year.

We then proceed to regressions so as to define the coefficients of the following equations

$$R = \alpha + \beta_1 *Target + \varepsilon \quad\quad (1)$$

$$R = \alpha + \beta_1 *Target + \beta_2 *ND + \varepsilon \quad\quad (2)$$

$$R = \alpha + \beta_1 * BM + \beta_2 *DY + \beta_3 *EP + \beta_4 *logMV + \varepsilon \quad\quad (3)$$

$$R = \alpha + \beta_1 *Target + \beta_2 *ND + \beta_3 * BM + \beta_4 *DY + \beta_5 *EP + \beta_6 *logMV + \varepsilon \quad\quad (4)$$

$$R = \alpha + \beta_1 *DY + \varepsilon \quad\quad (5)$$

$$R = \alpha + \beta_1 * EP + \varepsilon \quad\quad (6)$$

$$R = \alpha + \beta_1 * BM + \varepsilon \quad\quad (7)$$

and

$$R = \alpha + \beta_1 \, logMV + \varepsilon \quad\quad (8)$$

Given that,

R is the 6-month unadjusted share price returns after the event, that is,

$$R = \frac{Share\, price_{t+t\, months}}{Share\, price_t}$$

t = time of analyst's report

and

ε is the error term.

RESULTS

In our model, we estimate 6-month returns and then we run regressions (1) to (8) to investigate the association of the various factors to these 6-month returns. In addition, the effect of the fundamental factors is tested in various combinations in order to investigate whether the exclusion of possibly statistically insignificant factors leads to the increase of the fit of the model.

Association Between Analysts' Recommendations and Price Moves

Our results suggest that there is an association between analysts' recommendations and market returns, as illustrated in Table 4. Regression statistics imply that within a 6 month period share prices moved toward the direction the analysts predicted. The model shows that for an analyst's prediction of 100% price appreciation share prices appreciated by 18.9% within 6 months after the analyst's recommendation was released. The fit of the model is satisfactory for a 7-year horizon (6.39% r-sq adjusted), and the coefficient of target price is statistically significant at 1% level.

Table 4
Analysts' Recommendation Target Prices and Market Returns
R = 0.035 + 0.189 *Target + ε

Predictor	Coefficients	Standard error	t Stat
Intercept	0.035*	0.017	2.10
target	0.189***	0.046	4.12

R Square	Adjusted R Square	F	Sample
6.79%	6.39%	16.96	235

*, **, ***, indicate statistically significant results at 10%, 5% and 1% level, respectively.

Association Between Analysts' Origin and Price Moves

Table 5 indicates that whenever analysts relate to Greek investment houses, share prices appreciated by an additional 7% within 6 months following the release of the analysts' recommendation. Besides, the model indicates that even after adjusting for "nationality" the analysts' prediction adds value to market participants. Namely, for a target price that implies 100% price appreciation, share prices appreciated by 19.4% within 6 months after the analysts' recommendation is being released. The fit of the model increases significantly following the addition of the ND dummy variable (R-sq adjusted increased from 6.39% previously to 8.51% now), and the coefficient of the target price is again statistically significant at 1% model, while the ND coefficient is significant at 10% level.

Table 5
Analysts Nationality, Target Prices and Market Returns
R = 0.006 + 0.194*Target + 0.070ND + ε

Predictor	Coefficients	Standard Error	t Stat
Intercept	0.006	0.020	0.29
target	0.194***	0.045	4.27
ND	0.070*	0.027	2.53

R Square	Adjusted R Square	F	Sample
9.29%	8.51%	11.88	235

*, **, ***, indicate statistically significant results at 10%, 5% and 1% level, respectively.

Association Between Fundamentals and Price Moves

We now investigate the extend to which fundamentals alone can capture an important part of prospective price appreciation or depreciation. Our model indicates that fundamental values alone, presented initially in the form of the four control variables, can capture part of price moves, Table 6. The fit of the model is satisfactory although significantly lower than the analysts' prediction fit alone, while the only statistically significant coefficient (at 5% level) refers to the dividends to market value variable.

Table 6
Company Fundamentals and Market Returns
$R = -0.077 + 0.017*BM + 2.153*DY + 0.512*EP + 0.003*\log MV + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	−0.077	0.136	− 0.57
BM	0.017	0.039	0.43
DY	2.153**	0.658	3.27
EP	0.512	0.436	1.17
logMV	0.003	0.016	0.18

R Square	Adjusted R Square	F	Sample
7.55%	5.94%	4.70	235

*, **, ***, indicate statistically significant results at 10%, 5% and 1% level, respectively.

Now, if we first drop the size and book value variables to investigate for the predictive power of dividends and earnings, Table 7 shows that the predictive power of the model increases. Again, the dividends to market value variable form the only statistically significant explanatory factor of the regression.

Table 7
Dividends, Profits and Market Returns
$R = -0.050 + 2.107*DY + 0.578*EP + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	−0.050	0.034	−1.45
DY	2.107**	0.628	3.36
EP	0.578	0.379	1.53

R Square	Adjusted R Square	F	Sample
7.44%	6.65%	9.33	235

*, **, ***, indicate statistically significant results at 10%, 5% and 1% level, respectively.

Then, we also drop the earnings to market value variable to investigate for the predictive power of dividends to market value alone, Table 8. It is derived that the predictive power of the model slightly decreases. The dividends to the market value variable is significant at 1% level indicating that for a company that has 1% higher dividend yield its market value increases by 2.4% more within 6 months than other companies.

Table 8
Dividends and Market Returns
$R = -0.016 + 2.408*DY + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	−0.016	0.026	−0.61
DY	2.408**	0.598	4.03

R Square	Adjusted R Square	F	Sample
6.51%	6.11%	16.24	235

*, **, ***, indicate statistically significant results at 10%, 5% and 1% level, respectively.

When examining the earnings to market value variable, alone, Table 9 suggests that it is a significant factor, albeit less significant than dividends. For a company that has 1% higher earnings yield (E/MV), the market value increases by 0.979% more within 6 months than other companies.

Table 9
Earnings and Market Returns
$R = -0.002 + 0.979*EP + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	−0.002	0.032	−0.07
EP	0.979*	0.368	2.66

R Square	Adjusted R Square	F	Sample
2.95%	2.53%	7.09	235

*, **, ***, *indicate statistically significant results at 10%, 5% and 1% level, respectively.*

The size factor, examined with the use of the company logarithm of MV, is not a significant explanatory variable as illustrated in Table 10, while the same holds for the book value to market value variable, in Table 11.

Table 10
Market Size and Market Returns
$R = 0.026 + 0.006*\log MV + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	0.026	0.130	0.20
logMV	0.006	0.016	0.37

R Square	Adjusted R Square	F	Sample
0.06%	−0.37%	0.13	235

*, **, ***, *indicate statistically significant results at 10%, 5% and 1% level, respectively.*

Table 11
Book Value and Market Returns
$R = 0.063 + 0.027*BM + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	0.063**	0.020	3.14
BM	0.027	0.036	0.76

R Square	Adjusted R Square	F	Sample
0.25%	−0.18%	0.58	235

*, **, ***, *indicate statistically significant results at 10%, 5% and 1% level, respectively.*

When book value, dividends and earnings are examined together, the model is of higher predictive power, Table 12. However, it is only the dividends variable that affects the explanatory power of this regression. Coming now to dividends when examined together with target prices as explanatory variables, it is derived that dividends add to the predictive power of the model, as illustrated in Table 13.

Table 12
Book Value, Earnings, Dividends and Market Returns
$R = -0.053 + 0.018{*}BM + 2.176{*}DY + 0.491{*}EP + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	−0.053	0.035	−1.52
BM	0.018	0.038	0.48
DY	2.176***	0.645	3.37
EP	0.491	0.420	1.17

R Square	Adjusted R Square	F	Sample
7.54%	6.34%	6.28	235

*, **, ***, indicate statistically significant results at 10%, 5% and 1% level, respectively.

Table 13
Analysts' Target Price, Dividends and Market Returns, Regression Statistics
$R = -0.048 + 0.150{*}Target + 1.724{*}DY + 0.066{*}ND + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	−0.048	0.028	−1.74
Target	0.150***	0.047	3.17
DY	1.724*	0.616	2.80
ND	0.066*	0.027	2.43

R Square	Adjusted R Square	F	Sample
12.27%	11.13%	10.77%	235

*,**,***, indicate statistically significant results at 10%, 5% and 1% level, respectively.

This result with respect to the affect of dividends seems to be rather interesting as it demonstrates that the analysts' models and reports should incorporate more strongly the dividends factor in order for them to be more accurate in their predictions. Furthermore, the *ND* variable remains significant. Adding now back the book value and earnings variables the model fit is not improved, Table. 14.

Table 14
Analysts' Target Price, Book Value, Dividends, Earnings and Market Returns
$R = -0.074 + 0.138{*}Target + 0.037{*}BM + 1.752{*}DY + 0.131{*}EP + 0.072{*}ND + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	−0.074	0.037	−2.00
Target	0.138*	0.051	2.72
BM	0.037	0.038	0.98
DY	1.752*	0.645	2.72
EP	0.131	0.434	0.30
ND	0.072*	0.028	2.62

R Square	Adjusted R Square	F	Sample
12.85%	10.95%	6.75	235

*,**,***, indicate statistically significant results at 10%, 5% and 1% level, respectively.

When subtracting the earnings factor, as it seems to correlate to other factors, the model's predictive ability increases, as illustrated in Table 15. Furthermore, when size is added to the model, its predictive ability is reduced, Table 16.

Table 15
Analysts' Target Price, Dividends, Book Value and Market Returns
$R = -0.069 + 0143*Target + 0.042*BM + 1.805*DY + 0.072*ND + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	−0.069	0.032	−2.12
target	0.143	0.048	2.99
BM	0.042	0.035	1.20
DY	1.805*	0.619	2.92
Greeks	0.072*	0.028	2.62

R Square	Adjusted R Square	F	Sample
12.82%	11.30%	8.45	235

*, **, ***, indicate statistically significant results at 10%, 5% and 1% level, respectively.

Table 16
Analysts' Target Price, Book Value, Dividends, Earnings, Company Size and Market Returns
$R = -0.053 + 0{,}135*Target + 0.019*BM + 1.789*DY + 0.126*EP + 0.002*\log MV + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	−0.053	0.135	−0.39
target	0.135*	0.051	2.62
BM	0.019	0.039	0.48
DY	1.789*	0.665	2.69
EP	0.126	0.455	0.28
logMV	0.002	0.016	0.12

R Square	Adjusted R Square	F	Sample
10.25%	8.29%	5.23	235

*, **, ***, indicate statistically significant results at 10%, 5% and 1% level, respectively.

Finally, when adding the ND dummy variable to the previous group of variables, the fit of the model is significantly increased, Table 17.

Table 17
Analysts' Target Price, Company Size and Market Returns
$R = -0.254 + 0.136*Target + 0.029*BM + 1.583*DY + 0.287*EP + 0.021*\log MV + 0.087*ND + \varepsilon$

Predictor	Coefficients	Standard Error	t Stat
Intercept	−0.254	0.150	−1.70
target	0.136*	0.051	2.69
BM	0.029	0.038	0.75
DY	1.583*	0.658	2.40
EP	0.287	0.451	0.64
logMV	0.021	0.017	1.24
ND	0.087*	0.030	2.90

R Square	Adjusted R Square	F	Sample
13.43%	11.16%	5.90	235

*, **, ***, *indicate statistically significant results at 10%, 5% and 1% level, respectively.*

The above findings seem to lead to certain interesting comments. First, it is found that the relation between analysts' recommendations and market returns is important, which coincides with the findings in other markets and demonstrates that there is an information content, a predictive value, an added value or all of them in analysts' predictions. The analysts' target price coefficient is found statistically significant at one percent level in all regressions. Moreover, analysts' target price alone is the factor that can predict better share prices in the examined 6-month after the event period even when compared to all the other fundamental factors together.

Second, it is derived that analysts from Greek investment houses seem to come to better predictions than analysts from international investment houses. One explanation might have to do with the superior information advantage that these analysts have compared to their foreign colleagues. One should also take into account that on certain occasions authorities investigate whether such reports deliberately relate to fund moves. This however should not be the case for foreign investment houses in Greece as despite the suggestion of the nationality dummy for analysts' predictions, in general analysts add value to the market, given also the formation of our sample in terms of participating investment houses. Our findings nevertheless indicate that analysts' recommendations of Greek investment houses add 7-8% to the value of the company compared to their foreign counterparts while these results are statistically significant even when accounting for other factors.

Third, factors accounting for size, liquidation value and risk do not add value to the prediction on share price moves in the examined period. It is believed that both size and risk are better incorporated to analysts' predictions. Whatever the reason, these factors do not seem to count even when examined as stand alone variables in the model.

Fourth, the results depict that dividends add to the explanatory power of the model. The contribution of this variable is strong even when accounting for analysts' recommendations. This is probably due to the fact that analysts' recommendations account for this factor, but as they do not seem to predict dividend streams correctly, they too are useful in predicting share price moves. Investment myopia forms another reason that can explain why this factor adds value to analysts' recommendations. If analysts predictions account for a, say, 3-year or 5-year earnings and dividends stream, then they are probably skewed towards more long-term predictions than the market is oriented to. Finance literature for the last 30-years has identified investors short-term focus as 'investment myopia' pointing out that investors focus to much to next year profits and dividends. Whatever the cause, the contribution of this factor increases the model fit.

Concerning the usefulness of analysts' recommendations and dividends as predictive factors, our results are in line with studies in other markets especially with Womack (1996), Barber, Lehavy, McNichols and Trueman (2001), Chen and Cheng (2005), Ribeiro et al (2005). With respect to the findings for foreign analysts, who

operate in investment houses with vast volume investment banking activities, indicating that they tend to underperform when compared to Greek investment house analysts, who are less related to such activities, this is in line with the findings in Cliff (2004) stressing that it would be wise for investors to pay attention to the banking relationships between the brokerage houses and their customers. Also, they tend to comply with the findings of Boni and Womack (2002) who report that the vast majority of the buy-side professionals believe that investment banking activities and possible resulting conflicts form an important motivation for analysts.

CONCLUSIONS

In this study, the relation between analysts' recommendations and market returns is found to be important. The analysis indicates that analysts' predictions add significant value to the market. Analysts' target price alone is the factor that can predict better a share price in the examined 6-month after the event period, even when compared to other fundamental factors together. It is also found that domestic investment houses come to better predictions than international investment houses, something that is in line with findings in other studies that investigate analysts' predictions and banking relationships between these houses and their customers. It is also derived that the dividend policy is also included as a significant explanatory variable. Its contribution is strong even when accounting for analysts recommendations and increases the model fit.

Our findings conforming partly to previous evidence are interesting for regulators and market participants as well. If analysts' predictions are an important estimator of future market prices, then this is good news since market participants can still rely on analysts' predictions to make extraordinary gains in the market place. Also, if forthcoming year dividends provide an additional predictive power to forecasting models then market analysts and investors should take account of these factors more in the future so as to improve their performance. These findings are also interesting since this evidence from the recent 7-year period of the Greek capital market demonstrates that foreign analysts, who reportedly relate to large investment banking relations, underperform compared to Greek analysts. However, even when accounting for this factor analysts' recommendations in general predict future share prices.

NOTE

1. Cases that were excluded, because they do not comply with the criteria of our study, were only the recommendations about Vodafone S.A. Greece.

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