THE REPUBLIC OF TURKEY
BAHCESEHIR UNIVERSITY

STOCK RETURN REACTIONS TO THE MARKET RISK, FIRM SIZE, BOOK-TO- EQUITY, MOMENTUM, FINANCIAL DISTRESS : EVIDENCE FROM ISTANBUL STOCK EXCHANGE (ISE)

Master's Thesis

ZEYNEP KÖSE

İSTANBUL, 2011

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THE GRADUATE SCHOOL OF SOCIAL SCIENCES
CAPITAL MARKET AND FINANCE

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Thesis Supervisor: ASSOC. PROF. MEHMET HASAN EKEN

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ÖZET

HİSSE SENEDİ GETİRİNİN PAZAR RİSKİ, FİRMA BÜYÜKLÜĞÜ, DEFTER DEĞERİ/ PİYASA DEĞERİ, MOMENTUM VE FİNANSAL ORANLARA KARŞI REAKSİYONLARI : İSTANBUL MENKUL KIYMET PİYASASI ÖRNEĞİ

Köse, Zeynep

Sermaye Piyasaları ve Finans

Tez Danışmanı : Doç. Dr. Mehmet Hasan Eken

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Riskin ölçülmesi kavramı finansın en temel konularından biridir, fakat varlık fiyatlama konusunda hangi risk kavramlarının modele dahil edilmesi gerekliliği konusunda tartışmalar vardır. Bu çerçevede tez kapsamında 2000 ile 2010 tarihleri arasında literatürde en çok kullanılan risk faktörleri ile İstanbul Menkul Kıymetler Borsasındaki hisse senedi getirileri arasındaki ilişki analiz edilecektir. Seçilen risk faktörleri ise Pazar riski, firma büyüklüğü, defter değerinin piyasa değerine oranı, kısa süreli getiri oranı yani momentum ve finansal oranlarının kullanılmasıyla oluşturulan Q-score''dır. Sonuçlar gösteriyor ki; firma büyüklüğü etkisi hisse senedi getirileri arasında (imalat sektörü hariç) ters yönlü bir ilişki vardır. Finansal oranlarının yer aldığı Q-score değeri finans sektöründe pozitif etki yaratırken, momentum ise negatif yönlü etkiye sebep olmuştur. Defter değeri/ piyasa değeri oranı ise bazı zamanlar negatif bazı zamanlar ise pozitif yönlüdür. Kısaca, hisse senedi getirilerini açıklama konusunda kullanılan faktörler her biri anlamlı ilişkilere sebep olmaktadır.

Anahtar Kelimeler : Hisse senedi getirileri, Firma büyüklüğü, Pazar riski,Finansal oranlar, Q-score, Momentum

ABSTRACT

STOCK RETURN REACTIONS TO THE MARKET RISK, FIRM SIZE, BOOK-TO-EQUITY, MOMENTUM, FINANCIAL DISTRESS : EVIDENCE FROM ISTANBUL STOCK EXCHANGE (ISE)

Köse, Zeynep

Capital Markets and Finance

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Measuring risk in the stock market context is one of the most important topic of finance, but there is a controversy over what risk factors should be used to price assets or to determine the cost of capital. This thesis emprically investigates the ability of several commonly proposed risk factors to predict stock returns in Istanbul Stock Exchange (ISE100) between 2000 and 2010. We analyze the sensitivity of asset returns in ISE100, Manufacturing Sector, Finance Sector to the variation in market returns (beta), size, book to equity, short-term historical stock returns (momentum) and financial distress by using Q-score. The results show that the effect of size is negatively on the returns of all stocks, BV/MV factors is sometimes positive and negative on the returns of stocks, the Q-score factor causes a positive effect for the stocks Financial Sector and the momentum factor affects positively the returns of stocks in ISE100 and Manufacturing Sector. Besides, the factors are size, book-to-equity, momentum, market and Q-score in order of importance in explaining the variation in common stock returns. While the returns of the portfolio ocuured large firms are higher the returns of portfolios occured small firms, the portfolios in ISE100 and Financial Sector remain under the influence of size anomaly. We conclude that none of these factors is clearly significant for explaining stock returns on the ISE, manufacturing sector and finance sector.

Keywords : Stock Returns, Momentum, Size, CAPM, Beta, Book-to-Equity, Q-Score, Financial Distress

TABLE OF CONTENTS

THE LIST OF TABLES

THE LIST OF FIGURES

ABBREVATIONS

Adana Çimento (A)	:	ADANA, adana
Adana Çimento (C)	:	ADNAC, adnac
Advansa Sasa	:	SASA, sasa
Arbitrage Pricing Theory	:	AFT
Afyon Çimento	:	AFYON, afyon
Akbank	:	AKBNK, akbnk
Akçansa	:	AKCNS, akcns
Aksigorta	:	AKGRT, akgrt
Aksa	:	AKSA, aksa
Alarko Holding	:	ALARK, alar
Alarko GMYO	:	ALGYO, algyo
Alternatifbank	:	ALNTF, alntf
American Stock Exchange	:	AMEX
Anadolu Sigorta	:	ANSGR, ansgr
Arsan Tekstil	:	ARSAN, arsan
Anadolu Isuzu	:	ASUZU, asuzu
Akın Tekstil	:	ATEKS, ateks
Aygaz	:	AYGAZ, aygaz
Bagfaş	:	BAGFS, bagfs
Banvit	:	BANVT, banvt
Bosch Fren Sistemleri	:	BFREN , bfren
Bolu Çimento	:	BOLUC, boluc
Bossa	:	BOSSA, bossa
Brisa	:	BRISA, brisa
Borusan Mannesmann	:	BRSAN, brsan
Borusan Yatırım Pazarlama	:	BRYAT, bryat
BSH Ev Aletleri	:	BSHEV, bshev
Batı Çimento	:	BTCIM, btcim
Capital Asset Pricing Model	:	CAPM
Cemtaş	:	CEMTS, cemts

Çimsa	:	CIMSA, cimsa
Consumer Price Index	:	CPI
Ceytaş Ceyhan Tekstil Sanayi A.Ş.	:	CYTAS, cytas
Current liabilities / current assets	:	CLCA
Deva Holding	:	DEVA, deva
Doğan Gazetecilik	:	DGZTE, dgzte
Doğan Holding	:	DOHOL, dohol
Doğan Yayın Holding	:	DYHOL, dyhol
Dyo Boya	:	DYOBY, dyoby
Eczacıbaşı İlaç	:	ECILC, ecilc
Eczacıbaşı Yapı	:	ECYAP, ecyap
Eczacıbaşı Yatırım	:	ECZYT, eczyt
Ege Gübre	:	EGGUB, eggub
Ege Seramik	:	EGSER, egser
EGS GMYO	:	EGYO, egyo
Ereğli Demir Çelik	:	EREGL, eregl
Emerging Stock Markets	:	ESM
Finans Finansal Kiralama	:	FFKRL, ffkrl
Finansbank	:	FINBN, finbn
Ford Otosan	:	FROTO, froto
Funds provided by operations / total liabilities	:	FUTL
Garanti Bankası	:	GARAN, garan
Generalized Autoregressive Conditional Heteroskedasticity	:	GARCH
Gulf Cooperation Council	:	GCC
Gediz İplik	:	GEDIZ, gediz
Global Yatırım Holding	:	GLYHO, glyho
GDS Holding	:	GDSHO, gsdho
Goldaş Kuyumculuk	:	GOLDS, golds
Göltaş Çimento	:	GOLTS, golts
Good Year	:	GOODY, goody
Gübre Fabrikası	:	GUBRF, gubrf
Güneş Sigorta	:	GUSGR, gusgr
Hektaş	:	HEKTS, hekts
The difference between the returns on portfolios of high and		

low book value to market value stocks (High Minus Low)	:	HLM
Hürriyet Gazetesi	:	HURGZ, hurgz
İhlas Ev Aletleri	:	IHEVA, iheva
İhlas Holding	:	IHLAS, ihlas
İş Bankası (C)	:	ISCTR, isctr
İş GMYO	:	ISGYO, isgyo
İzmir Demir Çelik	:	IZMDC, izmdc
İzocam	:	IZOCM, izocm
Kartonsan	:	KARTN, kartn
Koç Holding	:	KCHOL, kchol
Kent Gıda	:	KENT, kent
Kerevitaş Gıda	:	KERVT, kervt
Klimasan Klima	:	KLMSN, klmsn
Konya Çimento	:	KONYA, Konya
Kordsa Global	:	KORDS, kords
Kardemir (D)	:	KRDMD, krdmd
Kristal Kola	:	KRSTL, krstl
Kingdom of Saudi Arabia	:	KSA
Makine Takım	:	MAKTK, maktk
Mardin Çimento	:	MRDIN, mrdin
Market value / book value ratio	:	PD/DD
Marshall	:	MRSHL, mrshl
Merko Gıda	:	MERKO, merko
Metro Tic. ve Mali Yatırım	:	METRO, metro
Mutlu Akü	:	MUTLU, mutlu
National Association Of Securities Dealers	:	NASD
National Council for Real Estate Investment Fiduciaries	:	NCREIF
Net Holding	:	NTHOL, nthol
Net income / total assets	:	NITA
Nurol GMYO	:	NUGYO, nugyo
Organization of the Petroleum Exporting Countries	:	OPEC
Otokar	:	OTKAR, otkar
One, if net income was negative for the last two years, zero otherwise	:	INTWO

One, if total liabilities exceeds total assets, zero otherwise	:	OENEG
Price /Earnings	:	P/E
Pera GMYO	:	PEGYO, pegyo
Penguen Gıda	:	PENGD, pengd
Petkim	:	PETKM, petkm
Pınar Süt	:	PNSUT, pnsut
Petrol Ofisi	:	PTOFS, ptofs
Sabancı Holding	:	SAHOL, sahol
Sarkuysan	:	SARKY, sarky
Security Market Line	:	SML
Selçuk Gıda	:	SELGD, selgd
Şişe Cam	:	SISE, sise
Şekerbank	:	SKBNK, skbnk
Standard& Poor's 500	:	S&P 500
The difference between the returns on portfolios of small and big stocks (Small Minus Big)	:	SMB
Tat Konserve	:	TATKS, tatks
Tekstil Bank	:	TEKST, tekst
The difference between the returns on portfolios of high and low momentum to market value stocks	:	$MOMENTUM_t$
The small market value and low book-to-market stock portfolio	:	SL
The big market value and low book-to-market stock portfolio	:	BL
The small market value and middle book-to-market stock portfolio	:	SM
The big market value and middle book-to-market stock portfolio	:	BM
The small market value and high book-to-market stock portfolio	:	SH
The big market value and high book-to-market stock portfolio	:	BH
The small market value and high book-to-market stock portfolio	:	SH
The small market value and low book-to-market stock portfolio	:	SL
The small market value and winner stock portfolio	:	S/H
The small market value and loser stock portfolio	:	S/L
The big market value and winner stock portfolio	:	B/H
The big market value and loser stock portfolio	:	B/L
The net income for the “t” period	:	NI_t

The change in net income	:	CHIN
Working capital / total assets	:	WCTA
Tire Kutsan	:	TIRE, tire
Türk Kalkınma Bankası	:	TKBNK, tkbnk
Tofaş Oto Fabrikası	:	TOASO, toaso
Total liabilities / total assets	:	TLTA
Turcaş Petrol	:	TRCAS, trcas
Trakya Cam	:	TRKCM, trkcm
T.S.K.B.	:	TSKB, tskb
T. Demir Döküm	:	TUDDF, tuddf
Tüpraş	:	TUPRS, tuprs
United Kingdom	:	UK
Up minus Down	:	UMD
Value at Risk	:	VAR
Vector-Error-Correction Model	:	VECM
Vestl	:	VESTL, vestl

:

SYMBOLS

Beta coefficient of "i" asset	:	β_i
Cost of equity	:	k_e
Covariance between asset $_i$ and market portfolio	:	δ_{im}
Dividends per share in "t" year	:	D_t
Error term	:	$e_{it,}$ E_t
Expected dividends per share in "t" year	:	DPS_t
Fix return as the interest of bond	:	i_t
Growth rate in dividends forever	:	g
Intercept	:	α
Price (terminal value) at the end of "n" year	:	P_n
Purchasing power risk factor	:	λ_2
Steady state growth rate forever after "n" year	:	g_n
The amount of stocks	:	N_t
The profit of company in "t"year	:	E_t
The amount of investment	:	I_t
The estimated return	:	E(r)
The realization possibility of returns	:	P_t
The estimated utility	:	E(u)
The risk, standart deviation	:	σ
The utility of return	:	u_i
The rate of return	:	R
The real purchasing power	:	X
The market nominal interest rate	:	r
The market value at the end of period$_i$	:	F_i
The rate of expected return of portfolio	:	$E(r_p)$
The return of risk free asset	:	R_f
The rate of expected return of market portfolio	:	$E(r_m)$
The standart deviation of market portfolio	:	σ_m
The standart deviation of portfolio	:	σ_p
The expected return of portfolio	:	$E(R_p)$

The expected return of asset $_i$	:	$E(R_i)$
The ratio of investment in " i" asset in the presence of the total portfolio	:	X_i
The expected return of market portfolio	:	$E(R_m)$
The standart deviation of portfolio	:	σ_p
The variance of asset $_i$	:	σ_i^2
The variance of market portfolio	:	σ_m^2
The expected return of portfolio with zero beta	:	R_z
The rate of return "i" asset at the"t" time	:	R_{it}
Total growth rate per capita at "t" time	:	C_t
The sensitivity of "i" asset to market portfolio	:	b_{im}
The rate of portfolio return to hedge "j" element of risk	:	$E(r/_j)$
The sensitivity of "i" asset to portfolio to hedge "j" element of risk	:	$bi_{/j}$
The value of "j" risk factor at the "t" time	:	f_j
The amount of unsystematic risk of "i" asset, error term	:	$\varepsilon_i(t)$
The required rate of return on the "i" asset	:	k_i
The slope of arbitrage pricing equation	:	ג
The required rate of return for theoretical treasury bills	:	k_{DT}
The interest rate (market price of risk for the first risk factor)	:	$ג_1$
The sensitivity of treasure bond to interest rate risk factor	:	b_{dt1}
The sensitivity of the treasure bond to purchasing power risk factor	:	b_{dt2}
The market excess return (r_m-r_f)	:	MTB_t
The regression coefficients for MTB_t, SMB_t and HML_t	:	m, s, h

1.INTRODUCTION

The basic function of capital markets where stock certificates, bonds and other marketable securities traded constituted brokerage and financial corporations such as banks, investment trusts and investment funds provided the flow of funds between investors and savers is an effective distribution of limited amount of funds and transformed into investment in the economy. Other important functions of capital markets are listed to spread the ownership base, liquidity provision, to increase control over businesses, to provide transparency, creating an economic indicator and to create the price.

The pricing mechanism allows to define the sources caused changes in rates of returns on asset or the identification of risk factors that can impact on prices and to test the relationship between risk and expected return in modern financial theory.

There are two basic models in order to explain the changes into the returns of asset in finance theory. These are asset pricing models based on relationship between the degree of risk and returns on stocks by using the basic informations of Portfolio Theory developed by Markowtiz in 1952. Today, the first widely used in pricing theory is Capital Asset Pricing Model developed Sharp (1964), Linther (1965) and Mossin (1966). Arbitrage Pricing Model was developed by Stephen A. Ross due to the difficulties in the test of CAPM and the critics about CAPM.

Today, to decide whether to choose among the investment options in developing capital markets has become very difficult. Investors have to do a detailed analysis by considering economic, social and political factors in the process of investment decisions.

The financial investment decisions are affected by many systematic and non-systematic factors. Investors are forced to build a concrete relationship between returns of financial asset and risk.

If stock prices is adopted as the dependent variable, prices or returns are under the influence of both the internal and external factors. The investors ignore the internal factors during the determination of stock prices thus those who want to invest in stocks make errors and leads to

failure of the investment. Because there is mutual influence of endogenous and exogenous factors in changes of stock prices and to separate among these factors is a difficult task. In this study, systematic and unsystematic risk factors affecting the financial investment is introduced, an element of risk in financial markets was emphasized.

The estimation of beta coefficient is backbone of the modern portfolio theory. The studies seen in the finance literature point that it can not be talked about unique stable beta coefficient for an indivual financial asset. In other words, a variety of beta coefficient depends on the calculation methods of returns, the chosen index as a representative of the market, the estimation period and the definiton internal factors affected the returns of financial asset.

Firstly, approaches used in the valuation of the stock, the asset pricing models, the factors and risks that affect stock prices and some important definitions are included in the scope of the thesis. In this section, the scope of the subject expanded by adding the opinions and research in the literature under each heading. Then the detailed information about the articles and models taken as reference in the subject of thesis explains.

After determining the scope of of data range and sectors used in the emprical anaylsis , the described models in the methodology part were applied for individual stocks. First, explanation power of market portfolio factor was determined for each stock and the beta-coefficicent was found. The results of regression were interpreted in the same way in the evaluation used two-factor (market and size factor). Then Fama and French model was applied and BV / MV factor has been added in the model and again the results of regression was interpreted. The results of regression created by the adding the momentum factor to the Fama and French Model were interpreted for four factor model. Finally, the results of regresssion created by using the q score results obtained for each stock were interpreted. Each model was applied for ISE100, Manufacturing Sector and the Financial Sector.

2.LITEATURE REVIEW

2.1.THE MANY DEFINITIONS ABOUT STOCK

Stock which are documents arranged in accordance with the law by corporate, capital dividend into shares issues stocks as negotiable instruments and commandite partnership, capital dividend into shares are deeds which represent a certain ratio of capital and provide the partnership right to the owners (Tuncer 1985, pp.204).

There is not a description of the stock directly on the Turkish Commercial Code, but corporative defines as partnership with a title, the specific capital divided into shares and the responsibility of the partners in corporative is limited to commit their capital shares on 269. title of the Turkish Commercial Code. The definitions show the properties of stock according to the guide of Capital Market and Stock Market Basics (1992, pp.35).

The main goal of those who want to invest in stocks is to maximum the rate of estimated profits of stock and investors want to minimize the risk of all stocks. Thus, the investor selects the stocks with minimum risk and the maximum estimated profit. There is no guarantee a certain return or a priority in liquidation for the stocks. If partners decide to distribute a certain portion of profits, the owners of the stock dividend is distributed.

The preferred stocks may be registered or bearer form. The common (normal) and preferred stocks are classified in terms of the rights of the their owners. The common stocks provides the equal voting rights for each shares in the general meeting, the equal share rights of the dividend distribution and the rights to receive equal share in liquidation phase (Özcan 1986, pp.119).

The preferred stocks provides more privileges on the management, dividend and the liquidation than common stocks.

There are various definition of the stock value which which are nominal value, book value, liquidation value and market value. .

a) The nominal value which is written the value of the stock is value in the period of the first extracted by the management of the partnership to be able to determine the amount of total capital and make the accounting records related to them.

b) Book value is calculated total equity of a company by dividing the total number of stocks. This value is the actual value of the stock, but it is often different from the nominal value.

c) Liquidation value is defined as the value which can find by one by one sale of assets in the company.

d) The market value defines the price of stocks traded in the capital market. The market value which is the price determined according to supply and demand in market conditions may not reflect a price printed on the stock. The market value of stock can higher than the actual value of the stock or can lower than the actual value of the stock due to market conditions.

2.2. THE STOCK VALUATION METHODS

The savers wanted to invest in securities make a decision about some issues which are in which they will invest in stocks, when you buy and sell securities by using various valuation methods. There are three approaches about the stock valuation in the literature and practice. These:

a. Fundemantal analysis
b. Technical approach
c. Efficient market approach

2.2.1. Fundemantal Analysis

The analysis is related to the assess all kinds of information about the company belonged this stock to estimate the risk and estimated return of a stock, developed by Graham –Dodd (Graham and Dodd 1962, pp.28). In other words, the analysis is the process of calculating the actual value of the stock. The actual value is a value connected to the quantitative and qualitative factors such as the firm's assets, income and expenditure status, growth potential, management team.

The analysis used in the calculation of the actual value has three phases. First, expectations about the state of the country's economy and their influence on the profitability of these firms are examined. Second, the state of industry included in company and the firm's position in this industry are discussed. Finally, the qualitative and quantitative factors related to the company are examined. At this stage, the management staff capabilities, the company's growth potential, developments in the financial condition is evaluated. As a result of these studies, the amount of company profits and distributed dividends in future periods are estimated. The actual value of the stock shall be determined by applying the various valuation models (Unal 1988,pp.100).

The actual value of the stock compared with at current market price and it is detected that the stock is overvalued and low. The under-valued of the stock purchase, the over-valued of the stock must be sold.

2.2.2. Technical Analysis

A method of evaluating securities by relying on the assumption that market data, such as charts of price, volume, and open interest, can help predict future (usually short-term) market trends. Unlike fundamental analysis, the intrinsic value of the security is not considered. Technical analysts believe that they can accurately predict the future price of astock by looking at its historical prices and other trading variables.

Technical analysis assumes that market psychology influences trading in a way that enables predicting when a stock will rise or fall. For that reason, many technical analysts are also market timers, who believe that technical analysis can be applied just as easily to the market as a whole as to an individual stock.

The assumptions in technical analysis (Edwards and Magge 1958, s.86):

a. The value of stock is only determined according to supply and demand of market.
b. There are several rational and the irrational factors affecting the supply and demand.
c. The stock prices will continue in the form of a specific trend except in the small fluctuations in the market.
d. The reasons of the shifts in the trend are changes in supply and demand.
e. The shifts in supply and demand sooner or later cause a change in trend followed the market prices.

In the opinion of the technical analysts, fundamental analysis is unnecessary and the technical analysis is more important than fundamental analysis. The reasons:

a. Fundamental analysis is very tedious, time-consuming and requiring to be familiar with economic issues. Technical analysis is easier in application phase and can be performed with minimal training.
b. Fundamental analysis is based on defining undervalued stocks and to invest in them. However, these investments will not efficient if other investors do not realize that the securities are undervalued and the price does not increase by increasing their demand.
c. Technical analysts do not have to rely on financial statements prepared by accountants because these statements may be contain misleading information.

2.2.3. Efficient Market Hypothesis

Efficient market hypothesis (EMH) is an idea partly developed in the 1960s by Eugene Fama. It states that it is impossible to beat the market because prices already incorporate and reflect all relevant information. This is also a highly controversial and often disputed theory. Supporters of this model believe it is pointless to search for undervalued stocks or try to predict trends in the market through fundamental analysis or technical analysis.

An investment theory that states it is impossible to "beat the market" because stock market efficiency causes existing share prices to always incorporate and reflect all relevant information. According to the EMH, stocks always trade at their fair value on stock exchanges, making it impossible for investors to either purchase undervalued stocks or sell stocks for inflated prices. As such, it should be impossible to outperform the overall market through expert stock selection or market timing, and that the only way an investor can possibly obtain higher returns is by purchasing riskier investments.

The efficient market hypothesis rests on the following predicates:

1. That information is widely available to all investors,
2. That investors use this information to analyze the economy, the markets, and individual securities to make trading decisions,
3. That most events that have a major impact on stock prices, such as labor strikes, major lawsuits, and accidents, are random, generally unpredictable events and when they do happen, they are quickly broadcast to investors,

4. That investors will react quickly to any new information.

There are three forms or levels of the efficient market hypothesis that differ in what information is considered.

In the weak form, only past market trading information, such as stock prices, trading volume, and short interest are considered. Hence, even the weak form of the EMH implies that technical analysis can't work, since technical analysis relies exclusively on past trading data to forecast future price movements.

The semi-strong form extends the information to public information other than market data, such as news, accounting reports, company management, patents, products of the company, and analysts' recommendations.

The strong form extends the information further to include not only public information, but also private information, typically held by corporate insiders, such as officers and executives of the corporation. Obviously, corporate insiders can make abnormal profits by trading their company's stock before a major corporate change is communicated to the public, which is why such insider trading is banned by the Securities and Exchange Commission (SEC). Corporate insiders can trade their stock, but only if the trade is not based on a major development that only a few people know, such as a merger, a new product line, or significant key appointments within the company.

The random walk hypothesis is a financial theory stating that stock market prices evolve according to a random walk and thus the prices of the stock market can not be predicted. It is consistent with the efficient-market hypothesis.

The random walk hypothesis: An investment theory which claims that market prices follow a random path up and down, without any influence by past price movements, making it impossible to predict with any accuracy which direction the market will move at any point. In other words, the theory claims that path a stock's price follows is a random walk that can not be determined from historical price information, especially in the short term. Investors who believe in the random walk theory feel that it is impossible to outperform the market without taking on additional risk, and believe that neither fundamental analysis nor technical analysis have any validity. However, some proponents of this theory do acknowledge that markets move gradually upward in the long run.

2.3. THE STOCK VALUATION METHODS

In financial markets, stock valuation is the method of calculating theoretical values of companies and their stocks. The main use of these methods is to predict future market prices, or more generally potential market prices, and thus to profit from price movement –stocks that are judged undervalued (with respect to their theoretical value) are bought, while stocks that are judged overvalued are sold, in the expectation that undervalued stocks will, on the whole, rise in value, while overvalued stocks will, on the whole, fall.

Stock valuation can be calculated using a number of different methods. The most common methods used are the discounted cash flow method, and the Gordon model. Whichever method is chosen must be done accurately so that the price of stock can be valued properly.

2.3.1. Dividend Valuation Model

When an investor buys stock, she generally expects to get two types of cashflows -dividends during the period she holds the stock and an expected price at the end of the holding period. Since this expected price is itself determined by future dividends, the value of a stock is the present value of dividends through infinity. Value per share of stock (VSS):

$$\sum_{t=1}^{t=\infty} \frac{E(DPS)_t}{(1+k_e)^t} \qquad (2.1)$$

DPS_t: Expected dividends per share
k_e: Cost of equity

The rationale for the model lies in the present value rule - the value of any asset is the present value of expected future cash flows discounted at a rate appropriate to the riskiness of the cash flows.

There are two basic inputs to the model - expected dividends and the cost on equity.To obtain the expected dividends, we make assumptions about expected future growth rates in earnings and payout ratios. The required rate of return on a stock is determined by its riskiness, measured differently in different models - the market beta in the CAPM, and the factor betas in the arbitrage and multi-factor models. The model is flexible enough to allow for time-

varying discount rates, where the time variation is caused by expected changes in interest rates or risk across time.

2.3.1.1. The Gordon Growth Model

The Gordon growth model can be used to value a firm that is in 'steady state' with dividends growing at a rate that can be sustained forever.

The Gordon growth model relates the value of a stock to its expected dividends in the next time period, the cost of equity and the expected growth rate in dividends.

$$value\ of\ stock = \frac{DPS_1}{k_e - g} \qquad (2.2)$$

DPS_1: Expected Dividends one year from now (next period)
k_e: Required rate of return for equity investors
g: Growth rate in dividends forever
DPS_1: Expected Dividends one year from now (next period)
k_e: Required rate of return for equity investors
g: Growth rate in dividends forever

While the Gordon growth model is a simple and powerful approach to valuing equity, its use is limited to firms that are growing at a stable rate. There are two insights worth keeping in mind when estimating a 'stable' growth rate. First, since the growth rate in the firm's dividends is expected to last forever, the firm's other measures of performance (including earnings) can also be expected to grow at the same rate. The second issue relates to what growth rate is reasonable as a 'stable' growth rate. however, imply that analysts will always agree about what this rate should be even if they agree that a firm is a stable growth firm for three reasons.

- Given the uncertainty associated with estimates of expected inflation and real growth in the economy, there can be differences in the benchmark growth rate used by different

analysts, i.e., analysts with higher expectations of inflation in the long term may project a nominal growth rate in the economy that is higher.

- The growth rate of a company may not be greater than that of the economy but it can be less. Firms can becomes smaller over time relative to the economy.

- There is another instance in which an analyst may be stray from a strict limit imposed on the 'stable growth rate'. If a firm is likely to maintain a few years of 'above-stable' growth rates, an approximate value for the firm can be obtained by adding a premium to the stable growth rate, to reflect the above-average growth in the initial years. Even in this case, the flexibility that the analyst has is limited.

The Gordon growth model is a simple and convenient way of valuing stocks but it is extremely sensitive to the inputs for the growth rate. Used incorrectly, it can yield misleading or even absurd results, since, as the growth rate converges on the discount rate, the value goes to infinity.

2.3.1.2. Two-Stage Dividend Discount Model

The two-stage growth model allows for two stages of growth - an initial phase where the growth rate is not a stable growth rate and a subsequent steady state where the growth rate is stable and is expected to remain so for the long term. While, in most cases, the growth rate during the initial phase is higher than the stable growth rate, the model can be adapted to value companies that are expected to post low or even negative growth rates for a few years and then revert back to stable growth.

The model is based upon two stages of growth, an extraordinary growth phase that lasts “n” years and a stable growth phase that lasts forever afterwards.

Extraordinary growth rate: g % each year for n years
Stable growth: g_n forever

Value of the Stock = PV of Dividends during extraordinary phase + PV of terminal price

$$P_0 = \sum_{t=1}^{t=n} \frac{DPS_t}{(1 + k_e, h_g)^t} + \frac{P_n}{(1 + k_e, h_g)^n} \qquad (2.3)$$

$$P_0 = \frac{DPS_{n+1}}{k_{e,st} - g_n} \quad (2.4)$$

DPS_t: Expected dividends per share in year t

k_e: Cost of Equity (h_g: High Growth period; st: Stable growth period)

P_n: Price (terminal value) at the end of year n

g: Extraordinary growth rate for the first n years

g_n: Steady state growth rate forever after year n

In the case where the extraordinary growth rate (g) and payout ratio are unchanged for the first "n" years, this formula can be simplified.

2.3.2. The Valuation Model Based on Company Earnings

A financial theory stating that the market value of a firm is determined by its earning power and the risk of its underlying assets, and is independent of the way it chooses to finance its investments or distribute dividends. Remember, a firm can choose between three methods of financing: issuing shares, borrowing or spending profits (as opposed to dispersing them to shareholders in dividends). The theorem gets much more complicated, but the basic idea is that, under certain assumptions, it makes no difference whether a firm finances itself with debt or equity.

This model is also called the Miller - Modigliani model. The valuation model based on the relationship between the profitability ratio which the partners of company desire and the variables reflecting risk and profitability and is considered that the stock value is independent to firm's dividend policy.

$$P_t = (d_1 t + P_1(t+1)) \quad (2.5)$$

R_t: the probability of stock

D_t: dividends per share in year t

P_{t+1}: the price of stock in year t

The invesments of firms funded by issuing new stock, but the dividend distribution policy has no effect on the stock. Thus, the total firm value (V_t) are evaluted in this model.

$$V_t = n_↓t\ P_↓t = \ 1/(1 + r_↓t\ )\ \ (E_↓t - I_↓t + V_↓(t+1)\ )\qquad (2.6)$$

N_t: the amount of stocks

E_t: the profit of company in year t

I_t: the amount of investment

$$V_o = \sum_{t=0}^{\infty} \frac{E_t - I_t}{(1+r)^{t+1}} \qquad (2.7)$$

According to Miller – Modigliani model, the most important factor in determining the value of the company is the amount of profit. In a perfect market, dividends distributed over the company value in the current period has no effect on the value. Because the increasing firm value with the dividend distribution drops the early level as a result of the debt of resource required by the distribution or equity financing. After determining the investment policy, the dividend rate does not affect the value of the share, but stock value may increase based on an optimistic estimation created by high dividend.

2.4. DEFINITIONS ABOUT RETURN AND RISK

2.4.1. The Estimated Returns

The aim of the investors is to make maximum profits, but the returns of the stocks depend on possible future events. Investors want to calculate the probability distribution of returns in order to determine the estimated returns of the stock. The fruition possibility of events affected the future returns of securities must be determined (Jones, Tuttle and Heaton 1977, pp.123).

The estimated returns is the sum of the product of the returns of securities in a certain period with the possibility of realization of these returns (Francis 1972, pp.253).

The equation of estimated return:

$$E\ (r) = \sum_{t=1}^{n} P_t\ r_t \qquad (2.8)$$

E(r): the estimated return

P_t: the realization possibility of returns

r_t: returns

The estimated returns provides to measure the average value of the results of the expected return in uncertainty conditions.

2.4.2. Estimated Utility

Investors want to provide maximum utility to maximize the estimated returns of securities in certain risk level or to minimize the risk of securities in certain estimated returns level. Therefore, the aim of the rational investors is to invest securities which are to maximize the utility (Jones 1977, pp.4).

The investors of securities seek to maximize the their utility by changing the current economic parameters. The definition of utility varies from one investor to another investor. However, it is not easy to choose by using the estimated return and risk. Because the concept of the choice criteria between the estimated return and risk is a subjective matter (Kanyılmaz 1992, pp.81). The subjective features are explained by using the utility analysis although the the choices and aims of investors are different. If there is a perfect certainty in the capital and securities markets, investment alternatives will be rarely equal. The investors want to achieve their goals under a variety of risks. This reason does not provide the result that the high estimated income securities may be always preferred against the other securities (Jones 1977, pp.352). For example, “A” stock provides the estimated return at the level of 0.60 and “B” stock provides the estimated return at the level of 0.50. The comparison among the two stock will not be fully accurate. If the return probability distribution of “A” stock distribution is 0.60 and the return probability distribution of “B” stock distribution is 0.20, the estimated return is not only to evaluate in the stage of decision. The need of utility concept is raised at this point (Kanyılmaz 1992, pp.82-83).

2.4.3. The Utility Function and Diminishing Marginal Utility

The utility function is a function shown in investors' preferences. The investor needs to be examined how to function is determined. First, the reactions of investors are examined in the face of some of the alternatives. In addition, two issues which are the positive utility function and the principle of diminishing marginal utility are important to maximize the benefit (Jones 1977, pp.352).

The principle of diminishing marginal utility is described with reduction the utility of each additional unit to the consumer while the amount consumed a particular good by one consumer in a given period increases (Kanalcı 1997, pp.9).

The first order derivative of utility function must take to calculate the marginal utility.

The Utility Function

u= f(w) (u: utility w:wealth)

Marginal utility:

$$MU = \frac{\partial u}{\partial w} \qquad (2.9)$$

It is possible to show the utilities of wealth and wealth as above equation. The utility curve is upward-moving curve because many investors prefer more return to less return. The utility curve of risk-averse investor wil increase a decreasing rate.

It is assumed that the utility function based on wealth will rise if the wealth increases. Therefore, the marginal utility is positive. In other words, the change rate of the utility function is higher than the change rate of the wealth. The marginal utility increases as much as increase in wealth because the utility curve increases a decreasing rate. The diminishing marginal utility indicates by a concave curve (Jones 1977, pp.352).

The estimated utility is a concept frequently used in the decision stages of the security investments. In fact, money can not be measured exactly. The selected securities are listed and the security that is higher utility prefers. The decision making is wrong by looking the rate of return in risky situations. While the investors make a decision about investment topics, the concept of the estimated utility ad the concept of utility assess together because the investors consider a order of preference according to the probability distribution of estimated utility.

The analysis of risky-investment decisions will be established on the principle of the estimated utility which is accepted to maximize the estimated utility of investors decided their investments. The estimated utility of an investment decision is the sum of the multiplied the utilities arising from all possible returns provided by investment and probability of the realization of these utilities (Kanyılmaz 1992, pp. 32-33 and 83-84).

The estimated utility is a function of estimated return and risk:

$E(u) = f [E(r), \sigma]$

E(u) : estimated utility

E (r) : estimated return

σ : risk

If the estimated return doesn't increase with the increase of risk, the estimated utility of investor will increase. If the reduction in risk leads to decrease in the estimated return at the same rate, the estimated utility will increase. The estimated utility :

$$E(u) = \sum_{i=1}^{n} p_i u_i \qquad (2.10)$$

p_i: the possibility of any return

$u_{i:}$ the utility of return

2.4.4. The Estimated Risk

Risk is the reduction possibility of economic utility that may be result in the emergence of the monetary loss or expense of a company (Demirelli 2007 pp. 15).

Investors make their decision by evaluating some expectations and estimates in the security investments. The unrealized possibility of estimates indicates that the investment is risky. If the real return of security is greater than estimated return of security or the deviations of real return in security is higher, the risk of security will be high (Bolak 1991, pp.104).

Another issue is the concept of uncertainty that is often confused with the concept of risk. People or investors know the the probable consequences of future events but the uncertainty will arise if no estimates about the possibility of realization can not be done. In other words, uncertainty is the lack of adequate information about the realization possibility of the returns of investment in securities. If a person does not want to give decisions based on the probability distribution, the risky situation is concerned (Sharpe 1988, pp.27).

For example, there will be the concept of risk if the future value of any investment instrument is estimated based on past values. However, there will be the concept of uncertainty there if the past values of the same investment vehicles do not access or these values can not be included in the analysis. Variable interest rates, variable tax laws, changes in the economic conjuncture is caused uncertainty in investments (Winger 1997, pp.109).

Risk means measurability and objectivity. The uncertainty refers to the subjective and measurable elements. If the estimate of probability is made by subjective, there will be the uncertainty situation or if the estimate of probability is made by objective, there will be the

risky situation (Weston and Brigham 1975, pp.313). This distinction is usually violated in investment analysis.

Financial risk is the measure of possible changes in the portfolios as the result of the changes of surrounding in a time interval for the current and future. In other words, financial risk is the changes in values of assets and liabilities of companies or individuals in the face of the prices' fluctuation (Usta 2005, pp.234).

2.4.4.1. Measuring Risk

If there is a difference among returns, the probability distribution of returns becomes severe, and the stock is risky. In other words, risk is defined as the variability of the distribution of returns. The variability of the distribution is statistically measured by standart deviation or variance (Bozkurt 1988, pp. 91).

$$\sigma^2 = \sum_{i=1}^{n} P_i(r_i - E(r))^2 \qquad (2.11)$$

Another indicator of the degree of riskiness of a security is standard deviation of the returns of the securities.

$$\sigma = \sqrt{\sigma^2} \qquad (2.12)$$

Standard deviation shows that the return of a security would be the extent to which different from the estimated of the security. In other words, standart deviation is an indication of the possibility of confrontation with a different return of the estimated return of a security. If the standart deviation is the smaller, the degree of accuracy about the estimated return of a security is the greater (Uğuz 1990, pp.121). The utility function shows the tendency of investors towards risk. Investors exhibit different behaviors in the face of risk:

a. Risk averters
b. Risk neutral
c. Risk seeker

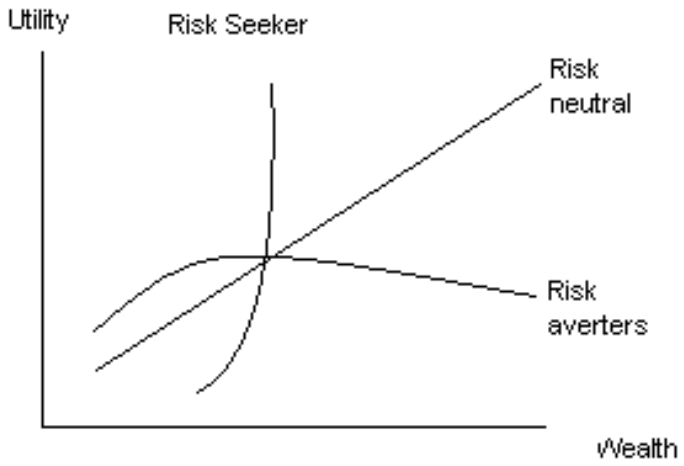

Figure 1.1 : The Utility Curve

The risk–averse investors shows the type of investor acting rationally. The utility curve of these investors follows a decreasing curve. These investors prefer a less risky investments among two investments which are same retuns because they don't love risk. In other words, the investors require a higher return when the risk increases. The utility curve of these investors increases as a decreasing curve. The curves of the quadratic utility is a method used to decide under uncertainty. There is no need for any mathematical function to explain this curve.

Risk-neutral investors are not behaving rationally. Utility curve is a linear function. The increase in wealth provides the same level increase in utiliy curve.

The estimated utility of investment is greater than the utility of decision not to invest in any for risk seeker investors. The utility on the any additional unit increases.

The quadratic utility function:

$$U = aR - bR^2 \qquad (2.13)$$

U: utility
R: the rate of return
a and b: positive constants

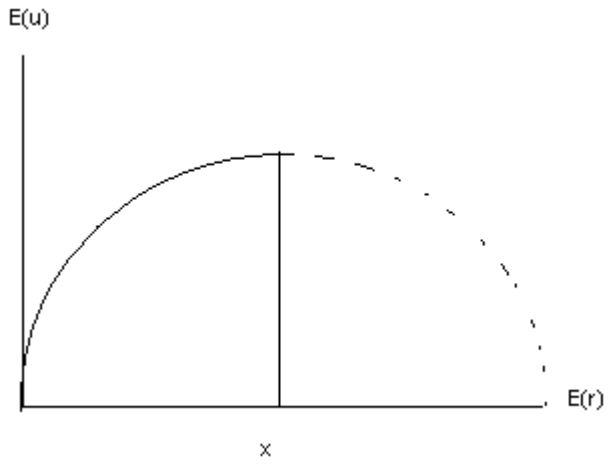

Figure 1.2 : The Quadratic Utility Function

According to the quadratic utility function, the estimated utility is a function of two components of probability. These are mean and variance. Thus, every investor with a quadratic function will maximize the estimated returns by making a minimum risk level for a particular estimated rate of return (Jones 1991, pp.354).

2.4.4.2. Total Risk

The most important factor is the relationship between risk and return of the securities by investing in any securities. Comparison of these two elements and the change of these two factors need to be examined on the stage of the selection of investment instruments. The examination of risk factors should be taken during investment decisions. Because investors have the knowledge about the returns which would be derived. Risks faced by investors are grouped under two headings.

a. Systematic risk
b. Unsystematic risk

2.4.4.2.1. Systematic Risk

If the market is a rising trend in general, the price of most of the securities rises. In other words, the relationship between the return of financial asset and the returns on financial assets of all of its class is systematic (Usta 2005, pp.232).

Sources of systematic risk are the changes of economic, political and social areas. All securities in the market are affected same direction but at different rates by systematic risk. Thus, the diversification of securities does not eliminate systematic risk. Systematic

variability of expected return is different degrees for almost all securities. Systematic risk has been identified 33 percent of total risk in a study which includes the stocks of 63 companies on the NYSE in the U.S. (Francis 1972, pp.317). In 1987, the study conducted on 28 companies which have quoted and traded on the Istanbul Stock Exchnage (ISE) was found to be 65,5 percent of the percentage of systematic risk (Teziş 1987, pp.45).

2.4.4.2.2. Unsystematic Risk

The unsystematic risk is the other part of the total risk and is a company or industry-specific risk. Unsystematic risk is composed of strikes, management mistakes, new inventions, advertising campaigns, changes in consumer preferences. These factors are considered to handle the company or related industry is concerned, independent of other industries and the factors affecting the capital market. Thus, unsystematic risk should be estimated separately for each firm. On the other hand, the unsystematic risk is possible to reduce through diversification because the unsystematic risk of any securities may be different directions.

2.4.4.2.2.1. Interest Rate Risk

Changes occurring in the market interest rate, significantly affect the market prices of securities. The interest rates move up and down in the long-term. This change affect the prices of securities in certain proportions and in the same direction.

Stock and bond prices move inversely with interest rates. Fixed-income securities is especially higher than the variable-income securities (Uğuz 1990, pp.123). Because the value of securities is equal to the current value of the proceeds from the bonds. The discount rate used to calculate present value of the securities is the market interest rate. Therefore, the change of prices of securities or financial assets are contrary to the change in interest rates (Kanyılmaz 1992, spp. 45-46). Therefore, interest rate risk can be defined as fluctuations in the market price of securities due to the changes of interest rate (Aşıkoğlu 1983, ss. 25). The change in interest rates will affect adversely on the bon market pricefor that with a fixed interest income. The return of a bond:

$$r_t = \frac{i_t+(P_{t+1}-P_t)}{P_t} \qquad (2.14)$$

i_t: fix return as the interest of bond

P_{t+1}: the market price of bond in "t+1" period

P_t: bond price at the beginning of "t" period

When the interest rate in the market is higher than intreset rate of the bond, the value of bond will decrease or when the interest rate in the market is smaller than intreset rate of the bond, the value of bond will increase.

If the maturity of bond is longer, the impact of the changes of the interest rate on bond price will decrease. In other words, the effect of the interest rate risk is decreasing. Interest rate risk is not possible to avoid. But those companies that issue bonds can give caution money to the bond holders against rising of the market interest rates. This behaviour may be able to avoid that risk (Kanyılmaz 1992, pp.46-47).

2.4.4.2.2.2. Inflation Risk (Purchasing Power Risk)

Inflation risk is risk arising from the losses of returns of securitites against inflation (Aşıkoğlu 1983, pp.94). The decrease in purchasing power of money due to rising the general price level affectes the efficiency of investments in securities. the returns of all securities affected different degrees by the increase in inflation rates (Bozkurt 1988, pp.84).

To calculate the real purchasing power:

$$X = \frac{1 + r}{1 + \frac{\Delta P}{P}} - 1 \qquad (2.15)$$

X: the real purchasing power

r: the market nominal interest rate

$\frac{\Delta P}{P}$: the changes of price

Generally, the brokers in stock exchange act as a screen against inflation risk for custormers. But this does not represent the accuracy at all times. The stocks are exposed to less purchasing power risk than fixed-income securities because stocks have variable returns. However the returns of stock will lead to an increase in real purchasing power avery time in an inflationary environment (Kanyılmaz 1992, pp. 46-47).

2.4.4.2.2.3. Exchange Rate Risk

Exchange rates between currencies of countries with any currency of the country has a very important function as breaking ties between the outside world and the country's economy. The international economic transactions and comparison of domestic and foreign prices expressed in different currencies required directly or indirectly the emergence of the current exchange rate between the national currency and foreign currencies.

Foreign currency risk or the risk of foreign exchange position explains adverse conditions as the loss of banks' profits due to the changes foreign exchange rate depending on the positions of foreign currency in the balance sheets of banks. In other words, the bank's foreign currency positions due to the unexpected direction of exchange rate will create the risk of negative clauses in the banks' revenues, the bank's equity, cash flows, asset quality and ultimately meeting the commitments (Babuşcu 2005, pp.70).

The exchange rate risk affects all companies of the assets and liabilities denominated in foreign currency. If the assets denominated foreign currency are not equal to the liabilities denominated same foreign currency, the companies expose to foreign exchange risk. The international companies is the most affected by the exchange rate risk. The below table shows a few large firms which suffer losses due to exchange rate risk suffer losses due to exchange rate risk in the end of accounting periods (Eaker, Fabozzi and Grant 1996, pp.588)

Table 1.1 : The Losses of Same Countries due to Exchange Rate Risk

Company	Country	Loss (U.S. $)
Kashima Oil	Japan	1.500.000.000
Abbott Labratories	U.S.	41.298.000
Reader's Digest	U.S.	2.200.000
Telefones de Mexico	Mexico	218.000.000
Bank Negana	Malaysia	2.100.000.000
Allied - Lyons	England	219.000.000
Viking Star	Bahama islands	31.400.000
Quaker Oats	England	19.000.000

The exchange rate is vital in terms of the international economic relations external balance. When mutual commitment and the interaction between the external and internal balance were taken into account, the exchange rate was the most strategic tools of the economic.

The increase or decrease changes of the exchange rate will cause the change in stock prices. According to theoretical framework, exchange rate changes which are one of the exogenous factors affect stock prices.

In fact, foreign exchange market is a market where the supply and demand elements of the encounters. There are several criteria that affect the demand for the currencies of various countries. Therefore, analysis of exchange rates alone should not think as a partial framework of the foreign trade sector and integrate into the general framework of the macro economy (Parasız 2000, pp.27).

The vitality and the recession in the foreign exchange markets affect the stock market, thus these markets constitute alternative markets to stock markets. The goods passed each other to meet a particular need is known competing goods. Therefore, the stock and exchange are rival financial instruments. Increase in the price of competing goods, the quantity demanded of the other goods which is a rival increases and in this case, the demand of goods whose price increase will decrease. There is a negative and functional correlation between the stock exchange. The cross-elasticity of demand between competing goods is always positive.

There are two types of investors who invest in stocks. The first of them is small savers and the second speculators. The small savers want to invest in long-term, continuous and stable. Speculators invest in the portion of assets as risk loving people or organizations. This type of investors, has a dynamic and active structure. Alternatively, they follow closely the developments in the markets.

If there is a continuous rise in foreign exchange rates in a country, this situation will attract the attention of investors. Investors will pay the foreign exchange market after stocks have become a partially or fully liquid market during movement in the foreign exchange markets. The increase in exchange prices decreases the stock prices because stock and exchange rate are competing investment vehicles. Thus the demand of stock increases or the stock value or the stock price increases. There are many factors affecting the price of foreign exchange. Regardless of these factors, the price of foreign exchang will influence stock price. As a result, there is a positive or negative change in stock prices.

2.4.4.2.2.4. Market Risk

In the capital market, the values of securities may be falling due to a specific reason or reasons from time to time or sometimes without any valid reason. There are many factors that cause such changes in the market.

Market risk is the risk that investment returns will decline due to market factors independent of the given security or property investment. Examples include political, economic, and social events, or changes in investor tastes and preferences. The impact of market factors on investment returns is not uniform; the degree as well as the direction of change in return differs among invesment vehicles. For example, legislation placing restrictive import quotas on Japanese goods may result in a significant increase in the value (and therefore the return) of domestic automobile and electronics stocks. Esentially, market risk is reflected in the price volatility of a security (the more volatile the price of a security, the greater its perceived market risk).

The changes of the social and economic structure of country, the new economic policies, the moral structures of individuals who invest and the indivuals are pessimistic and optimistic, an unexpected war affects the market. For example, when the news which is President Kennedy's death on November 22,1963 (Kennedy is the present of the New York Stock Exchange) was heard, the stock prices immediately began to decline. Then the stock market is closed. When stock exchange re-opened, the prices of securities rose to normal levels due to the market risk are eliminated (Francis 1972, pp.262). The high-quality securities (securities refers to the level of confidence in terms of capital and income.) are affects more than low-quality financial assets by market risk. Non-active markets have got more market risk than active markets. (with high transaction volume markets) Stocks are affected higher than the bond by market risk. Because, the real value of debt securities such as bonds can be estimated more accurately than the value of stock. This feature is caused that the volatility of the market price of bonds is less than the value of stocks due to market risk (Başoğlu, Ceylan and Parasız 2001, pp.123). The concept of market risk are included under the concept of political risk. Therefore, the part of detailed information provided at the bottom of the market risk.

Political risk defined as uncertainties which accrue as a result of unexpected or unpredictable of the the attitudes of governments or organizations and affect adversely continuity of its activities in the company (Goddard and Demirağ 1992, pp.269). According to Üstünel (2000) the politics risk occurs political, economic crisis and war situations. The elements of political risk is as important as the definition of the politics risk. In this context, the factors which

listed as below items can be defined as the elements of political risk (Holliwell 1998, pp.15-16).

- The rate of tax,
- Tariff and restrictions,
- The policies of exchange rate,
- Licensing and monopolies,
- Environmental and health safety practices,
- Expropriation,
- Revocative risk of securities

The scope of the poltical risk factors should assess the existence of non-functional and legal systems in foreign countries, bureaucratic obstacles, the processes of democratic transition and civil - ethnic wars.

Niederhoffer, Gibbs and Bullock (1970) examine the stock price behaviors during governmental and/or congressional elections in various developed countries, and they find some inefficiency in share prices around the time of elections, implying a profitable trading rule. They argue that changes in government administration caused by elections tend to affect financial policies or legislation, thereby significantly affecting stock prices.

Bekaert (1995), Bekaert and Harvey (1997) claimed that the increase of political risk may reduce the performance of the market and the rates of return.

2.4.4.2.2.5. Credit Risk

The non-payment or delayed payment of deposits, funds directed loans causes credit risk. The uncertainites of Turkey's economy due to high inflation increase the interest burden of banks and has the effect of making difficult the collection of receivables. The credit risk according to the contractual time and situations is the risk which is arising from being unable to meet its obligations of the participants. This condition causes financial loss. The formation of risk of the participant explain bu using the positive market values of instruments in the portfolio of the participant at any time. In this formation can be calculated based on source for each vehicle in the portfolio (Alan 1997, pp.697). The credit risk depending on the face of a credit event can be defined as potential loss in the market value. The risk of credit arises in the case

of a change effort to fulfill obligations of one of the parties. Thus, the credit ratings in the market value of debt may be seen as a credit risk depending on the percentage of faults of market. Among the credit risk or market risk is created some kind of overlap (Ceylan and Korkmaz 1995, pp.50).

2.4.4.2.2.6. Liquidity Risk

The liquidity risk is a risk owned the difficulties in translating of the financial assets to the current the financial assets at any time and is a risk of charging under the current market value. Liquidity is the ability to pay the debt on the maturity or the liquidity is a concept used monitoring of a balanced financial policy which makes to be compatible with maturity of liabilities by arranging the assests of company converted into cash as more liquid, shorter-term and more easily (Tezer and Çolak 1999, pp.201).

Liquidity risk arises in two ways. These are: the risk of asset liquidity and the risk of funding liquidity (Becker and Mazur 1995, pp.191).

2.4.4.2.2.7. Financial Risk

The increase in degrees of financial support of company or the increase in debt items which contract to pay interest such as bank loans and bonds etc. also causes to increase the possibility not to fulfill the commitment. This risk expressed as financial risk (Bolak 2001, pp.105). The important one of factors which causes the formation of financial risk is to increase the rate of borrowing. Today, countries want to take advantage of the leverage created by borrowing and this behaviour is normal according to finance liteature.

Reduction in repayment of business competence. Depending on the equity or foreign sources to finance the activities of the business occurs. According to the resource use of lower-cost foreign sources, the financial leverage effect, stock owners are upgrading their profits per share, due to the possibility of failure to pay back debts, increasing the riskiness of the securities issued by the enterprise. In terms of investor, the factors to increase the financial risk of company are increase in business debt, fluctuations in sales, the possibility of increase in raw material prices, the possibility of becoming obsolete production, increased competition, lack of working capital, management errors and strikes (Charles 1991, pp. 282-283).

One of the ratios used to determine the financial risk of companies is debt / total assets. This ratio shows the company's total investment is financed by debt percentage. The investors who want to invest in financial assets of the company's desire to be lower this ratio. The low ratio means that the assurance of people invested in securities is high. This is one of the factors that reduce the financial risk (Aşıkoğlu 1983, pp.102-103).

Bhandari (1988) examined the effect of leverage on stock returns for a long period from 1948 to 1981. Research results have revealed that the leverage ratio is statistically significant effect on stock returns.

Demir et. al. (1996) researched the relationships between financial ratios and stock returns of the industrial companies by using annual data and there was not able to detect a significant relationship between stock returns and the price / earnings ratios.

Canbaş, Düzakın and Kılıç (1997) highlighted key financial ratios used to estimate the stock returns such as the price / earnings (P/E), the market value / book value ratio (PD/DD), the ratios of the liquidity, profitability and capital structure. the ratios of the liquidity, financial structure and profitability were most important ratios which provides useful information to investors on the Istanbul Stock Exchange in this study.

Aydoğan and Güney (1997) could have discussed to predict the extent of the effects of the dividend yield on the stock returns. According to the results, the returns of stock are at very high levels in periods following the months when high dividend yield is observed. In conclusion, the dividend yield is an important forecasting tool in terms of market timing.

Abarbanell and Bushee(1998) investigated the relations between stock returns and financial ratios and whether or not to obtain returns above normal by using the fundamental analysis. Investories, receivables, gross profit margin, selling expenses, capital expenditure, the actual tax rate, stock valuation methods, the quality of audit and simultaneous changes in the factors of sales productivity of employees were used as indicator. The changes in inventory, capital expenditures and actual tax ratio are the most important indicators which provided to estimate the returns of stocks after a year. In addition, the changes of gross profit margin and sales expenses found that effective indicators on long term yields.

Aktas and Karan (2000) have attempted to predict stock returns with the help of logit model by using financial ratios. The predictive power of financial ratios is more robust than the basic indicators. Also, the correlation between the observed and predicted rankings of successful companies is statistically significant.

Çıtak (2004) investagated the relationship between the financial ratios and the stock for the ISE 100 Index and tested the existence of the relationship between the P/E ratio which is the ratio of the stock market performance and the returns of stock at different periods by regression analysis. As a result of the analysis found significant relationships in the period.

Lewellen (2004) investigated the effects of the financial ratios on explaining stock returns and the dividend yields are the best variable which is explained the stock return for the period of 1946 and 2000.

Yılgör (2005) explained the impact of the changes in the financial structure of companies on the returns of stock and how these changes were perceived by investors between 1996 and 2000 period by setting up portfolios. The total debt / total assets was used in this study. The increase in the level of borrowing was used as a knowledge affecting the future of the company by investors during certain periods. However, this information don't show the continuity (Yılgör 2005, pp.15-28).

2.4.4.2.2.8. Business Risk

Business risk is related to the formation of the assets of companies. The company which is high share of fixed assets to total assets has got high risk of its company. The company which has got high fixed assets will invest in high items such as machinery and equipment. This means that the fixed expenses is high. In fact, the concept of business risk will be more clearly define as the variablility in profit before interest and tax.

The sources of business risk are the issues in supply of raw material, technological developments, strikes, the changes of customers' tastes and preferences due to the increased competition. When these factors cause to adverse consequences for business, the profitability of companies reduces. Therefore the returns which investors provide as dividends or capital gains reduce (Copeland and Weston 1988, pp. 554).

2.4.4.2.2.9. Administrative Risk

The management decisions and the mistakes made by implementing decisions have a significant share into the company's success and the failures. Manager in the business is not always expected to be highly qualified and excellent. Management errors can significantly affect the variables that determine the value of the stocks.

The failures in the invesment decisions can increase the fixed costs. Increasing fixed costs of company causes to rise the business risk. The failures of management in collective labor contracts could result in a strike or lockout. The failure behaviour in the source selection of company affects to increase the financial risk (Francis 1972, pp.254).

The prices of stocks in the companies increase with successful managers in the countries where the capital market developed. The administrative risk affects more the owners of the stock than bond holders. Therefore, persons or institutions who invest in stocks give great importance to the quality of business managers of company invested by persons and institutions (Kepekçi 1983, pp.127).

2.5. PORTFOLIO MANAGEMENT

2.5.1. Traditional Portfolio Approach

One of the most difficult decisions faced by today's markets is to select the assets in the portfolio for investors. Moreover, the personal characteristics of investors may be decisive about the structure of the portfolio by considering the financial risk. Indeed, some investors are bearing the risk and some are behaving more cautious and tend to maintain their capital.

In this regard, risk is as an important element in the management of portfolio. The ratio or amount risk investors maintain will be determined by the types of entities to be included in the portfolio. However, the rate of assets in the portfolio is great importance as the types of assets being selected in the portfolio. In fact, according to Katy Marquardt the most important decision for an investor should be which securites are not included in the portfolio securities should be to determine what proportion of assets and which asset will distribute (Marquardt 2008). The main purpose of the traditional approach is that the investment portfolio consists of asset types and number as much as possible. The loss or profit of the value of assets in financial markets can not be predicted. Inspite of some prediction methods, sometimes subjective value can be effective to portfolio configuration (Düzel 1997, pp.68). This feature is unique to the traditional approach and because of the feature consisting some concepts such as experience, intuition the traditional approach leads to carry to the nature of art than a science.

The most obvious advantage of diversification in the traditional approach is the distribution of risk. An investor's portfolio should contain certain types of securities, this behaviour can be very effective on the distribution of portfolio return and risk. According to Bank Investment Consultant (2006, pp. 36), the trend of a single security could be different to the trend in financial markets, but the trend followed by the diversification of the portfolio of different assets quite _n deve to the trend in financial markets. As some of the assets within the portfolio depreciated over a certain period, others earn value. Even during the most pessimistic crisis periods, the fluctuations on the returns of assets with the different trends may compensate losses due to movements in different directions. Seasonal variability of assets must be analyzed well in advance in terms of portfolio diversification. Acording to Michael Branham, to keep various types of assets in portfolio is similar to form a baseball team whose have different capabilities. However, in order to implement this, the portfolio consists of different return potential of assets at different times. Assets in financial markets volatility refers to the risk of that asset, or in other words, refers to the possibility of not being able to achieve the expected return (Harrington 1987, pp. 79). Therefore, assets with less variability is preferred by investors. The variability level of assets in portfolio directly affect the portfolio return and the level of stabilization. Well-diversified portfolio shows a high rate of return and high stabilization (Marquardt 2008, pp. 92). According to Marquardt, this situation is a financial description to buy a cake _n deven to have the opportunity of taste it.

Returns of the securities consists of two parts as dividends and periodic value increase (Ceylan and Korkmaz 1995, pp. 78). Return of the portfolio is composed of a large number of securities is calculated as follows;

$$E_p = X_A E_A + X_B E_B \qquad (2.16)$$

The expected return on the portfolio is equal-weighted averages the expected return on assets in the portfolio. In an extreme case, assuming that all assets in the portfolio have the same expected return, the expected return on the portfolio is understood to be the same. As a result of this, the returns of securities in portfolio will not move in the same direction and the risk of the portfolio is lower than the risk of a security. Thus the traditional portfolio theory is based on the principle of increasing the number of securities in the portfolio (Bolak 2001, pp.25-30). Although how diversification needs to be done is a subjective phenomenon according to the traditional approach, according to some analysts it is an application that has got sharper rules. Historical data, some criteria such as personal characteristics of the investor are some of the

factors that determine to which ratio the assets distributed in the portfolio. The traditional approach to the management of securities will include in the investor's objective determination, the selection of securities in portfolio and portfolio management stages.

2.5.2. Modern Portfolio Approach

Until the 1950s, investors in countries wtih developed capital market the number of securities thought that the increase on the number of securities in the portfolio can reduce the portfolio risk. However, a positive or negative correlation among the returns of securities could not be considered. Harry Markowitz in 1952 published "Portfolio Selection" in his essay which has investigated how the maximum return of the securities in the portfolio can provide at a certain level of risk by taking into account the relationship among the returns of securities. Thus, Harry Markowitz's portfolio theory pioneered the modern approach.

Markowitz suggested reducing the non-systematic risk without being a decline of the expected return by collecting the securities whose returns are not full and positive correlation in a portfolio and examines of the associations among returns of securities on an investment portfolio (Hagin 1979, pp.87).

One of the basic and most important assumptions of the Markowitz model is the efficient frontier (efficient portfolio) concept. The portfolios on the efficient frontier is the highest returns for a specific risk level or the lowest risk for a particular level of return.

Markowitz has proved that portfolios on the efficient frontier could be determined by the way of "quadratic programming". However, the set of efficient portfolios are needed to identify the various inputs (Karaşin 1987). These inputs:

- The expected returns of the N number of securities likely to be included in the portfolio.
- Variances or standard deviations of the N number of securities likely to be included in the portfolio.
- The covariance coefficients value can be classified as the number of [N (N-1)] / 2 indicating that the relationship between the returns of other securities and returns of each of securities.

Markowitz model is a laborious and expensive model thus the "Index" model which is a simpler model than Markowitz model has been developed by William Sharpe (Ateş 2001, pp.48). After 1952, William Sharpe, John Lintner and Jan Mossin continued studying on portfolio management. The most important development in this direction is "CAPM" (Capital Asset Price Managemet). When investors investment in securities, particularly stocks according to modern portfolio approach, they are investigated that prices will change in which direction by using this model. There have been more extensive investigations since 1970 and the model has been tested by Richard Roll and Steve Ross. In same years, Roll and Ross took out the inadequacy of this model and the Arbitrage Pricing Model " have developed.

2.5.2.1. Principles of Modern Portfolio Theory

Portfolio selection is very different from the selection of securities. According to Markowitz, a good portfolio is not a long list consisting of a large number of stocks and bonds. Essentially, the theory aimed to create the best portfolio to meet the needs of the investor (Markowitz 1959, pp.47).

The basic point emphasized by Markowitz is that diversification is not enough to make the maximum expected return and the risk of the portfolio should be kept a minimum. The point provide to add the securities whose return are negative correlation in portfolio. Therefore, the main task of the investor choose "efficient portfolios" to share the money among stock in a manner to reduce the average weight of covariance on a certain level of the expected rate of return (Bekçioğlu 1984). Modern portfolio theory based on very simple and basic ideas. However, the calculations related to the expected return and risk increases, if the number of securities in the portfolio increases. For example, a portfolio of N securities needs to be calculated correlation coefficient of [N (N-1)] / 2 units (Harrington 1987, pp.56).

2.5.2.1.1. Uncertainty of Returns

Harry Markowitz said that investment therapist should not expect to being a prophet by stating that the uncertainty is the first noticeable feature about the issue of the investment and he or she is expected to make the right choice by using the information in hand in the current environment (Kocaman 1995).

Yield is the estimated values provided at the end of a period of time by an investment or a portfolio. For example, the expected return on each stock in a term can be calculated as follows (Harrington 1987, pp.58):

$$R_i = \frac{T_i + (F_i - F_{i-1})}{F_{i-1}} \qquad (2.17)$$

T_i: Dividends at the end of period$_i$

F_i: market value at the end of period$_i$

F_i-1: market price of the previous period

Estimated values is equivalent to the values that occur rarely. Th e degree of inaccuracy of the estimates or the inexact status of the estimates is measured by variance. Variance measures the width of the distribution of expected returns from investment. The correlation coefficient takes values between +1 and -1 (Eiteman, Stenehill and Moffett 2006, pp. 78).

2.5.2.1.1.1. Correlation Coefficient (+1)

To limit the risk of the portfolio is not possible in the case of being a full correlation between the returns of securities in the portfolio (C_{AB}=1). Because the prices of securities in the portfolio varies in the same direction. In other words, the portfolio is composed of a single securities. Possible to see this situation as below (Yalçın 1998, ss.71).

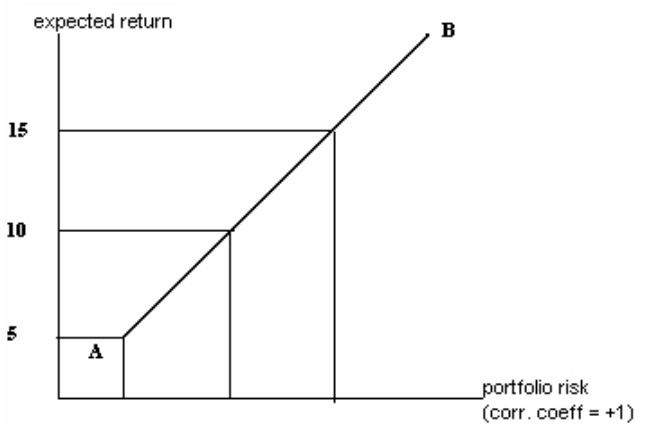

Figure 1.3 : The Portfolio Risk In Case Of Correlation Coefficient = +1

2.5.2.1.1.2. Correlation Coefficient (0)

If there is no relationship between securities returns in the portfolio, the portfolio risk can be reduced by using diversification.

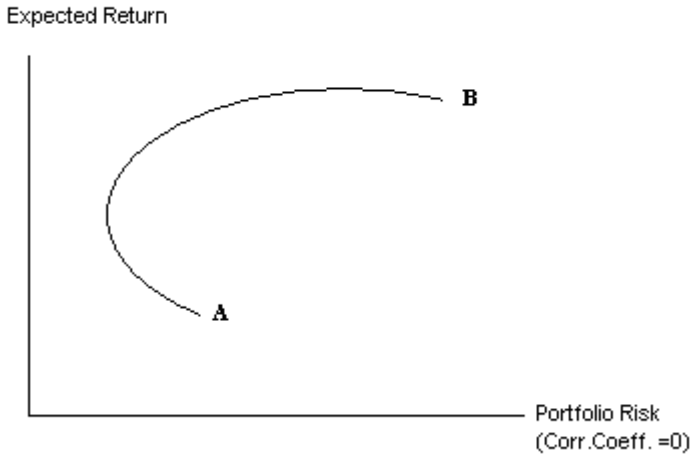

Figure 1.4 : The Portfolio Risk In Case Of Correlation Coefficient = 0

If correlation coefficient is zero, the limit which is viewed on portfolio risk can be followed on the formulation. If the ρ_{AB} is zero, the third term of the formula will be equal to zero.
In this case, the standard deviation of the portfolio of two securities be written as follows:

$$\sigma_p = (X_1^2 * \sigma_1^2 + X_2^2 * \sigma_2^2)^{1/2} \qquad (2.18)$$

The risk is limited by the selection of securities whose correlation is zero. all investors can easily be made for a kind of diversification. Research has shown that the degree of the relationship between bond price indices and stock price indices set to zero (Bakırhan 1989, pp. 51).

2.5.2.1.1.3. Correlation Coefficient (-1)

The probability of the negative relationship between returns of the securities is a rare situation. In case of a negative correlation coefficient, portfolio risk can be downloaded to a minimum. If the correlation coefficient is -1, there is the a perfect negative correlation between the securities. In this case, the risk of the portfolio composition of a particular stock will be zero. In the portfolio diversification the correlation coefficient between securities is desirable at a value close to -1 or -1. However, the market is not always possible to find it.
The situation in which correlation coefficient is -1 is possible to show with the following figures.

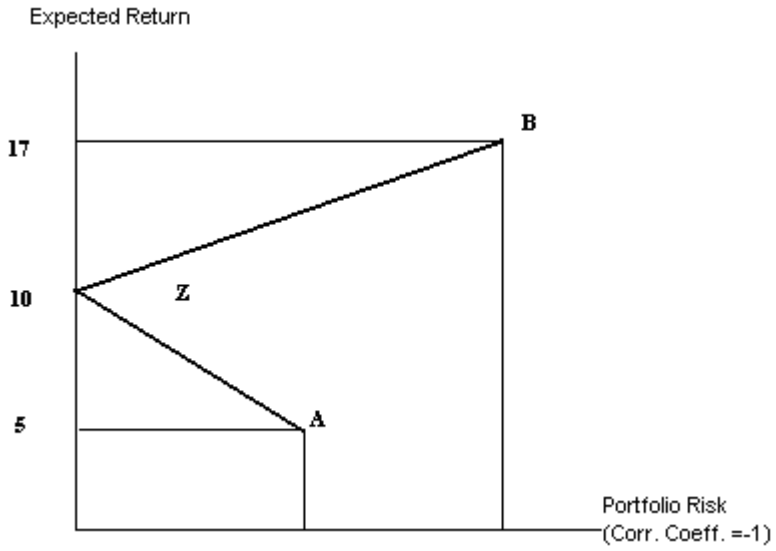

Figure 1.5 : The Portfolio Risk In The Case Of Correlation Coefficient = -1

The case of correlation coefficient = +1,0 and -1,0 can be shown as follows on the status of a single figure.

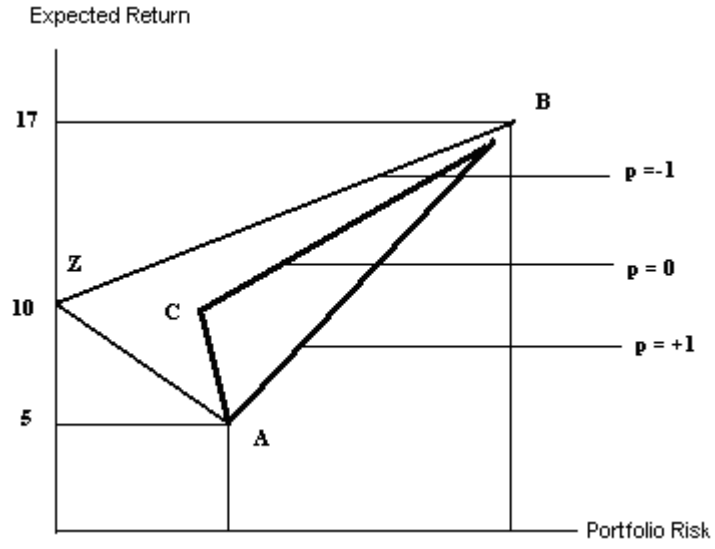

Figure 1.6 : Portfolio Risk In Correlation Coefficient -1, +1 Cases

As can be seen in the figure, the line denoted by p = -1 is less risk and more expected return than the line in p = 0 and p = +1. The core of modern portfolio theory explains the diversification of securities whose relationship is negative. Again p = 0 gives a better result than σ = +1

If the investor could find enough low correlations with securities, the portfolio risk declines systematic risk level through Markowitz diversification. However, the number of securities which is the low correlation among returns in the market is quite limited (Bakırhan 1989, pp. 54).

2.6. CAPITAL ASSET PRICING MODEL

The model for the pricing of all risky assets formed by developing the portfolio theory putting forward by Markowitz. CAPM which is the product of this theory, is based on the single variable, accepts the market portolio as independent variable and explains to the return on all risky securities by the market portfolio return.

The Capital Asset Pricing Model (CAPM) is an equilibrium model to research the relationship between systematic risk and expected return in a competitive capital market as a result of their research introduced independently by Sharpe (1964), Lintner(1965) and Mossin (1966) after Markowitz explains the principles of modern portfolio theory in 1952 CAPM is referred to Sharpe-Lintner-Mossin model as financial literature.

According to CAPM, the return of a security depends on the sum of systematic risk and unsystematic risk. The unsystematic risk is competely eliminated and the systematic risk remains alone in the effectively diversified portfolio. (Sharpe, Alexander and Bailey, 1999)

The basic features of CAPM are as follows:

- The risk of securities is measured with beta (β)
- The expected return of security depends on risk free rate, the risk premium of market and beta of security
- Investors treat of risky assets in sufficient diversified portfolios

Investors can take more risk to increase the expected return of investment (Berk 2000, pp.393-394).

2.6.1. The Assumption of Capital Asset Pricing Model

The assumption of capital asset pricing model (Yörük 2000, pp.30):

- Investors evaluates by considering the expected returns and standart deviations of portfolios for a period.
- If investors want to make a choice between the two portfolios, they will select a portfolio which ise higher expected return (lower standart deviation).

- All assests are infinite severability and a full liquidity. Investors can take positions in their investment without the influence of their wealthies and wants to provide the effective diversification of Markowtiz. Any amount of money in the market is borrowed and lent by using risk-free interest rate by investors. The interest rate except in the market interest rate is not used.
- Tax returns, trading commissions and transfer costs related to financial assests are zero.

The basic assumptions of the capital asset market line developed in addition to the efficient market hypothesis (Yörük 2000, pp.31):

- All investors have the same investment period.
- The risk-free rate of all investors is the same.
- Information is freely available.
- Investors have homogenous expectations. Investors have the same perception about expected returns, standard deviations and covariances of financial assets.

CAPM was developed depending on the Theory of Capital Markets thus some definitions such as the Separation Theorem and the Capital Market Line are focused. The basic assumption of the Theory of Capital Markets is the concept of the risk-free asset. Investors can borrow and lend money on a risk-free rate. In this theory, the optimum portfolio is defined as the portfolio that raises the slope of line connected the risk-free return and the efficient frontier (Yörük 2000, pp.31).

Therefore, investors will prefer the same optimum portfolio under the same expectation though there are the differences between the risk and choice structures of investors. The preference of investors would be that after the choice. Investors market the appropriate choice among risky asset and risk-free asset for themselves thus they aim at achieving maximize their satisfaction levels (Yörük 2000, pp.32)

2.6.2. Capital Market Line

Capital Market Line which provides the determination of the relationship between the expected rate of return and risk for efficient portfolios, consists of combinations of the

alternative risk and the expected rate of return provided possibility of risk-free borrowing or lending by using market portfolio (Yörük 2000, pp.59).

Ratioınal investors work to take place on the Capital Market Line according to the assumptions of Capital Market.

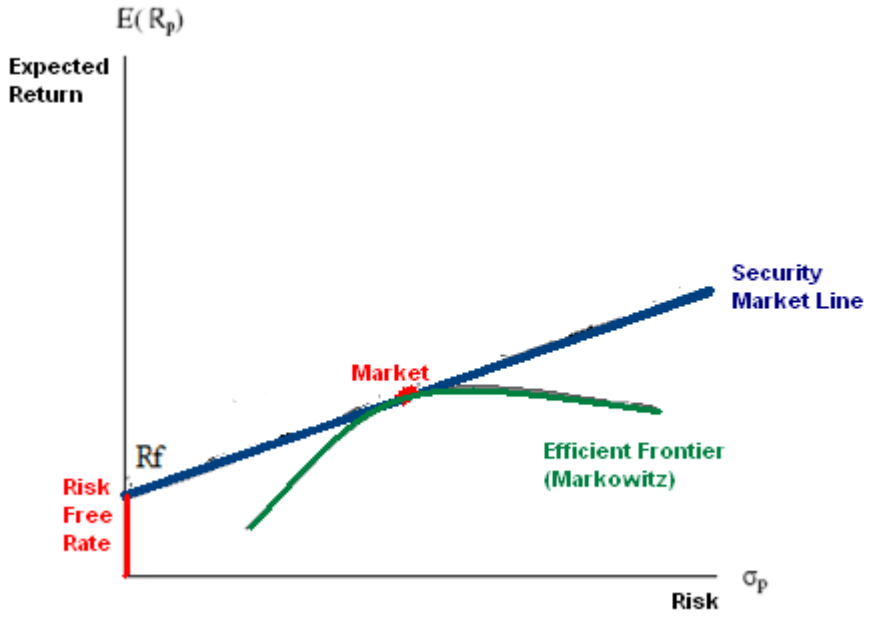

Figure 1.7 : Capital Market Line

$$E(r_p) = R_f + (E(r_m) - R_f)/ \delta_m + \delta_p \qquad (2.19)$$

$E(r_p)$: the rate of expected return of portfolio
R_f: the return of risk free asset
$E(r_m)$: the rate of expected return of market portfolio
δ_m: the standart deviation of market portfolio
δ_p: the standart deviation of portfolio

The possibility of the borrowing and lend money on the risk-free interest rate by adding the risk-free asset in the model effectively changes the shape of the original border and the line passes on the return of risk free asset.

The only risk factor as discussed the assumptions of CAPM is the systematic risk. The systematic risk defines the contribution of the asset on the portfolio held by investors. The

ratio of the covariance of market portfolio and the asset returns to the variance of market portfolio (δ_{im} / δ_m) is used as a valid risk value in asset pricing.

The expected return of the portfolio:

$$E(R_p) = X \times E(R_i) + (1 - X_i) \times E(R_m) \quad (2.20)$$

$E(R_p)$: The expected return of portfolio

$E(R_i)$: The expected return of asset $_i$

X_i: the ratio of investment in " i" asset in the presence of the total portfolio

$E(R_m)$: The expected return of market portfolio

The portfolio risk:

$$\delta_p = (x_i^2 \times \delta_i^2 + (1 - x_i^2) \times \delta_m^2 + 2 \times x \times (1 - x) \times \delta_{im})^{1/2} \quad (2.21)$$

δ_p: The standart deviation of portfolio

δ_i^2: The variance of asset $_i$

σ_m^2: The variance of market portfolio

δ_{im}: Covariance between asset $_i$ and market portfolio

The equation of Capital Asset Pricing Model is:

$$E(R_i) = R_{rf} + (E(R_m) - R_{rf}) / \delta_{im}^2) / \delta_{im} \quad (2.22)$$

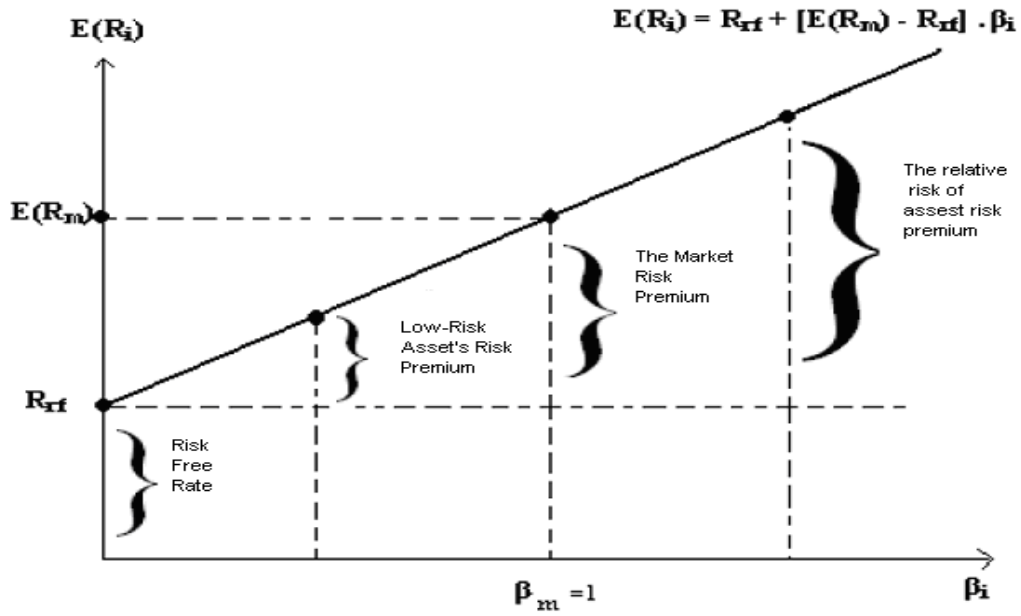

Figure 1.8 : The Security Market Line

Source: Eugene F.Brigham ve Louis C. Gapeski, Intermediate Financial Management, 4th Edt., Hourt Brace Jovana vich Intr. Edt., Fortworth, 1999, pp.82

The equation of CAPM reveals a increasing and linear function of the beta values of all the assests in a state of equilibrium. If beta value (or systematic risk) is high, the rate of asset return is high. The risk-free rate of return is located at the point where line intersects the vertical axis because the beta of risk-free asset is zero. The slope of capital
Market Line ($E(R_m) - R_{rf}$) reflects the degree of risk aversion in the economy. Therefore, the slope of Capital Market Line will steepen if the degree of risk aversion is quite large.

2.6.3. The Versions of CAPM

The various versions of CAPM were developed due to lack of the assumptions of CAPM in real life. Alternative models implemented and tested are as follows (Yörük 2000):

2.6.3.1. The Zero-Beta CAPM

The model doesn't contain in the assumption which defines the possibility of borrowing the desired amount over the risk-free interest rate from the market or lending the desired amount over the risk-free interest rate to market (Elton 1995, pp.215). The model is moving the market portfolio and the portfolios with zero covariance (therefore zero beta). However, to

achieve the portfolio with zero beta is almost impossible without short-selling due to the positive correlation coefficients many of the assets in the market. The risk-free asset can be sold short for the validity of the Zero-Beta CAPM or the opportunities of short-selling should be possible (Copeland and Weston 1988, pp.207-208).

$$R_i = R_z + (R_m - R_z\beta_i) \quad (2.23)$$

R_z: the expected return of portfolio with zero beta

2.6.3.2. The Consumption-Based CAPM

The standard form of CAPM uses only one term for a process of evaluation. However, the investors' decisions at any time in the real time represents only a stage of many investment decisions trying to maximize the functions for consumption- utility throughout the life. Based on this fact, Breeden (1979) and Rubinstein (1976) found the multi-period approach instead of single-term view for the fact that the balance in the capital markets and developed Consumption-Based Model. Basic assumption in this model is the relationship between the growth rate of total consumption and returns is linear to maximize functions of the consumption – utility (Özçam 1997, pp.23).

$$R_{it} = R_{it} + C_t\beta_i + e_{it} \quad (2.24)$$

R_{it}: the rate of return "i" asset at the"t" time

C_t: total growth rate per capita at "t" time

β_i: beta coefficient of "i" asset

e_{it}: error term

For the linear relation in the above equation:

- The parameters are constant over time,
- The correlation between the error terms and the increase rate of total consumption have zero and the error terms have zero correlation with each other
- The average of the error terms must be zero. (Altay 2001, pp.114)

2.6.3.3.The Multibeta CAPM

Another multi-period model is "Multibeta CAPM". Merton (1973) showed that uncertainty wasn't related to only the future value of asset, will be determined by the sensitivities to

multiple risk factors. The model assumes that the financial asset is influenced by many risk factors such as Arbitrage Pricing Theory (AFT). The equation of the multibeta CAPM:

$$E(r_i) = R_f + [E(r_m) - R_f]b_{im} + [E\, r_{/1}]b_{i/j} + [E(r_{/2}) - R_f]b_{i/2} + \dots \quad (2.25)$$

$E(r_i)$: the rate of expected return of "i" asset

R_f : risk-free interest rate

$E(r_m)$: the rate of expected return of market portfolio

b_{im}: sensitivity of "i" asset to market portfolio

$E(r/_j)$: the rate of portfolio return to hedge "j" element of risk

$bi/_j$: the sensitivity of "i" asset to portfolio to hedge "j" element of risk

The hedge portfolios in the above equation provide the fluctuation in the rate of return against the elements of risk. (The aim of hedge is to eliminate the risk factors or to decrease the effects of risk factors on the rate of return) However, there isn't clear information about how to create portfolios.

Capital Asset Pricing Model has been tested many times in order to explain the return on assets. As a result of these tests, many criticisms directed towards the model. The main issues caused to the criticism are the unrealistic assumptions of Capital Asset Pricing Model and exactly unprovable relations relationship between the beta coefficient and the prices of assets. (Dumas and Allaz 1996, pp.113-143)

The Arbitrage Pricing Theory has been developed in 1976 by Stephen A. Ross because of these criticisms directed at the Capital Asset Pricing Model and the difficulties in testing of CAPM.

2.7. ARBITRAGE PRICING MODEL

Most empirical studies showed that there were doubts about the Capital Asset Pricing Model although this model is basis of the dominant and modern portfolio theory. The first suspects about the Capital Asset Pricing Model were reported the different theories such as studies of Hakansson (1971), Meyers (1973), Merton(1973), the emprical evidences such as the studies

of Ball (1968), Basu (1977), Reinganum (1981) and the scientific theory of the study of Roll (1977). (Ross 1980, pp 107)

The standard CAPM should be developed to measure the sensitivity to sources of different risk, so the systematic risk is expressed more clearly. As a result of this development process, Multi-Beta capital Assets Pricing Model are obtained. This model was first developed by Merton who examined the effects of different risk sources on the returns of securities. The first of these studies has been provided by King (1964) who examined the sensitivity of U.S. stocks to market and industry factors during the period of 1927-1960 and has determined that the percent 50 of changes in stock returns depends on the effects of market index and percent 10 of them depends on the effects of the industry. Meyers (1973) examined the findings of King and similar results in his study were obtained. However, Meyers explained that the impact of industry on the returns of stocks overestimated in the study of King.

Ball and Brown (1968) investigated the benefit of the content of information of annual profits issued in the stock markets on the preferences of investors by using 261 companies in NYSE during the period of 1957-1965. Profit values reported will be to be useful in the stock returns if the prices of stock run into a revision about these reports. The results of nine-year period showed that the annual profit values provided information to the movements of the stock prices. In other words, the relationship between stock prices and profits showed strong evidence about the informational perspective provided the data in the accounting information system.

Basu(1977) analyzed 1400 industrial companies in the NYSE to determine the relationship between P/E ratio and stock performance between September 1956 and August 1971. P/E ratio was calculated and ranked for each stock and five portfolios formed as A (high) - E (low). As a result, P/E ratio may be an indicator of future returns. Portfolios with the low P/E as D and E were obtained higher annual return than portfolios with high P/E ratio as A and B in this study.

Basu (1983) examined relationship between the returns of stock in NYSE and P/E ratio, in additon to his study (1977) relationship between the returns of stock in NYSE and firm size (as an additional factor) in April 1963-March 1980 period. Basu formed various portfolios by using the factors as firm size and P/E ratio. The stocks with high P/ E ratio and small-sized

companies have provided higher returns than the stocks with low P/E ratio and large-sized companies. In addition, the results were consistent under controlled firm size, but the size effect disappeared under controlled P/E ratio.

Reinganum (1981) created 25 portfolios by the factors of size and P/E ratio by using 566 companies traded in NYSE and AMEX (American Stock Exchange) in the 3505 day period between 1963 and 1977. The average returns of small-sized companies based on P/E ratio were higher than the average returns of the large-sized companies based on P/E ratio. The strong size effect occured in the control phase of profit based on each P/E ratio. However, the P/E ratio effect wasn't found in the control phase of profit based on any size. Thus, the effect of firm size is covered the effect of P/E ratio.

Common points in these studies, are that the linear relationship between the expected rate of return and risk obtained in the many empirical studies does not support the results to theory, unrealistic assumptions and difficulties encountered in testing the model.
Ross(1976, pp. 341-360) claimed that the Arbitrage Pricing Theory would be a suitable alternative to Capital Asses Pricing Model. The reasons for claiming:

- There is a linear relationship between expected returns with "k" factor.
- The evaulation in the Arbitrage Pricing Theory isn't for only one period such as the Capital Asset Pricing Model.
- Arbitrage pricing theory is a more general model than Capital Asset Pricing Model which is accepted that pricing will be affected by the mean and variance. The restrictions in the Arbitrage Pricing Theory defines according to the utility functions of the investors but these limits are less restrictive than the Capital Asset Pricing Model.

There are two basic differences of Arbitrage Pricing Theory to the Capital Asset Pricing Model. The first of these is that the model is based on the law of one price and the second is that the return on assets are affected by more than one factor. The basis of Arbitrage Pricing Theory is these two differences.

Arbitrage pricing theory doesn't make a point of many factors that affect the daily prices of assets, but this theory makes a point of major factors affected the movement of assets in large portfolios. The effective diversification eliminates unsystematic risks of assets, so the returns

of these portfolios are mainly affected by systematic factors. Because the investors and researchers want to increase the portfolio performance and to be more understandable of the creation and evaluation phases of portfolio. (Roll and Ross 1984, pp.14-15)

2.7.1. The Assumptions of Arbitrage Pricing Theory

Arbitrage pricing theory is based on the law of one price. The basis of model forms the idea which same goods don't sell two different prices. The arbitraj is used to denote the process to make some money by sellling the precious metals, bonds or foreign money bought by investors with the condition take advantage of price differences in different markets (Ceylan and Korkmaz 1993, pp.141).

- Arbitrage profits is impossible: It is impossible to achieve a positive return without risk (Huberman 1982, pp.190).

- Capital markets are under perfect competition: The assumption means no-transaction costs and no-taxes in the capital markets, the effective spread of information, to split an infinite number of pieces of the investments and that investors does not affect the asset prices alone with the way of purchase and sale (Altay 2001, pp.200).

- The number of assets used in the model is sufficient: There are an unlimited number of the asset in the theory developed by Markowitz provides to be effective diversification and to eliminate non-systematic risk. However, this assumption loses its validity in the market where there are limited assets (Altay 2001, pp.200).

Connor (1984) and Chen & Ingersoll (1983) asserted that well-diversified portfolios and the presence of an unlimited number of asset would not lead to a problem in the stage of asset pricing. However, the number of assets used in the model should be rather than the number of factors used in the model (Reilly and Keith 1999, pp.323-330).

The rates of return in financial assets are derived by a linear model with "k" number of risk factor: there are many factors in Arbitrage Pricing Theory and the rates of asset's return are a linear function of these factors (Ross 1976).

These factors may also be factors in companies as well as macroeconomic variables. According to financial asset pricing model, investors maximizes expected returns by using a model depended on a pair of mean-variance. The relation of pricing in the Capital Asset Pricing Model is based on a single factor as the market portfolio and the changes in rates of

return are explained only by this factor. The criticism and doubts against Financial Asset Pricing Model leads to this situation. Because the experimental test and observation of the market portfolio is very difficult (Huberman 1982).

The model with "k" factor can be formulated as follows:

$$R_i(t) = E[R_i(t)] + b_{i1}f_1(t) + b_{i2}f_2(t) + \ldots + b_{ik}f_k(t) + \varepsilon_i(t) \quad (2.26)$$

i =1,2,…N

$R_i(t)$: the random rate of return of " i" asset realized at the end of "t" time "

$E[R_i(t)]$: the rate of expected return of "i" asset at the begining of "t" time.

b_{ij}: the sensitivity of "i" asset to the "j" risk factor (j=1,2,…,k)

f_j: the value of "j" risk factor at the "t" time.

$\varepsilon_i(t)$: the amount of unsystematic risk of "i" asset, error term.

N: the number of asset used in the model

While the risk factors used in the model are independent, these factors are common for all assets. The expected value of each factor is zero. If all of factors is zero, the real return (Ri(t)) will be equal to the expected return (E[Ri(t)]). Deviations from the expectations held out factors affects the returns on asset. The value of unsystematic risk portfion of the return will be zero. Because the unsystematic risk is completely eliminated through diversification. E [ε i (t)] = 0. εi (t) and εj (t) will be independent and zero because the unsystematic part of return for each asset is specific to this asset. In addition to them, these factors are considered to be unrelated with the unsystematic risk. As a result, it assumes that each asset has a sensitivity to each factor and each of these factors have the same values for all assets (Ross 1976).

Some important and basic assumptions as three assumptions listed in the below in the Capital Asset Pricing Model are unnecassary for The Arbitrage Pricing Model from the above assumptions (Reilly 1995).

i. The function of quadratic utility
ii. The normally distributed returns on the financial assets.
iii. The effect of market portfolio including all risky assets and the mean-varinace effect.

2.7.2. The Arbitrage Pricing Models

The arbitrage pricing models assume that the rates of return on asset is determined by "k" number and independent factors. These risk factors affect the financial assets on the different time and circumstances. However, it is not possible to make a statement about the exact number and nature of these factors and it is assumed to be a linear relationship between these risk factors and the rates of return on asset. Arbitrage pricing models in the literature can be analyzed under three headings. These are the single factor arbitrage pricing model, two factor arbitrage pricing model and multi factor arbitrage pricing model (Haugen 1993, s.263-266).

2.7.2.1. Single Factor Arbitrage Pricing Model

The model is the simplest arbitrage pricing model and moves under the assumption that there is a single source of risk. Ross studied a single-factor arbitrage pricing model based on market model. The cause of the changes on the returns of asset depends on macroeconomic factors and company-specific factors or microeconomic factors. The expected value of the mainfactor in the single-factor arbitrage pricing model is zero and this value is assumed to measure the new information about macroeconomic. The expected value of new knowledge is assumed to be zero for reasons from the definition. In addition, the factor is assumed to represent the return on market index portfolio (Gürbüz and Ergincan 2004, pp.67).

The assumptions of Arbitrage Pricing Model create the arbitrage pricing line.

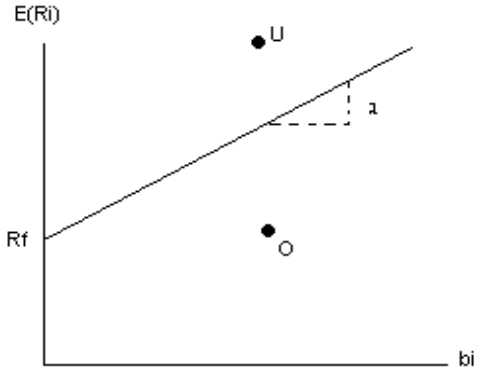

Figure 1.9 : The Arbitrage Pricing Line

Risk measures along the horizontal axis. Arbitrage pricing model deals with all the assets at the same risk to be perfect to changes provided the same rate of return. "k" shown as the required rate of return of "i" asset measures along the vertical axis. The required rates of

return defined as the minimum rate of return by investors needs to attempt about increase in the combined risk level (Rensburg 2002).

The arbitrage pricing line divides at the point showing the risk-free interest rate (Rf) by the vertical point. Risk-free interest rate is similar to the fixed interest rate payed to saving deposits in the concept of deposit insurance by a bank and is the lowest interest rate in this model. The zero-risk investments includes risk-free interest rate and are preferred by investors who do not want the high-risk.

The equation of single factor arbitrage pricing model:

$$k_i = R_f + ג\, b_i + e_i \qquad (2.27)$$

k_i: the required rate of return on the "i" asset

R_f: Risk-free interest rate

ג: The slope of arbitrage pricing equation (or the market price of risk because the slope measures relationship between risk and return in the capital market)

b_i: a sensitivity coefficient (or the beta factor is showed the risk factor measured the sensitivity of "i" asset to the risk factor)

e_i: error term

2.7.2.2. Two Factor Arbitrage Pricing Model (The two forms of undiversified risk)

The following equation is two-factor arbitrage pricing model for a theoretical treasury bills.

$$k_{DT} = R_f + ג_1 b_{dt1} + ג_2 b_{dt2} \qquad (2.28)$$

k_{DT}: The required rate of return for theoretical treasury bills

R_f: Risk-free interest rate

$ג_1$: The interest rate (market price of risk for the first risk factor)

b_{dt1}: the sensitivity of treasure bond to interest rate risk factor

$ג_2$: Purchasing power risk factor (the market price of risk for the second risk factor)

b_{dt2}: the sensitivity of the treasure bond to purchasing power risk factor

The sensitivity coefficient of arbitrage pricing model (b) shown as the indexs of undiversified risk species of systematic risk. The average value of the sensitivity coefficients for all risk factors and all assets is equal to 1 (b_i =1). If the sensitivity coefficent is eqaul to 1 (b_i =1), the rates of return on the "i" asset tend to change in the one-on-one conformity with "j" risk

factor. If the sensitivity coefficent is eqaul to 1,5 (b_i =1,5), the rates of return on the "i" asset are in a tendency to fall or increase %50 over average value. If the sensitivity coefficent is equal to 0,5 (b_i =0,5), the reaction of "i" asset to "j" risk factor is only 0.5 less than the average. If the sensitivity coefficent is equal to 0 (bi =0), "i" asset does not have undiversified and specific risk factor about "j" risk factor. The below figure is the improved version of arbitrage pricing line. The rates of desired return on assets are measured along the vertical axis (Rensburgh 2002).

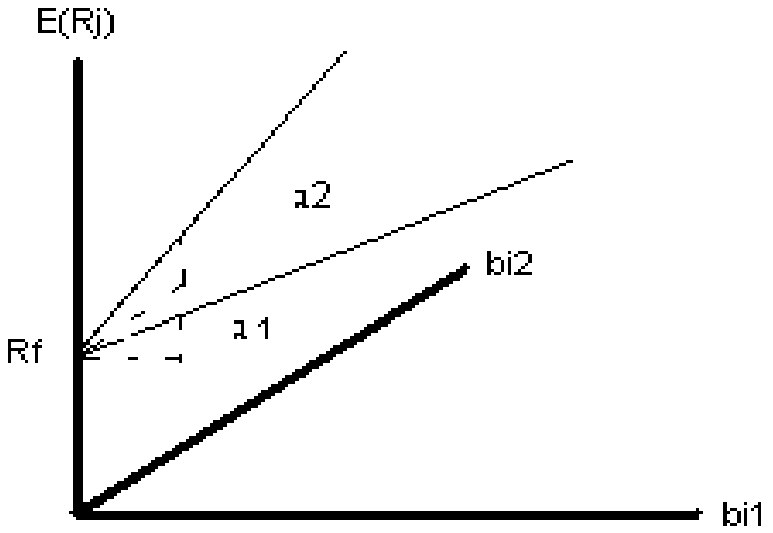

Figure 1.10 : The Improved Version of Arbitrage Pricing Line

Some assets are assumed to have certain positions in the arbitrage pricing plane due to economic causes. The treasury bond essentially has zero interest rate risk and purchasing power risk in one day before maturity. The treasury bond is a risk-free asset at the maturity. Treasury bills in a few years before their maturities includes interest rate risk and purchasing power risk at the large amount.

The behaviour of investors prefered arbitrage will remain the price bids while the expected return forced down in the arbitrage pricing plane and all prices of this low-priced assets are up. Likewise, all assets marked below the plane of the arbitrage pricing priced high and their transaction prices will be reduced to while the expected returns of their transaction prices are up to the plane of the arbitrage pricing.

2.7.2.3. Multi-Factor(f) Arbitrage Pricing Models

There are several risk factors that affect prices of financial assets. These risk factors causes different impacts on the financial assets at different times and circumstances. Multi-factor arbitrage pricing models that have changed, or when there is no previous risk factors, they have added to the new risk factors. This multi-factor arbitrage pricing models is defined as "f factor model". The number of different risk factors is the integer of “f” which has a statistical significance in the financial asset prices.

F-factor arbitrage pricing model:

$$E(R_i) = Rf + \lambda_1 b_{i1} + \lambda_2 b_{i2} + \ldots. + \lambda_f b_{if} \qquad (2.29)$$

The above equation means as the "f-factor arbitrage pricing model” which evaluates different risk factors(f) in determining the expected returns of the asset(i).

Only systematic risk factors are used in arbitrage pricing model though these factors are unavoidable and undiversified. Systematic risk factors can easily be varied down to zero, and therefore they do not play a role in arbitrage pricing model. In other words, the non-systematic risk is not important for the arbitrage pricing model. Because the arbitrage pricing model assumed that investors rationally prevents risk by diversifying (Atan, Boztosun and Kayacan 2005).

2.8. FACTORS AFFECTED STOCK PRICES

The change in a price of a share may be a result of a variety of factors. These factors may be both internal and external. Internal factors are those that are directly a result of a firm's actions, and are often linked to firm profitability. External factors are those that are not in control of the firm, and may include market speculation and investor confidence.

2.8.1. Internal Factors

Internal factors are factors that occur within an organization’s own structure. For example; business performance, growth prospects, dividend yield, corporate governance/transparency, shareholder/shareholding changes, takeover, merger and ecquisition, crisis and fund raising etc.

Among the internal factors is the attractiveness of the company itself. A listed company with consistent returns, excellent management team and attractive growth prospects should be able to attract investors, thus fueling demand for its shares. Company news and announcements also have an impact on its share prices. An announcement that its quarterly profits doubled could send the share price sky-rocketing, but news that a company's CEO is involved in a massive scam results in share prices spiraling down. Similarly, the performance of the overall sector that company is in could have a direct effect on share prices. An example of which is the retail sector, which is currently taking a beating due to a slump in consumer expenditure, thus creating a snowball effect on most retail companies.

2.8.1.1. The Changes on The Financial Structure

The stock prices are affected by changes in the financial structure of company issued this stock. The investors must review the company's activity analysis before they invest in a stock. The following factors are listed for the company's activity analysis (Tuncer 1987, s.16).

- The company's title, history and fame
- Capital, reserves
- The number of personel, the relations between managers and employees
- The subject of production, capacity and turnover, export probability
- Incentives
- Credit facilities
- New investment projects, the probability or opportunity of recapitalization
- Revaluation reserve
- The status compared to competitors in the market
- Costs and profitability
- Raw material supply facilities, dependence on domestic material or foreign sources, the current inventory and inventory management
- Profit distribution policy

2.8.1.2. Dividends

Internal factors affecting share prices may include the profitability of a firm. If a certain share pays dividends to investors, share price will increase if dividends increase. Dividends tend to be linked to a firm's profitability, and firms that are more profitable tend to be valued higher.

With other things being equal, a higher-valued company will have higher-valued shares. The price of a share may increase with value, as its returns are better.

Some companies, instead of paying dividends, may pay share bonuses instead. Instead of a cash payment, more shares are issued. The more shares a company issues, the lower the value of its shares. Increased share bonuses may lead to a fall in share price. Thus, although a firm may see more profits and see its value increase, the price and value per share may not necessarily increase.

2.8.1.3. The Estimated Earnings

2.8.1.3.1. Earnings

Earnings are the profit a company makes after all the expenses are paid. Stock investors are very interested in the earnings amounts of the companies represented by different stocks. The value of a company's share price is often related to the company's current and projected earnings. One reason to invest in a stock is to participate in the earnings growth of the company.

Publicly traded corporation “companies with stocks available to investors” are required to report earnings quarterly or four times a year. Earnings are determined by subtracting the company's expenses from the revenues earned from sales or services provided. The earnings are reported on the company's income statement. Earnings per share are the net earnings for a specific period divided by the number of company shares outstanding.

2.8.1.3.2. Price-to-Earnings Ratio

The price-to-earnings ratio (P/E) is a commonly used stock-market indicator. The P/E is used to evaluate the relative value of a stock. The P/E ratio is calculated by dividing the current stock price by the cumulative earnings per share for the last four quarters. For example, if a stock has a current share price of $20 and the earnings per share for the last year was $2 per share, the stock has a P/E ratio of 10.

The P/E ratio is used as to compare relative values. A stock with a P/E of 20 is considered to be more expensive than one with a P/E of 15. The stock with the lower P/E may have a higher stock price but has the lower valuation when the company's earnings are taken into consideration. Comparing P/E ratios works best when comparing companies in the same industry or when comparing a company's current ratio to its historic P/E ratio.

2.8.1.3.3. Earnings Report Dates

Corporations are required to make quarterly financial reports. Stock market analysts make predictions on the amount of future per-share earnings for specific companies. On the earnings release date, investors and analysts check to see if a company's earnings were higher or lower than the estimates. When a company reports earnings that are significantly different than the estimates, the stock price can move quickly up or down.

2.8.1.3.4. Earnings Growth

Stock market investors are also interested in the earnings growth rates of specific companies. A company with growing earnings will usually be given a higher relative stock value than a company with level or declining earnings. Growth stocks are companies with earnings that are increasing faster than the overall market. A stock with growing earnings will often have a higher P/E ratio and a stock value that's increasing along with the earnings.

2.8.2. External Factors

Share prices may be directly affected by various factors that may be beyond the control of the companies trading on the stock exchange.

2.8.2.1. The Changes of Real Economic Activities

Most variables used in these activities as an indicator of national income, industrial production and investment expenditures. Increase in economic activity causes the rise of the companies revenues, so the direction of relationship between real economic activity should be expected positive.

Foreign trade and current account deficits affect economy and so the return on equities. However, the relationship between foreign trade or current account deficits and stock price may be positive due to other effects which these deficits will create on exchange rates and foreign investments.

Mukherjee and Tufte (1998) indicate that industrial production is the largest positive determinant of Indian stock prices. Additionally, domestic output growth is its predominant driving force to Indian stock market performance. The findings of Flannery and Protopapadakis (2001) indicate that three real factor variables (Balance of Trade, Employment/Unemployment, and Housing Starts) are strong risk factor candidates, and these real factor candidates affect only the returns conditional volatility for NYSE-AMEX-NASD.

Furthermore, it is reported that remarkably, two popular measures of aggregate economic activity (Real GNP and Industrial Production) do not appear as risk factors, as well as that Real GNP announcements are associated with lower rather than higher return volatility. Karamustafa and Kucukkale (2002) show that the relation between stock returns and industrial production is positive and the relation between stock returns and trade balance is negative. Furthermore, the findings of the study indicate that the ISE is neither the result variable nor the cause variable of any macroeconomic variable.

Abugri (2008) reports that the response of stock returns to industrial production are positive and significant in Brazil and Chile, while industrial productions do not appear to exert a significant impact on the expected stock returns in Argentina and Mexico.

Most casual stock market investors do not pay too much attention to the current price of the various different commodities such as oil and gold. However these current prices can have a major bearing on the value of the main stock market indices.

The relationship between oil price and stock prices can be explained within the framework of asset pricing model (Pollet, 2004). According to asset pricing model, the price of an asset's future cash flow is equal to the present. The increase in prices of oil, capital and labor as an important input used in the production of many goods and services will affect the cash flow. Rising oil prices will increase production costs in the absence of substitution between factors of production substitution between factors of production. While high production costs will affect cash flow, stock prices reduce. At the same time, rising oil prices will affect the rate of reduction in the asset pricing model. The central bank raise interest rates to control inflation due to inflationary pressure created by rising oil prices. Treasury bills and bond leads to prefer to stock due to higher interest rates. This preference shift will cause to decline in stock prices. the total effect on the stock prices which is in rising oil prices period, depends on whether consumer or producer of the company's petroleum or petroleum products (Gisser and Goodwin, 1986: 73-75).

Chen et al. (1986) tested the impact of macroeconomic innovations such as interest rates, inflation rates, bond yield spreads, industrial production and oil prices on stock price returns for the US and showed that the impact of crude oil prices on stock returns is ambiguous. Although the impact of oil prices on stock returns in their study about the impact of asset prices was statistically insignificant, the results of other test were to be reversed about the

macroeconomic impact of oil prices intensified and the common notion about the adverse relationship was easily transmitted to oil and stock market relationship.

Kaul and Seyhun (1990) in their study between 1947 and 1985, annual data, has examined the variables that influence stock returns. The changes in some of these variables also occur due to supply shocks. For example, the OPEC crisis of the 1970s. Reveals the subperiod from 1966 to 1984 because of this crisis. Shocks supply a variable for real, namely the price variability for fuel and oil related products only, enhances KAUL & Seyhun's test results. The test results, oil price, stock returns are significant and negative effect. Oil-based variables to be included in the regression reduced the effect of certain variables. Judging by the regression coefficient of inflation has become a trivial example. But despite these contributions, although different variables to calculate stock returns are examined. In the study of financial market analysis carried out not by the very macroeconomic perspective.

The theoretical framework is created before the changes of oil price analyze the impact on equity markets. Oil prices affect economic activity by uisng the six mechanism (Lardic and Mignon, 2006:3911). Firstly, the rise of oil price which is the basic input of the production affects economic activity due to decline the in potential output according to the classic supply-side view. The result of rising oil prices cause to increase production costs and to reduce productivity and output growth. Secondly, the rise in oil prices affects economic activity due to disrupt the balance of foreign trade of oil-importing countries. the rise of oil prices causes the transfer of wealth from oil importing countries to oil exporting countries and purchasing power of households an firms creates a decline. Thirdly, the rise in oil prices will cause a rise in money demand due to the real balance effect. The monetary authorities do not explain the increase of the demand for money, so the increase of interest rates will lead to decline in economic activity. Fourthly, the increase in oil prices will create inflation. Increase in inflation will lead to start the spiral of price-wage increases. Fifthly, an increase in the price of oil may cause a negative effect on consumption, investment, and stock prices. Consumption decreases because of the fall of disposable income and the rise of invesment costs. Sixthly, the rise in price be permanent, the employment rate will lead to a decrease. The rise of oil prices is expected to be affect on stock prices by means of the six mechanisms, due to the relationship between economic growth and capital markets. (Campbell, 1995: 20).

In the Urrutia and Malliaris's study(1995), the negative reaction to stock prices during the Gulf crisis, has gained from the findings. Study the climb in oil prices during the Gulf crisis, as well as the influence on economic activity led to the decline in stock prices indicate. Stock returns have found no effect on the price of oil using data from the Japanese an US stocks in the Kaneko and Lee 's study (1995).

In the Jones and Kaul's study(1996), the current and future real cash flows and changes in the price of oil has been expressed explained by the reaction of international stock markets. Using quarterly data, the U.S. and Canadian stock markets react to changes in oil prices, but different than shown in stock markets in Japan and the UK against oil price shocks of the findings that have tended to react more. (negatively) Huang, Masulis, and Stoll(1996) investigated the effects of oil price shocks on the U.S. stock market by financial markets perspective. Within the framework of The VAR (a vector autoregression) model, they examined the dynamic relationship. between daily oil futures returns and stock returns. Although Granger-causality is expressed by a causal relationship among individual oil companies' stocks and oil future returns, oil futures prices or returns not detected any effect on S&P 500 like a broad-based index.

Sadorsky's analysis (1999) carried out the relationship between oil price and stock returns with monthly data between 1947-1966. Analysis shows that an oil price shock has a negative and statistically significant initial impact on stock returns. high production costs caused by high oil prices, leads to a decrease in earnings. In this case, the active stock market, prices fall brings. In short, the oil price shock suppresses the real stock returns. Sadorsky, using data between 1947 -1966, reviewed in the form of two separate periods through oil price shocks had a larger impact after 1986.

Ciner (2001) find but a negative association between oil price shocks and stock market returns although there is a significant nonlinear Granger causality from crude oil futures returns to S&P 500 index returns. The study show that stock index returns also affect crude oil futures. Papapetrou (2001) has examined the dynamic relationship between oil prices, real stock prices, interest rates and real economic activity for Greece by using a VAR(vector error correction) approach in 1989-1999 periods and reported that oil price shocks affect negatively on on stock returns.

Hong, Torous & Valkanov (2002) identified a negative relation between lagged petroleum industry returns and the U.S stock market returns as measured by the value-weighted CRSP index by using monthly data during 1972-2001. Pollet (2002) showed that stock market returns can be predicted using monthly changes in oil prices from 1973 to 2002. The accuracy of the study supports the position of the Norwegian stock market which is dominated negatively by oil companies and stocks and lead the world stock market.

Dreisprong et al. (2003) find that oil-price changes predict stock market returns and this predictability is especially strong in the developed markets in the article ‘s sample of countries like Australia, Austria, Belgium, Canada, Denmark, France, Germany, Hong Kong, Italy, Japan, the Netherlands, Norway, Singapore, Spain, Sweden, Switzerland, the United Kingdom and the United States and the world market index. the relation between oil returns and stock returns is negative.

Hammoudeh and Aleisa (2004) show that the relationship between oil prices and stock markets in GCC countries such as Bahrain (Kingdom of Bahrain), Kuwait, Oman (Sultanate of Oman), Qatar, Saudi Arabia (Kingdom of Saudi Arabia (KSA)) and United Arab Emirates explains by using Johansen co-integration. The Saudi market is a single market in the GCC countries that can be made about the stock market’s comments on the basis of oil future prices. Hammoudeh and Li (2004), using an international factor model, show that the oil and transport sectors’ stocks returns in the the United States, Mexico and Norway are affected positively from increase of oil prices.

Sawyer and Nandha (2006) emphasizes that stock prices appears to be insensitive to changes in oil prices using a hierarchical model of stock returns. the relationship between stock prices and oil prices were felt to be less predictable. Thus, the probability of making accurate prediction of relationship between stock prices and oil prices is decreasing.

Kilian and Park (2007) estimated a structural VAR model for the four variables as follows: the percentage change in world crude oil production, global real economic activity, the real oil price, and return on U.S. stocks and found that rising oil prices due to changes in oil-specific demand cause prices of stocks decline. Brahmasrene and Jiranyakul (2007) researched the relationship between stock market index and selected macroeconomic variables such as industrial production index, money supply exchange rate and oil price by using unit root,

cointegration and Granger causality tests during the postfinancial liberalization (pre-financial crisis) and post-financial crisis in Thailand. The results of tests showed that oil prices have a negative impact in the post-financial liberalization period. Anoruo and Mustafa (2007) examined the relationship between oil and stock returns for the US with daily data by using Johansen Bivariate Cointegration, and errorcorrection approach and found an evidence of causality from stock market returns to oil market and not vice versa.

Park and Ratti (2008) report that oil price shocks have a negative impact on real stock returns in the US and 13 European countries using monthly data during the period 1986-2000 within multivariate vector autoregressive approach. Gogineni (2008) emphasized that there is a positive relationship between changes of oil prices and stock return due to future economic activity by examining with daily data U.S.industries' stock prices with regard to their sensitivity to oil price changes from 1984 to 2007. Cong etc. (2008) emphasize that oil price shocks do not has statistically significant impact on the Chinese stock market indices using multivariate vector auto-regression. But some oil companies like stock returns in mining and petrochemicals index and some manufacturing index are affected oil volatility in the same direction. Nandha and Faff (2008) show that there is a significant negative impact on stock returns in many sectors studied based on the global industry indices prepared by Datastream, while the oil, gas and mining sectors is a positive impact. Sadorsky(2008) study stressed that stock prices of various sizes firms are affected in different directions and rates by changes in oil prices. As a result of the study, while stock prices of small and large-scale companies fairly symmetric response to changes in oil prices, medium-sized firms. The stocks prices of medium-sized firms asymmetric response to changes in oil prices.

Apergis and Miller (2009) tested whether oil market shocks affect monthly stock returns in eight developed countries such as Australia, Canada, France, Germany, Italy, Japan, UK and U.S. with regard to their sensitivities towards structural oil-market effects in 1981 - 2007 period. The results showed that international stock market returns do not react very significantly to oil price changes.

Büyükşalvarcı(2010) designed to test the relationships between the ISE-100 index returns and seven macroeconomic factors such as interest rate, industrial production index, oil price, foreign Exchange, money supply, inflation rate and gold price do not appear to have any significant by using a multiple regression model. For oil importer countries, an increase in oil

price will lead to an increase in production costs and hence to decreased future cash flow. oil price,have a negative effect on ISE-100 Index returns although oil price is very important for Turkey which is a net impoerter of oil. Wang etc. (2010) investigated the dynamic relationship between the variables of oil price, stock price, and real economic activity in Russia, China and Japan with monthly time series from 1999 to 2008 using a vector autoregressive (VAR) model with cointegration and variance decomposition analysis. As a result, there were a relation between stock price and oil price in Russia but this relationship among the two variables was not found in either China or in Japan in a long-run equilibrium. The results showed that stock price and oil price were important factors of economic activity in Russia during the short period but the results were not pointed that there was a close relationship among stock price and oil price either in China or in Japan.

Haubric(1998) emphasized that the fluctuation of gold prices moves less like a commodity than like long-lived assets such as stocks or bonds. That characteristic makes expectations particularly important because today's price depends heavily on future demand and supply like the stock market. However, the amount of gold production depends on prices unlike stocks or bonds. If the price of gold is too high, more mines will be opened and existing ones will take out low-grade ore. If the price is very low, shorten some of the mines and other production will be shut down,

Gold should be evaluated an alternative investment vehicle in the the stock market because of the most widely used in Turkey, especially in Anatolia. Gold prices are determined in export markets by market and closely related to exchange rates due to the nature of being imported. Therefore, the domestic price of gold determines foreign price and exchange rate. (Albeni and Demir, 2005)

Albeni and Demir (2005) identified the relation among deposit interest rates, portfolio investments, foreign exchange and gold prices and the financial index and found the existence of a positiv relationship between gold prices and the financial index which is traded on the National Market, and included only shares of the companies in the financial sector stock market index is calculated by taking into consideration changes in prices.

Smith(2001) emphasized the relationship between the price of gold set in London and set in New York and stock price indices for the United States over the period in January 1991 and

October 2001. There are a short-run correlation between gold price and stock price index in US is small and negative but there is no long equilibrium betwen two variables. For some time periods, the relationship among two variables is insignificantly different from zero.

Akkum and Vuran (2005) attempted to determine that the effects of the macroeconomic factors impact on the stock returns by using arbitrage pricing model for the period 1999-2002. the analysis included in the effects of the factors such as the ISE 30 index, financial, industrial and service sectors, including sub-indices, growth, industrial production index, exchange rate, inflation, money supply, the real budget balance, export / import ratios, the current account balance, market interest rates, gold prices and the term risk. As a result, the stock has been associated with a negative correlation between gold prices. Atan etc. (2005) examined relationship between gold prices, money supply, inflation rate, the capacity utilization rate, the average exchange rate basket, the industrial production index and the ISE 30 index stocks. The ISE 30 Index was the most important macroeconomic variable provided positive effect on stock returns. Other variables respectively are the average exchange rate basket, the capacity utilization rate, money supply, average gold prices, inflation and industrial production index variable

Mumcu (2006) has investigated the degree of macroeconomic factors that affect stock prices (gold, dollar, money supply, treasury bill interest rate, industrial production index) and found a negative relationship between stock pricesindex and gold. However, Treasury bills interest rates is the most important factor to influence negatively the stock index.

Gençtürk (2009) has examined the relations between stocks traded in Istanbul Stock Exchange (ISE) and macroeceonomic variables such as treasury bond interest rates, consumer price index (TÜFE), money supply (M2), industrial production index (SÜE), dolar and gold prices according to crisis periods and normal periods by using Multi Linear Regression Method. The article has showed no significant relationship between the ISE index and macroeconomic variables except in money supply during the crisis period, but has been defined a significant correlation between macro-economic factors and the ISE Index during no crises period and was found a negative relationship between the gold price and the stock price.

Mishra(2010) analysed the gold price volatility and the causality between domestic gold prices and stock market returns based on BSE 100 Index in India with monthly data for the

period January 1991 to December 2009. The results showed that the time series in the Augmented Dickey-Fuller test were stationary and all integrated of order one and there is a long run equilibrium relation between gold prices and stock market returns in the Johansen's cointegration test. The Granger causality test in the vector error correction model showed the evidence of feedback causality running between the gold prices and stock returns. But these two variables are insignificantly correlate or a very low degree of correlation hold between them. Wang etc. (2010) assessed the long- and short-term interactions among the fluctuations of crude oil price, gold price, exchange rates and the changes of the stock price indices in the United States, Germany, Japan, Taiwan, and China by using time series method with daily data between 2006 to February of 2009. There is no long-term stable relationship between gold price and the US stock market index and gold prices and Taiwan stock prices are independent but gold price is leading the exchange rate. Büyükşalvarcı (2010) highlighted that Turkish investors thought gold as an alternative investment, so a negative relationship is expected between gold price and stock returns. However Büyükşalvarcı showed that gold price did not appear to have any significant effect on ISE-100 Index returns when he analyzed the relationship between gold price and ISE-100 Index returns.

2.8.2.2. The Changes of Inflation

The changes of prices level is affected estimated earnings of investments in securities and the value of securities. One of the most important factors determining the prices of securities is an increase in the overall level of prices because of these reasons.

Inflation can be described in the form of the rise in general price level rise. Changes in the general price level affect the stocks in different ways. Therefore, it is not possible to say that the one-way relationship. Inflation duration and intensity, creates different effects on stock prices.

Stock prices will be positively affected from inflation in the case of a small percentage increase in the general price level. The moderate increase in prices which do not cause a high value of inflation creates a favorable environment for investments in securities, goods and services (Fosback 1986, pp.169).

When moderate inflation continues in the short period, the internal factors are assessed. First of all, entrepreneurs who escape from fear of lack of effective demand for goods produced, will choose to complete the operation in the current share capital. Thus, the operation under

production facilities will be prevented due to lack of demand of the economy. At the same time, the increase will increase the desire and the possibility to invest. The sales of companies will lead to an increase when inflation is not high. Thus, the company's sales volume will increase by using stores .

The increase in nominal earnings of the company causes an increase in the share of distributed dividends. As a result, the value of the stock price and the market price will rise and investors do not damage to from inflation but will be a profitable situation (Brealey 1984, pp.72-73).

According to Pindyck (1984), inflation reduces the real value of corporate debt and net real earnings of the stock is reduced but total effect size and direction is a matter of debate. This effect depends on tax and other parameter values. estimated inflation which is assumed to be small caused a positive effect on stock values.

According to Feldstein, value of the stock and finished goods prices was associated with significant falls in the period of high inflation especially 1970s. This fall of real stock prices causes to raise costs of capital of companies, so the incentive for investment in machinery and equipment reduce. In conlusion, stock prices are negatively affected (Feldstein 1982).

The rapid increase of the general level price affects the stock price by the other way which is defined that inflation affect stock prices through interest rates. The increase in inflation in the economy is considered to be high and long-term, high inflation will lead to an increase in interest rate. There is a negative correlation between the value of the stock and interest rate. Therefore, the stock price and market price will decrease due to a rapid increase in interest rates.

The works on this issue in the U.S. showes that (Francis 1970, pp.60):

Stock prices did not increase at the same rate with the changes of inflation. The dividend rate of stocks actually declined due to inflation rate which is constantly higher than dividend rate. This situation shows that stock prices stocks in the face of inflation can produce a partial barrier.

a. The stock prices of industrial companies according to the stock prices companies that produce public goods have gone head to head with inflation.
b. The returns of stocks was equal to the inflation rate during 138 monthly inflation period.
c. Stock returns are equal to inflation in the 138 monthly inflation period.

The stock prices are affected inflation, based on the severity, duration and the size of inflation in different ways.

One of the main problems in many developing countries is high inflation. In these countries to draw down high inflation should be to ensure continuity of the money supply and to increase domestic savings. It is possible to increase savings with the development of domestic capital market (Albeni and Demir 2005).

But the high inflation environment is also very difficult to develop the capital market. There are three different opinions about the impact of inflation on stock prices. First view, the stock is a good protector against inflation. The second opinion defenses a negative relationship between the stock yield and inflation. The third view that explains the return of the stock not affected by inflation (Albeni and Demir 2005) .

The decrease in purchasing power (inflation) affected prices of financial assets, by different degrees. the effect of inflation seems more severe on the prices of fixed-income financial assets although the effect of inflation on stock is an issue still under discussion (Akgüç 1995, pp.18).

In the periods of high inflation, savings move out of capital market so the supply of capital is reduced. At time period which is high inflation, fixed capital investments decline and the demand for capital is reduced. Therefore, inflation prevents the development of capital markets changes in inflation levels create an adverse impact on stock prices within the framework of these comments.

Nelson's (1976) tested the study of the relationship between stock returns and inflation for high inflation countries post-war period. Regressions of nominal stock returns on inflation expectations resulted in evidence against the Fisher hypothesis and the claimed hedging potential of stocks. The article is claimed a positive correlation between stock returns and one-period lagged inflation by using Russia and China datas.

Fama and Schwert (1977) translated the Fisher hypothesis which is is the proposition by Irving Fisher that the real interest rate is independent of monetary measures, especially the nominal interest rate into a regression framework and estimated the relation between stock returns and proxies of expected and unexpected inflation. Contrary to other assets such as real estate, stock returns were found to be a poor hedge against both expected and unexpected inflation for the 1953 - 1971 period in the United States. The article is showed a statistically significant negative correlation between inflation and stock prices. However, Fama (1981) modeled the relationship between stock prices and real economic activity in America and found a strong positive correlation between stock returns and inflation.

Geske and Roll (1983) explained that changes in inflation expectations leads to changes in stock returns due to a chain of macroeconomic events. When stock prices decline in response to anticipated changes in economic conditions, the government will tend to run a deficit because of largely fixed expenditures. To the extent that the deficit is monetized, expected inflation will rise. Shortly, the association between expected inflation and stock returns was negative.

Pearce and Roley (1985) examined the daily response of stock prices to announcements about the money supply, inflation, real economic activity, and the discount rate and showed a negative relation between stock returns and unexpected inflation bu using the Standard and Poor's 500 index.

Stulz (1986) investigated the relationship between real stock returns and changes in expected inflation and unexpected inflation and found that predicted a negative and weak correlations between expected inflation and stock returns. Wahlroos and Berglund (1986) tested the Fisher hypothesis, which is the proposition by Irving Fisher that the real interest rate is independent of monetary measures, especially the nominal interest rate and Proxy hypothesis of Fama whose suggestion that higher inflation may proxy a drop in the money demand induced by a lower growth in real activity, which simultaneously implies a drop in stock prices using Finnish stock returns over the period 1970–1980. The article was supported for Fama's Proxy hypothesis and found a negative relationship between stock returns and inflation. Darrat (1986) tested the direction of causation between money and prices for Morocco, Tunisia and Libya over the period 1960Q1 and 1980Q2 by using M1 and CPI. The results of study were

proved the validity of unidirectional causation running from money to prices without feedback for all the three countries concerned and were supported the monetarist view that money caused inflation. Darrat(1986) proved a negative relationship between stock market prices and inflation by using multivariate Granger technique.

Solnik (1987) investigated the effects of a few variables such as changes in exchange rate, interest rates and inflation expectancy on the stock prices. The study is used monthly data of nine of the market such as U.S., Japan, Germany, Great Britain, France, Canada, the Netherlands, Switzerland and Belgium. As a result, inflation has created a positive impact on stock prices in all other countries excluding the U.S, but this effect is statistically insignificant.

Kaul (1987) assumed that the relationship between inflation and stock returns is caused balance process in monetary sector. This relationship depends on money supply and demand factors in various periods. The negative relationship between stock returns and inflation caused the changes of money supply in the America, Canada, the United Kingdom and Germany in the period after the war. The relationship between inflation and stock price volatility is positive and insignificant in the 1930s.

McCarthy, Najand and Seifert (1990) rejected the Proxy Hypothesis for the United States, Germany, and the United Kingdom and have been identified a negative relationship between inflation and stock returns by using data in the United States, Britain and Germany.

Bulmash and Trivoli (1991) determined a business cycle to explain the relation between key macroeconomic variables such as gross national product, inflation (consumer price index), money supply (M1 and M2), interest rates (T-bill and T-bond rates), and the unemployment rate and found that the changes of inflation did not cause any impact on stock prices in the US market. Bottazzil and Corradi (1991) investigated the variability ofthe risk premium in the stock market by using Italy datas for the 1978-1989 period and showed that the increase in inflation had a negative impact on stock prices.

Boyle and Young's study(1992) have achieved a negative correlation between stock returns and inflation. However, Abdullah and Hayworth (1993) have found in a positive relation with inflation and U.S. stock return. Balduzzi (1995) has found a weak negative relationship

between inflation and stock returns by using two periods such as 1954-1976 and 1997-1990 by using a VAR method analysis. Amihud (1996) showed a negative relation between stock returns and unexpected inflation with Israeli daily data.

Kargı and Terzi (1997) intended to identify causal relationships and dynamic interactions between the Istanbul Stock Exchange in Turkey and interest rates, inflation, the real sector with the VAR method in the 1986-1996 period. Changes in inflation created a positive and weak impact on the ISE index but inflation is an important part of the announced change in ISE index, so that the source of changes in ISE was determined inflationary pressures rather than the changes in the real sector. Ozcan (1997) explained the Istanbul Stock Exchange composite index by using industrial production index, the CPI, the three-year treasury bond yield (converted to months), money supply, budget balance, exchange rate and current account balance for 1986-1995 period. As a result, there is a statistically significant relationship between inflation and stock returns in many periods. Durucasu (1997) study shows that the inflation rate variable do not effect the ISE 100 index.

Kearney and Daly (1998) investigated effects of macroeconomic factors' volatility on Australian stock market valatility. In this study, monthly interest rate, inflation, money supply, industrial production, current account balance and exchange rate volatility in the July 1972- January 1994 period is included in the model series. The increase in inflation volatility creates a positive impact on the stock prices. Najand and Noronha (1998) have tested the casual relationship between stock returns in the Japan, inflation, real output, and interest rate. The results show a weak negative relationship between inflation and stock returns. Unro (1998) has found a statistically significant and negative relationship between stock returns and inflation in the Hong Kong, Singapore, South Korea and Taiwan.

Sharpe (1999) provided that the long-term negative correlation between expected return and inflation in a study of the largest 144 firms in the S&P 500 1979-1998 result over a longer period of three decades. The model of the article included the log earnings-price ratio which is expressed as a linear function of expected inflation, expected future returns, expected earnings growth rates, and the log of the current dividend/payout ratio. Tuzcu (1999) investigated the relationship between the high volatility in ISE market and some financial and macroeconomic indicator. Price volatilities have been analyzed From 1 January 1986 when Istanbul Stock

Exchange began operations to 31 March 1999. The changes of inflation rate to explain extreme fluctuations in stocks were inadequate.

Durukan (1999) examined the relationship between the stock return in Turkey and many macroeconomic variables such as inflation, economic activity, interest rate, exchange rate and money supply in the period 1986-1998. the CPI as the inflation data is not an important and effective variable to explain changes in stock returns. Durukan (1999) tested effects of macro-economic variables such as inflation, interest rates, economic activity, exchange rate and money supply on stock prices in the period 1986-1998 by using least squares method. As a result, inflation is the most effective negative macro-economic variable on stock prices. Adrangi et al. (1999) examined the effects of macroeconomic variables on stock returns for Korea and Mexico and concluded a negative relationship between real stock returns and unexpected inflation. Gjerde and Sættem (1999), Achsani and Strohe (2002) examined small regional markets such as Norway and Indonesia and conclude that the relationship between stock price and inflation rate is ambiguous.

Chopin and Zhong (2000) tested the relationship between stock returns and inflation during II. World War and obtained a negative relationship between stock returns and inflation using a multivariate Vector-Error-Correction Model (VECM) in the short and long term. Khil and Lee (2000) found a negative relationship between stock returns and inflation rates in all countries except for Malaysia by using datas in the United States and 10 Asian countries (Australia, Hong Kong, Indonesia, Japan, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand) on the 1970-1997 period. The results of Kearney's study (2000) were showed that the changes of inflation rate innovations caused a negative and significant impact on stock prices.

Choudhry (2001) observed four countries with living high inflation which are Argentina, Chile, Mexico and Venezuela. The paper result backs the claim that the past rate of inflation may contain important information regarding the future inflation rate. These significant results presented shows a positive relationship between stock returns and inflation. These results suggest that stock returns against inflation is acting as a protection. Crosby's study(2001) examined the effects of inflation on stock returns in Australia, negative relationship between inflation and stock returns in the short-term is observed. Chopin and Zhong (2001) tested the association between stock returns and inflation during II World War

and established a strong negative relationship among inflation and stock. Spyrou (2001) found a significantly negative relationship between inflation and stock returns for Greece for the period 1990-1995, but the research showed negative but statistically insignificant correlation between variables for the period 1995-2000. Omran and Pointon (2001) showed that the changes of inflation rates created a negative impact on liquidity of stock market activity by using monthly data for Egyptian market in 1980-1998 period. Soenen and Johnson (2001) reported that inflation seemed to have no impact on Chinese real stock returns.

The Morelli's study(2002) is explained the interaction between stock market volatility and volatility in the macroeconomic variables such as industrial production, retail sales, money supply, inflation rate and exchange rate by using UK monthly datas. As a result, the changes in the prices of stocks can not be explained by using the volatility of macroeconomic data. Engsted and Tanggaard (2002) have been revealed differences between return-inflation relations on data in the Denmark and the United States. Accordingly, while there are reverse-directional relationship between stock returns and expected inflation rate for Denmark in the long term, the study are introduced a weak positive correlation between the inflation and the expected return for the United States. Wongbangpo and Sharma's study (2002) is explained the results of volatilities in some macroeconomic data on the prices of stocks traded in the Indonesia, Malaysia, Singapore, Philippines and Thailand stock markets. This investigation shows a reverse relation between stock prices and inflation.

Al-Khazali (2003) examined short-and long-term interaction between inflation and stock prices for 21 countries. The relationship between real stock prices and inflation is negative in the countries except Malaysia by using short term data. Al-Khazali's long-term examination results seem to support the Fisher effect which is in a positive direction of the relationship between the expected changes in inflation and the stock prices. This effect is due to the perception of the stock prices as a means of protection from inflation. Kim (2003) has found a negative correlation between stock returns and inflation in the study which includes Germany stock returns, inflation rate, and local growth rates the years of 1970-1999.

Nishat and Shaheen (2004) investigated the relationship between Karachi Stock Exchange Index and macro-economic variables from 1973 to 2004. As a result of the research, inflation is as an important negative determinant of stock prices. Adams et al. (2004) find evidence that stock prices fall after an announcement that inflation was higher than expected but only if high frequency data are used. They also find that the response depends on the state of the

economy. The relationships between Greece Stock Exchange Index and industrial production, inflation, interest rates investigate in Dritsaki and Dritsaki's study(2004). The changes of inflation generates a significant causal impact on stock prices as Greece Stock Exchange Index. Spyrou (2004) observed a positive correlation between the inflation and stock prices for 10 Emerging Stock Markets (ESM) which are Chile, Mexico, Brazil, Argentina, Thailand, South Korea, Malaysia, Hong Kong, Philippines and Turkey during 1990s. Sangbae and In (2004) presented a new perspective to positive relationship between stock returns and inflation in Fisher hypothesis. The results of the tests show a positive relationship between stock returns and inflation by using one month as the short period and a128 months as long term period.

Floros (2004) has investigated the correlation between stock returns in Athens Stock Exchange and Consumer Price Index data for Greece as inflation in the 1988-2002 period using various econometric techniques. The study's results showed that there was not any relationship between stock returns in Greece and inflation in the long term by using the Johansen test. Duman and Karamustafa (2004) investigated the relationship between stock returns and inflation in Turkey and have found a negative relationship between variables such as many advanced countries.

Mumcu (2006) tried to explain stock and the relationship between macroeconomic factors with Granger Causality Test using Multiple Linear Regression Model by using monthly data for the period January 1990-December 2004. The ISE 100 Index as dependent variable, Treasury bills interest rate, exchange rate, money supply (M2), industrial production index, inflation (CPI) and gold prices as independent variables were used in the study. As a result, there is no causal relationship between the Istanbul Stock Exchange Index and the CPI. Madsen (2005), and Ryan (2006) found a weakly positive correlation between stock returns and inflation.

Lutz (2007) examined the relationship between inflation and stock returns in Timberland by using timberland returns of NCREIF Timberland Index for the 1987-2006 period and the Wilson Model (known as John Hancook Timber Index) for the 1960-1986 period. Timberland is defined as an entity based on rising consumer prices. The analysis showed that the changes of U.S. timberland returns resulted in the changes of U.S. Consumer Price Index and there is a positive relationship between inflation and stock returns. Mutan and Çanakçı (2007) studied the effects of macroeconomic developments on the Turkish stock market by using monthly

data in January 2000 - April 2007. ISE National-100 index as the dependent variable, industrial production index, money supply and inflation is used in this study. It is observed a negative correlation between the stock return and inflation. Humpe and Macmillan (2007) is determined a negative relationship with inflation and stock prices for the period 1965-2005.

Zügül and Şahin (2009) determined whether there is a relationship between some macroeconomic variables such as dollar exchange rate, the M1 money supply, interest rate and consumer price index and the ISE 100 Index over monthly data in January 2004 - December 2008 period by using "Least Squares" was evaluated according to the linear regression method and emerged that inflation rate created a positive impact on the Istanbul Stock Exchange 100 index.

Büyüksalvarcı (2010) analyzed the effects of macroeconomic variables such as consumer price index, money market interest rate, gold price, industrial production index, oil price, foreign exchange rate and money supply on the Turkish Stock Exchange Market (Istanbul Stock Exchange Index-100) over monthly data extending from the January of 2003 to the March of 2010 by using a multiple regression model. The results of regresssion showed that inflation rate and did not have any significant effect on the ISE-100 Index returns.

2.8.2.3. The Changes of Interest Rates

Fama (1981) showed that the expected inflation which is proxied by the short term interest rate is negativeluy correlated with stock prices. On the other hand, the influence of the long-term interest rate on stock prices stems directly from the present value model through the influence of the long-term interest rate on the discount rate. Cook and Hahn (1988) and Smirlock and Yawitz (1985) presented that the decline in interest rate is good, the rise in interest rate is bad, the increase in the rate of the announcement effect in short term is negative and the decline in the rate of the announcement effect in short term is positive. The study examining the returns of stock in the short term emphasized that the changes of interest rate response very rapid in the financial market.

Saunders and Yourougou (1990) have expressed that some of the differences in stock returns explained the sensitivity of certain assets and liabilities of companies to interest rate. In the study, the stocks based on real assets (the stocks of industrial companies) are less sensitive to unexpected changes in interest rates than the stocks based on financial assets (the stocks in financial institutions). Jensen and Johnson (1995) have demonstrated that the long term

performance in stock markets is related to to the Fed discount rate. In addition, the study showed that the fluctuations in stock returns after the fall of the discount rate is higher and more stable.

Zhou (1996) also studied the relationship between interest rates and stock prices using regression analysis. He found that interest rates have an important impact on stock returns, especially on long horizons, but the hypothesis that expected stock returns move one-for-one with ex ante interest rates is rejected. In addition, his results show that long-term interest rate explain a major part of the variation in price-dividend ratios and suggests that the high volatility of the stock market is related to the high volatility of long-term bond yields and may be accounted for by changing forecasts of discount rates.

Lee (1997) used three-year rolling regressions to analyze the relationship between the stock market and the short-term interest rate. He tried to forecast excess returns (i.e. the differential between stock market returns and the risk-free short-run interest rate) on the Standart and Poor 500 index with the short-term interest rate, but found that the relationship is not stable over time. It gradually changes from a significantly negative to no relationship, or even a positive although insignificant relationship.

Jefferis and Okeahalam (2000) worked on South Africa, Botswana and Zimbabwe stock market, where higher interest rates are hypothesized to depress stock prices through the substitution effect (interest-bearing assets become more attractive relative to shares), an increase in the discount rate (and hence a reduced present value of future expected returns), or a depressing effect on investment and hence on expected future profits.

Zordan (2005) said that historical evidence illustrates that stock prices and interest rates are inversely correlated, with cycle's observable well back into the 1880's; more relevant to the period subsequent to World War II. From the late 1940's to the mid 1960's, inflation was low, and interest rates were both low and stable. Stocks did well during this period, both in nominal and real terms. The inverse relationship between interest-sensitive asset classes like stocks, bonds, and real estate and commodity prices has been known through history. That relationship can be observed in the 1877 to 1906 cycle, the 1906 to 1920 cycle, the 1920 to 1929 cycle, the 1929 to 1949 cycle, and the 1949 to 1966 cycle.

2.8.2.4. The Changes of Money Supply

Money supply is one of the most important factors that affected prices of securities traded in the securities market. Today, lots of writer and researchers don't constitute a consensus on the elements of money supply. While economicts comment the topics and elements of money supply, the people in the business world continue to use many definition(Fisher 1978, pp.8).

Classical approach to the supply of money to give the generally accepted definition of the oldest and is based on the exchange tool funciton of money. According to this approach, the supply of money on the countries where kid money, paper money and banking system are advanced is expressed in the form of demand deposits and commercial deposits and this passes as the narrow sense definition of money supply in economic literature (Kanalıcı 1997, pp.45).

According to Gurley and Shaw approach, the scope of the money supply is money, money sustitutes, cash demand deposits, time deposits and securities. The money supply is calculated as the weighted sum of these values by measuring degree of substitution of these assets (Gurley and Shaw, 1960)

The increase or decrease in the money supply may affect the stock prices by the three-way. When there was an increase in the money supply in the economy if any reason or the money supply is increased faster than the normal increase by the central bank, people will pass more cash than they needs the money for the current account. In this case, if an increase in the money supply suitable for the elasticity of aggregate supply, the real income will cause increase.

New purchasing power increases the amount of total spending. As total expenditure increases on the economy, the pressure on demand will increase. The increase in the amount of money will lead to the increase of the demand of all products and services of individuals. Sprinkel examined that the increase of money supply impacts on stock prices in a long term the individuals will lead to increases in demand for services to the entire property. Sprinkel worked on the story, and the United States from 1981 until 1963 during a long-term increase in the money supply on stock prices tesilerini examined (Sprinkel 1964, pp.128).

Changes in the money supply under certain conditions, such as stock prices affect corporate earnings through interest rate also affects through. When money supply increases and the supply elasticity is near zero, the multiplier effect ends and the cash starts to run in the direction. Therefore, the increase of money supply increase the total spending. The changes of total spending affect the general level of prices. (HORNE)

Fazal Husain and Tariq Mahmood (1999) study the relationship between monetary expansion and stock returns in Pakistan. M1 and M2 are used as dependent variables and stock indices of six sectors are used as independent variables. An Augemented Dickery Fuller test is used to find a relationship between money supply and both short and long run changes in stock market prices.

Ben Bernanke and Kenneth Kuttner (2005) argue that the price of a stock is a function of its monetary value and the perceived risk in holding the stock. A stock is attractive if the monetary value it bears is high. On the other hand, a stock is unattractive if the perceived risk is high. The authors argue that the money supply affects the stock market through its effect on both the monetary value and the perceived risk. Money supply affects the monetary value of a stock through its effect on the interest rate. The authors believe that tightening the money supply raises the real interest rate. An increase in the interest rate would in turn raise the discount rate, which would decrease the value of the stock as argued by the real activity theorists.

2.8.2.5. The Changes of Exchange Rates

Stocks and foreign exchange are an important alternative investment tools and the relation among them is negative. The situation of companies across the exchange rates affects according to positions in export-import, foreign currency assets.

The study of Bahmani-Oskooee and Sohrabian (1992) was the first studyto investigate long-term relationship between stock prices and exchange rates within the framework of the Granger causality test by using cointegration analysis. The study showed the two way causal relationship between the effective exchange rate and the S & P 500 index in the short term. But there were not a relationship between variables in the long term.

Abdalla and Murine (1997) investigated the relationship between stock prices and exchange rate in Korea, the Philippines, India and Pakistan by using the cointegration technique. There was a long-term relationship in the data of India and the Philippines. However, while the exchange rate was Granger cause of the stock in India, the study showed that there was an opposite case in the Philippines.

Aysoy etc. (1997) explained the ISE composite index by using some variables such as industrial production index, CPI, the three-year treasury bond yield (converted to months), money supply, budget balance, exchange rate and current account balance in the1986-1995 period. The results of the study highlighted that the macroeonomic factors were insufficient to explain the stock returns at whole period, but several macroeconomic factors had the power to explain them in some periods. For exmaple, the exchange rate showed a negative and strong relation with the stock returns in many periods.

Özer (1999) examined the links between exchange rates and stock prices on the basis of period between February of 1999 and July of 1993 and concluded that changes in stock prices caused changes in exchange rates. This result did not support the traditional approach which determined that the changes in exchange rates cause changes in stock prices but supported the portfolio approach which predictes that the changes in stock prices cause by changes in exchange.

The portfilo approach in determining the exchange rate says that the increase(decrease) of the stock value causes the increase (decrease) of interest rate by increasing the money demand and the result of the increase (decrease) of interest rate causes incerase(decrease) of demand for local currency, the currency ultimately be assessed (lose value).

Kenen (1994, pp.111) concluded that the relationship between stock prices and exchange rate could be expressed with monetary approach of the exchange rate theory by analyzing this relationship in the process of monetary expansion or contraction. According to monetary approach, the value of local currency is determined by comparing the foreign country's money supply and the domestic money supply.

Özçiçek (1997) concluded that the relationship between the changes of exchange rates and stock market volatility is strong in the same month. However, the volatility either the exchange rate or stock market was not affected by the net foreign portfolio investment in

foreign currency and the effect of the increase or decrease of the exchange rate was not same on the stock market indices. For example, the decrease of stock exchange indexes or increase of the exchnage rate (negative state) was found to be more powerful effect. The causal relationship was supported to be a two-way effect. In this case, the companies were affected both international competition (microeconomic approach) as a result of exchange rate changes and the exchange rate change in the stock market (portfolio approach). Finally, there were not a relationship between the volatility of stock market volume and exchange rate volatility.

Kasman (2004) examined the relationship between stock market volatility and macroeconomic volatility in Turkey by using monthly data in 1986-2003 period and measuring by GARCH estimates. The study used macroeconomic variables such as industrial production, money supply (M1), inflation rate, the exchange rate defined as a United States Dollar equivalent of the Turkish lira and oil prices. The bi-directional causality between ISE indices (National 100, financial, industrial and service) and the dollar exchange rate had reached.

Sevüktekin and Nargeleçekenler (2007) concluded that there was not a causal relationship between prices of stocks and the exchange rate in the short, whereas there was a two-way relationship in the long-term. This result showed that the long-term stock market crises prevented by controlling the exchange rate.

In short, when there was a bi-directional and positive causality between the prices of stocks and the exchange rate, the investors could be predict the behavior of other market by using a market. However, the relationship between the prices of stocks and the exchange rate after the imbalance in a period was not predicted by investors. Therefore, the long-term relationship between exchange rate and stock prices in this relevant period would be destroyed after a time period.

3.DATA AND METHODOLOGY

3.1 . DATA

The stocks traded the ISE 100 Index from 2000 to 2010 date range are determined on Financial asset pricing models. Though 200 companies have entered the index at certain times, the accessibility of the shares to monthly data investigate from 2000 to 2010 date range. In this direction, the data of 118 companies were able to get and these stocks are listed in the below table.

Table 3.1 : The Stocks in ISE100 between 2000 and 2010

ADANA	ASELS	BTCIM	EGYO	HURGZ	KRDMD	PEGYO	TIRE
ADNAC	ASUZU	CEMTS	EREGL	IHEVA	KRSTL	PENGD	TKBNK
AFYON	ATEKS	CIMSA	FFKRL	IHLAS	MAKTK	PETKM	TOASO
AKBNK	AYGAZ	CLEBI	FINBN	ISCTR	MARTI	PNSUT	TRCAS
AKCNS	BAGFS	CYTAS	FROTO	ISGYO	MERKO	PRKTE	TRKCM
AKGRT	BANVT	DEVA	GARAN	IZMDC	METRO	PTOFS	TRNSK
AKSA	BFREN	DGZTE	GEDIZ	IZOCM	MIPAZ	SAHOL	TSKB
ALARK	BOLUC	DOHOL	GLYHO	KARTN	MRDIN	SARKY	TUDDF
ALCTL	BOSSA	DYHOL	GOLDS	KCHOL	MRSHL	SASA	TUPRS
ALGYO	BOYNR	DYOBY	GOLTS	KENT	MUTLU	SELGD	UCAK
ALNTF	BRISA	ECILC	GOODY	KERVT	NETAS	SISE	VESTL
ANACM	BROVA	ECYAP	GSDHO	KIPA	NTHOL	SKBNK	YKBNK
ANSGR	BRSAN	ECZYT	GUBRF	KLMSN	NTTUR	TATKS	YKGYO
ARCLK	BRYAT	EGGUB	GUSGR	KONYA	NUGYO	TEKST	
ARSAN	BSHEV	EGSER	HEKTS	KORDS	OTKAR	THYAO	

After determining the main sectors included in 118 stocks, I wanted to examine the manufacturing sector and financial sector which are in a density of the stock set in addition to the ISE 100 under separate headings. In this regard, the stocks including the manufacturing sector and financial sector are listed in the below table.

Table 3.2 : Selected Stocks In Manufacturing Sector, Financial Sector and Others

MANUFACTURING INDUSTRY						FINANCIAL INSTITUTIONS		OTHERS
ADANA	BRISA	GEDIZ	KRDMD	TATKS		AKBNK	GUSGR	ALCTL
ADNAC	BRSAN	GOLDS	KRSTL	TIRE		AKGRT	IHLAS	ASELS
AFYON	BSHEV	GOLTS	MAKTK	TOASO		ALARK	ISCTR	BOYNR
AKCNS	BTCIM	GOODY	MERKO	TRCAS		ALGYO	ISGYO	BROVA
AKSA	CEMTS	GUBRF	MRDIN	TRKCM		ALNTF	KCHOL	CLEBI
ANACM	CIMSA	HEKTS	MRSHL	TUDDF		ANSGR	METRO	KIPA
ARCLK	CYTAS	HURGZ	MUTLU	TUPRS		BRYAT	NTHOL	MARTI

ARSAN	DEVA	IHEVA	OTKAR	VESTL		DOHOL	NUGYO	MIPAZ
ASUZU	DGZTE	IZMDC	PENGD			DYHOL	PEGYO	NETAS
ATEKS	DYOBY	IZOCM	PETKM			ECZYT	SAHOL	NTTUR
AYGAZ	ECILC	KARTN	PNSUT			EGYO	SKBNK	PRKTE
BAGFS	ECYAP	KENT	PTOFS			FFKRL	TEKST	THYAO
BANVT	EGGUB	KERVT	SARKY			FINBN	TKBNK	TRNSK
BFREN	EGSER	KLMSN	SASA			GARAN	TSKB	UCAK
BOLUC	EREGL	KONYA	SELGD			GLYHO	YKBNK	
BOSSA	FROTO	KORDS	SISE			GSDHO	YKGYO	

The close prices of stocks review on a monthly basis, ISE 100 is used for the market portfolio and Yearly Compounded Interest Rates of Treasury Discounted Auctions is used for risk free interest rate on all the analysis in my thesis. the data was consulted by the 3-month due to the operations related to the ratio of various balance sheet items in the phase of q-score factor.

I adopt the four-factor model (Fama French + momentum), Fama-French's 3-factor model, CAPM and two-factor model(size + CAPM) to explain the structure of stock returns in the Turkey. Lastly, since Griffin and Lemmon (2002) suggest that the financial distress risk of a firm has a significant impact on the rate of return, we add a fifth aggregate factor, the financial distress risk factor, q-score, to the Fama and French 3-factor model plus momentum (the explanation of the Carhart (1997) momentum 4-factor model)to test the structure of factors influencing the value and growth stock returns in Turkey.

3.2. SECTORAL INFORMATION

3.2.1. Istanbul Stock Exchange

Istanbul Stock Exchange started trading on 3 January 1986, although the second half of the 19th century in Turkey goes back to the roots of organized securities markets. Due to the Crimean War in Turkey starting in 1854 the Ottoman debt and facilitated the establishment of stock exchange securities, as well as accelerated. To remove the bonds after the start of the Ottoman debt, the market has formed an Istanbul Galata bankers and non-Muslim have begun to deal with this work. Turkey has emerged in this period due to the establishment of a stock market and the Galata bankers themselves, have pioneered this movement by establishing an association in 1864. First-time securities market was established in 1866, the Ottoman Empire, the "Bonds Dersaadet Exchange" is. Dersaadet Stock Exchange, European investors are aiming to get higher returns in the collapsed Ottoman economy became an occasion according to ISE.

Following the establishment of the Republic of Turkey No. 1447 issued in 1929, "Securities and Exchange Law of Exchanges" and inexperienced in capital markets, the new name "Istanbul Stock Exchange Market and Foreign Exchange" is organized under the name provided. In 1981, out of the Capital Markets Law and the Law on the stock market with the creation of the Capital Markets Board has taken an important step. Following this step at the end of 1985 officially established the Istanbul Stock Exchange, at the beginning of 1986, became operational according to ISE.

The below table which show the development of ISE can be seen the variability of the national market value of ISE and trading volume over the years during the period of 1998-2010.Shortly, there was not a significant stability of the growth rate in the ISE in the specified period. However, the trading volume of the ISE national market $68,485 million in 1998 reached $411,469 in 2010. Similarly, the market value increased to $295,808 million from $ 33,472 million. Although the trading volume and market value in the crisis years had declined, they increased again in later years. Furthermore, number of companies traded on the National Market Between 1998-2010 rised 339 from 278. In addition, there were 144 new initial public offering between 1998 -2010.

The share of ISE market value in the GDP was 44,9% as the highest value and 12,4% as the lowest value by showing variability. The ratio ISE market value per GDP was not high enough as shown in below table. One of the main reasons was that companies did not meet the financing needs by the way of the public opening during the specified periods.

YEAR	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Number of Companies Traded on the National Market	278	286	316	311	289	285	297	304	316	319	317	315	339
Initial Public Offering	20	9	36	1	4	2	12	9	15	9	2	3	22
ISE Market Value (Milyon USD)	33473	112276	68635	47189	33773	68624	97354	161630	162525	288290	119100	231700	295808
ISE trading volume (Milyon USD)	68485	81099	178998	74530	69937	98160	146605	200858	222724	294295	247893	305036	411469
GDP (Milyon USD)	269125	249816	266439	195545	232280	303262	392206	482685	529187	649125	730318	614466	729051
ISE Market Value / GDP (%)	12,4	44,9	25,8	24,1	14,5	22,6	24,8	33,5	30,7	44,4	16,3	37,7	40,6

The below table listed Market capitalization rate in GDP for the stock exchanges of Turkey and the selected developed countries. The market capitalization rate in GDP of companies traded on ISE was averagely 0.29 during 1998-2010 periods. Market capitalization rate of listed companies in the GDP for selected developed countries remains low compared to the average value. It is obvious that this rate would be even lower by taking into account the existing informal economy in our country. The ratio is greater than 1 in the America, Britain and Canada. The market capitalization rate of listed companies in the Turkey Stock Market in the GDP is low compared to developed countries. This case indicates that the relative importance of stock market in the economy is less.

Table 3.3 : Market Capitalization Rate of Listed Companies in the GDP for Selected Developed Countries

Countries/ Years	Germany	America	England	Italy	Japonya	Canada	Turkey
1998	0,5	1,44	1,63	0,46	0,63	0,88	0,13
1999	0,67	1,79	1,9	0,61	1,02	1,19	0,45
2000	0,67	1,53	1,76	0,7	0,68	1,06	0,26
2001	0,57	1,34	1,47	0,47	0,55	0,85	0,24
2002	0,34	1,04	1,15	0,39	0,53	0,78	0,15
2003	0,44	1,28	1,32	0,41	0,7	1,03	0,23
2004	0,43	1,38	1,3	0,46	0,77	1,19	0,25
2005	0,44	1,38	1,34	0,45	1	1,31	0,33
2006	0,56	1,46	1,55	0,55	1,08	1,33	0,31
2007	0,63	1,42	1,37	0,51	1,02	1,54	0,44
2008	0,3	0,82	0,7	0,23	0,66	0,69	0,16
2009(*)	0,39	1,07	1,28	0,31	0,67	1,2	0,38
2010(*)	0,43	1,18	1,6	0,31	0,71	1,39	0,42
Average	0,49	1,32	1,41	0,45	0,77	1,11	0,29

Source: IMF. WFE
*The IMF estimates GDP figures for the shaded cells

Company number traded in stock markets shows the number of companies proven from capital market source by exporting stock in time. Decreases represent the companies which exit form stok market or are exited from stock market because of various reasons.

Table 3.4 : Company Number Traded in Stock Markets (Domestic and Foreign)

Countries / Years	Germany	America	England	Italy	Japonya	Canada	Turkey
1998	662	8.449	2.423	243	3.162	1.433	278
1999	851	8.504	2.274	270	3.216	1.456	286
2000	983	7.851	2.374	297	3.406	1.394	316
2001	983	7.069	2.332	294	3.476	1.299	311
2002	934	6.586	2.824	295	3.465	3.791	289
2003	866	6.159	2.692	279	3.346	3.599	285
2004	819	6.097	2.837	278	3.396	3.604	297
2005	764	6.029	3.091	282	2.796	3.758	304
2006	760	6.005	3.256	311	3.854	3.842	316
2007	866	5.941	3.307	307	3.870	3.951	319
2008	832	5.472	3.096	300	3.786	3.841	317
2009	783	5.179	2.792	296	3.656	3.700	315
2010	765	5.095	2.966	296	3.565	3.741	339
Average	836	6.495	2.790	288	3.461	3.031	306

Source: WFE

When the number of companies traded on the ISE compared to the number of companies traded on stock exchanges in developed countries, the supply front of ISE as Italy appears to be insufficient. For example, while the average company number traded in stock markets was 6495 in America, 836 in Germany, 2790 in UK, 3461 in Japan, 3031 in Canada, this number was 288 in Italy and 306 in Turkey during 1998-2010. As stated above table, the rate of going public the companies traded on the Istanbul Stock Exchange remained at low levels.

Table 3.5 : Total Trading Volume (million dollars)

Countries / Years	Germany	America	England	Italy	Japonya	Canada	Turkey
1998	1.491.796	13.124.824	2.887.990	486.507	932.919	331.848	68.485
1999	1.551.467	19.890.396	3.399.381	539.449	1.891.669	357.443	81.099
2000	2.119.785	31.804.236	4.558.663	1.019.625	2.641.068	636.533	178.998
2001	1.423.371	22.240.645	4.520.183	633.937	1.834.418	461.557	74.530
2002	1.212.302	18.206.831	4.001.340	634.496	1.688.261	408.165	69.937
2003	1.299.327	17.322.982	3.609.718	820.642	2.221.254	471.544	98.160
2004	1.541.123	20.975.924	5.169.024	969.234	3.352.475	651.059	146.605
2005	1.915.305	24.820.123	5.677.721	1.293.682	4.679.558	900.493	200.858
2006	2.737.195	34.198.150	7.571.699	1.591.188	6.258.821	1.281.799	222.724
2007	4.324.928	57.900.406	10.333.686	2.311.194	6.765.972	1.634.870	294.295
2008	4.678.829	70.647.088	6.271.521	1.499.457	5.887.892	1.716.228	247.893
2009	2.240.331	46.735.935	3.402.496	948.147	4.158.347	1.245.457	305.036
2010	1.628.496	30.454.798	2.741.325	-	3.966.746	1.368.954	411.469
Average	2.166.481	31.409.411	4.934.211	1.062.296	3.559.954	881.996	184.622

When ISE trading volume was compared to the developed country stock markets trading volume, It was reached a conclusion that market ISE was very shallow. As seeing from the above table, while the average trading volume of stock exchange in the period 1998-2010 was $2.166.481milyon in Germany, $31,409,411 million in U.S., $4,934,211 million in UK, $3.559.594 million in Japan, $1.062 .296 million in Italy, $881,996 million in Canada, the average was only $184,622 million in Turkey.

If the share of ISE total trading volume in GDP was compared in shares of stock markets in developed countries, the results in the following table were obtained.

Table 3.6 : Total Trading Volume /GDP

Countries / Years	Germany	America	England	Italy	Japonya	Canada	Turkey
1998	0,68	1,49	1,98	0,40	0,24	0,54	0,25
1999	0,72	2,13	2,26	0,45	0,43	0,54	0,32
2000	1,11	3,20	3,08	0,93	0,57	0,88	0,67
2001	0,75	2,16	3,07	0,57	0,45	0,65	0,38
2002	0,60	1,71	2,48	0,52	0,43	0,56	0,30
2003	0,53	1,55	1,94	0,54	0,53	0,54	0,32
2004	0,56	1,77	2,35	0,56	0,73	0,66	0,37
2005	0,69	1,96	2,49	0,73	1,03	0,79	0,42
2006	0,94	2,55	3,09	0,85	1,43	1,00	0,42
2007	1,30	4,12	3,67	1,09	1,55	1,15	0,45
2008	1,28	4,92	2,34	0,65	1,20	1,14	0,34
2009(*)	0,67	3,31	1,56	0,45	0,82	0,93	0,50
2010(*)	0,49	2,08	1,21	-	0,74	0,88	0,56
Ortalama	0,79	2,53	2,43	0,64	0,78	0,79	0,41

Source: WFE
*The IMF estimates GDP figures for the shaded cells.

As shown in the table, the share of stock market trading volume in the GDP was over %100 in the America and UK. In 2000, this rate has reached %67 which was the highest value for Turkey during 1998-2010. At the end of 2000, the financial crisis in our country has led to decline trading volume in stock market. As a result of this decline, the share of the stock market trading volume in GDP decreased to %38. Nowadays, the share in Turkey has been estimated to be %56 by IMF.

3.2.1.1. ISE National-100 Index

ISE National-100 Index initiated with 40 companies in 1986 and is a continuation of composite index (ISE-100) limited by the stock of 100 companies in later years. The index excluding investment trusts traded on the National Market which is composed of stocks selected according to certain conditions will automatically include the stocks of the ISE National-30 and ISE National-50.

The monthly data of "ISE National-100 Index" (January 1986 =1) was obtained from the Istanbul Stock Exchange website. The following chart shows that the falling index because of the effects of the 1998 Russian crisis started to increase in the 1999. However, the index began to fall rapidly after the liquidity Crisis in November 2000. The decline in the index continued because of Crisis of February 2001. After elections on 03/11/2002, the one- part government power provided its political stability and economic stability, so the index began to rise again. The reason of the falling index in the last months of 2008 was the negative economic developments felt in many countries of the world. Depreciation of the U.S. real estate market and increase in personal bankruptcies involvement in sales caused this crisis (the negative economic developments). The index began to fall quickly because of this situation in the world. In 2010 after the global crisis, Turkey's economy in line with the world economy seemed positive changes.

Other notable point was that the index variability was high and the monthly data of ISE National-100 Index showed a positively skewed and long thin tails distribution.

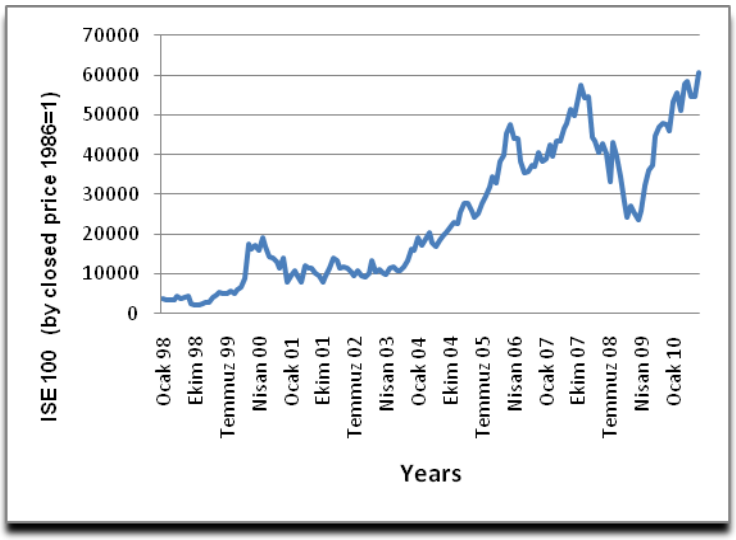

Figure 3.1 : ISE100 by closed price 1986=1

3.2.1.2. Total Traded Amount of ISE

The monthly data of total traded amount in the ISE National-100 Index was obtained from the Istanbul Stock Exchange website. As a result of effects of Russian crisis in 1998, the liquidity crisis in November 2000 and the financial crisis in February 2001, the total traded amount of ISE began to fall rapidly as shown the following chart. After elections on 03/11/2002, the one- part government power provided its political stability and economic stability, so the index began to rise again.The effects of the global financial crisis in 2008 have led to a rapid decline in the traded amount of ISE. Although this decline continued in 2009, the effect of the crisis began to decline in 2010 and the total traded amount of ISE has continued an increasing trend until June.

Other notable point was that total traded amount of ISE variability was high and the monthly data of the total traded amount in the ISE National-100 Index showed a positively skewed and short thick tails distribution.

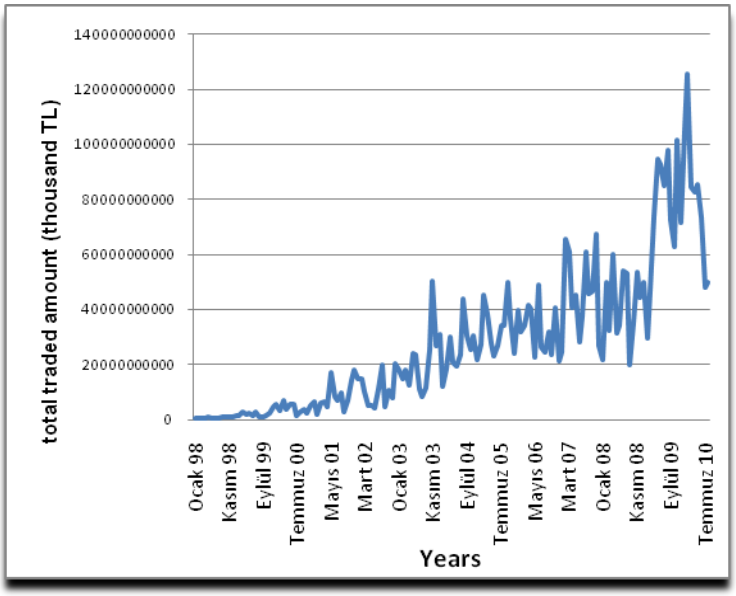

Figure 3. 2 : Total Traded Amount in ISE100

3.2.2. Financial Sector

3.2.2.1. General Outlook of Financial Sector

Asset size of financial sector has maintained its increasing trend and become TL 1.4 trillion as of March 2011. While the weight of banking sector in financial sector did not change, the growth in compounds of financial sector in general continued. A decrease by 0.5 points is realized in securities intermediary institutions'assets.

Table 3.7 : The Size of Assets in Financial Sector

(TL Billion)	2002	2003	2004	2005	2006	2008	2009	Mar.10	Dec.10	Mar.11	%Dist.
CBRT	74,1	76,5	74,7	90,1	104,4	106,6	113,5	112,1	128,4	139,7	9,9
Banks	212,7	249,7	306,4	406,9	499,7	581,6	732,5	860,5	1007	1046	77,2
Financial Leasing C.	3,8	5	6,7	6,1	10	13,7	17,1	14,3	15,8	15,8	1,2
Factoring Companies	2,1	2,9	4,1	5,3	6,3	7,4	7,8	11,1	14,5	14,4	1,1
Consumer Fin. Companies	0,5	0,8	1,5	2,5	3,4	3,9	4,7	4,5	6,1	6,4	0,5
Asset Management C.	n.a.	n.a	n.a	n.a	n.a.	0,2	0,4	0,4	0,7	0,73	0,1
Insurance Companies (1)	5,4	7,5	9,8	14,4	17,4	22,1	26,5	32,6	31	35,1	2,4
Pension Companies	0	3,3	4,2	5,7	7,2	9,5	12,2	16,5	17,8	17,8	1,4
Pension Inv. Funds		0	0,3	1,2	2,8	4,6	6	9,7	11,7	11,7	0
Securities Inv. Trust(2)	1	1,3	1	2,6	2,7	3,8	4,2	6,4	8	7,5	0,9
Securities Inv. Trust(2)	0,1	0,2	0,3	0,5	0,5	0,7	0,6	0,7	0,7	0,7	0,1
Securities Inv. Fund(2)	9,3	19,9	24,4	29,4	22	26,4	24	28,9	29,7	33,2	2,3
Real Estate Inv. Trust (2)	1,1	1,2	1,4	2,2	2,5	4,1	4,3	4,7	5,1	13,9	0,4
Venture Capital Trust(2)	0	0	0,1	0,1	0,1	0,2	0,1	0,2	0,2	0,2	0
Port. Man. Comp. (3)(4)	5,8	17,8	24,5	30,2	26	31,2	30,7	41,3	44,9	48,1	3,4
Total	315,9	382,8	455,2	591,5	697,8	806,5	972,4	1127,4	1303,8	1373,8	100

Source: BRSA, CBRT, TT, CMB, ACMII(1) January 2011 data is used. (2) December 2010 data is used. (3) January 2011 data is used. (4) Portfolio size managed by portfolio management companies.

As of March 2011, total number of institutions is 425 and the number of banks operating in financial sector decreased to 48 since two global-capital deposit banks merged under a single roof. It is determined that the decrease in number of financial leasing companies arising from not being adapted to orientation process and financial conditions ended in March 2011. While number of factoring companies decreased by 2, number of pension companies increased by 2, number of real estate investment trusts increased by 6 and number of venture capital investment trusts increased by 2.

Table 3.8 : Institutions Opearting in Financial Sector

Number	2005	2006	2007	2008	2009	Mar.10	Sep.10	Dec.10	Mar.11
Banks	51	50	50	49	49	49	49	49	48
Deposit	34	33	33	32	32	32	32	32	31
Participation	4	4	4	4	4	4	4	4	4
Developent Investment	13	13	13	13	13	13	13	13	13
Domestic Private	26	21	18	16	16	16	16	16	16
Public	8	8	9	9	9	9	9	9	9

Global Capital	17	21	23	24	24	24	24	24	23
Financial Leasing	84	81	68	50	47	47	47	35	35
Factoring	88	86	86	81	78	80	78	76	74
Comsumer Financing	9	9	9	10	10	10	10	11	11
Asset Management	4	5	5	5	6	6	6	6	6
Financial Holding Companies	0	0	0	3	3	3	3	3	3
Insurance(1)	46	47	51	62	55	57	57	57	58
Ind.Pension(1)	11	11	11	12	13	14	14	14	16
Reinsurance(1)	1	1	1	2	1	1	1	1	1
Otherinsurance(1)	34	35	39	48	41	42	42	42	41
Securities Intermediary Ins. (1)	101	100	104	104	103	103	103	103	103
Securities Inv. Trust	26	30	33	34	33	33	33	31	31
Real Estate Inv. Trust	10	11	13	14	14	14	15	18	24
Venture Capital Trust (2)	2	2	2	2	2	2	2	2	4
Portfolio Management Companies (2)	19	19	19	23	23	23	24	28	28
Total Number of Institutions	440	440	440	440	440	427	427	419	425

Source: BRSA, TT, CMB,AIRC, ACMII.

(1) December 2010 data is used since March 2011 data is not published yet. (2) November 2010 data is used since December 2010 data is not published yet.

3.2.2.2.Some Evaluation about Financial Instruments and Investors

Number of persons benefiting from banking services continued to increase together with the expansion of access channels to financial sector. 144 new branches started to operate in banking sector in December 2010 – March 2011 period, and accordingly number of personel in the sector also increased. The steady growth in alternative distribution channels of banks continued in March 2011, as well.

Table 3.9 : The Changes of Preferences of Residents' Investment Breakdown

		2003	2004	2005	2006	2007	2008	2009	2010(11)	Average
Residents' Investment Breakdown (%)	TL Deposits	32,62	35,17	42	42,82	46,24	50,27	49,07	51,26	43,68
	FX Deposits	29,72	25,92	22,11	25,42	22,96	23,91	22,4	20,81	24,16
	Participation Bank Funds	1,74	2,06	2,46	2,81	3,27	3,52	4,28	4,56	3,09
	Bonds/Bills	20,32	20,17	15,99	13,98	12,25	11,73	10,41	8,79	14,2
	Eurobonds	1,87	1,87	1,55	1,36	0,94	0,84	0,84	0,74	1,25
	Mutual Funds	7,46	8,37	8,49	5,77	5,84	4,53	4,76	4,29	6,19
	Repo	1,33	0,56	0,43	0,55	0,6	0,41	0,22	0,4	0,56
	Pension Funds	0,02	0,1	0,35	0,71	1	1,13	1,46	1,68	0,81
	Equities	4,93	5,78	6,61	6,58	6,89	3,67	6,54	7,48	6,06
	Total	100	100	100	100	100	100	100	100	100

When the shares of investment instruments in total savings during 2003-2010 were examined, the results in the above table were reached. The largest shares of the total investor's portfolio were TL deposits and FX deposits during 2003-2010 period. The shares were calculated 43.68% for TL deposits and 24.16% for the FX Deposits. The shares of investment instruments in total investments is assessed by taking the average for the period 2003-2010: The shares were 14.20 % for Bonds / Bills, 6.19% for Mutual Funds, 6.06% for Equities, 3.09% for Participation Bank Funds,1.25% for Eurobonds, 0.81% for Pension Funds and 0.56% for Repo.

When we look at the invesment instruments in investor's portfolio, these insturments are examined three parts. The first part consisted investment instruments which were a higher rate than averagely %10 in the portfolio. TL deposits, FX Deposits and Bonds/Bills were analyzed in the first part.

Table 3.10 : The changes of TL Deposits, FX Deposits and Bonds/Bills' Returns

	TL Deposits (million TL)	%Δ	FX Deposits (million TL)	%Δ	Bonds/Bills (million TL)	%Δ
2003	75.677		68.932		47.126	
2004	103.240	36,42	76.074	10,36	59.202	25,62
2005	145.191	40,63	76.440	0,48	55.271	-6,64
2006	170.774	17,62	101.399	32,65	55.749	0,86
2007	209.846	22,88	104.196	2,76	55.593	-0,28
2008	268.803	28,10	127.823	22,68	62.747	12,87
2009	305.201	13,54	139.334	9,01	64.761	3,21
2010/11	355.862	16,60	144.458	3,68	60.998	-5,81

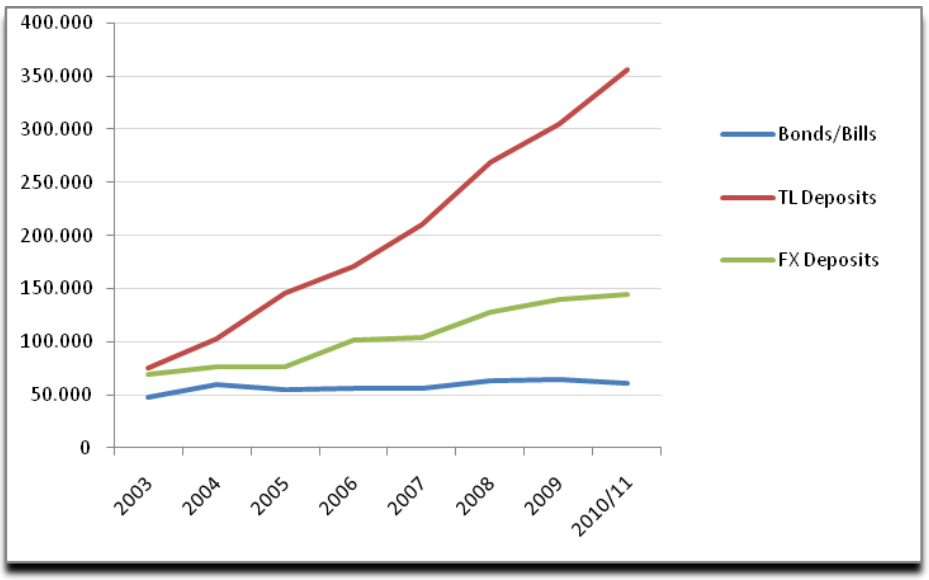

Figure 3.3 : The changes of TL Deposits, FX Deposits and Bonds/Bills' Returns

As shown in the chart above, the investors prefered more TL Deposits to FX Deposits and Bonds/Bills in their portfolio. There was the FX Deposits in the second sequence. In general, the rate of investment instruments as TL Deposits and FX Deposits in investors' portfolios were remaining a positive trend, but fluctuation of TL Deposits was smaller than FX Deposits the during 2003-2010 period. The rate of Bonds/Bills in investors' portfolios were sometimes negatively by using yearly data. For example, % change for 2005 : -%6,64 , % change for 2007 : -%0,28 and % change for 2010 : -%5,81 in investing Bonds/Bills.

In fact, the investment trend to the financial instruments in the first section were more than others because high-interest domestic government bonds to finance the public deficit were applied in country. The important reason to evaluate the savings in deposit accounts especially in foreign exchange deposit accounts was chronic inflation phenomenon in our country. In inflationist period, The money demand in foreign currency have been increased to maintain the purchasing powers of saving owners money.

Macroeconomic stability, particularly the progress of positive exchange were reflected the national currency and foreign currency financial assets in the portfolio preferences. Accordingly, the portfolio preferences of the domestic residents have been directed domestic currency denominated financial assets. As a result, the share of FX reduced and the stability of financial markets has increased.

The second part consisted investment instruments which were a higher rate than averagely %3 in the portfolio. Mutual Funds, Participation Bank Funds and Equity were analyzed in the second part.

Table 3.11 : The Changes of Equities, Participation Bank Funds and Mutual Funds' Returns

	Mutual Funds	%Δ	Participation Bank Funds	%Δ	Equities	%Δ
2003	17.299		4.036		11.433	
2004	24.573	42,05%	6.034	49,50%	16.962	48,36%
2005	29.342	19,41%	8.518	41,17%	22.862	34,78%
2006	23.020	-21,55%	11.212	31,63%	26.256	14,85%
2007	26.498	15,11%	14.828	32,25%	31.246	19,01%
2008	24.200	-8,67%	18.796	26,76%	19.623	-37,20%
2009	29.606	22,34%	26.625	41,65%	40.666	107,24%
2010/11	29.758	0,51%	31.689	19,02%	51.897	27,62%

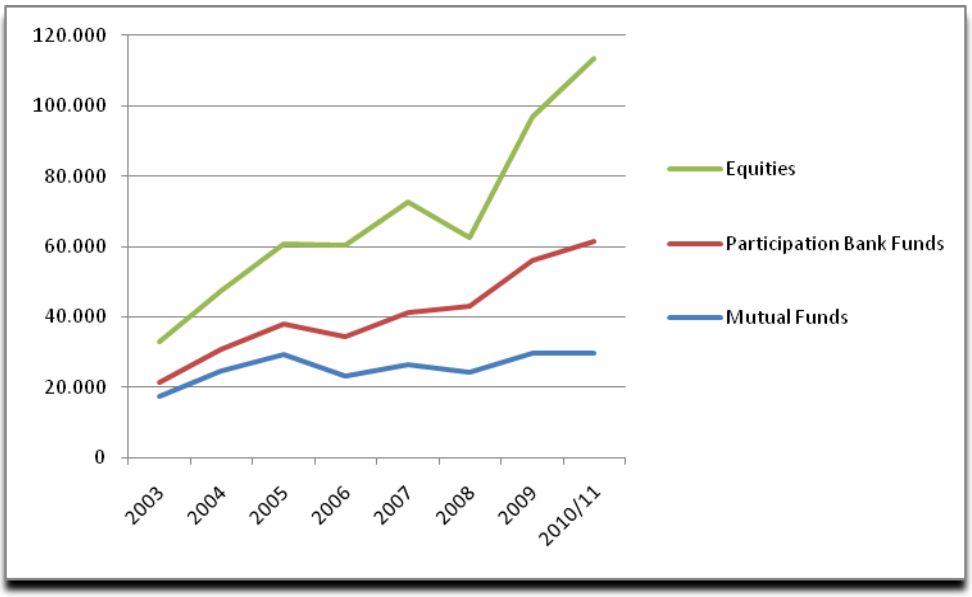

Figure 3.4 : The changes of Equities, Participation Bank Funds and Mutual Funds' Returns

When we have compared three invesment instruments, the equities were the most preferred invesment instruments except 2007-2008 periods as shown the above chart and table. Participation Bank Funds was more prefered than mutual funds in 2003-2010 periods. Also, bank funds and mutual funds have been acted in parallel to each other.

The third part consisted investment instruments which were a smaller rate than averagely %3 in the portfolio. Eurobonds, Pension Funds and Repo were analyzed in the third part.

Table 3. 12 : The Changes of Eurobonds, Repo and Pension Funds' Returns

	Eurobonds	% Δ	Repo	% Δ	Pension Funds	%Δ
2003	4.347		3.079		43	
2004	5.503	26,59%	1.651	-46,38%	296	588,37%
2005	5.344	-2,89%	1.486	-9,99%	1.219	311,82%
2006	5.412	1,27%	2.202	48,18%	2.821	131,42%
2007	4.281	-20,90%	2.733	24,11%	4.559	61,61%
2008	4.478	4,60%	2.199	-19,54%	6.042	32,53%
2009	5.237	16,95%	1.383	-37,11%	9.105	50,70%
2010/11	5.135	-1,95%	2.749	98,77%	11.687	28,36%

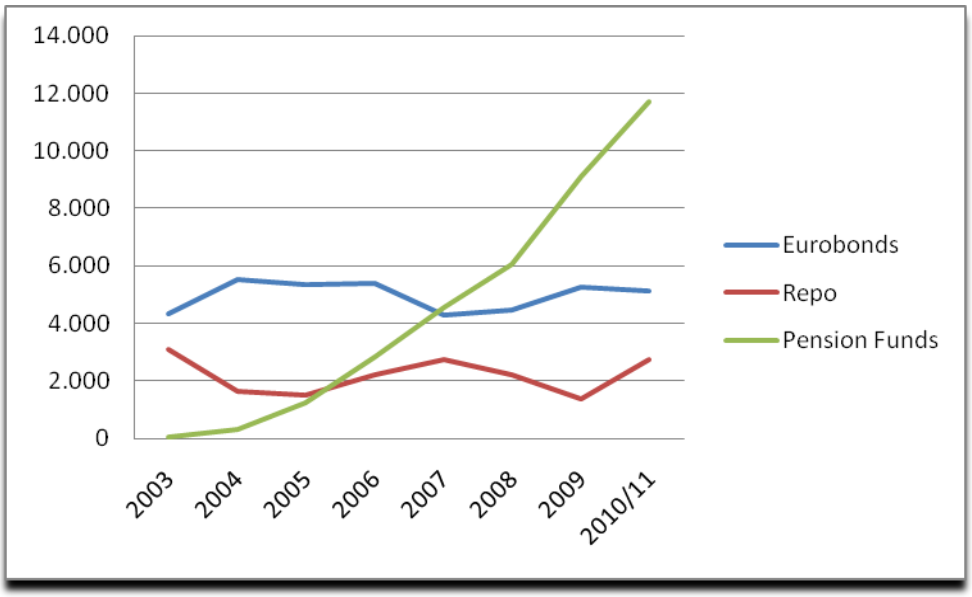

Figure 3. 5 : The Changes of Eurobonds, Repo and Pension Funds' Returns

When the chart which consisted the least preferred investment instruments in the last part was analyzed, the pension funds which considered a large share of financial assets in developed countries were considered as an indicator of the depth of the financial system due to their long term.

Although the pension funds have been the relatively low share of the financial asset portfolio of households in our country, this instrument has shown a rapid development in the recent years. The rapid change has been assessed as a positive development for deepening of

financial markets. Also, the repo has been the least preferred financial instrument according to above table or chart.

When we assessed investor preferences during 2009 -2010 periods, the preference rate increased %98 for repo Δand %28 for pension funds, decreased %1,95 for Eurobonds.

Table 3.13 : The Changes of Preferences of Non Residents' Investment Breakdown

		2003	2004	2005	2006	2007	2008	2009	2010(11)	Average
Non Residents' Investment Breakdown (%)	Equities	51,42	46,96	58,05	53,15	66,17	46,27	65,48	61,41	56,11
	Bonds/Bills	23,04	38,31	34,97	39,77	28,75	39,49	24,38	27,98	32,09
	Eurobonds	7,65	3,46	1,09	0,85	0,36	1,21	0,97	0,88	2,06
	Deposits	17,89	11,27	5,9	6,23	4,72	13,03	9,17	9,73	9,74
	Total	100	100	100	100	100	100	100	100	100

Foreign investors' preferences were 56.11% for equities, 32.09% for Bonds / Bills, 9.74% for deposits and% 2.06 for Eurobonds.

Table 3.14 : The Changes of Equities, Bonds/Bills, Eurobonds and Deposits' Returns

	Equities	% Δ	Bonds/ Bills	% Δ	Eurobonds	%Δ	Deposits	%Δ
2003	8.691		3.895		1.293		3.024	
2004	15.408	77,29	12.570	222,72	1.135	-12,22	3.696	22,22
2005	33.812	119,44	20.370	62,05	634	-44,14	3.434	-7,09
2006	34.774	2,85	26.019	27,73	555	-12,46	4.073	18,61
2007	69.876	100,94	30.363	16,70	378	-31,89	4.984	22,37
2008	35.417	-49,31	30.221	-0,47	927	145,18	9.972	100,09
2009	82.631	133,31	30.765	1,80	1.227	32,40	11.574	16,06
2010 (11)	109.479	32,49	49.871	62,10	1.576	28,40	17.339	49,80

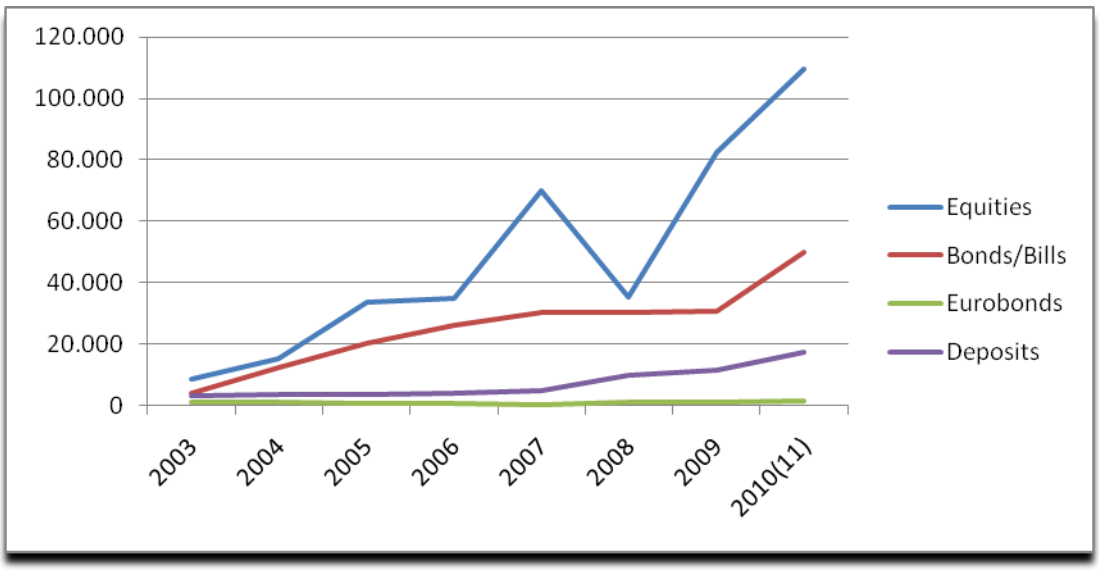

Figure 3.6 : The Changes of Equities, Bonds/Bills, Eurobonds and Deposits' Returns

As shown in the above chart, the foreign investor's preferences were listed in equities, bonds / bills, eurobonds and deposits.

While the share of equities in Non Residents' invesment portfolio was 51,41%, it has increased 61,41% in 2010(11). Because positive economic developments caused the perceived low risk level and investments(particularly portfolio investments) to the countries which enhanced the activities of foreign investment. To invest in equities which was the most important investment choice for foreign investors dropped to %46,27 due to the ongoing financial turbulence in 2008. However, the increase in securities markets have been decisive in the non-residents' invesment preferences and the share of equities in investor's portfolio increased again in 2009.

The bonds / bills which has been the second most preferred financial instrument constantly increased until 2008. However they decreased due to financial turbulence in 2008. Although the demand for Eurobonds accrued an increase after 2007, this situation didn't created a huge impact due to the small size of the portfolio. The above table was shown a positive increase in the demand tendency for deposits during 2003-2010 except 2005 and the effect of deposits's demand tendency was higher than Eurobonds.

Table 3.15 : The desciriptive Analysis of Deposit Rate, ISE100, Dollar, Euro and Gold

	Deposit Rate (%)	ISE 100 (%)	Dollar (%)	Euro (%)	Gold (bullion)(%)
1998	14,7	-52,3	-9,4	-3,7	-9,3
1999	11,2	189,4	1,6	-12,1	-0,8
2000	4,7	-45,6	-7,2	-18,2	-13,1
2001	-20,3	-18	26,8	26,4	31,7
2002	21,8	-28,2	-15,2	-2,4	3,4
2003	23,3	24,3	-24,3	-9,1	-8,5
2004	16	25,3	-10,9	-2,8	-3
2005	6,9	50,67	-10,14	2,95	2,95
2006	5,06	-7,52	-3,42	7,52	18,38
2007	7,93	30,92	-24,07	-16,23	-2,3
2008	4,91	-57,75	19,21	11,3	22,48
2009	8,81	83,52	-8,38	-1,81	25,32
2010	1,44	23,62	-5,07	-14,03	17,27
Average	8,19	16,80	-5,42	-2,48	6,50
Standart Dev.	10,87	66,97	14,66	12,45	14,73
Coefficient of Variation	1,17	3,10	-1,75	-4,49	1,62
Maximum	23,3	189,4	26,8	26,4	31,7
Minimum	-20,3	-57,75	-24,3	-18,2	-13,1

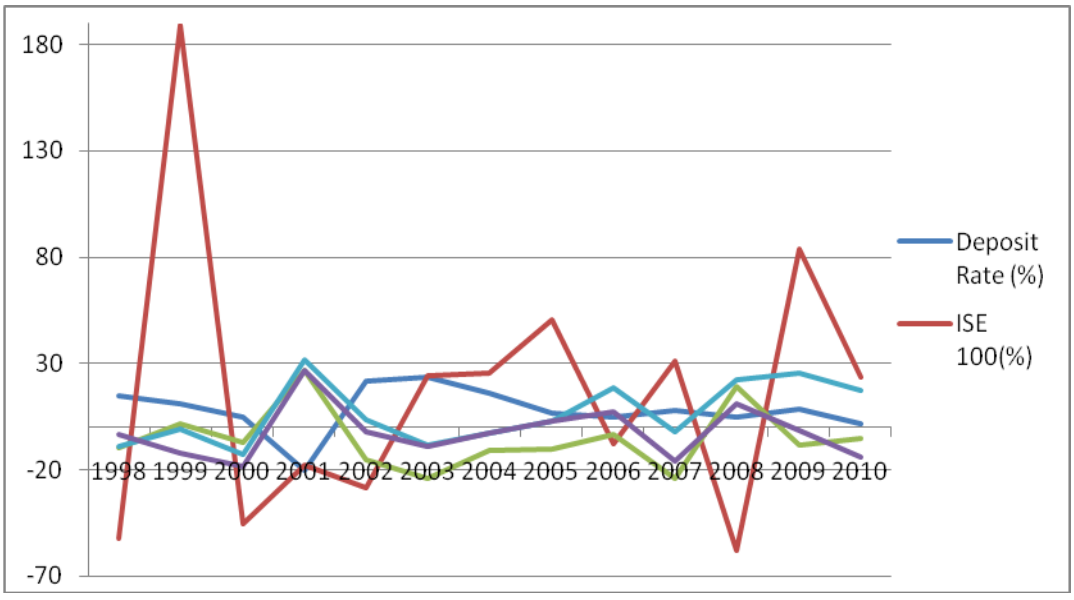

Figure 3.7 : The Changes of Deposit Rate and ISE 100 between 1998 and 2010

As shown the above table and chart, the ISE 100 acted between %169 and -%69. (or maximum return for ISE 100 was %169, minimum return for ISE 100 was -%69). The returns on other financial instruments were fluctuated from %30 to -%20. Euro, ISE 100, Dollar,

Gold and Deposit Rate were listed the varabilities of these financial instruments by using the coefficient of variation.

The average returns were listed as ISE 100, Deposits Rate, Gold, Dollar and Euro. However, the average returns of some financial instruments as Euro and Dollar were negative values., while the returns were 4.7% for Deposits rate,-45.6% for the ISE 100, -7.2% for Dollar,-13.1% for Euro and -18.2% for Gold before the financial crisis of 2001, the returns of selected financial instruments were -20.3% for Deposits Rate, - 18% for the ISE 100, 26.8% for Dollar, 31.7 for Euro and 26.4% for Gold in the crisis periods. In the next year after crisis periods (2002), the returns of them were 21.8% for Deposits Rate - 28.2% for the ISE 100, -15.2% for Dollar, -2.4% for the Euro and 3.4% for Gold. The numerical results were shown that only deposits rate in financial instruments reached a negative return value in the crisis period, but the others' demand increased. While the returns of deposits rate and gold were positive values, others continued the negative level returns after crisis.

3.2.3. Manufacturing Sector

Manufacturing industry refers to those industries which involve in the manufacturing and processing of items and indulge in either creation of new commodities or in value addition. The manufacturing industry accounts for a significant share of the industrial sector in developed countries. The final products can either serve as a finished good for sale to customers or as intermediate goods used in the production process.

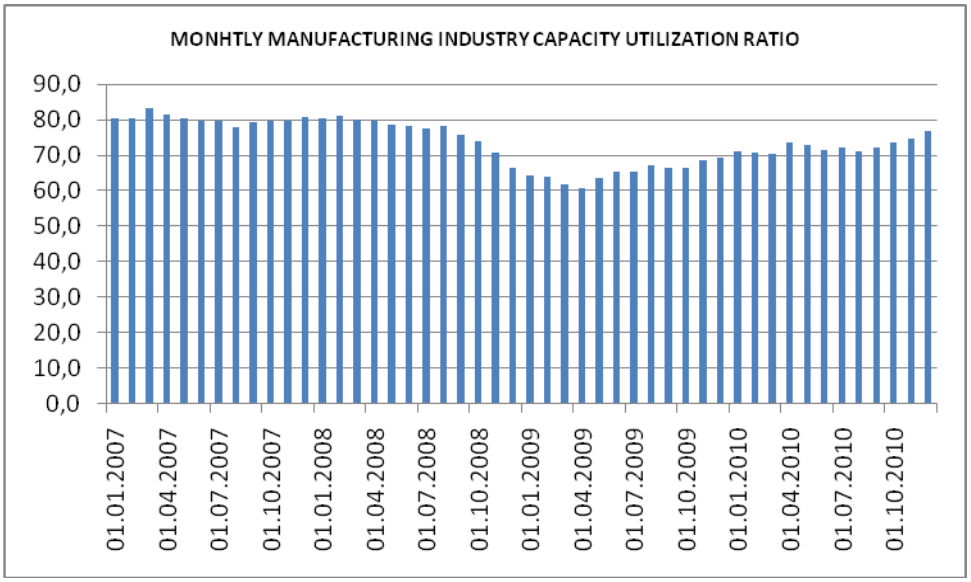

Figure 3.7 : Monthly Manufacturing Industry Capacity Utilization Ratio

The capacity utilization rate in the manufacturing industry reduced at the crisis period in 2008. However the rate did not decline under the level of %60 on a monthly basis. The capacity utilization rate is approximately 70% or 80% in the above chart.

MONHTLY MANUFACTURING INDUSTRY CAPACITY UTILIZATION RATIO												
	01.01.2010	01.02.2010	01.03.2010	01.04.2010	01.05.2010	01.06.2010	01.07.2010	01.08.2010	01.09.2010	01.10.2010	01.11.2010	01.12.2010
Manufacturing Industry	68,6	67,8	67,3	72,7	73,3	73,3	74,4	73	73,5	75,3	75,9	75,6
Manufacturing Industry (Sea. Adj.)	71,1	70,9	70,5	73,7	72,8	71,3	72	71,2	72,1	73,5	74,6	77
Food	71,8	71	68,7	70,2	69,8	67,6	67,9	65,6	66,5	74,7	75,4	74
Textile	72,3	72,7	75,9	77,5	77,7	78,6	77,8	78,9	78	78,3	80	80,1
Clothing	72,1	72,4	72,6	74,2	75,7	75,1	78,6	76,3	76,1	75,5	77,6	78
Oil Products	53,7	52,2	44,2	68,2	64,8	66,9	68,1	77,7	69,5	75,5	71,5	76,9
Chemistry	74,1	75,1	76,3	83,5	81,1	80,9	81,1	82,8	81	82,8	82,8	83
Basic Metal	76,3	71,9	73,5	79,1	79,6	77,8	79,8	74,4	77,2	74,8	78,4	78,5
Electrical Equipment	68,6	67,1	65,4	69,9	73,6	73,3	75,8	75,5	75,5	77,5	76,2	76,5
Motor Vehicles	65,5	66	66,5	69,3	70	69,5	71,3	68,8	69,6	74,2	75,2	71,8
Durable Cons. Goods	67,6	67,5	65,7	69,1	73,2	72,2	71,7	70,4	71,9	72,6	73,4	73,4
Non-Durable Cons. Goods	70,5	69,9	69,2	71,6	71,1	70,9	72,5	69,9	71,3	75,3	75,7	74,7
Consumption Goods	70	69,5	68,6	71,2	71,5	71,1	72,4	70	71,4	74,8	75,3	74,5
Intermediate Goods	72,7	70,9	71,9	76,2	77,5	77,2	78	76,3	76,9	76,6	78,1	78
Capital Goods	63,1	64,7	65,3	68,2	68,7	69,3	70,9	68,9	69,8	72,5	73,1	70,9

Table 3.15 : Monthly Manufacturing Industry Capacity Utilization Ratio

The above table showed that the minimum level of capacity utilization rate was oil products, capital goods, motor vehicles, durable consumer goods and electrical equipment production. But this process finished in there months and these headlines entered into an upward trend in line with manufacturing industry in May 2010.

Turkey is an example of deep structural chnages occuring in the manufacturing structure of emerging economies as a result of their integration into world market in the above table. Even though traditional and resource-based productions remain much more important, tehir real valu added share have undergone substantial cuts in the entire period under observation (with the exception of basic metals). The speed of this process has accelerated in the most recnet years. These structural shifts have favoured new industries such as transport equipment and machinery.

Table 3.16 : Yearly Capacity Utilization in Manufacturing Industry

Yearly Capacity Utilization in Manufacturing Industry			
SECTORS	PUBLIC	PRIVATE	TOTAL
2000	79,8	74,4	75,9
2001	81,8	66,7	70,9
2002	81,7	72,8	75,4
2003	83,9	75,9	78,4
2004	85,7	79,8	81,3
2005	86,0	78,8	80,3
2006	89,4	79,6	81,0
2007	88,4	80,7	81,8
2008	86,7	77,0	78,1
2009	78,5	68,7	68,9

If the capacity utilization rate is asssed as public and private companies, the capacity utilization rate of prive companies less than the public part in the above table on the annula basis. The private companies reduced costs by using less capacity to behave more cautious at te years of crisis

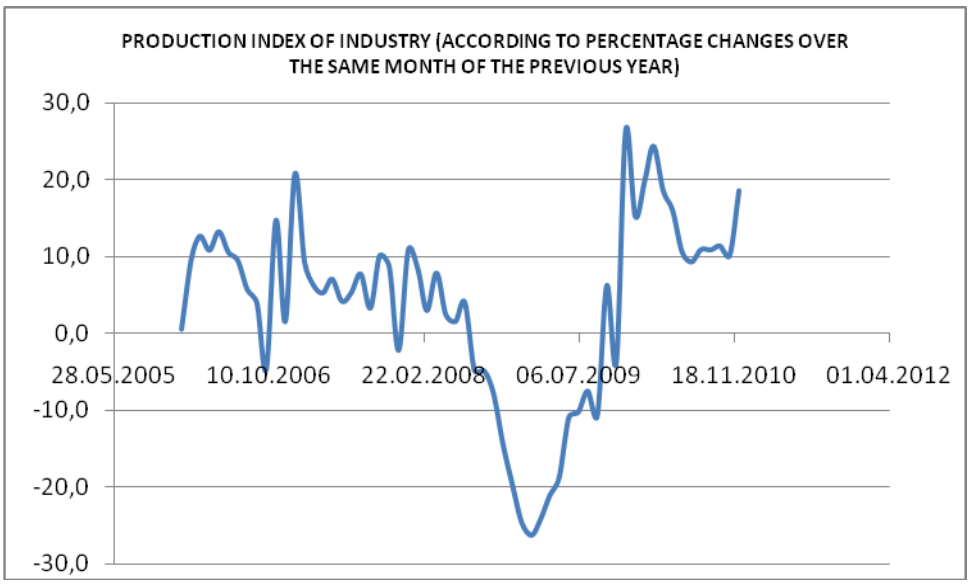

Figure 3.8 : The Production Index of Industry

The above chart shows that production index of manufacturing industry remained negative values from August 2008 to the beginning of 2010 due to crisis in 2008. Though the effects of the crisis had been reduced as from March 2009, the positive change was held on December 2009. If a dceline occured in April 2010, the negative rate of change would not reach. This process has been follwed the increase trend in 3 months.

Turkey in the manufacturing sector is second rank after China in the world by evaluating production growth in the manufacturing sector's performance in the first quarter of 2011 according to the United Nations Industrial Development Organization (UNIDO) report.

While successful countries exemplified by the level of increase in industrial and manufacturing production, the country showed the best performance among newly industrialized countries is Turkey with a growth rate of 13 percent. In this category, the growth rate of Mexico was 7 percent and the growth rate of India was 5,1 percent.

3.3. METHODOLOGY

Markowitz developed Modern Portfolio Theory in 1952 has caused a major change in the financial world by introducing that the value of a security could be determined according to the relationship among other securities in the portfolio, the expected yields of these securities, the standard deviation of returns. Markowitz's study provides significant contributions to portfolio selection issue and is the basis to the development of the CAPM with the studies of Sharpe (1964), John Lintner (1965) and Mossin (1966).

CAPM is expressed the expected return on a security as a function of systematic risk thus CAPM is able to apply for all securities. However, many studies investigated the adequacy and applicability of CAPM got negative results. Thus, some important studies were carried out on change the assumptions of CAPM and development about new asset pricing models.

Sharpe (1963) obtained a simple, easily and applicable model by making changes on the Markowitz portfolio theory. This model was given "single index" model due to using only the market as a pricing factor. However, the first phase of single index model developed by Sharpe does not maintain its existence a long period of time and the King (1966) has laid the foundations of "multi-index model" while he showed that the industry factors introduced an effective factor in the pricing of stocks as well as market.

Cohen and Pogue (1967) and Meyers (1973) tested its ability to predict price in themulti-index models and achieved positive results. While academic studies examining the feasibility of single and multi-index models researched, the market and non-industry factors affected the price of the stock evaluated. This vision put forward by Merton (1973) developed new asset pricing theory.

Arbitrage Pricing Theory developed by Ross (1976) developed, defined a large number of risk sources(the number of factors in theory does not specify) had the potential to affect the returns of stock and suggested pricing of these risks. Roll and Ross (1980) did the first practical work relating to APT by using the stocks in United States and accepted the applicability of APT. Chen (1983), Dhrymes, Friend and Gultekin (1984) and Cho (1984) concluded that APT can be an applicable model by using different periods and data as the results of Roll and Ross(1980)' study. Although the presence of many factors affected stock returns in the APT identified, APT does not give information about these factors.

Fama (1981), Geske and Roll (1983) with James, Koreisha and Partch (1985) put forward that these factors might be macroeconomic factors. In these studies, the relationship between some macroeconomic factors and stock returns was examined. The internal factors which are company-specific referred to as characteristics of the company. The effects of these characteristics on stock returns were defined "Fama and French Three-Factor Model (FFM)" developed by the Fama and French (1993) detected that the factors of company size, book value / market value ratio and the market return were important in determining the returns of

stocks. Fama and French (1998) also found that the predict of stock returns was success in international dimension of CAPM for 29 countries.

Hodoshima et al. tested situational relationship between return and beta and the forces of some factors as PD / DD ratio and size of company in a phase of return statement on the Tokyo Stock Exchange (TSE) between 1952 and 1995 by using the approach of Fama and Macbeth. Their findings were showed that beta coefficent, PD / DD ratio and the size of company were also strongly variables. Elsas et al. used monthly data in the period of 1960-1995 for Germany and had found inadequate for explaining the relationship between return and beta by the approach of Fama and MacBeth.

Matteev investigated the role of beta, and other variables (size, book value / market value, asset value / market value, asset value / book value and price) to define cross-sectional variation in average returns of companies traded in the Sofia Stock Exchange (BSE-Sofia) in January 1998-December 2002 period for Bulgaria. While the book value / market value and price did not affect the returns of stock, some factors as beta, size, book value and market value had an important role in explaining the variability. As a result, there was a linear relationship between the average returns of firms traded on the BSE and the beta coefficients and the effects of the size and book value / market value showed a statistically significant.

Rahman et al. tested relationship between the independent variables as beta, book value /market value and business size and the expected return in the Bangladesh Stock Exchange by using the Fama and French Three Factor Model in 1999-2003 for Bangladesh. The findings of the study were showed that beta coefficient is not the only factor affected the return on equity and book value / market value and size of company were also important variables. In addition, CAPM is a valid model to define to the returns of companies traded in Bangladesh Stock Market.

Akdeniz et al. [18] tested returns of companies traded on the Istanbul Stock Exchange (ISE) wtih the approach of CAPM by using monthly data for the period January 1992-December 1998.According to the results obtained, there were a positive relationship between returns and market value / book value ratio and the negative relationship between returns and size of company but there were no contacts with returns and beta coefficient of market.

3.3.1. Capital Asset Pricing Model

The CAPM is a model for pricing an individual security or a portfolio. For individual securities, we make use of the security market line (SML) and its relation to expected return and systematic risk (beta) to show how the market must price individual securities in relation to their security risk class. The SML enables us to calculate the reward-to-risk ratio for any security in relation to that of the overall market. Therefore, when the expected rate of return for any security is deflated by its beta coefficient, the reward-to-risk ratio for any individual security in the market is equal to the market reward-to-risk ratio, thus:

$$E(R_i) - R_f = (E(R_m) - R_f)* \beta_i \qquad (3.1)$$

$E(R_i)$: the expected return on the capital asset

R_f : the risk-free rate of interest such as interest arising from government bonds

βi (the beta): the sensitivity of the expected excess asset returns to the expected excess market returns, or also $\beta_i = Cov(R_i, R_m) / Var (R_m)$,

$E(R_m)$: the expected return of the market

$E(R_m) - R_f$: the market premium(the difference between the expected market rate of return and the risk-free rate of return).

The market reward-to-risk ratio is effectively the market risk premium and by rearranging the above equation and solving for $E(R_i)$, we obtain the Capital Asset Pricing Model (CAPM).

3.3.2. Fama and French 3- Factor Stock Return Model Theory and Tests

In asset pricing and portfolio management the Fama-French three factor model is a model designed by Eugene Fama and Kenneth French to describe stock returns.

The traditional asset pricing model, known formally as the Capital Asset Pricing Model, CAPM, uses only one variable, beta, to describe the returns of a portfolio or stock with the returns of the market as a whole. In contrast, the Fama–French model uses three variables. Fama and French started with the observation that two classes of stocks have tended to do better than the market as a whole: (i) small caps and (ii) stocks with a high book-to-market ratio (BtM, customarily called value stocks, contrasted with growth stocks). They then added two factors to CAPM to reflect a portfolio's exposure to these two classes:

Fama and French (1993, 1996) propose the following 3-factor model to explain stock returns:

$$r_t = \alpha + mMTB_t + sSMB_t + hHML_t + \varepsilon_t \quad (3.2)$$

r_t: asset or portfolio return minus the risk-free rate ($r_p - r_f$)

α: intercept

MTB_t: market excess return ($r_m - r_f$)

SMB_t: the difference between the returns on portfolios of small and big stocks (Small Minus Big);

HML_t: the difference between the returns on portfolios of high and low book value to market value stocks (High Minus Low);

E_t: an error term; and

m, s, h: regression coefficients for MTB_t, SMB_t and HML_t

Arshanapalli et al. (1998) studied the data of foreign stock markets outside the United States by using the Fama and French 3 factor model. Their results show that SMB and HML had distinct explanatory ability for stock returns and the Fama and French 3-factor model explains the stock returns.

Chen and Zhang (1998) examined the risk and return of stocks in the United States, Japan, Hong Kong, Malaysia, Taiwan and Thailand for the period from 1977 to 1993 by using the Fama and French (1995) methodology that analysed the characteristics of firms with high book-to-market and those with low book-to-market equity.. The results show that the value of stocks have higher returns in the United States, Japan, Hong Kong, and Malaysia and the higher returns correspond to higher distress risks in these markets as United States, Japan, Hong Kong.

Halliwell et al. (1999) researched the e efficiency of the Fama and French 3-factor model by using Australian accounting data from 1981 to 1991. The results of this study show that the 3-factor model provides significantly improved explanatory power over the CAPM and the factor of BE/ME is very important in asset pricing. Using the conventional CAPM, the intercept appears to rise monotonically from low to high BE/ME portfolios, but there is little evidence of a relationship between the intercept, α, and size, except among the low BE/ME portfolios. Only a handful of portfolios, large size combined with high BE/ME, show statistical significance for the intercept term (at the 5 percent level). The most important result

is that the 3-factor model provides a better explanation of the Australian stock returns than the CAPM by using intercept analysis and adjusted R-square analysis,

Fama and French (2004) examined the difference of performance of the CAP relative to the Fama and French 3-factor model. They evaluated some important topics as how value premiums vary with firm size, whether the CAPM explains value premiums, and whether average returns compensate for differences in β by using the predictions in the CAPM. The some factors as size, book-to-maket equity and other price ratios that cause problems for the CAPM are important in expected returns that market return(β) has little or no independent role in explaining returns.

3.3.3. Momentum 4-Factor Model Theory and Tests

Jegadeesh and Titman (1993) evaluated the effect of momentum strategies in the US stock market for the period from 1965 to 1980. They said that momentum strategies provide abnormal returns but these returns are not fully priced by the 3-factor Fama and French model and the part of the abnormal returns generated in the first year after portfolio formation dissipates during the following two years.

Carhart (1997) analysed persistence in mutual fund performance during 1962 to 1993 under the assumptions of the study of Jegadeesh and Titman (1993). He added a one year momentum factor in the Fama and French 3-factor model and formed a momentum 4-factor model to explain mutual fund returns. Thus he calculated as the difference between portfolio returns for the highest 30 percent and lowest 30 percent momentum stocks. Carhart found that his momentum 4-factor model provides additional explanatory power for up to one year after portfolio formation while the performance of the CAPM is compared to both the Fama and French 3-factor model and Carhart's momentum 4-factor model.

The four-factor pricing model (FFPM) states that the excess return of a security is explained by the market portfolio and three factors designed to mimic risk variables related to size, book-to-market (BM) and momentum. According to the FFPM, stocks' excess returns are equal to:

$$E(R_{it})-R_{ft} = b_i*(E(R_{mt})-R_{ft}) + s_i*E(SMB_t) + h_i*E(HML_t) + w_i*E(MOMENTUM_t) \quad (3.3)$$

where the factor loadings are respectively bi, si, hi and wi

$E(R_{it})$: the expected return of i asset / portfolio
R_{ft}: risk-free interest rate
$E(R_{mt})$: the expected return of market portfolio
SMB_t: the difference between the returns on portfolios of small and big stocks (Small Minus Big);
HML_t: the difference between the returns on portfolios of high and low book value to market value stocks (High Minus Low);
$MOMENTUM_t$: the difference between the returns on portfolios of high and low momentum to market value stocks (High Minus Low);

SMB and HML have been constructed in keeping with Fama and French (1993), and MOMENTUM is constructed as UMD (Up minus Down) in keeping with Carhart (1997). For each month t from July of year y-1 to June of year y, the stocks based on their size and book-to-market ratio of June y-1 are ranked. Then these two rankings are used to calculate a 50 percent breakpoint for size, and 30 percent and 70 percent breakpoints for book-to-market. The stocks are subsequently sorted into two size groups and three book-to-market groups based on these breakpoints. In addition, the stocks above the 50 percent size breakpoint are designated B (for big) and the remaining 50 percent are designated S (for small). In addition, the stocks above the 70 percent book-to-market breakpoint are designated H (for high), the middle 40 percent are designated N (for neutral) and the firms below the 30 percent book-to-market breakpoint are designated L (for low) .

The six value-weighted portfolios formed SL, SN, SH, BL, BN and BH as the intersection of size and book- to-market groups. Note that the number of firms in each of the six portfolios varies. SMB (Small minus Big) is the equal-weight average of the returns on the small stock portfolios minus the returns on the big stock portfolios:

$$SMB = ((SL - BL) + (SM - BM) + (SH - BH))/3 \qquad (3.4)$$

SMB: Small minus Big
SL: small market value and low book-to-market stock portfolio
BL: big market value and low book-to-market stock portfolio

SM: small market value and middle book-to-market stock portfolio
BM: big market value and middle book-to-market stock portfolio
SH: small market value and high book-to-market stock portfolio
BH: big market value and high book-to-market stock portfolio

Similarly, HML (High minus Low) is the equal-weight average of the returns on the value stock portfolios minus the returns on the growth stock portfolios:

$$HML = ((SH - SL) + (BH - BL))/2 \quad (3.5)$$

HML: high minus low
SH: small market value and high book-to-market stock portfolio
SL: small market value and low book-to-market stock portfolio
BH: big market value and high book-to-market stock portfolio
BL: small market value and low book-to-market stock portfolio

For each month t from July of year y-1 to June of year y, the stocks based on their size in June y-1 are ranked as their performance between t-12 and t. The model is proceeded for the momentum factor as for the book-to-market factor. Stocks above the 70 percent prior performance breakpoint are designated W (for winner), the middle 40 percent are designated N (for neutral) and the firms below the 30 percent prior performance breakpoint are designated L (for loser). We form six value-weight portfolios, S/L, S/N, S/W, B/L, B/N and B/W, as the intersection of size and prior performance groups. MOMENTUM or WML(Winners Minus Losers) is the equal-weight average of the returns on the winner stock portfolios minus the returns on the loser stock portfolios:

$$MOMENTUM = ((S/H - S/L) + (B/H - B/L))/2 \quad (3.6)$$

MOMENTUM or WML: Winners Minus Losers
S/H: small market value and winner stock portfolio
S/L: small market value and loser stock portfolio
B/H: big market value and winner stock portfolio
B/L: big market value and loser stock portfolio

3.3.4. Financial Distress Theory and Tests

Dichev (1998, pp.1146) emphasized that the size and book to market effects might be proxying for a firm distress risk factor by several authors as Fama and French (1992,1996 and 2004), Chen and Zhang (1998) etc and researched bankruptcy risk in NYSE, AMEX, and NASDAQ stocks from 1981 to 1995 by using Altman's (1968) Z-score and Ohlson's (1980) O-score measures.

The Z-score formula for predicting bankruptcy was published in 1968 by Edward I. Altman. The formula may be used to predict the probability that a firm will go into bankruptcy within two years. Z-scores are used to predict corporate defaults and an easy-to-calculate control measure for the financial distress status of companies in academic studies. The Z-score uses multiple corporate income and balance sheet values to measure the financial health of a company. The Z-score is a linear combination of four or five common business ratios, weighted by coefficients. The coefficients were estimated by identifying a set of firms which had declared bankruptcy and then collecting a matched sample of firms which had survived, with matching by industry and approximate size (assets).

Dichev found that firms with high bankruptcy risk earn substantially lower than average returns since 1980 with either measure and that Ohlson's model displayed a stronger negative association between bankruptcy risk and subsequent returns. As a result, the market did not fully impound available financial distress information into market prices.

Ohlson (1980) used a logit model to construct a financial alarm model analysed some financial distress variables by using 105 bankrupt company stocks and 2058 nonbankrupt stocks from both NYSE/AMEX and OTC firms in the manufacturing industry from 1970 to 1976. Some financial variables were applied to estimate a logit model to predict the probability of financial distress. The financial varibles in the Ohlson's logistic model is shown as follows (Ohlson, 1980, pp. 118, 121):

$$\text{SIZE} = \ln(\text{total assets} / \text{GNP price-level index}) \qquad (3.7)$$

TLTA: Total liabilities / total assets
WCTA: Working capital / total assets
CLCA: Current liabilities / current assets

NITA: Net income / total assets

FUTL: Funds provided by operations / total liabilities

INTWO: One, if net income was negative for the last two years, zero otherwise

OENEG: One, if total liabilities exceeds total assets, zero otherwise

CHIN: $(NI_t - NI_{(t-1)} / (| NI_t | + | NI_{(t-1)} |)$, where NI_t is net income for the most recent period. The variable is thus intended to measure change in net income.

Griffin and Lemmon (2002) examined the U.S. stock market based on five quintiles of financial distress risk using O-score as Ohlson's (1980) measure of distress risk with a 3-factor Fama and French model. The study showed that value portfolios outperform growth portfolios and that high O-scores are positively related to stock returns. The difference in stock returns for firms with the highest risk of distress is twice as large for high BE/ME securities relative to low BE/ME securities compared to other groups. As a result, the Fama-French three-factor model explains the returns more completely if the firms' financial distress is further classified.

Ferguson and Shockley(2003) searched the role of the financial distress risk in securities pricing in U.S. stock market. The portfolios in the study created by using their financial leverage and financial distress factors. they used debt to equity as financial leverage risk and Altman's (1968) Z to measure relative financial distress risk. As a result, the study showed that debt to equity as and Altman's Z are important time series variables when added to the Fama-French factors and the single-factor CAPM model.

Campbell, Hilscher, and Szilagyi (2008) examined the relationship between financial distress risk and asset prices by using empirical monthly index for each company with accounting and market-pricing variables in the U.S. stock market. The distressed stocks have very low returns in the four-factor Carhart regressions and they investigated many explanations for apparent underperformance of distressed stocks or "the distress anomaly".

4.THE RESULTS OF THE EMPRICAL ANALYSIS

4.1.CAPM (MARKET FACTOR)

The relationship between the selected stocks and ISE 100 defined as the stock market portfolio were analyzed using the E-views 7 program. The results of the evaluation made under the CAPM is as follows:

Table 4.1 : The Regresssion Results of Stocks According to CAPM

	beta	t-Statistic (beta)	Prob, (beta)	R-squared	Durbin-Watson stat		beta	t-Statistic (beta)	Prob, (beta)	R-squared	Durbin-Watson stat
adana	0,8903	7,8216	0	0,4217	1,8774	hekts	0,8878	8,0092	0	0,4321	2,0701
adnac	0,9679	11,2096	0	0,5934	2,3187	hurgz	1,4336	11,9566	0	0,6257	2,3362
afyon	0,5546	4,2736	0	0,224	1,9939	iheva	0,7681	4,1331	0,0001	0,2169	1,4342
akbnk	1,0529	14,2138	0	0,7103	2,2026	ihlas	1,0475	7,3218	0	0,3936	1,8692
akcns	1,0121	13,2642	0	0,677	2,1677	isctr	1,1222	16,2978	0	0,7731	1,9418
akgrt	1,13	13,3944	0	0,6817	2,106	isgyo	0,8785	12,7921	0	0,6592	1,9756
aksa	0,9679	8,2339	0	0,4445	2,0204	izmdc	0,932	7,6635	0	0,4128	1,6989
alark	1,0434	13,7419	0	0,6941	2,1279	izocm	0,8238	7,082	0	0,38	2,039
alctl	1,1171	10,9203	0	0,5804	1,977	kartn	0,3911	3,721	0,0003	0,1969	2,1317
algyo	0,8373	9,2106	0	0,4967	2,2451	kchol	1,2918	16,9469	0	0,7836	1,9572
alntf	1,2153	13,7461	0	0,6943	2,4235	kent	0,4891	2,6862	0,0082	0,153	2,131
anacm	0,8212	7,3439	0	0,3948	2,1673	kervt	0,8993	4,8244	0	0,2528	2,4229
ansgr	1,0656	11,8036	0	0,6192	2,3707	kipa	0,7796	8,0398	0	0,4338	1,6462
arclk	1,2408	11,5886	0	0,6101	2,0674	tkbnk	0,9825	9,0561	0	0,4887	2,0686
arsan	0,8259	4,7614	0	0,2495	2,0099	klmsn	0,7627	5,5337	0	0,2918	2,0658
asels	1,0848	8,0349	0	0,4335	1,7579	konya	0,6498	5,2816	0	0,2778	1,9595
asuzu	1,0194	8,0818	0	0,4361	1,8123	kords	0,8788	8,6199	0	0,4655	1,8654
ateks	1,0127	5,8224	0	0,3081	2,0322	krdmd	1,2239	7,8841	0	0,4252	1,8692
aygaz	0,8704	7,9477	0	0,4287	1,9336	krstl	0,9831	5,6033	0	0,2957	1,8771
bagfs	0,722	6,7145	0	0,359	1,6204	maktk	0,6318	3,0861	0,0025	0,1688	1,7809
banvt	0,6081	5,1962	0	0,2731	1,8331	martı	1,0196	8,883	0	0,4795	2,1736
bfren	0,7359	2,6847	0,0082	0,1529	2,266	merko	0,8006	6,7303	0	0,3599	1,607
boluc	0,791	7,678	0	0,4137	1,7365	metro	0,781	6,205	0	0,3299	2,0662
bossa	0,7368	5,9571	0	0,3157	1,9059	mipaz	1,342	12,1202	0	0,6324	2,3777
boynr	1,257	9,6452	0	0,519	2,2303	mrdin	0,7569	6,7672	0	0,362	1,6081
brisa	0,7582	7,1936	0	0,3863	2,1007	mrshl	0,6196	5,6304	0	0,2973	1,9101
brova	1,0872	6,0126	0	0,3189	2,0177	mutlu	0,9564	6,4382	0	0,3432	2,1931
brsan	0,8999	7,1273	0	0,3825	2,0866	netas	0,2179	13,3708	0,1836	0,1137	1,8523
bryat	0,8625	6,9699	0	0,3736	2,1037	nthol	1,1004	7,1961	0	0,3864	2,0786
bshev	0,4491	2,933	0,004	0,1625	1,8673	nttur	1,0985	9,1818	0	0,4952	2,0352
btcım	0,7982	7,971	0	0,43	2,0771	nugyo	0,9501	9,4221	0	0,5076	2,356

cemts	0,984	8,1615	0	0,4405	1,9102	otkar	0,9909	8,9386	0	0,4825	2,1219
cımsa	0,9399	9,0079	0	0,4861	2,1523	pegyo	1,3528	9,108	0	0,4914	1,5057
clebi	0,8756	5,885	0	0,3117	2,0491	pengd	0,4066	2,9565	0,0037	0,1635	1,9995
cytas	0,8264	5,1882	0	0,2726	1,8668	petkm	0,7888	6,8881	0	0,3689	2,1329
deva	0,4525	2,8781	0,0047	0,1603	2,0245	pnsut	0,955	7,645	0	0,4118	1,9628
dgzte	1,2184	8,063	0	0,4351	2,1096	prkte	0,008	0,0307	0,9756	0,1	1,7984
dohol	1,2157	12,5869	0	0,6512	1,8342	ptofs	0,805	6,1245	0	0,3253	2,0952
dyhol	1,3151	11,8029	0	0,6192	1,9273	sahol	1,0517	10,7399	0	0,5721	1,8895
dyoby	1,0008	5,9411	0	0,3148	1,8449	sarky	0,7519	6,9851	0	0,3744	2,028
ecılc	0,7917	5,8302	0	0,3085	2,1731	sasa	0,7906	6,6883	0	0,3575	2,1063
ecyap	0,8877	7,119	0	0,3821	2,0843	selgd	0,6835	4,6911	0	0,2457	2,2716
eczyt	0,8967	11,4508	0	0,6041	2,4389	sıse	1,0371	10,2107	0	0,547	1,99
eggub	0,5846	5,1096	0	0,2683	1,9881	skbnk	1,1482	9,7695	0	0,5252	2,0408
egser	0,6687	5,052	0	0,2652	1,7642	tatks	0,7982	6,9744	0	0,3738	1,9396
egyo	0,8433	6,0908	0	0,3233	2,3986	tekst	1,0275	9,4308	0	0,5081	2,0159
eregl	0,8465	7,0364	0	0,3774	2,1276	thyao	0,9903	10,3307	0	0,5527	1,79
ffkrl	1,064	8,1465	0	0,4397	2,0977	tire	0,5684	4,4714	0	0,2342	1,9055
fınbn	0,8964	8,2749	0	0,4467	2,1271	toaso	1,0317	8,2942	0	0,4478	1,8948
froto	0,8777	8,1854	0	0,4418	2,1187	trcas	0,8458	6,5978	0	0,3523	2,1494
garan	1,4089	19,0329	0	0,8374	1,9936	tkbnk	0,9825	9,0561	0	0,4887	2,0686
gediz	0,8645	6,9547	0	0,3727	1,9764	trkcm	0,6978	7,0355	0	0,3773	2,0198
glyho	1,3371	14,9608	0	0,7344	1,7852	trnsk	0,7844	4,1057	0,0001	0,2156	1,8036
golds	0,7713	5,9485	0	0,3153	1,9126	tskb	1,1255	11,771	0	0,6179	1,7564
golts	0,7011	5,8385	0	0,309	1,8763	tuddf	0,9551	7,2925	0	0,3919	2,3207
goody	0,6764	6,5782	0	0,3512	1,9516	tuprs	0,8063	8,4293	0	0,4552	1,9
gsdho	1,1871	10,5331	0	0,5624	2,1318	ucak	0,857	6,6701	0	0,3564	1,8161
gubrf	0,9028	6,197	0	0,3294	1,6881	vestl	1,0216	8,6421	0	0,4667	2,1287
gusgr	0,731	5,9726	0	0,3166	1,9173	ykbnk	1,2997	15,8893	0	0,7618	2,3529

The range of the estimated stock betas is between 0,4066 the minimum and 1,4336 the maximum in the below table. The results indicate a positive relationship between beta coefficients and the realized risk premiums. All of the beta coefficients for individual stocks are statistically significant at a 95% level except in the stocks of PRKTE and NETAS and or we see that a statistically significant relationship between the risk premium and stocks by evaluating probability (beta) ($p < 0,05$) (except in the stocks of PRKTE and NETAS $p>0,05$).
In the table above, we examine the value of the Durbin-Watson as autocorrelation indicator; ($n=131$, $k=2$, $d_L= 1,363$, $d_U= 1,496$ according to Durbin Watson Table $\alpha =0,05$) There is no autocorrelation among data because all autocorrelation values is 1,496 to 2,504. Thus the H_0 hypothesis is accepted.

The explanation power of risk premium as the explanatory variable to the stock returns in the below table is less than 50 percent. There are only 29 stocks which are over 50 percent. The range of the coefficient of risk premium to stock returns is between 0,4066 (PENGD) the minimum and 1,4336 (HURGZ) the maximum in the above table.

Table 4.2 : The Stocks According to R squared in CAPM

R-squared									
10%	20%	30%			40%		50%	60%	>70%
PRKTE	IHEVA	ATEKS	GOODY	IZOCM	IZMDC	AKSA	NUGYO	ECZYT	AKBNK
NETAS	AFYON	ECILC	TRCAS	ECYAP	BOLUC	FINBN	TEKST	ARCLK	GLYHO
BFREN	TIRE	GOLTS	UCAK	BRSAN	ADANA	TOASO	BOYNR	TSKB	YKBNK
KENT	SELGD	CLEBI	SASA	BRISA	KRDMD	TUPRS	SKBNK	DYHOL	ISCTR
DEVA	ARSAN	DYOBY	BAGFS	NTHOL	AYGAZ	KORDS	YKGYO	ANSGR	KCHOL
BSHEV	KERVT	GOLDS	MERKO	TUDDF	BTCIM	VESTL	SISE	HURGZ	GARAN
PENGD	EGSER	BOSSA	MRDIN	IHLAS	HEKTS	MARTI	THYAO	MIPAZ	
MAKTK	EGGUB	GUSGR	PETKM	ANACM	ASELS	OTKAR	GSDHO	DOHOL	
KARTN	CYTAS	BROVA	GEDIZ	PNSUT	KIPA	CIMSA	SAHOL	ISGYO	
TRNSK	BANVT	EGYO	BRYAT		DGZTE	TKBNK	ALCTL	AKCNS	
	KONYA	PTOFS	TATKS		ASUZU	PEGYO	ADNAC	AKGRT	
	KLMSN	GUBRF	SARKY		FFKRL	NTTUR		ALARK	
	KRSTL	METRO	TRKCM		CEMTS	ALGYO		ALNTF	
	MRSHL	MUTLU	EREGL		FROTO	TKBNK			

4.2. FAMA AND FRENCH THREE-FACTOR MODEL

The Fama and French three-factor model is more like an extension of the CAPM. It includes the two factors identified by Fama and French (1992), firm size (SMB: small minus big) and book-to-market equity (BE/ME), in addition to the market factor. In fact, the model augments the CAPM model by the size effect and the book-to-market equity effect.

At the end of June of each year, ISE 100 stocks, the stocks in financial sectors and the stocks in manufacturing sectors are allocated into two groups (S: small and B : Big) based on whether their market equity in June is below or above the median ISE stocks, the stocks in financial sectors and the stocks in manufacturing sectors are allocated in an independent sort to three book-to market equity (BV/MV) groups low (L), medium (M), or high (H) based on the berakpoints fort he bottom 30 percent, middle 40 percent, and top 30 percent of the values of BV/MV for ISE 100 stocks, the stocks in financial sectors and the stocks in manufacturing sectors. Six size- BV/MV portfolios (S/L, S/M, S/H, B/L, B/M, B/H) are defined as the intersections of the two MV and the three BV/MV groups.

Table 4.3 : The Portfolios According to the Size of Stocks in ISE100

The Portfolios According to the Size of Stocks in ISE100										
S	CYTAS	BROVA	PEGYO	GOLDS	CEMTS	ALGYO	NTTUR	BAGFS	ADANA	TIRE
	SELGD	MERKO	UCAK	KLMSN	PENGD	EGGUB	BOLUC	MRSHL	GOLTS	YKGYO
	GEDIZ	KRSTL	MARTI	ATEKS	EGSER	IHEVA	DGZTE	AKGRT	BFREN	GLYHO
	EGYO	NUGYO	MIPAZ	HEKTS	DYOBY	SARKY	BOSSA	ALNTF	FFKRL	ECYAP
	TRNSK	MAKTK	ARSAN	ADNAC	ALCTL	GSDHO	METRO	DEVA	BRYAT	TEKST
	KERVT	MUTLU	ASUZU	GUSGR	AFYON	BOYNR	BANVT	ECZYT	SISE	
B	SASA	ANSGR	MRDIN	GOODY	SKBNK	KONYA	DYHOL	PTOFS	ARCLK	KCHOL
	TATKS	KRDMD	ALARK	BRSAN	OTKAR	IZMDC	TSKB	TOASO	KENT	YKBNK
	NTHOL	CLEBI	ISGYO	IHLAS	BRISA	ECILC	ASELS	AYGAZ	EREGL	ISCTR
	BTCIM	HURGZ	VESTL	KORDS	GUBRF	TKBNK	TRKCM	THYAO	TUPRS	AKBNK
	KARTN	PNSUT	TRCAS	NETAS	CIMSA	ANACM	DOHOL	BSHEV	FINBN	GARAN
	PRKTE	TUDDF	KIPA	AKSA	IZOCM	AKCNS	PETKM	FROTO	SAHOL	

Table 4.4 : The Portfolios According to the BV/MV of Stocks in ISE100

The Portfolios According to the BV/MV of Stocks in ISE100										
L	ADANA	BAGFS	BROVA	DYOBY	GUBRF	KENT	MAKTK	NETAS	TATKS	
	AFYON	BFREN	BSHEV	ECYAP	IZMDC	KERVT	MERKO	NTHOL	TOASO	
	ALCTL	BOYNR	CLEBI	FROTO	IZOCM	KLMSN	MRDIN	OTKAR	TUDDF	
	ASELS	BRISA	DYHOL	GOODY	KARTN	KONYA	MRSHL	TKBNK		
M	TUPRS	AKSA	ASUZU	BRSAN	DEVA	FFKRL	GUSGR	KCHOL	MUTLU	YKBNK
	AKBNK	ANACM	AYGAZ	BRYAT	DGZTE	FINBN	HEKTS	KIPA	NUGYO	YKGYO
	AKCNS	ARCLK	BANVT	BTCIM	EGGUB	GARAN	IHLAS	KORDS	PENGD	TRKCM
	AKGRT	ARSAN	BOLUC	CIMSA	EREGL	GOLTS	ISCTR	MIPAZ	PETKM	TSKB
H	ADNAC	ANSGR	CYTAS	EGSER	GOLDS	ISGYO	METRO	SARKY	TRNSK	
	ALARK	ATEKS	DOHOL	EGYO	GSDHO	KRDMD	NTTUR	SKBNK	UCAK	
	ALGYO	BOSSA	ECILC	GEDIZ	HURGZ	KRSTL	PEGYO	TEKST	VESTL	
	ALNTF	CEMTS	ECZYT	GLYHO	IHEVA	MARTI	SAHOL	THYAO		

Table 4.5 : The Portfolios According to the Size and BV/MV of Stocks in ISE100

The Portfolios According to the Size and BV/MV of Stocks in ISE100							
SL	ADANA	BFREN	ECYAP	MERKO			
	AFYON	BOYNR	KERVT	MRSHL			
	ALCTL	BROVA	KLMSN				
	BAGFS	DYOBY	MAKTK				
SM	AKGRT	BOLUC	EGGUB	HEKTS	PENGD		
	ARSAN	BRYAT	FFKRL	MIPAZ	SELGD		
	ASUZU	DEVA	GOLTS	MUTLU	TIRE		
	BANVT	DGZTE	GUSGR	NUGYO	YKGYO		
SH	ADNAC	BOSSA	EGSER	GOLDS	MARTI	SARKY	
	ALGYO	CEMTS	EGYO	GSDHO	METRO	TEKST	

	ALNTF	CYTAS	GEDIZ	IHEVA	NTTUR	TRNSK	
	ATEKS	ECZYT	GLYHO	KRSTL	PEGYO	UCAK	
BL	ASELS	DYHOL	IZMDC	KONYA	OTKAR	TKBNK	
	BRISA	FROTO	IZOCM	MRDIN	TATKS		
	BSHEV	GOODY	KARTN	NETAS	TOASO		
	CLEBI	GUBRF	KENT	NTHOL	TUDDF		
BM	AKBNK	ARCLK	CIMSA	IHLAS	KORDS	PTOFS	TRKCM
	AKCNS	AYGAZ	EREGL	ISCTR	PETKM	SASA	TSKB
	AKSA	BRSAN	FINBN	KCHOL	PNSUT	SISE	TUPRS
	ANACM	BTCIM	GARAN	KIPA	PRKTE	TRCAS	YKBNK
BH	ALARK	HURGZ	SKBNK				
	ANSGR	ISGYO	THYAO				
	DOHOL	KRDMD	VESTL				
	ECILC	SAHOL					

Table 4.6 : The Portfolios According to Size of Stocks in Manufacturing and Finance Sectors

The Portfolios According to Size of Stocks in Manufacturing Sector							The Portfolios According to Size of Stocks in Manufacturing Sector			
S	AFYON	GLYHO	ARSAN	GOLTS	ADNAC	SELGD	S	NTHOL	BRYAT	EGYO
	BAGFS	GSDHO	ASUZU	HEKTS	ATEKS	DEVA		YKGYO	FFKRL	GLYHO
	BFREN	METRO	BANVT	PENGD	BOLUC	EGSER		AKGRT	GUSGR	GSDHO
	ECYAP	PEGYO	DYOBY	SASA	BOSSA	GOLDS		ALGYO	NUGYO	METRO
	KERVT	ADANA	EGGUB	TIRE	CEMTS	KRSTL		ALNTF	ECZYT	PEGYO
	CYTAS	DGZTE	GEDIZ	IHEVA	MUTLU	SARKY				
B	VESTL	IZOCM	TATKS	BRSAN	PNSUT	TRKCM	B	AKBNK	TKBNK	ISCTR
	BSHEV	KARTN	TUDDF	BTCIM	PTOFS	TUPRS		DYHOL	TSKB	ISGYO
	FROTO	KENT	AKCNS	CIMSA	SISE	AKSA		FINBN	YKBNK	KCHOL
	GOODY	KNYA	ANACM	EREGL	TIRE	ECILC		GARAN	SAHOL	ANSGR
	IZMDC	MRDIN	ARCLK	GUBRF	TOASO	HURGZ		IHLAS	ALARK	DOHOL
	KRDMD	OTKAR	AYGAZ	PETKM	TRCAS	KORDS				

Table 4.7 : The Portfolios According to BV/MV of Stocks in Manufacturing and Finance Sector

The Portfolios According to BV/MV of Stocks in Manufacturing Sector								The Portfolios According to BV/MV of Stocks in Finance Sector			
L	AFYON	KLMSN	BSHEV	KARTN	TATKS	OTKAR		L	NTHOL	FINBN	TSKB
	BAGFS	MAKTK	FROTO	KENT	TUDDF	BRISA			YKGYO	GARAN	YKBNK
	BFREN	MERKO	GOODY	KONYA	KERVT				AKBNK	IHLAS	
	ECYAP	MRSHL	IZMDC	MRDIN	IZOCM				DYHOL	TKBNK	
M	ADANA	ASUZU	CIMSA	GUBRF	PTOFS	TRCAS	BTCIM	M	ALARK	AKGRT	FFKRL
	AKCNS	AYGAZ	DYOBY	HEKTS	SASA	TRKCM	GOLTS		ISCTR	ALGYO	GUSGR
	ANACM	BANVT	EGGUB	PENGD	SISE	TUPRS	PNSUT		ISGYO	ALNTF	SAHOL
	ARCLK	BRSAN	EREGL	PETKM	TIRE	ARSAN	TOASO		KCHOL	BRYAT	NUGYO
H	ADNAC	CEMTS	EGSER	KORDS	SELGD	ECILC		H	ANSGR	EGYO	PEGYO
	AKSA	CYTAS	GEDIZ	KRDMD	VESTL	SARKY			DOHOL	GLYHO	TEKST

	ATEKS	DEVA	GOLDS	KRSTL	BOSSA				SKBNK	GSDHO	
	BOLUC	DGZTE	HURGZ	MUTLU	IHEVA				ECZYT	METRO	

Table 4.8 : The Portfolios According to the Size and BV/MV of Stocks in Manufacturing Sector

The Portfolios According to the Size and BV/MV of Stocks in Manufacturing Sector										
SL	AFYON	KLMSN	KERVT		BL	BRISA	IZMDC	KONYA	TUDDF	
	BAGFS	MAKTK				BSHEV	IZOCM	MRDIN		
	BFREN	MERKO				FROTO	KARTN	OTKAR		
	ECYAP	MRSHL				GOODY	KENT	TATKS		
SM	ADANA	EGGUB	TIRE		BM	AKCNS	BRSAN	GUBRF	SISE	TUPRS
	ARSAN	GOLTS	DYOBY			ANACM	BTCIM	PETKM	TOASO	
	ASUZU	HEKTS	SASA			ARCLK	CIMSA	PNSUT	TRCAS	
	BANVT	PENGD				AYGAZ	EREGL	PTOFS	TRKCM	
SH	ADNAC	CEMTS	EGSER	KRSTL	BH	AKSA	KRDMD			
	ATEKS	CYTAS	GEDIZ	MUTLU		ECILC	VESTL			
	BOLUC	DEVA	GOLDS	SARKY		HURGZ				
	BOSSA	DGZTE	IHEVA	SELGD		KORDS				

Table 4.9 : The Portfolios According to the Size and BV/MV of Stocks in Finance Sector

The Portfolios According to the Size and BV/MV of Stocks in Finance Sector							
SL	NTHOL			BL	AKBNK	IHLAS	GARAN
	YKGYO				DYHOL	TKBNK	YKBNK
SM	AKGRT	FFKRL	BRYAT		FINBN	TSKB	
	ALGYO	GUSGR		BM	ALARK	SAHOL	
	ALNTF	NUGYO			ISCTR	KCHOL	
SH	ECZYT	METRO	GSDHO		ISGYO		
	EGYO	PEGYO		BH	ANSGR		
	GLYHO	TEKST			DOHOL		
					SKBNK		

4.2.1. Desciptive Analysis

4.2.1.1. The Results of ISE 100

Table 4.10 : The Descriptive Analysis of Portfolios According to Size and BV/MV of Stocks in ISE100

	B	S	L	M	H	ISE 100	HLM
Mean	0,006317	0,006364	0,010563	0,004739	0,004740	-0,310362	-0,00623
Median	0,012056	0,016598	0,015818	0,020887	0,009627	-0,205266	-0,00504
Maximum	0,456800	0,448162	0,408346	0,409055	0,549824	0,094989	0,254371
Minimum	-0,53438	-0,5037	-0,61478	-0,5631	-0,41397	-2,024556	-0,13211
Std, Dev,	0,129610	0,130973	0,130279	0,128473	0,132377	0,314334	0,052034
Skewness	-0,37226	-0,44094	-0,71905	-0,67711	0,148197	-2,047729	0,804973

Kurtosis	5,568459	5,391481	6,981945	5,986541	5,091249	9,526753	7,346648
Jarque-Bera	39,03407	35,46220	97,83535	58,69529	24,35056	324,0682	117,2738
	BH	BL	BM	SH	SL	SM	SMB
Mean	0,002508	0,012597	0,003486	0,005136	0,007512	0,006841	0,000300
Median	0,008835	0,018458	0,020631	0,003698	0,005680	0,016637	0,000936
Maximum	0,546498	0,418469	0,465273	0,558945	0,448921	0,353658	0,096342
Minimum	-0,44029	-0,58617	-0,50528	-0,42865	-0,65769	-0,568145	-0,09899
Std, Dev,	0,146098	0,127700	0,131439	0,132698	0,143891	0,130401	0,041976
Skewness	0,201377	-0,64885	-0,31396	0,107150	-0,51968	-0,80077	0,021228
Kurtosis	4,379096	6,480679	5,236261	5,330216	6,661095	5,837385	2,923595
Jarque-Bera	11,26663	75,32037	29,44843	29,88891	79,05786	57,94395	0,041704

According to the above table, the lowest value as the mean is ISE100 and the highest value is the BL portfolio. According to the standard deviation, ISE100 is the highest, the SMB portolio was obtained the lowest value. The many portfolios as H, HLM, BH, SH, SMB and ISE100 are positive skew, other portfolios are negative skew (left skew).

According to the above table, the lowest value as the mean for portfolios occured size factor is big size portfolio. In other words, the return of portfolio with small size is higher than the return of portfolio with big size. When we evaluate the risk of these portfolios by using the value of standart deviation, the risk of portfolio with big size is lower than the risk of portfolios with small size. In addition to size factor, the lowest value as the mean among the portfolios with high and low BV/MV factor is high BV/MV portfolio and the risk of portfolio with low BV/MV is lower than the risk of portfolios with high BV/MV.

4.2.1.2. The Results of Manufacturing Sector

Table 4.11 : The Descriptive Analysis of Portfolios According to Size and BV/MV of Stocks in Manufacturing Sector

	B	S	L	M	H	HLM	ISE100
Mean	0,00440	0,00362	0,01107	0,00153	0,00082	-0,00141	-0,31036
Median	0,02644	0,01265	0,01406	0,01861	0,01284	-0,00080	-0,20527
Maximum	0,46645	0,41975	0,35305	0,41688	0,57310	0,39297	0,09499
Minimum	-0,90209	-0,91483	-0,89295	-0,95917	-0,85942	-0,37398	-2,02456
Std, Dev,	0,14350	0,14037	0,13788	0,14522	0,14673	0,08706	0,31433
Skewness	-1,78431	-2,12835	-2,09327	-2,18297	-1,26297	-0,04103	-2,04773
Kurtosis	14,48095	16,36989	16,06398	16,72231	12,34977	81,61017	9,52675
Jarque-Bera	788,98720	1074,60000	1027,22900	1131,85800	511,98360	1454,25400	324,06820
	BH	BL	BM	SH	SL	SM	SMB

Mean	0,00046	0,01166	0,00117	0,00096	0,00834	0,00209	-0,00064
Median	0,00506	0,01511	0,02035	0,01139	0,00446	0,00465	0,00078
Maximum	0,70613	0,34926	0,46529	0,52322	0,88272	0,34205	0,25807
Minimum	-0,82768	-0,89540	-0,93345	-0,87132	-0,99879	-0,99892	-0,23956
Std, Dev,	0,16549	0,13971	0,14983	0,14486	0,19319	0,14612	0,06441
Skewness	-0,30691	-2,05124	-1,76741	-1,53797	-0,68645	-2,49622	0,02559
Kurtosis	88,73847	15,19853	13,86868	13,03086	11,23030	18,67882	56,71456
Jarque-Bera	190,38040	904,08810	712,98440	600,85050	380,02350	147,78430	38,96865

According to the above table, the lowest value as the mean is ISE100 and the highest value is the BL portfolio. According to the standard deviation, ISE100 is the highest, the SMB portolio was obtained the lowest value. The many portfolios as SMB are positive skew, other portfolios are negative skew (left skew).

According to the above table, the lowest value as the mean for portfolios occured size factor is small size portfolio. In other words, the return of portfolio with high size is higher than the return of portfolio with small size. When we evaluate the risk of these portfolios by using the value of standart deviation, the risk of portfolio with small size is lower than the risk of portfolios with big size. In addition to size factor, the lowest value as the mean among the portfolios with high and low BV/MV factor is high BV/MV portfolio and the risk of portfolio with low BV/MV is lower than the risk of portfolios with high BV/MV.

4.2.1.3. The Results of Finance Sector

Table 4.12 : The Descriptive Analysis of Portfolios According to Size and BV/MV of Stocks in Finance Sector

	B	S	L	M	H	HLM	ISE100
Mean	0,007966	0,009932	0,006275	0,011153	0,009342	-0,004166	-0,310362
Median	0,01193	0,010611	0,008047	0,016249	0,016616	-0,00603	-0,205266
Maximum	0,507912	0,488884	0,567339	0,553434	0,395084	0,377874	0,094989
Minimum	-0,3911	-0,415647	-0,437382	-0,404911	-0,351738	-0,467471	-2,024556
Std, Dev,	0,143426	0,139685	0,146631	0,150305	0,134302	0,089202	0,314334
Skewness	0,181679	-0,173435	0,062015	0,218327	-0,224998	-0,199548	-2,047729
Kurtosis	3,804689	4,451892	4,747502	4,320557	3,395457	1,046283	9,526753
Jarque-Bera	4,255069	12,16286	16,75242	10,55936	19,58898	3,048647	324,0682
Probability	0,119131	0,002285	0,00023	0,005094	0,375518	0	0.000000
	BH	BL	BM	SH	SL	SM	SMB
Mean	0,006959	0,011497	0,002922	0,005981	0,009776	0,013928	0,002769

Median	0,012857	0,011476	0,011502	0,010129	0,01612	0,020263	0,0000199
Maximum	0,489967	0,544065	0,460834	0,600499	0,74488	0,391628	0,259183
Minimum	-0,46765	-0,396835	-0,335995	-0,476548	-0,473995	-0,368736	-0,220232
Std, Dev,	0,164473	0,150098	0,142369	0,151435	0,195647	0,138571	0,075177
Skewness	0,043119	0,228899	0,131794	0,00925	0,423435	-0,364614	0,198083
Kurtosis	3,321426	4,198637	3,289941	5,18229	5,208819	3,567843	4,085266
Jarque-Bera	0,604517	8,986107	0,838096	2,599658	3,054523	4,662622	7,285504
Probability	0,739147	0,011186	0,657673	0,000002	0	0,097168	0,02618

According to the above table, the lowest value as the mean is ISE100 and the highest value is the BL portfolio. According to the standard deviation, ISE100 is the highest, the SMB portolio was obtained the lowest value. The many portfolios as SMB, SH, SL, BM, BH, BL, B, L, M are positive skew, other portfolios are negative skew (left skew).

According to the above table, the lowest value as the mean for portfolios occured size factor is high size portfolio. In other words, the return of portfolio with small size is higher than the return of portfolio with high size. When we evaluate the risk of these portfolios by using the value of standart deviation, the risk of portfolio with small size is lower than the risk of portfolios with big size. In addition to size factor, the lowest value as the mean among the portfolios with high and low BV/MV factor is low BV/MV portfolio and the risk of portfolio with high BV/MV is lower than the risk of portfolios with low BV/MV.

4.2.2.Models

4.2.2.1.Two- Factor Model (Market Factor + Size Factor)

The value of SMB (small minus big) is calculated for size factor. SMB is meant to mirror the risk factor in returns related to size. Kenneth French's website calculated SMB as the average return on the three small stock portfolios (SL, SM, and SH) minus the average return on the three big stock portfolios (BL, BM and BH). The below table is shown relationship between the stock returns and market factor and the value of SMB as the size factor.

4.2.2.1.1. The Results for ISE 100

The range of the estimated stock betas by using market factor is between -0,063992 the minimum and 1,40928 the maximum and the range of the estimated stock betas by using size factor is between -1,49776 the minimum and 2,90549 the maximum in the appendix 1.1.1.

The results indicate a positive relationship between beta coefficients and the realized market risk premiums (except in PRKTE). The results of some stock returns as AKBNK, AKCNS, AKSA, ANSGR, ARCLK, ASELS, AYGAZ, BSHEV, CIMSA, DOHOL, DYHOL, ECILC, EREGL, FINBN, GARAN, HURGZ, IHLAS, ISCTR, ISGYO, KCHOL, KRDMD, MARDIN, PRKTE, PTOFS, SAHOL, SISE, SKBNK, THYAO, TOASO, TRKCM, YKBNK etc. indicate a negative relationship between beta coefficients and the realized size risk premiums. The results of other stock returns indicate a positive relationship between beta coefficients and the realized size risk premiums. However, the results indicate a positive relationship between beta coefficients and the realized size or market risk premiums for the majority of stocks.

In the appendix 1.1.1, we examine the value of the Durbin-Watson as autocorrelation indicator; (n=131, k =3, d_L=1.297, d_U= 1.57according to Durbin Watson Table α =0,05) There is no autocorrelation among data because all autocorrelation values is 1,57 to 2,703. Thus the H_0 hypothesis is accepted. The size and market factor is important on the stock returns in the 0,05 level because F Sig. Değeri 0.000<α=0.05 (except in PRKTE and NETAS)

Table 4.13 : The Stocks According to R-squared in ISE100

R-squared								
10-20%	20- 30%	30-40%						
NETAS	KARTN	SELGD	CYTAS	BANVT	EGYO	BOSSA	MUTLU	
PRKTE	DEVA	ATEKS	GOLDS	MAKTK	TRNSK	GOODY	UCAK	
KENT	PENGD	GOLTS	EGGUB	PTOFS	TRCAS	MRDIN	PETKM	
BFREN	AFYON	EGSER	KRSTL	GUSGR	MRSHL	SASA	SARKY	
BSHEV	TIRE	CLEBI	ECILC	KLMSN	GUBRF	KERVT	TATKS	
	KONYA	GEDIZ	TRKCM	EREGL	BRISA	DYOBY	BROVA	
	ARSAN	BAGFS	IZOCM	NTHOL	TUDDF	ECYAP	METRO	
	IHEVA	IHLAS						
40-50%				50-60%		60-70%	70-80%	>80%
ANACM	AYGAZ	ASUZU	FFKRL	NTTUR	BOYNR	ADNAC	HURGZ	ALNTF
BRYAT	ASELS	CEMTS	CIMSA	MARTI	THYAO	ARCLK	DOHOL	AKBNK
BRSAN	BTCIM	TOASO	OTKAR	ALGYO	YKGYO	TSKB	ISGYO	YKBNK
IZMDC	DGZTE	HEKTS	TKBNK	PEGYO	SAHOL	ANSGR	AKCNS	GLYHO
BOLUC	KIPA	TUPRS		NUGYO	ALCTL	DYHOL	AKGRT	ISCTR
KRDMD	MERKO	FINBN		TEKST		GSDHO	ALARK	KCHOL
PNSUT	FROTO	KORDS		SISE		ECZYT		GARAN
ADANA	AKSA	VESTL		SKBNK		MIPAZ		

The explanation power of size (SMB) and market factors as the explanatory variables to the stock returns in the below table is less than 50 percent. There are only 34 stocks which are over 50 percent.

4.2.2.1.2. The Results for Manufacturing Sector

The range of the estimated stock betas by using size factor is between 0,001 the minimum and 0,199 the maximum and the range of the estimated stock betas by using market factor is between -0,955 the minimum and 1,530 the maximum in the Appendix 1.2.1.

In the Appendix 1.2.1, we examine the value of the Durbin-Watson as autocorrelation indicator; (n=131, k =3, d_L=1.29, d_U= 1.57according to Durbin Watson Table α =0,05) There is no autocorrelation among data because all autocorrelation values is 1,57 to 2,703. Thus the H_0 hypothesis is accepted.

Table 4.14 : The Stocks According to R-Squared in Manufacturing Sector

R-squared					
10-%20	20-%30		30-%40		
BFREN	KARTN	KERVT	KONYA	GOLTS	MUTLU
KENT	IHEVA	EGSER	KLMSN	DYOBY	GOODY
DEVA	AFYON	EGGUB	KRSTL	GOLDS	TRCAS
BSHEV	TIRE	CYTAS	MRSHL	BOSSA	SASA
PENGD	SELGD	BANVT	ATEKS	PTOFS	BAGFS
MAKTK	ARSAN		ECILC	GUBRF	MERKO
40-%50				50-%60	>%60
MRDIN	EREGL	ANACM	AYGAZ	TOASO	SISE
PETKM	IZOCM	PNSUT	BTCIM	TUPRS	ADNAC
GEDIZ	ECYAP	IZMDC	HEKTS	KORDS	ARCLK
TATKS	BRSAN	BOLUC	DGZTE	VESTL	HURGZ
SARKY	BRISA	ADANA	ASUZU	OTKAR	AKCNS
TRKCM	TUDDF	KRDMD		CIMSA	
FROTO	AKSA	CEMTS			

The explanation power of size (SMB) and market factors as the explanatory variables to the stock returns in the below table is 30 percent to 50 percent. There are only 11 stocks which are over 50 percent.

The size and market factor is important on the stock returns in the 0,05 level because F Sig. Değeri 0.000<α=0.05 (except in ADANA, ATEKS, BAGFS, BFREN, BOLUC, BOSSA, BRISA, BRSAN, BSHEV, BTCIM, CEMTS, CYTAS, DEVA, ECYAP, EREGL, GEDIZ,

GOLTS, GUBRF, IHEVA, KARTN, KERVT, KONYA, KRSTL, MAKTK, MRDIN, MRSHL, MUTLU, OTKAR, PENGD, SARKY, SELGD, TIRE). The excluded stocks are showed that the size and market factor is not a a statistically significant together.

4.2.2.1.3. The Results for Finance Sector

The range of the estimated stock betas by using size factor is between -0,8419 the minimum and 1,3486 the maximum and the range of the estimated stock betas by using market factor is between 0,0957 the minimum and 0,2398 the maximum in the Appendix 1.3.1.

In the Appendix 1.3.1, we examine the value of the Durbin-Watson as autocorrelation indicator; (n=131, k =3, d_L=1.297, d_U= 1.57 according to Durbin Watson Table α =0,05) There is no autocorrelation among data because all autocorrelation values is 1,57 to 2,703. Thus the H_0 hypothesis is accepted.

Table 4.15 : The Stocks According to R-Squared in Financial Sector

R-squared					
30-%50		50-%60	60-%70		>%70
GUSGR	FFKRL	NUGYO	ECZYT	ALARK	AKBNK
EGYO	FINBN	TEKST	TSKB	ALNTF	GLYHO
METRO	TKBNK	SKBNK	DYHOL	AKGRT	YKBNK
BRYAT	PEGYO	YKGYO	ANSGR		ISCTR
NTHOL	ALGYO	GDSHO	DOHOL		KCHOL
IHLAS		SAHOL	ISGYO		GARAN

The explanation power of size (SMB) and market factors as the explanatory variables to the stock returns in the below table is 50 percent to 70 percent. There are only 6 stocks which are over 70 percent.

The size and market factor is important on the stock returns in the 0,05 level because F Sig. Değeri 0.000<α=0.05 (except in BRYAT)

4.2.2.2. Three Factor Model (Market + Size + Book-to-Market Equity)

The size factor is evaluated with the book-to-market factor. Thus, HLM is calculated by the method of Fama and French. HLM is created to mimic the risk factor in returns related to book-tomarket equity. French calculated HML as the average return on the two low book-to-

market equity stock portfolios (SL and BL) minus the average return on the two high book-to-market equity stock portfolio (SH and BH).

4.2.2.2.1. The Results of ISE 100

The range of the estimated stock betas by using market factor is between 0,1013 the minimum and 0,2489 the maximum, the range of the estimated stock betas by using size factor is between -0,7318 the minimum and 1,2378 the maximum and the range of the estimated stock betas by using BV/MV factor is between -1,2384 the minimum and 0,7299 the maximum in the Appendix 1.1.2.

In the Appendix 1.1.2., we examine the value of the Durbin-Watson as autocorrelation indicator; (n=131, k =4, d_L=1.229 , d_U= 1.650 according to Durbin Watson Table α =0,05) There is no autocorrelation among data (except in ANSGR, EGYO, HURGZ, IHEVA, KERVT, MIPAZ, PEGYO, YKBNK and TUDDF) because all autocorrelation values is 1,650 to 2,350. Thus the H_0 hypothesis is accepted (except in ANSGR, EGYO, HURGZ, IHEVA, KERVT, MIPAZ, PEGYO, YKBNK and TUDDF).

Table 4.16 : The Stocks According to R-Squared in ISE100

R -squared							
10-%10	20-%30	30-%40					
NETAS	KARTN	BSHEV	ARSAN	TRNSK	EGSER	NTHOL	
PRKTE	DEVA	ATEKS	GUSGR	EGYO	MAKTK	METRO	
	BFREN	CYTAS	SELGD	GOLTS	GEDİZ	UCAK	
	PENGD	GOLDS	KRSTL	KENT	TRCAS		
	IHEVA	TIRE	CLEBI	AFYON	ECILC		
40-%50				50- %60			
IHLAS	EREGL	BTCIM	KRDMD	DYOBY	ASUZU	ANACM	TEKST
BRYAT	KLMSN	KONYA	BOSSA	ADANA	TOASO	TRKCM	ECYAP
EGGUB	PTOFS	DGZTE	MERKO	TKBNK	GOODY	KORDS	THYAO
MUTLU	BROVA	BAGFS	FINBN	AKSA	IZOCM	HEKTS	TUDDF
GUBRF	KIPA	SARKY	TATKS	NTTUR	NUGYO	IZMDC	YKGYO
SASA	MRDIN	CEMTS	KERVT	BRISA	ALGYO	BOYNR	
ASELS	FFKRL	PETKM	PNSUT	FROTO	PEGYO	TUPRS	
MRSHL	VESTL	OTKAR	BOLUC	MARTI	BRSAN	AYGAZ	
60 -%70			>%70				
DYHOL	ECZYT	DOHOL	ARCLK	GLYHO			
GSDHO	HURGZ	AKCNS	ALNTF	ISCTR			
SISE	ISGYO	AKGRT	AKBNK	KCHOL			
MIPAZ	SAHOL	ALARK	YKBNK	GARAN			

The explanation power of size (SMB), market power and BV/MV factors as the explanatory variables to the stock returns in the below table is between 30 percent and 60 percent. There are only 15 stocks which are over 60 percent.

The size, BV/MV and market factor is important on the stock returns in the 0,05 level because F Sig. Değeri 0.000<α=0.05 (except in PRKTE). The stocks are showed that the size, BV/MV and market factor is a a statistically significant together.

4.2.2.2.2. The Results of Manufacturing Sector

The range of the estimated stock betas by using market factor is between 0,0019 the minimum and 0,2026 the maximum, the range of the estimated stock betas by using size factor is between -2,2947 the minimum and 3,8568 the maximum and the range of the estimated stock betas by using BV/MV factor is between -2,9377 the minimum and 2,4218 the maximum in the Appendix 2.2.2.

In the Appendix 2.2.2., we examine the value of the Durbin-Watson as autocorrelation indicator; (n=131, k =4, d_L=1.229 , d_U= 1.650 according to Durbin Watson Table α =0,05) There is no autocorrelation among data because all autocorrelation values is 1,650 to 2,350. Thus the H_0 hypothesis is accepted.

Table 4.18 : The Stocks According to R-Squared in Manufacturing Sector

R-squared							
10-%20	20-%30	30-%40			40-%50		
BFREN	KARTN	MAKTK	ECILC	MERKO	MUTLU	GUBRF	ECYAP
KENT	SELGD	AFYON	KERVT		GODDY	BAGFS	SARKY
BSHEV	IHEVA	TIRE	PENGD		PTOFS	ARSAN	KRSTL
DEVA	CYTAS	EGSER	GOLTS		PETKM	BRISA	ANACM
		KLMSN	BOSSA		GEDIZ	TUDDF	HEKTS
		MRSHL	GOLDS		TATKS	IZOCM	DGZTE
		KONYA	EGGUB		FROTO	CEMTS	
50-%60		60-%70		>%70			
TRKCM	KORDS	BRSAN	SISE	BANVT			
TRCAS	PNSUT	AKSA	ADNAC	HURGZ			
KRDMD	ASUZU	AYGAZ		CIMSA			
MRDIN	OTKAR	EREGL		DYOBY			
VESTL	BOLUC	TOASO		ARCLK			
BTCIM	ATEKS	ADANA		AKCNS			

SASA	IZMDC	TUPRS					

The explanation power of size (SMB), market risk and BV/MV factors as the explanatory variables to the stock returns in the below table is 30 percent to 70 percent. There are only 6 stocks which are over 70 percent.

The size, market factor and BV/MV are not important on many stock returns in the 0,05 level because F Sig. Değeri 0.000<α=0.05. The stocks showed that the size, market factor and BV/MV factors is not a statistically significant together are ADANA, ATEKS, BAGFS, BFREN, BOLUC, BOSSA, BSHEV, BTCIM, CEMTS, CYTAS, DEVA, DGZTE, ECYAP, GEDIZ, GOLTS, GOODY, GUBRF, HEKTS, IHEVA, KARTN, KERVT, KLMSN, KRSTL, MAKTK, MERKO, MRDIN, MRSHL, MUTLU, PENGD, SARKY, SELGD, TATKS and TIRE.

4.2.2.2.3. The Results of Finance Sector

The range of the estimated stock betas by using market factor is between 0,1013 the minimum and 0,2489 the maximum, the range of the estimated stock betas by using size factor is between -0,7318 the minimum and 1,2378 the maximum and the range of the estimated stock betas by using BV/MV factor is between -1,2384 the minimum and 0,7299 the maximum in the Appendix 1.3.2.

In the Appendix 1.3.2., we examine the value of the Durbin-Watson as autocorrelation indicator; (n=131, k =4, d_L=1.229 , d_U= 1.650 according to Durbin Watson Table α =0,05) There is no autocorrelation among data because all autocorrelation values is 1,650 to 2,350. Thus the H_0 hypothesis is accepted.

Table 4.19 : The Stocks According to R-Squared in Financial Sector

R-squared							
30-50%		50-%60		60-%70		>%70	
GUSGR	IHLAS	TKBNK	SKBNK	SAHOL	DOHOL	AKBNK	YKBNK
EGYO	FINBN	PEGYO	YKGYO	ECZYT	ISGYO	AKGRT	ISCTR
METRO	FFKRL	ALGYO	GDSHO	TSKB		ALARK	KCHOL
BRYAT		NUGYO		DYHOL		ALNTF	GARAN
NTHOL		TEKST		ANSGR		GLYHO	

The explanation power of size (SMB), market power and BV/MV factors as the explanatory variables to the stock returns in the below table is higher than 50 percent. There are only 8 stocks which are under 50 percent.

The size, BV/MV and market factor is important on the stock returns in the 0,05 level because F Sig. Değeri 0.000<α=0.05. The stocks are showed that the size and market factor is a a statistically significant together.

4.2.2.3. Four Factor Model (Market+Size+Book-to-Market Equity+Momentum)

Carhart four-factor model (1997) is extension of the Fama-French model, containing an additional momentum factor (MOM), which is long prior-month winners and short prior-month losers. The effect of momentum is interpreted as the monthly change of prices by using the analysis depend on the size factor of Fama and French in the thesis. First, the stocks listed as low (/L), medium(/M) and high (/H) according to the monthly changes of momentum. Then, we calculated intersections between size categories and the momentum factor categories. These stocks:

Table 4.19 : The Portfolios According to Momentum Factor of Stocks in ISE100

The Portfolios According to Momentum Factor of Stocks in ISE100								
/L	AKBNK	BOSSA	FROTO	KENT	NTTUR	SAHOL	TOASO	
	ALNTF	BROVA	GARAN	KIPA	NUGYO	SELGD	TRCAS	
	ANSGR	CYTAS	GSDHO	KLMSN	OTKAR	SKBNK	TUDDF	
	ARCLK	EREGL	GUBRF	MIPAZ	PETKM	TEKST	YKBNK	
	BANVT	FINBN	ISCTR	MRDIN	PTOFS	THYAO	YKGYO	
/M	ADANA	ALCTL	BRSAN	DEVA	ECYAP	HEKTS	KORDS	MERKO
	ADNAC	ALGYO	BRYAT	DGZTE	ECZYT	HURGZ	KRDMD	METRO
	AKCNS	ASELS	BTCIM	DOHOL	EGYO	ISGYO	KRSTL	MRSHL
	AKGRT	AYGAZ	CIMSA	DYOBY	GOLDS	KCHOL	MAKTK	NETAS
	ALARK	BOLUC	CLEBI	ECILC	GUSGR	KERVT	MARTI	PEGYO
	PENGD	SARKY	SISE	TIRE	TSKB	TUPRS	UCAK	VESTL
/H	AFYON	ATEKS	BSHEV	FFKRL	IHEVA	KONYA	SASA	
	AKSA	BAGFS	CEMTS	GEDIZ	IHLAS	MUTLU	TATKS	
	ANACM	BFREN	DYHOL	GLYHO	IZMDC	NTHOL	TKBNK	
	ARSAN	BOYNR	EGGUB	GOLTS	IZOCM	PNSUT	TRKCM	
	ASUZU	BRISA	EGSER	GOODY	KARTN	PRKTE	TRNSK	

Table 4.20 : The Portfolios According to Momentum and Size Factors of Stocks in ISE100

The Portfolios According to Momentum and Size Factors of Stocks in ISE100												
S/L	ALNTF	KLMSN	TEKST				B/L	AKBNK	FROTO	KIPA	SAHOL	TUDDF
	BOSSA	MIPAZ	YKGYO					ANSGR	GARAN	MRDIN	SKBNK	YKBNK
	BROVA	NTTUR						ARCLK	GUBRF	OTKAR	THYAO	
	CYTAS	NUGYO						EREGL	ISCTR	PETKM	TOASO	
	GSDHO	SELGD						FINBN	KENT	PTOFS	TRCAS	
S/M	ADANA	AYGAZ	DYOBY	GUSGR	MARTI	PENGD	B/M	AKCNS	CIMSA	ISGYO	NETAS	VESTL
	ADNAC	BOLUC	ECYAP	HEKTS	MERKO	SARKY		ALARK	CLEBI	KCHOL	SARKY	
	AKGRT	BRYAT	ECZYT	KERVT	METRO	TIRE		ASELS	DOHOL	KORDS	SISE	
	ALCTL	DEVA	EGYO	KRSTL	MRSHL			AYGAZ	ECILC	KRDMD	TSKB	
	ALGYO	DGZTE	GOLDS	MAKTK	PEGYO			BRSAN	HURGZ	MRSHL	TUPRS	
S/H	AFYON	BFREN	FFKRL	MUTLU			B/H	AKSA	GOODY	KONYA	SASA	
	ARSAN	BOYNR	GEDIZ	TRNSK				ANACM	IHLAS	MUTLU	TATKS	
	ASUZU	CEMTS	GLYHO					BRISA	IZMDC	NTHOL	TRKCM	
	ATEKS	EGGUB	GOLTS					BSHEV	IZOCM	PNSUT		
	BAGFS	EGSER	IHEVA					DYHOL	KARTN	PRKTE		

Table 4.21 : Portfolios According to Momentum – Size and Size Factors of Stocks in Manufacturing Sector

Portfolios According to Size Factor							Portfolios According to Momentum – Size Factors							
L	TRCAS	CYTAS	FROTO	PETKM	CIMSA		S/L	ADANA	ECYAP		B/L	ARCLK	GUBRF	PTOFS	KLMSN
	BANVT	KLMSN	TUDDF	MRDIN	ECILC			BANVT	SELGD			CIMSA	KENT	TOASO	
	PTOFS	SELGD	OTKAR	BOLUC	ADANA			BOLUC				ECILC	MRDIN	TRCAS	
	KENT	BOSSA	ARCLK	ECYAP				BOSSA				EREGL	OTKAR	TUDDF	
	GUBRF	TOASO	EREGL	VESTL				CYTAS				FROTO	PETKM	VESTL	
M	PENGD	TUPRS	SISE	BRSAN	BTCIM	BAGFS	S/M	ADNAC	GOLDS	MERKO	B/M	AKCNS	IZMDC	TIRE	
	DYOBY	AKCNS	ADNAC	MRSHL	KRDMD	TATKS		BAGFS	HEKTS	MRSHL		AYGAZ	KORDS	TRKCM	
	MERKO	DEVA	DGZTE	HURGZ	MAKTK			DEVA	KERVT	PENGD		BRSAN	KRDMD	TUPRS	
	GOLDS	SARKY	KERVT	KORDS	TRKCM			DGZTE	KRSTL	SARKY		BTCIM	SISE	GOLDS	
	HEKTS	AYGAZ	TIRE	KRSTL	IZMDC			DYOBY	MAKTK	TIRE		HURGZ	TATKS		
H	EGSER	MUTLU	GOODY	EGGUB	KARTN		S/H	AFYON	CEMTS	MUTLU	B/H	AKSA	KARTN		
	AFYON	BRISA	IZOCM	GEDIZ	KONYA			ARSAN	EGGUB	SASA		ANACM	KONYA		
	CEMTS	GOLTS	AKSA	SASA				ASUZU	EGSER			BRISA	PNSUT		
	ANACM	BSHEV	ARSAN	BFREN				ATEKS	GOLTS			BSHEV			
	PNSUT	IHEVA	ASUZU	ATEKS				BFREN	IHEVA			IZOCM			

Table 4.22 : Portfolios According to Momentum – Size and Size Factors of Stocks in Financial Sector

Portfolios According to Size				Portfolios According to Momentum – Size Factors					
/L	YKBNK	FINBN		S/L	GSDHO		B/L	ANSGR	SAHOL
	GARAN	GSDHO			TEKST			FINBN	YKBNK
	ISCTR	TEKST			YKGYO			GARAN	
	SAHOL	YKGYO						ISCTR	
	ANSGR			S/M	AKGRT	EGYO	B/M	AKBNK	SKBNK
/M	AKBNK	PEGYO	EGYO		ALGYO	GUSGR		DOHOL	TSKB
	SKBNK	ECZYT	KCHOL		ALNTF	NUGYO		ISGYO	
	ALNTF	ALGYO	GUSGR		ECZYT	PEGYO		KCHOL	
	NUGYO	DOHOL	AKGRT	S/H	BRYAT	NTHOL	B/H	ALARK	
	ISGYO	TSKB			FFKRL			DYHOL	
/H	METRO	FFKRL			GLYHO			IHLAS	
	ALARK	IHLAS			METRO			TKBNK	
	BRYAT	TKBNK							
	DYHOL	NTHOL							
	GLYHO								

4.2.2.3.1. Desciptive Analysis

4.2.2.3.1.1.The Results of ISE100

Table 4.23 : The Descriptive Analysis of Portfolios According to Momentum Factor in ISE100

	/H	/L	/M	MOMENTUM	S/M	ISE 100
Mean	0,01038	0,006249	0,004128	0,004904	0,004018	-0,310362
Median	0,025684	0,014674	0,012384	0,006358	0,013547	-0,205266
Maximum	0,371591	0,475118	0,495856	0,299096	0,486961	0,094989
Minimum	-0,63925	-0,374273	-0,490374	-0,343524	-0,548288	-2,024556
Std, Dev,	0,132543	0,130802	0,129404	0,059778	0,130369	0,314334
Skewness	-0,927017	-0,031217	-0,149781	-0,645973	-0,408289	-2,047729
Kurtosis	7,181486	4,304559	5,604378	14,28814	6,327565	9,526753
Jarque-Bera	114,2007	9,310681	37,51252	704,6224	64,07805	324,0682
	B/H	B/L	B/M	S/H	S/L	
Mean	0,009698	0,007269	0,003061	0,011893	0,004514	
Median	0,019971	0,022287	0,003081	0,019935	0,004785	
Maximum	0,343905	0,50369	0,490207	0,38332	0,453781	
Minimum	-0,712343	-0,474252	-0,503781	-0,634686	-0,424615	
Std, Dev,	0,134976	0,133311	0,134138	0,140115	0,143578	
Skewness	-1,149678	-0,066273	-0,083861	-0,806961	0,017409	
Kurtosis	8,67981	4,98571	5,046367	6,475517	4,199623	
Jarque-Bera	204,9456	21,61834	23,01096	80,14995	7,861681	

According to the above table, the lowest value as the mean is ISE100 and the highest value is the S/H portfolio. According to the standard deviation, ISE100 is the highest, the

MOMENTUM portolio was obtained the lowest value. The S/L portfolio is positive skew, other portfolios are negative skew (left skew). The Jarque-Bera values are very high. In terms of Jarque-Bera measurement the high value proves that the data set is not normally distributed.

According to the above table, the lowest value as the mean for portfolios occured momentum factor is portfolio with low momentum. In other words, the return of portfolio with high momentum is higher than the return of portfolio with low momentum. When we evaluate the risk of these portfolios by using the value of standart deviation, the risk of portfolio with low momentum is lower than the risk of portfolios with high momentum.

4.2.2.3.1.2.The Results of Manufacturing Sector

Table 4.24 : The Descriptive Analysis of Portfolios According to Momentum Factor in Manufacturing Sector

	/H	/L	/M	MOMENTUM	S/M	ISE 100
Mean	0,008863	0,001305	0,003003	0,010842	0,005472	-0,31036
Median	0,0224	0,009365	0,010086	0,008264	0,014465	-0,20527
Maximum	0,356995	0,445898	0,49494	0,333973	0,461973	0,094989
Minimum	-0,93775	-0,90948	-0,88372	-0,125001	-0,86572	-2,02456
Std, Dev,	0,143937	0,142935	0,143932	0,062049	0,142938	0,314334
Skewness	-2,15305	-1,74964	-1,65713	1,218761	-1,59173	-2,04773
Kurtosis	16,16908	15,0334	13,6995	8,040931	13,35501	9,526753
Jarque-Bera	1047,821	857,2176	684,8221	171,1324	640,5933	324,0682
	B/H	B/L	B/M	S/H	S/L	
Mean	0,012342	0,00378	-0,0009	0,008545	-0,00458	
Median	0,030203	0,011048	0,019011	0,019456	-0,00621	
Maximum	0,368691	0,473558	0,515542	0,403973	0,44229	
Minimum	-0,83075	-0,93465	-0,91946	-0,998898	-0,8519	
Std, Dev,	0,139104	0,148198	0,149991	0,154709	0,143407	
Skewness	-1,68666	-1,7077	-1,62405	-2,036304	-1,31709	
Kurtosis	12,23585	14,69632	13,27134	15,91332	12,01502	
Jarque-Bera	527,7131	810,3923	633,4427	1000,731	481,4762	

According to the above table, the lowest value as the mean is ISE100 and the highest value is the B/H portfolio. According to the standard deviation, ISE100 is the highest, the MOMENTUM portolio was obtained the lowest value. The MOMENTUM portfolio is positive skew, other portfolios are negative skew (left skew). The Jarque-Bera values are very

high. In terms of Jarque-Bera measurement the high value proves that the data set is not nsormally distributed.

According to the above table, the lowest value as the mean for portfolios occured momentum factor is portfolio with low momentum. In other words, the return of portfolio with high momentum is higher than the return of portfolio with low momentum. When we evaluate the risk of these portfolios by using the value of standart deviation, the risk of portfolio with low momentum is lower than the risk of portfolios with high momentum.

4.2.2.3.1.3.The Results of Finance Sector

Table 4.25 : The Descriptive Analysis of Portfolios According to Momentum Factor in Finance Sector

	/H	/L	/M	MOMENTUM	ISE 100	
Mean	0,010789	0,007048	0,008403	0,003842	-0,310362	
Median	0,024897	0,011627	0,008027	0,010115	-0,205266	
Maximum	0,472101	0,531987	0,550469	0,29866	0,094989	
Minimum	-0,442958	-0,362061	-0,373521	-0,202497	-2,024556	
Std, Dev,	0,14856	0,14741	0,135674	0,080283	0,314334	
Skewness	-0,104857	0,097765	0,186296	0,285702	-2,047729	
Kurtosis	4,3617	3,722362	4,4014	4,164263	9,526753	
Jarque-Bera	10,36105	3,056876	11,47749	9,180977	3,240682	
Probability	0.005625	0.216874	0.003219	0.010148	0.000000	
	B/H	B/L	B/M	S/H	S/L	S/M
Mean	0,005772	0,008255	0,007774	0,014803	0,004635	0,008875
Median	0,007583	0,003611	-0,000244	0,019465	0,008785	0,009533
Maximum	0,631995	0,54002	0,546386	0,543249	0,51592	0,553531
Minimum	-0,448845	-0,458204	-0,411227	-0,530052	-0,598346	-0,345242
Std, Dev,	0,156808	0,149836	0,148043	0,157043	0,170614	0,138046
Skewness	0,344603	0,128815	0,253735	-0,274491	-0,16272	0,142106
Kurtosis	4,72241	3,981089	3,77808	4,847503	3,947988	4,420772
Jarque-Bera	18,78596	5,61613	4,710176	20,2758	5,483403	11,45905
Jarque-Bera	190,3804	904,0881	712,9844	600,8505	380,0235	1477,843
Probability	0.000083	0.060322	0.094885	0.000040	0.064461	0.003249

According to the above table, the lowest value as the mean is ISE100 and the highest value is the S/H portfolio. According to the standard deviation, ISE100 is the highest, the

MOMENTUM portolio was obtained the lowest value. The MOMENTUM, /L, /M, B/H, B/L, B/M and S/M portfolio is positive skew, other portfolios are negative skew (left skew).

According to the above table, the lowest value as the mean for portfolios occured momentum factor is portfolio with low momentum. In other words, the return of portfolio with high momentum is higher than the return of portfolio with low momentum. When we evaluate the risk of these portfolios by using the value of standart deviation, the risk of portfolio with low momentum is lower than the risk of portfolios with high momentum.

4.2.2.3.2. The Regression Results

4.2.2.3.2.1.The Results of ISE 100

The range of the estimated stock betas by using market factor is between 0,0022 the minimum and 0,2589 the maximum, the range of the estimated stock betas by using size factor is between -2,0354 the minimum and 4,1248 the maximum, the range of the estimated stock betas by using BV/MV factor is between - 2,929 the minimum and 2,4972 the maximum and the range of the estimated stock betas by using momentum factor is between -1,3347 the minimum and 3,6224 the maximum in the Appendix 1.1.3.

In the Appendix 1.1.3, we examine the value of the Durbin-Watson as autocorrelation indicator; (n=131, k =5, d_L=1.160, d_U= 1.735 according to Durbin Watson Table α =0,05) There is no autocorrelation among data (except in MERKO) because all autocorrelation values is 1,735 to 2,265. Thus the H_0 hypothesis is accepted.

Table 4.26 : The Stocks According to R squared in ISE100

R-squared								
10-%20	20-%30	30-%40		40-%50				
NETAS	BSHEV	AFYON	GUSGR	BRYAT	EREGL	DGZTE		
KENT	DEVA	CYTAS	IHEVA	GEDIZ	KLMSN	BOSSA		
PRKTE		BFREN	ECILC	METRO	MUTLU	TATKS		
		NTHOL	GOLDS	TIRE	EGSER	ASELS		
		ATEKS	MAKTK	PTOFS	KIPA	PETKM		
		EGYO	PENGD	TRNSK	IHLAS	BOLUC		
		CLEBI		EGGUB	FINBN	MRSHL		
		ARSAN		BROVA	BAGFS	KARTN		
50-%60			60-%70			70-%80		>%80
FFKRL	NUGYO	TUDDF	AYGAZ	ECZYT	ASUZU	AKCNS	MARTI	YKBNK
SARKY	ALGYO	TRKCM	NTTUR	SKBNK	GSDHO	HURGZ	ISGYO	ADANA

KRDMD	MRDIN	ANACM	SEZGD	THYAO	KONYA	ARCLK	OTKAR	ISCTR
DYOBY	BTCIM	KORDS	TEKST	TOASO	SASA	ADNAC	UCAK	GARAN
GUBRF	BRISA	HEKTS	BRSAN	ANSGR	SAHOL	AKGRT		KCHOL
TRCAS	CEMTS	PEGYO	GOLTS	CIMSA	SISE	ALNTF		TSKB
KLBNK	FROTO	GODDY	BOYNR	DOHOL		ALARK		
IZOCM	AKSA	VESTL	YKGYO	MIPAZ		GLYHO		
BANVT	KERVT	MERKO	DYHOL	PNSUT		AKBNK		
ECYAP	IZMDC		ALCTL	TUPRS		KRSTL		

The explanation power of size (SMB), market risk, BV/MV and momentum factors asthe explanatory variables to the stock returns in the below tableis 40 percent to 80 percent. There are only 6 stocks which are over 80 percent.

The size, market factor, momentum and BV/MV is not important on many stock returns in the 0,05 level because F Sig. Değeri $0.000<\alpha=0.05$. The stocks showed that the size, momentum, market and BV/MV factors is not a statistically significant together are ADANA, ALCTL, ALNTF, ATEKS, BAGFS, BOLUC, BOSSA, BRISA, BRSAN, BTCIM, CEMTS, DEVA, DGZTE, ECYAP, GEDIZ, GOLDS, GOLTS, GOODY, GUBRF, HEKTS, IZMDC, KENT, KERVT, KRSTL, MAKTK, MARTI, MRDIN, MRSHL, MUTLU, PENGD, SARKY, SELGD, TATKS, TIRE, TSKB, YKBNK, YKGYO.

4.2.2.3.2.2. The Results of Manufacturing Sector

The range of the estimated stock betas by using market factor is between 0,0019 the minimum and 0,2071 the maximum, the range of the estimated stock betas by using size factor is between -2,4354 the minimum and 4,1248 the maximum, the range of the estimated stock betas by using BV/MV factor is between - 2,929 the minimum and 2,4972 the maximum and the range of the estimated stock betas by using momentum factor is between -1,0347 the minimum and 2,6001 the maximum in the Appendix 1.2.3.

In the Appendix 1.2.3., we examine the value of the Durbin-Watson as autocorrelation indicator; ($n=131$, $k=5$, $d_L=1.160$, $d_U= 1.735$ according to Durbin Watson Table $\alpha=0,05$) There is no autocorrelation among data (except in SELGD, MERKO and IHEVA) because all autocorrelation values is 1,735 to 2,265. Thus the H_0 hypothesis is accepted.

Table 4.27 : The Stocks According to R squared in Manufacturing Sector

R-squared							
10-%20	30-%40		40-%50		50-%60		
KENT	AFYON	IHEVA	PETKM	BAGFS	TRKCM	DGZTE	KERVT
DEVA	MAKTK	GOLDS	MRSHL	KLMSN	SARKY	IZOCM	IZMDC
	TIRE	PENGD	GEDIZ	MUTLU	KRDMD	MRDIN	MERKO
	BFREN		TATKS	TUDDF	ANACM	BTCIM	
	ECILC		PTOFS	GODDY	GUBRF	BRISA	
	EGSER		EGGUB	ARSAN	TRCAS	KORDS	
	BSHEV		FROTO		HEKTS	VESTL	
60-%70		70-%80		>%80			
CYTAS	PNSUT	AKSA	ECYAP	ARCLK			
BRSAN	TUPRS	EREGL	OTKAR	SELGD			
GOLTS	ASUZU	HURGZ	DYOBY	ATEKS			
AYGAZ	KONYA	CIMSA		ADANA			
CEMTS	SASA	ADNAC		AKCNS			
TOASO	SISE	BOSSA		BANVT			
BOLUC		KRSTL		KARTN			

The explanation power of size (SMB) , market risk, BV/MV and momentum factors as the explanatory variables to the stock returns in the below tableis 30 percent to 80 percent. There are only 7 stocks which are over 80 percent.

The size, market factor, momentum and BV/MV is not important on many stock returns in the 0,05 level because F Sig. Değeri $0.000<\alpha=0.05$. The stocks showed that the size, market, momentum and BV/MV factors is not a statistically significant together are ADANA, ATEKS, BAGFS, BOLUC, BOSSA, BRISA, BRSAN, BTCIM, CEMTS, DEVA, DGZTE, ECYAP, GEDIZ, GOLDS, GOLTS, GOODY, GUBRF, HEKTS, IZMDC, KENT, KERVT, KRSTL, MAKTK, MRDIN, MRSHL, MUTLU, PENGD, SARKY, SELGD, TATKS, TIRE.

4.2.2.3.2.3. The Results of Finance Sector

The range of the estimated stock betas by using market factor is between 0,1013 the minimum and 0,2489 the maximum, the range of the estimated stock betas by using size factor is between -0,7318 the minimum and 1,2378 the maximum, the range of the estimated stock betas by using BV/MV factor is between -1,2384 the minimum and 0,7299 the maximum and the range of the estimated stock betas by using momentum factor is between -1,2384 the minimum and 0,7299 the maximum in the Appendix 1.3.3.

In the table above, we examine the value of the Durbin-Watson as autocorrelation indicator; (n=131, k =5, d_L=1.160, d_U= 1.735 according to Durbin Watson Table α =0,05) There is no autocorrelation among data (except in DOHOL, DYHOL, PEGYO, SAHOL, SKBNK and TSKB) because all autocorrelation values is 1,735 to 2,265. Thus the H_0 hypothesis is accepted.

Table 4.28 : The Stocks According to R squared in Finance Sector

R-squared					
30-50%	50-%60	60-%70	70-%80	>80%	
GUSGR	FINBN	NUGYO	ECZYT	AKBNK	GARAN
EGYO	FFKRL	TEKST	TSKB	AKGRT	ISCTR
METRO	TKBNK	SKBNK	DYHOL	ALARK	KCHOL
BRYAT	PEGYO	YKGYO	ANSGR	ALNTF	
NTHOL	ALGYO	GDSHO	DOHOL	GLYHO	
IHLAS		SAHOL	ISGYO	YKBNK	

The explanation power of size (SMB), market risk, BV/MV and momentum factors as the explanatory variables to the stock returns in the below table is higher than 50 percent. There are only 6 stocks which are 30 percent to 50 percent.

The size, market factor, momentum and BV/MV is important on many stock returns in the 0,05 level because F Sig. Değeri 0.000<α=0.05. The stocks showed that the size, market, momentum, BV/MV factors is a statistically significant together.

4.2.2.4. Five Factor Asset Pricing (Market Risk + Size + BV/MV + Momentum+ QScore)

Various financial ratios under the heading of Q score calculated for each stock as used by the 3-month balance sheet and income statement. In this calculation process the data between January 2006 and December 2010 were examined. The following results were obtained by the multiple regression method for the ISE 100, manufacturing and financial sector using financial ratios calculated for each stock.

The regresion results for ISE100:

q-score = 0.153843 - 0.054916*INTWO - 0.020707*CHIN + 0.091533* CLCA + 0.518890*FUTL - 1.377214*NITA - 1.319637*OENEG - 0.232471*SIZE + 0.004580*TLTA + 0.4464680*WCTA

The regresion results for manufacturing sector:

q-score = 0.153843 + 0.115038 *INTWO + 0.018668*CHIN - 0.035742* CLCA + 0.093125*FUTL + 3,705561*NITA - 0.880079*OENEG - 0.347411*SIZE + 1,034546*TLTA – 0,410860*WCTA

The regresion results for financial sector:

q-score = -1,628249 – 0,262689*INTWO + 0.115007*CHIN - 0.096143* CLCA - 0,336547*FUTL + 7,510215*NITA + 2,519077*OENEG - 1,436677*SIZE + 8,808190*TLTA - 2,922638*WCTA

The value of Q score for each stock are calculated using the above equations and ranked by intersecting stocks listed according to the size.

Table 4.29 : The Portfolios According to Q-Score of Stocks in ISE100

The Portfolios According to Q-Score of Stocks in ISE100							
L*	ADANA	BANVT	CIMSA	ECYAP	ISCTR	SAHOL	TRNSK
	ALCTL	BOYNR	CYTAS	EGYO	KCHOL	SISE	TSKB
	ARCLK	BRISA	DGZTE	EREGL	KERVT	SKBNK	TUPRS
	ASELS	BSHEV	DOHOL	GEDIZ	MAKTK	THYAO	YKBNK
	BAGFS	BTCIM	ECILC	GSDHO	PTOFS	TOASO	YKGYO
M*	ADNAC	ALNTF	BOLUC	DEVA	FINBN	IHLAS	TKBNK
	AKBNK	ARSAN	BROVA	DYHOL	FROTO	ISGYO	KORDS
	AKGRT	ASUZU	BRSAN	ECZYT	GLYHO	IZMDC	KRDMD
	ALARK	ATEKS	BRYAT	EGGUB	GUSGR	KENT	MARTI
	ALGYO	BFREN	CEMTS	FFKRL	HURGZ	KIPA	METRO
	SARKY	TEKST	TRCAS	TUDDF	NTHOL	OTKAR	PNSUT
	SASA	TIRE	TRKCM	VESTL	NUGYO	PETKM	
H*	AFYON	AYGAZ	GARAN	HEKTS	KONYA	MRSHL	PENGD
	AKCNS	BOSSA	GOLDS	IHEVA	KRSTL	MUTLU	PRKTE
	AKSA	CLEBI	GOLTS	IZOCM	MERKO	NETAS	SELGD
	ANACM	DYOBY	GOODY	KARTN	MIPAZ	NTTUR	TATKS
	ANSGR	EGSER	GUBRF	KLMSN	MRDIN	PEGYO	UCAK

Table 4.30 : The Portfolios According to Q-Score and Size Factors of Stocks in ISE100

The Portfolios According to Q-Score and Size Factors of Stocks in ISE100											
SL*	ADANA	ECYAP	MAKTK			BL*	ARCLK	CIMSA	KCHOL	THYAO	
	ALCTL	EGYO	TRNSK				ASELS	DOHOL	PTOFS	TOASO	
	BOYNR	GEDIZ	YKGYO				BRISA	ECILC	SAHOL	TSKB	
	CYTAS	GSDHO					BSHEV	EREGL	SISE	TUPRS	

	DGZTE	KERVT					BTCIM	ISCTR	SKBNK	YKBNK	
SM*	ADNAC	ASUZU	BRYAT	FFKRL	NUGYO	BM*	AKBNK	FROTO	KENT	NTHOL	TRCAS
	AKGRT	ATEKS	CEMTS	GLYHO	SARKY		ALARK	HURGZ	KIPA	OTKAR	TRKCM
	ALGYO	BFREN	DEVA	GUSGR	TEKST		BRSAN	IHLAS	TKBNK	PETKM	TUDDF
	ALNTF	BOLUC	ECZYT	MARTI	TIRE		DYHOL	ISGYO	KORDS	PNSUT	VESTL
	ARSAN	BROVA	EGGUB	METRO			FINBN	IZMDC	KRDMD	SASA	
SH*	AFYON	GOLTS	MERKO	PEGYO		BH*	AKCNS	CLEBI	KARTN	PRKTE	
	BOSSA	HEKTS	MIPAZ	PENGD			AKSA	GARAN	KONYA	TATKS	
	DYOBY	IHEVA	MRSHL	SELGD			ANACM	GOODY	MERKO		
	EGSER	KLMSN	MUTLU	UCAK			ANSGR	GUBRF	MRDIN		
	GOLDS	KRSTL	NTTUR				AYGAZ	IZOCM	NETAS		

Table 4.31 : The Portfolios According to Q-Score of Stocks in Manufacturing Sector

The Portfolios According to Q-Score of Stocks in Manufacturing Sector								
L*	TIRE	HURGZ	GUBRF	SELGD	TUDDF	DYOBY		
	GOODY	MRDIN	IHEVA	GOLDS	KONYA			
	AFYON	ADNAC	BOSSA	KARTN	KRSTL			
	MERKO	AKSA	EGSER	CEMTS	AYGAZ			
M*	BAGFS	KENT	ASUZU	HEKTS	MUTLU	BSHEV	DEVA	IZMDC
	ECILC	ANACM	MRSHL	TRCAS	KLMSN	BOLUC	MAKTK	FROTO
	PTOFS	OTKAR	AKCNS	CYTAS	PENGD	EGGUB	GEDIZ	
	ARSAN	IZOCM	GOLTS	VESTL	TATKS	SASA	ADANA	
H*	KRDMD	BFREN	BRSAN	TOASO	KERVT	DGZTE		
	KORDS	SARKY	SISE	BTCIM	ARCLK			
	ATEKS	TRKCM	BRISA	CIMSA	BANVT			
	PNSUT	PETKM	EREGL	TUPRS	ECYAP			

Table 4.32 : The Portfolios According to Q-Score and Size Factors of Stocks in Manufacturing Sector

The Portfolios According to Q-Score and Size Factors of Stocks in Manufacturing Sector										
SL*	ADNAC	DYOBY	KRSTL			BL*	AKSA	HURGZ	TUDDF	
	AFYON	EGSER	MERKO				AYGAZ	KARTN		
	BOSSA	GOLDS	SELGD				GOODY	KONYA		
	CEMTS	İHEVA	TİRE				GUBRF	MRDİN		
SM*	ADANA	BOLUC	GEDİZ	MAKTK	SASA	BM*	AKCNS	İZMDC	PTOFS	
	ARSAN	CYTAS	GOLTS	MRSHL			ANACM	İZOCM	TATKS	
	ASUZU	DEVA	HEKTS	MUTLU			BSHEV	KENT	TRCAS	
	BAGFS	EGGUB	KLMSN	PENGD			FROTO	OTKAR	VESTL	
SH*	ATEKS	ECYAP				BH*	ARCLK	CİMSA	PETKM	TRKCM
	BANVT	KERVT					BRİSA	EREGL	PNSUT	TUPRS
	BFREN	SARKY					BRSAN	KORDS	SİSE	
	DGZTE						BTCİM	KRDMD	TOASO	

Table 4.33 : The Portfolios According to Q Score - Size Factors and Q-Score Factor of Stocks in Financial Sector

The Portfolios According to Q Score - Size Factors in Financial Sector								The Portfolios According to Q-Score Factor in Financial Sector				
SL*	EGYO			BL*	DOHOL	SAHOL	YKBNK	L*	SAHOL	GSDHO	TSKB	EGYO
	GSDHO				ISCTR	SKBNK			ISCTR	YKBNK	YKGYO	
	YKGYO				KCHOL	TSKB			KCHOL	DOHOL	SKBNK	
SM*	AKGRT	NUGYO	GUSGR	BM*	ALARK	ISGYO		M*	TEKST	IHLAS	FINBN	ECZYT
	ALGYO	TEKST			FINBN	TKBNK			BRYAT	ALARK	GUSGR	ISGYO
	BRYAT	ECZYT			IHLAS				AKGRT	TKBNK	NUGYO	ALGYO
SH*	ALNTF	PEGYO		BH*	AKBNK	GARAN		H*	ALNTF	NTHOL	PEGYO	AKBNK
	FFKRL	METRO			ANSGR				METRO	GLYHO	GARAN	
	GLYHO	NTHOL			DYHOL				DYHOL	FFKRL	ANSGR	

4.2.2.4.1. Descriptive Analysis

4.2.2.4.1.1. The Results of ISE100

Table 4.34 : The Descriptive Analysis of Portfolios According to Q Score Factor of Stocks in ISE100

	BH*	BL*	BM*	SH*	SL*	SM*
Mean	0.009598	0.005225	0.005514	0.003430	0.007800	0.008346
Median	0.014606	0.010846	0.013944	0.006481	0.016265	0.011422
Maximum	0.419067	0.482771	0.467712	0.443561	0.517507	0.436331
Minimum	-0.468521	-0.450995	-0.557807	-0.775672	-0.437094	-0.349636
Std. Dev.	0.118993	0.135535	0.137747	0.142267	0.146285	0.128401
Skewness	-0.288163	-0.044993	-0.387285	-1,314159	0.097204	-0.088650
Kurtosis	5,334534	4,399422	5,447269	9,641946	4,883218	4,022551
Jarque-Bera	31,56117	107,337	35,96543	278,5033	19,56434	5,878872
	H*	L*	M*	Q_SCORE	ISE 100	
Mean	0.006451	0.006335	0.006930	-0.002183	-0,310362	
Median	0.008127	0.014689	0.010456	0.007692	-0,205266	
Maximum	0.435766	0.471060	0.452021	0.185899	0,094989	
Minimum	-0.648250	-0.417923	-0.438900	-0.415227	-2,024556	
Std. Dev.	0.128463	0.132166	0.130579	0.092639	0,314334	
Skewness	-0.932666	-0.108950	-0.227705	-1,219585	-2,047729	
Kurtosis	8,144356	4,63949	4,588044	6,334321	9,526753	
Jarque-Bera	163,4436	14,93078	14,89733	93,15873	324,0682	

According to the above table, the lowest value as the mean is ISE100 and the highest value is the BH* portfolio. According to the standard deviation, ISE100 is the highest, the Q score portolio was obtained the lowest value. The SL* portfolio is positive skew, other portfolios are negative skew (left skew).

According to the above table, the lowest value as the mean for portfolios occured Q score factor is portfolio with low Q score. In other words, the return of portfolio with high Q score is higher than the return of portfolio with low Q score. When we evaluate the risk of these portfolios by using the value of standart deviation, the risk of portfolio with low Q score is lower than the risk of portfolios with high Q score.

4.2.2.4.1.2. The Results of Manufacturing Sector

Table 4.35 : The Descriptive Analysis of Portfolios According to Q Score Factor of Stocks in Manufacturing Sector

	BH*	BL*	BM*	SH*	SL*	SM*
Mean	0.002860	0.007774	0.005875	0.011489	0.000129	0.003841
Median	0.019427	0.014912	0.019830	-0.000657	-0.000762	0.015642
Maximum	0.486422	0.548023	0.393298	0.576804	0.480593	0.344663
Minimum	-0.910325	-0.849366	-0.813325	-0.828943	-0.832480	-0.877369
Std. Dev.	0.151356	0.145150	0.141253	0.159789	0.143042	0.137428
Skewness	-1,577431	-1,262696	-1,409058	-0.415200	-1,447301	-2,13849
Kurtosis	12,43268	12,08326	10,92734	9,586666	11,7232	15,09333
Jarque-Bera	539,9852	485,1544	386,3654	240,5691	461,0819	898,1203
	H*	L*	M*	ISE 100	Q SCORE	
Mean	0.005736	0.003405	0.004655	-0,310362	0.008903	
Median	0.023968	0.005040	0.011047	-0,205266	-0.000399	
Maximum	0.490223	0.509491	0.360140	0,094989	0.460869	
Minimum	-0.883198	-0.839717	-0.855809	-2,024556	-0.272615	
Std. Dev.	0.148681	0.139176	0.135400	0,314334	0.100078	
Skewness	-1,418465	-1,500414	-2,023525	-2,047729	0.678172	
Kurtosis	12,26422	13,17679	14,61201	9,526753	6,004623	
Jarque-Bera	512,3952	614,4554	825,3945	3,240682	59,31804	

According to the above table, the lowest value as the mean is ISE100 and the highest value is the SH * portfolio. According to the standard deviation, ISE100 is the highest, the Q score portolio was obtained the lowest value. The Q score portfolio is positive skew, other portfolios are negative skew (left skew).

According to the above table, the lowest value as the mean for portfolios occured Q score factor is portfolio with low Q score. In other words, the return of portfolio with high Q score is higher than the return of portfolio with low Q score. When we evaluate the risk of these portfolios by using the value of standart deviation, the risk of portfolio with high Q score is lower than the risk of portfolios with low Q score.

4.2.4.1.3. The Results of Finance Sector

Table 4.36 : The Descriptive Analysis of Portfolios According to Q Score Factor of Stocks in Financial Sector

	BH*	BL*	BM*	SH*	SL*	SM*
Mean	0.010834	0.006085	0.006665	0.013331	0.000893	0.010893
Median	0.011722	0.005896	0.007052	0.013714	0.010303	0.006890
Maximum	0.569405	0.631562	0.533622	0.526514	0.634680	0.394145
Minimum	-0.445144	-0.414571	-0.386639	-0.524580	-0.567018	-0.318367
Std. Dev.	0.163738	0.152632	0.139450	0.165685	0.163743	0.130204
Skewness	0.160581	0.396466	0.114326	-0.093775	-0.064880	-0.187481
Kurtosis	4,02063	4,310275	4,244339	4,66111	5,499397	3,249362
Jarque-Bera	6,248875	12,80285	8,736944	15,25309	34,19003	1,106827
Probability	0.043962	0.001659	0.012671	0.000487	0.000000	0.574984
	H*	L*	M*	Q_SCORE	ISE 100	
Mean	0.012332	0.004527	0.009131	0.014813	-0,31036	
Median	0.011295	0.009693	0.009981	0.001257	-0,20527	
Maximum	0.543670	0.632498	0.348921	0.417551	0,094989	
Minimum	-0.445873	-0.435399	-0.341891	-0.347587	-2,02456	
Std. Dev.	0.154863	0.147614	0.128031	0.118458	0,314334	
Skewness	0.074974	0.342808	-0.202459	0.208026	-2,04773	
Kurtosis	4,380724	4,988007	3,243224	4,126223	9,526753	
Jarque-Bera	10,52848	24,13806	1,217841	7,868073	3,240682	
Probability	0.005173	0.000006	0.543938	0.019565	0.000000	

According to the above table, the lowest value as the mean is ISE100 and the highest value is the Q score portfolio. According to the standard deviation, ISE100 is the highest, the Q score portolio was obtained the lowest value. The Q score, BH*, BL* BM* and L* portfolio is positive skew, other portfolios are negative skew (left skew).

According to the above table, the lowest value as the mean for portfolios occured Q score factor is portfolio with low Q score. In other words, the return of portfolio with high Q score is higher than the return of portfolio with low Q score. When we evaluate the risk of these portfolios by using the value of standart deviation, the risk of portfolio with high Q score is lower than the risk of portfolios with low Q score.

4.2.2.4.2. Regression Results

4.2.2.4.2.1. The Results of ISE 100

The range of the estimated stock betas by using market factor is between 0,0078 the minimum and 1,5057 the maximum, the range of the estimated stock betas by using size factor is between - 2,4686 the minimum and 2,2977 the maximum, the range of the estimated stock betas by using BV/MV factor is between -1,9355 the minimum and 1,3350 the maximum, the range of the estimated stock betas by using momentum factor is between -1,4727 the minimum and 2,5582 the maximum and the range of the estimated stock betas by using Q score factor is between -0,6637 the minimum and 0,6588 the maximum in the Appendix 1.4.1.

In the Appendix 1.4.1., we examine the value of the Durbin-Watson as autocorrelation indicator; (n=131, k =5, dL=1.090 , dU= 1.825 according to Durbin Watson Table α =0,05) There is no autocorrelation among data (except in ADNAC, AKBNK, ALGYO, ALNTF, ANACM, ANSGR, ARCLK, BFREN, BOYNR, BRISA, CIMSA, KERVT, PEGYO, SAHOL, SKBNK, TRNSK) because all autocorrelation values is 1,825 to 2,175. Thus the H_0 hypothesis is accepted.

Table 4.37 : The Stocks According to R-squared in ISE100

R -squared							
10-30%	30-%40	40-%50		50-%60			
KENT	BSHEV	ARSAN	ECILC	EREGL	TATKS	TUDDF	
PTOFS	DEVA	MAKTK	METRO	ASELS	EGSER	CEMTS	
NETAS	CYTAS	BRYAT	DGZTE	KRDMD	EGGUB	TRKCM	
	EGYO	IHEVA	GEDIZ	TRNSK	BTCIM	KORDS	
	CLEBI	GOLDS	AFYON	DYOBY	ALGYO	AKSA	
	BFREN	KLMSN	TIRE	FFKRL	BOSSA	GOODY	
	GUSGR	PTOFS	FINBN	BAGFS	IZOCM	KARTN	
	ATEKS	MRSHL	MUTLU	PETKM	TRCAS		
		NTHOL	KIPA	BOLUC	HEKTS		
		IHLAS	BROVA	MRDIN	PENGD		
60-%70				70-%80		80-%90	>%90
FROTO	SEZGD	DYHOL	SISE	GSDHO	IZMDC	ADNAC	GARAN
KLBNK	NUGYO	SKBNK		MIPAZ	TOASO	GLYHO	MARTI
AYGAZ	TEKST	CIMSA		KONYA	ALARK	MERKO	YKBNK
PEGYO	NTTUR	YKGYO		SAHOL	ALNTF	THYAO	ISCTR
ECYAP	ALCTL	VESTL		SARKY	AKCNS	UCAK	KCHOL
BRSAN	ECZYT	DOHOL		GUBRF	GOLTS	ISGYO	
BANVT	ANACM	ASUZU		HURGZ	TSKB	OTKAR	

BRISA	ANSGR	BOYNR		ARCLK	KRSTL	PNSUT	
KERVT	SASA	TUPRS		AKBNK	AKGRT	ADANA	

The explanation power of size (SMB) , market risk, BV/MV, momentum and Q score factors as the explanatory variables to the stock returns in the below table is 40 percent to 80. There are only 5stocks which are over 90 percent.

The size, market factor, momentum and BV/MV is important on many stock returns in the 0,05 level because F Sig. Değeri $0.000<\alpha=0.05$. The stocks showed that the size, market factor, Q score, moementum and BV/MV factors is a statistically significant together.

4.2.2.4.2.2. The Results of Manufacturing Sector

The range of the estimated stock betas by using market factor is between 0,0078 the minimum and 0,2073 the maximum, the range of the estimated stock betas by using size factor is between -2,9619 the minimum and 4,1169 the maximum, the range of the estimated stock betas by using BV/MV factor is between - 2,9242 the minimum and 2,4782 the maximum, the range of the estimated stock betas by using momentum factor is between -0,8885 the minimum and 2,6884 the maximum and the range of the estimated stock betas by using Q score factor is between -0,6637 the minimum and 0,7951 the maximum in the Appendix 1.4.2.

In the Appendix 1.4.2., we examine the value of the Durbin-Watson as autocorrelation indicator; (n=131, k =5, dL=1.090 , dU= 1.825 according to Durbin Watson Table α =0,05) There is no autocorrelation among data (except in IHEVA, KARTN and KERVT) because all autocorrelation values is 1,825 to 2,175. Thus the H_0 hypothesis is accepted.

Table 4. 38 : The Stocks According to R-squared in Manufacturing Sector

R-squared							
10-%20	20-%30	30-%40	40-%50		50-%60		
KENT	DEVA	AFYON	MAKTK	KLMSN	ARSAN	HEKTS	TRKCM
		BFREN	MRSHL	EGGUB	KRDMD	BRISA	KORDS
		EGSER	GOLDS	TUDDF	TRCAS	IZOCM	FROTO
		BSHEV	GEDIZ	TIRE	MRDIN	ECILC	
		IHEVA	PTOFS	MUTLU	TATKS	PENGD	
			PETKM	GODDY	ANACM	BAGFS	
60-%70	70-%80			80-%90		>%90	
DGZTE	SİSE	EREGL	ASUZU	CYTAS	ADANA	SELGD	

AYGAZ	BOLUC	KONYA	BTCIM	CEMTS	PNSUT	AKCNS	
BRSAN		SARKY	ADNAC	MERKO		BANVT	
VESTL		GUBRF	KRSTL	ARCLK		HURGZ	
KERVT		IZMDC	AKSA	OTKAR		BOSSA	
SASA		TOASO	DYOBY	CIMSA		ATEKS	
TUPRS		GOLTS		ECYAP		KARTN	

The explanation power of size (SMB), market risk, BV/MV, momentum and Q score factors as the explanatory variables to the stock returns in the below table is 40 percent to 80. There are only 7 stocks which are over 90 percent.

The size, market factor, momentum and BV/MV is not important on many stock returns in the 0,05 level because F Sig. Değeri $0.000<\alpha=0.05$. The stocks showed that the size, market factor, Q score, moementum and BV/MV factors is not a statistically significant together are ADANA, AKSA, ANACM, BAGFS, BOLUC, BOSSA, BRISA, BRSAN, BTCIM, CEMTS, DEVA, DGZTE, ECYAP, EREGL, GEDIZ, GOLDS, GOLTS, GOODY, HEKTS, KENT, KERVT, KLMSN, KRDMD, MAKTK, MRDIN, MRSHL, MUTLU, PENGD, SARKY, TATKS, TIRE.

4.2.2.4.2.3. The Results of Finance Sector

The range of the estimated stock betas by using market factor is between 0,1089 the minimum and 0,2372 the maximum, the range of the estimated stock betas by using size factor is between -0,7338 the minimum and 1,2558 the maximum, the range of the estimated stock betas by using BV/MV factor is between -1,2345 the minimum and 0,6346 the maximum, the range of the estimated stock betas by using momentum factor is between -0,8123 the minimum and 0,8230 the maximum and the range of the estimated stock betas by using Q score factor is between -0,4150 the minimum and 0,3073 the maximum in the Appendix 1.4.3.

In the Appendix 1.4.3., we examine the value of the Durbin-Watson as autocorrelation indicator; (n=131, k =5, dL=1.090 , dU= 1.825 according to Durbin Watson Table α =0,05) There is no autocorrelation among data (except in DOHOL, DYHOL, SKBNK, PEGYO, SAHOL and TSKB) because all autocorrelation values is 1,825 to 2,175. Thus the H_0 hypothesis is accepted.

Table.4.39 : The Stocks According to R-Squared in Financial Sector

R-squared						
30-%50	50-%60	60-%70		70-%80	>%80	
GUSGR	FINBN	TKBNK	YKGYO	GDSHO	DOHOL	GARAN
EGYO	FFKRL	PEGYO		SAHOL	ISGYO	ISCTR
METRO		ALGYO		ECZYT	ALARK	KCHOL
BRYAT		NUGYO		TSKB	ALNTF	AKBNK
NTHOL		TEKST		DYHOL	GLYHO	AKGRT
IHLAS		SKBNK		ANSGR	YKBNK	

The explanation power of size (SMB), market risk, BV/MV, momentum and Q score factors as the explanatory variables to the stock returns in the below table is 60 percent to 80. There are only 11 stocks which are over 80 percent.

The size, market factor, momentum and BV/MV is important on many stock returns in the 0,05 level because F Sig. Değeri $0.000<\alpha=0.05$. The stocks showed that the size, market factor, Q score, momentum and BV/MV factors is a statistically significant together.

Looking at the statistics about DW test, there is autocorrelation or there is a relationship among the error terms. In other words, there is autocorrelation. In this case, significant variables did not attend in the model.

5. CONCLUSION

The investors choose among investment instruments according to the various criteria. These criteria are usually based on the characteristics of the pricing of financial assets. Factors affecting the financial assets are divided into internal and external factors in the the financial world. A large part of the external factors are the macroeconomic factors. Internal factors arespecific factors in the financial asset or company. there are the company's or stock's internal factors outside the beta coefficient of market risk in this thesis thus I want to increase explanation power of stocks returns. Because there are many researches, artciles and thesis about the factors increased explanation power of stocks returns in the finance literature.

In ISE100, Manufacturing Sector and Finance Sector as a result of the regressions run, it was observed that the t-statistics of the slopes of the size factor were significant and were higher than the t-statistics of the slopes of the other factors for all the cases. Thus, it could be emphasized that the size factor was the most important factor in explaining the variation in common stock returns. The t-statistics of the slopes of the BV/MV factor were significant for averagely cases. Thus, it could be emphasized that BV/MV factor is the second important factor in explaining the variation in common stock returns. MOMENTUM factor is the third important factor, market is fourth important factor and Q score is the fifth important factor.

Considering the findings about the t-statistics of the slopes of the market factor, SMB factor and HML factor and also the R2 and the Adjusted R2 statistics, as a whole for the all cases, it could be possible to emphasize that the 2 Factor Model, 3 Factor Model, 4 Factor Model and 5 Factor Model captured the variation in common stock returns of firms quoted to Istanbul Stock Exchange over the period December of 2000 to December of 2010. Because the explanation power of stock returns is averagely 41,93 percent using only market risk factor, the explanation power of stock returns is averagely 44 percent using market risk factor plus size factor, , the explanation power of stock returns is averagely 48,8 percent using market risk factor, size factor plus BV/MV factor, the explanation power of stock returns is averagely 55 percent using market risk factor, size factor plus BV/MV factor plus MOMENTUM factor and the explanation power of stock returns is averagely 60 percent using market risk factor, size factor plus BV/MV factor, MOMENTUM factor plus Q-score factor in ISE100. In the financial sector, the explanation power of stock returns is averagely 30 percent using only

market risk factor, the explanation power of stock returns is averagely 56 percent using market risk factor plus size factor, the explanation power of stock returns is averagely 57 percent using market risk factor, size factor plus BV/MV factor, the explanation power of stock returns is averagely 61 percent using market risk factor, size factor plus BV/MV factor plus MOMENTUM factor and the explanation power of stock returns is averagely 71 percent using market risk factor, size factor plus BV/MV factor, MOMENTUM factor plus Q-score factor. In Manufacturing sector, the explanation power of stock returns is averagely 36 percent using only market risk factor, the explanation power of stock returns is averagely 40 percent using market risk factor plus size factor, , the explanation power of stock returns is averagely 47 percent using market risk factor, size factor plus BV/MV factor, the explanation power of stock returns is averagely 57 percent using market risk factor, size factor plus BV/MV factor plus MOMENTUM factor and the explanation power of stock returns is averagely 69 percent using market risk factor, size factor plus BV/MV factor, MOMENTUM factor plus Q-score factor.

When the direction of relationship between the stocks in ISE100 and market, size, BV/MV, MOMENTUM and Q-score factors by using the results of regression with two, three, four and five factors is evaluated, the effect of size is positively on the returns of stocks in the two factor model but the direction of the effect is negative in other factor model. The BV/MV and Q-Score factors affects negatively the returns of stocks. The positive changes of MOMENTUM factor causes the increase in the returns of stocks.

In the manufacturing sector, the effect of size is positively on the returns of stocks in the two factor model but the direction of the effect is negative in other factor model. The BV/MV and MOMENTUM factors affects positively the returns of stocks. The positive changes of Q score factor causes the decrease in the returns of stocks.

In the financial sector, the effect of MOMENTUM and BV/MV factors is sometimes positive and negative on the returns of stocks but there is often a negative relationship between MOMENTUM factor and the return of stocks. Generally, the size factor affects negatively the returns of stocks and the Q-score often affects positively the returns of stocks.

When we evaluate returns of portfolios in ISE100, financial sector and manufacturing sector, the results which are that the returns of portfolios low BV/MV are higher than the returns of

portfolios with high BV/MV, the returns of portfolios with high momentum are higher the returns of portfolios with low momentum and the reurns of portfolios with high Q-score are higher than the returns of portfolios low Q-score are same. However, the returns of portfolios with big size is higher than the returns of portfolios with small size in manufacturing sector while the returns of portfolios with small size is higher than the returns of portfolios with big size in ISE100 and financial sector.

The most important factor of the portfolio with big size, small size, medium BV/MV, medium momentum, low momentum, high Q-Score, low Q-Score, medium Q- Score among the portfolios occured in ISE100 according to the t-statistics of the slopes is size factor. The most important factor of portfolio with high BV/MV and low momentum in ISE100 according to the t-statistics of the slopes is BV/MV factor. The most important factor of portfolio with high momentum according to the t-statistics of the slopes is momentum.

The most important factor of the portfolio with big size, small size, high BV/MV, medium BV/MV, medium momentum, low momentum, high Q-Score, low Q-Score, medium Q- Score among the portfolios occured in Manufacturing Sector according to the t-statistics of the slopes is size factor. The most important factor of portfolio with low BV/MV in Manufacturing Sector according to the t-statistics of the slopes is Q-Score factor and the most important factor of portfolio with high momentum in Manufacturing Sector according to the t-statistics of the slopes is MOMENTUM factor.

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