THE REPUBLIC OF TURKEY

BAHÇEŞEHİR UNIVERSITY

THE RELATIONSHIP BETWEEN MACROECONOMIC VARIABLES AND STOCK RETURNS. CASE STUDY ON ISTANBUL STOCK EXCHANGE SECTOR INDICIES'RETURNS

Master Thesis

SERKAN YEŞİLYURT

İSTANBUL, 2011

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I certify that this thesis meets all the requirements as a thesis for the degree of Master of Business Administration.

Prof.Dr. Ümit EROL
Program Coordinator

This is to certify that we have read this thesis and that we find it fully adequate in scope, quality and content, as a thesis for the degree of Master of Business Administration.

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ABSTRACT

The Relationship Between Macroeconomic Variables and Stock Returns.

Case Study on Istanbul Stock Exchange Sector Indicies'Returns.

Yeşilyurt, Serkan

Capital Markets and Finance

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The purpose of this study is to analyze the interaction between the returns of sectors dealt in the Istanbul Stock Exchange (ISE) and the macroeconomic variables, by means of Vector Autoregressive (VAR) models. At this point, especially the impact of macroeconomic variables on sectoral returns is examined. The sectors applied for the purpose of this study are Banking Industry, Electricity Industry, Food Industry, Holding Industry, Chemistry Industry, Service Industry and Metal Industry. In the study, "Return Indexes" of the sectors in question are utilized as the return variable. In terms of macroeconomic variables, Money Supply (M2), Consumer Price Index (CPI), Real Effective Exchange Rate Index, Import-Export Coverage Ratio, Industrial Production Index, Interest Rate, Gold Price and Crude Oil Price are adopted. In the analysis, the data related to the said variables are obtained from various sources. The data related to return indexes of sectors are obtained from ISE, and the data related to Real Effective Exchange Rate Index, Import-Export Coverage Ratio and Gold Price are obtained from the Electronic Data Delivery System of the Central Bank of Turkey. The data related to Money Supply, Consumer Price Index and Industrial Production Index are collected from the website of IMF on the International Financial Statistics. Lastly, the data on the variable of crude oil price are obtained from the publications of State Planning Organization, titled the Main Economic Indicators. The period from August, 2000, to August, 2010 are applied as the term of analysis and 121 surveys are adopted accordingly. In order to maintain the consistency between the variables, all variables are addressed as "ratio variables", and increase rates of all variables except interest rate, inflation rate and import-export coverage ratio are calculated and included in the analysis. In the study, the return of ISE-100 Index and the relationship between the macroeconomic variables are also examined in addition to the relationship between sectoral returns and macroeconomic variables. In empirical analysis, Vector Autoregressive models are adopted and relationship between the variables is examined by means of Impulse-Response functions. Also, causality relationships between the variables are examined.

Keywords: Stock Returns, Macroeconomic Factor Model,Macroeconomic Variables

ÖZET

Makroekonomik Değişkenlerle Hisse Senedi Getirileri Arasındaki İlişki. Istanbul Menkul Kıymetler Piyasası Sektör Endeks Getirileri Üzerine Örnek Çalışma

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Bu çalışmanın amacı, İstanbul Menkul Kıymetler Borsasında işlem gören sektörlere ait getiriler ile makroekonomik değişkenler arasındaki etkileşimi Vektör Otoregresif (Vector Autoregressive, VAR) modeller yardımıyla analiz etmektir. Bu noktada özel olarak ise makro ekonomik değişkenlerin sektörel getiriler üzerindeki etkisi araştırılmaktadır. Çalışmanın amacı doğrultusunda belirlenen sektörler, Bankacılık, Elektrik, Gıda, Holding, Kimya, Hizmetler ve Metal Sanayi sektörleridir. Çalışmada getiri değişkeni olarak adı geçen sektörlere ait "Getiri Endeksleri" kullanılmıştır. Makroekonomik değişkenler olarak ise Para Arzı (M2), Tüketici Fiyat Endeksi (CPI), Reel Efektif Döviz Kuru Endeksi, İhracatın İthalatı Karşılama Oranı, Sanayi Üretim Endeksi, Faiz Oranı, Altın Fiyatı ve Ham Petrol Fiyatı değişkenleri kullanılmıştır. Analizde değişkenlere ait verilere farklı kaynaklardan ulaşılmıştır. Sektörlere ait getiri endekslerine ait veriler İMKB'den, Reel Efektif Döviz Kuru Endeksine, İhracatın İthalatı Karşılama oranı ve altın fiyatı değişkenlerine ait veriler ise Türkiye Cumhuriyeti Merkez Bankasının Elektronik Veri Dağıtım Sitesinden elde edilmiştir. Para arzı, Tüketici fiyat endeksi ve sanayi üretim endeksi verilerine IMF'nin International Financial Statistics sitesinden ulaşılmıştır. Son olarak ham petrol fiyatı değişkenin verilerine ise DPT'nin Temel Ekonomik Göstergeler isimli yayınlarından ulaşılmıştır. Analiz dönemi olarak 2000 yılının Ağustos ayından 2010 yılının Ağustos ayına kadar olan dönem ele alınmıştır ve buna göre toplam gözlem sayısı 121 olarak belirlenmiştir. Değişkenler arasındaki uyumu sağlamak amacıyla tüm değişkenler "oran değişkenler" olarak ele alınmış faiz oranı, enflasyon oranı, ihracatın ithalatı karşılama oranı dışında kalan tüm değişkenlerin artış oranları hesaplanarak analize dâhil edilmişlerdir. Çalışmada sektör getirileri ile makro ekonomik değişkenler arasındaki ilişkinin yanı sıra İMKB-100 Endeksinin getirisi ile makro ekonomik değişkenler arasındaki ilişki de incelenmiştir. Ampirik analizde Vektör Otoregresif modeller kullanılarak değişkenler arasındaki ilişki Etki-Tepki (Impulse-Response) fonksiyonları yardımıyla incelenmiştir. Ayrıca değişkenler arasındaki nedensellik ilişkileri de araştırılmıştır.

Anahtar Kelimeler: Hisse Senedi Getirileri, Makroekonomik Faktör Modelleri, Makro ekonomik Değişkenler

CONTENT

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ABBREVIATIONS

ADF	Augmented Dickey-Fuller
AIC	Akaike
B	Beta
BANK	Banking Industry
CAPM	Capital Asset Pricing Model
CML	Capital Market Line
CPI	Consumer Price Index
DF	Dickey-Fuller
ELCT	Electricity Industry
EMH	Efficient Market Hypothesis
EXIM	Export/Import Ratio
GIDA	Food Industry
GNP	Gros National Product
GOLD	Gold Price
HIZ	Service Industry
HOLD	Holding Industry
HPR	Holding Period Return
HPR	Historic Periodic Return
HQ Criterion	Hannan-Quinn Information
I	Interest Rate
IMKB	Istanbul Stock Exchange

SYMBOLS

Expected returns	:	$E(c_t)$, $E(Ri)$
Discount rate	:	k_t
Risk Free Rate	:	Rf
Market Risk	:	Rm
Time series	:	yt
Variables	:	Yt, Xt

1. INTRODUCTION

Capital markets play an important role in the financial sector of every economy. An efficient capital market can promote economic growth and prospeity by stabilizing the financial sector and providing an important investment channel that contributes to attract domestic and foreign capital. Capital market efficiency means the unanticipated portion of the return on a security is unpredictable, and over a sufficient number of observations, does not differ systematically from zero. The unanticipated portion is the actual return what was expected based on some fundamental analysis.

The relationship between stock market returns and fundamental economic activities in the developed countries have been well explained. However, the economic role of the stock markets in relatively less explained in developing countries which is less clear such as Turkey. Specifically, how do these developing markets respond to changes in its fundamental economic variables, when compared to the well developed, well organized, and more efficient markets.

The purpose of this study is to investigate the relationship between stock market returns and macroeconomic variables in Turkish stock market, using Vector Autoregressive (VAR) model, unit root test and Impulse-Response functions. I have selected Turkish Stock Market as a case study for a developing countries because of its impressive economic growth, liberalization of financial markets in contrast many of the countries is struggling with economic crises. I found that Turkish stock market has a meaningful relationship with macroeconomic variables and stock returns compare with the other developing countries stock Exchange Markets. The chosed factors are Money Supply (M2), Consumer Price Index (CPI), Real Effective Exchange Rate Index, Import-Export Coverage Ratio, Industrial Production Index, Interest Rate, Gold Price and Crude Oil Price.

Every countries have different investor types, so Turkey also has different kind of investor perspective. In developed and organize markets investment done for getting

dividend and use time value of the money which means that investor are focusing on two different points: time value of money and dividend. In Turkish Stock Market the situation a bit different it is why there is few company which is distributed dividend in contrast many of the companies use dividend as reserve funds. As it is seen that investor invest their money to get time value of money at the end of the investment process. Stock Market has many rules to protect the investors. However this market is also chaotic. There are many investors are doing their investment for long term term investment or short term investment. Some of them buy and sell the stocks for speculative activities. Under this investment strategies, stocks and its return are affected many parameters. One of the most important parameter is macroeconomic variables. During this dissertation I will try to explain the relationship between stock returns and macroeconomic variable. Which one of them positively / negatively related each other I would like to display it.

This study consist of 6 parts. Which are as follows;
1. Introduction ,
2. Literature and general information about financial markets,
3. Capital market instruments, Efficient market hypothesis, portfolio management are explained in this part,
4. Data and method are mentioned,
5. Focus on the emprical results of the thesis,
6. Conclusion of the all study
were mentioned according to this order as it seen abo

2. LITERATURE ON MACROECONOMIC VARIABLES AND STOCK RETURNS

In the financial literature, the price of a share is equal to the discounted sum of the share holder's future returns. That is,

$$P_0 = \sum_t E(c_t)/(1+k_t)^t$$

(2.1)

A possible change in expected returns [E(c_t)] and /or discount rate (k_t) would affect the share prices. That is why, the discount rate in the equation depends on the risk free rate and the risk premium, stocks (equities) in an economy is affected by the macroeconomic movements. A number of studies suggest a relationship between macroeconomic variables and stock market returns have been documented for developed economies.These dissertation has considered the emerging market case generally. This dissertation focus on the emerging market by considering Turkish case. The relationship and short term dynamics among the selected macro economic variables and the ISE100 and ISE sector indices shows that there is a special association and responses among sub indexes and the main index of ISE. Toksoy used Yamamoto proces which reveals Gold prices granger cause the ISE 100 with only unidirectional manner. On the other hand ISE 100 only granger causes the interest, which emphasis alternative investment tools explanation of interest dependent instruments and the shares. Moreover her findings present resemblances regarding industry and finance index with ISE 100. services index is found to be differentiated from other indexes as leaded by the changes in monetary expansions, which conclude as the influence of retailer companies situated in the index. The index leading role on the fluctuation of interest in the long run should highlight the role of stock indexes in the finance policy considerations.Monetary expansions also has lowest impact on stock indexes. Foreign excahange rate more rigorous impact on the finace sector indices compared the others. Gold has significant impact on services sector index. Services sector shows immediate response to gold price movements but lower reaction to Foreign exchange movements. (Tokgöz,2009)

Macroeconomic factors are theorically deemed as the sources of stock market volatility. Therefore these variables are regarded as the leading indicator of stock returns. (Binder & Merges,2001) state that the volatility of the return on the market portfolio is inversly related to the ratio of the expected profits to expected revenues for the economy. (Nardari & Scruggs, 2005) infer that high uncertainty regarding future returns are mainly associated with recessions. However (Moore, 1983) & (Achwert, 1989) indicate stock prices as leading indicators, reporting that the turn in stock prices takes place prior to the turn in business activity. Even though significant relationships between stock prices and economic variables are commonly found out both in developed and in emerging markets, there is yet no consensus regarding neither the signs of relationship nor the direction of causality.

Chen, Roll and Ross select macroeconomic variables to estimate U.S. stock returns and apply the APT models. They used seven macroeconomic variables, such as; term structure, industrial production, risk premium, inflation, market return, consumption and oil prices in the term period of January 1953 to November 1984. They found a strong relationship between the macroeconomic variables and expected stoc returns during the tested period whic is between 1953-1984. They noted that industrial production changes in risk premium, twists in the yield curve, measures of un anticipated inflation of chances in expected returns. They found that consumption, oil prices and market index are not priced by the financial market. They conclude asset prices react sensitively to economic news, especially to unanticipated news.(Chen, Roll & Ross, 1986)

Another researc was made which is paralel yo the Chen,Roll and Ross (1986) study on United Kingdom (U.K.) market.The results indicate that macroeconomic variables do not appear to affect share returns in the UK as they do in US. They suggest that either different macroeconomic factors have and influence on share returns in UK or the metodology employed by Chen, Roll and Ross (1986) is inefficient. (Poon & Taylor,1991)

The Another study was made by Burmeister and Wall. This study continued down similar path of research laid down by Chen, Roll and Ross. Having conducted research suggest that the variability of stock returns could be explained by unanticipated changes in certain macroeconomic variables mainly; unantipated change in term structure, unanticipated change in inflation, unanticipated change in the risk premium and unanticipated change in asset return but they suggest more research was needed.(Burmeister & Wall,1989)

In addition to this, Abdullah and Hayworth observed that U.S. stock returns are related positively to inflation and growth in money supply, yet negatively to budget and trade deficits, and also short and long term interest rates.(Abdullah & Hayworth,1993)

Other work which is made by Clara and Thomas, investigate that the effect of 18 macroeconomic factors on stock returns in UK. They found oil prices, retail price index, bank lending and corporate default risk to be important risk factors for the UK stock returns. (Priestley,1996) preestablished the factors that may carry a risk premium in the UK stock market. Seven macroeconomic and financial factors; namely default risk, industrial production, exchange rate, retail sales, money supply unexpected inflation, change in expected inflation, terms structure of interest rates, commodity prices and market portfolio. For the APT model, with the factor generating from the rate of change approach all factors are significant.(Clara & Thomas, 1994)

Another important study was made for Japanese stock market which replicated the Chen and Roll and Ross (1986) study in the multi factor APT framework. He put on view that the stock returns are significantly influenced by the changes in expected inflation and the unexpected changes in both the risk premium and the slope of the term structure of interest rates. Within the APT framework, Brown and Otsuki (1990) explore the effects of the money supply, a production index, crude oil price, exchange rates, call maney rates and a residual market error on the japanese stock market. They beholde that these factors were associated with significant risk premium in Japanese stocks. (Hamao, P., 1988)

For Singapore stock market Maysami and Koh made a study. They tried to show the relationship between the signapore stoc index and selected macroeconomic variables over a seven year period since 1988 to 1995 and they found that a positive relation existed between stock returns and changes in money supply. On the other hand there existed negative relationships between stock returns with changes in price levels, short and long term interest rates and exchange rates.(Maysami & Koh, 2000)

Wongbangpo and Sharma made an extended study in South East Asia countries (Indonessia, Malaysia, Philippiness and Thailand) to examine the interdependence between stock markets and fundemental macroeconomic factors. They used monthly date from 1985 to 1996 to represent GNP, the consumer price index, the money supply, the interest rate and the exchange rate for five countries. According to result of this study high inflation in Indonesia and Philippines influences the long run negative relation between stock prices and the money supply, while the money growth in Malaysia, Singapore and Thailand induces the positive effect for their stock markets. The exchange rate is positively related to stock prices in Indonesia, Malaysia and Philippines, yet negatively related in Singapore and Thailand. (Wongbangpo & Sharma, 2002)

The dynamics relationship between stock prices and economic variables in six Asian Pasific selected countries of Malaysia, Korea, Thailand, Hong Kong, Japan and Australia was found out by Mahmood and Dinniah study. The monthly data on stock price indices, foreign exchange rates, consumer price index and industrial production index that spans from january 1993 to December 2002 are used. In particular, they they focused their analysis on the long term multivariate causality between this variables. The result indicate the existing of a long term equlibrium relationship between stock price indices and among variables in only four countries. As for short term relationship, all countries except for Hong Kong and Thailand show some interactions. The Hong Kong shows relationship only between exchange rate and stock price while the Thailand reports significant interaction only between output and stock prices. (Mahmood & Dinniah, 2009)

Maysami, Howe and Hamzah made a study on Singapore's All-S Sector Indices to define the relationship between macroeconomic variables and stock market indices. They chosed Finace index, Equities Property index, Composite stock index and used Johansen's(1990) a full information maximum likelihood estimation model. Their study shows that Equities property index formed significant relationship with all macroeconomic variables, Equities finance index and Equities hotel indec, money supply and short term-long term interest rates were insignificant. (Maysami, Howe, Hamzah, pp. 1-72)

Chen made an important research on the relations between stock market and macroeconomc varizbles in developed countries. This dissertation has explored a set of economic state variables as systematic influencec on stock market returns and has examined their influence on asset pricing. From the perspective of efficient market hypothesis and rational expectations intertemporal asset pricing theory, asset prices should depend on their expososures to the state variables that describe the economy. Several macroeconomic variables vere found to be significant in explaning expected returns, most notably, industrial production, changes in the risk premium,twist in the yield and somewhat more weakly measures of unanticipated inflation and changes in expected inflation during periods when these variables were highly volatile. Stock market index such as value weighted New York Stock Exchange index, explains a significant portion of the timeseries variability of stock returns, it has an insignificant influence on pricing when compared against the economic state variables. He conclude that stock returns are exposed to systematic economic news, that they are priced in accordance with their exposures, and that the news can be measured as innovations in state variables whose identification can be accomplished through simple and intuitive financial theory. (Chen, 1986, pp. 401,402)

Another study was made Melina Dritsaki on Athens Stock Exchange. she used A multivariate VAR model to define the relation ship between macroeconomic variables and stock returns. She used Logarithm of Industrial Production index, Logarithm of Inflationwhich is consumer price index, Logarithm of Interest rate and Logarithm of Greek Stock Market Index. She used Logarithm returns the resasons is that this kind of

return are justified both theoretically and empirically. Theoretically, Logarithmic returns are analytically more tractable when linking together sub period returns to form returns over longer intervals. Emprically, logarithmic returns are more likely to be normally distributed which is prior condition of standart statistical techniques. She used quarterly date from 1988 M9 to 2003 M6 for all variables. According to Var model analysis and Casulity tests of the variables showed that; there is a bilateral causal relation between the General Index of Athens Stock Exchange and Industrial Production. Undirectional causal relationship between the General Indec of Athens Stock Exchange and the Inflation rate wşth direction from the inflation rate to the General Index of Athens Stock Exchange. There is a unidirectional causal relationship between the General Index of Athens Stoch Exchange and Interest Rates with the direction from interest rate to General Index of Athens Stoch Exchange.(Daritsaki, 2005, p. 45)

To explain the dynamic interaction among real stock returns, oil prices and economic activit, a VAR analysis is performed by George Hondroyiannis and Evangellia Pappapetrou in Greece. This analysis allows testing for the endogeneity of all variables in the economy and for the responses of real stock returns, oil prices and macroeconomic activity to different shocks in oreder to capture the short run dynamics of the variables. They used interest rate, exchange rate, real oil prices, industrial production index and real stock returns as endogenous and real foreign stock returns as endogenous variable. They try to find out to investigate the degree of integration of the variables used in the emprical analysis. The major finding of the analysis is that the domestic macroeconomic activity affects the performance of the domestic stock market. However, the fluctuations of the Greek stock market are not fully predictable, as a substantial proportion of the variation in the stock market still remains unexplained. Oil price shocks have an immediate negative effect on industrial production. Impılse response analysis shows that all the macroeconomic variables are important in explaining stock price movements. Growth in industrial production responds negatively to a real stock return shock. Increase in real stock returns does not necessarily lead to a higher level of industrial production. Real stock returns respond negatively to interest rate shocks. Oil price changes are also importan . a positive oil price shock depress real

stock returns. Interest rates and growth in industrial production are negatively related lower industrial production growth. And also real stock returns negatively related to interest rate shocks. (Hondroyiannis, P., 2001, pp. 33-48)

Karam Pal and Ruhee Mittal used quarterly time series data spanning the period from January 1995 to December 2008.The unit root test, the cointegration test and error correction mechanism heve been applied to define the long run relation between the Indian capital arkets and key macroeconomic variables such as interest rates, exchange rates and gros domestic savings of Indian economy. According to study; changes in stock markets are affacted not only by changes in few selected macroeconomic variables, but there are other macroeconomic dimensions affecting the Indian Stock Market. Inflation rate have significant effect on stock prices. Gros domestic savings doesn't have a significant effect on Indian Stock Market. (Pal, M.)

Another study was made on how macroeconomic indicators affect the performance of stock markets by using Ghana Stock Exchange. This study cover the years between 1991 and 2005. They used quarterly timeseries dates and cointegration model. According to findings of this study: lengingrates from deposit money banks have an adverse effect on stock market performance and particularly serve as major hindrance to business growth in Ghana. High lending rate negatively related on business. Exchange rate cahanges doesn't affect stock market. Inflation rate is found to have negative effect on stock market performance. The treasury bill rate variable have a positive and but statistically week effect on the performance of stock returns.(Coleman, T.,)

Other importan study was made on South Asia, Sri Lanka Stock Market. All share price index to present the stock market and the money supply, the treasury bill rate (as a interest rate), the consumer price index (for inflation), and exchange rate as macroeconpmic variables. Data was chosed broad time interwal from 1985 to 2001. Unit root test, cointegration, vextor error correction model, impulse response functions and variance decomposition used for evaluation the relation between chosen variables. The result is that; Consumer price index, the money supply and the treasury bill rate have a significant influence on stock market. The treasury bill which means inflation demenstrate the strongest influence on price changes compared to the other variables.

On the other hand, share price index doesn't have any influence on macroeconomic variables except for the interest rate. Tests showed that shocks to economic variables explained only a minority of the forecast variance error of the market index; these effects didn't persist for so long. (Gunasekarage, P., 2004, p. 29)

Within the contex of emerging market many studies were made on Islamic Stock returns. This study was made on whether or not local and foreign macroeconomic variables affect Islamic stock returns. The aim of this study is to explore the extend to which macroeconomic variables affect Islamic Stock Market behavior in Malasia in the post 1997 financial crices period. Monthly datas were used between 1999-2006 Autoregressive distrubuted lag model approaches to cointegration. The resuld found out that real exchange rate, money supply (M3), treasury bill rate, and federal fund rate seem to be suitable targets for the government to focus on, in order to stabilize the Islamic stock market and to encourage more capital flows into the market. For interest rates and stock return relation is well defined here when the interest rate increaseeither domestically or internationally the Muslim investors will invest more stoc market. In investing their money into the stock markets, the Malaysian Muslim investors are oriented by interest rates for their investment decision in the case where the rates are high. When the interest rate low they stop the invest their money on stock market. Internationally for example any changes in US monetary policies affect the Malaysian stock market. (Majid,Y., 2008, pp.127-135-136)

Another work was done on Malaysian stock market with the linkages between stock prices and four macroeconomic variables; rea ouput,price level, money supply and exchange rate. The data are monthly for the period from 1977 to 1998. The sample ends in August 1998 because capital control and fixed exchange rate imposed by the government on 2 September 1998. This study examines causal rtelations and dynamic between the Malaysian stock market and four macroeconomic variables which are industrial production index, money supply, price level and exchange rate. Well accepted techniques of cointegration and VARs to uncover the long run relationship and short run interactions among the variables using the data for about 22 years. For money supply the relation between equity prices is uncertain and in the long run is negative. It means

that shocks in money supply may feed into the economy inflation instability, expectations of contractions and risk elements and accordingly result in adverse or uncertain behavior of the stock market. The exchange rate is negatively associated with the stock prices. (Ibrahim,A., 2003, pp.6-24)

Benjamin A. Abugri made a large scalled research in four Latin American Countries significantly explain market returns. He used four macro economic variables like exchange rate, interest rate, industrial production and money supply. He argued that emerging and developed stock market returns are sensitive to macroeconomic news and financial market participants tend to follow closely the release of economic data and announcements of policy changes. In fact there are several theoratical justifications to expect a relationship to exist between macroeconomic variables and stock return.(Boudoukh, Richardson,1993). On the other hand, there exist a large gap in the emprical identification of the macroeconomic variables affecting returns and the few studies that document such relation hace typically focused on developed markets (Mandelker, Tendon, 1985).Abugri tried to attemps to bridge that gap by investigating the link between macroeconomic variables and stoc returns in four markets which are Argentina, Brazil, Chile and Mexico. He used six variable vector autoregressive (VAR) model. The findings yield a number of specific results. First is that, market returns to shocks in macroeconomic variables connot be determined a priori, since it tends to vary from country to country. Second is that the global variables are consistently more important than the domestic variables in explaining returns across markets. And also market are inherently linked to some making and implementation is transmitted to these markets as negative shocks.(Abugri,K., 2006)

Khaled Hussainey used macroeconomic variables to define its relation to stock prices in Vietnamase Stock Exchange. Data was used between 2001-2008. Using time series analysis he tried to define the relationship between variables. According to results of this study; there are statistically significant associations among domestic production sector, money markets and stock prices. In broad window US. Macroeconomic fundementals significantly affect Vietnamese stock prices. US. Real sector is stronger than that of the money market in Vietnamese. Industrial production has a positive effect

on stock prices. Long and short run interest rates are not affecting stock prices in the same direction. US. Reasl production activity has stronger effect on share prices in compar,s,on with the US money market. (Hussainey, K., 2009)

There are many significant studies in Germany about thsi subject. One of this was made by Merikas. This study aims to reexamine Fama's proxy hypothesis which states that inflation is negatively related to real economy activity and the negative relationship between stock returns and inflation showed positive impact of real variables on stock returns. He used broad data from 1960 to 2000. VAR model is used this datas. The result defined that the largest growth has a negative effect on stock return and influences positively inflation in Germany. Stock return were found to be negatively related with employment growth and positively related with GDP growth. (Merikas, A.G. & Merika, A.A.,2006)

A relationship that is not always so well-defined between evaluations of stocks and interest rates exists. Existing studies was made by Fama and found stock returns move in the opposite direction as interest rates. Nissim/Penman (2003) found that interest rates and operating income move in the same direction. Their studies found that interest rates affect both the numerator and denominator in the discounted cash flow model calculation, but the denominator (discount rates) were affected more by interest rate moves. Davis studied the interest rate changes against large and small stock returns. His focus was on what type of stocks, small, large, value and/or growth have a higher correlation to interest rate changes. The research showed small and value stocks are more sensitive to interest rate changes. A portfolio manager or investor would need to decide what type of interest rate should be applied to the discount rate. (Fama & Schwert, 1977)

Various theoritical frameworks have been developed to explain the negative correlations observed between inflation and real asset returns in the postwar period. In light of the Fisher hypothesis and of the commonly held wiev that stocks and bonds should be a hedge against inflation, these relations are indeed puzzling. (Fama, Geske& Roll) all

attemt to explain the negative association between stock returns and inflation and real interest rates. (Lee, B.S., 1992)

Other studies was made by Mark J.Flanary and Christopher M. James which is the relation between interest rate movements and stock returns. Emprical studies has found that inclusion of an interest rate factor adds substantial exolanatory power to the simple single factor market model, where the return on an index of stocks are used as a proxy for the market portfolio. However, a common deficiency of emprical study in this area is that no specific hypotheses are presented to explain why the effect of interest rate movements on stock returns should vary among stocks. The interest rate sensitivity of stock returns is related to the maturity composition of the firm's holdings of nominal contracts. Common stock returns are found to be correlated with interest rate changes. (Mark, J.F., 1984, p.1141)

The research of Brunner, Friedman and Schwartz, Tobin and others have established that a relationship exist between changes in the money supply and chnages price of other assets held in an investor's portfolio. It is generally agreed that an unexpected increase or decrease in the growth rate of money results in a change in the equlibrium position of many with respect to others assets in the portfolio investors. As a result individual investors try to adjust the proportion of their asset portfolios represented by money balances in the price levels of the various asset categories. With the proposition that the rate of growth of the money supply has an impact on stock returns as proported by various portfolio theorists. (Tobin, Scwartz,Friedman & Brunner., 1986)

2.1 FINANCIAL MARKETS

Markets transferring the funds between the units supplying and demanding funds by providing coordination between term and amount has an important function in constituting capital accumulation setting the ground for economical development and directing this accumulation to efficient areas.

Stock exchanges qualified as an institution of capital market are of great importance in fulfilling the functions of capital markets. Exchanges are the places where buyers and sellers come together and determine the prices of securities in particular commerce centers on particular dates. Exchanges commencement of which are based on old markets and fairs have obtained an extremely contemporary structure in our day. The changes in world's economy as from 1960s increased the importance and functions of stock exchanges.(Apak, 2009, Finansal Yönetim, İstanbul: Papatya Yayıncılık Eğitim). ISE, which is an rather new exchange with a history of 18 years when compared to the developed exchanges of the world, achieved a position of leadership among other exchange in its region in a very short time. (Sermaye Piyasası ve Borsa Temel Bilgiler Kılavuzu, İstanbul: ISE Yayınları, 1994, p.1). Active and rational distribution of fund supplies and demands among economical units and development and institutionalization level of financial markets implementing this distribution are deemed as the indicator of a healthy economical structure. Therefore, importance and role of financial markets constituting the financial system, financial institutions active in this markets and financial instruments being processed in such an structure is undoubtedly unquestionable.

Financial Market is a concept which is wider than money and capital markets and also including these markets and consists of savers, investors, investment and financing instruments, subsidiary institutions, law and administrative order. The financial system including these five factors.

2.2 TYPES OF FINANCIAL MARKETS

Financial markets are a body of markets consisting of many markets linked to each other. It is possible to classify financial markets according to variable criteria. However, it should be especially specified that classification of markets is mostly formal. It has become a tradition to classify financial markets according to the time that funds changing hands in these markets take place in the ones included in the system. In addition, it is possible to group financial markets according to their level of organization, processes carried out in the markets and fund users.(Canbaş,S., Finansal Pazarlar, 2007, Karahan Kitabevi, p.9)

Financial markets are divided into two, one of which is Money Markets and the other is Capital Markets, according to the credit periods of funds.

2.2.1 Money Markets

The money market is a component of the financial markets for assets involved in short-term borrowing and lending with original maturities of one year or shorter time frames. Trading in the money markets involves Treasury bills, commercial paper, bankers' acceptances, certificates of deposit, federal funds, and short-lived mortgage-backed and asset-backed securities. It provides liquidity funding for the global financial system.

The money market consists of financial institutions and dealers in money or credit who wish to either borrow or lend. Participants borrow and lend for short periods of time, typically up to thirteen months. Money market trades in short-term financial instruments commonly called "paper." This contrasts with the capital market for longer-term funding, which is supplied by bonds and equity.

The core of the money market consists of banks borrowing and lending to each other, using commercial paper, repurchase agreements and similar instruments. These instruments are often benchmarked to (i.e. priced by reference to) the London Interbank

Offered Rate (LIBOR) for the appropriate term and currency.(Frank, J. F., Steve, V. M & Moorad, C, 2002, The Global Money Markets*:* Wiley Finance)

2.2.2 Capıtal Market

Capital market, with its simple and broad definition, is a market where capital supply and demand comes together. Market is economically defined as Organized Market where buyers and sellers come together by means of dealers or telecommunication instruments and mutual exchange is carried out.   The most distinct feature distinguishing capital markets from the other markets is that funds processed in these markets are medium and short term. This feature have brought forward that sources supplied from capital markets are used in financing fixed assets of enterprises. In conclusion, capital markets can be defined, with its broadest meaning, as the markets where medium and long term fund supplies and demands are satisfied.

Capital market is primarily necessary to ensure that fund users meet their needs of funds and savers turn their savings into investments and obtain the best income. In developed countries, capital markets are the sources of long term funds for enterprises. As income level of people is high and accordingly their amount of savings is high in developed countries, capital markets have an important role in investment decisions of people. (Ceylan, A., 1995, İşletmelerde Finansman Yönetim, Bursa: Ekin Kitabevi, p.284)

Development of capital markets is achieved by means of economical development and development level and efficiency of capital markets are in parallel with the development level of country's economy. It is very obvious that economical development leads the development of capital market in Turkey. (Tanör, R., 1999, Türk Sermaye Piyasası, İstanbul : Beta Publication, Cilt 1, p.3)

2.3 FUNCTIONS AND STRUCTURE OF CAPITAL MARKET

"Capital market is a market where share stocks, bonds and similar securities are purchased and sold in the strict sense and where medium and long term credit supply and demand come together in the broad sense. Capital market divides into two in its strict meaning: primary market where newly issued securities are sold and secondary market where previously issued securities are sold. (Günlük, A., 1984, Türkiye'de Sermaye Piyasası: Türkiye Ansiklopedisi, İstanbul,:İletişim Yayını, Vol.1, p. 191)

2.3.1 Primary Markets: These are the markets in which securities are issued for the first time by the companies supplying these securities and directly presented to the buyers demanding such securities. Presence of an intermediary does not change this characteristic of the market. The fact that funds directly comes together does not mean that funds comes to the companies without any intermediary but means a new capital inflow is provided. In conclusion, funds supplied from the primary market will flow in the company as capital. That is, money inflow will be provided in economical terms.

2.3.2 Secondary Markets: These are the markets where securities previously issued and still circulating are processed. The most important institutions of the secondary markets are securities exchanges and financial intermediaries. (Civan. M., Türkiye Sermaye Piyasasındaki Son Gelişmeler, 1995, Ankara: Türkiye Bankalar Birliği Yayınları, pp.24-25)

Funds supplied from the securities relayed in the secondary market bear no relation with the company which issues such funds. Secondary market increases the liquidity of securities, creates demand in the secondary market and provides its development.

2.3.3 Tertiary Markets: These are the markets consisted with the purchase and sell of listed share stocks. In such markets which are especially common in United States of America and called as "Over the Counter", transactions are not based on a certain location and carried out by means of telephone and computer network throughout the country.

2.3.4 Quaternary Markets: These are the markets where intermediaries and institutions are totally eliminated and transactions are carried out directly between the investors. Such transactions are mostly carried out between corporate and major investors. Their advantage is that transaction costs are totally eliminated.(Seyidoğlu, H., 1994, Uluslararası Finans, İstanbul, p.200, Tunahan, H., Türkiye'de ve Gelişmiş Ülkelerde Sermaye Piyasalarını Düzenleyici ve Denetleyici Kuruluşlar, Unpublished Postgraduate Thesis, İÜSBE, p.6)

Markets also divide into two according to their type of organization;

2.3.5 Organized Capital Markets: These are the markets which are organized as securities exchanges, have a distinctive mode of processing and constituted for sell and purchase of share stocks and bonds.

2.3.6 Unorganized Capital Markets: Such organized markets are the supplementary of securities market. Sell and purchase of unlisted affiliates are especially included such markets and shares of limited or commandite partnerships are purchased and sold.(Yasin, .M., 2002, Sermaye Piyasası Kurulu ve İşlemler, Seçkin Yayıncılık San. Ve Tic. A.Ş, p.36)

2.4 RELATION AND DIFFERENCES BETWEEN MONEY MARKET AND CAPITAL MARKET

Money market and capital market are separately mentioned and defined and important issues are emphasized above. In fact, it will be wrong to exactly differentiate these two markets, which are closely linked to each other. Therefore, one should not forget that money market and capital market constitute a texture with organic bonds and differentiating these two markets would be artificial in the real life.(Yasin, .M., 2002, Sermaye Piyasası Kurulu ve İşlemler, Seçkin Yayıncılık San. Ve Tic. A.Ş, p.36)

The reasons why money and capital market are not independent from each other are as follows: (Tuncer, S., 1995, Türkiye'de Sermaye Piyasası:Teori – Uygulama, İstanbul: Okanyayıncılık, pp.12-13)

1.   Money market is also included in the concept of capital market in the broad sense. These two market type is liked to each other like communicating vessels.

2.   The ones demanding fund may apply to one of these markets.

3.   The ones demanding funds, or using credits, may contract debts from both markets according to their own situation and type of the credit they need.

4.   Funds may shuttle freely between two markets. For example, due short-term debts can be replaced with long term debts.

5.   Some intermediary institutions, especially banks, may carry out transactions in both money market and capital market and work with the same activity in both markets.

As understood from the explanations above, it is difficult to make certain distinctions between two markets. However, it is necessary to know the differences between these two markets in theory. These differences are indicated in the table below.

Table 1: Differences between money market and capital market

DIFFERENCES	MONEY MARKET	CAPITAL MARKET
TERM	It is the market where short term fund demand and supply comes together.	It is the market where long term fund demand and supply comes together.
FUNCTION	It is applied in order to eliminate the temporary liquid problem.	It is applied due to the need of fixed investment and net enterprise capital.
SOURCE	Fund sources are temporary official, commercial and drawing account.	Fund sources are permanent and real savings.
INSTRUMENT	Instruments used in fund transactions are negotiable instruments.	Instruments used in fund transactions are securities like share stocks and bonds.
INTEREST	Risk and thus interest rate is low as there is short term fund transaction.	Risk and thus interest rate is high as there is long term fund transaction.

Source: Yüksel ,A. S. & Radoplu, G., 1980, s.7

2.5 THE DEVELOPMENT OF CAPITAL MARKETS IN TURKEY

2.5.1 The Capital Market Before The Establishment Of The Republic

The developments concerning the capital market were made in Ottoman Empire through 1874 rescript. However, this did not stem from a development happened to come out as a result of the industrialization process as in Europe and America. There was not a great need for a capital market in Ottoman Empire, as its economy was comprised of agriculture, handicraft and import. The most important security in the capital market of Istanbul in this period was the bonds the empire released. Most of these bonds were sold to Europeans through Galata Bankers. (Günlük, A., 1984, Türkiye'de Sermaye Piyasası, Türkiye Ansiklopedisi, Istanbul, İletişim Yayınları, Vol. 1, p.191). We know that these debts caused public debts afterwards.

2.5.2 The Capital Market After The Establishment Of The Republic

It will be much more useful to analyze this period in two chapters as that before 1960 and after 1960.
A- There was not any significant development in the capital market of the young Republic by 1960. This market was very much limited due to the 1447 numbered Stock Exchange Markets Law entering into force in 1929 due to the poverty caused by having just been out of war and the dreadfulness of the developments leading to the Public Debts. Buying and selling non-quoted securities in the market was forbidden by this law and a stock and currency exchange market was established in Istanbul.

The economy of the country was based on agriculture in this period. The capital accumulation for the industry to develop was very limited. Industrialization started via State Economic Enterprises and Public Economic Enterprises by force of the Statism Principle. The state adopted the policy of "Establishing and Developing the National Banks" instead of the Capital Market. Small savings were being transformed to investments in this way. On one hand, the state continued making investments, on the other hand, the limited capital accumulation owned by the private sector having just

been created was supported with the cheap credit sources generated by the banks out of the small savings. Cheap bank credits speeded up the development of the private sector.

The rate of the stock corporations among the private sector businesses increased very fast in the middle of 1950s. The private investment groups whose shares in the industry increased day by day became aware of the facilities of becoming a bank owner in providing themselves with cheap credits and chose this method. While the number of banks was only 34 in 1950, it rose to 58 in 1960. Some of these banks were closed out after 27th of May, 1960. The private companies having difficulties in getting credits from the rival banks increasingly headed for releasing share stocks and bonds. (Günlük, A., 1984, Türkiye'de Sermaye Piyasası, Türkiye Ansiklopedisi, Istanbul, İletişim Yayınları, Vol 1, p.192)

B- A fast conglomeration process in the private sector was experienced in 1960-1980 period.

Many companies started releasing share stocks and bonds to satisfy the need of capital. While at the beginning there was no need for a capital market and any legal regulation for this field, the framework of the 1447 numbered and 1929 dated law started being limited. Thus, some efforts were made to prepare a law.

   a). A Proposal for the Capital Market was prepared in 1963, but it was not negotiated and it was accepted in 1967.
   b). A similar proposal prepared in 1970 ended up like the one in 1963 and was accepted in 1973.

These proposals had not been transformed into law, however, an experiment was experienced due to the legal hole. Share stocks for billions was released and sold to the great savings owners to establish great businesses in many sectors. However, this project was non-durable and ended up in bankruptcy in two years. The case of close-out for HASTAŞ, the owner of this project, has been prolonged up to today.

This experience was reflected on the law amendment of the Central Bank in 1970. Such significant conditions and regulations as that the maximum level of the interests for bills can not exceed 15 percent, that the fixed dates can not be lower than 5 years, that the sale period can be 3 months at most and notifying the bank of the information showing the results of the sale within 15 days after the export date, were prepared for the bond market with the changes made. (Özer, Ş.,1978, Yatırımların Finansmanı ve Sermaye Piyasası, Ankara, T.O.B. Yayınları, p.77)

A partial control was arranged for the capital market with this change made in the Central Bank Law. However, this control was provided only in the primary market. If the share stocks and bonds had not been sold within the official sale period determined, they were processed in the secondary market. The companies increasingly started passing this period and focus their stocks on the secondary market. The private sector corporations headed for selling all of the share stocks and bonds and most of those they recorded through the bankers. These developments occuring after 1970 caused the bankers dealing with buying and selling stock exchange to emerge.(Günlük, A., 1984, Türkiye'de Sermaye Piyasası, Türkiye Ansiklopedisi, Istanbul, İletişim Yayınları, Vol 1, p.193)

We can say that the savings owners were not interested enough in the capital market in this period. Some interests of profit and bond were paid at an amount above inflation in these years. People headed for the capital market with the joy and trust provided by being shareholders of the publicly listed companies connected with the great industry establishments making a name for themselves in the eyes of people. However, the dividends that the publicly listed holdings and incorporated companies distributed fell very much behind the inflation rate as the inflationist pressure increased . (Çakıcı, L., 1983, Uluslar arası Sermaye Piyasası ve Bankalar Semineri, Tütüncüler Bankası Yayınları, p. 105)

A tight money policy was put into action in the economy with the stabilization measures dated 24th of June, 1980. The interest rates of the banks were released with the banking dated 1st of July, 1980. The fact that the banks increased the interests suddenly made

the industrial and commercial sectors who were used to using cheap credits have great financial problems. These sectors started applying to banking establishments to get over the financial problems.

Now, they were applying everywhere to be able to find credit. Thus, the banking establishments becoming aware of the fact that the credit volume that they could intervene grew very much, developed many means including high interests and short terms to be able to collect money from people. These means were bill, check, certificate of deposit and etc. The rivalry between banks and bankers, the rivalry among bankers, people's dreams of big profits in short terms and most importantly the legal hole in this field caused the Turkish Society to suffer very much.

In this period, there was not any capital market where bonds and share stocks were bought and sold, buy a money market completely in the hands of the banks, bankers and greedy entrepreneurs. The share stocks and bonds which were a capital market means were only a warranty in this market.

The growth observed in the capital market in 1975-1981 period reached 1000 persentage. While the total bond export was 15.3 billion in 1975, this number was 151 billion liras in 1981. (Mali Aracı Kuruluşlar Raporu, Istanbul, TÜSİAD Yayını, p.18)

The capital market experience resulting in the bankruptcy, fleeing and close-outs of the bankers made the opinion that the legal regulations were not enough in this field and there was a need for new regulations, put across in every sector. There upon, the 2499 numbered Capital Market Law was prepared and it was put into force in February, 1982.

2.5.3 The Current State Of The Capital Market

While the capital market was being reorganized with the 2499 numbered Capital Market Law in Turkey in 1981, a new shape and content were intended for the Stock Exchange Market and the 1929 dated and 1447 numbered Stock Exchanges Market Law was abolished and the KHK/91 numbered Stock Exchange Market Delegated Legislation was put into force.

The exchange market president was appointed for establishing the exchange market with the Regulations Concerning the Establishment and Operations of the Stock Exchange Markets released later. The first general assembly was made on 19th of April, 1985 and the first board of management was selected and the Regulation for Istanbul Stock Exchange Market was accepted in the general assembly on the 31st of October, 1985. The exchange market was opened on the 26th of December, 1985 and the first session was made on the 3rd of January, 1986. The transactions were made only in one session on that dates. From 3rd of December, 1996, the transactions started being made on computers with a technological advancement. The exchange market started changing and developing faster in 1994. Two sessions transaction was started in 1994. After the two-session implementation, the clearing period was increased to two days with a new system named T+2. (Başarı, Ç., 2005, Fiyat Kazanç Oranı ISED Bir Uygulama, A.I.B.U Institute of Social Sciences, Published Postgraduate Thesis, p. 23). ISE (ISE) having a history of only 26 years (from 1985 to 2011) succeeded in becoming one of the fastest growing exchange markets in the globe. We can summarize the history of the exchange market as in the table bel

Table 2: History of Stock Market

Ottomon Period		Republic Period		New Perion	
1838	Balta Limanı Agreement	1923	Additional Bylaw (An addition to 1906 Bylaw)	30.07.1981	2499 Numbered CML
1839	The Rescript of Gulhane	1927	Stock Exchange Market	06.10.1983	Delegated Legislation Concerning the 91 Numbered Stock Exchange Market
1854	Following the Crimean War (Galata Bankers)	1929	Stock Exchanges Markets Law	06.10.1994	The Regulation Concerning the Establishment and Operation Principles of the Stock Exchange Markets
1856	Edict of Reform (New Opportunities and Banks for Foreigners)	1929	Istanbul Stock Exchange Market (Name Changing)	18.12.1985	I.M.K.B. Regulation

1860	Air Games (Stockbroker-player)	1938	Stock Exchange Market (Movement to Ankara with Name Changing)	26.12.1985	İ.M.K.B. Going into Action
1864	The Bankers in Havyar Public House	1941	Stock Exchange Market (Movement to Istanbul Again)	03.01.1986	The first transaction in the share stock market

1866	Dersaadet Stock Market
1873	The Stock Market was connected to the Ministry of Finance
1881	Forbidden Bylaw (Public Debts)
1906	Stock Exchange Market

Source: (Başarı Çetin: Fiyat Kazanç Oranı ISE Bir Uygulama, A.I.B.U, Institute of Social Sciences, Published Postgraduate Thesis, 2005, p.24)

2.6 CAPITAL MARKET LAW AND ITS GOAL

2.6.1 The Goal of Capital Market: The goal of the law is stated in the 1st clause as. "The matter of this law, is regulating and controlling the operations of the capital market where there are trust, candidness and determination conditions and the protection of the rights and benefits of the saving owners to let savings be invested in securities and let the people be efficiently and widely involved in the economic development."

2.6.2 The Concepts as Extension: A new concept the lawmaker brought is letting the establishments exporting stock exchange have "Registered Capital". "The registered capital is a concept enabling the management principles an important appreciation authority and flexibility compared to the fixed capital system in action. The registered capital presents to be a top point the corporative can increase the capital and release new share stocks. The executive board can release new share stocks when needed until this top point. However, increasing the capital in the fixed capital system was dependent on hard formalities.(Özkol, E., 1884, Sermaye Piyasaları ve Türkiye'de Sermaye Piyasaları Uygulamaları, D.E.U. IIBF Institute of Social Sciences, Postgraduate Thesis, p.15)

The second new concept is "Changeable Bond" concept. The owner of the bonds, if s/he wishes, has the chance to change his/her bonds with the share stocks of the corporative in the foreseen conditions and term. In this way, the bond owner company can observe the trend and decide on whether buy the share papers of this company or not.

Another innovation the law provided is increasing the top of releasing bonds. While this top was limited to the unpaid capital, it was increased a little with the additional spare capital.

A new establishment born with the law is Capital Market Board. This board is comprised of 7 members, all of whom selected by the Board of Ministers. It has legal entity and is independent. However, this independence is a little damaged by the fact

that the Board firstly worked dependently with the Ministry of Finance and is now working with Undersecretariat of Treasury and Foreign Trade. Despite all of these, these members use their authority under their own responsibility and independently.

A security fund is anticipated to be formed by this law. This fund will be formed in Central Bank and be formed of the 1 per cent shares of the sales of the broker establishments which are registered for a year. If the broker establishment can not fulfill the obligations in any case, the deficit will be compensated from this close-out fund.

2.8 THE POSITION AND IMPORTANCE OF THE CAPITAL MARKET IN THE ECONOMY

The capital market is the main element of the development of the capitalist economy. Maintaining the dynamism and investment continuity in the economic life is only possible with capital accumulation. Capital accumulation is possible with individuals putting their savings in the circulation one by one. In the capital markets, the savings are submitted to the investors and the fund need of the investors is satisfied in this way. (Sarıkamış, C., 1995, Sermaye Pazarları, Ankara, Alfa Yayıncılık,p.13). Thus, not only contribution is made to the economic development after new investments are made, but also not any external debt is experienced as the funds the investors need is provided with the domestic savings.(Öküzcü, A., 1994, Sermaye Piyasası ve Türkiye'de Menkul Kıymetler Borsası'nın Gelişimi, Ankara, Published Postgraduate Thesis, HUSBE, p.24)

It is undesirable for individuals to keep small savings they own inactive. The savings yielding no profit lose their values in due course by force of the inflation. The capitalists resort to appreciating their capital in different types such as depositing money into bank at interest and transforming it to such values as gold and exchange to averse this risk. One of the ways to evaluate the capital is the capital market. Indeed, the fact that the individuals head for the capital market is dependent on a reliable market environment and the chance of getting a high profit.

The capital market plays an important role in the struggle with inflation as it enables the savings to be transformed to investments and prevent them from being inactive. (Aytaç, Z., 1988, Sermaye Piyasası Hukuku ve Hisse Senetleri Hukuku,Ankara, Institue of Bank and Trade Law Research, p.5) However, it should be in mind that the inflation should be in low rates for the capital markets to be able to develop and grow sturdily.

It is possible to mention about some negativities of the capital market in addition to this positive contribution to economy, too. The most important one of these is the speculative actions. The speculative actions used by different people or establishments for different goals not only affect the development of the capital market in a negative way, but also cause the companies or saving owners to lose money and the speculators to acquire illegally. Such problems as the fact that the directors of the companies juggle the books on the balances, that the directors use the information they learn about the company and cooperate with the speculators for their own interest, which is also called "the trade of those who learn everything inside", abuse the trust in the capital markets. (Karslı, M., 1989, Sermaye Piyasaları, Istanbul, Borsa Menkul Kıymetler,Vol.2., pp.21-22). Another important risk of the capital markets is the fact that these markets are affected very soon by the political progresses. The sudden increases or risings depending on this interaction in the markets frighten the investor and the savings owners. (Sayılgan, Ş.,1996, Sermaye Piyasası ve Borsa'da Komuoyunun Aydınlatılmasının Önemi ve Medyanın Rolü,Istanbul, Published Phd Thesis, MUSBE, pp.115-116)

One of the most important functions of the Capital Market is the fact that it enables the small savings owners to be able to be partners of the properties and profits and to contribute to forming "social justice". It is claimed that the social justice the Marxist ideology aims to form by ending personal property over the means of production and by providing social property is formed in capitalist economy via means of the market. (Çapanoğlu, M., B., 1993,Türkiye'de ve Dış Ülkelerde Sermaye Piyasaları, Özelleştirme Uygulamaları ve Menkul Kıymetler Borsaları, Istanbul, Beta Yayınları, pp. 18-19). However, this is a reproachable and a partly true idea. That is to say, those who are interested in the capital market in the underdeveloped countries are primarily

the people with higher income, because being able to invest in the means of capital market requires surplus savings.

Moreover, the investment to be made in the capital market is a risky business. The speculative actions of the great capital owners who are effective in the capital market can give harm to small investors and savings owners in great levels. Therefore, the chance for the capital market to be able to serve the social justice is dependent on the operations of this market in a framework of straightforwardness, trust and honesty.

The formation, development of the Capital Market and its fulfilling its function is closely related with the economic, social and psychological conditions of the country. For example, having savings is not enough on its own, but the habits of appreciate these is also important. That is to say, distrust in the means of the capital market will diminish the demand for the market and the markets will not be able to make the desired maximum progress.

3. CAPITAL MARKET INSTRUMENTS

Capital market instruments are divided into two as securities and other capital market instruments in the Article 3 of Capital Market Law. In the same article, "securities are negotiable instruments which are;

1. provide partnership and creditorship,
2. represent a particular amount,
3. are used as investment instrument
4. yield periodical income,
5. are fungible,
6. issued in series,
7. have same inscriptions,
8. are subject to the provisions determined by the Board (Canbaş, S., C., & Doğukanlı, H.,2007, Finansal Pazarlar, Karahan Kitabevi, p.31)

In addition to the securities, money, check, policy, bond, and documents other than certificates of deposit provisions of which are determined by the Commission are specified as other capital market instruments. Features of Securities may be specified as follows (Istanbul Stock Exchange Publication, 2006, p.65);

a) Securities legally have the characteristics of negotiable instrument. In Turkish Commercial Code (Article 557), negotiable instrument is defined as "bill the rights of which can not be transferred apart from the bill itself".

b) Securities are values having particular fungible formal conditions with standard and round sums.

c) They are massive bills issued in large numbers and offered to the public. They are not issued for only one trade relation like commercial bills.

d)   They show more or less continuity and represent the rights of creditorship or partnership.

e)   They yield periodical income.

f)   They should be in compliance with the conditions determined by the Capital Market Board and include the information required by the Board.

g)   They are used for the purpose of investment.

Securities are the papers having the characteristics of negotiable instruments enabling partnership or creditorship. Securities granting partnership rights are named as share stocks and the ones enabling creditorship relation are named as bonds. Derivatives of share stock, derivatives of bond, treasury bills, profit and loss sharing documents, financing bills etc. are the financial instruments of capital market evaluated in scope of securities.

3.1 BONDS

In Turkish law, according to Article 420 of TCC, "Bond is debentures having same nominal values and inscriptions issued by incorporated companies in order to obtain credits (Bolak, M., 2001, Sermaye Piyasası Menkul Kıymetler ve Portföy Analizi, Istanbul, Beta Yayınları, p.137). In other words, bonds are debt instruments and therefore they are financial assets indicating the commitment of paying the interest over a interest price determined for a particular period and the principal amount at once or in other mode of payment at the end of the period. (Sharpe, W.F.,.Alaexader, J.G & Bailey, V.J., 1993 Investments, Prentice Hall, London , p.99)

Types of bonds include;

    i.Government– private sector bonds,
    ii.Premium – par bonds,
   iii.Registered – bearer bonds,
   iv.Guaranteed – nonguaranteed bonds,
    v.Collateral – debenture bonds,

vi.Lottery bonds,

vii.Realizable bonds,

viii.Index-linked bonds.

Bonds provide their holders with interest income in essence. Both public sector and private sector take advantage of this financing instrument. (Aşıkoğlu, R., 1983, Sermaye Piyasası Aracı Olarak Enflasyon Ortamında Tahvilleri Değerleme, Eskişehir, Anadolu University Press, p.35)

Term of bonds is determined by the incorporated company at their discretion provided that it is not less than 2 years. Last day of the sale period is accepted to be the starting date of the term and the principal amount may be paid at once at the end of the term or by equal installments as from end of the first year till the end of the term. (Konuralp, G., 2001, Sermaye Piyasaları, Istanbul, Alfa Yayınları, p.31)

3.2 SHARE STOCKS

Share stock is a financial asset which constitutes partnership between purchasing and offering institution and provides the buyer with the right to obtain a share from out of profit and the issuer with the right to use the funds till the liquidation time. In addition, this financial asset is a financing instrument eliminating the intermediary. Shares are expressed and represented with these financial assets in incorporated companies and limited partnership divided into shares. However, the share stocks freely circulating in financial markets are the share certificates of the incorporated companies and therefore when share stocks are mentioned, share certificates of incorporated companies commonly comes to mind.

Share stocks are financial assets for the holder and they also mean financial responsibility for the issuer. A share stock is a pretension submitted in return for the real sources either in the mode of income or in the mode of physical capital or asset.(Blake, D., 1988, Financial Market Analysis, New York, Mac Millan Publishing Company, p.12) It causes the rise of mutual rights and liabilities that a partnership relation is

constituted between the purchasing investor and the institution offering the share stock. Transactions of issuing, offering, purchasing and selling share stocks which are the most efficient financial instruments in meeting the company's need for long term and constant funds are legally determined by every country. Share stocks have the characteristics of negotiable instruments issued by the incorporated companies and representing the capital share. Nominal value of the capital is divided into equal shares in incorporated companies (Yasaman, H., 1992, Menkul Kıymetler Borsası Hukuku, İstanbul, p.33)

The rights of the shareholder are broader than the bondholder. The reason is that bonds are not issued as participation shares like share stocks but issued as debentures. Therefore, bondholders are not concerned with the fact that the company from which they purchase debenture is in loss In case of company's liquidation, claim of bondholders takes precedence of the claim of shareholders. The relation of the bondholder and the company ends when the term of bond expires.

Although the first samples of share stocks were seen in Italy, France, Spain, Hanseatic Provinces and Leipzig in the 15th century, the innovations including volume, fluency, free float and speculative freedom came into existence in Amsterdam market establish in the beginning of the 17th century and then share stocks of industrial companies started to be transacted systematically in the exchange established in London in 1772 and in New York in 1972 (Kayalıdere, K.,2002, 1995 – 2000 Döneminde ISE'de İşlem Gören Hisse Senetlerinin Piyasa Değeri,Firma Büyüklüğü ve Fiyat Kazanç Oranına Göre Oluşturulan Portföylerin Performanslarının İncelenmesi, Manisa, Published Postgraduate Thesis, Celal Bayar University, Institute of Social Sciences, p.10). Rapid development of the capital market after the civil war in USA leaded to the development of share stock which was an instrument of the capital market. The fact that federal bonds were marketed to the small investors and share stocks of railway were extensively copied and successfully sold in the times of war provided investors with the chance to be acquainted with share stocks.(M.Kohn, 1994, Financial Institutions and Market, Mc Graw, London, Hill Book Company, p.560)

The effect of the developments, especially the ones in computer and communication technology, on world's economy has been the acceleration of international capital movements and increase in the number of the partners of the company and the services, such as learning ability at will and performances of classification and evaluation of securities, carried share stocks from the transactions in national stock exchanges to international transactions and thus increased their value.

Advantage of share stocks that the need for capital is composed of small amounts for a long term and involvement of the one giving the money does not last a long time. In addition, share stocks are mostly of bearer, so it is not obliged to fulfill a special formality for a transfer (Turkish Commercial Law, Article 394). Capital Market Board regulated the principals and procedures concerning the transaction of capital market instruments in representative value without physically printing them in the end of 1996 (Official Gazette 9.12.1996) (Canbaş, S., C., & Doğukanlı, H.,2007, Finansal Pazarlar, Karahan Kitabevi, p.33). This regulation includes the participation certificates of share stocks and investment funds traded in the exchange.

Registration of shares stock traded in the exchanges is carried out on computers by Takasbank. In this scope, Takasbank was founded in 1994 as the Central Securities Depository of Turkey. Takasbank has the duty of providing fungible or separate depository of the securities delivered. In determining depository method, it is paid attention to observe the publicly-listed parts separate depository accounts. Thus, barter of share stocks traded in the exchange is carried out in Takasbank, such share stocks are kept in this bank which is the central securities depository and transfer transactions of purchases and sales in the Exchange are carried out on file.

Share stocks are the documents representing a right just like other securities and transfer of these documents to the third persons means the transfer of the face value and dependant rights. For the company, each share certificate constitutes a legal unit. Therefore, it is legally impossible to divide it. In case than a share stock has more than one holder, they can use their rights in the company only through a joint representative (Kayalıdere, K.,2002, 1995 – 2000 Döneminde ISE'de İşlem Gören Hisse Senetlerinin Piyasa Değeri,Firma Büyüklüğü ve Fiyat Kazanç Oranına Göre Oluşturulan Portföylerin

Performanslarının İncelenmesi, Manisa, Published Postgraduate Thesis, Celal Bayar University, Institute of Social Sciences, p.11)

The rights and liabilities arising from the share stocks for their holders are as follows:

a) Right to obtain share from the company's profit (Turkish Commercial Code, Article 553)

b) Right to participate in Company Management and to vote(Turkish Commercial Code, Article 377, 537.

c) Right to preference (Turkish Commercial Code, Article 394)

d) Right to participate in liquidation balance (Turkish Commercial Code, Article 447)

e) Right to obtain information about company's activities (Turkish Commercial Code, Article 362)

In addition to the rights, shareholder has also liabilities. Liabilities of the shareholders are as follows (Başarı, Ç., 2005, Fiyat Kazanç Oranı ISED Bir Uygulama, A.I.B.U Institute of Social Sciences, Published Postgraduate Thesis, p. 35);

1. Liability of subscribing partners to fulfill their liability

2. Liability to pay the unpaid capital immediately in case of bankruptcy of the company capital of which is not paid totally.

Liability of company's partner is valid until the capital is fully paid. The partner who commits to contribute to the capital of the company is given a "Certificate" till the capital is totally paid together with the payment of first call (payment summons). This certificate is replaced with share stock after the capital is totally paid (Ataman Ü., 1999, Şirket Muhasebesi, Türkmen Kitabevi, İstanbul, p. 32)

3.2.1 Types of Share Stock

Share stocks are divided into types in various terms:

i.   Share stocks may be divided as follows in terms of the rights they provide for their holders:

      1.   Prior (preferred) stocks,

      2.   Common stocks

Prior stocks provide their holders with special rights and priorities in respect to profit share, liquation and administrative issues. They may be divided into types in terms of the rights they provide. Common stocks provide their holders with right of equal voting and right of obtaining equal share in case of profit distribution and liquidation. Profit shares are not paid to the holders of common stocks before they are paid to the holders of prior stocks.

ii.   Share stocks are divided into two in terms of Circulation Ability:

      1.   Registered share stocks

      2.   Bearer share stocks

Registered share stocks are issued in the name of the person written in company's book of shares. These share stocks change hands only by means of endorsement and transfer. It is, of course, required to change the register in the book of shares after the transfer. Bearer share stocks may be easily transferred upon agreement and delivery (Canbaş, S., C., & Doğukanlı, H.,2007, Finansal Pazarlar, Karahan Kitabevi, p.47)

iii.   Paid up - non-paid up shares:

Paid up shares are the stocks issued by means of new commitment and payment and providing fund flow to the partnership from external resources. These stocks are

purchased either in the process of foundation or in the process of capital increase by the previous partners by using right of preference (new share) or by the third persons by means of public offering.

On the other hand, the stocks which are issued on the ground of adding increases in reserve funds, retained profits, fund of appraisal surplus, sale returns of estates or contributions to the capital and in return for which a new payment is not in question out of the enterprise are named as "non-paid up shares". Right to obtain these stocks belongs to the previous partners as they are issued upon contribution of some instruments which are already included in the equity capital to the principal capital.

iv.   Premium and non-premium shares

The share stocks which are totally issued with their nominal values are named as premium shares and the ones which are issued with a value over their nominal values are named as non-premium shares. According to TCC the article 286, share stocks cannot be issued with a value less than their nominal value. Premium shares are issued only if there is a relevant provision in the articles of association and a relevant resolution is taken by the General Assembly (Bolak, M., 2001, Sermaye Piyasası Menkul Kıymetler ve Portföy Analizi, Istanbul, Beta Yayınları, p.104).

v.   Founder and dividend shares :

Founder shares are the shares which do not represent a particular capital share and provide the right to participate in company's management but provide the right to obtain share from company's profit and are issued without charge and always registered in the names of founders.

Dividend shares are the shares given to some individuals in return for various services and claims upon the resolution of the General Assembly and not representing the capital share. Special dividend is not paid to neither prior stocks nor founder and dividend

shares not representing the capital share before legal reserves specified in TCC and the first dividend specified in TCC and CML are paid. The payable amount can not be more than one tenth of the remaining profit.(Canbaş,S., Finansal Pazarlar, 2007, Karahan Kitabevi, p.48)

3.3 THE EFFICIENT MARKET HYPOTHESIS

The efficient-market hypothesis was first expressed by Louis Bachelier, a French mathematician, in his 1900s, "The Theory of Speculation". (Kirman, A., 2009, Economic theory and the crisis). His work was largely ignored until the 1950s; however beginning in the 30s scattered, independent work corroborated his thesis. A small number of studies indicated that US stock prices and related financial series followed a random walk model. (See, W.,(1934), Cowles and Jones (1937) & Kendall (1953), and later Brealey, Dryden & Cunningham). Research by Alfred Cowles in the '30s and '40s suggested that professional investors were in general unable to outperform the market.

The efficient-market hypothesis was developed by Professor Eugene Fama at the University of Chicago Booth School of Business as an academic concept of study through his published Ph.D. thesis in the early 1960s at the same school. It was widely accepted up until the 1990s, when behavioral finance economists, who had been a fringe element, became mainstream. (Fox J., 2002, Is The Market Rational, Fortune). Empirical analyses have consistently found problems with the efficient-market hypothesis, the most consistent being that stocks with low price to earnings (and similarly, low price to cash-flow or book value) outperform other stocks. (Fama E & French K.. 2002, "The Cross-Section of Expected Stock Returns". Journal of Finance,, p. 47:427-465). Alternative theories have proposed that cognitive biases cause these inefficiencies, leading investors to purchase overpriced growth stocks rather than value stocks. Although the efficient-market hypothesis has become controversial because substantial and lasting inefficiencies are observed, Beechey et al. (2000) consider that it remains a worthwhile starting point.

The efficient-market hypothesis emerged as a prominent theory in the mid-1960s. Paul Samuelson had begun to circulate Bachelier's work among economists. In 1964

Bachelier's dissertation along with the empirical studies mentioned above were published in an anthology edited by Paul Cootner. (Cootner, P., 1964, The Random Character of StockMarket Prices. MIT Pres)

In 1965 Eugene Fama published his dissertation arguing for the random walk hypothesis, and Samuelson published a proof for a version of the efficient-market hypothesis. (Fama,& Eugene , 1965, "The Behavior of Stock Market Prices".,Journal of Business, pp. 38-34–105) In 1970 Fama published a review of both the theory and the evidence for the hypothesis. The paper extended and refined the theory, included the definitions for three forms of financial market efficiency: weak, semi-strong and strong. The efficient market hypothesis is a central paradigm of finance theory. Discussion of many different areas of finance are influenced by market efficiency, and anyone involved in the securities business should be familiar with the meaning and implications of market efficiency.

There are two types of efficiency: operational efficiency and informational efficiency.(Strong, R., A., 1993, Portfolio Construction, Management and Protection, Minneapolis/St.Paul, West Publishing Company, p.170). Operational efficieny measures how well things function in terms of speed of execuation and accuracy. At a stock Exchange, operational efficiency is measured by such factors as the number of orders that are lost or filled incorrectly and the elapsed time between the receipt of an order and its execution.

The efficient market hypothesis relates to informational efficiency, a measure of how quickly and accuretly the market react to new information. (The market is a colloquial term referring to all the players: individuals,institutions, foreigners, and so on. We talk about the market behaving a certain way as if it were a single entity). New data are constantly entering the market place via economic reports, company announcements, political statements or public opinion surveys to name a few sources. (Kondak, N., 1997,The Efficient Market Hypothesis Revisited: Some Evidence From The İstanbul Stock Exchange, Capital Market Board of Turkey Publiciation, p.36). What does all this information mean? Is rising unemployment in Turkey good or bad for golders of

Turkish Stocks? How about company A's announcement that intends to siplit its stock 5 for 1? The market is informationaly very efficient: securitiesprices adjust rapidly and accurately to new information without the need to digest it very long. There are three forms of efficiency which are as follows:

3.3.1 Week Form Efficiency*:* The least restrictive form of EMH is the week form. Simply put, this states that you cannot predict future stock prices by analysing prices from the past. In other words, charting techniques (technical analysis) are of no use. Any information that is contained in the past price series is already included in the current price. (Strong, R., A., 1993, Portfolio Construction, Management and Protection, Minneapolis/St.Paul, West Publishing Company, p.171)

3.3.2 Semi Strong Form Efficiency*:* The week form of the efficient market hypothesis states that securities prices fully reflect any information contained in the past series of stock stock prices. The semi strong form takes the information set a step further and includes all available information. There is a plethore of information of potential interest to investors. In addition top ast stock prices, such things as economic reports, brokerage firm recommendations, and investment advisory letters abound. Although, no one person sees every one of these items, "the market" does, and prices move as people make decision to buy and sell based on what they learn from the information set available to them. (Strong, R., A., 1993, Portfolio Construction, Management and Protection, Minneapolis/St.Paul, West Publishing Company, p.175) The point is that investors can not earn extra Money by using not only charts but also fundamental analysis

3.3.3 Strong Form Efficiency*:* Share prices reflect all information, public and private, and no one can earn excess returns. If there are legal barriers to private information becoming public, as with insider trading laws, strong-form efficiency is impossible, except in the case where the laws are universally ignored. To test for strong-form efficiency, a market needs to exist where investors cannot consistently earn excess returns over a long period of time. Even if some money managers are consistently observed to beat the market, no refutation even of strong-form efficiency follows: with

hundreds of thousands of fund managers worldwide, even a normal distribution of returns (as efficiency predicts) should be expected to produce a few dozen "star" performers. Insider trading is not used to extra earning.

3.4 NECESSARY CONDITIONS FOR MARKET EFFICIENCY

Market do not become efficient automaticaly. It is the action of investors, sensing bargains and putting into effect schemes to beat the market, that make markets efficient. The necessary conditions for a market inefficiency to be eliminated are: (Damadoran, A.,2002, Investment Valuation, Tools and Techniques for Determining the Value of Any Asset, New York John Wiley and Sons,Inc, p. 115)

a) The Market inefficiency should provide the basis for a scheme to beat the market and earn excess return. For this to hold true?
    i.   The asset or assets that are the source of the inefficiency have to be traded.
    ii. The transaction costs of executing the scheme have to be smaller than the expected profits from the scheme.

b) There should be profit maximizing investors who?
    i.   Recognize the potential for excess return.
    ii. Can replicate the beat the market scheme that earns the excess return.
    iii. Have the resources to trade on the stock(s) until the inefficiency disappears.

The internal contradiction of claiming that there is no possibility of beating the market in an efficient market and requiring profit maximizing investors to constantly seek out ways of beating the market and thus making it efficient has been explored by many. If markets were in fact efficient, investors would stop looking for inefficiencies, which would lead to markets becoming inefficient again. It makes sense to think about an efficient market as self correcting mechanism, where inefficiencies appear at regular intervals but disappear almost instantaneously as investors find them and trade on them.

3.5 ANOMALIES

In Finance, anomaly usually refers to unexplained results that deviate from those expected under finance theory, especially those related to the efficient market hypothesis. The principal market anomalies currently being explored include the low priced stock, the small firm effect, the neglected firm effect, the overreaction effect, january effect, book to market ratio, earning announcement and liquidity.(Strong, R., A., 1993, Portfolio Construction, Management and Protection, Minneapolis/St.Paul, West Publishing Company, p.178)

3.5.1 P/E Effect

Portfolios composed of low P/E stocks often outperform portfolios composed of high P/E stocks. Some have hypothesized, based on the capital asset pricing model and other models relating risk to returns, that the reason for this is because low P/E stocks have greater risk, and therefore potentially greater returns. In other words, if 2 stocks have the same return, then the one with the lower P/E ratio is riskier; otherwise they would have the same P/E ratio. (Some of you will be thinking, "Wait, high P/E stocks are riskier" This is generally true, but those riskier stocks are also expected to yield higher returns to compensate investors for their risk.

3.5.2 Low Priced Stock

Many people believe that certain stock price levels are either too high or too low. Equivalently, they believe that there is an optimum trading range fort he price of stock. By finance theory, the stock price should be merely a marker and be of no value in comparing firms. The size (and Value) of a piece of pie depends on the number of pieces into which the pie is cut.

Stil there is folklore about stock prices. As early as 1936 the academic literature showed evidence that low priced common stock tended to earn higher returns than stock with a "high" price. (Fritzmeier, L.H.,1936, Relative Price Fluctuation of Industrial Stock in Different Price Groups, Journal of Bussiness, pp.113-154)

3.5.3 Small-Firm Effect

Small companies' stocks tend to outperform large companies, simply because they have a greater potential for growth--the larger the company, the harder it is to grow even larger. However, there appears to be more of an increase in the 1st 2 weeks of January, even after adjusting for the riskiness of the stocks using the capital asset pricing model (CAPM). Since the stocks of small companies are more volatile, many of the them will have declined in value by the end of the year, and many of these stocks will have been sold to offset profits for the year, or to reduce taxes from other income. It has been hypothesized that the January effect is due to this tax-loss selling in December, thereby depressing the stock prices of small firms more than could be justified by the prospects for the underlying companies. Hence, when the new year begins, investors buy up these stocks, thus raising the stock prices. Some have argued that this hypothesis is not likely to be valid, since, if true, investors would buy the stocks before the end of the year to earn those gains. However, if investors bought before the end of the year, the price may still decline further, since it is impossible to know how much more tax-loss selling there will be which is why they wait until the beginning of the new year. Of course, to take maximum advantage of this effect, one should buy as early in the new year as possible then others, especially the technical analysts will continue the buying by taking advantage of the upward momentum.

3.5.4 Neglected-Firm Effect

The neglected firm effect is defined as the observation that small firms tend to outperform in the market. But since almost all neglected firms are small firms, this may simply reflect the basic fact that small firms have a greater potential for growth (investor expectation through this way) and may not represent an independent effect. This effect may also arise because when small firms become larger, their coverage by investors increases, and their stock float also increases, which allows more institutional investors to buy the stock. Institutional investors are reluctant to buy stocks with a limited float, since any major buying or selling can have a significant impact on the stock price.

3.5.5 Market Overreaction

Another area of current research interest lies in the observed tendency for the market to overreact to extreme news, with the general result that systematic price reversals can sometimes be predicted. For example, if stock fall sharply, they seem to have a tendency to perform beter than their betas indicate they should in the following period. De Bont and Thaler have written several important papers dealing with this subject. (Werner, F.M, De Bont ,Richart, & H. Thaler, 1985, Does the Stock Market Overreact ? Journal of Finance, pp.793 – 805)

3.5.6 January Effect

The January Effect is another well known anomaly in Financial theory. Numerous studies show persuasive evidence that stock returns are inexplicably high in January, and that small firms do beter than large firms in Janury. It is because investor predict that small firm performance will beter than prudential firms. January effect has also a psychological explanation. Investors believe that in January market has escalation (Bullish Market) trend.

3.5.7 Book-to-Market Ratios

It has generally been observed that stocks of companies with high book-to-market ratios outperform stocks with low book-to-market ratios. Studies have shown that this effect seems to be independent of the stock's beta, and therefore, independent of systematic risk. This effect could be explained by the fact that companies with low book-to-market ratios tend to be companies that investors expect to grow rapidly. However, rapid growth continually declines as companies grow larger hence, growth in stock prices will be diminished as the P/E ratio declines as future expectations of further growth are lowered. As the P/E ratio drops, the return also drops. Furthermore, stocks with high book-to-market ratios tend to decline less in bear markets, since there is less risk when the market value of a company is close to its book value.

3.5.8 Earnings Announcements

Earnings announcements have many times created variable effects on stock prices. Sometimes stock prices go up until the earnings are announced, then decline on the news or they may decline before the announcement if expectations are not positive. Expectations usually are based on analysts' reports, and their forecast of future earnings. Many websites publish a consensus of earnings expectations. If the actual reported earnings differs significantly from what was expected, then this earnings surprise can have a large effect on the subsequent stock price for an extended period of time. The more dramatic the earnings surprise, the more effect it had on the stock price, with positive surprises causing the stock price to rise for up to 2 months after the announcement, and negative surprises causing declines the price effect was most dramatic within the 1st several days of the announcement. Not only does this study indicate that abnormal returns can be earned by simply watching earnings announcements for surprises and responding quickly to them, but it also shows that price changes are not as fast as EMH would seem to imply.

3.5.9 Liquidity Effect

It has also been argued that since stocks of small firms usually have relatively few outstanding shares of stock, few shares trade at any particular time, which makes the stocks relatively illiquid. Illiquidity increases bid/ask spreads, which increases risk, and therefore, such stocks command a higher risk premium as compensation.

Everyone keep in mind that market anomalies, like the stock market, are much like the weather although there are definitely recurring patterns, you never know what it is going to do on any particular day. Market anomalies occur more frequently than not, which is why they have been noticed, but they don't always occur.

3.6 RISK AND RETURN IN PORTFOLİO MANAGEMENT

3.6.1 What is Risk?

Risk for most of us refers to the likelihood that in life's games of chance we will receive an outcome that we will not like. For instance the risk of driving a car too fast is getting a speeding ticket or worse still, getting into an accident. (Damadoran, A.,2002, Investment Valuation, New York, John Wiley and Sons,Inc, p. 60). Merriam Webster's Collegiate Dictionary, in fact, defines the verb to risk as " to expose to hazard or danger." Thus risk is perceived almost entirely negative terms.

In finance risk is defined as :The incossistency / volatility of returns create a threat to expected cash flow and therefore return.

What constitues a satisfactory investment portfolio? Not so long ago, a reasonable answer would have been a bank saving account (risk free asset) plus a risk portfolio asset (include systematic risk). Nowadays, investors have acces to vastly wider array of assets and may contemplate complex portfolio strategies that may include foreign stocks and bonds, real estate, precious metals and collectibles. Even more complex strategies may include futures and options to insure portfolios against unacceptable losses.

Security risk means uncertainity about future rates of return. (Bolak, M., 2004, Risk ve Yönetim, İstanbul, Birsen Yayınevi Ltd.Şti, p.47). Investor measure their succes by computing the rate at which their funds have grown during the investment period. The total holding period return (HPR) of a share of stock depens on the increase (or decrease) in the price of the share over the investment period as well as on any dividend income the share has provided. The rate of return is defined as dollars earned over the investment period per dollar invested.(Bodie, Z., Kane, A., & Marcus, A., j., 1995, Essentials of Investment, Chicago, Irwın publiciation, p.112)

HPR= Ending Price – Begining Price + Cash Divident

Begining Price

This defination of the HPR assumes that the dividend is paid at the end of the holding period.

It is emphasized than investor is rational in an active market. While mentioning the behaviors of a rational investor, we should underline that the investor targets maximum income with minimum risk. In order to reveal the relation between income and risk, the risk should be measured and therefore one of asset pricing models, Financial Asset Pricing Model or Arbitrage Pricing Model, should be used. Risk coefficient is indicated with B (beta) within Financial Asset Pricing Model.

Risk in Financial Assets is defined as the ambiguity in obtaining the expected profit level. As there is variability in risk measurement in financial management, share stocks constitutes the most risky kind among the securities. There is a possibility that the real efficiency to be provided by each share stock in the future may be less than the efficiency expected or targeted by the investor. Such possibility poses the risk of the investment on the share stock from the viewpoint of the investor.

As it is impossible for investor to control or restrict the risks, the total risk of financial asset may be divided into two groups, one of which is Systematic Risk and the other is Nonsystematic Risk.

If we should indicate with a formula, the total risk that an investor is subject to expresses the Variance of a share stock.

3.6.2 Source Of Risk

3.6.3 Total Risk: It consists of two parts with respect to whether it is controlled by the investor. (Kayalıdere, K.,2002, 1995 – 2000 Döneminde ISE'de İşlem Gören Hisse Senetlerinin Piyasa Değeri,Firma Büyüklüğü ve Fiyat Kazanç Oranına Göre Oluşturulan Portföylerin Performanslarının İncelenmesi, Manisa, Published Postgraduate Thesis, Celal Bayar University, Institute of Social Sciences, p.50). The risk type which can be controlled and disabled by the investor for the activities is "nonsystematic risk": Financial Risk, Management Risk, and Sector Risk. However, there is a risk type which can not be influenced by the investor and it is "systematic risk": Interest Rate Risk, Inflation Risk and Market Risk. Systematic risk is also defined as Market Risk.

3.6.4 Systematic Risk: In finance, systemic risk is the risk of collapse of an entire financial system or entire market, as opposed to risk associated with any one individual entity, group or component of a system. (Kaufman George G .Banking and curriciency Crices and Systematic Risk, World Bank Publiciation, 2002, p.18,19). It can be defined as "financial system instability, potentially catastrophic, caused or exacerbated by idiosyncratic events or conditions in financial intermediaries". It refers to the risks imposed by interlinkages and interdependencies in a system or market, where the failure of a single entity or cluster of entities can cause a cascading failure, which could potentially bankrupt or bring down the entire system or market. It is also sometimes erroneously referred to as "systematic risk". This risk is undiversifiable and arise because of systematic factors that affect all securities of a particular type, such as common stock.

3.6.5 Unsystematic Risk: Also known as "specific risk", this risk is specific to individual stocks and can be diversified away as you increase the number of stocks in your portfolio. It represents the component of a stock's return that is not correlated with general market moves.

For a well-diversified portfolio, the risk or average deviation from the mean of each stock contributes little to portfolio risk. Instead, it is the difference or covariance

between individual stock's levels of risk that determines overall portfolio risk. As a result, investors benefit from holding diversified portfolios instead of individual stocks.

3.6.6 Risk Return Trade – Off

One simple strategy for an investor to pursue is to keep all of his or her Money invested in a bank account. This strategy has a number advantages. It is safe, and it requires no expertise and little effort on the part of the investor.

However, if an investor is willing to consider the possibility of taking on some risk, there is the potential reward of higher expected returns. The important thing of this thesis is to find out exploring the nature of this risk return trade of and use stocks Relative Valuation techniques and find out the principles of rational portfolio choice associated with it. The approach I present is known as modern portfolio theory (MPT)

The main organizing principle of MPT is efficient diversification. The basic idea is that any investor who is averse to risk, that is, who requires a higher expected return in order to increase its expected return without taking on additional risk. (Bodie, Z., Kane, A., & Marcus, A., j., 1995, Essentials of Investment, Chicago, Irwın publiciation, p.3)

3.7 CONCEPTS OF PORTFOLIO AND PORTFOLIO MANAGEMENT

Portfolio theory was developed with the studies and contributions of Harry M. Markowitz, John Lintner ve William Sharpe. The reason behind the special importance attached to the portfolio theory is that portfolio theory has underlined the capital market for long years. In this chapter, concepts portfolio and portfolio management will be specified in details.

3.7.1 Concept of Portfolio

Portfolio means wallet in its lexical sense. Portfolio expresses all of the securities possessed by investors and used in the name of investors. In terms of securities,

portfolio is a securities set consisting of securities. (Gürol, E., & KILIÇOĞLU A., 1994, Business World Dictionary, İstanbul, Cem Yayınevi, p. 696). Portfolio may be defined as financial assets consisting of various securities, especially share stocks, bonds and derivative instruments, and possessed by a particular person or persons. In a broader sense, portfolio is a distinctive, qualified, measurable and new asset in the possession of investors willing to achieve particular goals. Even if portfolio consists of particular securities, there is a relation among these securities and portfolio is a distinctive and measureable asset. Therefore, portfolio is not the sum of the securities it includes. (Ceylan, A., & Korkmaz, T.,1998, Borsada Uygulamalı Portföy Yönetimi, Bursa, Ekin Kitabevi Yayınları, pp. 7 -8). According to portfolio theory, investors do not generally invest on a single security. Investors distribute their savings among various securities. The aim behind this is to share out the savings of investors among various securities in the best way. (Apak, S., & Demirel, E., 2009, Finansal Yönetim. İstanbul, Papatya Yayıncılık, p.299). One of the main approaches of investment management is to evaluate the concept of investment as part of a general investment plan. This approach underlies the investment funds which rapidly spread throughout the capital market. Thus, no matter how small the funds to be turned into investment are, funds are gathered in a joint account and distributed to different securities according to the principal of risk distribution. Accordingly, this general investment consisting of various securities, without any restriction, are named as portfolio. Each security is a part of investment portfolio.(Bekçi, I., 2001, Optimal Portföy Oluşturulmasında Bulanıl Doğrusal Programlama Modeli ve ISE'de bir Uygulama, Isparta, Süleymen Demirel University Institute of Social Sciences, Department of Business, Published Phd Thesis, 2001, p.14)

3.7.2 Concept of Portfolio Management

Portfolio management is the act of creating portfolio and deciding on the securities to be issued and the time of issue and the securities with which such securities will be replaced and the time of replacing. (Yörük, N,2000, Finansal Varlık Fiyatlama

Modelleri Ve Arbitraj Fiyatlama Modelinin ISE' de Test Edilmesi, Istanbul, ISE Yayınları,p.3). Portfolio management is the system in which aims, preferences and restriction of investors with reference to the information presented in terms of politics, economy, market, branch of industry and securities are determined and evaluation of the success on the decisions taken is constantly maintained and updated by way of monitoring the portfolio.

According to Sharpe, portfolio management is "the process of revaluing money". As economical conditions changes in time, it could be possible for investors of securities to sell some of the securities and purchase new ones. Deciding on when, how and over which securities such transactions will be carried out requires specialty and responsibility. Portfolio management is to purchase various securities in accordance with the needs of investors and economical conditions and manage these securities in an appropriate way.

Portfolio management may also be defined as the process of managing securities according to profit and risk goals of the investors. The activities to be carried out for portfolio management may be examined in two aspects. One of them is the duties of portfolio holder or investors. The duties of portfolio holders or investors is to inform the portfolio manager in particular time intervals about the profits targeted to be obtained from the investment and the acceptable risk level. The second aspect is the duties of portfolio manager. Portfolio manager is liable to provide the expected profit from the securities of the portfolio holder or investor together with the required diversification on an acceptable risk level. (Bekçi, I., 2001, Optimal Portföy Oluşturulmasında Bulanıl Doğrusal Programlama Modeli ve ISE'de bir Uygulama, Isparta, Süleymen Demirel University Institute of Social Sciences, Department of Business, Published Phd Thesis, 2001, p.14)

Portfolio management is the activity of processing the portfolios consisting of capital market instruments in the capacity of investor's representative in frame of the portfolio management agreement to be executed with the investors. Portfolio management companies do not give investors the guarantee that they will provide a previously

determined profit by word or in written. (Sorularla Borsa Ve Sermaye Piyasası, 2000, ISE Yayınları, p. 64)

Portfolio management and investment consultancy have been fitted into a legislative frame by means of the practices carried out by the Capital Market Board in order to ensure that professional portfolio management is adopted in Turkey for providing reliability and stability in the market. The principals concerning the foundation and authorization of the institutions to carry out practices of customer portfolio management in accordance with the provisions of clause of the article 20 and the articles 22/0, 31, 32, 34 and 39 in capital market law numbered 3794 were regulated in by means of a notification. (Rodoplu,,G., 1993, Türkiye'de Sermaye Piyasası Ve İşlemleri, Marmara University, Istanbul, Nihad Sayar Eğitim Vakfı Yayınları, No: 459 – 692, p. 107)

 Thereafter, many intermediaries engaged in the capital market started to provide services for the investors by obtaining portfolio management certificate. In addition, activity of customer portfolio management was defined in detail in the notification of "principals concerning the portfolio management activities and institutions carrying out such activities" (Serial: V No:9) in the Official Gazette dated 14 January 1993 and numbered 21465. From this point of view, portfolio management may be defined as the process of managing the portfolios consisting of capital market instruments by proxy in accordance with the contract to be executed with the customers. It is also possible for investors to make their investments through the agency of intermediaries. Intermediaries mediate the distribution of securities offered to public for a particular period and return the unsold securities to the issuer in the end of this period. (Bekçi, I., 2001, Optimal Portföy Oluşturulmasında Bulanıl Doğrusal Programlama Modeli ve ISE'de bir Uygulama, Isparta, Süleymen Demirel University Institute of Social Sciences, Department of Business, Published Phd Thesis, 2001, p.15)

3.7.3 Types Of Portfolio

In finance, a portfolio is an appropriate mix or collection of investments held by an institution or an individual. Holding a portfolio is a part of an investment and risk-limiting strategy called diversification. By owning several assets, certain types of risk

(in particular unsystematic risk) can be reduced. The assets in the portfolio could include Bank accounts, stocks, bonds, options, warrants, gold certificates, real estate, futures contracts, production facilities, or any other item that is expected to retain its value. In building up an investment portfolio a financial institution will typically conduct its own investment analysis, whilst a private individual may make use of the services of a financial advisor or a financial institution which offers portfolio management services.

3.7.4 Portfolio formation

Many strategies have been developed to form a portfolio.

1. equally-weighted portfolio
2. capitalization-weighted portfolio
3. price-weighted portfolio
4. optimal portfolio (for which the Sharpe ratio is highest)

Investors can chose best portfolio formation according to their risk aversion.

3.8 APPROACHES OF PORTFOLIO MANAGEMENT

Portfolio theory suggests that a selection is made among portfolios depending on the income and risk measurements expected by the investors. It is accepted that there is a probability distribution between these two concepts. There are two main approaches of portfolio management enabling successful creation of portfolio. The first approach is the traditional portfolio approach based on the principal of diversifying securities. The second approach is the modern portfolio approach mostly grounded on a mathematical basis.

3.8.1 Tradational Portfolio Managment

Traditional portfolio management had been used widely both in theory and in practice until 1950s. Despite the fact that the method does not have a scientific basis, it is still used by many investors by virtue of the ease of implementation. Aim of the tradition portfolio approach is to provide the maximum benefit for the investors. When it is thought how consumers chooses the goods and services from which they will obtain the maximum benefit, it is accepted that investors may choose a portfolio maximizing their benefit preferences concerning risks and profits in a similar way. In other words, investors try to maximize the benefits they expect according to the arising risk level. Traditional portfolio approach attaches importance to excessive diversification and pays attention to the possible relations between the securities to be taken into the portfolio. However, it does not attach enough importance to numeric information in the selection of securities.

According to the traditional portfolio approach, risk diversification is the essential goal. As the returns of securities generating the portfolio do not move in the same direction, risk of the portfolio will be smaller than the risk of a single security. Considering this fact, traditional portfolio approach is based on the diversification of securities in the portfolio. This approach may be defined as "not putting all eggs in the same basket". According to this approach, it is suggested that applying a diversification consisting of securities of the enterprises which are not engaged in the same branch of industry will have a positive effect. Application of traditional portfolio approach differs for each investor. This difference varies according to the information and experience of the investors. The traditional portfolio approach aims to ensure that the investor obtains the maximum benefit. In other words, investors try to maximize the benefit they expect according to the arising risk level. Portfolio income may be defined with the profit shares of securities in the portfolio and value increases in securities in particular periods. Therefore, it is necessary to predict the returns of securities held by the investors. In addition, it is required to calculate the risks possible to arise according to these predicted returns. The main goal of creating portfolio is to diversify the risk. Returns of securities in the portfolio will not be the same and total risk of the portfolio

will be smaller than the risk of a single security. According to this assumption, traditional portfolio approach tries to increase the number of securities in the portfolio.

3.8.2 Modern Portfolio Management

One of the most important and influential economic theories dealing with finance and investment, Modern Portfolio Theory was developed by Harry Markowitz and published under the title "Portfolio Selection" in the 1952 Journal of Finance. MPT says that it is not enough to look at the expected risk and return of one particular stock. By investing in more than one stock, an investor can reap the benefits of diversification - chief among them, a reduction in the riskiness of the portfolio. MPT quantifies the benefits of diversification, also known as not putting all of your eggs in one basket.

For most investors, the risk they take when they buy a stock is that the return will be lower than expected. In other words, it is the deviation from the average return. Each stock has its own standard deviation from the mean, which MPT calls "risk".

The risk in a portfolio of diverse individual stocks will be less than the risk inherent in holding any one of the individual stocks (provided the risks of the various stocks are not directly related). Consider a portfolio that holds two risky stocks: one that pays off when it rains and another that pays off when it doesn't rain. A portfolio that contains both assets will always pay off, regardless of whether it rains or shines. Adding one risky asset to another can reduce the overall risk of an all-weather portfolio.

In other words, Markowitz showed that investment is not just about picking stocks, but about choosing the right combination of stocks among which to distribute one's nest egg. (See Introduction To Diversification and The Importance Of Diversification)

MPT assumes that investors are risk averse, meaning that given two portfolios that offer the same expected return, investors will prefer the less risky one. Thus, an investor will take on increased risk only if compensated by higher expected returns. Conversely, an investor who wants higher expected returns must accept more risk. The exact trade-off will be the same for all investors, but different investors will evaluate the trade-off

differently based on individual risk aversion characteristics. The implication is that a rational investor will not invest in a portfolio if a second portfolio exists with a more favorable risk-expected return profile i.e., if for that level of risk an alternative portfolio exists which has better expected returns.

3.9 CAPITAL ASSET PRICING MODEL

The asset return depends on the amount paid for the asset today. The price paid must ensure that the market portfolio's risk / return characteristics improve when the asset is added to it. The CAPM is a model which derives the theoretical required expected return (i.e., discount rate) for an asset in a market, given the risk-free rate available to investors and the risk of the market as a whole. The CAPM is usually expressed (http://en.wikipedia.org/wiki/ Modern_portfolio_theory)

$$\mathrm{E}(R_i) = R_f + \beta_i(\mathrm{E}(R_m) - R_f)$$

(3.1)

β, Beta, is the measure of asset sensitivity to a movement in the overall market; Beta is usually found via regression on historical data. Betas exceeding one signify more

1. than average "riskiness" in the sense of the asset's contribution to overall portfolio risk; betas below one indicate a lower than average risk contribution.

2. $(\mathrm{E}(R_m) - R_f)$ is the market premium, the expected excess return of the market portfolio's expected return over the risk-free rate.

This equation can be statistically estimated using the following regression equation:

$$\mathrm{SCL} : R_{i,t} - R_f = \alpha_i + \beta_i (R_{M,t} - R_f) + \epsilon_{i,t}$$

(3.2)

where αi is called the asset's alpha , βi is the asset's beta coefficient and SCL is the Securities Characteristics Line.

Once an asset's expected return, E(Ri), is calculated using CAPM, the future cas h flows of the asset can be discounted to their present value using this rate to establish the correct price for the asset. A riskier stock will have a higher beta and will be discounted at a higher rate; less sensitive stocks will have lower betas and be discounted at a lower

rate. In theory, an asset is correctly priced when its observed price is the same as its value calculated using the CAPM derived discount rate. If the observed price is higher than the valuation, then the asset is overvalued; it is undervalued for a too low price.

3.9.1 Capm Assumptions

CAPM has some important assumption. Without this assumption this model can not work well.

1. As any other model in finance, CAPM has its assumptions, mostly overlapping with the assumptions of the Markowitz portfolio model.
2. First of all investors are efficient investors, who target points on the efficient frontier. The exact location on the frontier depends the investor's risk-return utility function.
3. Investor can lend and borrow any amount of Money at risk free rate.
4. Investor have homogeneous expectations.
5. Investors have same one period investment horizon.
6. There is no transaction cost and taxes
7. There is a perfect competition in the market which means no individual can affect the prices in the market place.
8. Capital markets are in fully equlibrium.

4. DATA AND METHOD

The purpose of this study is to analyze the interaction between the returns of sectors dealt with the Istanbul Stock Exchange (ISE) and the macroeconomic variables, by using Vector Autoregressive (VAR) models. At this point, especially the impact of macroeconomic variables on sectoral returns is examined. The sectors applied for the purpose of this study are Banking Industry, Electricity Industry, Food Industry, Holding Industry, Chemistry Industry, Service Industry and Metal Industry.

In the study, "Return Indexes" of the sectors in question are utilized as the return variables. In terms of macroeconomic variables, Money Supply (M2), Consumer Price Index (CPI), Real Effective Exchange Rate Index, Import-Export Coverage Ratio, Industrial Production Index, Interest Rate, Gold Price and Crude Oil Price are adopted.

In the analysis, the data related to the said variables are obtained from various sources. The data related to return indexes of sectors are obtained from ISE, and the data related to Real Effective Exchange Rate Index, Import-Export Coverage Ratio and Gold Price are obtained from the Electronic Data Delivery System of the Central Bank of Turkey. The data related to Money Supply, Consumer Price Index and Industrial Production Index are collected from the website of IMF on the International Financial Statistics. Lastly, the data on the variable of crude oil price are obtained from the publications of State Planning Organization, titled the Main Economic Indicators.

The period from August, 2000, to August, 2010 are applied as the term of analysis and 121 surveys are adopted accordingly. In order to maintain the consistency between the variables, all variables are addressed as "ratio variables", and increase rates of all variables except interest rate, inflation rate and import-export coverage ratio are calculated and included in the analysis.

In the study, the return of ISE-100 Index and the relationship between the macroeconomic variables are also examined in addition to the relationship between sectoral returns and macroeconomic variables. In empirical analysis, Vector

Autoregressive models are adopted and relationship between the variables is examined by means of Impulse-Response functions. Also, causality relationships between the variables are examined.

4.1 THE CONCEPT OF STATIONARY

Economic time series have a set of impacts that emerge in periods. These impacts are also called as the components of economic time series. In general, any economic time series consist of four components. These impacts (components) are trend, seasonal, cyclical and incidental. The trend impact can be regarded as relatively more important compared to others. The trend impact also reflects the general tendency of economic time series (increase or decrease) in the course of time. The seasonal one is an impact that may emerge if the economic time series are obtained in monthly or quarterly observations.

In empirical studies where economic time series are adopted, the assumption on stationary of average and variance values of variables in the course of time reveals the "stationary" of variables. The average and variance of any time series do not change based on time; this situation indicates that the economic time series is stationary. The representation on average and variance of y_t time series is as follows:

$$E(y_t) = \mu$$

$$Var(y_t) = E(y_t - \mu)^2 = \sigma^2$$

(4.1)

The concept of stationary is highly important in analyses where the economic time series are utilized. In this regard, the reliability of studies that are carried out based on non- stationary variables is controversial. If an economic time series represents non-stationary behaviors, it means that the impact of any shock being exposed by this series will be permanent. The most important reason for non-stationary behaviors of economic time series is the respective trend impact. If the trend impact is stochastic, it is required to take the first order difference of variable, in order to eliminate the non-stationary nature of time series. In these processes that are also called as difference stationary

process, the permanence of any impact of shock is eliminated by taking the difference. On the other hand, if the trend impact has deterministic nature, it is needed to eliminate the trend impact of time series in order to remove the non-stationary nature of the time series. This process is called as trend stationary process.

Difference stationary process for the y_t time series can be shown as follows:

$$y_t = y_{t-1} + \varepsilon_t$$

(4.2)

$$y_t - y_{t-1} = \Delta y_t = \varepsilon_t$$

Trend stationary process for the y_t time series can be shown as follows:

$$y_t = \beta_0 + \beta_1 t + \varepsilon_t$$

(4.3)

$$y_t - \left(\hat{\beta}_0 + \hat{\beta}_1 t \right) = \varepsilon_t$$

Economic time series may have both stochastic and deterministic trend:

$$y_t = \beta_0 + \beta_1 t + y_{t-1} + \varepsilon_t$$

(4.4)

4.2 UNIT ROOT TESTS

In analyses performed through economic time series, there are many methods adopted in the literature in testing stationarity of variables considering the assumption that supposes these series as stationary. Among these approaches, "unit root tests" come into prominence. If a time series has unit root, then it indicates that such time series is non-stationary in nature.

There are many unit root tests utilized in the literature. Firstly introduced by Dickey and Fuller (1979), the concept of unit root has enabled to examine the stationarity of economic time series. The first test developed in this respect is called as Dickey-Fuller (DF) unit root test. The model of DF unit root test is as follows:

$$y_t = \rho y_{t-1} + \varepsilon_t \tag{4.5}$$

In this model, $H_0 : \rho \geq 1$ hypothesis (non-stationarity) is examined and it is decided whether the time series is stationary. Differently from this model, first difference of dependent variable in the model is taken and can be written as follows:

$$\Delta y_t = \delta y_{t-1} + \varepsilon_t \tag{4.6}$$

In this model, $H_0 : \delta = 0$ hypothesis is examined and it is decided whether the variable is stationary. However, it is not possible to use the classical t test in the examination of $H_0 : \delta = 0$ in DF unit root test. tau (τ) statistic, calculated by Dickey and Fuller (1976), is utilized. Considering the deterministic components (constant term and trend variable) that are possible to be insert into the model in DF unit root test, there different cases are mentioned. The first case is that no deterministic component exists in the model:

$$\Delta y_t = \delta y_{t-1} + \varepsilon_t$$

The second case is that only the constant term among the deterministic variables is inserted into the model:

$$\Delta y_t = \beta_0 + \delta y_{t-1} + \varepsilon_t \tag{4.7}$$

The third and last case is that both constant term and trend variable are inserted into the model:

$$\Delta y_t = \beta_0 + \beta_1 + \delta y_{t-1} + \varepsilon_t \tag{4.8}$$

In all three cases, $H_0 : \delta = 0$ hypothesis is examined and if critical tau (τ) values derived by Dickey and Fuller (1976) are above their absolute value based on the

absolute value of tau (τ) statistic, null hypothesis is rejected and it is concluded that the series is stationary.

Dickey and Fuller (1981) state later that it is needed to insert previous period values of Δy_t variable into these models in order to eliminate the autocorrelation problem that may emerge in abovementioned models. After the previous period values of Δy_t variable are inserted into the model, this unit root test is called as the Augmented Dickey-Fuller (ADF) test. The common representation of the model utilized in ADF test is as follows:

$$\Delta y_t = \beta_0 + \beta_1 + \delta y_{t-1} + \sum_{i=1}^{m} \alpha_i \Delta y_{t-i} + \varepsilon_t$$

(4.9)

Therefore, as in the DF test, $H_0 : \delta = 0$ hypothesis is examined in researching the existence of unit test in this model. In the ADF test, it is possible to utilize Akaike (AIC) and Schwarz (SC) information criteria in the determination of appropriate delay length; in other words, in determining how many previous period values of Δy_t variable will be inserted into the model. Values regarding the Akaike (AIC) and Schwarz (SC) information criteria are calculated by means of following formulas:

$$AIC = \ln\left(\frac{ESS}{T}\right) + \frac{2k}{T}$$

(4.10)

$$SC = \ln\left(\frac{ESS}{T}\right) + \frac{k.\ln T}{T}$$

(4.11)

In these formulas, the T sample number means ESS residual squares and k means the number of variables.

4.3 VECTOR AUTOREGRESSIVE (VAR) MODELS AND IMPULSE-RESPONSE ANALYSIS

The VAR models, firstly developed by Sims (1980), are developed version of simultaneous equation systems, which are conventional econometric models. The VAR models are based on the methods of econometric time series.

The VAR(p) model that is written from p. order for two variables such as Y_t and X_t is as follows:

$$Y_t = \alpha_{10} + \sum_{i=1}^{p} \alpha_{11i} Y_{t-i} + \sum_{i=1}^{P} \alpha_{12i} X_{t-i} + u_{1t}$$

$$X_t = \alpha_{20} + \sum_{i=1}^{p} \alpha_{21i} Y_{t-i} + \sum_{i=1}^{P} \alpha_{22i} X_{t-i} + u_{2t}$$

$$(4.12)$$

In these models, u_{1t} and u_{2t} mean the error terms with zero mean and constant variance.

Matrix representation of VAR model from p. order is as follows:

$$\begin{pmatrix} Y_t \\ X_t \end{pmatrix} = \begin{pmatrix} \alpha_{10} \\ \alpha_{20} \end{pmatrix} + \sum_{i=1}^{P} \begin{pmatrix} a_{11i} & a_{12i} \\ a_{21i} & a_{22i} \end{pmatrix} \begin{pmatrix} Y_{t-i} \\ X_{t-i} \end{pmatrix} + \begin{pmatrix} u_{1i} \\ u_{2i} \end{pmatrix}$$

$$(4.13)$$

It is not significant to directly interpret the parameters obtained as a result of estimated result of VAR model. For this reason, a set of results are interpreted by means of impulse-response and variance decomposition analyses.

The responses of variables in the VAR system to the shocks in previous periods or of other variables are important. The error term in time series models is generally expressed as the representation of shocks.

A set of conditions must be in place in order to apply the VAR model. If all the variables in model are stationary (i.e. average and variance of time series are fixed in the course of time), the VAR model can be applied based on the said variables. The

reason underlying this assumption is that the shocks exposed to stationary variables have temporary impact and such impact of shock will decrease in time.

The most important part in the estimation of VAR models is to correctly determine p, the delay length. A set of criteria are utilized in determining the appropriate delay length. FPE criterion, AIC (Akaike Information Criterion), SC (Schwarz Criterion) and HQ (Hannan-Quinn Information Criterion) are some of them.

The VAR models are more appropriate to use for shock economies. In the estimation of VAR models, the second important occurs at this very point. Since the VAR models deal with shock economies, all variables utilized in the model must be stationary. However, it is not required for variables being stationary at the same order. In other words, the variables can be stationary at level values or by taking their differences from the proper order.

4.4 CAUSALITY ANALYSES

Based on the VAR models established after the appropriate delay length in VAR models is determined, it is possible to carry out causality analyses depending on dynamic relationships between the variables.

$$Y_t = \alpha_{10} + \sum_{i=1}^{p} \alpha_{11i} Y_{t-i} + \sum_{i=1}^{P} \alpha_{12i} X_{t-i} + u_{1t}$$

$$X_t = \alpha_{20} + \sum_{i=1}^{p} \alpha_{21i} Y_{t-i} + \sum_{i=1}^{P} \alpha_{22i} X_{t-i} + u_{2t}$$

(4.14)

In the foregoing VAR(p) model with two variables, $H_0 : \alpha_{12i} = 0$ is tested in researching a causality relationship from X_t variable to Y_t variable. According to F test result conducted on restriction, the rejection of said hypothesis indicates the existence of causality relationship from X_t variable to Y_t variable. The existence of a causality relationship from Y_t variable to X_t variable is tested with $H_0 : \alpha_{21i} = 0$ hypothesis. If

$H_0 : \alpha_{21i} = 0$ hypothesis is rejected, then there is a causality relationship from Y_t variable to X_t variable. As a result of causality analyses, three different cases may occur. The first one is unidirectional causality and second one is bi-directional causality. The third one is the inexistence of any causality relationship between the variables.

4.5 IMPULSE-RESPONSE ANALYSES

The impulse-response analyses utilized in the determination of dynamic relationships between the variables in VAR model calculate the size and direction of impact of a standard deviation shock in any error terms, on the variables. The existence of endogenous and exogenous variables in VAR models is important regarding the sequence of variables in the course of estimating the model. The authenticity of forecasting that emerge as a result of Impulse-Response Analyses is based on the accuracy of said sequence. Accordingly, the sequence must be carried out in a way to place the most exogenous variable to the first sequence and to place the most endogenous variable to the last sequence. The Impulse-Response Analyses also enable the determination of shock impact of any variable that will emerge in the future on other variable.

The variables used in the analysis and their abbreviations are given in Table 3.

Table 3: The Variables Used in Analysis and Their Abbreviations

NAME OF THE VARIABLE	ABBREVIATION
RETURN OF CHEMISTRY INDUSTRY	KIM (persentage)
RETURN OF SERVICE INDUSTRY	HIZ (persentage)
RETURN OF METAL INDUSTRY	MESY (persentage)
RETURN OF HOLDING INDUSTRY	HOLD (persentage)
RETURN OF FOOD INDUSTRY	FOOD (persentage)
RETURN OF ELECTRICITY INDUSTRY	ELCT (persentage)
RETURN OF BANKING INDUSTRY	BANK (persentage)
RETURN OF ISE-100	ISE100 (persentage)
MONEY SUPPLY INCREASE RATE	M2 (persentage)
INFLATION	CPI (persentage)
INCREASE OF REAL EXCHANGE RATE	RER (persentage)
EXPORT/IMPORT RATIO	EXIM (persentage)
INCREASE RATE OF INDUSTRIAL PRODUCTION INDEX	IP (persentage)
INTEREST RATE	I (persentage)
INCREASE RATE OF GOLD PRICE	GOLD (persentage)
INCREASE RATE OF CRUDE OIL PRICE	OIL (persentage)

5. EMPIRICAL RESULTS

In the analysis, the ADF unit root test is applied in order to determine the stationary orders of variables at first.

5.1 RESULTS OF UNIT ROOT TEST

The results of ADF unit root test applied to level values of variables are given in Table 4

Table 4: The Results of ADF Unit Root Test Applied to Level Values of Variables

Variables	Delay Value	τ statistic
KIM	0	-12.15421
HIZ	0	-13.3915
MESY	0	-10.88718
HOLD	0	-11.78821
FOOD	10	-2.227336
ELCT	0	-10.8941
BANK	0	-11.51399
ISE100	2	-4.766333
M2	2	-4.294346
CPI	6	-2.78205*
RER	4	-5.935567
EXIM	1	-3.062195*
IP	12	-1.492561*
I	2	-2.55154*
GOLD	0	-7.017152
OIL	0	-8.059485

Note: * indicates that the existence of unit root which is the main hypothesis at 5persentage significance level cannot be rejected. Delay values are established by using Akaike Information Criterion (AIC).

According to results of the ADF unit root test applied to level values of KIM, HIZ, MESY, HOLD, FOOD, ELCT, BANK, ISE-100, M2, RER, GOLD and OIL variables included in Table 4, the hypothesis regarding the existence of unit root which is the main hypothesis at 5persentage significance level is rejected. Thus, KIM, HIZ, MESY, HOLD, GIDA, ELCT, BANK, İMKB-100, M2, RER, GOLD and OIL variables are level stationary variables (i.e. $I(0)$ variables). According to results of the ADF unit root test applied to level values of CPI, EXIM, IP and I variables, the hypothesis regarding the existence of unit root which is the main hypothesis at 5persentage significance level is rejected. Thus, CPI, EXIM, IP and I variables are not level stationary.

After it is realized based on the results of ADF unit root test that CPI, EXIM, IP and I variables are not level stationary, the ADF unit root test is applied by taking first order difference of the variables. The result of ADF unit root test applied to first order differences of CPI, EXIM, IP and I variables are shown in Table 5.

Table 5: The Results of ADF Unit Root Test Applied to First Order Differences of Variables

Variables	Delay Value	τ statistic
ΔCPI	11	-3.93697*
ΔEXIM	11	-2.92514*
ΔIP	11	-9.07589*
ΔI	0	-16.15007*

Note: * indicates that the existence of unit root which is the main hypothesis at 5persentage significance level is rejected. "Δ" shows the first difference operator. Delay values are established by using Akaike Information Criterion (AIC).

According to the ADF unit root test result applied to first order differences of CPI, EXIM, IP and I variables included in Table 5, the hypothesis regarding the existence of unit root which is the main hypothesis at 5persentage significance level is rejected.

Based on these results, CPI, EXIM, IP and I variables are level stationary variables at first order (i.e. $I(1)$ variables).

After the stationarity orders of variables are determined, the VAR models are utilized in the second stage of analysis and the interaction relationship between the returns of Banking, Electricity, Food, Holding, Chemistry, Service, Metal Industries and ISE-100, and macroeconomic variables. Through the VAR models, causality analyses and impulse-response analyses between the macroeconomic variables of the returns of Banking, Electricity, Food, Holding, Chemistry, Service, Metal Industries and ISE-100 are carried out, respectively.

5.2 CAUSALITY ANALYSIS AND IMPULSE-RESPONSE ANALYSIS OF BANKING INDUSTRY AND MACROECONOMIC VARIABLES

In this stage of study, the impact of macroeconomic variables on banking industry is examined. Firstly, the determination of appropriate delay length to be used for the estimation of VAR model is carried out in the analysis. The model called as unrestricted VAR model is estimated and the appropriate delay length is determined by means of information criteria from this unrestricted VAR model. Among the variables used in estimation of all VAR models, M2, RER, GOLD, OIL and BANK variables are included in VAR models with their level values as they are $I(0)$ variables and CPI, EXIM, IP and I variables are included in said models by taking their first differences as they are $I(1)$ variables.

The appropriate delay length in the forecasting of VAR model is determined as 8 by using Akaike Information Criteria (AIC). After the appropriate delay length is determined 8, VAR(8) model is forecasted.

After forecasting the VAR(8) model, the causality relationship between the variables is examined at first. Since the impact of macroeconomic variables on the banking industry is taken into consideration in line with the purpose of this study, the results related to

causality analyses are only analyzed for variables affecting, or being affected by, the banking industry. The results of causality analyses are given in Table 6.

According to results of causality analysis on the banking industry given in Table 6, it can be seen that there are three macroeconomic variables affecting the banking industry at 5 persentage significance level. Thus, Real Exchange Rate, Import-Export Coverage Ratio and Interest Rate variables are influential on the banking industry.

Table 6: The Results of Causality Analysis on Banking Industry

| Main Hypothesis	χ^2 Test Statistic	Degree of Freedom	Probability Value
$BANK \nrightarrow RER$	18.78037	8	0.0161*
$RER \nrightarrow BANK$	31.80651	8	0.0001*
$EXIM \nrightarrow BANK$	23.89788	8	0.0024*
$I \nrightarrow BANK$	19.39646	8	0.0129*

Note: * indicates that the hypothesis regarding the inexistence of causality which is the main hypothesis at 5 significance level is rejected.

According to these results, money supply, gold price, crude oil price, inflation and industrial production index variables are not influential on the banking industry. Also, the results of causality analyses indicate that the only macroeconomic variable that is affected the banking industry is the variable of Real Exchange Rate. There is a bi-directional causality relationship between the banking industry and real exchange rate index.

After the direction of causality relationships among the BANK, RER, EXIM and I variables is determined, impulse-response analyses have been performed depending on the direction of causality relationships between the variables. Accordingly, the impact of any potential export-import coverage ratio and interest rate shock on the banking industry is examined, in addition to mutual interaction between the banking industry and real exchange rate variable. The results of Impulse-Response Analyses are given in Graphic 1.

In the impulse-response functions, the direction and size of impact of a standard deviation shock on other variables is provided at vertical axis, and the period is provided at horizontal axis. Dashed lines represent the confidence intervals with 2 standard deviations. In the impulse-response functions, the graphic in the confidence internals is cutting the 0 line and this means that there is statistically significance between the said variables.

Graphic 1: Impulse-Response Functions of the Banking Industry
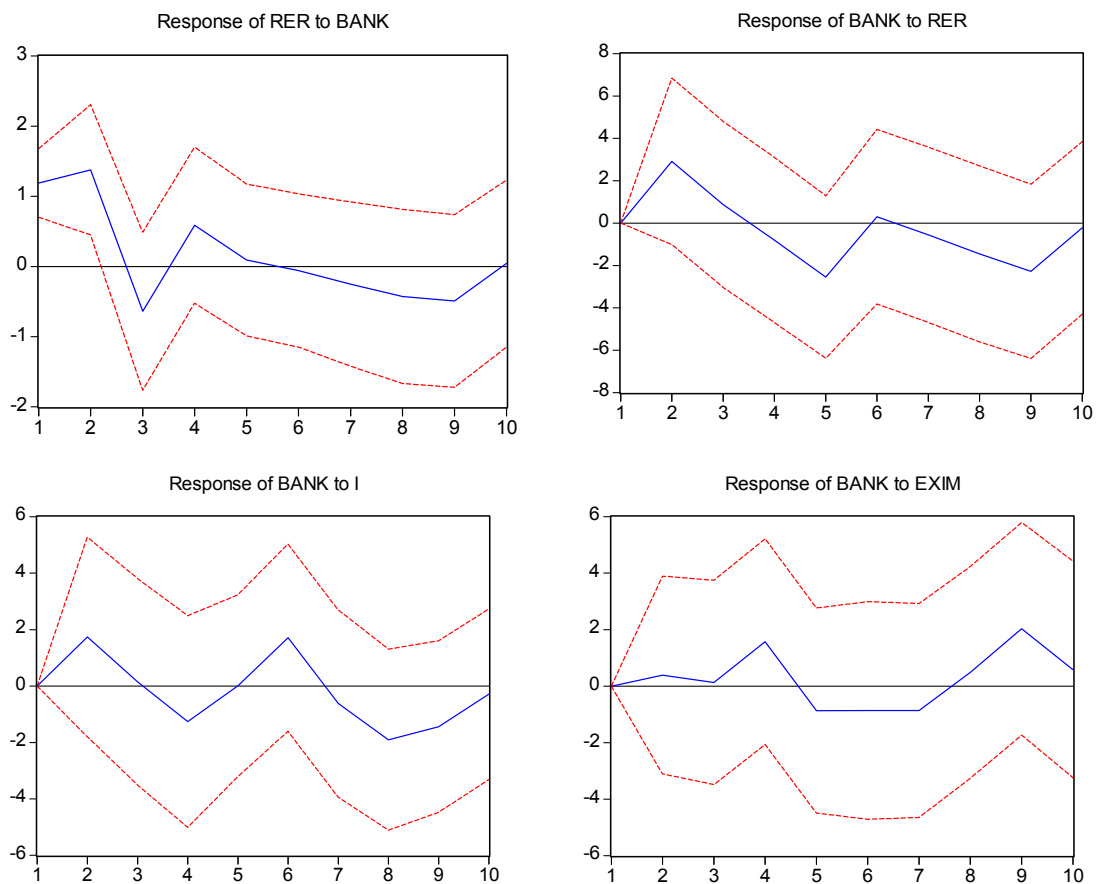
When the impulse-response functions given in Graphic 1 above are examined, the following results are obtained: any shock that occurs in the banking industry shows positive impact on real exchange rate for the first (period) month and negative impact between the second and third months. Similarly, this is also applicable for the impact of interest rate on the banking industry. The banking industry does not react to a shock on

export-import coverage ratio for the first 3 periods and shows an upward trend after the third period. It is also realized that a shock on the real exchange rate variable makes a positive impact on the banking industry for the first period, yet it shows a downward afterwards.

5.3 CAUSALITY ANALYSIS AND IMPULSE-RESPONSE ANALYSIS OF ELECTRICITY INDUSTRY AND MACROECONOMIC VARİABLES

In this stage of study, the impact of macroeconomic variables on electricity industry is examined. Firstly, the estimation of unrestricted VAR model is carried out and appropriate delay length is determined. The order of VAR model utilized in the analysis is determined as 8 by using AIC information criterion.

After forecasting the VAR(8) model, since the impact of macroeconomic variables on the electricity industry is taken into consideration, the results related to causality analyses are only analyzed for variables affecting, or being affected by, the electricity industry. The results of causality analyses are given in Table 7.

Table 7: The Results of Causality Test on Electricity Industry

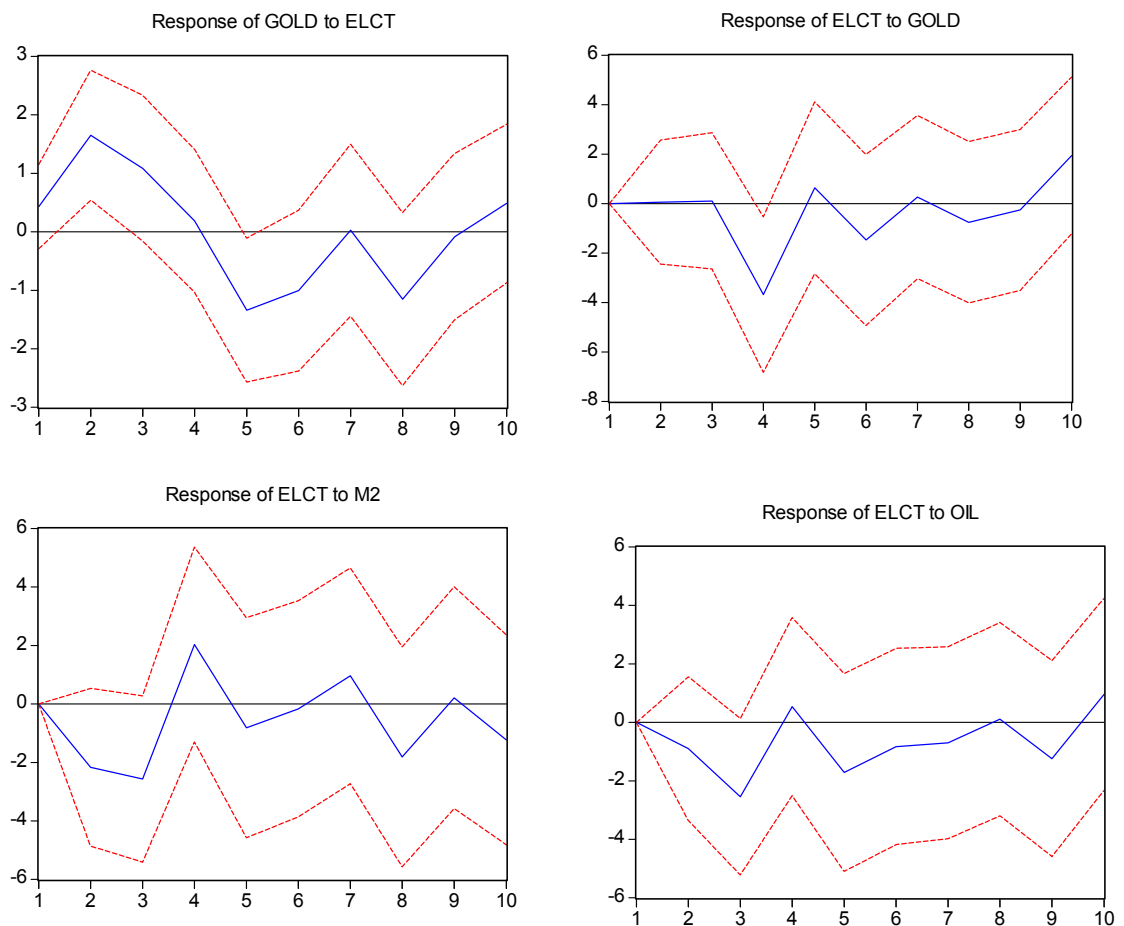| Main Hypothesis	χ^2 Test Statistic	Degree of Freedom	Probability Value
$M2 \nrightarrow ELCT$	17.37484	8	0.0264*
$GOLD \nrightarrow ELCT$	19.06567	8	0.0145*
$OIL \nrightarrow ELCT$	21.76366	8	0.0054*
$IP \nrightarrow ELCT$	16.65766	8	0.0339*
$I \nrightarrow ELCT$	24.50325	8	0.0019*
$ELCT \nrightarrow GOLD$	27.02499	8	0.0007*

Note: * indicates that the hypothesis regarding the inexistence of causality which is the main hypothesis at 5 persentage significance level is rejected.
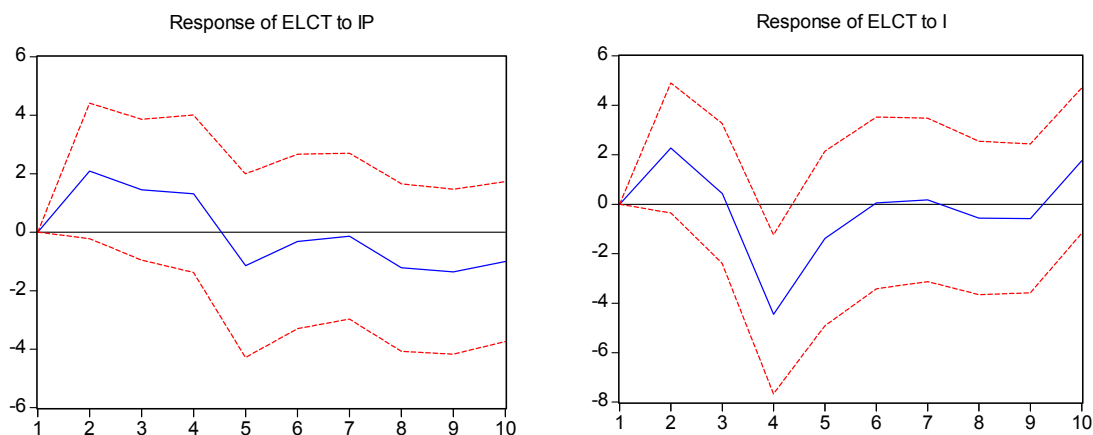
According to the results of causality analysis given in Table 7, there is a unidirectional causality relationship from money supply, crude oil price, industrial production and interest rate to the electricity industry at 5persentage significance level and there is a bi-

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directional causality relationship between gold prices and the electricity industry. Thus, the macroeconomic variables that have impact on the electricity industry are the variables of money supply, gold price, crude oil price, industrial production index and interest rate. On the other hand, the only macroeconomic variable affected by the electricity industry is the gold price.

Dynamic relationships between the said variables depending on the findings obtained in line with the causality analyses are analyzed by means of impulse-response functions that are shown in Graphic 2.

Graphic 2: Impulse-Response Functions of the Electricity Industry

Response of ELCT to IP	Response of ELCT to I

The results obtained based on the impulse-response functions given in Graphic 2 above are as follows: any shock that occurs in the electricity industry increases the gold price until the second period, yet decreases after the second period. Any shock that occurs in the gold price does not affect the electricity industry until the third period and make a negative impact after the third period. Any shock that occurs in the money supply and crude oil price reveals a negative impact on electricity industry until the third period and makes a positive impact on the industry after third period. Any shock that occurs in industrial production and interest rate makes a positive impact on the industry until the second period and reveals a negative impact after the third period.

5.4 CAUSALITY ANALYSIS AND IMPULSE-RESPONSE ANALYSIS OF FOOD INDUSTRY AND MACROECONOMIC VARIABLES

In this stage of study, the impact of macroeconomic variables on food industry is examined. Firstly, the estimation of unrestricted VAR model is carried out and appropriate delay length is determined. The order of VAR model utilized in the analysis is determined as 8 by using AIC information criterion.

After forecasting the VAR(8) model, since the impact of macroeconomic variables on the food industry is taken into consideration, the results related to causality analyses are only analyzed for variables affecting, or being affected by, the food industry. The results of causality analyses are given in Table 8.

Table 8: The Results of Causality Test on Food Industry

Main Hypothesis	χ^2 Test Statistic	Degree of Freedom	Probability Value
GIDA $\not\rightarrow$ EXIM	27.2439	8	0.0006*

Note: * indicates that the hypothesis regarding the inexistence of causality which is the main hypothesis at 5 persentage significance level is rejected.

According to the results of causality analysis given in Table 8, there is a unidirectional causality identified from the food industry to export-import coverage ratio at 5persentage significance level. In the causality analysis performed for the food industry, it is found that there is no macroeconomic variable with impact on the food industry. The food industry is influential on the export-import coverage ratio.
Dynamic relationship between the food industry and export-import coverage ratio depending on the findings obtained in line with the causality analyses are analyzed by means of impulse-response functions that are shown in Graphic 3.

Graphic 3: Impulse-Response Functions of the Food Industry

Response of EXIM to GIDA

The results obtained based on the impulse-response functions given in Graphic 3 above are as follows: any shock that occurs in the food industry decreases the export-import coverage ratio until the second period, yet increases after the second period.

5.5 CAUSALITY ANALYSIS AND IMPULSE-RESPONSE ANALYSIS OF HOLDING INDUSTRY AND MACROECONOMIC VARİABLES

In this section, the impact of macroeconomic variables on the holding industry is examined and at first, appropriate delay length is determined by forecasting the unrestricted VAR model. The order of VAR model utilized in the analysis is obtained as 8 by using AIC information criterion.

After forecasting the VAR(8) model, since the impact of macroeconomic variables on the holding industry is taken into consideration, the results related to causality analyses are only analyzed for variables affecting, or being affected by, the holding industry. The results of causality analyses are given in Table 9.

**Table 9:** The Results of Causality Test on Holding Industry

Main Hypothesis	χ^2 Test Statistic	Degree of Freedom	Probability Value
$RER \not\rightarrow HOLD$	19.57542	8	0.01210*
$HOLD \not\rightarrow EXIM$	35.17847	8	0.00000*

Note: * indicates that the hypothesis regarding the inexistence of causality which is the main hypothesis at 5 persentage significance level is rejected.

According to the results of causality analysis given in Table 9, there is a unidirectional causality identified from real exchange rate variable to holding industry and from holding industry to export-import coverage ratio at 5persentage significance level. Thus, it is realized that the only macroeconomic variable making impact on the holding industry is the real exchange rate.

Dynamic relationships between the variables depending on the findings obtained in line with the causality analyses are analyzed for the holding industry by means of impulse-response functions. The results of impulse-response analysis for the holding industry are given in Graphic 4.

Graphic 4: Impulse-Response Functions of the Holding Industry
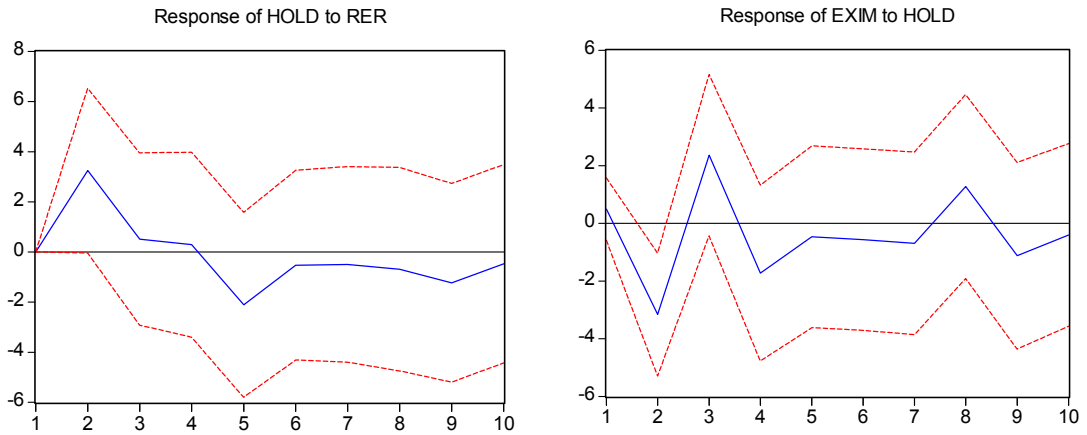
Based on the impulse-response functions given in Graphic 4, it is possible to obtain the following results: any shock that occurs in real exchange rate makes positive impact on the holding industry until the second period, yet reveals a negative impact after the second period. On the other hand, any shock that occurs in holding industry makes a negative impact on export-import coverage ratio until the second period and gives a positive impact after the second period.

5.6 CAUSALITY ANALYSIS AND IMPULSE-RESPONSE ANALYSIS OF CHEMISTRY INDUSTRY AND MACROECONOMIC VARIABLES

In this stage of study, the impact of macroeconomic variables on chemistry industry is examined. Firstly, the estimation of unrestricted VAR model is carried out and appropriate delay length is determined. The order of VAR model utilized in the analysis is determined as 8 by using AIC information criterion.

After forecasting the VAR(8) model, since the impact of macroeconomic variables on the chemistry industry is taken into consideration, the results related to causality analyses are only analyzed for variables affecting, or being affected by, the chemistry industry. The results of causality analyses are given in Table 10.

**Table 10:** The Results of Causality Test on Chemistry Industry

Main Hypothesis	χ^2 Test Statistic	Degree of Freedom	Probability Value
$I \nrightarrow KIM$	18.66119	8	0.01680
$KIM \nrightarrow RER$	29.73692	8	0.00020

Note: * indicates that the hypothesis regarding the inexistence of causality which is the main hypothesis at 5 persentage significance level is rejected.

According to the results of causality analysis given in Table 10, there is a unidirectional causality relationship identified from interest rate to chemistry industry and from chemistry industry to real exchange rate at 5persentage significance level. Thus, it is realized that the only macroeconomic variable making impact on the chemistry industry is the interest rate.

The impulse-response functions obtained for the chemistry industry after the said causality analysis are given in Graphic 5:

Graphic 5: Impulse-Response Functions of the Chemistry Industry
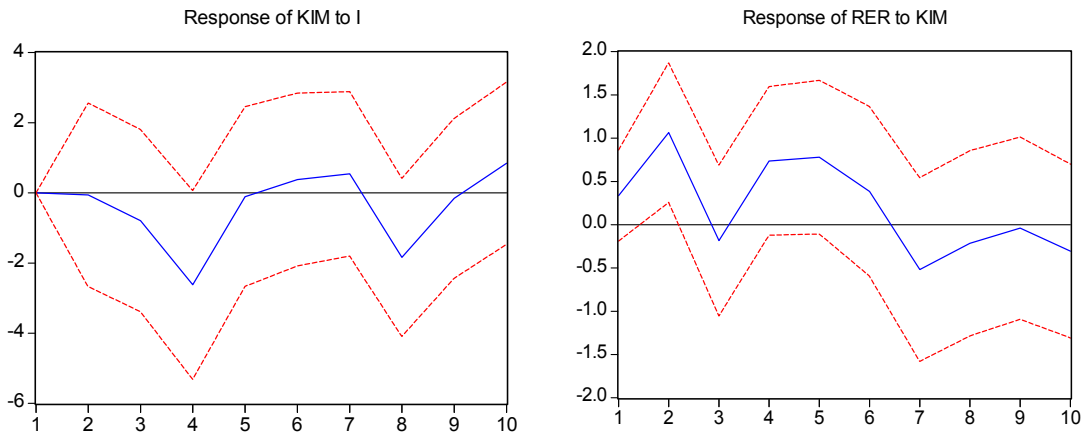
Based on the impulse-response functions given in Graphic 5; any shock that occurs on interest rate does not lead any change on the chemistry industry for the first two periods and affects the industry in a negative way after the second period. Any shock that occurs

on the chemistry industry creates a positive reaction on real exchange rate until the second period and negative reaction after the second period.

5.7 CAUSALITY ANALYSIS AND IMPULSE-RESPONSE ANALYSIS OF SERVICE INDUSTRY AND MACROECONOMIC VARIABLES

In this section where the impact of macroeconomic variables on service industry is examined, the estimation of unrestricted VAR model is carried out at first and appropriate delay length is determined. The order of VAR model utilized in the analysis is determined as 8 by using AIC information criterion.

After forecasting the VAR(8) model, since the impact of macroeconomic variables on the service industry is taken into consideration, the results related to causality analyses are only analyzed for variables affecting, or being affected by, the service industry. The results of causality analyses are given in Table 11.

Table 11: The Results of Causality Test on Service Industry

| Main Hypothesis	χ^2 Test Statistic	Degree of Freedom	Probability Value
$CPI \nrightarrow HIZ$	33.15206	8	0.0001*
$I \nrightarrow HIZ$	22.95106	8	0.0034*
$RER \nrightarrow HIZ$	18.47137	8	0.018*
$HIZ \nrightarrow EXIM$	19.05833	8	0.0146*
$HIZ \nrightarrow I$	16.29545	8	0.0383*
$HIZ \nrightarrow RER$	27.63408	8	0.0005*

Note: * indicates that the hypothesis regarding the inexistence of causality which is the main hypothesis at 5 persentage significance level is rejected.

According to the results of causality analysis given in Table 11, there is bidirectional causality between the service industry and interest rate, and between the service industry and real exchange rate at 5 persentage significance level. Also, it is identified that there is a unidirectional causality relationship from inflation variable to the service industry and from the service industry to the export-import coverage ratio. With regards

to these results, the macroeconomic variables making impact on the service industry are inflation rate, interest rate and real exchange rate. On the other hand, service industry makes impact on the export-import coverage ratio, interest rate and real exchange rate.

The impulse-response functions established for the service industry in line with the determined causality relationships are provided in Graphic 6:

Graphic 6: Impulse-Response Functions of the Service Industry

Response of RER to HIZ   Response of I to HIZ
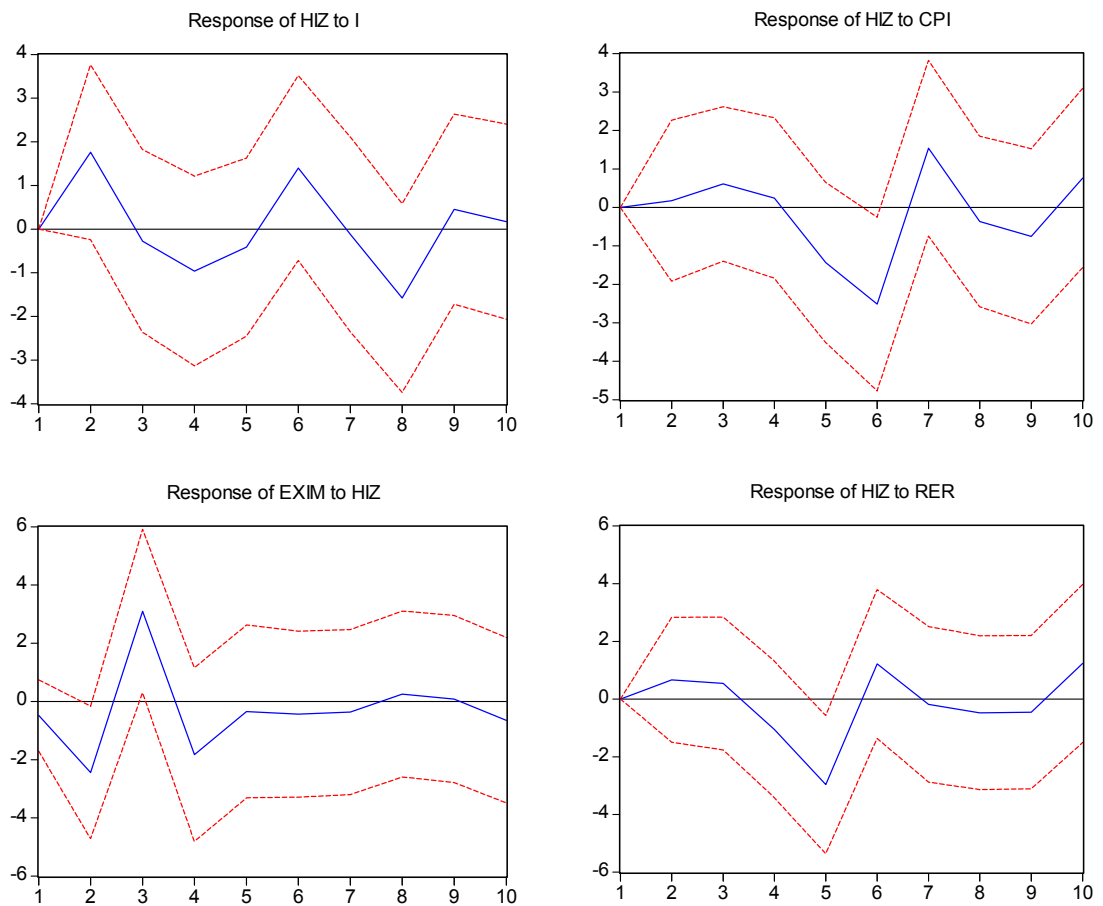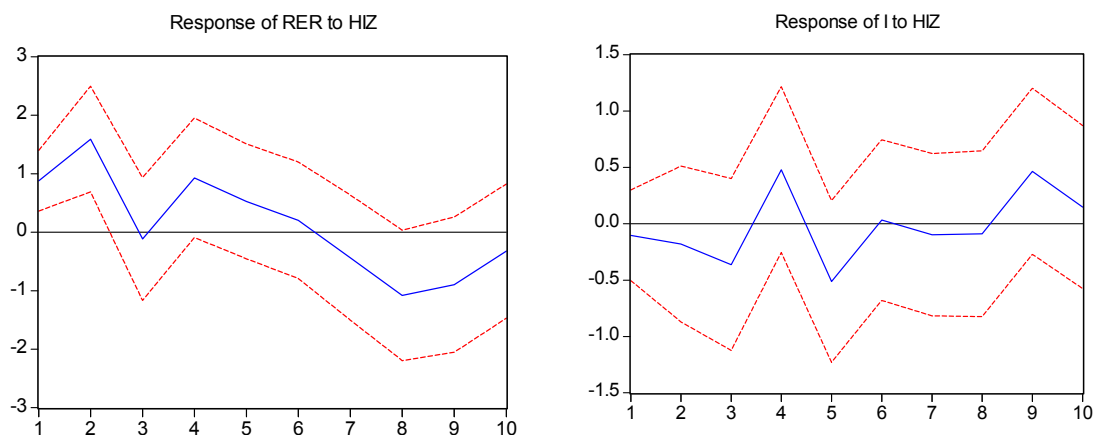
According to the results obtained from impulse-response functions provided in Graphic 6, any shock that occurs on interest rate increases the returns of service industry until the first two period and decreases after the second period. Any shock that occurs on the inflation rate makes positive impact on the service industry until the third period and negative impact after the third period. Any shock that emerges in the real exchange rate increases the returns of service industry until the second period, does make impact within second and third period, and decreases the returns after third period. Any shock on the service industry decreases the export-import coverage ratio until the second period and increases after the second period. Also, it increases real exchange rate until the second period and decreases after the second period. Furthermore, it decreases interest rate until the third period and decreases it after the third period.

5.8 CAUSALITY ANALYSIS AND IMPULSE-RESPONSE ANALYSIS OF METAL INDUSTRY AND MACROECONOMIC VARIABLES

In this section where the impact of macroeconomic variables on metal industry is examined, the estimation of unrestricted VAR model is carried out at first and appropriate delay length is determined. The order of VAR model utilized in the analysis is determined as 8 by using AIC information criterion.

After forecasting the VAR(8) model, since the impact of macroeconomic variables on the metal industry is taken into consideration, the results related to causality analyses

are only analyzed for variables affecting, or being affected by, the metal industry. The results of causality analyses are given in Table 12.

Table 12: The Results of Causality Test on Metal Industry

Main Hypothesis	χ^2 Test Statistic	Degree of Freedom	Probability Value
MESY ↛ EXIM	21.52205	8	0.0059*
MESY ↛ RER	16.55471	8	0.0351*

Note: * indicates that the hypothesis regarding the inexistence of causality which is the main hypothesis at 5 persentage significance level is rejected.

According to the results of causality test given in Table 12, there is no macroeconomic variable that makes impact on the metal industry. It is identified at 5 persentage significance level that there is unidirectional causality relationship from the metal industry to the export-import coverage ratio and real exchange rate variables. Thus, the metal industry is influential on the export-import coverage ratio and real exchange rate. After the direction of causalities between the variables is determined in line with the results of causality analysis for metal industry, dynamic relationships related to the variables are examined by means of impulse-response functions. The impulse-response functions related to metal industry are given in Graphic 7.

Graphic 7: Impulse-Response Functions of the Metal Industry
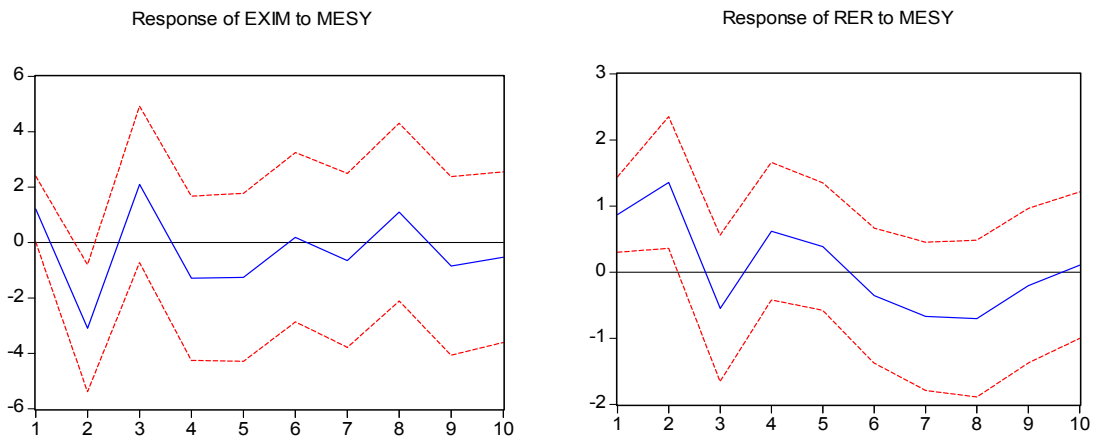
According to the results obtained from impulse-response functions provided in Graphic 7, any shock that emerges on the metal industry decreases the export-import coverage ratio until the second period and increases it after the second period. It also increases the real exchange rate index until the second period and decreases after the second period.

5.9 CAUSALITY ANALYSIS AND IMPULSE-RESPONSE ANALYSIS OF ISE-100 AND MACROECONOMIC VARIABLES

In this section where the impact of macroeconomic variables on ISE-100 is examined, the estimation of unrestricted VAR model is carried out at first and appropriate delay length is determined. The order of VAR model utilized in the analysis is determined as 8 by using AIC information criterion.

After forecasting the VAR(8) model, causality test is applied in order to examine the impact of macroeconomic variables on ISE-100. However, it is found out that none of the variables, which are Money Supply (M2), Inflation (CPI), Real Effective Exchange Rate Index, Export-Import Coverage Ratio, Industrial Production Index, Interest Rate, Gold Price and Crude Oil Price, is influential on ISE-100. Also, another finding obtained from the analysis is that the ISE-100 variable is not influential on the macroeconomic variables.

6. CONCLUSION

This thesis examined the relationship between macroeconomic variables and İstanbul Stock Market Indicies which are Banking Industry index, Electricity Industry index, Food Industry index, Holding Industry index, Chemistry Industry index, Service Industry index, Metal Industry index and ISE 100 Composite Index monthly returns Vector Autoregressive models are adopted and relationship between the variables is examined by means of Impulse-Response functions. Also, causality relationships between the variables are examined.

In the study, "Return Indexes" of the sectors in question are utilized as the return variable. In terms of macroeconomic variables, Money Supply (M2), Consumer Price Index (CPI), Real Effective Exchange Rate Index, Import-Export Coverage Ratio, Industrial Production Index, Interest Rate, Gold Price and Crude Oil Price are adopted

My conclusions were that;

1. There are three macroeconomic variables affecting the banking industry at 5 persentage significance level. Thus, Real Exchange Rate, Import-Export Coverage Ratio and Interest Rate variables are influential on the banking industry. Only macroeconomic variable that is affected the banking industry is the variable of Real Exchange Rate which means that mutual relationship exist between Real Exchange Rate and Banking Industry. After that impulse-response analyses showed that there is statistically significance between the said variables.

2. There is a unidirectional causality relationship from money supply, crude oil price, industrial production and interest rate to the electricity industry at 5 persentage significance level and there is a bi-directional causality relationship between gold prices and the electricity industry. The results obtained based on the impulse-response functions given in Graphic 2 above are as follows: any shock that occurs in the electricity industry increases the gold price until the second period, yet decreases after the second period. Any shock that occurs in

the gold price does not affect the electricity industry until the third period and make a negative impact after the third period. Any shock that occurs in the money supply and crude oil price reveals a negative impact on electricity industry until the third period and makes a positive impact on the industry after third period. Any shock that occurs in industrial production and interest rate makes a positive impact on the industry until the second period and reveals a negative impact after the third period.

3. There is a unidirectional causality identified from the food industry to export-import coverage ratio at 5 persentage significance level. In the causality analysis performed for the food industry, it is found that there is no macroeconomic variable with impact on the food industry. The food industry is influential on the export-import coverage ratio. Any shock that occurs in the food industry decreases the export-import coverage ratio until the second period, yet increases after the second period.

4. There is a unidirectional causality identified from real exchange rate variable to holding industry and from holding industry to export-import coverage ratio at 5 persentage significance level. Thus, it is realized that the only macroeconomic variable making impact on the holding industry is the real exchange rate. any shock that occurs in real exchange rate makes positive impact on the holding industry until the second period, yet reveals a negative impact after the second period. On the other hand, any shock that occurs in holding industry makes a negative impact on export-import coverage ratio until the second period and gives a positive impact after the second period.

5. There is a unidirectional causality relationship identified from interest rate to chemistry industry and from chemistry industry to real exchange rate at 5 persentage significance level. Thus, it is realized that the only macroeconomic variable making impact on the chemistry industry is the interest rate. any shock that occurs on interest rate does not lead any change on the chemistry industry for the first two periods and affects the industry in a negative way after the

second period. Any shock that occurs on the chemistry industry creates a positive reaction on real exchange rate until the second period and negative reaction after the second period.

6. There is bidirectional causality between the service industry and interest rate, and between the service industry and real exchange rate at 5 persentage significance level. Also, it is identified that there is a unidirectional causality relationship from inflation variable to the service industry and from the service industry to the export-import coverage ratio. With regards to these results, the macroeconomic variables making impact on the service industry are inflation rate, interest rate and real exchange rate. On the other hand, service industry makes impact on the export-import coverage ratio, interest rate and real exchange rate. any shock that occurs on interest rate increases the returns of service industry until the first two period and decreases after the second period. Any shock that occurs on the inflation rate makes positive impact on the service industry until the third period and negative impact after the third period. Any shock that emerges in the real exchange rate increases the returns of service industry until the second period, does make impact within second and third period, and decreases the returns after third period. Any shock on the service industry decreases the export-import coverage ratio until the second period and increases after the second period. Also, it increases real exchange rate until the second period and decreases after the second period. Furthermore, it decreases interest rate until the third period and decreases it after the third period.

7. It is identified at 5 persentage significance level that there is unidirectional causality relationship from the metal industry to the export-import coverage ratio and real exchange rate variables. Thus, the metal industry is influential on the export-import coverage ratio and real exchange rate. Any shock that emerges on the metal industry decreases the export-import coverage ratio until the second period and increases it after the second period. It also increases the real exchange rate index until the second period and decreases after the second period.

8. Lastly it is found out that none of the variables, which are Money Supply (M2), Inflation (CPI), Real Effective Exchange Rate Index, Export-Import Coverage Ratio, Industrial Production Index, Interest Rate, Gold Price and Crude Oil Price, is influential on ISE-100. Also, another finding obtained from the analysis is that the ISE-100 variable is not influential on the macroeconomic variables.

As a rusult of this, it is said that the relationship between macroeconomic variables and stock market indicies exist in ISE. Hovewer, every sector has its own dynamics and it is affected different variables. There is no exact variables which is affected all indicies. But the effect is exist. Microeconomic analyses should be chosed rather than macroeconomic analyses because there are many transactions in the markets have manipulative actions. So they don't reflect the correct price of the stocks. İstanbul Stock Exchange is developing day by day. Meaningful resxults showed that why I choosed ISE to test this relation in developing countries' markets.

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