THE INFORMATION CONTENT OF EARNINGS AND SYSTEMATIC
RISK IN CHANGING ECONOMIC CONJECTURE :
THE TURKISH CASE

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ABSTRACT

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This thesis analyses the information content of inflation adjusted financial statements for investors and the informational value of accounting earnings and systematic risk in explaining stock returns in Turkey. Information content of inflation accounting is tested by using event study methodology. Results show that, contrary to 2002, there exist abnormal returns/(losses) in the period surrounding the announcement of 2004 financial statements. However, due to non-company specific political and economic conditions around the announcement days, we cannot precisely state that either the inflation adjustment or the political forces cause the abnormal price activity at the time of research.

Second part of the thesis is based on the regression study methodology which shows the significance of accounting earnings and firms' systematic risk in explaining stock returns, in different economic conjectures. Results show that earnings have informational value for 2003 and 2004 fiscal years while systematic risk is significant in the period before 2003. This may imply that earnings become significant in good periods of the economy while the systematic risk becomes significant when the economy is in recession or recovery periods.

Keywords: Inflation accounting, Earnings, Systematic risk

ÖZET

FİNANSAL TABLO KÂRI VE SİSTEMATİK RİSKİN DEĞİŞEN
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TÜRKİYE ÖRNEĞİ

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Bu çalışma, enflasyona göre düzeltilmiş finansal tabloların yatırımcılar için bilgi içeriği olup olmadığını ve finansal tablolardaki kârın ve sistematik riskin hisse senedi getirilerini açıklamadaki anlamlılığını analiz etmektedir. Enflasyon muhasebesinin bilgi içeriği olay çalışmaları metodu kullanılarak test edilmektedir. Analiz sonuçları, 2002 mali tablolarının aksine, 2004 mali tablolarının açıklandığı dönemde normalin dışında getirilerin/(kayıpların) gerçekleştiğini göstermektedir. Öte yandan, günlük anormal getiriler/(kayıplar) incelendiğinde, anormal hareketlerin enflasyona göre düzeltilmiş mali tabloların etkisi ile değil, yabancı yatırımcının yatırım kararlarının dünya piyasalarındaki hareketlerden dolayı değişmesinden kaynaklandığı görülmüştür.

Tezin ikinci kısmında ise mali tablo kârının ve sistematik riskin farklı ekonomik konjektürlerde hisse senedi getirilerini açıklamaktaki anlamlılığı, regresyon analizi yöntemi ile test edilmektedir. Sonuçlar, mali tablo kârının 2003 ve 2004 mali dönemleri için hisse senedi getirilerini açıklamada anlamlı olduğunu fakat sistematik riskin ise 2003 yılından önceki dönemler için anlamlı olduğunu göstermektedir. Bu sonuç, mali tablo kârının ekonominin iyi olduğu dönemlerde anlamlı olduğunu, sistematik riskin ise ekonominin toparlanma aşamasında ya da durgun olduğu dönemlerde bilgi içeriğinin olduğu şeklinde yorumlanabilir.

Anahtar Kelimeler: Enflasyon Muhasebesi, Kâr, Sistematik Risk

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CHAPTER 1

INTRODUCTION

The information content of accounting earnings attracted researchers since the study of Beaver (1968) and Ball and Brown (1968). There are many studies regarding accounting figures and stock returns in the literature, however, the number of studies on Turkish stock market is limited. Istanbul Stock Exchange (ISE) is the only stock exchange in Turkey which was established in 1986. In this study, we will analyze stock returns and accounting earnings of non-financial listed companies in ISE.

The purpose of this study is twofold. Firstly, we would like to investigate the information content of inflation adjusted financial statements as reflected by the market returns. Secondly, we will explore the information content of earnings per share and systematic risk on stock returns.

As a result of hyperinflationary periods, companies subject to the Capital Markets Board regulations have been required to apply inflation accounting procedures in preparing their financial statements since December 2003 (Official Gazette no.24597 on 11/28/2001). This change provides an opportunity to investigate the information content of inflation adjusted financial statements of listed companies in Turkey. Additionally, economic crisis incurred in 1999, November 2000, and February 2001 urged us to focus on the information content of accounting earnings and firms' systematic risks in Turkey for the period between 1999 and 2004 fiscal years.

We apply both event study and regression study methodologies in our analysis. The first part of the study will be based on event study. Using this method, we will determine whether stock prices are abnormally affected from the announcement of financial statements covering 2002 and 2004 fiscal years, before and after the preparation of inflation adjusted financial statements. Moreover, we will also compare abnormal returns between the two sample years because the accounting policies are different in these sample periods. Since 2003 financial statements are adjusted to inflation, we will test whether this change in financial statement figures effect the abnormal returns surrounding the financial statement announcement dates. Comparison of the two sample years may provide us evidence regarding the effectiveness of inflation accounting and importance of financial statement announcements.

In the second section of the analysis, value-relevance of earnings per share and systematic risk will be investigated. Sample period is determined as 1999-2004 in which the country incurred three economic crises. We will extend our analysis by performing regressions for each year separately to identify value relevance of the earnings per share and systematic risk in different years and economic conjectures.

Overall, this study will provide evidence about the importance of financial statement figures and financial statement announcements in stock exchange market. In addition to this, value relevance of systematic risk and accounting earnings in different economic conjectures will be studied for the listed companies on ISE which is an example of an emerging market.

CHAPTER 2

LITERATURE REVIEW

2.1. LITERATURE REVIEW ON EVENT STUDIES

The relation between stock prices and the accounting variables of companies has been an interesting issue for researchers as well as the investors, firm managers, and other stakeholders of firms for several decades. The interest has mainly focused on the accounting earnings and its relation with stock prices or returns. Regarding this issue, Beaver (1989) argues that no other figure in the financial statements receives more attention by the investment community than earnings per share; and that the relationship between accounting earnings and security prices is probably the single most important relationship in security analysis, and its importance is reflected in the attention given to price-earning ratios. The research studies in the literature on the price-earning relation primarily start with the pioneering work of Beaver (1968) and Ball and Brown (1968). Beaver (1968) draws attention to the investor reactions to earnings announcements, as reflected in the volume and price movements of common stocks in the weeks surrounding the announcement date. First, he argues that if earnings reports have information content, the number of shares traded is likely to be higher when the earnings report is released than at other times during the year. Second, he suggests that if earnings reports convey information in the sense of leading to changes in the equilibrium value of the current market price, the magnitude of the price change (without respect to sign) should be larger in the earnings-announcement week (week 0) than during the non-report period. He bases the study on a sample of

annual earnings announcements released by 143 firms between 1961 and 1965. He uses a model in which changes in the earnings of an individual security are viewed as a linear function of market-wide index of earnings changes. The result of the volume analysis that is adjusted for market influences indicates that earnings announcements possess information content. Additionally, the price analysis that is also adjusted for influence of market-wide events indicates that the magnitude of the price changes in week 0 is much larger (67% higher) than the average during the non-report period. The behavior of the price changes uniformly supports that earnings reports possess information content. Observing a price reaction as well as a volume reaction means that not only are expectations of individual investors altered by the earnings report but also the expectations of the market as a whole, as reflected in the changes in equilibrium prices.

Ball and Brown (1968) use an earnings model similar to the price and volume models used in Beaver (1968). They divide their sample into two groups: instances where the earnings residual is positive (actual earnings are higher than "expected") and instances where the earnings residual is negative (actual earnings lower than "expected"). The behavior of the price residuals for these two groups is examined. They find that the sign of the cumulative price residual (summed over a 12 month period including the announcement month) is highly associated with the sign of the earnings residual.

McWilliams and Siegel (1997) examine the use of event studies in management research and provide guidance regarding the procedures for appropriate use of the event study method. They argue that the event study method is developed to measure the effect of an unanticipated event on stock prices. The standard approach is based on estimating a market model for each firm and then calculating abnormal returns. These abnormal returns are assumed to reflect the stock market's reaction to the arrival of new information. The significance of the abnormal return allows the researcher to infer that the event had a significant impact on the values of the firms. According to the authors, the inference of

significance relies on the following assumptions: (1) markets are efficient (2) the event is unanticipated; (3) there is not any confounding effect during the event window. Confounding events can include the declaration of dividends, announcement of merger, signing of a major government contract, filing of large damage suit, and change in a key shareholder. Brown and Warner (1980, 1985) shows that using a long event window severely reduces the power of the test statistic. This reduction leads to false inferences about the significance of an event. Because it is much more difficult to control for confounding effects when long windows are used, an event window should be as short as possible. It should be long enough to capture the significant effect of the event, but short enough to exclude confounding effects.

Brown and Warner (1985) examine properties of daily stock returns and how the particular characteristics of these data affect event study methodologies for assessing the share price impact of firm-specific events. The paper extends earlier work of Brown and Warner (1980) in which they investigate event study methodologies used with monthly returns. In Brown and Warner (1980), they conclude that a simple methodology based on the market model is both well-specified and relatively powerful under a wide variety of conditions, and in special cases even simpler methods also perform well. In Brown and Warner (1985), the statistical properties of both observed daily stock returns and of daily excess returns are studied, given a variety of alternative models for measuring excess returns. To examine the implications of these properties for event studies, various event study methodologies are simulated by repeated application of each methodology to samples that have been constructed by random selection of securities and random assignment of an event-date to each security. Using simulation procedures with actual daily data, the paper investigates the impact of a number of potential problems of concern in the literature. These include (1) non-normality of returns and excess returns, (2) bias in OLS estimates of market model parameters in the presence of non-synchronous trading, and (3) estimation

of the variance to be used in hypothesis tests concerning the mean excess return, and specifically the issues of autocorrelation in daily excess returns and of variance increases on the days around an event. In the study, two hundred and fifty samples of 50 securities are constructed. The securities are selected at random and with replacement from the population of all securities for which daily return data are available on the files of the Center for Research in Security Prices at the University of Chicago (CRSP). Each time a security is selected, a hypothetical event day is generated. Events are selected with replacement, and are assumed to occur with equal probability on each trading day from July 2, 1962, through December 31, 1979. Day '0' is defined as the day of a hypothetical event for a given security. For each security a maximum of 250 daily return observations is used for the period around its respective event, starting at day - 244 and ending at day + 5 relative to the event. The first 239 days in this period (- 244 through - 6) is designated as the "estimation period", and the following 11 days (- 5 through + 5) is designated as the "event period" They include the securities which have at least 30 daily returns in the entire 250 day period, and no missing return data in the last 20 days. As a result of their analysis Brown and Warner (1985) indicates that the characteristics of daily data generally present few difficulties in the context of event study methodologies based on the Ordinary Least Squares (OLS) market model and using standard parametric tests. OLS market model is as follows (Brawn and Warner, 1985 pp.7):

$$A_{i,t} = R_{it} - \alpha_i - (\beta_i * R_{mt})$$

$A_{i,t}$: Excess return for security i at day t

R_{it} : Return on security i at time t

R_{mt} : Return on market index at time t

α_i and β_i are OLS values from the estimation period.

Booth, Kallunki and Martikainen (1998) use event study methodology to examine the unexpected returns of Finnish firms during the first days following the announcement of annual accounting earnings. In the study, their sample includes 131 firm-year observations of data for Finnish firms that are listed during the 1990–1993 period on the Helsinki Stock Exchange (HSE). Financial firms (banks and insurance companies) are excluded because of their different accounting practices. Stock market reactions to earnings announcements are investigated from the beginning of year 1990 because of the establishment of the Security Market Act in 1989; 1990 represents the first whole calendar year of the new legislation. According to the Security Market Act, firms are required to inform the HSE immediately after any major company specific economic news, including accounting earnings announcements. Major Finnish newspapers are checked for possible news leaks prior to the official announcement day. The event date is defined to be the day of the first announcement of annual accounting earnings for each year provided to the HSE. Unexpected earnings are examined for a 10-day period following the earnings announcement, because the use of longer return intervals is preferable in thin security markets relative to the studies using 2-3 days for US markets. The results of the study suggest that the post-announcement period unexpected return of firms with positive earnings surprises is higher than the return of firms reporting negative earnings surprises.

Dumontier and Raffournier (2002) examine the relationship between accounting information and capital markets in Europe. They classify the European literature into three groups: studies of the market reaction to newly released accounting information; studies of the long-term association between stock returns and accounting numbers; studies devoted to the use of accounting data by investors and to the impact of market pressure on accounting choices. First part of the analysis tests the hypothesis that positive unexpected earnings should on average lead to positive abnormal returns, and negative unexpected earnings to negative abnormal returns. Earnings are supposed to convey relevant information if

abnormal stock returns are statistically positive for firms with positive unexpected earnings, and statistically negative for companies with negative unanticipated earnings. Abnormal returns are defined as the difference between actual and market-adjusted predicted returns. The methodology based on the volatility of returns assumes that any announcement that does convey information should cause a price change. The variability of returns is therefore expected to be higher at the announcement date than on any other day. Hence, observing whether there is an increase in the volatility of returns on announcement days can test the hypothesis that earnings convey information to investors. Based on the results of their analysis, Dumontier and Raffournier (2002) conclude that annual and interim announcements by European companies cause significant stock price changes and trading volume increases. If European capital markets are efficient in the sense that quoted prices do not significantly deviate from fundamental values, this evidence is consistent with the hypothesis that released accounting figures are useful to market participants. Moreover, the magnitude of stock price reactions is positively related to the level of surprise in the disclosed numbers and negatively related to the market value of firms. If market value is a good proxy for the amount of information available to market participants prior to accounting disclosures, the negative link between firm size and market reaction validates the hypothesis that numerous events related to earnings are publicly observed prior to accounting announcements. Therefore, at least for large firms, a substantial proportion of abnormal stock returns arise prior to the actual release of earnings. Based on the paper of Beaver (1968), Landsman and Maydew (2001) examine changes over time in the information content of quarterly earnings using the two metrics in Beaver [1968], abnormal trading volume (AVOL) and abnormal stock price volatility (AVAR), for the three day earnings announcement event window, over the period 1972-1998. They find no evidence of a decline in the informativeness of accounting information over the past thirty years, as measured by both abnormal trading volume and return volatility around quarterly earnings

announcements. If anything, the results suggest an increase over time in the informativeness of quarterly earnings announcements.

There are many studies in the literature about the relation between stock returns and accounting figures, however, there are only a few studies regarding this issue for the Turkish stock market. One of the studies which use Turkish stock market data is Odabasi (1998). This study investigates the stock return reaction associated with earnings announcements on the Istanbul Stock Exchange (ISE) to verify whether announcements possess informational value. The author conducts an event study on an equally weighted portfolio of 92 securities which constitute more than 600 earnings announcements over the period from June 1992 to June 1995. This study, examines whether security prices change in response to earnings announcements. For this purpose, the author examines whether the magnitude of the price change (without respect to sign) is larger on the announcement day than during the non-event period. Then, the earnings announcements are assigned to sub samples of "good" news and "bad" news by using a simple expectation model. For each group, the changes in stock prices around the announcements are examined to verify whether statistically significant price changes occur in the predicted direction (i.e., positive price activity for "good" news and vice versa for "bad" news). The author uses the market model of Sharpe (1964) to eliminate market wide elements of price changes. The dates on which earnings announcements are released by the ISE are defined as the event dates (t=0). The 31 trading days surrounding the announcement of earnings (i.e., t=-15,...,0,..+15) are designated as the event window. The days around the event window (i.e., t=-60,...,-16 through +16,...,+30) are designated as the estimation or non-event period. The author tests the significance of the cumulative average abnormal returns in order to determine whether earnings announcements cause significant price changes. The results of the analyses indicate that there exists an above abnormal price activity (measured without respect to the sign of price changes) on the earnings announcement day. After the

good news and bad news classification, the author suggests that the average abnormal return on the announcement day is significantly greater than zero for the good news sub-sample while it is significantly less than zero for the bad news sub-sample. Overall, the results reveal that the average abnormal returns on announcement days are significantly different from zero for the whole sample and for each sub-sample. These findings show that earnings announcements possess informational value for the investors of ISE.

The studies mentioned above are called event studies in terms of their methodology. By the help of this methodology, reactions of the investors are tested. The event study method is a powerful tool that can help researchers in assessing the financial impact of changes in accounting and corporate policies and the external factors that affect the firm behavior. Using this method, a researcher can determine whether there is an "abnormal" stock price effect associated with an unanticipated event (in this case earnings announcements). From this determination, the researcher can infer the significance of the event (McWilliams and Siegel, 1997). Brown and Warner (1980; 1985) examine the event study methodologies and how the particular characteristics of monthly and daily stock returns data affect event study methodologies for assessing the share price impact of firm-specific events. Using simulation procedures with actual return data, they investigate the impact of a number of potential problems of concern in the literature. In both of the studies the results from simulations are consistent. The results indicate that the methodologies based on the OLS market model and using standard parametric tests are well-specified under a variety of conditions

2.2. LITERATURE REVIEW ON REGRESSION STUDIES

Besides the event study methodology, regression analysis is also commonly used in the literature regarding the relation between stock prices and firms' accounting

variables. Generally, stock prices or returns are regressed on accounting variables such as earnings per share, book value per share, etc. The regression coefficient of earnings per share is commonly called as "earnings response coefficient (ERC)" in the literature (Collins and Kothari, 1989).

One of the earliest papers to adopt a regression approach to the analysis of the returns earnings relationship is Beaver *et al.* (1980). They find a statistically significant earnings response coefficient at the individual security level in each of the nineteen years from 1958 to 1976 by employing a cross-sectional regression of percentage change in stock prices on percentage change in earnings.

In the literature, there are two approaches which are commonly used when the return-earnings association is studied by using regression analysis. First approach assumes that firm's market value is related to its book value. The relation between accounting earnings and security returns may be obtained by taking the first differences of book values and prices, respectively. Thus, any change in the book value which is equal to the retained earnings because of the clean surplus condition is related to a change in stock prices (eg., Easton and Harris,1991, Ohlson, 1991, Strong,1993) as presented below:

$$\Delta P_{jt} = \Delta BV_{jt} + \varepsilon_{jt} = EPS_{jt} - d_{jt} + \varepsilon_{jt} \qquad (1)$$

ΔP_{jt} : Change in market value per share of firm j at time t

ΔBV_{jt} : Change in book value per share of firm j at time t

$EPS_{jt} - d_{jt}$: (Earnings per share minus dividend per share): Retained earnings of firm j at time t

ε_{jt} : Error term

Dividing both sides of the equation (1) by beginning-of-period stock price ($P_{j,t-1}$) and rearranging the equation results in a model which relates returns to

contemporaneous earnings levels normalized by the beginning-of-period stock price:

$$R_{jt} = \alpha_0 + \alpha_1 \, EPS_{jt} \Big/ P_{j,t-1} + \varepsilon_{jt} \qquad\qquad \text{(2) Levels Model}$$

$$R_{jt} = \left(\Delta P_{jt} + d_{jt}\right) \Big/ P_{j,t-1} \qquad\qquad \text{(3)}$$

R_{jt} : Return on firm j at time t

$P_{j,t-1}$: Market value of firm j at time t-1

ΔP_{jt} : Change in market value per share of firm j at time t

EPS_{jt} : Earnings per share of firm j at time t

d_{jt} : Dividend of firm j at time t

ε_{jt} : Error term

Second approach to the return-earnings relation in regression analysis focuses on earnings based valuation model. This alternative approach expresses price as a multiple of earnings (eg., Easton and Harris,1991, Ohlson, 1991, Strong,1993):

$$P_{jt} = \beta EPS_{jt} + e_{jt} \qquad\qquad \text{(4)}$$

P_{jt} : Market value of firm j at time t

Ohlson (1989α) demonstrates that the Miller and Modigliani (1961) dividend irrelevance proposition requires that if a dividend is paid on security *j* at time *t*, then equation (4) must be written as:

$$P_{jt} + d_{jt} = \beta EPS_{jt} + e_{jt} \qquad\qquad \text{(5)}$$

The equation which gives "changes model" is obtained by taking the first differences of accounting earnings and prices, and dividing both sides of the equation by the beginning-of-period stock price ($P_{j,t-1}$):

$$R_{jt} = \beta_0 + \beta_1 \Delta EPS_{jt} / P_{j,t-1} + \varepsilon_{jt}$$ (6) Changes Model

That is, there is a linear relation between change in earnings divided by beginning-of-period price and security returns over that period[1] (Easton and Harris, 1991). The strength of the association between earnings and stock returns is given by the coefficients of determination (R^2) of the regression models. It is generally taken as a measure of the degree to which earnings provide relevant information concerning firm performance because of its ability to reflect value-relevant items incorporated in stock prices. The slope coefficients α_1 or β_1 are frequently defined as the earnings response coefficients (ERCs) (Dumontier and Labelle, 1998). With regard to the models above, Ohlson (1991) focuses on the levels (2) and changes models (6), and he suggests that in a certainty setting, returns should relate to earnings levels. On the other hand, under uncertainty, earnings changes can explain returns as well as contemporaneous earnings. An empirical study by Easton and Harris (1991) offers some supporting evidence for this proposition. In their study the authors investigate whether the level of earnings divided by price at the beginning of the stock return period ($EPS_{jt}/P_{j,t-1}$) is relevant for evaluating earnings/returns associations. They use mainly three models in their study: "levels model (2)", "changes model (6)" and "multivariate model (7)" which includes both levels and changes of earnings variables divided by beginning of period price:

$$R_{jt} = \gamma_0 + \gamma_1 EPS_{jt} / P_{j,t-1} + \gamma_2 \Delta EPS_{jt} / P_{j,t-1} + \varepsilon_{jt}$$ (7) Multivariate Model

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[1] Implicit in equation (6) is the assumption that a dividend is paid at time t but there is no dividend paid at time (t-1).

ΔEPS_{jt} : Change in earnings per share of firm j at time t

Their study is based on a sample which is selected from the period 1969-1986 including 19.996 firm-year observations. All regression models are estimated for the pooled cross-section and time series sample as well as for each year of available data. The R^2 from the pooled regression based on the levels model (2) is 7,5% compared to the R^2 of 4% from the equivalent regression for the changes model (6) for the year-by-year regressions, the R^2 from the levels model is higher than the R^2 from the changes model in 14 of the 19 years and is at least twice as high in 7 of the sample years. In multivariate regressions (7) of security returns on both the current earnings levels and the earnings changes variable both coefficients are generally significantly different from zero. These results indicate that both the current earnings levels and the earnings changes variables are relevant in explaining stock returns, however, among the univariate regression models, levels model (2) dominates changes model (6). Kothari (1992) extends those studies and focuses on three ERC models: (a) a model specified in levels, (b) a model specified in changes and (c) a model using previous year's earnings as the deflator. The main theoretical conclusions from this analysis are the following:

Because prices reflect information about future earnings changes: (i) compared to the change specification, the levels specification yields higher explanatory power and a less biased earnings response coefficient estimate; (ii) the levels specification yields a biased earnings response coefficient when prices contain information about more-than-one-period-ahead earnings changes; (iii) if an accurate proxy for the market's unexpected earnings is used, the ERC estimate is unbiased and the explanatory power is greater than that using the levels and change specifications; (iv) using beginning-of-the-year price as the deflator compared to the previous year's earnings yields a less biased coefficient estimate

and higher explanatory power; (v) the explanatory power of a typically estimated price-earnings regression is expected to be low, perhaps only about 15-20%.

In addition to the studies which focus on the US data, many research papers can be found in the literature regarding the return-earnings associations which focus on the data of countries other than US. For instance, Martikainen et al. (1997) study the returns-earnings association with a sample of 39 Finnish firms listed on the Helsinki Stock Exchange (HSE). Following the approach employed by Easton and Harris (1991) pooled regression models including the levels and changes of the earnings figures, deflated by the opening market value of equity, $P_{j,(t-1)}$, are estimated. The estimation results indicate that earnings figures are significantly related to stock returns when earnings levels are used in the analysis. On the other hand, results show that earnings changes are not significant in explaining stock returns. In addition to that, they compare the significance of profits and losses in explaining stock returns by testing the restrictions that the slopes for profits and losses are equal. The significant slopes and restrictions parameters for profits when earnings levels are used suggest that the information content of losses is less than the information content of profits.

Dumontier et al. (1998) also analyses the association between stock returns and earnings changes or earnings levels for the companies in France quoted in Paris Stock Exchange covering a ten-year period from 1981 to 1990. All earnings, dividends and prices are adjusted for stock splits and stock issues. The sample includes the same 117 firms for any of the years under consideration. In order to determine whether the earnings level variable and the change in earnings one are value relevant in explaining stock returns of French firms, the two univariate regressions for the levels (2) and changes models (6) are run. They do not use the multivariate model (7) because of strong collinearity between the two earnings variables: the correlation coefficients between the level and changes variable vary from 43% to 77% depending on the year under consideration. Each regression model is estimated both for each of the years between 1981 and 1990

and for the pooled cross-section and time series sample. According to the regression analysis both of the variables (the level of earnings and the first difference in earnings) are found to be relevant for evaluating the return-earnings association. Additionally, the authors use a rigorous likelihood ratio test to determine which of these two variables has the highest explanatory power for stock returns. Although both variables appear to be statistically linked with stock returns, the comparison of the explanatory power of the two models and the likelihood ratio test developed by Vuong (1989) suggest that the earnings-level model (2) performs better than the earnings-changes (6) one in explaining stock returns.

Harris et al. (1994) analyze the relation between accounting measures and stock returns for a sample of 230 German companies from 1982 to 1991. The authors follow the multivariate model (7) which includes both the levels and changes of earnings variables used by Easton and Harris (1991). They use the price 6 months after the year-end and an 18-month return interval ending on that date. In their analysis the number of observations differs between the samples in years when one of a pair of matched firms has any missing data. As a result of their analysis, they find that accounting earnings are significantly associated with stock returns in Germany, contrary to the notion that German accounting figures are meaningless.

As is the case in the study of Harris et al. (1994), Vafeas et al. (1998) also present evidence that earnings levels as well as changes are important in explaining stock returns in an emerging stock market. The study employs data on all listed firms in the Cyprus Stock Exchange over the ten year period (1985-1994). Unlike stocks in developed markets, most stocks in the Cyprus are thinly traded. In addition to that, the informational environment is very different in Cyprus compared to that in developed markets. Specifically, in Cyprus there is no financial press on a daily basis, no online electronic media pertaining to the Cyprus market and no full-time financial analysts, important source of information that might serve as a

substitute to published accounting information; as a result, accounting information may gain added importance in such an environment. Their sample consists of 37 firms which provide 260 firm-year observations during the sample period. Following Easton and Harris (1991) both the levels as well as changes variables are considered. All variables are deflated by beginning-of-period total assets in order to limit heteroscedasticity in the residuals. Findings indicate that earnings levels as well as earnings changes variables are important in explaining stock returns.

Chen et al. (2001) examine empirically whether domestic investors in the Chinese stock market perceive accounting information to be value-relevant by using a sample of all listed firms in the Shanghai and Shenzhen Stock Exchanges from 1991 to 1998. In their study they focus on three research questions. First, they explore whether accounting information is value relevant for domestic investors. Their second research question is to examine whether the value relevance of accounting information in China varies in a predictable manner with respect to factors that are likely to affect the degree of value relevance. These factors include positive vs. negative earnings, firm size, earnings persistence, and liquidity of stocks. Finally, the third research question is whether value relevance differs between companies issuing both A- and B-shares. Estimating the price and return models for the pooled cross-section and time-series sample as well as for each year, they conclude that the two independent variables, earnings levels and changes, in the return model are both significant at $\alpha < 0,01$. The adjusted R^2 indicates that they jointly explain about 11% of the cross-sectional variation in stock returns. After these results they analyze the impact of four factors on the value relevance. First they divide their sample into two groups based on each of the four factors. Second, they employ a dummy variable to denote a firm's membership in each group and test the significance of the dummy-accounting variable interaction to assess the impact of each factor on value relevance. Third, they further perform F-tests to examine whether accounting information is value

relevant for each group separately given the impact of each factor in the model. The results provide evidence that accounting information is value relevant in the Chinese market according to both the pooled cross-section and time-series regressions or the year-by-year regressions. Furthermore, they examine whether value relevance changes in a predictable manner with respect to four factors including positive versus negative earnings, firm size, earnings persistence, and percentage of public share holdings. They find that while accounting earnings are value-relevant for companies reporting positive earnings, there is no value relevance evidence for companies reporting losses. Earnings of smaller firms are more value relevant according to the return model. As for earnings persistence, they find that investors in China don't distinguish earnings with more permanent components from those with less permanent components as measured by income increasing items below operating income. Accounting earnings are value relevant for both types of companies. The results support that the accounting information is more value relevant for firms whose stocks are more liquid as measured by public share holdings. Collectively, in this study they report consistent evidence that accounting information is value-relevant to Chinese investors despite the perception of inadequate accounting and financial reporting in China.

In the literature, accounting based valuation models are not limited to models in which returns regressed on earnings. Researchers also use accounting figures other than the earnings variables in their analysis. Most commonly used models include book values in addition to earnings levels and/or changes variables. For example, in their studies Gornik-Tomaszewski and Jermakowicz (2001) examine the relation between accounting numbers derived from the financial statements of Polish listed companies and their market values. Their analysis relies on the following model:

$$P_{jt} = \theta_0 + \theta_1 X_{jt} + \theta_2 BV_{j,t-1} + \varepsilon_{jt} \qquad (8)$$

P_{jt} : Cum-dividend stock price at time t

X_{jt} : Earnings per share

$BV_{j,t-1}$: Book value of equity per share at the end of fiscal year t-1

Their sample covers Polish companies traded on the Warsaw Stock Exchange (WSE) between 1996 and 1998. The final sample consists of 77 firms and 231 firm-year observations. The empirical tests show that current earnings and lagged book values are positively and significantly related to current stock prices for the whole sample and most of sub-samples used in this study. Moreover, the incremental information content of lagged book value is greater than that of current earnings. They report adjusted R^2 of 62% for all years combined, and adjusted R^2 of 61%, 70%, and 60% for years 1996, 1997, and 1998, respectively. Furthermore, they suggest that the incremental information content of book value is relatively high at 20%.

Another study which takes book values in addition to the earnings figures into consideration is Graham and King (2000). In their study Graham and King (2000) examine the relation between stock prices and accounting earnings and book values in six Asian countries: Indonesia, South Korea, Malaysia, the Philippines, Taiwan, and Thailand. The analysis is based on a residual earnings model that expresses the value of the firm in terms of book value and residual income. The study addresses two questions. First, are there systematic differences across countries in the value relevance of accounting, and are these differences related to accounting differences? Second, are there systematic differences in the incremental and relative information content of book value per share (BVPS) and abnormal (residual) earnings per share (REPS) across the countries, and are such differences related to accounting differences? The six countries in the study differ on some dimensions but are similar on others. Two dimensions that they examine are the model on which the accounting systems are based and the type of standard

setting body. IAS was the primary basis for accounting standards in Indonesia, Malaysia and Thailand. USGAAP was the primary basis in the Philippines and Taiwan. Korean accounting standards were unique in that they are based on Korean tax law. As a result of their analysis, they find differences across the six countries in terms of the explanatory power of BVPS and REPS for firm values. Explanatory power for Taiwan and Malaysia is relatively low while that for Korea and the Philippines is relatively high. These differences are generally consistent with differences in the accounting practices. Second, with respect to the incremental and relative explanatory power of BVPS and REPS, they find BVPS to have high explanatory power in the Philippines and Korea but little in Taiwan and additionally, in all six countries REPS has less explanatory power than BVPS in most of the years.

Howton and Peterson (1998) investigate whether a time-varying risk model used to estimate systematic risk (beta) improves upon the relation between beta and return. Systematic risk is the market risk or the risk that cannot be diversified away, as opposed to "idiosyncratic risk", which is specific to individual stocks. It refers to the movements of the whole economy. Even if we have a perfectly diversified portfolio there is some risk that cannot be avoided, which is the systematic risk. However, the systematic risk is not the same for all securities or portfolios. Different companies respond differently to a recession or a booming economy[2]. As a result, different firms have different beta values showing their risk that can not be diversified away. In the study of Howton and Peterson (1998), the appropriate portfolio betas are determined and assigned to each of the individual firms in that portfolio prior to the estimation of the cross-sectional regressions. Each firm in the cross-sectional regression has three betas for each portfolio formation year, a constant-risk beta, a bull-month beta, and a bear-month beta. Test results show a significant difference in the means of bull-market and bear-market betas. The average bull-month beta, 1,252, is significantly larger

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[2] http://en.wikipedia.org

(t-statistic of 7,25) than the average bear-month beta, 0,996. Following the assignment of the portfolio betas to individual firms in the portfolio, cross-sectional regressions are estimated. According to the results of their analysis, when a constant risk beta is the only independent variable, it is not significant. When the additional independent variables size, book-to-market equity, and earnings-price ratio are added to the model, the results indicate that, again, the beta estimated with the constant-risk model is insignificant. On the other side, when the bull-market beta is used as the only independent variable the coefficient of beta is significantly positive. A significantly positive coefficient for beta during a "good" market is intuitively appealing. One would expect that when the market is doing well the higher risk firms, as measured by beta, would have greater returns than less risky firms. This finding contrasts with the results reported in constant-risk model which implies that beta is not important for explaining the cross-section of returns. Finally, when the bear-market beta is the sole independent variable, its coefficient is significantly negative. Again, this is intuitive, since one would expect that higher risk firms, as measured by beta, would do worse than less risky firms when the market overall is doing poorly. Thus, ex-post, one would expect a negative relationship between risk and return in a "bad" market. Overall, results suggest that a simple model of allowing separate bull- and bear-market betas resurrects beta as an important factor affecting the cross-section of realized stock returns.

The number of studies regarding the association between stock returns and accounting figures is limited in Turkey. One of the studies which use the Turkish stock data belongs to Pamukçu et al. (2004). In this study, the authors analyze the value-relevance and the incremental explanatory power of financial statement information for listed Turkish companies. The analysis is based on the valuation model developed by Ohlson (1995). According to the Ohlson model, the value of a firm is equal to the sum of its book value and expected future abnormal earnings discounted by the required return on equity capital. Associating the price

of a listed stock to its earnings and book value per share, the model employed in this study is an empirical specification of the Ohlson model. The model associates the market value of a listed stock to a linear function of its earnings and book value. Their research objective is twofold. First they study the value relevance of accounting information and incremental explanatory power of earnings and book value for listed Turkish firms. Second they study the cross-sectional effects of those factors that may potentially contribute to the temporal changes in the value relevance of earnings and book value: they consider negative earnings, firm size, and capital structure as potential factors that may explain the variation in value-relevance.

The study covers the period between 1995 and 2001 and consists of 873 firm-year observations. The yearly cross-sectional regressions of price on earnings per share and book value per share are as follows: the adjusted R^2 of yearly regressions ranges from a minimum of 0,372 in 2001 to a maximum of 0,823 in 1996. On average the pooled regression yields an adjusted R^2 of 0,575, revealing that EPS and BVPS jointly explain 57,5% of the variation in stock prices of the Turkish data. For the same kind of model, Collins et al. (1997) report an average adjusted R^2 of 0,536 for the US, whereas King and Langli (1998) report R^2 s of 0,402; 0,646; and 0,662 for Germany, Norway and the UK respectively. The most interesting feature of Turkish results is the sharp decline in combined value relevance from, 0,652 in 1999 to 0,383 in 2000 and to 0,372 in 2001, the minimum among seven years of data. They also argue that the decline in the combined value-relevance of earnings and book value is accompanied by a decline in the incremental R^2 of earnings and the common incremental R^2. They conclude that the sharp decline in the explanatory power of the model is because of the increase in the frequency of losses during these years. The last two years of the sample period are characterized by two consecutive domestic financial crises that have driven the Turkish economy into its worst recession. In November 2000, trying to defend the pegged currency regime imposed by the IMF, the

Turkish Central Bank was unable to control the skyrocketing interest rates, which put the whole financial system into a deep liquidity crunch. Then the second crisis was resurrected by political instability in February 2001, followed by the abandonment of the pegged currency regime that the Turkish Central Bank could no longer defend.

In the study, the effects of firm size (Total Assets) and capital structure (Total Liabilities/Total Assets) are investigated, too. They argue that the combined value-relevance and the incremental explanatory power of earnings increase with firm size. Regarding the capital structure they find that the combined value-relevance is higher for firms with moderate leverage relative to the firms with low and high leverage.

Overall, there are many studies in the literature which focus on the relationship of accounting figures and the stock valuation. In general, the studies regarding this issue can be classified as "event studies" and "regression studies" in terms of their methodologies. Event studies focus on the reactions of the investors and test whether there is an "abnormal" stock impact associated with an unanticipated event such as earnings announcements. On the other hand, "regression studies" focus on the accounting figures and their explanatory power on the market measure of value.

2.3. BACKGROUND ON TURKEY

2.3.1. Istanbul Stock Exchange (ISE)

Istanbul Stock Exchange (ISE) is the only institution in Turkey for securities exchange established to provide trading in equities, bonds and bills, revenue-sharing certificates, private sector bonds, foreign securities and real estate

certificates as well as international securities. The ISE was founded as an autonomous, professional organization in early 1986.

In ISE, number of publicly traded companies increased from 80 in 1986 to 297 in 2004. As of 2007 320 companies are traded in National Market of ISE. ISE price indices are computed and published throughout the trading session while the return indices are calculated and published at the close of the session only. The indices are: ISE National-Composite Index, ISE National-30, ISE National-50, ISE National-100, Sector and sub-sector indices, ISE Second National Market Index, ISE New Economy Market Index and ISE Investment Trusts Index. The ISE National-100 Index contains both the ISE National-50 and ISE National-30 Index and is used as a main indicator of the national market.

The origin of an organized securities market in Turkey has its roots in the second half of the 19th century. The first securities market in the Ottoman Empire was established in 1866 under the name of "Dersaadet Securities Exchange" following the Crimean War. Dersaadet Exchange also created a medium for European investors who were seeking higher returns in the vast Ottoman markets. Following the proclamation of the Turkish Republic, a new law was enacted in 1929 to reorganize the fledgling capital markets under the new name of "Istanbul Securities and Foreign Exchange Bourse"[3].

Soon, the Bourse became very active and contributed substantially to the funding requirements of new enterprises across the country. However, its success was clouded by a string of events, including the Great Depression of 1929 and the impending World War II abroad which had taken their toll in the just developing business world in Turkey. During the industrial drive of the subsequent decades, there was a continuous increase in the number and size of joint stock companies, which began to open up their equity to the public. Those mature shares faced a

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[3]Source: http://www.ise.org/about/history.htm

strong and growing demand from mostly individual investors and some institutional investors[4].

The early phase of the 1980s saw a marked improvement in the Turkish capital markets, both in regard to the legislative framework and the institutions required to set the stage for sound capital movements. In 1981, the "Capital Market Law" was enacted. The next year, the main regulatory body responsible for the supervision and regulation of the Turkish securities market, the Capital Markets Board based in Ankara, was established. A new decree was issued in October 1983 foreseeing the setting up of securities exchanges in the country. In October 1984, the "Regulations for the Establishment and Functions of Securities Exchanges" was published in the Official Gazette[5]. The regulations concerning operational procedures were approved in the parliament and the Istanbul Stock Exchange was formally inaugurated at the end of 1985.

The ISE is a full member of[6]

- World Federation of Exchanges (WFE),

- Federation of Euro-Asian Stock Exchanges (FEAS),

- International Securities Services Association (ISSA),

- International Capital Market Association (ICMA),

- European Capital Markets Institute (ECMI),

- World Economic Forum (WEF) and

An affiliate member of

- International Organization of Securities Commissions (IOSCO).

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[4] Source: http://www.ise.org/about/history.htm

[5] Official Gazette No:18537 dated October 6, 1984, source: www.ise.org/about/organize

[6] Source: http://www.ise.org/about/recog.htm

ISE Market Volume between 1986 and 2005 are provided in Table 1 below:

Table 1. ISE Market Volume between 1986 and 2005

	Volume Million YTL	Volume Million USD	Market Value Million YTL	Market Value Million USD	Number of Contract ('000)	Number of Working Days	Number of Traded Companies
1986	0,01	13	0,71	938	---	250	80
1987	0,10	118	3	3.125	---	249	82
1988	0,15	115	2	1.128	112	253	79
1989	2	773	16	6.756	247	255	76
1990	15	5.854	55	18.737	766	247	110
1991	35	8.502	79	15.564	1.446	247	134
1992	56	8.567	85	9.922	1.682	251	145
1993	255	21.770	546	37.824	2.815	246	160
1994	651	23.203	836	21.785	5.085	253	176
1995	2.372	52.311	1.252	20.565	11.667	251	205
1996	2.941	36.698	3.225	30.329	11.912	247	228
1997	8.907	57.178	12.546	61.348	17.006	252	258
1998	17.851	69.696	10.455	33.473	21.091	248	277
1999	36.390	82.931	60.070	112.276	25.243	236	285
2000	110.056	180.123	46.106	68.635	31.746	246	315
2001	92.542	79.945	67.884	47.189	30.670	248	310
2002	105.149	69.990	55.340	33.773	28.064	252	288
2003	145.489	99.406	95.546	68.624	29.093	246	285
2004	206.658	146.511	131.584	97.354	39.821	249	297
2005	263.656	197.074	216.730	161.630	41.710	254	304
2006	314.894	222.399	228.283	162.525	42.842	250	316

Source: www.imkb.gov.tr

Descriptive Statistics of ISE-Composite Index Values between 1999 and 2004 are provided below in Table 2:

Table 2. Descriptive Statistics of ISE-Composite Index Values between 1999 and 2004

Year	Min. Index	Max. Index	Mean of Index	Standard Deviation	Kurtosis	Kurtosis Standard Error
1999	2.335	14.710	5.453	2.246	4,045	0,316
2000	1.747	18.547	13.678	2.534	1,217	0,309
2001	737	13.055	9.578	1.523	3,363	0,308
2002	8.391	14.206	10.586	1.358	-0,707	0,306
2003	8.716	17.716	11.877	2.153	0,045	0,309
2004	15.324	23.857	19.081	2.114	-0,855	0,307

Source: www.imkb.gov.tr

As seen in Table 2, stock market is highly volatile between 1999 and 2003 in Turkey. The standardized kurtosis values are not in the range of normality (+/- 1,96 in 5% significance level) except for 2003.

2.3.2. The Capital Markets Board (CMB)

The CMB sets the accounting standards for public companies, financial intermediaries, and institutional investors. These standards are not in full compliance with international accounting standards. The CMB has set up regulations and standards for consolidated financial and any company willing to published consolidated financial statements should comply with these regulations. The 1999 Capital Market Law amendment mandates the formation of an "Accounting Standards Board" which will be in charge of enforcing the adoption of internationally accepted accounting standards. Listed companies are required to file balance sheet, income statement, and legal auditors' report with

the ISE and CMB on a quarterly basis. Each year they must also publish their financial statements on the official commercial gazette and on at least two daily newspapers[7].

Listed companies are required to have their year-end and half year financial statements independently audited by auditors certified by the CMB. These external auditors are required to produce an opinion certifying that the financial statements have been prepared in compliance with Turkish GAAP and that they provide a fair and accurate assessment of the financial health of the company. Auditors are liable to civil action if their letter of opinion is proved to have misled investors[8].

2.3.3. Economy of Turkey

Turkey is a developing country with a strong agriculture sector and a growing industrial sector. The country has a strong and rapidly growing private sector that coexists with large state owned economic enterprises. The Turkish economy enjoyed growth rates of 8.9% and 7.4% for the 2004 and 2005 fiscal years, respectively and by per capita gross domestic product she could be placed among the upper-middle income countries. She is a founding member of the Organization for Economic Co-operation and Development (OECD) and the G20 industrial nations.[9]

Following the Russian crisis due to heavy foreign capital outflow from the country causing a significant increase in interest rates, Turkey incurred a major economic crisis in 1999. The economic crisis led to a decrease in domestic consumption and reduction in the industrial production. Moreover, the country

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[7] Source : http://www.worldbank.org/ifa/rosc_cg_turkey.html

[8] Source : http://www.worldbank.org/ifa/rosc_cg_turkey.html

[9] Source : http://en.wikipedia.org/wiki/Economy_of_Turkey#cite_note-19

was hit by major earthquakes occurred in August and November 1999 that caused the recession period to continue until the end of 1999. By the effect of these factors GNP decreased by 6,1% in 1999 relative to the previous year.[10]

In 2000, based on the 'Reduction of Inflation Program', the Central Bank aimed to hold exchange rates in accordance with the predetermined figures by controlling its balance sheet items. Unfortunately, domestic and foreign markets were both negatively affected due to the increasing current account deficit, delays in the restructuring reform, and deviations from the privatization targets. Liquidity problems and loss of trust in the economy caused the interest rates to increase. Inevitably, this led financial problems in the banking sector. In December 2000, IMF provided additional reserve to meet the liquidity needs of the market. However, due to the fact that the risk premium of the country increased by the end of 2000, maturities of the domestic and foreign funds got shorter and interest rates got higher. [11]

Due to the political problems occurred before Treasury bidding on 19 February 2001 demand for foreign currency increased significantly in financial markets. The Central Bank tried to restrict liquidity in order to decrease the high demand for foreign currency. However, this affected the public banks negatively, which are in need of high liquidity. The number of banks decreased to 31 which was 72 in 1998. Consequently, exchange rate policy was changed to floating rate system on 22 February 2001. A large amount of capital flew out of the country, causing a serious depreciation of Turkish Lira along with the deterioration of trust in economic performance and reduction of domestic demand. [12]

After the terror attacks in the United States of America on 11 September 2001, the 'Stronger Economy Program' was revised covering the period between 2002

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[10] Source: www.tcmb.gov.tr- annual report-1999, pp.1-3

[11] Source: www.tcmb.gov.tr- annual report-2000, pp.13-14

[12] Source: www.tcmb.gov.tr- annual report-2001 pp.13-14.

and 2004. The economy started to recover with the help of increasing trust in the new economic policies and the positive trend in the domestic demand. Furthermore, increase of exports in 2002 affected industrial production positively and contributed to the economic growth. Turkish economy entered into rapid growth period in 2002 and continued to improve in 2003 and 2004 with GNP growth rates of 5,9% and 10%, respectively. Healthy implementation of the economic program enabled the economy to get stronger, Turkish Lira to appreciate against foreign currency, interest rates to decrease, and markets to become more optimistic about macro economic targets. [13]

2.3.4. History on Inflation Accounting in Turkey

Turkish economy incurred high inflation rates for years until 2004. Table 13 provides yearly average changes in Wholesale Price Index (WPI) for the period between 1999 and 2005. As a result of hyperinflationary periods, companies subject to the Capital Markets Board have been required to apply inflation accounting procedures on their balance sheets since 31.12.2003 financial statements (Official Gazette no.24597 on 11/28/2001).

The prolonged period of high inflation in Turkey have various detrimental effects on companies while distorting their financial statements and reducing their reliability. The effects of inflation on financial statements depend on the characteristics of the items that constitute the statement. Balance sheet items are divided into two groups based on their ability to follow price changes: Monetary items and non-monetary items. The nominal value of a monetary item remains constant in the face of a change in price level, while its purchasing power moves in the opposite direction of the change. The change in the purchasing power that

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[13] Source: www.tcmb.gov.tr- annual report-2002 pp. 13-15.

monetary-items cause on the financial statements in the inflationary periods stems from the changes in the general price level. The purchasing power of the non-monetary items on the financial statements, on the contrary, varies with the changes in the general price level, their nominal values moving in the same direction with the price level. In the traditional accounting methods, the price level changes are disregarded and the nominal value of the money is used as the measurement unit. Inflation accounting system is also based on the historical cost method, but these costs are adjusted for the changes in the general price level. Thus, it enables the financial statements to reflect the actual values which make them easier to understand and interpret. There are two valuation methods: historical cost based valuation and current cost based valuation method. In the historic cost method, assets are recorded with the cost at the time of their purchase. It is practical in the sense that preparing financial statements with this method is a simple task of transfering the book values to the financial statements. This method also fulfills the "objectivity" criterion of accounting and is considered as an adequate method in an economy without inflation. However, in periods of high inflation, financial statements prepared in accordance with this method often proves to be misleading (Çelik, 2003). In the framework of IAS 29-Financial Reporting in Hyperinflationary Economies, balance sheet amounts not already expressed in terms of the measuring unit current at the balance sheet date are restated by applying a general price index. Monetary items are not restated because they are already expressed in terms of the monetary unit current at the balance sheet date. Monetary items are money held and items to be received or paid in money.

Assets and liabilities linked by agreement to changes in prices, such as index linked bonds and loans, are adjusted in accordance with the agreement in order to ascertain the amount outstanding at the balance sheet date. These items are carried at this adjusted amount in the restated balance sheet. All other assets and liabilities are non-monetary. Some non-monetary items are carried at amounts

current at the balance sheet date, such as net realisable value and market value, so they are not restated. All other non-monetary assets and liabilities are restated.

Most non-monetary items are carried at cost or cost less depreciation; hence they are expressed at amounts current at their date of acquisition. The restated cost, or cost less depreciation, of each item is determined by applying to its historical cost and accumulated depreciation the change in a general price index from the date of acquisition to the balance sheet date. Hence, property, plant and equipment, investments, inventories of raw materials and merchandise, goodwill, patents, trademarks and similar assets are restated from the dates of their purchase. Inventories of partly-finished and finished goods are restated from the dates on which the costs of purchase and of conversion were incurred.

This Standard requires that all items in the income statement are expressed in terms of the measuring unit current at the balance sheet date. Therefore all amounts need to be restated by applying the change in the general price index from the dates when the items of income and expenses were initially recorded in the financial statements.

In a period of inflation, an entity holding an excess of monetary assets over monetary liabilities loses purchasing power and an entity with an excess of monetary liabilities over monetary assets gains purchasing power to the extent the assets and liabilities are not linked to a price level. This gain or loss on the net monetary position may be derived as the difference resulting from the restatement of non-monetary assets, owners' equity and income statement items and the adjustment of index linked assets and liabilities. The gain or loss may be estimated by applying the change in a general price index to the weighted average for the period of the difference between monetary assets and monetary liabilities. The gain or loss on the net monetary position is included in net income. Inflation accounting requirements of Capital Markets Board in communiqué XI No:20 are based on the principles mentioned above regarding IAS 29.

CHAPTER 3

DATA AND METHODOLOGY

This study purports to examine the importance of financial statement announcements as well as the information content of financial statements of companies listed in the ISE. In the first part of the study, the effect of financial statement announcements on stock price changes is analyzed by using event study methodology. Event study analysis will provide evidence regarding the importance of financial statement announcements in Turkish stock market. The second part of the study utilizes the regression methodology which will contribute the literature by providing outputs on value relevance of accounting earnings of companies listed in ISE.

In both analyses, ISE is assumed to have weak-form of efficiency as stated in Buguk and Brorsen (2003). In their article, the random-walk hypothesis for ISE's composite, industrial and financial indexes is tested using four different tests; namely Augmented Dickey Fuller (ADF) unit root, Geweke-Porter-Hudak (GPH) fractional integration, Lo-MacKinlay (LOMAC) variance ratio, and a modified variance ratio test using ranks and signs of the series. The results obtained from four different tests mostly indicate that all three series are efficient (obey the random-walk hypothesis). Most of the results support Kawakatsu and Morey (1999) who failed to reject randomness of the ISE. Alparslan (1989) also concluded that the ISE is weak form efficient. On the other hand, the rank and sign tests provide some mild support for Balaban's (1995a, b) conclusion that the ISE is neither weak form nor strong form efficient. The difference between the

past studies may be attributed to both the different time spans and different statistical methods used (Buguk and Brorsen, 2003).

3.1. SAMPLE SELECTION

3.1.1. Sample Selection for Event Study

Based on the list of non-financial firms quoted on ISE we obtained audited annual financial statement announcement dates from ISE databank. Event window dates are determined according to these financial announcement dates.

Our primary list for 2002 financial statement announcements was composed of 303 firms of which 64 firms were operating in financial industry. As a result, 239 non-financial firms were available for our analysis regarding 2002 financial statements. On the other hand, we obtained similar list for the 2004 financial statement announcements. In 2005 (Financial statements covering 2004 fiscal year were announced in 2005), there were 123 firms' financial statement announcements based on CMB communiqué XI Number: 20 as of 31 December 2004. This list was composed of 80 non-financial firms.

After determining the list of non-financial firms, we matched the Cumulative Abnormal Returns (CAR) for 2002 and 2004 of each firm in the two lists, to have paired list of non-financial companies, which have adjusted their financial statements after the year 2002. Firms which have CAR values in both of the sample years 2002 and 2004 remained in the sample. News regarding these 80 firms was obtained from the web-site of ISE and all of them were reviewed. We eliminated firms from the sample whenever a firm has one or more of the following criteria in any of the sample years during the event window surrounding the announcement of audited financial statements

(t=-10,…,0,…+10), where the announcement day is defined as the event day (t=0):

- Firms which have dividend distribution announcements in the general assembly

- Firms which increased their capital as rights issue

- Firms which have announced sale of significant shareholder shares

- Firms which have re-announced their financial statements due to any change in their net income figures.

Stock prices of the selected companies for each of the 21 days of event window were obtained from Data-stream database and ISE databank, which were adjusted to both stock splits and dividends.

The number of sample firms declined to 45 pairs after the review of the company news, announced in ISE. However, our final sample size reduced to 36 pairs after the elimination of 9 pairs of companies for which alpha and beta data were not available in the database. Alpha and beta data for each company were obtained from İstanbul Bilgi İletişim Sistemleri Inc. (IBS) database[14].Last 100 trading days before the event window was determined as the estimation period for alpha and beta calculation.

3.1.2. Sample Selection for Regression Study

Second part of the study is based on regression study. We obtained financial statement announcement dates for the financial statements from 1999 to 2004 from the financial reports databank of ISE[15]. Based on the yearly lists, we

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[14] Source: www.analiz.com

[15] Source : http://www.imkb.gov.tr/bilanco/mtablodonem.htm

eliminated financial firms such as; banks, mutual funds, insurance firms, factoring firms, etc. Financial statement figures and market index data were obtained from the web-site of ISE, systematic risk data were obtained from İstanbul Bilgi İletişim Sistemleri Inc. (IBS) database and adjusted prices were obtained from Datastream database. Number of firms used in the final analysis decreased due to the missing data. In order to protect the sample size as much as possible we preferred to use ISE composite index and the systematic risk calculated using ISE composite index. Loss of data is generally due to the lack of price, systematic risk or financial statement figures. The following table shows the number of firms in the primary list, number of firms with different systematic risk data calculated with different ISE price indexes, and the final number of firms used in our analysis:

Table 3. Sample Selection and Loss of Data

Financial Statement Period	Companies Listed in ISE Composite Index	Number of firms in the analysis	Loss of data %
1999	154	139	10%
2000	170	146	14%
2001	169	159	6%
2002	170	159	6%
2003	65	59	9%
2004	64	56	13%

As seen in the table above, reduction in the sample size, due to lack of data, changes from 6% to 14%. In 2003 and 2004 number of firms is significantly lower than the number of firms in the other sample years. Financial statements of

2003 and 2004 were prepared according to CMB communiqués XI Number: 20, 21 and 25. Financial statements prepared on the basis of CMB communiqué XI Number: 20 and 21 were adjusted to inflation; however, Number: 21 was used for firms which were required to prepare inflation adjusted and consolidated financial statements. CMB communiqué XI Number: 25 is based on IFRS requirements. We used the firms with financial statements prepared on the basis of CMB communiqué XI Number: 20. Communiqué XI Number: 20 requires firms to prepare their financial statements adjusted to inflation, beginning from 31 December 2003 financial statement period. The firms which prepared their financial statements according to CMB communiqué XI Number: 21 and 25 were eliminated from our analysis. Firms with financial statements prepared on the basis of communiqué XI Number: 21 were eliminated from our sample because; consolidated financial statements include financial statements of other listed companies in the market, too. Besides, firms with financial statements prepared on the basis of communiqué XI Number: 25 were also eliminated from the sample because; IFRS adjustments were not obligatory for 2003 and 2004 financial statements. The communiqué XI Number: 25 became obligatory for the period beginning on 01 January 2005.

3.2. HYPOTHESES

Based on event study methodologies, we analyze the two sample fiscal periods 2002 and 2004 separately and try to find out whether financial statement announcements have information content for investors. Our first hypothesis is stated as:

H^1_0: Financial statement announcements do not have any information content for the investors in ISE.

This hypothesis translates into a testable hypothesis as follows:

"The cumulative abnormal returns (CAR) in the event window surrounding the financial statements announcement dates are equal to zero for each sample years in ISE".

The 21 days surrounding the announcement of earnings (ie, t=-10,…, 0,…+10) is designed as the "event" period. The dates on which earnings announcements are released by the ISE are defined as the event dates (t=0). Additionally, in order to find out if there is any difference in the CAR because of inflation accounting after 2003 (the first year of inflation adjusted financial statements) we compare the CAR values of the year 2002 (the year before inflation accounting) with 2004 (the year after inflation accounting). In this case, our hypothesis is stated as:

H^2_0: Return behavior during the event window is the same in both of the sample years.

In other words, the testable hypothesis can be stated as "Means of the CAR values in the event window surrounding the financial statements announcement dates in 2002 and 2004 are equal".

In the second part of the study, we focus on the regression analysis. As mentioned in the literature review section, the relation between the stock prices and firms' accounting variables was studied by various researchers from different aspects. Pioneering study in adopting a regression approach to the analysis of the returns and earnings relationship is Beaver *et al.* (1980). Easton and Harris (1991), Ohlson (1991) and Strong (1993) followed the approach of Beaver *et al.* (1980) and find a statistically significant earnings response coefficient at the individual security level. Based on these studies we set our hypothesis as:

H^3_0: "Earnings per share and firm systematic risk have no information content in explaining returns in the Turkish stock market (ISE)".

$H^3{}_0$ is tested in the pooled cross-sectional regression, and then tested for each sample year separately in yearly regressions.

3.3. METHODOLOGY

3.3.1. Event Study Methodology

First part of the study is based on event studies. Event study methodology is a powerful tool which is generally used to test the reactions of investors to an unexpected event. Using this method, we can determine whether there is an "abnormal" stock price effect associated with financial statement announcements. We argue that stock prices change above normal figures during the period that the financial statements are announced to the investors and other stakeholders in ISE. The period covering the financial statement announcements are defined as the "event window", while the period before the event window is called as "non-event period". We investigate whether the magnitude of the price change is larger (causing abnormal returns) on the announcement day than during the non-event period. The study is based on a sample of 72 financial statements announcements released by 36 firms for 31 December 2002 and 31 December 2004, i.e. before and after the compulsory inflation adjustment and disclosure requirement for the public companies traded on the ISE by the Capital Markets Board. Companies subject to Capital Markets Board regulations were required to implement inflation accounting for their financial statements beginning from 31 December 2003. Therefore, the companies adjusted their financial statement for inflation for the first time in 2003. Since this a transitory period, we chose to exclude such reports and concentrate on the 2004 financial statements which were prepared using inflation accounting standard. Our analysis purports to provide evidence for

both the importance of financial statement announcements and the effect of inflation adjusted financial statements in ISE.

The study excludes companies which have outstanding news, dividend distribution decisions, capital rights issuing decisions, re-announcing the financial statements during the event window period for isolation of the sample data from other effects which can cause any deviation in returns during event period. The 21 days surrounding the announcement of earnings (ie, t=-10,…, 0,…+10) is designed as the "event" period. The dates on which audited annual earnings announcements are released by the ISE are defined as the event dates (t=0).

The 100 days before the event period (ie, t = -11…-110) are designated as the "non-event" period. Event dates are obtained from the database of Istanbul Stock Exchange (ISE)[16].

The market model of Sharpe (1964) is used to eliminate market-wide elements of price changes (Odabasi, 1998).

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{9}$$

R_{it} : Return on security i on day t

R_{mt} : Return on ISE composite index on day t

In the equation (9) α_i and β_i are the ordinary least-squares estimates for firm i's market model parameters, and ε_{it} is an abnormal or unexpected return[17]. α_i is the constant of the equation (9) and is calculated by the following formula:

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[16] www.imkb.gov.tr

[17] We obtain the α_i and β_i data from İstanbul Bilgi İletişim Sistemleri Inc. (IBS) database www.analiz.com which uses stock return and ISE composite index market return for the last 100 trading days period before the event window.

$$\alpha_i = \overline{R_{it}} - (\beta_i * \overline{R_{mt}}) \qquad (10)$$

β_i : Systematic risk for firm i

$\overline{R_{it}}$: Mean of returns of firm i in the period

$\overline{R_{mt}}$: Mean of returns of market in the period

β_i is also defined as the systematic risk of firm i which is calculated as follows:

$$\beta_i \frac{\sum_{t=1}^{n}\left[\left(R_{it} - \overline{R_{it}}\right)\left(R_{mt} - \overline{R_{mt}}\right)\right]}{\sum_{t=1}^{n}\left(R_{mt} - \overline{R_{mt}}\right)^2} \qquad (11)$$

α_i and β_i are calculated by the above formulas (10) and (11) respectively which use returns of last 100 trading days of the non-event period (t = -11,..,-110) in ISE composite market index and sample firms.

The estimated coefficients, α_i and β_i are used to form predictions of R_{it} during the event period ($-10 \leq t \leq +10$). Thus the abnormal return for security i on event day t, AR_{it}, is calculated as:

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \qquad (12)$$

AR_{it} : Abnormal return for firm i at time t

For a sample of N securities, Cumulative abnormal return from day L_1 to day L_2, $CAR_{L1,L2}$ is calculated by,

$$CAR_{L1,L2} = \sum_{t=L1}^{L2} AR_t \qquad (14)$$

AR_t : Abnormal return at time t

Under the assumption that abnormal returns AR_{it}, are independent and identically distributed with finite variance, then the test statistic for the period from L_1 to L_2, $t_{(L1,L2)}$, will be distributed Student-t in the absence of abnormal performance (Odabasi, 1998).

$$t_{(L1,L2)} = \overline{CAR}_{(L1,L2)}(N)^{1/2} \qquad (20)$$

$t_{(L1,L2)}$: Test statistic for the period from L_1 to L_2

$\overline{CAR}_{i,(L1,L2)}$: Average cumulative abnormal return over the interval L_1 to L_2

N : Number of securities on each event day

The test statistic $t_{(L1,L2)}$ is used to test if the expected value of the average cumulative abnormal return is significantly different than zero over the period from L_1 to L_2 (Odabasi, 1998).

Furthermore, means of CAR series for the two sample periods are compared by using paired t-test in order to analyze whether the abnormal returns differ between two sample periods. This analysis will provide evidences regarding the effect of implication of inflation adjustments to financial statements.

3.3.2. Regression Study Methodology

Second part of the study focuses on the information content of financial statement figures and change in their informational value, in different economic conjectures. This section of the study covers non-financial Turkish companies listed on the Istanbul Stock Exchange (ISE) from 1999 to 2004 fiscal years which is composed of 718 firm-year observations in total. The sample period is between 1999 and 2004 for earnings per share figures but from 2000 to 2005 for the market data such as stock return, alpha and beta because; financial statements

covering a full year are announced in the subsequent year. We will use "fiscal year" instead of financial statement period. Earnings per share data and the related financial statement announcement dates were obtained from database of ISE[18]. Sample years do not include the period before 1999 fiscal year due to the fact that volume of the market is relatively lower than the selected period. Table 1 includes ISE market volume between 1986 and 2005. Our sample period includes economic crisis incurred in 1999, November 2000 and February 2001.

The regression model of Easton and Harris (1991) is used as the fundamental model. In their studies, the relation between accounting earnings and security returns are obtained by taking the first differences of book values and prices, respectively. So, any change in the book value which is equal to the retained earnings because of the clean surplus condition is related to a change in stock prices (Easton and Harris,1991, Ohlson, 1991, Strong,1993) [19]:

$$\Delta P_{jt} = \Delta BV_{jt} + \varepsilon'_{jt} = EPS_{jt} + \varepsilon''_{jt} \qquad (1)$$

Dividing both sides of the equation (1) by beginning-of-period stock price ($P_{j,t-1}$) and rearranging the equation results in a model which relates returns to contemporaneous earnings levels normalized by the beginning-of-period stock price:

$$R_{jt} = \alpha_0 + \alpha_1 \, EPS_{jt} \big/ P_{j,t-1} + \varepsilon_{jt} \qquad (2) \text{ Levels Model}$$

$$R_{jt} = \Delta P_{jt} \big/ P_{j,t-1} \qquad (3)$$

Based on the findings of Howton and Peterson (1998) regarding the relation between systematic risk and return we expect that there is a negative relationship between risk and return in a "bad" market.

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[18] http://www.imkb.gov.tr/malitablo.htm

[19] Dividend was included in the adjusted price data obtained from Datastream database.

Our sample period includes bear and bull periods as in the study of Howton and Peterson (1998). Howton and Peterson find a significant difference in the means of bull-market and bear-market betas where the average bull-month beta is significantly larger than the average bear-month beta. Therefore, they suggest that a simple model of allowing separate bull- and bear-market betas resurrects beta as an important factor affecting the cross-section of realized stock returns. For this reason we include systematic risk in our model as "beta (β)" to find out the significance of systematic risk in changing economic conjecture. Therefore, we extend the "earning levels model" of Easton and Harris (1991) by adding beta as the second independent variable.

Final model used in our study is as follows:

$$R_{jt} = \alpha_0 + \alpha_1\, EPS_{jt} \Big/ P_{j,t-1} + \alpha_2 \beta_{jt} + \varepsilon_{jt} \qquad \text{(21) Extended Earning Levels Model}$$

$$R_{jt} = \Delta P_{jt} \Big/ P_{j,t-1} \qquad\qquad\qquad \text{(3)}$$

The systematic risk β data is estimated from the returns of last 100 trading days of the month in which the financial statements are announced. Systematic risk values are calculated by the above equation (11)[20] using ISE-Composite index values.

Earnings per share data were obtained from ISE database and calculated by the following formula:

EPS = Net Income / Paid in Capital   (22)

Companies announce their number of outstanding shares only when they have positive earnings. On the other hand, we have many firms in our sample, which incurred net losses and did not need to announce number of outstanding shares in the financial statement notes. Thus, we use "paid in capital" instead of number of

outstanding shares by assuming that all shares are 1 YTL for the sample companies.

Using the extended earning levels model (21) we evaluate the explanatory power of our model and the statistically significance of the independent variable coefficients. First of all, pooled cross-sectional regression is performed for the model covering the period between 1999 and 2004 fiscal years (for the financial statements announced in period between 2000 and 2005). Secondly, the year-by-year regressions are performed by using the same model. Value relevance of earnings per share and the firms' systematic risk to the stock returns is examined for each sample year separately. The results of our analysis are discussed in the following section.

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[20] Systematic risk (β) data are obtained from www.analiz.com

CHAPTER 4

RESULTS

Our study is twofold: event study and regression study. First part of the study is based on the event study methodology. The aim of the first part of the study is to determine whether financial statement announcements cause any abnormal return in Turkish stock market. We extend the study by performing paired t-test to determine whether inflation adjusted financial statements have information content. We compare the fiscal year 2002 in which financial statement figures are disclosed in historical amounts and the fiscal year 2004 in which financial statements are adjusted for inflation.

In the regression studies, we perform regression analysis to investigate the significance of earnings per share and the systematic risk in explaining stock returns. Pooled cross-sectional regression analysis is performed for the fiscal years from 1999 to 2004 including earnings per share and systematic risk[21]. Then, yearly regressions are performed for each year separately. The results are explained in the following section in detail.

4.1. EVENT STUDY RESULTS

By the help of event study, we analyze whether earnings announcements cause abnormal returns during event window (t = -10,…,+10). The dates on which

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[21] Annual financial statements are announced in the subsequent year, so our sample covers 2000 and 2005 when the financial statement announcement periods are considered.

earnings announcements are released by the ISE are defined as the event dates (t=0). The 100 days before the event period (ie, t=-11,…,-110) are designated as the "non-event" period. Student's t test is performed for fiscal years 2002 and 2004 separately. Sample size is determined as 36 for both years.

Table 4. CAR Values for 2002 and 2004

Listed Company	2002 $CAR_{(L1,L2)}$	2004 $CAR_{(L1,L2)}$
ALCTL	12,0	26,8
BOLUC	(5,9)	(3,2)
BSOKE	2,8	14,3
BSPRO	(5,9)	(8,7)
DENTA	3,6	(9,7)
DERIM	(31,7)	(2,9)
DMSAS	0,8	(12,5)
ECYAP	(11,4)	(10,8)
EGGUB	(11,7)	(5,2)
EGSER	1,0	(10,8)
ESEMS	(3,0)	(3,5)
GOLDS	23,1	(9,6)
GOODY	(13,2)	(14,3)
GUBRF	3,4	(0,2)
HEKTS	(10,3)	(6,8)
HZNDR	(5,0)	(9,3)
INTEM	4,3	21,1
KAPLM	1,8	(5,7)
KNFRT	9,0	(7,6)
KRTEK	6,8	(9,1)
LINK	17,8	(8,5)
LUKSK	23,2	2,8
MEMSA	18,6	(15,9)
NETAS	8,0	1,3
PENGD	15,4	(9,9)
PETKM	1,9	(6,3)
PIMAS	11,5	(6,1)
PRKAB	(11,3)	(15,0)
PRKTE	4,9	(15,6)
SANKO	6,1	5,8
SERVE	16,4	6,3
SKPLC	4,6	4,5
UCAK	2,5	(8,9)
UNYEC	7,1	11,9
VAKKO	(5,3)	(11,3)
YATAS	(16,3)	(6,0)
Mean of CAR	2,1	(3,8)

Cumulative abnormal returns (CAR) for each of the securities in the sample are presented in Table 4.

Test results of CAR $_{(L1,L2)}$ show that there is abnormal return activity during event window surrounding the 2004 financial statement announcements but not in the event window surrounding the 2002 financial statement announcements. Test results are as follows:

$T_{2002} = 1,070,$ $P_{2002} = 0,292$

$T_{2004} = -2,302,$ $P_{2004} = 0,027$

Based on the test results we infer that 31 December 2004 financial statement announcements caused abnormal returns during the event window, so we are able reject H^1_0 with 97% confidence level for the fiscal year 2004. However, test results for the fiscal year 2002 imply that 31 December 2002 financial statement announcements did not cause any abnormal activity on stock returns. Therefore, we fail to reject H^1_0 for the fiscal year 2002.

Besides other economic and political conditions, these two sample years differ from each other due to accounting policy applications and inflation rates incurred. In 2002 annual average change in wholesale price index was 50% while it decreased to 11% in 2004. The accounting policies have changed for the listed companies in effect from 31 December 2003 financial statement announcements due to high rates of inflation until 2004. In 2001, the Capital Markets Board announced that the publicly traded companies should disclose their annual financial tables of 2003 adjusted to inflation (Official Gazette no.24597 on 11/28/2001).

To determine whether the CARs in two years are different, in addition to the one sample t-test above, we perform paired samples t-test. Paired samples t-test is

performed for 36 firms for which we have CAR values of both 2002 and 2004 fiscal years. Paired t-test result indicates that with 98,8% confidence level (p = 0,012) we can reject H^2_0, which states that means of cumulative abnormal returns[22] of these companies for the fiscal years 2002 and 2004 are equal. The findings of one sample and paired sample tests suggest that 2002 and 2004 disclosures had different effects on the returns.

In order to analyze reasons of abnormal returns in detail, we calculate cumulative average AR values for each day of the event window. Average abnormal returns of 36 companies are calculated for each event day. Then, cumulative average abnormal return values are found for each event day. The following table shows AR and cumulative average AR values for each of the event day in the event window:

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[22] CAR values are calculated by summimg AR values from L_1 to L_2 (covering event window) for each company and for each sample year.

Table 5. Daily Average AR and Cumulative AR Values for 2002 and 2004

Days in the Event Window	2002		2004	
	Average AR 2002 %	Cumulative Average AR 2002 %	Average AR 2004 %	Cumulative Average AR 2004 %
-10	-0,42	-0,42	0,59	0,59
-9	-0,32	-0,73	-0,27	0,31
-8	1,00	0,26	-0,35	-0,04
-7	0,36	0,62	0,74	0,70
-6	-0,30	0,33	0,08	0,78
-5	-0,23	0,10	0,28	1,06
-4	0,22	0,32	-0,44	0,62
-3	**1,20**	1,52	0,44	1,06
-2	-0,36	1,15	0,13	1,20
-1	0,69	1,84	-0,38	0,81
0	0,37	2,21	0,00	0,82
1	**-1,32**	0,90	-0,36	0,46
2	0,54	1,44	-0,17	0,29
3	-1,12	0,32	-0,81	-0,53
4	0,51	0,83	**-1,62**	-2,15
5	-0,34	0,49	0,20	-1,95
6	0,32	0,81	-1,15	-3,11
7	0,35	1,16	0,22	-2,89
8	0,52	1,68	-0,90	-3,78
9	0,73	2,42	-0,15	-3,93
10	-0,32	2,09	0,09	-3,85

The abnormal return levels at t -3 and t+1 for the 2002 financial statements disclosure in March 2003 prompted us to investigate whether there could be other non-company specific factors prevalent in those days that might have caused this jump. Upon investigation of the newspapers for each event day, we found out that although AK Party government had been ruling the country for 100 days, Tayyip Erdoğan took over the prime ministry position from Abdullah Gül in 11 March 2003 (which is on average three days before the financial statement announcements). It appears that the change in prime ministry caused a shift in the

returns. Moreover, the drop in daily abnormal return on t+1 might be due to Iraq War. On 17 March 2003, the newspapers announced that United States of America was preparing to conquer Iraq and requested the Turkish parliament to approve the second permission note[23]. This development apparently caused an economic turmoil as well as a political turmoil at the time.

There is 1,62% decrease in the cumulative average abnormal returns in 17 March 2005 which is on average four days after the announcement of 2004 financial statements. Similarly, we scanned the event window surrounding the 2004 annual financial statement announcements in newspapers' archives. We saw that on 16 March 2005 foreign investors started to buy USD by selling stocks and bonds in their possession. Thus, the ISE index declined by 11,24% in four days while the USD appreciated significantly from 1,2670 YTL to 1,3350 YTL[24].

Considering the explanations above, and the abnormal activity in stock prices, it would be prudent to conclude that abnormal price activity is not mainly due to the financial statement announcements, but it appears that it is also due to political news and speculative behaviors of the foreign investors in both 2003 and 2005 (announcement of 2002 and 2004 financials, respectively). Thus, based on the results and the related discussion, we can infer that financial statement announcements may have some effect on the returns. However, due to non-company specific political and economic conditions of the country around the announcement days, we cannot inconclusively state that either the inflation adjustment or the political forces impel the price activity in the ISE at the time of research. Further research is necessary in order to isolate the effect of political and world wide economic news. Earlier, Onder and Simga-Mugan (2006) provide some empirical evidence that economic news that directly affect Turkey and domestic political news explain the variation in returns in ISE.

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[23] http://www.yenisafak.com.tr/arsiv

[24] http://www.takvim.com.tr/2005/03/18/eko103

4.2. REGRESSION STUDY RESULTS

In this part of the study, "extended earning levels model (21)" is used as the main model. Descriptive statistics of pooled financial statement figures such as; Income/(Loss), Total Assets, Total Equity, Beta, EPS, Adjusted EPS and Return, are presented below. Descriptive statistics are provided separately for the period covering 1999-2002 and 2003-2004, because financial statement figures are adjusted to inflation in the period covering 2003 and 2004.

Table 6. Descriptive Statistics between 1999 and 2002- Without Inflation Accounting

	N	Minimum	Maximum	Mean	Std. Dev.
Income/ (Loss) (*)	603	-646,79	242,98	2,10	37,70
Total Assets (*)	603	2,41	4.155,16	121,11	336,98
Total Equity (*)	603	-251,32	1.236,24	41,48	105,93
Beta (**)	603	0,00	2,37	0,78	0,26
EPS	603	-21,25	499,59	2,00	23,23
EPS/ P(t-1)	603	-31,64	282,25	0,71	13,6
Return	603	-0,87	11,36	0,65	1,46
Pt	603	0,18	197,5	4,55	13,48

(*) Million YTL

(**) Systematic risk calculated using ISE composite index.

Table 7. Descriptive Statistics for 2003 and 2004- With Inflation Accounting

	N	Minimum	Maximum	Mean	Std. Dev.
Income/ (Loss) (*)	115	-34,33	64,61	1,12	9,60
Total Assets (*)	115	7,82	732,86	106,30	103,04
Total Equity (*)	115	-11,30	313,28	58,62	60,54
Beta (**)	115	-0,17	1,24	0,51	0,25
EPS	115	-2,11	32,68	0,83	4,35
EPS/ P(t-1)	115	-1,82	7,04	0,04	0,76
Return	115	0,29	4,25	1,37	0,64
Pt	115	0,54	820,00	21,90	105,00

(*) Million YTL

(**) Systematic risk calculated using ISE composite index.

Based on our main model (21), pooled cross-sectional regression is performed for the period between 1999 and 2004 fiscal years:

$$R_{jt} = \alpha_0 + \alpha_1 \, EPS_{jt} \Big/ P_{j,t-1} + \alpha_2 \beta_{jt} + \varepsilon_{jt}$$

Table 8. Result of Pooled Cross-sectional Regression Analysis

			Coefficients (Significance)		
Sample Size	**F (Model Significance)**	**Adjusted R^2**	**Constant**	**Beta**	**EPS/P(t-1)**
	7,643		-	-0,142	0,023
718	(0,001)	0,018	(0,000)	(0,000)	(0,535)

According to the pooled regression output, the model is found to be significant with only 2% explanatory power. Additionally, the coefficient of systematic risk is statistically different than zero while the coefficient of EPS is not.VIF tolerance values are around 1, so there is no multicollinearity problem between independent variables. However; Durbin-Watson value of the model is 1,008 which indicates that there may be autocorrelation in the model. Autocorrelation may be due to the fact that our sample covers the period between 1999 and 2004 fiscal years with time series data. To overcome autocorrelation in the pooled regression and to analyze the association of EPS and systematic risk with stock returns in detail, model (21) is used for each sample year separately. The results of the yearly cross-sectional regression analysis made for return on adjusted earnings per share and beta are presented in the table below:

$$R_{jt} = \alpha_0 + \alpha_1 EPS_{jt} / P_{j,t-1} + \alpha_2 \beta_{jt} + \varepsilon_{jt}$$

Table 9. Results of Yearly Regression Analysis

Year (*)	Financial Statement Period	Sample Size	F (Model Significance)	Adjusted R^2	Constant	Beta	EPS/P(t-1)
						Coefficients (Significance)	
2000	1999	139	1,417 (0,246)	0,006	(0,001)	0,142 (0,097)	-0,028 (0,745)
2001	2000	146	2,918 (0,057)	0,026	(0,330)	-0,192 (0,020)	0,055 (0,505)
2002	2001	159	3,834 (0,024)	0,035	(0,000)	-0,212 (0,008)	0,022 (0,779)
2003	2002	159	3,471 (0,034)	0,03	(0,058)	-0,135 (0,088)	0,145 (0,066)
2004	2003	59	8,881 (0,000)	0,214	(0,022)	0,012 (0,921)	0,493 (0,000)
2005	2004	56	5,126 (0,009)	0,130	(0,214)	0,044 (0,727)	0,396 (0,003)

(*) The term "fiscal year" is used for the period which is covered by the annual financial statements. Annual financial statements are generally announced in the subsequent year which is stated as "announcement year".

Yearly cross sectional regression model is insignificant for the fiscal periods 1999 and 2000 at 95% confidence level. However, the model is statistically significant for the financial statements of 2001, 2002, 2003 and 2004 which are announced in the ISE in 2002, 2003, 2004 and 2005, respectively. Since annual financial statement announcements are made in the subsequent year, we analyze

the results of the yearly regressions by considering the economic and market indicators in these announcement periods.

Implications of the analysis for each year are as follows;

- *Financial Statements of 1999*

"After the Russian crisis in August 1998, capital outflow from Turkey significantly increased causing the interest rates to rise. In the second quarter of 1999, downsizing of the economy continued deeply by the effect of economic recession in the other countries. Besides the dynamics of the economy, earthquakes occurred in August and November 1999 caused the recession period to continue until the end of 1999[25]". By the effect of these factors, GNP decreased by 6.1% in 1999 relative to the previous year. Below, Table 10 provides quarterly GDP and GNP values and their changes relative to the previous year:

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[25] Source: www.tcmb.gov.tr- annual report-1999 pp. 1-2.

Table 10. GNP-GDP between 1998 and 2005

Quarter	GNP (basic prices at 1987, 1000 YTL)	GDP (basic prices at 1998, 1000 YTL)	GNP Growth Rate (%)	GDP Growth Rate (%)
98-I	24.226.031	15.265.678		
98-II	27.743.559	16.484.808		
98-III	38.581.878	20.346.608		
98-IV	28.751.649	18.106.054		
	119.303.117	**70.203.147**		
99-I	22.314.607	14.436.129	-7,9	-5,4
99-II	26.724.906	16.217.899	-3,7	-1,6
99-III	35.664.702	19.361.768	-7,6	-4,8
99-IV	27.339.614	17.824.774	-4,9	-1,6
	112.043.829	**67.840.570**	**-6,1**	**-3,4**
00-I	23.246.163	15.217.908	4,2	5,4
00-II	28.170.249	17.269.135	5,4	6,5
00-III	38.247.506	21.019.481	7,2	8,6
00-IV	29.480.556	18.929.875	7,8	6,2
	119.144.474	**72.436.399**	**6,3**	**6,8**
01-I	22.474.400	15.419.915	-3,3	1,3
01-II	24.710.478	16.173.158	-12,3	-6,3
01-III	34.750.430	19.650.704	-9,1	-6,5
01-IV	25.847.756	17.065.575	-12,3	-9,8
	107.783.064	**68.309.352**	**-9,5**	**-5,7**
02-I	22.607.905	15.469.977	0,6	0,3
02-II	27.290.013	17.214.452	10,4	6,4
02-III	37.531.514	20.876.687	8,0	6,2
02-IV	28.908.192	18.958.715	11,8	11,1
	116.337.624	**72.519.831**	**7,9**	**6,2**
03-I	24.273.566	16.716.746	7,4	8,1
03-II	28.282.851	17.898.517	3,6	4,0
03-III	39.616.972	21.774.718	5,6	4,3
03-IV	30.991.599	19.948.211	7,2	5,2
	123.164.988	**76.338.193**	**5,9**	**5,3**
04-I	27.647.374	18.380.247	13,9	10,0
04-II	32.729.596	20.035.372	15,7	11,9
04-III	41.883.347	23.528.095	5,7	8,1
04-IV	33.047.705	21.541.877	6,6	8,0
	135.308.022	**83.485.591**	**9,9**	**9,4**
05-I	29.726.839	19.947.283	7,5	8,5
05-II	34.280.335	21.577.563	4,7	7,7

Source: www.tuik.gov.tr

Financial statements for the period 1999 were announced in 2000 in which recovery of economy started. According to the regression results the explanatory power of the model is 0,6% where the model is totally insignificant. This result indicates that there are other variables which may explain the annual stock returns in this sample period.

- *Financial Statements of 2000*

Regression results regarding the financial statements which covers the fiscal year 2000, indicates that the model is significant at 94% confidence level. Explanatory power of the model is still low where coefficient of systematic risk is statistically significant and the coefficient of EPS is insignificant.

The reason of the statistically significant coefficient of systematic risk may be the economic crisis occurred in November 2000 and February 2001. In 2001, when the financial statements of 2000 are announced, ISE-Composite index decreased to 7.579 in March 2001 from 15.055 in March 2000. Monthly ISE-Composite index closing values are provided in Table 12 below:

Table 11. ISE -Composite Index Monthly Closing Values (*)

	1999	2000	2001	2002	2003	2004	2005
Jan	2.483	15.822	9.999	12.611	10.743	16.498	26.184
Feb	3.675	15.014	8.174	10.584	11.257	17.986	27.213
Mar	4.326	15.055	7.579	11.137	9.298	19.269	24.589
Apr	5.031	18.098	11.576	10.942	11.298	17.338	22.642
May	4.802	15.399	10.235	10.002	11.126	16.416	24.224
Jun	4.668	13.793	10.588	9.099	10.633	17.156	25.864
Jul	5.429	13.197	9.434	9.917	10.317	18.569	28.455
Aug	4.749	12.484	9.431	9.318	11.263	19.301	29.690
Sept	5.730	10.848	7.329	8.610	12.562	20.969	31.971
Oct	6.186	12.835	9.440	9.960	15.014	22.045	30.785
Nov	7.921	8.308	11.089	12.870	13.985	21.641	36.528
Dec	14.197	8.885	13.055	10.087	17.716	23.857	38.473

Source: www.imkb.gov.tr.

(*)Figures are stated in New Turkish Liras.

Additionally, according to the yearly average systematic risk values, we conclude that average of systematic risk increases in 2001 (announcement year of 2000 financials) relative to the previous year. Yearly average systematic risk and returns of our sample is provided in the Table 12 below.

Table 12. Average Return and Systematic Risk of Sample Firms

Announcement Year	Financial Statement Period	Return	Beta
2000	1999	239%	0,684
2001	2000	-41%	0,848
2002	2001	72%	0,746
2003	2002	3%	0,840
2004	2003	43%	0,457
2005	2004	30%	0,570

Based on the Table 12 we infer that the average systematic risk values of our sample firms are relatively higher in the announcement years of 2000, 2001, 2002 and 2003. This implies that the investors perceive the sample stocks riskier in 2001 due to the economic recession in the Turkish economy. The riskier profile of sample firms might cause the systematic risk to be statistically significant in explaining stock returns in 2001. Furthermore, EPS of the fiscal year 2000 are statistically insignificant in explaining stock returns in 2001. High inflation rates incurred during 2000 and 2001 may have led the investors to think that the financial statements do not reflect the actual position of the company. Please refer to the Table 13 below for the yearly average percentage change in WPI:

Table 13. Yearly Average Percentage Change in WPI 1998-2005 (*)

	1998	1999	2000	2001	2002	2003	2004	2005
Jan	83,2	68,2	54,6	48,0	66,8	45,9	23,6	14,6
Feb	84,1	64,8	56,3	44,5	72,1	42,1	21,5	14,7
Mar	84,8	61,7	57,8	42,1	75,4	39,4	19,2	15,0
Apr	85,4	59,2	58,7	41,8	75,3	37,8	17,0	15,0
May	85,4	57,0	59,3	42,3	73,6	36,7	15,2	14,0
Jun	85,1	55,2	59,7	43,3	71,5	35,4	13,7	12,8
Jul	84,0	53,9	59,4	44,8	69,1	33,8	12,5	11,7
Aug	82,2	53,1	58,8	46,9	66,3	32,1	11,6	10,7
Sept	83,8	52,4	57,5	49,7	63,0	30,3	11,2	9,5
Oct	77,8	52,1	56,0	53,2	59,0	28,5	11,2	8,2
Nov	75,0	52,1	54,3	57,0	54,6	27,1	11,1	6,9
Dec	71,8	53,1	51,4	61,6	50,1	25,6	11,1	5,9

Source: www.tuik.gov.tr

(*)Yearly average percentage change, for period 1987-1994: 1987=100, for period 1995-2001:1994=100.

- *Financial Statements of 2001*

After the crisis incurred in February 2001, the economy started to recover with the help of increasing trust in the new economic policies and the positive expectations about the domestic demand. However, the recovery period started in the second quarter of 2002. Please refer to the Table 10 above for GDP values. The GDP decreased by 5,7% in 2001 and annual growth rate was only 0,3% in the first quarter of 2002. Additionally, average systematic risk values of the sample firms were still relatively higher than the values in the announcement years 2004 and 2005 (at 0,75 in Table 12) implying that stocks in our sample were still relatively riskier in ISE during the announcement of 2001 financial statements. On the other side, according to Table 11, ISE-Composite index values are higher than the previous year during the announcement period of 2001 financial statements. Average

systematic risk of sample firms are still relatively higher although the ISE-Composite index is going well relative to the previous year, during the 2001 financials' announcement period. This inconsistent image between higher ISE-Composite index values and the higher average systematic risk values of the sample firms may be due to the fact that the ISE-Composite index includes stocks of both financial and non-financial firms while, our sample does not contain stocks of financial companies.

According to the yearly regression outputs, systematic risk is significant in 2002 where the economy is in the first phases of recovery. Similar to the explanations in the previous year, the coefficient of EPS (calculated from net income of 2001 financial statements) is statistically insignificant. This may be due to high inflation rates or the economic recession incurred during the period covered by the financial statements.

- *Financial Statements of 2002*

Financial statements of 2002 were announced in 2003. Performance of Turkish economy continued to improve in the first quarter of 2003 with GDP growth rates of 8,1%. As a result of the healthy implementation of the economic program, economy in the country got stronger and markets became more optimistic about the macro economic targets.

According to the regression results in Table 9, our model is statistically significant with only 3% explanatory power. Coefficients of the systematic risk and EPS can be accepted as statistically significant. Average value of systematic risks for the sample firms is 0,84 in 2003 which is relatively higher than the previous year. Additionally, ISE-Composite index decreases from 11.137 in March 2002 to 9.298 in March 2003 (see in Table 11). The decrease in the ISE-Composite index and the increase in average systematic risk of sample firms may be due to the political uncertainty after the elections

in November 2002. 59th cabinet of Turkey was established by AKP in 14 March 2003.

Inflation rates decreased in 2003 relative to the previous years (Please see Table 13). The annual GNP growth rates of 2002 was 7,9% which has positive impact in the market and the financial positions of the companies. The reason of the statistically significant EPS may be the improvements in the economy or the decreasing inflation rates.

- *Financial Statements of 2003 and 2004*

According to the GDP growth rates (Table 10), inflation rates (Table 13), and the ISE-Composite index values we conclude that the economy got stronger after 2002. Average systematic risk values of the sample firms decreased to 0,46 and 0,57 in 2004 and 2005 respectively. In the yearly regression outputs (please see Table 9), the explanatory power of the model becomes 21,4% for 2003 fiscal year and 13% for 2004. In both of the years, EPS is significant while systematic risk is insignificant.

Sample size is smaller than the previous years because we only included the companies which prepared their financial statements based on CMB communiqué XI No:20 regulations.

Overall, the Durbin-Watson test value is around 2 except for the sample years 2002 and 2004. Durbin-Watson statistic is found to be 1,55 in 2002 and 1,68 in 2004 fiscal years, which is also in acceptable ranges. Furthermore, there is no multicollinearity problem in yearly regressions, where the VIF tolerance values are around 0,99 for all of the sample periods.

CHAPTER 5

CONCLUSION

5.1. SIGNIFICANCE OF THE STUDY

This study has contributions to the literature from many aspects. First of all, in the event study analysis part, the effect of financial statements announcements was tested in the Turkish stock market ISE. Besides, we tested whether inflation adjusted financial statements caused abnormal price activity during the event window surrounding the financial statement announcements. Abnormal returns were investigated day by day to clarify the reasons of the abnormality.

Second part of the study, which is composed of regression studies, contributes to the literature by analyzing value relevance of accounting earnings and the systematic risk on stock returns by considering the conjectural position of the economy. Since Turkish stock market ISE is an emerging market, there are limited number of studies in the literature related to accounting earnings and stock market figures. The economic recessions incurred in 1999, November 2000, and February 2001 enabled us to analyze value relevance of EPS and systematic risk in different economic conjectures. Regression analysis part of the study supports the argument that, accounting earnings have informational content during good times of the economy. Moreover, it may also support the study of Howton and Peterson (1998) which states that there is a negative relationship between risk and return in a bad market.

5.2. LIMITATIONS OF THE STUDY

Like any research this one has limitations, too. Our major limitation in the event study is the ups and downs in the political and economic environment around the event date. It is hard to eliminate the effect of global and regional political and economic events. News regarding Iraq War and the change of the president in Turkey may be the reason of abnormal returns around the 2002 financial statement announcements. Similarly, the activity in global markets may be the reason of abnormal losses occurred in the Turkish market during the event window of 2004 financial statements. The effect of the non-company specific news cannot be eliminated in our study so that we cannot come to a precise conclusion about the reasons of the abnormal price activity around the financial statement announcements. Addition to this, during isolation of the sample from other events related to the sample firms, we exclude many of the firms from event study which cause a reduction in the sample size. We believe that with higher sample size, results of the study will be much clearer.

There are also some limitations regarding the regression studies. Primarily, the value relevance of independent variables are analyzed by considering inflation, GDP, GNP growth rates, stock market index values. However, there are also other external factors such as global market news, political issues, etc. which may also have effect on stock returns. So, we cannot precisely infer that the coefficient of EPS is significant in 2003 and 2004 fiscal years due to the lower inflation rates, good market conditions, or another factor.

Besides, our regression analysis includes only earnings data as an accounting figure although the investors may consider other accounting figures such as financial leverage ratio, total asset size, etc. or figures which are not related to accounting.

Finally, sample period covers only the fiscal years between 1999 and2004 due to the data limitation and the fact that ISE is a new developing market. This study can be extended to longer periods in further research.

5.3. FURTHER RESEARCH

In the regression study section, our sample is limited to the period from1999 to 2004. In further research the sample years can be extended upward so that clearer results can be obtained. Since ISE is a developing market, as the sample period is extended after 2004 market efficiency will increase and normal/good period of the sample will contain more years leading the sample size to be larger. Additionally, regarding the regression studies, variables other than firm systematic risk, can be investigated beside the earnings per share, especially for the crisis and recovery periods. Additional variables such as total asset size, financial leverage ratios, etc. may increase the explanatory power of the model.

5.4. IMPLICATIONS

In this paper, our analysis is composed of two separate studies. In the first section of the analysis, event study is performed for 2002 and 2004 fiscal years separately, to test whether the financial statement announcements cause abnormal returns during event window period (t=-10,…,+10) surrounding the financial statement announcement dates. Based on the test results, we infer that abnormal returns/ (losses) occurred during the event window surrounding 31 December 2004 financial statement announcements. Conversely, test results for the fiscal year 2002 imply that the abnormal returns activity is not statistically different than zero during the event window of 31 December 2002 financial statement announcements.

Besides other economic and political conditions, these two sample years differ from each other due to accounting policy applications and inflation rates incurred. In 2002 annual average change in wholesale price index was 50% while it decreased to 11% in 2004. The accounting policies have changed for the listed companies in effect from 31 December 2003 financial statement announcements due to high rates of inflation until 2004. Thus, in addition to the one sample t-test, we perform paired samples t-test to determine whether means of the CARs in two years are different. Paired samples t-test is performed for 36 firms for which we have CAR values of both 2002 and 2004 fiscal years. Paired samples t-test result indicates that with 98,8% confidence level (p = 0,012) we can reject the hypothesis of "financial statement announcements have the same effect on stock returns in both 2002 and 2004" at 98,8% confidence level.

In order to analyze reasons of abnormal returns in detail, we calculate cumulative average AR values for each day of the event window. The abnormal return levels on specific days of the event window led us to investigate whether there could be other non-company specific factors prevalent in those days that might have caused abnormal return activity. Based on the investigation of the newspapers for each event day, we conclude that abnormal price activity is not mainly due to the financial statement announcements, but it appears that it is also due to political news and speculative behaviors of the foreign investors in both 2003 and 2005 (announcement of 2002 and 2004 financials, respectively). Thus, based on the results and the related discussion, we can infer that financial statement announcements may have some effect on the returns. However, due to non-company specific political and economic conditions of the country around the announcement days, we cannot precisely state that either the inflation adjustment or the political forces cause the abnormal price activity in the ISE at the time of research.

In the second section of the study we perform value relevance analysis based on the regression studies. The value relevance of earnings per share, which is mostly

used accounting figure in the literature, and the firm systematic risk on stock returns is analyzed for the period between 1999 and 2004 fiscal years. According to the yearly regression results, the explanatory power of the model is relatively higher for 2003 and 2004 fiscal years (with 21,4% and 13% respectively). The earnings response coefficient becomes significant in 2003 and 2004 fiscal years while the coefficient of systematic risk is insignificant in the same period. On the other hand, firm systematic risk is significant mainly for the fiscal years 2000, 2001 and 2002. It is possible for the systematic risk to be significant due to the economic recessions incurred in 1999, November 2000, and February 2001. In these years, average systematic risks of the sample firms are much higher than the fiscal years 2003 and 2004. The results support the argument of Howton and Peterson (1998) which states that there is a negative relationship between risk and return in a bad market. Conversely, the coefficient of EPS seems to be significant when the economy is good or/and the inflation rates are low.

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