Journal of Yaşar University
http://joy.yasar.edu.tr

Journal of Yasar University 2010 18(5) 2938-2948

THE RELATIONSHIP BETWEEN STOCK RETURN ASYMMETRIES AND CORPORATE GOVERNANCE: AN EMPIRICAL WORK ON THE TURKISH CASE

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ABSTRACT

In this paper, we investigate the relationship between stock return asymmetries, i.e. stock market return volatility and corporate governance by using the data of selected companies listed on Istanbul Stock Exchange (ISE) and we test the hypothesis whether there is a correlation between the quality of corporate governance, concentration of ownership and the positive skewness of ISE listed company returns. We discuss our findings that positive skewness is most profound in stock market returns for companies that have poor corporate governance. In addition, companies with more concentrated ownership also have greater positive skewness. That is, if a company's ownership is more concentrated, it is more likely that managers have more discretionary power to disclose information, which induces more positive skewness. We find that our results are consistent with some of theoretical models in the literature and also our results are robust to different measures of return asymmetries and to alternative measures of corporate governance.

Key Words: *Corporate Governance, Volatility, Stock Return Asymmetry, EGARCH*

JEL Code: G0, G32, G10, C22

I. Introduction

In this paper, we use the data of Istanbul Stock Exchange (ISE) listed companies traded in Turkey as a representative of emerging markets and hence investigate why stock returns in emerging markets tend to be more positively skewed than stock returns in developed markets inclined to be. Bae, Wei and Lim (2004) show that the differences in the quality of corporate governance matter for stock return skewness. Thus, we test the hypothesis whether there is a relationship between stock return asymmetries and the quality of corporate governance and concentrated ownership in Turkey.

There is a huge literature that highlights the significance of corporate governance on the various aspects of financial markets. La Porta et al. (1997, 1998, and 2000) argue that the legal protection of investors is a particularly important demonstration of effective corporate governance. We contribute to this growing literature by showing that the quality of corporate governance influences the distributional characteristics of stock returns and by explaining why stock returns in emerging markets tend to be more positively skewed than those in developed markets tends to be based on ISE listed companies' data in Turkey.

The rest of the paper is organized as follows. In Section II, we review the related literature on the stock market return asymmetries and suggest a rationale for the linkage between the qualities of corporate governance, return asymmetries and concentrated ownership. In Section III, we give brief information about the current issues in Turkey regarding corporate governance landscape. In Section IV, we describe the data, build up our main hypothesis, and illustrate the methodology we apply. Finally, in Section V, we report our main empirical results; we discuss our findings and conclude our paper.

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II. Literature Review on Stock Return Asymmetries and Corporate Governance

It is widely discussed in the literature that stock returns in emerging markets are characterized by higher average returns and higher volatilities than are those in developed markets. However, it is less discussed in the literature regarding the fact that stock returns in emerging markets are more positively skewed than are those in developed markets[1]. It is argued that differences in the quality of corporate governance matter for stock return skewness.

There are two major reasons why the quality of corporate governance is related to return asymmetries. Firstly, Morck, Yeung, and Yu (2000) state that economies that protect public investors' property rights poorly facilitate intercorporate income shifting by controlling insiders. This practice of income shifting in economies that do not protect investors' property rights, in turn, facilitates risk sharing among affiliated firms or business segments by smoothing the performance of affiliated firms or business segments. Friedman, Johnson, and Mitton (2002) argue that entrepreneurs in emerging markets often use resources from other businesses that they control to rescue a troubled company. Chang and Hong (2000) show that business groups in Korea use extensive cross-subsidization such as debt guarantees, equity investments, and internal transactions to support poorly performing firms at the expense of well-performing firms. Mitton (2002) finds evidence of "propping" in diversified firms in Indonesia, the Philippines, Korea, Malaysia, and Thailand during the Asian financial crisis of 1997-98. By studying the takeover market in Korea, Bae, Kang, and Kim (2002) show that financially distressed targets that belong to business groups are likely to be merged with more successful member firms, even when such transactions do not maximize the value of the bidding firms. Secondly, stock markets in countries depicted by poor corporate governance have a tendency to contain poor disclosure of information. In the developed countries, corporate managers are generally subject to many governance mechanisms that compel them to take action in the best interests of shareholders. These corporate governance mechanisms are missing or are not experienced in majority of the emerging markets. The lack of mechanisms to govern managerial discretion would permit firm managers in such emerging markets to have more discretionary power over the disclosure of information. Managers would have a wider scope for hiding bad news or releasing bad news slowly.

The assumptions of stock return distributions have been very important in deriving capital asset pricing models, portfolio theory, and option pricing models. The assumption of a mean-variance return distribution, including normal and lognormal distributions, is most commonly adopted in these models. However, it is well documented in previous literature that stock returns are asymmetrically distributed. Kraus and Litzenberger (1976), Friend and Westerfield (1980), Sears and Wei (1985), and Harvey and Siddique (2000), among others study how skewness affects asset pricing models, while in their recent research Das and Sundaram (1999) and Chen et al. (2001) examine how skewness affects option pricing.

The earliest theory to explain negative asymmetries in stock market returns is based on leverage effects as proposed by Black (1976) and Christie (1982). The leverage-effects hypothesis suggests that when a stock price drops, the financial and operating leverage of the firm increases, which increases the subsequent stock return volatility. When a stock price rises, the financial and operating leverage of the firm declines, decreasing subsequent stock return volatility. This asymmetric volatility reaction to the rise and fall of stock prices causes stock returns to be negatively skewed. On the other hand, Schwert (1989) and Bekaert and Wu (2000) state that leverage effects are not adequate enough to explain the scale of the observed negative asymmetries in aggregate stock market returns.

Pindyck (1984), French et al. (1987), Campbell and Hentschel (1992), and others suggest the second theory to explain negative asymmetries in stock market returns comes from the volatility-feedback hypothesis. The theory of volatility feedback argues that the arrival of either good news or bad news signals an increase in

[1] Kee-Hong Bae, K.C. John Wei and Chanwoo Lim, 2004, Corporate Governance and Conditional Skewness in the World's Stock Markets,Working Paper, http://ccfr.org.cn/cicf2005/paper/20050118004325.PDF , pp. 1-2

market volatility, which in turn increases the risk premium. This increase in the risk premium offsets part of the positive effect of the good news (cash flow increase), but it amplifies the negative effect of the bad news (cash flow decrease). As a result, stock prices drop more when there is bad news in the market than when there is good news, which leads to negatively skewed stock returns. However, Poterba and Summers (1986) counter-argue that most market volatility shocks are very short-lived and, hence, changes in market volatility cannot be expected to have an important impact on the risk premium. As a result, volatility feedback cannot account for large proportions of the negative asymmetries in stock market returns. A recent model developed by Hong and Stein (2003) suggests that investor heterogeneity is the major reason for negative return asymmetries.

Another noteworthy hypothesis is the discretionary-disclosure hypothesis. This hypothesis argues that managers have some degree of discretion over the disclosure of information and that they prefer to announce good news immediately but allow bad news to dribble out slowly. This managerial behavior will then impart a degree of positive skewness in stock returns. Furthermore, this managerial discretion tends to be more pronounced in small-capitalization firms or in firms followed by fewer analysts, since managers of these firms have a wider scope for hiding bad news from the market. In fact, Harvey and Siddique (2000) and Chen et al. (2001) find that skewness is more positive on average for small-capitalization firms. Moreover, Chen et al. (2001) find that skewness is more positive for firms followed by fewer analysts. Using U.S. data from 1979 to 1983, Damodaran (1987) also finds that firms followed by fewer analysts have higher positively skewed returns.

Rajan and Zingales (1998) and Demirgüç-Kunt and Maksimovic (1998) find that stock markets in economies with good corporate governance have larger investments from external funds than do those in economies with poor corporate governance. Johnson et al. (2003) and Mitton (2002) report that strong corporate governance economies can sustain market declines better than poor corporate governance economies can during a financial crisis. Hung (2001), Ball et al. (2003), Fan and Wong (2002), and Leuza et al. (2003) document that good corporate governance economies provide higher quality of accounting information than do poor corporate governance economies.

III. Corporate Governance Landscape in Turkey

Corporate governance is a process, consistent with the principles and the practices of a free market and a democratic society. It assigns final authority and full responsibility to a board of directors whose decision-making responsibility is collegial and participatory where independent and outside views are valued. The board maximizes shareholder value through fairness, accountability and transparency.

In “Corporate governance: A Framework for Implementation” document of the World Bank, which is prepared to identify points for implementation of corporate governance in extensively differing regimes, and political, economic and social environments; the major elements of corporate governance are defined as;

- Competitive markets
- Transparency
- Financial discipline
- Well-regulated and liquid securities markets

In emerging markets, where institutions are weak and ownership is concentrated, corporate governance issues can not be simply explained by agency problems. The controlling shareholder generally takes an active interest in running the company and holds executive roles. Minority shareholders and other investors may be constantly confronted with acts reflecting lack of property rights, contract violations, transfer pricing, targeted issues and repurchases, self-dealing, asset stripping and abuse of minority positions, etc. which remain unpunished. The dominant conflict observed in emerging markets between the dominant shareholders/managers and other stakeholders, especially the outside investors and creditors, is referred to as the ‘‘expropriation problem’’[2].

[2] Melsa Ararat and Mehmet Ugur, 2003, Corporate governance in Turkey: an overview and some policy recommendations, Corporate Governance, VOL. 3 NO. 1 2003, pp. 58-75

Due to the boost in competitive conditions within financial markets, countries are obliged to harmonize their legislation with the international level and grasp a set of regulations in order to achieve and maintain improvement. In this respect, restructuring the Turkish capital markets is becoming extremely important especially for public companies in terms of providing global liquidity and expanding the fund provision capabilities of international financial markets.

Turkey is currently undergoing an IMF-sponsored restructuring process after having experienced high and persistent inflation but relatively high growth for more than two decades. Despite a positive outlook at the end of 2000, the Turkish economy was plunged into the deepest economic crises of its history in early 2001. As a result of the reforms, more competitive markets are in the process of being established. Despite the shrinkage in the GNP by 25% in 2001, the sharp decline in profit margins in the private sector, the expectation for transparency is increasing. Given limited capital accumulation in Turkey, rising unemployment and the high proportion of a young labor force, the importance of foreign direct investment flows have become a major thrust for economic stability and prosperity.

As a result of the ongoing reform program, the missing elements for corporate governance are also put into utilization. The reforms, related to the banking sector, enforces the financial discipline by strengthening the links among government, banks, and corporations; restricting directed and connected lending; and restructuring banks to bring financial, managerial and technical capabilities to the real sector.

The challenge for Turkey is to take the next steps toward sound corporate governance, before in case another crisis erupts. The major initial steps already been taken, will not be fully effective without voluntary initiatives. Companies will form their own incentives and disciplines to adopt and consistently practice sound principles of corporate governance by adhering to best practices and rules set by global markets.

As a transition and emerging economy, Turkey builds a strong regulatory framework for corporate governance, which rests primarily upon a public enforcement model, with the Capital Markets Board (CMB) which is the major Authority in setting corporate governance standards for publicly held companies, for enforcing the applicable standards and for fostering market integrity.

Most corporation structures in Turkey are characterized by concentrated (cross-) ownership, often in the form of family-controlled financial industrial company groups (concentrated ownership that also dominates management, strategic decision making within conglomerates of companies, many of which are listed on the Istanbul Stock Exchange). The legal form of most holding companies has a structure very similar to the Japanese keiretsu. A Group of companies are the outcome of the investments by a single family or a small number of allied families. As it is seen in the cross shareholding systems, some of the company groups own a bank that serves as the main bank of group companies. The companies are generally linked to each other by a web of inter-corporate shareholdings. Families hold control of a holding company which has shares in several other companies giving rise to a pyramidal structure.

The economy structure is not a problem in itself, provided that good and effective safeguards are in place that prevent potential abuse, protect market and minority shareholders and ensure market discipline.

Turkey has recognized for some time now the importance of good corporate governance and various, serious initiatives have been taken. Adopting corporate governance principles in accordance with the international standards even is considered to be a corner stone of stabilizing and enforcing the Turkish economy.

Therefore, Turkish authorities have been investing significant resources to implement programs designed to harmonize corporate governance standards related laws and institutions with European and international standards and practices, the OECD principles of corporate governance (last revised 2004).

In this regard, awareness of international good practice of corporate governance principles is rising. The Turkish Industrialists' and Businessmen Association ("TUSIAD") plays a leading role in coordinating and

presenting the views of publicly held companies in Turkey on a wide range of issues including corporate governance matters. Code of Best Practice, published by TUSIAD is a guideline for all publicly held companies. Although the corporate governance landscape is much better then in the past, there are some areas such as control and disclosure of the related party transactions, the protection of minority shareholders, the role of the management board and the role played by the institutional shareholders in Turkish companies that could need further improvement. For the purpose of minimizing the defects and to level the Turkish system with the internationally accepted standards, Turkish Commercial Code proposed amendments which is estimated to be in force in 2007, includes corporate governance measures among others. These are broadly:

1. All companies will have to publish financial statements in accordance with Turkish Accounting Standards (that are compatible with International Financial Reporting Standards – "IFRS"). Furthermore, a significant minority of the publicly held companies have been preparing their financial statements in accordance with the IFRS for several years.
2. All companies will be required to have web sites and make investor related information available on their site as a consequence of the improving weight of the stakeholders' in the companies and transparency requirements. The introduction of a "comply or explain" requirement for the Capital Markets Board ("CMB") principles and better demand and supply conditions are improving the quantity and accessibility of the information.
3. Proposed amendments are expected to clarify the board's legal responsibility and fulfill certain key supervisory and strategic functions, encourage board members to play a more active role and provide motivated board members who whish to assume a more active role with legal justifications for taking such responsibilities.
4. There will be special requirements for company groups with the aim of providing an enhanced transparency in the intra-group relations and reduced risk for abuse of minority shareholders.
5. Parent companies will have enhanced rights in their affiliates. The proposed amendments will prohibit parent companies from abusing their power to control the subsidiary. A controlled company that had cross shareholdings in a controlling company would only be permitted to exercise 25 % of the voting, dividend and other rights attaching to that cross shareholding.
6. Another improvement is the opening up the shareholders meeting to the stakeholders, and media.

There are also some amendment proposals regarding the corporate governance framework to the Capital Markets Law made by the CMB. These are mainly:

1. Proposed amendments to the Capital Markets Law would increase the range of the Executive Board's enforcement powers and increase the applicable sanctions for the non-compliance with capital markets laws.
2. The draft of Capital Markets Law introduces a statutory civil right of action for misleading disclosure in prospectuses and reverses the onus of proof. The issuer board members and intermediary institutions could be held jointly and severally liable, as well as auditors and selling shareholders.
3. CMB is also in an effort to create a corporate governance index to rate companies based on their adherence to the CMB's corporate governance principles introduced in 2003. In cooperation with the Turkish corporate governance principles and the decision of CMB on 7th Feb 2005, Istanbul Stock Exchange ("ISE") introduced the corporate governance index principles. The creation of the index will increase the market pressure to put investors back in control of companies, creating a corporate culture of transparency.

IV. Data and Methodology

a. Data

We use the data of 43 ISE listed companies selected from different sectors, i.e. manufacturing of food and beverages, textile and leather industry, furniture, paper products, publishing, metal products, mineral products, consumer trade, transportation, communication and information technology. Table 1 shows the list of selected ISE listed companies with the information about the date of foundation, sector information, concentrated ownership (%) and free float ratio as of 2006. Our survey is only concentrated on non-financial companies since the rules and regulations in financial sector have additional requirements specialized for

institutions in Turkish capital markets[3]. We get all the company data from ISE financial sector and ISE Index reports available on ISE website dated third quarter of 2006. We collect monthly stock returns of each company in US Dollars starting from the first traded month in ISE. In addition, we take ISE100 Index daily figures starting from 2nd Jan, 2002 to 29th March, 2007 to analyze stock market volatility in Turkish capital markets. The reason we start from the year 2002 is that Turkey went through a very serious financial crises in 2001 and it take some time to recover for all market players, financial institutions and Central Bank of the Turkish Republic (CBTR). There is new arena in Turkey after this financial crisis with the increasing awareness of all participators in the markets regarding the importance of good corporate governance. Therefore, it is inevitable for Turkish businessman to understand the reason behind corporate governance mechanisms and apply these principals to their companies as soon as possible to maintain their global competitive advantage in the economy.

We test the hypothesis whether there is relation between the stock return asymmetries, concentrated ownership and hence, the quality of corporate governance in Turkish non-financial companies and to assess our findings based on the empirical results in previous literature for various countries.

b. Methodology

In our study, we need to find robust measures for both the quality of corporate governance and the stock return asymmetries to test our hypothesis for Turkish non-financial companies. During the literature review, we see that there are various ways to measure stock return asymmetries and corporate governance quality. One of the measures of return asymmetry is the conditional coefficient of skewness, which we call *"SKEWE"*. SKEWE is computed by taking the sample's third moment of monthly returns and dividing it by the sample variance of monthly returns raised to the power of 3/2.

$$SKEW_i = \frac{(n(n-1))^{3/2} \sum_{\tau=1}^{n} R_{i\tau}^3}{(n-1)(n-2)\left(\sum_{\tau=1}^{n} R_{i\tau}^2\right)^{3/2}}$$

where $R_{i\tau}$ represents the demeaned monthly return for stock i on day τ and n is the number of observations on monthly returns during the sample period. Monthly returns are computed as $ln[(P_{i\tau} + D_{i\tau})/P_{i\tau-1}]$, where $P_{i\tau}$ is the stock price at the close of month τ and $D_{i\tau}$ is the dividend. Scaling the raw third moment by the cubed standard deviation allows us to compare stocks with different volatilities. A larger value in *SKEWE* is associated with a stock that has a more right-skewed return distribution.

Recent corporate scandals and earnings restatements have resulted in an increased emphasis on the need for strong corporate governance to ensure financial reporting quality (SEC 2003; Cohen et al. 2004; Carcello et al. 2002). For example, Institutional Shareholders Services (2006) found that 63% of the global institutional investors surveyed expect increased growth in the importance of corporate governance over the next three years. This increased emphasis on corporate governance also has been noted in academic research that links financial reporting quality to corporate governance strength (e.g., Dechow et al. 1996; Beasley et al. 1999; Beasley et al. 2000; Klein 2002; Agrawal and Chadha 2005; Krishnan 2005; Srinivasan 2005; Wang 2006). Management, the audit committee, the external auditor, and the internal audit department are cornerstones of governance that are essential to managing organizational risks (Bailey et al. 2003; Gramling et al. 2004).

Since Turkey is at the beginning of corporate governance implementations, the corporate governance index is yet to be announced in the near future. In this respect, we use concentrated ownership, the existence of audit committee and if there exist an audit committee, the number of audit committee members as a proxy variable for the corporate governance. We follow a methodology similar to the analysis of La Porta et al (1998)[4]

[3] When we choose the companies, we follow the same selection criteria as explained in Uzun's (2006) unpublished dissertation in order to include all sectors by taking at least one representative company from each non-financial sector.

[4] La Porta et al. (1998) construct the shareholder rights index (anti-director rights) as the sum of the six rights measuring how strongly the legal system favors minority shareholders against controlling shareholders in the corporate decision-making process with the index ranging from 0 to 6. A higher score on this index indicates greater respect for investor protection.

in using the degree of shareholders rights and the analysis of Weir, Laing and McKnight (2001)[5] in using concentrated ownership, audit committee and board structure as a proxy of corporate governance. Hence, we define the logarithmic percentage of concentrated ownership of each companies as "*LOWNERSHIP*" and the number of audit committee members (if exists) as "*AUDITCOMMITTEE*".

c. Least Squares Analysis and Exponential GARCH Model

A standard approach in econometric analysis is the estimation of mean regressions generally using least squares (OLS) analysis. However, if applied econometricians are interested in volatility which ultimately relates to the concept of the variance, alternative modelling tools are required. One reason why volatility might be of interest to the investigator in a financial context is the notion that variability in the return to an asset or security should be reflected in its price. An asset or security with a high variance (i.e., a risky asset) should command a higher return to encourage investors to hold it.

One way of dealing with the problem of heteroscedasticity is to actually model the variance itself and this is essentially the approach adopted within the ARCH and GARCH literature. The problem of heteroscedasticity is generally viewed as one confined to cross-sectional data but if the emphasis focuses on the conditional variance, this is unlikely to be constant over time. This is distinct from the conventional case of heteroscedasticity where the variance of the error was viewed as a potential function of an explanatory variable or variables. Instead the error variance varies over time in a manner that is dependent on how large errors were in the past. In the context of stock market returns, one is likely to observe sub-periods of high volatility (i.e., large errors) perhaps attributable to large world events like oil shocks etc., and sub-periods of low volatility (i.e., small errors) attributable to the usual swings in stock market activity. In other words, there is autocorrelation in the riskiness of financial returns, where such riskiness is measured by the conditional variance.

The non-constancy of volatility over time can be modelled using an autoregressive conditional heteroscedasticity (ARCH) model as developed originally by Engle (1982). For example, the following ARCH (p) model could be expressed as:

$$\sigma_t^2 = \alpha_0 + \alpha_1 u_{t-1}^2 + \alpha_2 u_{t-2}^2 + \ldots\ldots + \alpha_p u_{t-p}^2 \qquad [1]$$

The ARCH specification in [1] could potentially involve the estimation of a large number of parameters, particularly if the periodicity of the data is daily or weekly, for example. The GARCH model was designed to represent a more parsimonious account of the relationship and posited the following relationship:

$$\sigma_t^2 = \alpha_0 + \alpha_1 u_{t-1}^2 + \beta_1 \sigma_{t-1}^2 \qquad [2]$$

Thus, the variance is expressed as a function of the lagged squared error from last period and the lagged variance. This represents the simplest generalised autoregressive conditional heteroscedasticity (GARCH) model (Bollerslev,1986). This could be expressed as the following generalization of the ARCH model is suggested:

$$\sigma_t^2 = \alpha_0 + \alpha_1 u_{t-1}^2 + \alpha_2 u_{t-2}^2 + \ldots\ldots + \alpha_p u_{t-p}^2 + \beta_1 \sigma_{t-1}^2 + \beta_2 \sigma_{t-2}^2 + \ldots\ldots + \beta_q \sigma_{t-q}^2 \qquad [3]$$

It is important to note that stationarity imposes conditions on the GARCH(p,q) process through restrictions on the α_i and β_i parameters. This is not investigated here but necessary and sufficient conditions for stationarity in expression [3] are given by:

$$\alpha_0, \alpha_i \geq 0, \ \beta_i \geq 0 \text{ and } \quad 0 \leq \sum_{i=1}^{p} \alpha_i + \sum_{i=1}^{q} \beta_i < 1 \qquad [4]$$

5 Weir, Laing and McKnight (2001) analyzed firm performance of UK companies based on the independence of board, audit committee and governance mechanisms.

One limitation of the GARCH models is that they restrict shocks to have the same effect on the conditional variance whether the shocks are negative or positive. In other words, the conventional GARCH specification treats shocks symmetrically so only the absolute values of the shocks matter and not their signs. This may be appropriate in some cases but in financial applications like stock markets, this may be a proposition worth testing. An asymmetric approach would allow for the fact that 'bad' news (e.g., an unexpected drop in the asset price) exerts a larger influence on future volatility than 'good news' (i.e., an unexpected increase in the asset price). There is some evidence that stock market declines trigger episodes of greater volatilities than stock market increases. The following exponential GARCH(1,1) or EGARCH(1,1) model allows the proposition of symmetry to be tested(Nelson,1991). The conditional variance component of the regression model can be expressed as:

$$\mathrm{Ln}(\sigma_t^2) = \phi_0 + \gamma \frac{u_{t-1}}{\sigma_{t-1}} + \partial \frac{|u_{t-1}|}{\sigma_{t-1}} + \beta \, \mathrm{Ln}(\sigma_{t-1}^2) \qquad [5]$$

The logarithmic transformation ensures that the variances will never become negative. The EGARCH(1,1) model is asymmetric if $\gamma \neq 0$, since the absolute values of shocks is controlled for in [5]. It should be noted that when $\gamma > 0$, positive shocks generate greater volatility than negative ones.

In our model, we include a dummy variable *"Dummy"* in order to capture the time difference regarding the corporate governance implementations in Turkey. As explained above, the corporate governance legislation has been finalized at the end of 2004. Therefore, we assign zero to the period of Jan 2002 to Dec 2004 and one to the remaining period, i.e. Jan 2005 to March 2007 for ISE100 index return figures. We define the variable "DLISE100" as the representative of ISE100 index logarithmic monthly return figures.

V. Empirical Results and Concluding Remarks

Firstly, we employ the following OLS regression model in E-views after predicting the skewness of each ISE listed company we choose and the empirical results are shown in the following equation as we define MODEL 1.

MODEL 1: *OLS Regression Results of Stock Return Asymmetries in ISE Listed Companies*

SKEWE = -0.7192181401*LOWNERSHIP + 0.356268784*AUDITCOMMITTEE
(-2.41)* (2.15)**
DW = 1.93

We find that there is an inverse relationship between stock return asymmetries and logarithmic percentage of concentrated ownership for the ISE listed companies we survey. This means that when there is one percent logarithmic increase in concentrated ownership of a company, the positive skewness is expected to decrease (0.71) on the average for the same company. In addition, each new member added to the audit committee is expected to increase the positive skewness (0.35) on the average for each company. Our findings are parallel to the literature and as we expected in our hypothesis.

Secondly, we estimate EGARCH model of ISE100 index monthly return figures for the period of Jan 2002 to March 2007 in E-views after transforming the data to the logarithmic form and the empirical results are shown in the following equation as we define MODEL 2.

* The value in paranthesis indicates the t-statistic results of LOWNERSHIP significant at %5 confidence level.
** The value in paranthesis indicates the t-statistic results of AUDITCOMMITTE significant at %5 confidence level.

MODEL 2: *EGARCH Model Results of Stock Return Asymmetries in ISE100 Index and the Effect of Corporate Governance on Stock Price Volatility in Turkey*

$$\mathrm{LOG(GARCH)} = -0.593 + 0.155\frac{u_{t-1}}{\sigma_{t-1}} - 0.053\frac{|u_{t-1}|}{\sigma_{t-1}} + 0.936\,\mathrm{Ln}(\sigma^2_{t-1}) - 0.046\,Dummy$$

DW = 1.99

The EGARCH(1,1) model is asymmetric since $\gamma \neq 0$, and equal to 0.155 in MODEL 2. This means that when $\gamma > 0$, positive shocks generate greater volatility than negative ones as we expect for Turkish Stock Markets after the year 2002 to the present. In addition, we include a Dummy variable in our model to investigate the difference in the stock return volatility in ISE100 Index between the two sub-periods[6], before and after corporate governance implementations in Turkey, regarding the ISE listed companies' corporate governance performance. The coefficient of Dummy variable (-0.046) is negative in sign but low in the amount in MODEL 2. This shows that there is a negative relation between ISE100 Index stock market return volatility and the effect of corporate governance in Turkey. We find that the corporate governance implementations are likely to decrease stock market return volatility in ISE100 Index. Our findings are parallel to the previous literature as we mentioned above in Section II.

In conclusion, we find that there is a relation between stock market return volatility and the quality of corporate governance both at the firm level and market level in Istanbul Stock Exchange. On the other hand, since Turkey is an emerging country; there is still need for corporate governance improvements both at the firm level and country level. There are various studies in the area of corporate governance and these studies emphasize the fact that there is no single corporate governance model suitable for every country. Hence, the authorities should take this fact into consideration to achieve the best corporate governance model in Turkey.

In this respect, CMB aims to build up a regulatory impact assessment system for analyzing the effects of new laws on market efficiency as part of its "twinning project" with the German authorities. In addition, proposed amendments to the Capital Markets Law (CML) intended to develop the CMB's responsibility. These are important steps that enable CMB to facilitate more systematic regulatory decision-making, reporting on economic performance and the mitigation of corporate governance risk areas in Turkey in the near future.

[6] Jan, 2002-Dec, 2004 is set as before corporate governance period and Jan, 2005 – March 2007 as after corporate governance period. Companies are expected to announce their corporate governance implementations by "comply or explain" approach recommended by CMB of Turkey.

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