



**CORPORATE GOVERNANCE AS A QUANTITATIVE INDICATOR AND A STUDY ON ISTANBUL STOCK EXCHANGE CORPORATE GOVERNANCE INDEX IN TURKEY**

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**ABSTRACT**

The purposes of this study are to determine the direction and the magnitude of the interrelations of the Corporate Governance Index (XKURY as denoted by ISE) and other three indexes of ISE, and to analyze and find out whether any one of these indices may be used as a positive indicator for an investment to be made in XKURY index. XKURY index consists of the stocks of the listed companies of ISE those are rated as satisfactorily applying the corporate governance principles in accordance with the criteria set by the Capital Markets Board of Turkey. As a result of an analysis based on 683 observations, statistically significant relationships have been established and interpreted between the XKURY index returns and the returns of the other three indices described above, which constitutes a quantitative indicator of corporate governance practices. It has been found that the corporate governance index had a very strong and positive correlation with other indices it has been compared. The econometrical analyses carried out in the study had concluded that it will not be possible to use any of the indices of ISE as a positive indicator for an investment to be made in XKURY index, by following their movements.

**1. INTRODUCTION**

Although the term *corporate governance* itself is relatively new, the elements surrounding the multi-faceted corporate governance have used to be in the agenda since the first half of the 20<sup>th</sup> century. Shleifer and Vishny (1997) are defining the corporate governance saying “corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment.” (Shleifer and Vishny, 1996). According to OECD the corporate governance is defined as being an understanding where the interests of the shareholders, managers, employees, customers, creditors, fund suppliers and the state are best dealt by the joint-stock companies, in addition to their main goal of obtaining profits and distributing it to shareholders (OECD, 1998). But it is, however, worth noting that the ultimate goal intended to be achieved by good conduct of corporate governance principles is not maximizing the value of the company. The corporate governance is an understanding of business administration that considers the interests of all stakeholders within the framework of transparency, equality, accountability and responsibility, in line with the financial objectives.

John and Senbet, (1998) are defining the corporate governance more comprehensively by saying “it deals with the mechanisms that the stakeholders of a joint-stock company, whose shares are publicly traded, apply control over the people within the organization and the management to ensure the protection of their interests” (Kose, Senbet, 1998). It is also worth adding that the expression stakeholder comprises not only the shareholders of the company but the bond holders as well as the employees of the company, suppliers of the materials and the services (sellers), customers and all other parties that have an interest in the company one way or the other. Reviewing various definitions of corporate governance makes it clear that all of them are talking about conflicts of interest between the insiders and the outsiders arising from separation of the ownership and control from each other. An increasing interest in corporate governance has been observed in the recent past. At first, implemented mechanisms of the management activities have been investigated; these discussions had become

more intense following the financial scandals and business bankruptcies and certain obvious accounting frauds alleged that done by the managers much more recently (such as Enron, WorldCom). Number of arrangements has been deemed necessary as a result of encountered conflicts of interests of the company executives with the shareholders', the conflicts among the shareholders themselves about management of the company and the conflicts of interests of the company with the factors outside the company; thus the principles of corporate governance have been determined. The most common interest conflict among the aforementioned interest groups is the one between the shareholders and the company executives. It is inevitable to agree with Adam Smith for his judgment "it will be quite optimistic to expect a company executive's managing money of the others with due care and attention as if it were his own money, without frittering away or making use of it as a means to provide personal profit for himself" (Smith, 2006). In solving this chronic problem, the corporate governance is a commitment provided for the shareholders that the company executives will not let the wrong redirection of resources and will transfer the investments in rational projects by means of set out rules and brought in constraints. Secondary interest conflict is the one encountered between the minority shareholders and the shareholders have the power to control. The shareholder with a large share of stocks may so direct the resources to increase his own wealth by acting as a company executive himself, or influencing the management from outside. In such a case, proper implementation of corporate governance guarantees that the investments of the minority shareholders will be protected in the maximum extent via rational decisions to be taken and such exploitation will not occur in the corporations those apply the corporate governance principles. The third kind of interest conflict is: interests of the company as a whole being in conflict with the interests of the non-company factors. In this context, the corporate governance again guarantees to all the other factors that a transparent, responsible, equitable, accountable way of management has been adopted and the interests of all concerned are protected in the maximum extent.

In the last two decades, military blocs have left their places to trade unions in the world. In this structure the effect of the private sector has been increased not arithmetically but geometrically. Everything haven't happened smoothly without any flaw during expansion of the private sector to such extent though, Asian and Russian crises first, then major accounting scandals caused by the companies such as Enron, Arthur Andersen, WorldCom, Parmalat have increased the need of the investors' to have confidence in the private sector. All of these mentioned have embodied the emergence of the concept of corporate governance. Developed corporate governance as a result of bad experiences is important; because:

- It is the guarantee of observance of the rights of all interest groups.
- It makes provision of funds cheap and easy with obtained trust and reputation as a result of proper applications of it.
- Ensures the fund providers that rational use of resources will be made and added value will be produced.

The corporate governance trend that has begun in the 90s due to all these aforementioned developments and their contributions became a concrete structure in the year 1999 with issuance of the OECD Principles of Corporate Governance with participation of 30 countries. OECD had issued the principles collected under the following main headings in order to be used as a template by the countries while publishing their own corporate governance principles: (OECD, 1998).

- The requirements for an effective corporate governance framework (It is a template for the necessary legal arrangements),
- Shareholder rights and the Basic functions of ownership,
- Fair treatment of shareholders,
- The role of stakeholders in the corporate governance (Covers the related parties out of the company),
- Making public disclosure and transparency, and
- Responsibilities of the board of directors.

If it is attempted to draw a general framework for corporate governance practices in the world these practices may be divided into two distinctive groups such as the Continental European corporate governance practices and Anglo-Saxon practices (Sivacioglu, 2008). Following general characteristics may be found in the countries applying the Continental European model: predominance of the banks in the financial markets, and a concentrated shareholding structure is observed, presence of relatively illiquidity of the capital markets and weak shareholder activism are other common characteristics. Continental European countries except the Baltic States and Japan may be shown as the samples of the countries those adopted such an interpretation of the corporate governance concept.

The basic feature in the Anglo-Saxon model is presence of a well developed stock culture of the people in such countries, which consist of USA in the first order, then the United Kingdom and Ireland, as being the samples of applying countries. Dispersed ownership structure, liquidity of the capital markets, sophisticated market for corporate control and extensive shareholder activism may be specified as the other main features of this application. On the other hand, due to the nature of it, certain weaknesses have been observed such as a limited shareholder-manager relationship and being open to hostile takeovers. In fact the differences in forming the countries' economic policies constitute the basis for this polarization. The effects of a competition-based economic program are observed in the Anglo-Saxon model. For the Continental European model it can be said that the governments both do act as a regulatory organ for the industry and also as a performer of the industrial activities to achieve national objectives. While the main conflict is experienced between the majority and minority shareholders in Europe, it is between the company executives and shareholders in the Anglo-Saxon model.

Although the benefits of Continental European models are discussed instead of the Anglo-Saxon style corporate governance systems, the general tendency is the other way around. In recent years, a new situation has developed, where the companies who fulfill the corporate governance practices satisfactorily are treated in the national stock exchanges under a separate index or in a secondary stock exchange. In this context, there are such applications in five countries in the world including Turkey (Sivacioglu, 2008).

- Turkey - ISE Corporate Governance Index
- South African Republic - Johannesburg Stock Exchange Socially Responsible Investing Index
- South Korea - Korea Corporate Governance Stock Price Index
- Brazil - Nova Mercado
- Italy - Milano Stock Exchange STAR Exchange (Segmento Titoli con Alti Requisiti)

In the following sections of the study, applications of the corporate governance in Turkey have been mentioned briefly and a quick literature review has been made before the presentation of the data and the method used in the research. Although some researchers have an opinion that Turkey has not behaved as fast as required in respect of corporate governance, the conclusion of the observances accumulated during the research have been carried out for this study is: Turkey has behaved just in time, for ISE has been in a state of a baby just recently started creeping with its six-year history, 34 million USD trading volume and 9.9 billion USD total capitalization. It is impossible to teach a baby to run who is not capable of standing up (Sivacioglu, 2008). One of the most important steps taken on corporate governance in Turkey is publishing of the Capital Markets Board (CMB). The principles prepared according to the realities of Turkey with the reasoning "One size does not fit all", have been revised in 2005.

When the principles are examined, the following points stand out: (CMB, 2005)

- Document defines that compliance status of the publicly traded companies should be rated by the authorized institutions.
- When examined together with the current legal regulations as a whole it becomes apparent that a management approach is adopted ahead of the current situation. With such structure of it, it has a guiding nature.

The national corporate governance philosophy of Turkey has been formed under four main headings:

- Shareholders
- Public Disclosure and Transparency
- Stakeholders
- Board of Directors

Another important step with respect to Corporate Governance is obligation to publish the Corporate Governance Compliance Report of the publicly traded companies. With this application, expansion rate of corporate governance and interest has shown in the topic have been increased due to the requirement of publication of the report. However, the most significant development in Turkey is acquiring operational capacity of the ISE Corporate governance index. XKURY index has been calculated from the date of August, 31. The number of publicly traded companies had exceeded five. Aforementioned rating firms are as follows: TCR Corporate Governance and Credit Rating Co. Inc., Saha Corporate Governance and Credit Rating Services Co. Inc., Kobirate International Credit Rating and Corporate Governance Services Co. Inc., Risk Metrics Group Inc., JCR Avrasya Rating Co. Inc. The initial value of the index is 48082.17 as of August, 29, 2007. After this date the number of companies in the index has reached to 27 as of June 2010 by addition of companies rated as

satisfactory; these companies are: Anadolu Efes, Arcelik, Asya Katılım Bankası, Aygaz, Coca Cola Icecek, Dentaş Ambalaj, Doğan Holding, Doğan Yayın Holding, Hürriyet Gazetecilik, İş Finansal Kiralama, Logo Yazılım, Otokar, Park Elektrik Madencilik, Petkim, Şekerbank, Türkiye Sınai Kalkınma Bankası, TAV Havalimanları, Tofaş Otomobil Fabrikası, Turcas Petrol, Tüpraş, Türk Prysmian Kablo, Türk Telekom, Türk Traktör, Vestel, Yapı ve Kredi Bankası, Vakıf Yatırım Ortaklığı ve Gayri Menkul Yatırım Ortaklığı.

## **2. LITERATURE REVIEW**

In recent years, a significant amount of experimental work has been done on various corporate governance issues, especially following the scandals and emergence of large-scale corporate bankruptcies such as Enron, WorldCom, and Adelphia. However, the literature of the corporate governance go back to 1776 (Smith) and 1932 (Berle and Means) in the academic studies. We think that the research in this area can be divided into two main groups:

- First, the area which is more theoretical trying to determine how and what should be the corporate governance structure that will lead to increased effectiveness of various corporate governance mechanisms and reduced cost of representation, and
- The empirical area trying to associate the corporate governance measures with the economic performances and growth of the companies managed within the scope of the framework in question, their stock prices and expected returns, the cost of equity capital as well as various valuation measures of those companies empirically.

Research work dealt with and referred to in this study have been examined under the headings of “the work performed abroad” and “studies carried out in Turkey” within the scope of the above described criterion.

### **2.1. Studies Performed Abroad And Their Results**

Corporate governance is a universal form of management shaped by the dynamics of each country's own despite being implemented based on the same elements. The studies investigating such differences arising from the legal regulations of the countries in general focus on the following points;

The number one issue investigated in this type of researches is the shareholders' rights. The first indicator is equal voting right of each share. Second indicator is ease of the use of the right to vote. Other indicators are protection of minorities and the percentage of votes required for extraordinary general assembly. The lower this ratio is, the more effective is the corporate governance in that country. According to the research by La Porta et al (1996) while this ratio is 1 percent in the USA, it is 10 percent in Turkey and 33 percent in Mexico. Another indicator is whether it is mandatory to distribute dividends. Based on these indicators, as the USA being in the first order, the countries where Common law legal systems (British based legal system) are valid were found to be protecting shareholders more strongly than the others. It is worth noting that the weakest in this respect are the countries who adopted the French legal system, including Turkey. This research in general falls under the coverage of the second area described above; therefore, latest main findings are reviewed in this empirical area in the current section.

In 2000, researcher Johnson et al has measured the relationship between the deficiencies in corporate governance and the stock and financial asset prices for 25 countries. He has identified that during financial crisis the capital flows were very rapid and having very negative effects for the countries with weak corporate governance practices. In such cases currencies of these countries are very negatively affected by the crises (Johnson et al, 2000). Gompers, Ishii and Metrick (2001), have formed a 24-parameter "Corporate Governance Index" for rating 1500 companies, and concluded that an investor provides a better return of about 8.5 percent by selling the stocks of the companies (Gompers, Ishii, and Metrick, 2001). Bai et al has examined the problems of corporate governance in China in their studies published in 2002. The study concludes that the well-managed companies in corporate governance have reached higher stock market values. Chinese investors are willing to pay a premium of a significant rate for better corporate governance standards; this rate reaches up to 20% for well-managed companies (Bai et al, 2002). In 2003, Brockman and Chung have made use of the data of 31 Hong Kong and 64 Chinese origin, total 95 companies listed in the Hong Kong stock exchange and studied the investor protection and the liquidity of the companies. They have found that the buying-selling price gap is narrower and the trading volume is higher for the companies HK origin than the Chinese origin companies. They have found that the cause of this situation associated with high-quality corporate governance practices targeted investor protection (Brockman and Chung, 2003).

In their studies published in 2004, Beiner et al has formed a corporate governance index on the basis of a research made on all companies listed in the Swiss Stock Exchange and found that 1 point increase in the index

caused an average increase of 8.5% in the market capitalization. In his study published in 2009, Cheffins has examined the experienced meltdown of unprecedented scale since the fall of 1930 in the prices of stocks in the USA and the collapse resulted in removing of 37 companies from the S&P 500 iconic index in 2008, and questioned whether there was a share of corporate governance weakness in the event. The data covers 37 companies removed from the S&P 500 index, using the Factiva newswire database of Dow Jones. The news about these companies has been published in the newspapers such as New York Times, the Wall Street Journal and Financial Times and magazines such as The Economist, Forbes, and Fortune had been relied on. As the conclusion of his study of the sample of companies at “ground zero” of the stock market meltdown, the general argument of the author is that existing corporate governance arrangements in the United States do not have weaknesses requiring any radical legal changes and the corporate governance mechanism had successfully passed this tough test (Cheffins, 2009).

In his work published in 2010, Bhasin has carried out a research on the Reliance Industries Limited to find out in what extent did the disclosure, one of the basic requirements of corporate governance, fulfilled in practice, in India, the country that has the largest number of listed companies in the world. He found out that the company’s performance was “very good” with 85 points. Company's annual report for the fiscal year 2008-2009 has been used as the source of data and disclosures examined in-depth to conclude. The “case study” approach as the research method and the “point valuation system” in the constructed model have been used. The primary data has been obtained via interviews with some of the company executives. Secondary data has been collected by screening the publications in relation with the Reliance Group especially the ones related to corporate governance applications of the company as well as the corporate governance report of the company. It is expected that the Reliance Group, the largest and well-known company of India, will constitute a model for the other companies in the country (Bhasin, 2010).

In their study dated 2010, Shipilov et al have put forward a theory arguing that an institutional logic plays a role in adopting new corporate governance practices, while adopting in multi-waves, the practices that are close to the logic of the initially adopted practice are adopted at once, however in case of entirely new kind of practice the results obtained by the other institutions applying this new practice are waited. They have sought support for this theory by analyzing adoptions of practices following the board of directors’ reform in Canada. As the research method, the general assemblies of the 217 listed companies in Canada TSX index have been collected between the years 1999 and 2005. Thus, the interlocking boards were determined and the chosen time interval has constituted an ideal period for observing. The conclusion of their research shows that adoptions of the corporate governance practices in the companies having an interlocking board structure are more rapid as they have predicted (Shipilov, Greve, Rowley and Timothy, 2010).

The conclusions and the results may be summarized as following: stock market performances of the companies are higher for those implementing the principles of corporate governance. In general, returns on equities of the companies are high for those applying the principles of corporate governance.

## **2.2. Studies Conducted In Turkey And Their Results**

Studies on corporate governance in Turkey are summarized below;

The first one of these studies, the study on ISE dated 2001, is the most comprehensive research work questioning the level of corporate governance in Turkey, and dealing with the degree of implementation of the principles of corporate governance and reflection of these principles in the performances of companies (Varış et al, 2010).

The study examined the corporate governance practices of companies traded on the Istanbul Stock Exchange (ISE) and the relationship between the market and their financial performances. According to the results of the study both the financial and market return performances of the companies are higher those applying the corporate governance principles and standards more than the others.

The study of the CLSA, published in 2001, is interesting for Turkey because 17 Turkish companies are included among the 495 companies from 25 countries within the scope of the research; and 10 Turkish companies out of 17 have achieved to be included among the unsuccessful 100, and 2 out of these to be included among the unsuccessful 25 companies which are Doğan Yayın Holding and Vestel Elektronik (CLSA, 2001). Churaev (2003) has examined the impacts of the corporate governance issues on the values of the Turkish companies. Corporate governance ratings of the companies under XU30 index has been measured against their stock performances, financial structure of the companies’, and return performances. While the corporate governance performance rate increases the average of the adjusted cumulative return increases.

Study of the Gürbüz and Ergincan dated (2004), has established relations between the stock market performances, financial structures and profitability of the companies and a corporate governance index, which is obtained in accordance with the Articles of Associations of the companies and partnership indices (Ergincan and Gürbüz, 2004). Stock market performances of the companies implementing the corporate governance principles better, were found more successful and their equity profits higher than the others. It has been observed that such companies also can find loans with much more appropriate conditions. Corporate Governance Forum of Turkey and Standard & Poor's have conducted the project together that had focused on issues of transparency and disclosure, which are important indicators of corporate governance. Project has lasted for and the findings have been published in 3 consecutive years.

The research work dated 2005, has constituted basis for the studies in the following years as being the methodology (Ararat, Balic and Bradley, 2005). Data that has been obtained from the annual reports and the web sites of the companies had been used in the analyses and the evaluations had been presented in three sub-categories. These sub-categories and notes of the 52 companies in these categories for the first year are as following:

- Ownership Structure and Investor Relations 4/10
- Financial Transparency and Information Disclosure 7/10
- Board of Directors, Management Structure and Process 3/10

Where, the overall average is 5 out of 10 for this research, the high note obtained in the financial transparency may be attributed to the successful legal regulations.

Similar results have been obtained for the 2006 stage of the same project, and the success in the financial reporting has also been achieved in that year (Ararat, Balic, and Kochetygova, 2007). The most striking result for the year 2006 is the significant progress in the banking sector compared to previous year. This situation has been connected to developments in the financial sector and positioning of the foreign banks in Turkey. The study that has been completed in 2007 has concluded that the rate of improvement for all three areas have been slowed down (Ararat and Balic, 2007). However, a positive development has been found for the last year of the project that was the narrowed gap of the levels of implementing the corporate governance of the traced companies.

Kaymak and Bektaş in their study dated 2008 had aimed to find out whether the regulated "western-style" corporate governance practices have come out to the surface in the characteristics of the boards of directors of the Turkish banks and if so whether such characteristics affected the performance or not. The financial data and data related to the board of directors on the Internet page of the Banks Association of Turkey has been collected for 27 commercial banks for the period between the years 2001 and 2004, analyses of performance and board of directors have been carried out based on this data. While presence of the insiders in the board has found a positive impact on return on assets, the CEO's being also the chairman of the board and ownerships of the board members of the company have found adverse effects in the study, where 27 banks of Turkey (attracting large amounts of foreign investment as being an emerging market) have been evaluated with their performances between 2001 - 2004 (Kaymak and Bektaş, 2008).

Selekler, Gökşen and Yıldırım, Öktem in their study dated 2009 are investigating the effects of national and international pressures exercised upon a developing economy to improve the corporate governance, in terms of institutional theory. Policy makers recently have criticized the groups of family companies those are in a dominant position in emerging economies because of their weak governance structures. The agreed upon joint recommendation to the groups of family companies is to increase the number of the independent and outsider directors in their board of directors. Therefore, the changes have been made in the compositions of the board of directors of their affiliates by the six of the largest family groups of companies between 2002 and 2006 have been analyzed in the study using one-way ANOVA and *t*-tests as statistical tools. No statistically significant change has been found in the compositions of the boards of directors within the period of research (Selekler, Gökşen and Yıldırım, Öktem, 2009).

The study dated 2009, carried out by Bektaş and Kaymak, examines the relationships between their performances and the board structures and concentrations and types of the ownerships of the Turkish banks, resource dependency point of view. Total 27 banks' financial and corporate data has been compiled from the Internet page of the Banks Association of Turkey and analyzed, 3 are state-owned banks, 18 are private banks and 6 were foreign-owned banks out of these 27 banks. However, due to unavailability of data such as board of directors, whether the CEO is also the chairman of the board, number of the insiders-outsiders on an annual basis between the years 2001 and 2004, only 2004 data were used. While analyzing the long-term effects of the decisions of the board of directors, ownership rates of the board members have been measured between 1994 and

2004. The conclusion reached by the researchers is that the size of the board of directors and CEO's being also the chairman of the board do not significantly affect the returns on assets of the Turkish banks, whereas ownerships of the board members have a negative association with the performance. They identified that the analysis of by whom the board of directors is composed showed that it had a curvilinear relationship with the performance implying that high performance regardless of whether the majority composed of outsiders or insiders (Kaymak and Bektaş, 2009).

### 3. DATA AND METHODOLOGY

This section is on the data collection and the method used in the research. To perform performance analysis of ISE Corporate Governance Index, the chosen period starts on 31.08.2007 the date on which the index started to be calculated, and ends on 31.05.2010 (including that day). In order to directly measure the returns of the Return Index, sections in the ISE Monthly Bulletins were used. To ensure that the measurement should allow comparing in a logical framework, periodic return performance measurements have been made also for the XU30, XU100. Considering that quarterly, monthly or weekly observations will not statistically be sufficient, the Return Indices of ISE indices are compiled daily, for a total of 683 trading days of ISE between the dates August, 31, 2007 and May, 31, 2010. The period chose to perform the measurements and comparisons. Following model has been structured according to these variables:

$$XKURY = \alpha_0 + \alpha_1 XU30 + u_1 \quad (1)$$

$$XKURY = \beta_0 + \beta_1 XU100 + u_2$$

$$XKURY = \theta_0 + \theta_1 XUTUM + u_3$$

For every series adequate number of lags has been specified to eliminate the autocorrelation problem. In the series of daily observations, the number of lags has started from  $k = 22$ , representing one-month period in terms of trading days (Perron, 1989). From this stage on, a 22-day period has been used for entire analyses in the study. The results obtained were ascertained whether they were causal or not.

For determining the lag length the Akaike information criterion (AIC) has been used. The lag length has been found as being 1 according to AIC.

$$(2) \quad \Delta Y_t = \mu + \beta_t + \alpha Y_{t-1} + \sum_{i=1}^k \gamma_i \Delta Y_{t-i} + u_t$$

Granger causality test was applied to reveal the causal relationships between variables besides the simple correlation relationships. Granger causality test is a method used to determine the direction of relations of causality between variables formulated by Clive Granger in 1969 (Granger, 1969).

According to this test, if the inclusion of information on the variable  $x$  into the model provides contribution to prediction of the variable  $y$ , then the  $x$  variable is the cause of  $y$ .

The Granger causality test for the model presented above is carried out as follows. In case the following hypothesis of  $H_1$  is accepted, then  $x$  is not a reason for  $y$ .

$$H_1: b_{21} = b_{22} = \dots = b_{2q} = 0 \quad (3)$$

In case the following hypothesis of  $H_2$  is accepted, then  $y$  is not a reason for  $x$ .

$$H_2: d_{11} = d_{12} = \dots = d_{1q} = 0 \quad (4)$$

In case both hypotheses  $H_1$  and  $H_2$  are rejected, then it becomes clear that there is a two-sided causality between  $x$  and  $y$ . In this case, the feedback effects may be mentioned. The above hypothesis tests may be tested using Wald test:

$$F = \frac{\frac{(HKTS - HKT)}{r}}{\frac{HKT}{n - k}} \quad (5)$$

In the equation (5) *HKTS* stands for the error sum of squares of the restricted model, *HKT* error sum of squares of the unrestricted model, *r* number of constraints, *n* number of observations, and *k* number of parameters in the model. If the calculated *F* value is greater than the table (critical) value of the *F*, then  $H_1$  and  $H_2$  hypotheses are rejected. At the third stage of the study causal relationships between variables have been tested using vector autoregressive (VAR) technique. Furthermore, to determine the dynamic causal relationships between variables and in order to test the consistency of the results to be obtained as a result of the Granger causality tests estimations of the impulse-response functions were also used. The VAR model deals with all the variables selected in unison and examine them in the integrity of a system. In the VAR model endogenous and exogenous variable distinction is not made between the variables. Existence of a theory is not assumed affecting the formation of the model, at the stage of the creation of econometric model. It is not allowed that the restrictions and assumptions alleged by the theory disturb the model definition. A pre-constraint is not imposed on the relationships between variables. In this manner, the negative effects of the pre-assumptions those a model builder needs to make at the model building stage are eliminated on a large scale.

The four-variable VAR model can be expressed in a standard way as follows:

$$(6) \text{XU30} = c_1 + \sum_{i=1}^P d_{1i} \text{XKURY}_{t-i} + \dots + \sum_{i=1}^P d_{4i} \text{XUTUM}_{t-i} + v_{2t}$$

$$\text{XU100} = e_1 + \sum_{i=1}^P f_{1i} \text{XKURY}_{t-i} + \dots + \sum_{i=1}^P f_{4i} \text{XUTUM}_{t-i} + v_{3t}$$

$$\text{XUTUM} = g_1 + \sum_{i=1}^P h_{1i} \text{XKURY}_{t-i} + \dots + \sum_{i=1}^P h_{4i} \text{XUTUM}_{t-i} + v_{4t}$$

in equations above, *P* stands for the lengths of lags, and *v* for random error terms having zero means, its covariance's with its own lagged values are zero, variances are constant and normally distributed. In the VAR model, the assumption of the errors being unrelated to their own lagged values does not impose any constraint to the model, for it enables to overcome the autocorrelation problem by increasing the lag lengths of the variables. VAR models can be applied in two manners as being restricted and unrestricted VAR models. The "F tests" that shows the Granger-causality, the "variance decomposition" and "impulse-response functions" that shows the interactions between variables are the methods used in the VAR analysis to obtain the results. The variance decomposition separates the change on one of the endogenous variables, defined in equality (6), as being shocks those affecting all internal variables respectively; thence, it becomes possible to get informed about the dynamic nature of the model. The purpose of the variance decomposition is to detect the effect of each random shock on the error variance of the predictions for future periods. Prediction error variance can be expressed as each variable's contribution to the error variance for a period of length *h*. Then, by proportioning each variance, to the total variance, the relative weight is found as a percentage. Interpretation of the results obtained by the variance decomposition is also very important. Considering the equality number (6), if a shock at  $v_{1t}$  does not affect the prediction error variance of *x*, regardless of length of the forecast period, *x* can be considered exogenous because *x* is acting independent from *y*. On the contrary, if a shock at  $v_{1t}$  affects the prediction error variance of *x* pretty much, *x* is considered as an endogenous variable. In our study, 22 periods (days) have been used as the length of



the period of shock representing the 22 trading days within a month. The order of the variables also affects the results in the variance decomposition.

In the final stage of the study, impulse-response functions have been formed. Impulse-response functions show the effects of one (1) standard-deviation shock, generated in one of the random error terms, on the current and future values of the endogenous variables. In VAR analysis, the impulse-response functions have a great role in detecting the symmetrical relations and determining the dynamic interactions between the examined variables. Whichever is the most influential variable, in the relationships between the variables in a model, can be decided by using variance decomposition. However, whether this variable that is found effective, can be used as being the policy tool or not can be decided by using impulse-response functions. The Monte Carlo technique has been used in calculation of standard errors of the impulse-response functions in the study. According to this technique, a random sample is chosen from the asymptotic distribution of the VAR coefficients, calculated by Hamilton (Hamilton, 1994). The impulse-response coefficients are obtained by making use of these coefficients, obtained by simulation. This process is repeated certain number of times and the sampling distribution of the impulse-response coefficients are found. Standard deviations are obtained by using this distribution. The standard deviations, obtained as described, will give the standard errors of the impulse-response functions. At this stage, the graphics of the impulse-response functions have been examined in terms of the responses of the variables, in the model, to the shock imposed on the XKURY index, in order to compare the results obtained by Granger causality tests.

#### 4. EMPIRICAL RESULTS

In the study, the relations on the return basis between the XKURY Index and the other three indices -subject to the research- have been revealed based on the observations. During the study, at first, separate periodic return calculations have been made for the XKURY, XU30, XU100 and XUTUM indices. The variables affecting the XKURY index has been defined as being the indices XU30, XU100 and XUTUM. In the first stage of the study stationary tests of the entire variables have been performed. Following model has been used for augmented Dickey-Fuller (ADF) test for stationary. Table 1 shows the ADF test results according to the levels of the variables and I. differences.

**Table 1:**

##### ADF Test Results According to the Levels of the Variables and 1<sup>st</sup> Differences

| Variable* | ADF<br>(According to Level) | ADF<br>(According to I. Difference) |
|-----------|-----------------------------|-------------------------------------|
| LXKURY    | -0.89                       | -23.38*                             |
| LXU30     | -1.49                       | -6.07*                              |
| LXU100    | -1.54                       | -6.15*                              |
| LXUTUM    | -1.49                       | -6.01*                              |

\*L, logarithm of the variable ( $\alpha_{0.05} = -3.42$ ;  $\alpha_{0.10} = -3.13$ )

All variables are 1st order difference stationary as can be seen from Table 1. In the second stage, primarily correlation analyze was applied in order to determine the direction and degree of the relationship between the variables. Table 2 shows the calculated values of the Pearson correlation between variables.

**Table 2. Results of Pearson Correlation between Variables**

|              | <b>XKURY</b> | <b>XU30</b>     | <b>XU100</b>    | <b>XUTUM</b>    |
|--------------|--------------|-----------------|-----------------|-----------------|
| <b>XKURY</b> | <b>1</b>     | (+) Very Strong | (+) Very Strong | (+) Very Strong |
| <b>XU30</b>  | 0.999        | <b>1</b>        | (+) Very Strong | (+) Very Strong |
| <b>XU100</b> | 0.949        | 0.960           | <b>1</b>        | (+) Very Strong |
| <b>XUTUM</b> | 0.998        | 0.999           | 0.953           | <b>1</b>        |

XKURY variable has a very strong in level of correlation in the same direction (positive) with the XU30, XU100 and XUTUM variables. The Granger casualty results obtained in the study are shown in Table 3.

**Table 3. VAR Granger Causality / Wald F Test Analysis Results**

| <b>Number of Observations: 683 - Dependent Variable: XKURY</b> |                   |                           |                         |
|--|-------------------|---------------------------|-------------------------|
| <b>Variable</b>  | <b>Chi-Square</b> | <b>Degrees of Freedom</b> | <b>Significance (P)</b> |
| XU30   | 0.022             | 1                         | 0.883                   |
| XU100  | 1.827             | 1                         | 0.177                   |
| XUTUM  | 0.946             | 1                         | 0.331                   |
| <hr/>  |                   |                           |                         |
| XU30 – XKURY   | 1.306             | 1                         | 0.253                   |
| XU100 – XKURY  | 1.040             | 1                         | 0.308                   |
| XUTUM – XKURY  | 1.357             | 1                         | 0.244                   |

According to the Granger causality test results given in Table 3, neither XKURY variable is the Granger-cause of the other variables, nor are the other variables the Granger-cause of XKURY conclusion has been reached.

Results of the variance decomposition those have been obtained with the VAR model, defined in equation set (6), are given in Table 4.

**Table 4. Results of the Variance Decomposition**

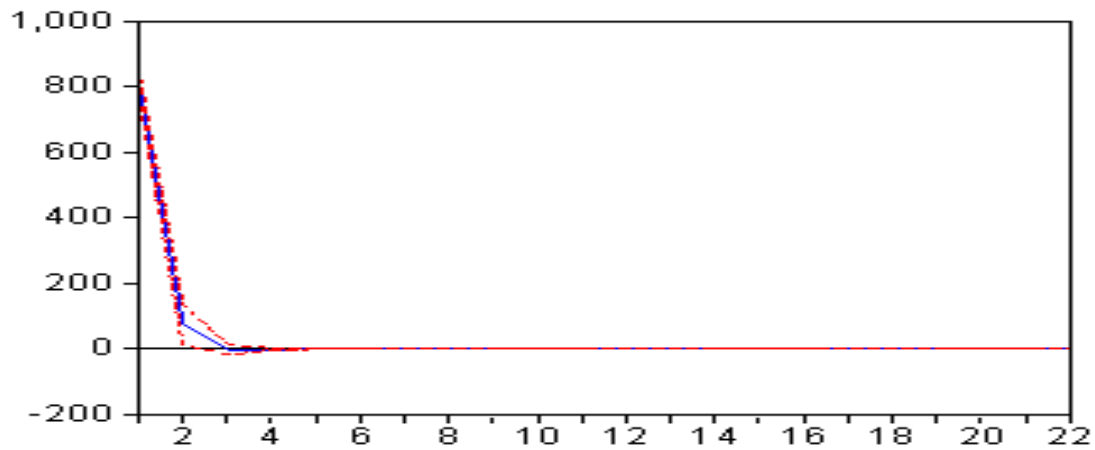
| Period (Day) | Standard Error | D (XKURY) | D (XU100) | D (XU30) | D (XUTUM) |
|--------------|----------------|-----------|-----------|----------|-----------|
| 1            | 810.42         | 100.00    | 0.00      | 0.00     | 0.00      |
| 2            | 817.13         | 99.22     | 0.03      | 0.62     | 0.14      |
| 3            | 817.26         | 99.19     | 0.03      | 0.64     | 0.15      |
| 4            | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 5            | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 6            | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 7            | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 8            | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 9            | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 10           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 11           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 12           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 13           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 14           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 15           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 16           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 17           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 18           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 19           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 20           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 21           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |
| 22           | 817.27         | 99.19     | 0.03      | 0.64     | 0.15      |

**Cholesky ranking:** D (XKURY) D (XU100) D (XU30) D (XUTUM)

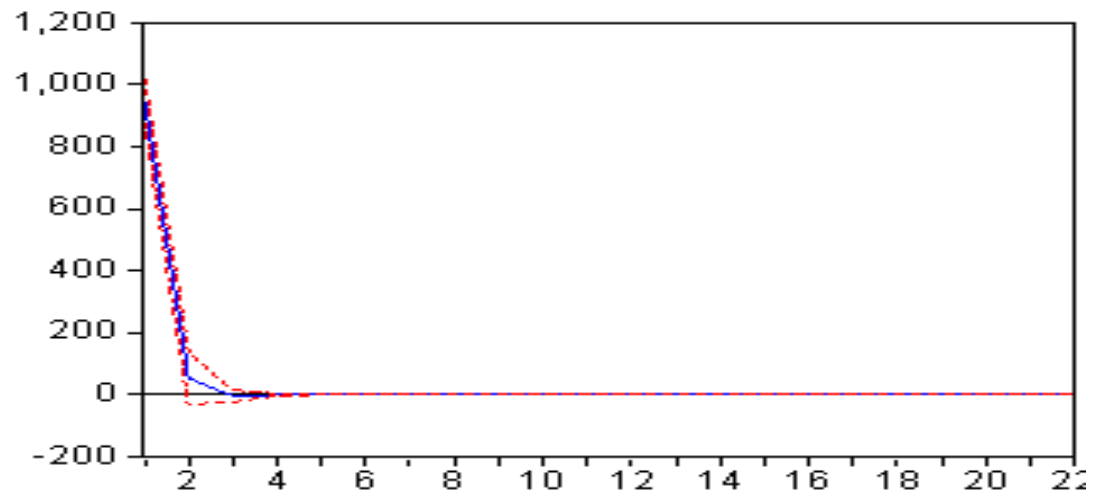
When the results of the variance decomposition, given in Table 4, are examined, all of the changes on the prediction error variance of the XKURY index in the first period are explained by the variable itself. There is no contribution of other variables. In the second period, while the share of the variable itself is 99.22% in the changes on the prediction error variance of the XKURY index; XU30 index's share is 0.6%; XUTUM index's share is 0.14% and XU100 index's share is 0.03%. Consequently, it is concluded that another variable, other than the index itself, is not able to explain XKURY index over time. The VAR impulse-response functions are shown below in Graphic 1.

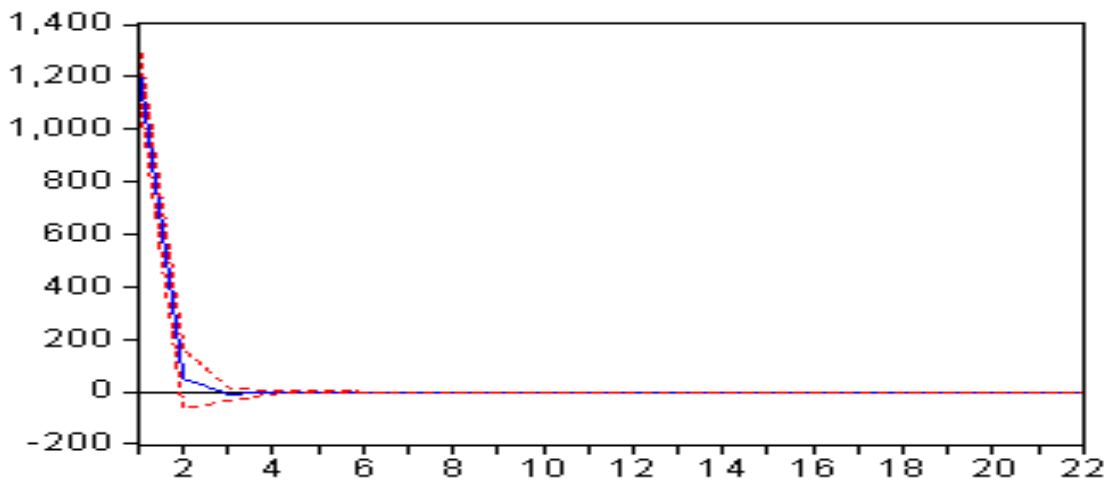
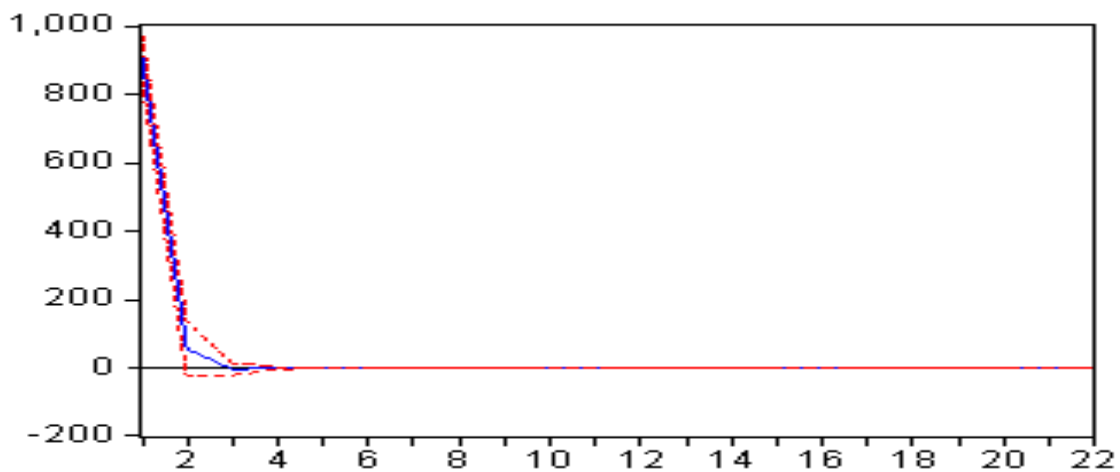
### Graph 1. Graphics of Impulse-Response Functions

#### Response of the XKURY to XKURY



#### Response of the XU30 to XKURY



**Response of the XU100 to XKURY****Response of the XUTUM to XKURY**

Interpretation of Graphic 1 leads to the following conclusion. The first graphic in top left shows the effect of the one standard deviation shock imposed on XKURY index, again on itself. While a unit shock given on XKURY index in the current period affects it in the negative direction, in the same period, such an effect also continues in the second period. From the third period on the effect of the shock gradually decreases and disappears. From the third period on it is not statistically significant. The bands i.e. dashed lines are representing inclusion of zero. Results those are obtained for the other variables are similar. According to the results drawn out of the graphics it can be said that none of the variables does have an effects on the XKURY index.

## 5. CONCLUSION

It has been determined that the corporate governance index (XKURY) has a very powerful correlation in the positive direction with the other indices it has been compared with in the study. However, according to Granger causality test results following has been concluded: both “the XKURY index is not a Granger reason for the other indices” and “the other indices are not Granger reasons for the XKURY index”. Such a situation may be interpreted as: these indices showing similar motion trends in numerical values are not sufficient for a statistically significant relationship. All of the changes on the prediction error variance of the XKURY index, in the first period are explained by the index itself. There is no contribution of the other indices. This situation is similar throughout the period of examination. At the end of 22 periods share of the XU30 index is only in the ratio of 0.64%. Considering the equality number (6) it is concluded that if a shock at  $v_{1t}$  does not affect the prediction error variance of  $x$ , regardless of length of the forecast period,  $x$  can be considered exogenous; because,  $x$  is acting independent from  $y$ . XKURY index is also exogenous in our study i.e. acting independent from the other three indices. This result is similar to the Granger causal analysis result.

Examining the charts of impulse-response functions leads to conclusion that the XKURY index cannot be used as a policy tool. The indicator index, for an investment to be made in XKURY index, is still the XKURY index itself. Whenever, a new data or information reaches to the market, this information is analyzed and evaluated by the market actors and a new market price is tagged for such an investment tool. Such a new market equilibrium price, maintains the existence until a new piece of information reaches to the market, needs to be construed. The markets, where the marketable securities respond to the new information immediately, completely and accurately, securities prices change randomly, market rules prevent to achieve a gain higher than usual rates, and it is not possible for the professional investors acting independently or in groups to gain higher than usual rates is nominated as “*effective markets*”. Many studies have been done to measure in which form the ISE is an effective market, within the framework of this definition. Most of the studies concluded that the ISE is effective in the weak form, but not effective in semi-strong form. These results enounce us that abnormal returns cannot be achieved by using series consisting of data such as past prices and trading volumes of the indices and this information is already inclusive in the current prices of the financial assets. It is concluded that determination of indicator indices, for an investment to be made in the XKURY index, is not feasible by following the movements of the subject indices of ISE.

## REFERENCES

- Ararat Melsa, Balic Amra, Bradley Nicolas**, “Corporate Governance: Turkish Transparency and Disclosure Survey”, 2005, (Access) <http://www.sabanciuniv.edu/ybf/cgft/tr/Arastirma/Arastirma Projeleri/documents/Officialreport2005.pdf>, 14.04.2010, pp: 1 - 15.
- Ararat, Melsa, Balic Amra**, “Corporate Governance: Turkish Transparency and Disclosure Survey 2007: Pace of Improvement has slowed” 03.05.2010, (Access) [http://www.sabanciuniv.edu/ybf/cgft/tr/Arastirma/ArastirmaProjeleri/documents/Turkish\\_TD\\_2007.pdf](http://www.sabanciuniv.edu/ybf/cgft/tr/Arastirma/ArastirmaProjeleri/documents/Turkish_TD_2007.pdf), pp: 1 - 14.
- Ararat, Melsa, Balic, Amra, Kochetygova, Julia**, “Turkish Transparency and Disclosure Survey 2006: Significant Developments at Turkey’s Largest Companies”, 22 June 2006, (Access) <http://www.sabanciuniv.edu/ybf/cgft/tr/Arastirma/ArastirmaProjeleri/documents/SP2006finalforpublication.pdf>, 30.05.2010, pp: 1 - 16.
- Bai, Chong-En et al**, “Corporate Governance and Firm Valuations in China” **University of Hong Kong - School of Economics and Finance**, November 2002, (Access) [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=361660#PaperDownload](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=361660#PaperDownload), pp: 1 - 45.
- Beiner, S. et al**, (DROBETZ, Wolfgang, SCHMID, Marcus, and ZIMMERMANN Heinz), “An Integrated Framework of Corporate Governance and Firm Valuation - Evidence from Switzerland”, **ECGI Working Paper in Finance**, No: 34/2004, pp: 2 - 54.
- Bhasin, Madan Lal**, “Corporate Governance Disclosure Practices: The Portrait of a Developing Country” **International Journal of Business & Management**, April 2010, Vol. 5, Issue 4, pp: 150 – 167.
- Brockman, Paul, Chung, Dennis**, “Investor Protection and Firm Liquidity” **Journal of Finance**, 2003, Vol. LVIII (2), pp: 921 - 937.

- Cadbury Committee**, “Report of the Committee on the Financial Aspects of Corporate Governance”, **Gee Publishing**, London, 1992.
- Cheffins, Brian R.**, “Did Corporate Governance “Fail” During the 2008 Stock Market Meltdown? The Case of the S&P 500”, **Business Lawyer**; November 2009, Vol. 65 Issue 1, pp. 1 - 65
- Churaev, Kamil**, “The Impacts of Corporate Governance Issues on Values of Turkish Companies”, **Unpublished Master's Thesis**, 2003, Istanbul.
- Clsa**, “Corporate Governance in Emerging Markets” **CG Watch Report**, 2001: 1 (Access) [www.clsa.com](http://www.clsa.com).
- Hamilton, J. D.** (1994), “Time Series Analysis”, **NJ: Princeton University Press**. Princeton,
- Granger, C. W. J.** (1969), “Investigating Causal Relations by Econometric Models and Cross-Spectral Methods”, **Econometrica**, 37 (3), August, pp: 424 - 438.
- Gompers, P., Ichii, J., Metrick, A.**, “Corporate Governance and Equity Prices”, **Working Papers Series**, 2001, No: 8449, NBER, pp: 44 - 68.
- Gürbüz, Osman, A., Ergincan, Yakup**, **Corporate Governance, Its State in Turkey and Suggestions for Its Development**, Literatür Yayıncılık, Istanbul. 2004.
- Johnson, Simon et al**, “Corporate Governance in the Asian Financial Crisis”, **Journal of Financial Economics**, 2000, 58, pp: 141 - 186.
- John, Kose, Senbet, Lemma W.**, “Corporate Governance and Board Effectiveness”, **Journal of Banking and Finance**, 1998, Issue 22, pp: 371 - 403.
- Kaymak, Turhan; Bektaş, Eralp**, “East Meets West? Board Characteristics in an Emerging Market: Evidence from Turkish Banks”. **Corporate Governance: An International Review**, November 2008, Vol. 16, Issue 6, pp: 550 – 561.
- Kaymak, Turhan, Bektaş, Eralp**, “Governance Mechanisms and Ownership in an Emerging Market: The Case of Turkish Banks” **Emerging Markets Finance and Trade**, November-December 2009, Vol. 45, Issue 6, pp: 20 – 32.
- La Porta, Rafael et al**, (LOPEZ-de-SILANES, Florencio, SHLEIFER, Andrei, VISHNY, Robert), “Law and Finance”, **National Bureau of Economic Research Working Paper**, No: 5661, Cambridge, 1996, pp: 3 - 34.
- OECD, Business Sector Advisory Group on Corporate Governance**, 1998.
- OECD, Corporate Governance Principles**, 1998.
- OECD, OECD Principles of Corporate Governance**, OECD Publishing, Paris, 2004.
- Perron, Phillip**, (1989), “The Great Crash, the Oil Price Shock, and the Unit Root Hypothesis”, **Econometrica**, Vol. 57, Issue: 6; pp: 1361 - 1401.
- Selekler, Gökşen, Nisan, Öktem, Yildirim, Özlem** “Countervailing Institutional Forces: Corporate Governance in Turkish Family Business Groups”; **Journal of Management and Governance**, 2009, Vol. 13, Issue 3, pp: 193 – 213.
- Shipilov, Andrew V., Greve, Henrich, Rowley, Timothy J.**, “When Do Interlocks Matter? Institutional Logics and the Diffusion of Multiple Corporate Governance Practices” **Academy of Management Journal**, 2010, Vol. 53, Issue 4, pp: 846 – 864.
- Shleifer, Andrei, Vishny, Robert W.**, “A Survey of Corporate Governance” **National Bureau of Economic Research, Working Papers**, No. 5554, April 1996, **Journal of Finance**, June 1997, Vol. LII (2). pp: 737 - 783.
- Sivacioglu, Can Mert**, “Corporate Governance, Measurable Effects on Capital Markets and an Application” Unpublished Master's Thesis, 2008, Ankara.
- Smith, Adam**, “**Wealth Of Nations**” Culture Publications of Isbank of Turkey / Hasan Ali Yücel Classics Series, November 2006, Istanbul.
- CMB**, “**CMB Corporate Governance Principles**”, February 2005 (corrected second release) (Access) [www.spk.gov.tr/displayfile.aspx?action=display8file&pageid=159&fn=159.pdf](http://www.spk.gov.tr/displayfile.aspx?action=display8file&pageid=159&fn=159.pdf)
- Variş, Meral, et al**, “Capital Markets Corporate Governance Principles”, **ISE Magazine**, Special Issue, Year 5, Issue 129, pp: 129 - 168.