SINGLE STOCK FUTURES APPLICATIONS IN PORTFOLIO MANAGEMENT: TRADING STRATEGIES BY USING SSF

SEDA EKİNCİOĞLU
106664038

İSTANBUL BİLGİ ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ
ULUSLARARASI FİNANS YÜKSEK LİSANS PROGRAMI

DR. ENGIN KURUN

ISTANBUL-2010

ISTANBUL BILGI UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES
Msc. IN INTERNATIONAL FINANCE

SINGLE STOCK FUTURES APPLICATIONS IN PORTFOLIO MANAGEMENT: TRADING STRATEGIES BY USING SSFs

PORTFÖY YÖNETİMİNDE HİSSE SENEDİNE DAYALI VADELİ İŞLEM SÖZLEŞME UYGULAMALARI: ALIM-SATIM STRATEJİLERİ

SEDA EKİNCİOĞLU
106664038

Tez Danışmanı : Dr. Engin Kurun

Tez Jürisi Üyeleri

Adı ve Soyadı	**İmzası**
Prof. Dr. Oral Erdoğan	.....
Dr. Engin Kurun	.....
Kenan Tata	.....

Tezin Onaylandığı Tarih : 23 Haziran 2010
Toplam Sayfa Sayısı : 79

Anahtar Kelimeler (Türkçe)

1) Hisse Senedine Dayalı Vadeli İşlem Sözleşmeleri
2) V.O.B.
3) Portföy Yönetimi
4) Vadeli İşlem Piyasaları
5) Alım – Satım Stratejileri

Anahtar Kelimeler (İngilizce)

1) Single Stock Futures
2) TURKDEX
3) Portfolio Management
4) Future Markets
5) Trading Strategies

ISTANBUL BILGI UNIVERSITY
INSTITUTE OF SOCIAL SCIENCES
Msc. IN INTERNATIONAL FINANCE

SINGLE STOCK FUTURES APPLICATIONS IN PORTFOLIO MANAGEMENT: TRADING STRATEGIES BY USING SSFs

PORTFÖY YÖNETİMİNDE HİSSE SENEDİNE DAYALI VADELİ İŞLEM SÖZLEŞME UYGULAMALARI: ALIM-SATIM STRATEJİLERİ

SEDA EKİNCİOĞLU
106664038

Tez Danışmanı : Dr. Engin Kurun

Tez Jürisi Üyeleri

Adı ve Soyadı	**İmzası**
Prof. Dr. Oral Erdoğan	.....
Dr. Engin Kurun	.....
Kenan Tata	.....

Tezin Onaylandığı Tarih : 23 Haziran 2010

Toplam Sayfa Sayısı : 79

Anahtar Kelimeler (Türkçe)

1) Hisse Senedine Dayalı Vadeli İşlem Sözleşmeleri
2) V.O.B.
3) Portföy Yönetimi
4) Vadeli İşlem Piyasaları
5) Alım – Satım Stratejileri

Anahtar Kelimeler (İngilizce)

1) Single Stock Futures
2) TURKDEX
3) Portfolio Management
4) Future Markets
5) Trading Strategies

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

AMEX	:	American Stock Exchange
CBOT	:	Chicago Board of Trade
CMES	:	Chicago Mercantile Exchange
İMKB	:	Istanbul Menkul Kıymetler Borsası
SSF	:	Single Stock Future
TURKDEX	:	Turkish Derivatives Exchange
CFTC	:	Commodity Futures Trading Commission
SEC	:	Security and Exchange Commission
ISE	:	Istanbul Stock Exchange
CFMA	:	Commodity Futures Modernization Act
LIFFE	:	London International Financial Futures and Options Exchange
SFE	:	Sydney Futures Exchange
HKEX	:	Hong Kong Exchange
CMB	:	Capital Market Board

ÖZET

Bu tezde vadeli işlem piyasaları ve hisse senedine dayalı vadeli işlem sözleşmelerinin özellikleri, tarihsel gelişimi, spot piyasaya göre farklılıkları teorik ve uygulamalı olarak ele alınmıştır. Her ne kadar bu sözleşmeler ülkemizde henüz işlem görmeseler de, bu çalışmada hisse senedine dayalı vadeli işlem sözleşmelerinin portföy yönetiminde kullanımı 10 ayrı yatırım stratejisi üzerinde VOB tarafından yapılan hazırlık çalışmalarında belirlenmiş olan taslak sözleşme unsurları baz alınarak değerlendirilmiştir. Sonuç olarak hisse senedine dayalı vadeli işlem sözleşmelerinin gerek risk ve portföy yönetimine sağladığı strateji çeşitliliği, gerekse de kullanım kolaylığı açısından Türk Sermaye Piyasasına kazandırılması önerisi getirilmiştir.

ABSTRACT

This thesis examines the characteristics and historical development of single stock futures and discusses their differences with the spot market, both theoretically and practically. Although these instruments are not being traded in Turkey yet, trading strategies presented in this thesis refers to draft contract specifications which was provided by the Turkdex for preliminary purposes

As a conclusion, single stock futures contracts are suggested to be used in Turkish capital markets, given their convenience in practice and various solutions in risk management and portfolio management.

ACKNOWLEDGMENT

Although I decided to conduct this master thesis after my professional experience in the financial sector, it could not have been undertaken without the analysis of various authors, academics and studies.

With respect to my own continuing efforts, I particularly wish to express my deepest gratitude to Meral Ekincioğlu, Nihal Dedemen, Tamer Şahin. As the significant part of my dissertation experience, they brought joy and meaning into my life.

And, I want to thank Dr. Engin Kurun for pointing the way through some difficult areas, helping the frame the issues and his tenacity in forcing me confront difficult questions. Second, I would like to thank Prof. Dr. Oral Erdoğan for his brilliance in helping me deal with the aspect of Turkish economy and its critical facts.

I am also grateful for Bilgi University library and its research facilities.

Additionally, I wish to express my special thanks to Turkdex for their kind help about the development of Single Stock Futures Markets in Turkey.

Last but not least, I dedicate my master thesis to my lovely mother and beloved memory of my father, two great people who I owe my life.

I. INTRODUCTION

Single stock futures (SSF) represent one of the most interesting developments in the field of financial derivatives for some years. This is both because of their trading potential, which is very large and the fact that they have recently become legal in US.

Considering the drastic transformation of Turkish economy throughout the 90s‘ and its strong impact on the new financial world, one of the main questions in this thesis is how will the SSF help to create a new picture in this transitional market and stimulate new possibilities in 2000’s. With respect to the global dimension, it can be seen that the importance of Turkish economy and its financial market become more evident in order to gain a new capacity and response of a developing country to the mobility of capital, common markets, denationalization and even new global terms.

It is worth emphasizing that one of the critical issues underlined by this thesis is the lack of its literature in Turkey. In light of this, the remarkable contribution of this thesis is to fill this gap and illuminates some critical and the emerging possibilities of single stock future applications for market actors.

This thesis also analyzes the properties of risk and return for a single stock futures contract and shows how such a contract would be used in passive and active stock portfolio management.

Assessments described above are basically in the scope of this study arepresened in the second chapter which contains useful information about the futures markets and types of futures contracts. The development of organized derivatives market in Turkey also discussed in the chapter.

The third chapter is about SSF contracts. Historical development, SSF usage in the world, advantages of SSF and differences between holding a stock and SSF contracts are discussed here.

In the fourth chapter of the study, in terms of the literature review, academic studies with the context of portfolio management, risk management, hedging strategies and the effects of SSF contracts to the spot market are examined. SSF contracts usage with the different portfolios and risk management practices and concepts of risk and return are mentioned in the fifth chapter.

Sixth chapter is completely reserved for the SSF applications in portfolio management. 10 different trading strategies are applied to the draft SSF contracts of Turkdex. This study has demonstrated that SSF can be employed successfully to manage the risk and applicable for portfolio hedging.

As a result of this thesis SSF contracts could be an important financial tool for portfolio management and risk management is concluded.

II. GENERAL REVIEW OF FUTURES MARKETS

In a brief definition, a derivative is a financial instrument or security whose payoffs depend on a more primitive or fundamental good. For instance, a wheat futures contract is a derivative instrument, because the value of the futures contract depends on the value of the wheat that underlies the futures contact. The value of a wheat futures contract is derived from the value of the wheat in underlying spot market. There are mainly four types of financial derivatives namely; forwards, futures, options and swaps. Due to the fact that the majority of the derivative contracts include futures contracts, this study intends to address the impact of futures trading on the underlying spot market.

Historically, many people considered derivatives as recently invented instruments but in reality Thales had been the first person who had implicitly used derivatives in the 5th century BC. He had made a call option in order to get the first call on a wine press. If the harvest is bad, he would not use his call option but if the harvest is good he would make profit. Eventually, he had made lots of profit. Thus, from this example it is understood that options had been the first used derivative instrument in the finance literature. Initially, derivatives were used in non-profit agricultural exchange for trading butter and eggs. Then in 1972, CME (Chicago Mercantile Exchange) created the world's first financial futures contract by introducing futures on seven foreign currencies. Financial derivatives have reached a huge popularity and growth following their introduction.

There are several reasons for this improvement:

1) The financial derivatives help to move the market closer to equilibrium and thus, are considered to improve efficiency. If two financial markets are considered which are almost the same, with the exception that one includes

financial derivatives, the market including financial derivatives will allow traders more choices for both managing the risk and making investment.

2) In many cases traders find financial derivatives to be a more attractive instrument than the underlying cash security. The transaction costs associated with trading a financial derivative are substantially lower than the costs of trading the underlying cash instrument. Moreover, the return potential for derivatives is higher than the associated spot market instruments. Thus, higher profit potential with lower cost (leverage effect) is one of the major reasons why derivative instruments stand as one of the most attractive financial instruments.

3) One of the most important reasons for the popularity of derivative instruments is the potential for effective risk management. Financial derivatives provide a powerful tool for limiting risks; however, successful risk management with derivatives requires a full understanding of the principles that govern the pricing of financial derivatives.

Despite all of these improvements and benefits, there are also many contradictory opinions about derivative markets. The main theme of these opinions is about its effect on spot markets. It is claimed that derivative markets cause disability and inefficiency on the spot markets and the economy. The underlying rationale behind this is that the derivatives encourage speculation and thus, has a destabilizing impact on the underlying spot market.

In this study we will be interesting with future derivatives on single stock future contracts.

2.1. General Characteristics of Futures Markets

A futures contract is an agreement between two counterparties that fixes the terms of an exchange that will take place between these two

counterparties at a certain future date on predetermined conditions. It is a derivative security, as its value is derived from the value of the underlying security subject to the futures contract.

Futures contracts are standardized agreements to exchange specific types of good in specific amounts and at specific future delivery or maturity dates. Conventionally, there are only four contract periods per year (March, June, September and December). On the other hand, in Turkish Derivatives Exchange (TURKDEX), contract maturity periods are; February, April, June, August, October and December. However, only the three nearest by maturity of these contracts are being transacted concurrently. These standardized contracts can be exchanged between counterparties very easily through the exchange. Chicago Board of Trade (CBOT) is the oldest and largest futures exchange in the world. Thus, CBOT's organizational features have been used to illustrate the features of other derivative exchanges.

In CBOT, futures contracts are traded on a central regulated exchange by open outcry, whereby traders congregate periodically in a pit on the floor of the exchange to buy and sell contracts, with every negotiated price being heard by other traders. When an order is executed, the two traders fill out clearing slips and they are later matched by the exchange. As soon as the order is confirmed by the customers, the futures contract is settled. The buyer of a futures contract is said to be in long position and will make profits if the futures price rises. Conversely, the seller of a futures contract is said to be short position and will make profits if the futures price falls.

The number of contracts outstanding at any time is referred as the ''open interest'' at that time. In futures markets, the functions of the clearing house are very important. The clearing house guarantees fulfillment of all contracts by intervening in all transactions and becoming the formal counterparty to every transaction. Therefore, clearing house bears all the credit risk in futures transactions.

It is also possible to close a position at any time by performing a reverse trade, so it can be said that futures contracts are in most cases extremely liquid.

The clearing house stands against all the credit risk by being the counterparty to every transaction and by using the daily marking-to-market system. At the end of every day's trading, as a result of that day's change in the futures price, the profits or losses of the counterparties have to be settled. Failure to pay the daily loss results in default and the closure of the contract against the default party. Hence, the credit risk of the clearing house is minimized because accumulated losses are not allowed.

In order to establish a futures contract, each counter party must deposit a certain amount of the contract value, this deposit is called ''initial margin''. The initial margin is determined by the clearing house and it is generally equal to approximately 5% - 10% of the contract value. Investors can use cash, T-bills, bonds or stocks for the margin requirement. Even a single day's loss is covered by this deposit. As the margin account falls below a particular threshold which is called the maintenance margin level, it has to be brought back to the initial margin level with additional payments known as variation margin.

According to Blake (1990), the application of 'daily price limits' protects the clearing house from excessive credit risk. During any trading day, the futures prices can move within a band including settlement price of the previous trading day. In case the price of futures increases above the upper limit of the band, the market closes ''limit-up''. In case the price of futures fall below the lower limit of the band, the market closes ''limit-down''. This application ensures an orderly market by giving market participants a chance to check and time for reassessment of their positions.

Functions of Futures Markets

Most people consider futures instruments as the tools that provide speculative gains as in stock exchanges. In reality futures markets are designed for hedging and risk management purposes, that is, to prevent investors from speculation. However, as the derivative markets evolved, the speculators and arbitrageurs have also been involved in futures transactions.

Nowadays, futures markets are generally used for these three purposes. Thus, there are mainly three kinds of investors namely; speculators, hedgers and arbitrageurs. Speculators consist of investors willing to make profits by speculative trading. Hedgers consist of investors willing to protect their asset values from fluctuations in price levels. Arbitrageurs consist of investors willing to make sure profits without any risk by seizing the price disparities between futures and spot markets. In addition to these three kinds of investors, there is one more group of investors who wish to discover information about the future course of prices in commodities. On the other hand, when the social functions of futures markets are examined it can be argued that, the speculation and the arbitrage are not regarded as socially constructive. Thus, the futures markets have mainly two social functions, namely the price discovery and hedging.

2.2. Price Discovery

Price discovery is the revealing of information about future cash market prices through the futures market. As mentioned above, in buying or selling a futures contract, a trader agrees to receive or deliver a given commodity at a certain time in the future for a price that is determined now. Due to this circumstance, by using the information contained in futures prices today, market observers can estimate the future price of the commodity. Futures markets serve a social purpose by helping people make

better estimations of future cash prices. Accordingly, they can make their consumption and investment decisions more wisely.

Farmers, lumber producers and other economic agents can use futures markets to make production decisions. They all use futures market estimates of future cash prices to plan their production decisions.

2.3. Hedging

Hedging is a risk management strategy. The objective of hedging is to transfer risk between individuals or corporation. Hedging in futures markets involves taking a position in a futures market opposite to a position held in the cash market to minimize the risk of financial loss, which may be caused by price fluctuations.

The person who tries to eliminate the risk is called the hedger. Hedgers are concerned with adverse movements in security prices or with increases in volatility which increase the overall riskiness of his position. Thus, they use the futures market as a buffer for a cash market transaction. Every hedger has a preexisting risk associated with the commodity that is being sold and they use the futures market transaction to reduce that risk. For example, if an individual has a long position in spot (cash) market securities, that individual may incur loss if the prices go down and may want to protect him against this risky position. Alternatively, if an individual has a short position in spot (cash) market securities, that individual may incur loss if the prices go up and may want to protect him against this risky position.

In order to hedge successfully and to transfer the risk, the hedgers will have to make the right decision. Figure-1 shows the effect of hedging on the distribution of security prices.

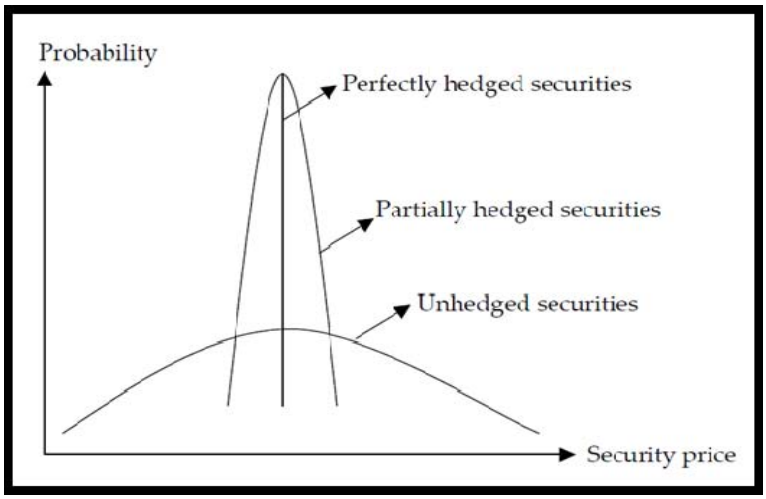

Figure 1: The Effect of Hedging on the Distribution of Security Prices

A perfect hedge is one in which the hedging instrument is established in such a way that its price movements are perfectly negatively correlated with those of the underlying cash security. In many cases, however, it is not possible to create a perfect hedge because a perfectly correlated hedging instrument is not available. In such cases, only a partial hedge can be established, but this is better than not to hedge at all.

2.4. Speculation

Eun (2004), define speculation as the trading based on anticipated price fluctuations. Speculation activity includes buying, holding, selling, and short-selling of any financial instruments to profit from expected fluctuations in its price. According to this definition, a speculator is a trader who enters the futures market aiming to make profit and thereby is willing to accept higher risk. In line with target of making a quick short-term profit, speculators are generally interested in taking short / long position in a particular security. Most individuals have no heavy risk exposure in most commodities. If we consider an individual who does not use futures markets for hedging purposes, such as farmers, has an interest in the wheat market

and trades wheat futures contract, then it can be argued that he is most likely to speculate on the wheat prices. He enters the futures market to make some profit with increased risk. There are three types of speculators; day traders, scalpers, and position traders.

Speculators who will not hold overnight positions are known as day traders. Day traders attempt to profit from the price movements that may take place over the course of one trading day. The day traders close their position before the end of trading each day so that they have no position in the futures market overnight.

The traders that take positions for only a few minutes are known as scalpers. Scalpers aim to foresee the movement of the market over a very short interval, ranging from the next few seconds to the next few minutes.

Finally, the traders that hold positions for more than one day are known as position traders. On occasion they may hold their positions for weeks or even months. Compared to the spot markets, speculation in futures markets has greater advantages. First of all, it is generally difficult or even impossible to short cash market securities in sufficient volume to make the speculation worthwhile (Indices for instance). In addition, cash markets may actually be less liquid than the corresponding derivatives market which is important for opening and closing positions rapidly. The major advantage of speculating in futures markets is that only a small amount of capital has to be put up front to take on large long or short positions. This is known as the leverage effect.

2.5. Arbitrage

Arbitrage involves the simultaneous purchase of a security in one market and the sale of it or a derivative product in another market to profit from price differentials between the two markets. Arbitrage means making

sure profit without any risk and an arbitrageur is a person who engages in arbitrage actions.

As mentioned above, arbitrage is the simultaneous buying and selling of a security at two different prices in two different markets. The arbitrageur makes profit by taking advantage of the price disparity by selling in one market, while simultaneously buying in the other. Since the disparity is usually very small, a large volume is required to lock in a significant profit for the arbitrageur. An important factor for arbitrage trade is the transaction costs. Therefore, arbitrageurs have to construct arbitrage bands, to see that if the arbitrage trade is profitable even after transaction costs are taken into account. Perfectly efficient markets present no arbitrage opportunities, since in a well-functioning market; such opportunities cannot exist or disappear very rapidly. If they did exist, there would be many fabulously wealthy people.

2.6. Types of Futures Contracts

There are mainly four types of futures contracts. These are commodity futures, foreign currency futures, interest rate futures and index (generally stock index) futures. In addition, there are more than 50 different subcontracts that are currently available in CBOT. In this section, the characteristics of these four contracts are going to be discussed.

2.6.1. Commodity Futures Contracts

Commodity futures contracts were first used in the agricultural area to protect farmers from the seasonal fluctuations, and to hedge their income. Nowadays it is being used for hedging, speculation and arbitrage purposes.

Parallel to the growth of commodity future markets, the variety of products traded have also expanded. As such, trading of the precious metals

as well as the energy derivatives have commenced besides agricultural products.

The primary agricultural products traded include, grains, oil products and cotton. The highest trading volume among precious metals belongs to gold, silver and copper.

For many of these commodities, several different contracts are available for different types of the commodity. For the majority of the commodities, there are various delivery months.

2.6.2. Interest Rate Futures Contracts

Interest rate futures contact is a type of contract whose underlying security is a debt obligation. These types of contracts are traded on Treasury bills, notes, and bonds, as well as Eurodollar deposits, and municipal bonds.

There are two contracts with three-month maturities being traded on CME, namely T-bills and Eurodollar time deposits. In Turkish Derivatives Exchange (TURKDEX), T-Benchmark interest rate futures contract was introduced on April 24 2006.

Interest rate futures contracts can be used by hedgers, speculators and arbitrageurs. Trader having T-bills, notes and bonds on their portfolios may use interest rate futures for hedging purposes. Likewise, investors who are willing to make profits due to seize the interest rate fluctuations can also use the interest rate futures to seize arbitrage opportunities.

2.6.3. Foreign Exchange Futures Contracts

Active trading of foreign exchange futures has started with the establishment of the floating exchange rate regimes in the early 1970s.

Firstly, foreign exchange futures were designed to protect both exporters and importers from the currency fluctuations. As the market developed, it has become an attractive instrument for speculators and arbitrageurs, as well. Foreign exchange futures contracts are mostly denominated on the British pound, U.S. dollar, Canadian dollar, Euro, the Japanese yen, and the Swiss francs.

2.6.4. Index Futures Contracts

Most of the future contracts include stock indices. One of the most remarkable characteristic about stock index futures contracts is that there is no possibility of actual delivery. A trader's obligation must be fulfilled by a reversing trade or a cash settlement at the end of trading. These contracts mostly used for making profits with speculative actions. To some extent hedgers are also using these contracts but not as much as speculators do.

2.7. Futures Markets in Turkey

In Turkey, the first currency futures contracts were introduced by Istanbul Stock Exchange (ISE) in 2001. However, the first futures trading trial ended in a very short time because of the insufficient substructure. Afterwards, on February 4 2005, Turkish Derivatives Exchange (TURKDEX) has commenced. By the commencement of TURKDEX, futures trading officially started in Turkey.

Initially, only ISE-30 index, 91 and 365 days interest rate, cotton and wheat, TRY/DOLLAR and TRY/EURO currency futures contracts were introduced. Afterwards, on November 1 2005, the ISE-100 index, on March 1 2006, Gold and on April 24 2006, T-Benchmark interest rate futures contracts were introduced.

According to the regulations in TURKDEX, the contract size of ISE-30 contract is; (ISE-30 index/1,000)*100 TRY and the initial margin is 700 TRY. On the other hand, the contract size of ISE-100 contract is; (ISE-100 index/1,000)*100 TRY and the initial margin is 600 TRY.

In addition, the contract size of Euro contract is 1000 euro and the initial margin is 200 TRY, whereas the contract size of Dollar contract is 1,000 dollar and the initial margin is 160 TRY. Furthermore, while the contract size of the Gold contract is 100 gr. and the initial margin is 500 TRY, the contract size of T-Benchmark interest rate contract is 10,000 TRY and the initial margin is 300 TRY. Cotton and wheat contracts with 1000 kg and 5000 kg contact size respectively have both same initial margin amount which is equal to 240 TRY.

As it is seen, in TURKDEX only futures contracts are traded. Although it is a derivatives exchange the options contracts are planned to be introduced in the short term. On the other hand, in Figure-2, as of Dec 2009, it can be seen that 82 % of all futures transactions belongs to the ISE-30 index futures contracts transactions. As discussed previously, most of the index futures trading consist of speculative activities.

It is also seen in Figure-2 that U.S Dollar contracts have been the second highest volume futures contracts with 17 % share among all futures transactions. However, Figure-2 shows that only 1 % of all futures transactions contained Euro futures contracts transactions.

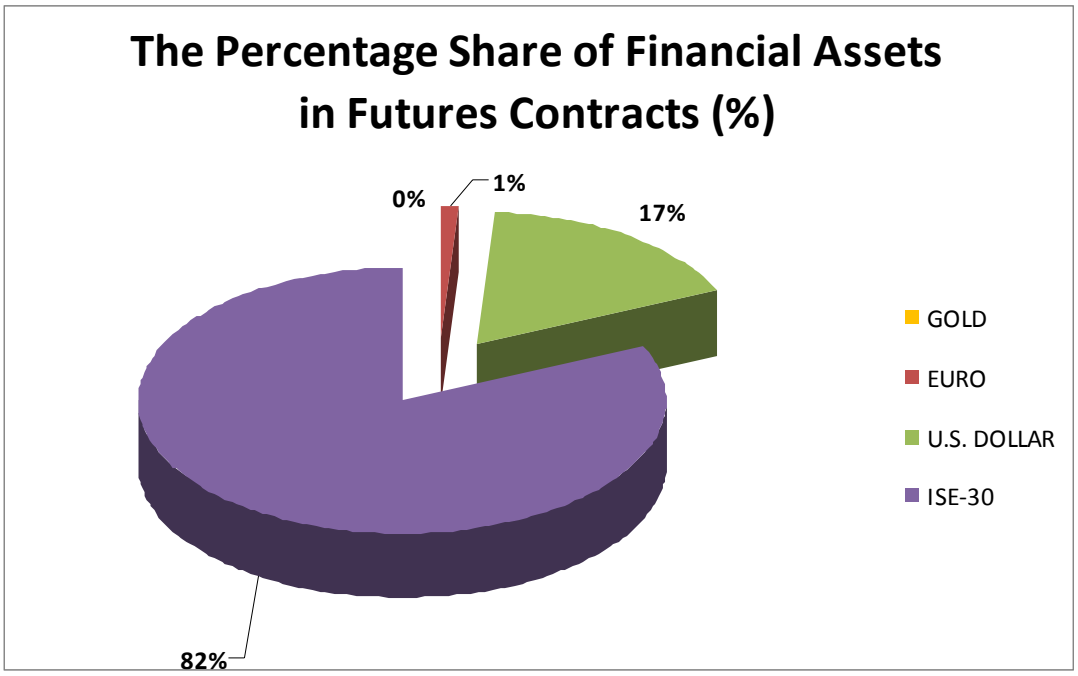

Figure 2: The Percentage Share of Financial Assets in Futures Contracts (%)
Source: TURKDEX, 2009

It was a very remarkable attempt and it can be monitored that the derivatives markets in Turkey has been improving since its commencement. Consequently, it can be said that in a very short term, TURKDEX has became an indispensable part of the Turkish financial markets.

2.8. The Economic and Social Role of Futures Markets

Futures markets play a crucial role for the global economy and financial markets. Robert (1993), suggests that, futures trading, serves as a tool for minimizing the risk of market turbulence as interest rate volatility, changes in currency values and stock prices create uncertainty for financial planners and forecasters. Thereby, futures are usually used as risk management tools by financial decision makers and they are generally successful at reducing the potential for losses in cash positions. Furthermore, futures provide a high degree of leverage which is not available in any other financial instruments, which is an aspect to increase

their importance in the financial markets. Futures also enable speculators to creatively develop portfolios for while minimizing the level.

Franklin et. al. (1992) emphasized another important function of futures markets as shifting of risk through hedging. Futures markets allow transferring the price risk from traders who wish to avoid it to speculators who are willing to assume it. In other words, they separate price risk from other business risks and help traders to reduce or control risk exposure, in case of adverse price fluctuations.

In brief, there are many advantages of future markets to the economy and capital markets. Futures markets increase the market efficiency by providing information to decision –makers and planners. Hedgers can hedge their positions at lower costs. Also built safeguards against credit risk under clearing houses guarantees'.

III. SINGLE STOCK FUTURES

3.1. The Definition of Single Stock Futures

Single-stock futures (SSFs) are useful multi-purpose stock derivatives, which they have not well known in developing markets. They are exchange-traded future contracts on individual stocks which allow traders to take large exposures in those stocks at low cost thanks to the leverage possibilities. SSFs give investors increased capabilities to leverage themselves within the market. Additionally, these products, unlike most options, can be traded on margin. They represent one the most interesting developments in the field of financial derivatives. They can be used for a wide range of purposes as; hedging, speculation, investment, price discovery or financial engineering or insurance sector applications.

Futures also provide other advantages, such as shorting stocks relatively easily through selling a contract. Considering that, the short seller would have to borrow the stock first and only be able to trade in certain conditions in the cash market - such as after an uptick in the share price, future create an advantage by easier transactions (Lascelles, 2002).

Single Stock futures are standardized contracts written on shares of individual companies which give the purchaser (seller) the obligation, upon expiration, to buy (sell) a specific number of shares of the underlying stock at a specific price determined on the date of the purchase (sale).

Mitchell (2002), claims that the concept of standardization in the future markets allows the trading of such contracts in a wider platform as each party involved in a transaction clearly knows about the standardized features of a specific contact. The trading of security futures would be much more complicated without such standardization, if every transaction would have different terms and conditions. Through a predetermined set of features

in a futures contract, only the price of the contract is left to be determined by both buyer and seller.

In derivative markets, although some contracts require physical delivery, a majority of transactions usually settle in cash before expiration. As previously mentioned, the investor could offset the position by taking the opposite side of the initial transaction prior to expiry effectively eliminating the obligation to buy (sell) the shares at the end of the contract. Also the investor could hold until expiry and fulfill the obligation by taking delivery of the shares or by cash settling the difference between spot price and the settlement price. Finally, the investor could roll over the position into a later contract thereby delaying the expiration of the strategy until a later date. This last plan is achieved by offsetting the present position and entering into a new position with a subsequent expiration.

In futures markets, there is no require of exchange of cash or goods until the expiration of the contract. Only a level of margin deposit is required as long as the position remains open, as evidence of the investor's financial ability to complete the transaction. This margin is the amount of cash and cash-equivalent securities that an investor must maintain in a future or margin account and is established by each Exchange varying between contracts according to the volatility of the underlying asset. Generally, the initial margin is approximately 15-20% of the value of the position. However, it may be lower when certain future strategies are employed or when an offsetting position in stock options or the spot market exists.

Ang and Cheng (2005) describe single stock futures as instruments which have standardized features that allow the trading of the contracts with standardization of the underlying instrument. For example the underlying number of shares that a single stock futures contract represents is fixed at 100 shares. As with an option contract, the size is standardized at 100 shares and will not fluctuate. Other standardization includes contract delivery month, the underlying component (in this case the company's shares that

make up the futures contract) and the minimum fluctuation that can occur in the course of trading the instrument.

According to Mitchell (2002), the concept of standardization within the future markets is a key component that allows the trading of such contracts in a fashion that allows each party involved in a transaction to rely on the standardized features of a specific contact. Without such standardization, the trading of security futures would be much more complicated as every transaction would have different terms and conditions. By only allowing a predetermined set of variables in a security futures contract, regulators and exchanges leave only the price of the contract to be determined by both buyer and seller.

According to Lascelles (2002), with a stock futures transaction, the investor makes a legally binding promise to buy or sell the underlying stock in the future. Consequently, the investor does not become an owner of the corporation, as with a stock purchase, and will not receive dividends, voting rights and all other privileges associated with share ownership. Therefore, a stock future price should correspond to the cost of buying the shares on the spot market and holding them for the life of the futures contract. If the price does not equate to that definition, an arbitrageur could make a profit by transacting in the spot and the futures markets accordingly. Hence, single stock futures values are priced by the market in accordance with a theoretical pricing model based on a formula:

$$F = P \cdot (1 + r) - Div$$

where F is the single-stock futures contract price, P is the underlying stock price, r is the annualized interest rate, and Div is the expected dividend.

Another valuation of single stock futures can be found through the following:

$$F = [S - PV(Div)] \cdot e^{r \cdot (T-t)}$$

where S is the price of the underlying (the stock price), PV(Div) is the Present value of any dividends entitled to the holder of the underlying between T and t, r is the risk free rate, and e is the base of the natural log. F is of course the price of the single stock futures contract.

According to the above formula, the price of the futures depends on the following elements: the price of the underlying share, the interest earned on the capital that should have been used to purchase the shares on the spot market and the dividends that should have been earned over the life of the futures contract. Consequently, the futures will trade at a premium relative to the stock price since interest should be earned on the capital that was not allocated to purchase the full value of the shares. However, the future price will be adjusted downward by the present value of the expected dividends during the life of the contract since as mentioned previously; the holder will not be entitled to collect those dividends. Therefore, when a large dividend amount is expected, the future price may trade at a discount to the stock price. Since different investors have divergent expectations about future interest and dividend rates, the market will experience fluctuations in future prices.

Single Stock Futures provide a significant flexibility for a wide range of investors, both individual and professional basis. These instruments provide a cost-effective trading method for participants in the equity, futures and options markets, including many activities from speculating to hedging.

3.2. The Historical Development of Futures Markets and Single Stock Futures

The origins of modern futures markets can be traced back several hundred years, although the most commonly noted starting point is the launch of forward corn trading on March 13th, 1851 at Chicago Board of

Trade (CBOT). The modern financial futures market first rose to prominence in the 1970s in the wake of the collapse of the Breton-Woods agreement with the US abandoning the Gold Standard leading to the free floating of foreign exchange markets.

Equity derivatives markets dates back to the establishment of the Chicago Board Options Exchange in 1973. CBOE has been remained as the largest single stock options exchange in the USA ever since, despite considerable competitive pressure due to newer platforms such as International Securities Exchange (ISE), Philadelphia Stock Exchange, The Pacific Coast Exchange (in San Francisco) and the New York - based American Stock Exchange (AMEX).

The first equity futures were index products launched initially at the Kansas City Board of Trade in February 1982. The KCBOT launched a stock index future on the Value Line index, now based upon some 1,650 US shares, over 70% traded on the New York Stock Exchange, some 20% on the NASDAQ, and the remainder on the AMEX and Canadian markets. The Chicago Mercantile soon managed to gain a leading market share in stock index futures after launching futures based upon the S&P 500 index in April 1982. The S&P 500, a leading benchmark for US equity prices, popular with US fund managers, quickly established itself as the benchmark US index for futures markets. Other stock indices have been listed on exchanges throughout the rest of the world during the past 20 years. Most successful stock index futures/options have tended to be based on local markets, although following the introduction of the euro in 12 nations of the European Union (EU), pan – European indices have so far failed to make a big impact on futures markets.

The period leading up to launch of equity index futures in 1982 was notable as there was a fundamental regulatory conflict in the USA. The Securities and Exchange Commission (SEC) had been created from the Securities Exchange Act in 1934 in the wake of the Wall Street Crash of 1929. It reports to the US House of Representative Finance Committee.

Meanwhile, the Commodity Futures Trading Commission (CFTC) had been established more recently in 1974 and reports to the Agriculture Committee, as it had its origins in the commodity business. However, as financial regulation helped the futures markets to grow explosively, the balance of power in volume terms switched to financial products. By 1982, the futures exchanges wanted to list index futures, and a meeting of the two chairmen of regulatory bodies was convened to reach an agreement on the regulation of those instruments that both regulatory bodies could reasonably claim they had a right to oversee. The end result was the Shad – Johnson Accord named after SEC Chairman John Shad and Philip McBride Johnson, the Chairman of the CFTC. This agreement allowed the launch of equity index products. Single stock futures, however, remained illegal in the USA until the Commodity Futures Modernization Act (CFMA) was enabled in 2000.

For over a decade, SSF contracts have been traded on several exchanges around the world including the London International Futures and Options Exchange (LIFFE) in Europe, the Sydney Futures Exchange (SFE) in Australia, the Hong Kong Exchange and Clearing Ltd (HKEX) in Hong Kong, India, South Africa and elsewhere. However they recently came of age because of two developments.

The first was launched in January 2001 by the London International Financial Futures and Options Exchange (LIFFE) of a major program of 95 SSF covering a wide range of international stocks. The second was the lifting in the latter part of 2001 of the US ban on SSF which had been imposed partly because regulators could not agree how to regulate them, with they have concerns for price manipulation.

In late 2000, U.S. Congress passed legislation to lift the 20-year ban on the trading of SSF, paving the way for OneChicago and the NQLX exchanges to start trading SSF on 8th November 2002. The two exchanges followed different development patterns. NQLX, which used a market maker system, ceased operations in December 2004 while OneChicago, which uses a specialist system, succeeded to increase the number of listed

stocks steadily to 491 by December 2007 and has become the dominant market for SSF contracts on U.S. stocks. In One Chicago, each SSF contract is written over 100 underlying shares and the contracts follow the quarterly expiry cycle of March, June, September and December.

However, these developments of the SSF market to up to date have not been very impressive, in terms of volume and open interest of SSF contracts when compared to the volume of underlying stocks at these countries. Johns and Brooks (2005), explain possible reasons why SSF may not be meeting prior expectations.

One of the reasons may be the relative newness of the market, which has prompted some confusion among brokers and individual investors. Salcedo (2003b) notes that ''*a major reason retail stock traders aren't trading single stock futures is their unfamiliarity with the new products.*''

Also Sisk (2003) notes that, many financial institutions have waited to see how SSF have advanced and whether it will be worthwhile to direct investors to this market.

3.3. Single Stock Futures Usage in the World

The importance of single stock future contracts in organized exchange markets increased significantly in the recent years. The financial crisis,which was experienced in 2008, also triggered the increase in the volume of future and option contracts which were trading on organized exchange markets. The volume grew by 14% y/y implying 17.652.703.611 units increase. Future Contracts made up of 47% of this volume while the option contracts corresponded to 53%.

Total volume of the single stock futures contracts increased 59% with 949.298.440 unit in 2007 from 595.368.946 unit in 2006. South Africa

was being in the first rank with a 420.344.791 unit contract. And also EUREX was the highest increased rate with 148% in 2008.

3.4. The advantages of Single Stock Futures

Stock futures offer many opportunities and advantages with regards to the performance of a portfolio of shares. Indeed, they can greatly increase the effectiveness with which the manager can hedge against adverse movements in the stock market and also enable the manager to benefit from market timing opportunities at a relatively low cost compared to a strategy that would require the direct purchase of shares. Following are some of the advantages offered by stock futures.

SSF could expand the welfare of investors and drag the costs of trading down in several ways. Ang and Cheng (2005) discusses the opportunities for substantial leveraging of individual stock transactions through lower margin requirement of 20% of the position's total value compared to the margin requirement of the cash market. Accordingly, SSF requires less capital than directly buying/selling the underlying stocks and thereby reduce the capital constraint problems. Second, SSF enable investors to avoid short-sale restrictions and costly regulations that are imposed on the cash market. Investors are better off because they can sell short on a downtick (no up – tick rule) in the futures market and there is no restriction on the number of futures contracts that can be shorted. New information would be readily reflected in the futures prices and improves the price discovery process.

According to Shastri, Trirumalai and Zutter (2005) , indeed find support for the argument that the price discovery process of the underlying stocks improves significantly post the introduction of SSF contracts on OneChicago.

Table 1: Derivative Financial Instruments traded on organized exchanges
By instrument and location (Notional principal in billions of US dollars)

	Amounts outstanding						Turnover			
Instrument / Location	**Dec 2007**	**Dec 2008**	**Sep 2009**	**Dec 2009**	**2008**	**2009**	**Q1 2009**	**Q2 2009**	**Q3 2009**	**Q4 2009**
Futures										
All Markets	**28,028.1**	**19,478.0**	**21,198.9**	**21,748.7**	**1,543,720.3**	**1,126,119.8**	**240,999.5**	**286,944.5**	**290,861.0**	**307,314.8**
Interest rate	26,769.6	18,732.3	20,085.8	20,622.6	1,392,566.9	1,016,354.2	217,822.0	260,766.0	261,551.2	276,214.9
Currency	158.5	95.2	172.1	163.7	24,389.6	24,212.8	4,393.3	5,488.2	6,654.4	7,676.9
Equity index	1,100.0	650.5	941.1	962.4	126,763.8	85,552.8	18,784.2	20,690.3	22,655.3	23,423.0
North America	**14,466.6**	**10,137.0**	**10,425.0**	**10,715.9**	**847,400.0**	**598,984.8**	**131,363.4**	**164,725.9**	**156,735.9**	**156,159.6**
Interest rate	13,844.1	9,818.8	9,993.0	10,282.4	774,439.1	543,952.1	118,935.6	141,687.8	142,385.1	140,943.6
Currency	101.4	59.9	97.7	89.2	20,854.6	19,593.1	3,741.5	4,283.3	5,333.6	6,235.1
Equity index	521.1	258.3	333.5	344.2	52,106.3	35,439.1	8,686.2	8,754.7	9,017.3	8,980.9
Europe	**9,012.4**	**6,506.3**	**7,680.0**	**8,054.2**	**590,755.3**	**449,391.3**	**93,926.7**	**113,022.1**	**113,426.4**	**129,016.1**
Interest rate	8,639.5	6,252.3	7,232.8	7,611.7	543,670.8	420,041.3	87,631.7	106,228.9	105,566.5	120,614.2
Currency	5.7	5.3	3.0	2.7	157.7	78.8	18.2	18.1	21.8	20.7
Equity index	367.2	248.8	444.2	439.8	46,926.7	29,271.3	6,276.9	6,775.2	7,838.1	8,381.2
Asia and Pacific	**3,943.3**	**2,466.5**	**2,644.3**	**2,446.9**	**89,259.5**	**64,701.8**	**12,790.6**	**15,874.8**	**17,469.8**	**18,566.5**
Interest rate	3,745.5	2,327.1	2,461.4	2,250.8	63,811.5	43,803.4	9,132.1	10,599.2	11,532.4	12,539.7
Currency	23.7	7.9	50.0	48.0	353.5	2,135.5	127.6	556.0	691.7	760.2
Equity index	174.0	131.5	132.9	148.1	25,094.5	18,762.8	3,530.9	4,719.6	5,245.7	5,266.6
Other Markets	**605.8**	**368.1**	**449.6**	**531.8**	**16,305.5**	**13,041.9**	**2,918.8**	**3,321.7**	**3,228.8**	**3,572.6**
Interest rate	540.5	334.0	397.7	477.7	10,645.5	8,557.3	2,122.6	2,250.1	2,067.2	2,117.4
Currency	27.7	22.2	21.4	23.8	3,023.7	2,405.1	506.1	630.8	607.4	660.8
Equity index	37.7	11.9	30.5	30.3	2,636.3	2,079.6	290.2	440.8	554.2	794.3

Source:IOMA/FWE/TURKDEX

Table 2: Derivative Financial Instruments traded on organized exchanges
By instrument and location (Number of contracts in millions)

	Amounts outstanding						Turnover			
Instrument / Location	**Dec 2007**	**Dec 2008**	**Sep 2009**	**Dec 2009**	**2008**	**2009**	**Q1 2009**	**Q2 2009**	**Q3 2009**	**Q4 2009**
Futures										
All Markets	**139.0**	**110.4**	**101.1**	**96.8**	**5,484.6**	**4,580.5**	**1,119.1**	**1,161.8**	**1,146.3**	**1,153.3**
Interest rate	98.1	77.1	67.6	63.9	2,582.9	1,935.8	443.0	490.3	496.2	506.3
Currency	8.2	7.6	6.2	5.5	433.8	376.1	74.4	90.0	103.3	108.4
Equity index	32.7	25.7	27.3	27.5	2,467.9	2,268.6	601.8	581.6	546.7	538.5
North America	**96.4**	**72.3**	**62.2**	**56.6**	**2,373.3**	**1,825.6**	**449.6**	**461.0**	**460.0**	**455.0**
Interest rate	71.8	57.4	47.5	42.4	1,295.6	913.2	198.2	231.3	242.6	241.1
Currency	1.0	0.7	0.9	0.9	159.0	158.0	31.0	35.9	42.5	48.5
Equity index	23.6	14.1	13.8	13.3	918.6	754.4	220.3	193.8	174.9	165.4
Europe	**23.3**	**20.4**	**19.8**	**18.6**	**2,032.3**	**1,673.5**	**413.8**	**419.8**	**410.4**	**429.5**
Interest rate	11.7	9.3	9.9	10.1	982.8	759.3	175.9	189.1	190.5	203.7
Currency	5.7	5.4	3.1	2.8	164.3	84.0	21.1	19.2	22.3	21.4
Equity index	5.9	5.8	6.9	5.7	885.2	830.2	216.8	211.4	197.6	204.4
Asia and Pacific	**7.8**	**5.9**	**6.6**	**6.5**	**692.5**	**709.2**	**165.6**	**185.7**	**184.2**	**173.7**
Interest rate	4.9	3.0	3.0	2.9	114.1	92.5	20.6	23.4	24.4	24.0
Currency	0.5	0.2	1.0	0.1	7.0	42.3	2.5	11.1	13.7	15.1
Equity index	2.4	2.7	2.6	2.7	571.3	574.4	142.5	151.2	146.1	134.7
Other Market	**11.6**	**11.8**	**12.5**	**15.1**	**386.5**	**372.2**	**90.1**	**95.5**	**91.6**	**95.0**
Interest rate	9.7	7.4	7.2	8.5	190.3	170.8	48.2	46.4	38.7	37.4
Currency	1.0	1.3	1.2	0.8	103.5	91.8	19.7	23.8	24.8	23.5
Equity index	0.8	3.1	4.1	5.8	92.7	109.5	22.2	25.3	28.1	34.0

Source:IOMA/FWE/TURKDE

Third, SSF are also a less costly alternative for investors to hedge stock options positions or underlying equity positions against short-term adverse price movements. They enable investors to create cost-effective hedging strategies and significantly reduce trading expenses, timing risk and basis risk that arise from simultaneously entering multiple markets to hedge.

Opportunity to benefit from movements of the market is the fourth advantage that we can add. The future contracts enable a speculator to gain exposure to the price movements of a single stock without having to buy or sell the shares in the spot market. Fifth, arbitrageurs are able to do basis or arbitrage trading on this new product.

However, the introduction of SSF may affect the liquidity of an underlying stock and thereby influence the portfolio choice of institutions and hedge funds managers. On the other hand, SSF also act like a hedging vehicle for wide-range index investments or fund holding as they are designed to separate stock- specific risk from overall market risk. So, fund managers can use this instrument to remove the exposure to downside risk of certain stocks which are constituents of the existing index or fund investments.

Chau, Holmes and Paudyal (2005) highlight that the trading in SSF might influence the moment characteristics of the underlying stocks in the primary markets and that it could lead to increased serial correlation and excess volatility in those markets. Their investigation shows that such effects vary across industry sectors and that it is difficult to generalize the impact of SSF trading across markets.

The debate of whether SSF improve market efficiency remains unsolved. According to Ang and Cheng (2004a), SSF trading increases market efficiency. Using a news event approach they find that the number of unexplained large stock returns decreases for firms after SSF are introduced and is smaller in comparison to firms without SSF. This reduction also increases with the level of trading of SSF. In summary, the overall demand

for SSF is expected to change the liquidity in both the futures and the spot market. This may subsequently affect the degree SSF might contribute to market efficiency.

With recent developments, the aggregate market value of stocks represents an important fraction of all financial wealth in big international markets like United States. Nowadays, these markets are also subject to relatively large price volatility. But the total risk borne by holders of stocks is also enormous.

While this risk has far-reaching effects on investors, market makers and corporations, the possibilities for managing it effectively are limited. Portfolio diversification permits some reduction in risk for investors who hold balanced portfolios, but since a large portion of every stock's price variability is due to general market risk, diversification can only reduce risk so far.

A single stock futures market for contracts on a broad-based stock price will provide a direct, low cost and effective mechanism for managing market risk in common stocks. However, optimal use of single stock futures in portfolio management must take account of the fact that only a stock portfolio whose composition is identical to the stock can be perfectly hedged. In all other cases, stock futures will provide what is essentially a cross-hedge.

According to Jones and Brooks (2005), Single stock futures offer some important possibilities for improving investment performance in actively managed portfolios. They would allow a manager to separate a stock's market-related performance from its company-specific performance.

With different point of views, diverse techniques and various theories, all of these studies underline the importance of managing the risk.

A manager specializing in stock selectivity could minimize the market risk component in his portfolio by using a short hedge in the futures

market. A manager specializing in market timing could adjust his portfolio's systematic risk level by going long or short in the futures market.

3.5. Differences between Holding Stock and Single Stock Future Contract

Investors can use single stock future contracts for more efficient risk management. Reducing risk has also come to the forefront of most people's minds and the need to hedge has become of paramount importance.

Table 3: Differences between Holding Stock and SSF

Stock		**SSF**
Yes	*Voting Rights*	*No*
Yes	*Dividend*	*No*
Yes	*Ownership period: can be infinite as long as the company stays in business*	*No*
No	*Leverage*	*Yes*
Limited	*Open Position*	*Yes*
Limited	*Short Selling*	*Yes*
No	*Expires with the end of contract or if the company closes or is taken over*	*Yes*

As you can see in table 3, buying a single stock future contract is not same meaning with buying a normal stock. There are several key differences to holding a single stock contract and holding the actual underlying share (Table 3). Single stock futures give investors all these opportunities.

IV. LITERATURE REVIEW

4.1. Importance and Effects of Single Stock Futures on the Spot Market

Single Stock Futures have only recently started to trade on exchanges and previous research about single stock future is very limited. Lee and Tong (1998) found that the volatility of the Australian stock market had not increased following the introduction of single stock futures while the trading volume of the underlying shares had raised significantly thereby enhancing liquidity in the market.

Dennis and Sim (1999) showed that in the Australian market, single stock futures had not increased the volatility of the underlying stocks. Bologna and Cavallo (2002) find a decrease in volatility, while an increase is reported in Antoniou and Holmes (1990). A majority of the studies find insignificant changes, for example, Becketti and Roberts (1990), Santoni (1987), Smith (1989), and Baldauf and Santoni (1991). One possible reason for the inconclusive results is that the standard volatility test may have low testing power.

Jones and Brooks (2005) betray that how single stock futures (SSF) have developed in the United States and present evidence of a number of non-dividend paying companies with underlying stock prices that closed above the settlement prices of their respective SSF, contradicting the carry arbitrage model.

Bozanic (2007) argue that, by single stock futures (SSF) contracts which investor pessimism is able to be priced into the market. Under the "SSF may serve as a substitute for selling stocks short when a firm's shares are difficult or costly to borrow" hypothesis research that after a positive earnings surprise possible arbitrage opportunities, the pricing discrepancies may imply the existence of a convenience yield in the SSF market.

Kumar and Tse (2007) analyze SSFs in the Indian market to understand their contribution in price leadership. The findings indicate that trades in the stock market contribute more to price discovery than trades in the SSF market (72% and 28%, respectively), while quotes in the SSF market are more price innovative than quotes in the stock market (39% and 61%, respectively).

4.2. Portfolio Management

According to Mulvey (2005) showed that the traditional portfolio theory in light of modern financial instruments, improvements in information and trading systems and enhanced risk management. The approach, called Essential Portfolio Theory, builds on the dynamic nature of global markets via new securities and strategies. Discuss the advantages of a widely diversified, leveraged portfolio for individual investors.

4.3. Risk Management

According to Güven Sevil (2001), risk, in general, is the possibility of unexpected results, and for financial perspective the definition can be interpreted as the variance between the expected and the realized value. And this variance makes risk management is unavoidable for the corporations in financial industry. The study claims as the main reasons behind the improvement of risk management are that options put on the financial market by Chicago Board of Trade (CBOT) and Black & Sholes option pricing model in 1973, increasing interest rates in USA due to the changing of economic policy in 1979 and also the evolution in international financial markets in 1980's.

Ang and Cheng (2005) showed that how the SSF exchanges chose the listed products. They found that, the estimated probability of listing is a

good predictor of the single stock futures' post-listing success, as measured by their trading volume in the first year.

Actually these reasons support the idea that risk management is a purely financial transaction. It therefore follows from Miller and Modigliani (1958). According to the Modigliani-Miller paradigm, buying and selling option contracts cannot alter the company's value; in perfect financial markets, with fixed investment policy and with no contracting costs or taxes, corporate financing policy is irrelevant

The argument implies that if a firm chooses to change its hedging policy, investors who hold claims issued by the firm can change their holdings of risky assets to offset any change in the firm's hedging policy, leaving the distribution of their future wealth unaffected.

4.4. Determinants of Optimal Hedging Strategies:

Risk management strategies can be characterized as either linear, hedging strategies (which eliminate all exposure to price fluctuations) or nonlinear, insurance strategies (which protect firms against falling prices only.) Firms employing forwards, futures contracts and swaps use linear strategies, while firms purchasing put options use nonlinear strategies.

There are explicit debates about the determinants of optimal hedging strategies. Peter Tufano (1996) demonstrates that choices among instruments are determined by their relative costs (including transaction costs), interim liquidity requirements, accounting and tax implications, and the ability to customize the contract terms.

Froot, Scharfstein and Stein (1993), argue that the optimal choice of strategies is determined by whether the sensitivity of cash flows and investment costs relative to changes in the underlying macro-variable. If the sensitivities are equal, linear or hedging strategies will be optimal, otherwise

firms would prefer to use non-linear or option strategies. However, Tufano (1996) finds this theory unreliable due to the short time series of annual observations.

On the other hand, Brown and Toft (2002) do not concentrate on the investment and/or capital structure of the firm as a determinant of optimal hedge strategy. First of all, they retype the derivatives as vanilla (such as forwards and simple options) instead of linear and as exotic (derivatives and options) instead of non-linear. According to the theory set on how firms should hedge, price and quantity correlation, the degree of price and quantity volatility, and the ratio of these risks are the primary determinants of the optimal hedge strategy for the firm. When the produced quantity is known with certainty and price-quantity correlation is negligible forward contracts are typically very effective hedging tools. It is called naïve forward hedge. In contrast, when the correlation between price and quantity is negative, firms can benefit most from nonlinear exotic payoffs. Additionally, as price risk increases relative to quantity risk, the hedge becomes more linear, since the unhedged risk is less important. But as price risk decreases, the unhedged component of total risk increases and the convexity of the optimal hedge increases.

V. PORTFOLIO AND RISK MANAGEMENT WITH SINGLE STOCK FUTURES

Acceptance of single stock futures market could well be hampered by equity portfolio managers' lack of understanding of its possibilities. We differentiate our work from similar studies in its purpose.

This thesis analyzes the investment strategies and properties of risk and return for a single stock future contract and shows how such a contract would be used in passive and active stock portfolio management. Single stock futures will allow an investor to alter the risk characteristics of his/her portfolio easily and in an economic way. Furthermore, optimal use of stock futures in an active portfolio strategy will allow an investor to make the best use of superior expertise either in selecting securities that are mispriced relative to the market or in forecasting the future course of the stock itself.

5.1. Investment Strategies Using Single Stock Futures

Diversification is essential to making right portfolio management. It should be designed to increase returns or reduce the risk of portfolio. The use of stock futures enables the manager to effectively protect the portfolio from large fluctuations in its returns and provides more stable expected revenue. Following are some strategies that may be implemented with the use of stock futures.

Basic Hedging: Investors may predict a short term drop in the prices of a stock that currently owned. Therefore, investor could sell stock future for hedging his/her position in that particular stock. With this strategy, the

targeted stock position is protected against a decrease in its value. Also the rights with the ownership of the shares are kept.

Covered Options Writing: A common stock option spread strategy is known as the buy-write. This strategy involves buying a stock and selling a call against this stock. Investors engage in this strategy to realize additional return on their strategy by collecting option premium income.

This strategy is commonly utilized when the investor is somewhat neutral to bullish on a stock and to additionally gain a degree of protection from a decline in the stock price. This same strategy can be implemented at SSF while taking advantage of additional leverage and financing benefits.

Short Selling Restrictions: If a company's prospectus prevents buyers of its shares from selling their stock for a certain period of time or if the shares are purchased in a plan that prevents the sale of shares, the investor could sell stock futures to hedge the exposure to the stock until the restrictive period ends.

Delayed Ownership: Investors can purchase shares of a company in the future at a predetermined price by using stock futures. After the expiration of the contract, investor would buy the underlying stock.

Index Hedging: Stock futures could be used to remove a particular stock from the portfolio by selling future contracts when he/she owned broad-based index investment in the IMKB-100 or another benchmark.

Pairs Trading: With this strategy, if investor expecting an outperformed stock performance, stock futures which are outperformer could be purchased while the stock futures of the underperformer are simultaneously sold. It enables the investor to custom build the exposure of the portfolio according to the expected performance of two different companies without affecting the exposure of the portfolio to the broader market or sector performance

Portable Alpha Trading: When a portfolio manager faces a volatility triggering event (earnings announcement etc.) for one of the stocks under management, instead of selling an index futures contract. Manager could sell a stock future contract on that specific stock effectively hedging only the performance of that stock.

5.2. Risk and Return

The properties of a hedged stock position will depend on the return and risk characteristics of the index futures contract. We'll begin by showing how the possibility of arbitrage with the cash market will determine prices in the futures market.

Let R_S be the rate of return on the "stock" portfolio. For example, if the futures contract were written on the Garanti Bank shares in the IMKB-100, R_S would represent the total rate of return on a stock portfolio whose composition was identical to that of the IMKB-100. If the market index used is broad enough, it will be a good proxy for the "stock portfolio" of standard financial theory.

The market return (with the tilde signifying that it is a random variable) can be broken down into a dividend yield, d_S (which we will treat as being nonrandom), plus a capital gain: [23]

$$R_S = d_S + ((S_1 - S_0) / S_0) \quad (1)$$

where S_1 and S_0 are the beginning and ending values of the stock. The mean and variance of R_S (μ_S and α^2_S) are given by:

$$R_S = d_S + ((S_1 - S_0) / S_0), \quad (2)$$

$$\text{Var}(R_S) = \alpha^2_S = \text{Var}((S_1 - S_0) / S_0)$$

Now consider a fully hedged position in which futures contracts are sold against the entire portfolio. If we define a "stock unit" to be S_0 TL, and if the TL value of the portfolio itself is currently V_0, the portfolio contains V_0 / S_0 stock units. This is the number of units that will be sold in the futures market.

Each stock unit will be sold short at the futures price, F_0, and at the expiration of the futures contract the short positions will be covered at a price of S_1, for a return of $F_0 - S_1$ TL per stock unit. Defining the "rate of return" on a long futures contract as:

$$R_F = ((S_1 - F_0) / S_0) \quad (3)$$

we then have for the rate of return on the fully hedged stock portfolio the return on the stock position R_S plus the return on the short futures position, $-R_F$, or;

$$R_H = R_S - R_F,$$

$$= d_S + ((S_1 - S_0) / S_0) - ((S_1 - F_0) / S_0),$$

$$R_H = d_S + ((F_0 - S_0) / S_0) \quad (4)$$

Since all risk associated with the uncertain future level of the stock, $S_{1,}$ has been hedged away, R_H is a riskless return. It be must equal the rate of return on other types of riskless investments, such as Treasury bills; otherwise an opportunity for profitable arbitrage will exist. This condition establishes a necessary relationship between the return on the stock portfolio, R_S, the riskless interest rate, r, and the return on the stock futures contract, R_F. Substituting r for R_H above gives:

$$R_F = R_S - r$$

and now we have:

$$R_F = \mu_s - r,$$

$$\text{Var}\,(R_F) = \text{Var}\,(R_S - r) = \alpha^2_{S,}$$

$$\text{Cov}\,(R_{F,}\, R_S) = \text{Cov}\,(R_S - r, R_S) = \alpha^2_S \qquad (5)$$

Substituting from Equations (2) and (4), we can express the futures price as a function of the current and expected levels of the stock and the expected return on the market:

$$F_0 = S_1 - (R_S - r)\, S_0 \qquad (6)$$

An investor holding the stock portfolio can lock in a future value by selling single stock futures. In this way, he/she transfers the full risk of fluctuations in the stock to the buyer of the contract, who receives as compensation an expected profit, R_F, or $(R_S - r)S_0$, per unit, in TL. The expected increase in the futures price over its lifetime, from F_0 to S_1, is equal to the TL risk premium per stock unit on the stock portfolio

VI. SINGLE STOCK FUTURES APPLICATIONS IN PORTFOLIO MANAGEMENT AND APPLICABILITY IN TURKEY

6.1. Single Stock Future Contract Specification in Turkish Derivatives Exchange (TURKDEX)

Investors will have the chance to invest on the direction of only one stock by using SSF contracts. If they think that there will be good progress, they will buy the SSF; otherwise they will short the SSF contract. Investors will also be able to use the leverage effect of the SSF contract. By depositing only 20% of the contract value, they will have leveraged positions. On the other hand, fund managers might also use this contract to hedge their spot equity portfolio against the price declines by going short at the futures market..

Below you can find draft single stock futures contract specifications with examples;

TURKDEX Single Stock Futures Contract Specification (Draft)

Underlying Asset	selected stocks
Contract Size	A standard contract represents 100 shares. (SSF_YKBNK*100) (Example: 3.70*100= 370)
Price Quotation	TRY denominated value of the stock, shall be quoted significant to two decimals
Daily Price Limit	±%15 of the established base price for each equity with a different contract month

Tick size	0.01 (Example: 5.01-5.02) Value of one tick corresponds to TRY 0.01
Contract Months	*February, April, June, August, October and December. Two months can be trade at the same time. (Current and the subsequent expiry month)*
Initial Margin	20% of the contract value
Maintenance Margin	75% of the initial margin
Spread Margin	Convention of the different long-term position with a contract value of the short positions of the net value of the contract amount (value of long positions - short positions value) is calculated and 20% of the absolute value of calculated amount is taken. The amount, the difference in position with the number of shares of the basis of the difference (spread) by multiplying the amount of security is added.
Final Settlement Day	Last business day of each contract month
Last Trading Day	Last business day of each contract month
Settlement Method	Cash Settlement
Trading Hours	9:15-17:15
Position Limits	Absolute position of every stock (eg 20,000) Proportional position limit is 10%. Position limits apply

	account basis.
Final Settlement Price	the weighted average spot price rounded to the nearest price step calculated by the expiration date
Daily Settlement Price	the price is calculated daily reconciliation and is rounded to the nearest price steps: Last 10 minutes of the trading session before the end of all the transactions carried out in accordance with the amount of the average weighted price is determined daily as the price of compromise.

Margin Calculation Example

10 long position of Turkdex-December 2009 contract for ISCTR with the settlement price 5.00 TRY, initial margin amount will be calculated as follows (at the time of trading margin calculation is based on a trading price):

$$IM = SP \times CS \times N \times IM\%$$

IM: Initial Margin

SP: Settlement Price or Trading price

CS: Contract Size

N: Number of Positions

IM%: Initial Margin rate (eg. 20%)

IM= (5,00 x 100 x 10) x 0.20=1,000 TRY

Margin rules permit the exchanges to reduce the required initial margin for certain offsetting positions involving SSF's. Such positions represents calendar spreads, basket spreads, convertibles, conversions and reverse conversions. As far as we know, Turkdex will allow spread margining for calendar spreads only.

6.2 Investment Strategies with Using Single Stock Futures

Investment strategies with using single stock futures are divided into ten groups that institutional investors which are one of the most productive factors to providing liquidity and efficiency in capital markets can use.

1) Making speculation about stock market direction
    i. Long SSF trade
    ii. Short SSF trade
2) Pairs (relative value) trading
3) Creating a synthetic portfolio
4) Stock or index arbitrage
5) Controlling the stock beta risk
6) Hedging for unexpected price movements
    i. Short hedge
    ii. Long hedge

7) Cash flow management

8) Covered call writing

9) Conversions and reversals

10) Equity option combinations

SSF can also be used for cash flow management. For example, an asset manager awaiting payment of a certain amount of money, who knows which stocks he will want to invest it in, can use SSF to 'forward fix' the cost of his future intended investment. The manager needn't then worry that by the time he receives the money the stock will already have moved higher.

All of the strategies that are listed above can be used without single stock futures but these strategies can use cheaper, easy and faster with single stock futures. Therefore, these strategies by institutional investors are being implemented in an effective manner.

Following sections of the study, single stock future contracts using detailed information about these ten investment strategies are provided

6.2.1. Making Speculation about Stock Market Direction

During the periods, that single stock futures does not exist, Investors which want to do speculation about future prices of a stock would hold a long or open positions. But investors can buy or sell stock contracts with their markets expectations by single stock futures. Investors, have about the possible stock price movements in the volatility of the market may get a profit. Single stock future contracts have become efficient equipments to making speculation about the stock market movements because of the cheap cost values and single stock future contracts theoretically reflects the market conditions truly.

6.2.1.1. Long SSF trade

Profiting from rise in a share price

The simplest use of Single Stock Futures is to gain economic exposure to the underlying stock. Buying a Single Stock Futures will create an investment which provides the same price performance as owning the underlying shares.

So why trade the future instead of the stock? Futures trades tend to be cheaper to execute and more capital efficient. Trading a futures contract does not result in the physical delivery of shares, therefore the cost and administration of stock delivery is avoided by buying the future contract. For UK shares traded on FTSE do not attract stamp duty, which again reduces the transaction cost. Futures contracts do not require payment in full – merely a deposit of margin to provide a guarantee of the investor's ability to cover any losses which may arise. As a result, the capital required to hold the futures position is a fraction of the value of the underlying shares.

This lower capital requirement can be used to increase the gearing of the investment-increasing the return on capital produced by a given move in the underlying share price

Example – long futures position

A simple example of using Single Stock Futures is as follows: an investor expects the ISCTR share price to increase in the short term. Current prices are as follows:

	Bid	**Offer**
ISCTR Share	TRY4.80	TRY4.82
ISCTR Future	TRY4.86	TRY4.88

The investor buys 10 futures contract at a price of TRY 4.88. The future represents an investment in 100 shares. Two weeks later, the market prices are as follows:

	Bid	**Offer**
ISCTR Share	TRY4.90	TRY4.92
ISCTR Future	TRY5.00	TRY5.02

Both the share price and the futures price have risen. The investor closes out the position at TRY 5.00. The profit from this transaction is

(5.00 – 4.88) x 10 x 100 = TRY120.

This example can be used to analyze the effect of gearing provided by Single Stock Futures. Had the investor purchased the shares, a cash payment of

4.82 x 1.000 = TRY4.820 would be required.

The profit

(4,90-4,82) x 1000 = TRY80

would have been made, implying a 1.65% return on the investment. With an investment in Single Stock Futures, no cash payment is required up front – a margin deposit representing a fraction of the total value is required. In this case the margin deposit is

4.88 x 10 x 100 x 0.2 = 976

The profit (without taxes and commissions) from the futures trade of TRY 120 therefore represents a return on investment of 12.30%. (976 margin deposit and 120 profit, implies 120/976=12.3)

Moreover deposited cash margin earns daily interest (currently gross O/N rate is 6,50% which is determined by the Central Bank) and increase the return on SSF investment.

6.2.1.2. Short SSF trade

Profiting from fall in the share price

SSF provide investors with a simple mechanism to profit from a predicted fall in a share price. The opportunity to achieve this result with shares (by selling shares you don't own, and buying them at a lower price) is an expensive procedure usually restricted to investment banks and their larger clients.

SSF provide a simple method for achieving this aim. As seen previously, futures prices move in line with share prices, and profit / loss is received / paid on a daily basis. Selling a futures contract result in the investor receiving profits if the share price (and consequently the futures price) falls:

Example – short futures position

An investor expects the price of ISCTR stock to fall over the next few months. Current prices are:

	Bid	Offer
ISCTR Share	TRY4.80	TRY4.82
ISCTR Future	TRY4.90	TRY4.92

The investor sells 10 ISCTR futures at a price of TRY4.90 per share. Each future represents 100 shares. A margin deposit is required for this trade, equal to 20% of contract value, i.e. a TRY 980.

Two weeks later, the market prices are as follows:

	Bid	Offer
ISCTR Share	TRY4.60	TRY4.62
ISCTR Future	TRY4.64	TRY4.66

Investor closes the futures position by buying futures at TRY4.66. The profit from this transaction is

(4.90- 4.66) x10 x 100 =TRY240.

This represents a return on investment of 24.49% (without taxes and commissions)

6.2.2. Pairs (Relative value) Trading

As we mentioned earlier, traditionally, selling shares short has been difficult and has precluded many investors from partaking of one of the

more common professional tools: pairs-trading. However, even institutional investors can find pairs-trading with SSFs a more efficient use of their capital and a less bureaucratic means of selling and administering the short leg of the position. Pairs-trading simply involves having a reasonably agnostic viewpoint on market direction, but feeling convinced that a particular relationship in the price between two different companies is going to expand or contract. With stock futures, the whole issue of borrowing stock or having dividend liability while short of a cash share is essentially reduced. Margin payments are the only ongoing position maintenance you need to make with SSFs, and, in fact, margins are reduced for the relatively lesser risk of spread positions such as pairs trades.

Pairs-trading is also, of course, the basis of the original hedge fund concept of maintaining a short position against every long position. Pairs trades can be preferred for many reasons such as one company being expected to pay a higher dividend than or perceived relative strength/weakness on technical bases. Normally, pairs trades take place between two stocks in a related sectors.

Where SSF pairs are transacted on the same exchange, there is usually a significant margin reduction as pairs trades have less overall risk exposure. Also, note that on various exchanges (such as Euronext LIFFE), electronic matching technology allows pairs trades to be executed as a strategy trade with both legs being transacted simultaneously, thus reducing execution risks (e.g., slippage) to the trader.

Let’s assume that the banking sector is particularly volatile in some period. For many weeks both ISCTR and GARAN shares were trading at or around the same price. On July 30th, the December ISCTR share futures could be sold at TRY4.60, while GARAN could be bought for TRY4.50. In other words, GARAN was 10Ykr cheaper than ISCTR and in this trade we were expecting GARAN to outperform ISCTR stock, relatively, prior to the expiry of the December futures. The SSF is the ideal vehicle here.

For most of October 2009, the differential sat at around 50 points, which meant a healthy 60 point profit for the trade, given that we originally bought GARAN cheaper than we sold ISCTR, and at this time we could buy the ISCTR position back much more cheaply than we could sell the GARAN trade. Assuming that, in this period, both shares went ex-dividend and there was little change in their prices. While SSFs (like equity options) are priced to reflect the dividend payments, no actual dividend payments change hands in the SSFs market, further simplifying the issue for the spread (or outright) trader.

Essentially, if you get pairs trades right then you can profit enormously, if you get it wrong the fact that you are holding two legs to the trade ought to help cushion any losses, compared with being wrong in an outright position.

6.2.3. Creating a Synthetic Portfolio

Creating a portfolio which tracks the stock index returns is passive portfolio management method. This type use of portfolios is based on the modern portfolio theory (Markowitz, 1950). If the stock market is effective and stock are priced with their all known risks; any return gets on with any portfolios takes its risk level.

But indexing is not based on information retrieval trading strategy. Indexing is a strategy which theory wants from investors to achieve an effective portfolio in an efficient market activity.

Firstly, fund manager will choose a portfolio that reflects the best market performance. Then fund manager must be protecting the portfolio balance when new funds added. With single stock futures contracts and bonds, fund manager can reach the index performance cheaper from stock market cost value.

Let's give an example to see why use of single stock futures contracts preferred to create an indexing portfolio.

Example:

A fund manager wants to indexing portfolio with value of 900,000 TRY for targeting TUPRS portfolio.

- TUPRS share price is 30 TRY in the ISE.
- Within three months term, one TUPRS SSF price is 30.30 TRY
- Expected dividend return of the spot portfolio is 2% in three months.
- Bonds return rate in three months is 3%.

In this case, theoretical future contract price;

Future Price = Spot Price + (Spot Price x (Financing Cost – Dividend Return))

Futures Price = 30 + 30 (0,03 – 0,02) = 30.30 TRY

There are two strategies that fund manager can follow;

Strategy 1:

For receiving the ISE-30 index performance, buying any ISE-30 stock portfolio with 900,000 TRY.

Strategy 2:

Buying 297 contracts with the three months term index futures which one SSF price is 30.30 TRY and buying Treasury bond with 900,000 TRY.

Table 4, is giving the comparison of two strategies. In first column assumed that, market will increase 10% and second column is 10% decreased.

Table 4: Comparison of the strategies for creating an indexed portfolio

Assumptions		
Investment Amount		900.000 TRY
TUPRS Spot price		30
TUPRS Spot price at the Final Settlement Day		33 – 27
TUPRS SSF Price		30.30
Expected Dividend Rate		2%
Bonds Returns Rate		12%
Strategy 1 (Holding stocks)		
Value of Index Increasing	10% = (33000/30000 – 1)	-10% = (27000/30000 – 1)
Portfolio's market value that following the ISE-30	990.000 TRY = 900.000 x (1+0,10)	810.000 TRY = 900.000 x (1-0,10)
Dividends (TRY)	18.000 = (0,02 x 900.000)	18.000 = (0,02 x 900.000)
Value of Portfolio (TRY)	1.008.000TRY	828.000 TRY
TRY Denominated Return	108.000 TRY	- 72.000 TRY
Strategy 2 (Creating a Synthetic portfolio)		
The number of contracts that need to be purchased	297	297
Profit / Loss from selling one contract at the end of term	270 = (3300 - 3030)	-330 = (2700-3030)
Profit / Loss for 50 units	80.190 TRY = (297 x 270)	-98.010 TRY = (297 x -

		330)
Treasury Bonds Value	927.000 TRY = 900.000 x 1,03)	927.000 TRY = 900.000 x 1,03)
Value of Portfolio (TRY)	1.007.190 TRY	828.990 TRY
TRY Denominated Return	107.190 TRY	- 71.010 TRY

At the end of the investment term, both strategies TRY denominated returns are close to each other. Results in the table should not be surprising because in the indexing method the targeting vehicle (TUPRS) is imitating with buying TUPRS SSFs and Treasury bond. You can see that a SSFs contract can be imitating by selling underlying asset and buying Treasury bond.

The key difference between two strategies is transaction costs. The transaction cost advantage in single stock future contracts can be evaluate in different times of markets. When prices are increase, future contract strategies supply a positive cash follow in an interim period. Similarly, shortfall in markets causes margin call in long futures contract strategies. The difference between these strategies is cash flow timing. In futures markets profit and loss can be realized as it done (daily mark to market) but in spot markets in can be deferred at the end of the investment term.

Thus, if single stock future contracts are priced correctly, this can be reveal that fund managers can use single stock future contracts for creating an indexed portfolio

6.2.4. Stock or Index Arbitrage

Stock portfolio and funds can be created by using programmed trade systems, for receiving a predefined stock performance. By using programmed trade systems, well diversified portfolio can be sold in different percentages and then it can be invested in money market instruments. Thus, the programmed trade systems can help to sell stocks in the portfolio manager's portfolio and provides to invest in risk-free short-term treasury bills for portfolio's risk protection

Mispricing in the market provides arbitrage opportunity in the market. Fund managers and arbitragers are heavily invest both in spot and futures markets, if there is a difference between actual and theoretical prices, buying SSFs contracts and selling stocks or selling SSFs and buying stocks depends on their theoretical prices. Investor's supply will reduce the price of over-priced stock and their demand will increase the price of underperformed stock in the market. This transaction moves spot prices into theoretical price limits. We called this strategy stock arbitrage.

The difference between stock arbitrage and programmed trade systems is; stock arbitrage is an investment strategy and programmed trade

systems are using technique by institutional investors for trading. In other words, the programmed trade systems are one of the techniques for using stock arbitrage. If, SSFs contract price is lower than theoretical price, fund manager can increase the return of the portfolio with buying SSFs contracts and Treasury bonds.

Example:

Single stock futures price is not 30.30 TRY as in Example and assume that it was 30.10 TRY. In this case, futures contract will be appreciated to 30.30 TRY. If scenarios are repeated again in the previous example we can see that, portfolio value is approximately 6,000 TRY much when SSFs and Treasury bond buying strategy selected against buying stock from spot ISE-30. This case is summarized in Table 5.

Table 5: Example of Stock Arbitrage

Assumptions	
Investment Amount	900.000 TRY
TUPRS Spot price	30
TUPRS Spot price at the Final Settlement Day	33 – 27
TUPRS SSF Price	30.10
Expected Dividend Rate	2%
Bonds Returns Rate	12%
If TUPRS Spot price at the Final Settlement Day is 33;	

Portfolio Value (Strategy 1) = 1.008.000 TRY Portfolio Value (Strategy 2) Profit / Loss per SSF= 3300 – 3010 = 290 Profit = 297 x 290 = 86.130 Treasury bonds Value = 927.000 Portfolio Value = 1.013.130 TRY
If TUPRS Spot price at the Final Settlement Day is 27 Portfolio Value (Strategy 1) = 828.000 TRY Portfolio Value (Strategy 2) = Profit / Loss per SSF= 2700 – 3010 = -310 Profit = 297 x -310 = -92.070 Treasury bonds Value = 927.000 Portfolio Value = 834.930 TRY

This example, reveals the importance of when futures position term ends, spot position was closed. If arbitrageur wants to sell portfolio after the final settlement day, arbitrage profit can not 6000 TRY.

6.2.5. Controlling the Stock Beta Risk

Institutional investor who wants to manage the portfolio's market risks can do it by review and update the beta of the portfolio. Accessing to the targeting beta of the portfolio, modifying the stock composition will provide it. When modifying the stock composition transaction costs which must be folded are very high. By the help of leverage factor in futures

markets, institutional investor can also create targeting beta through single stock futures with less transaction costs. Long position on single stock futures contracts with higher beta will increase the portfolio's beta and short position with higher beta will decrease the beta of the portfolio.

Active portfolio management covers two general strategies. At first, portfolio manager's expectation on general market level. If he/she estimates the prices will go down, manager can buy stocks which have low beta values or sell all equity portfolios and buy risk-free financial instruments to decrease the market risk. If manager estimates that the prices are rising, then manager can buy stocks which have high beta values to increase the market risk. This strategy is called market timing. But these stock trading transactions are very costly. By single stock futures contracts it is cheaper than buying/selling stocks.

Second strategy is stock selection, buying low rated stocks and selling high rated stocks because of expectation of a correction in prices. If stocks are mispriced portfolio manager will get higher profit from the portfolio's risk-adjusted return rate. Depends on the level of risk on return, it is associated with alpha which is a degree of portfolio performance.

$$E(Rp) - Rf = \text{beta} \times (E(Rm) - Rf) \quad (7)$$

Portfolio manager's positive performance is provided that the rate of return of the portfolio will be higher than expected. This unexpected more return called positive alpha.

Alpha = Actual Portfolio Rate of Return – Expected Rate of Return

$$(Rp - Rf) - (E(Rp) - Rf) \quad (8)$$

$$(Rp - Rf) - \text{beta} \times (E(Rp) - Rf) \quad (9)$$

The purpose of stock selection strategy is to create a portfolio with a high alpha value. Single stock futures contracts can use both strategies called "market timing" and "stock selection".

Example:

Assume that a portfolio manager is managing a stock portfolio with 1,000,000 TRY amount and 1,2 beta. Portfolio manager estimates market of the trend is downward for the next month. If his estimates are accurate, the portfolio value decreases higher than the market rate of decline. Because portfolio will decrease with the rate of 120% more than the general market portfolio. For this reason, fund manager wants to decrease the portfolio's market risk to a manageable level and choose the beta level 0,1. Portfolio managers can provide the 0.1 beta rate with selling a single stock future contract which has a 1 beta.

Calculation of the required number of SSFs contract is presented below. In our example SSFs price is 10 TRY and therefore contract value is 1,000 TRY

Ideal portfolio = Spot Portfolio + Future Contract Position

Ideal portfolio x beta = (Spot Portfolio x beta) + (Future Contract Position x beta)

1,000,000 TRY x 0,1 = (1,000,000 x 1,2) + Nf x 1,0 x 1000

Nf = - 1100 unit SSFs contract can be sold

In this case, portfolio manager sell 1100 contract SSFs which has 1 beta value to provide the new 0,1 beta rate.

In stock selection strategy, to use single stock future contracts are related with the beta of the portfolio

Example:

Assume that, risk-free return rate 6,5% and market risk premium 3,5%, surplus return rate 8,75% and stock prices return from the mispricing is 10,25%. In this case portfolio's alpha is calculated 1,5. If portfolio manager, wants to decrease the beta rate from 1,5 to 1, can sold the 60% of the portfolio and can buy Treasury bond which have zero beta rate then alpha will also decrease from 1,5 to 0,6. On the other hand portfolio

manager can solve the beta problem without changing the alpha rate of the portfolio. Portfolio amount is 100,000 TRY

Table 6: An Example of SSFs Contracts and Portfolios Alpha Rate

Spot Portfolio Portfolio Beta = 1,5 Risk Free Rate = 6,5% Market Return Rate = 10% Expected Return = 6,5% + 1,5(10% - 6,5%) = 11,75% Surplus Return Rate = 11,75% - 6,5% = 5,25% Expected Surplus Return Rate = 10,25% Alpha Rate = 10,25 – 5,25 = 5
SSFs Contracts are not used; Portfolio Beta = 1,00 (40% x 2,5 + 60% x 0) Expected Return = 6,5% + 1,0 (10% - 6,5%) = 10% Surplus Return Rate = 10% - 6,5% = 3,5% Expected Surplus Return Rate = 0,4 x 10,25 = 4,1 Alpha Rate = 4,1 – 3,5 = 0,6
SSFs Contracts are used; SSFs portfolio amount is 1000 TRY and number of contracts to decrease portfolio beta to 1 Ideal Portfolio = Spot Portfolio + Future Contract Position 100,000 TRY x 1,0 = 100,000 TRY x 2,5 + Nf x 1000 x 1,0 Nf = - 150 Contracts

Portfolio Beta = 1,00

Expected Return = 6,5% + 1,5 (10% - 6,5%) = 11,75%

Surplus Return Rate = 11,75% - 6,5% = 5,25%

Expected Surplus Return Rate = 10,25

Alpha Rate = 10,25 – 5,25 = 5

6.2.6. Hedging For Unexpected Price Movements

Hedging a stock portfolio against unexpected price movements is a technique for controlling the risk. Hedging is changing the beta rate of a portfolio of existing or future position with zero-beta rate. Used to provide hedging with single stock future contract result, the hedging of the investor's portfolio is in favor of market price movements, even price was fixed.

There is also one concept is out more; "*Hedging Ratio*", that is a ratio comparing the value of futures contracts purchased or sold to the value of cash commodity being hedged. Say you are holding 10,000 TRY in foreign equity, which exposes you to currency risk. If you hedge 5,000 TRY worth of the equity with a currency position, your hedging ratio is 0.5 (50 / 100). This means that 50% of your equity position is sheltered from exchange rate risk. The hedging ratio is important for investors in futures contracts, as it will help to identify and minimize basis risk.

Hedging with single stock futures is divided into two by short hedging and long hedging. Investors that having stock portfolio hedging with short position by selling single stock futures for the market risk. The goal of short hedging by selling a forward contract is compensation of spot portfolio's any partial or total loss of value with forward earnings. If there will be any decrease in the share prices index spot portfolio make loss, but single stock futures prices also will decline and investors who sell contracts will make profit from futures position.

6.2.6.1 Short Hedge

A short hedge in single stock futures is designed to protect a long position in your stock. Since futures prices closely follow the stock prices, losses in the stock can be offset by gains in a short futures position. In this way hedging involves establishing a position in the futures market that is equal and opposite your position in the cash market, so that any loss incurred in one market will be offset by a gain in the other. The short hedge can be an excellent way to insulate your stock portfolio holdings against adverse price movements.

Let's assume you have a portfolio of stock with a large holding in ISCTR Stock, 1,900 shares to be exact. ISCTR Stock is reporting earnings next month and you are concerned that the news will not be good. You can protect your stock holding by selling an equivalent position in single stock futures. Since each contract controls 100 shares, you would actually sell 19

ISCTR SSF contract to completely protect against a potential drop in ISCTR share price. Should the price subsequently decline, the decrease in the value of the shares will be approximately offset by an increase in the value of the futures contracts.

Example:

You own 1,000 shares of ISCTR, which is expected to report earnings next month. You want to hold your position to take advantage of the long-term upside potential but you are concerned about a short-term glitch. By selling futures contracts, you can protect yourself against the risk of a decline in its price. To accomplish this, you sell 10 ISCTR futures contracts priced at TRY5. When you think the stock has hit bottom, you buy back the futures contracts leaving the stock to appreciate as prices go up.

The table below illustrates that the total value of your hedged stock holdings remains unaffected by either a price decline or a price increase.

Price Next Month	**Value of 1000 Shares**	**Gain or loss on Futures**	**Total Value**
TRY4	TRY4000	+TRY1000	TRY5000
TRY5	TRY5000	0	TRY5000
TRY6	TRY6000	-TRY1000	TRY5000

As the illustration clearly shows, if you hedge stock against an unfavorable price change you also give up the opportunity to benefit from a favorable price change.

Another variation of the short hedge is called the Ratio Hedge. A ratio hedge is similar in structure, but instead of hedging 100% of your stock position, you only hedge a percentage of your position. For example, if you own 1,000 shares of ISCTR, you may choose to hedge 600 of the shares, leaving the remaining 400 shares to profit from a possible breakout. This popular strategy is often used to balance out risk to a more acceptable level.

You should also note that although these examples illustrate a "perfect" hedge, actual results vary one way or the other depending on the price relationship between the cash and futures markets.

6.2.6.2 Long Hedge

In general, the long SSF hedge is used to lock in today's price for a future stock acquisition or distribution. This variation of hedging can be useful in a variety of possible situations. For instance, suppose you'd like to buy shares of ISCTR because you expect it to appreciate, but the funds needed to acquire the stock won't become available for several months (e.g., money you expect to receive from a real estate closing or maturing investment holding). Buying a futures contract provides a way to establish a stock position at today's purchase price.

Alternatively, assume you expect to acquire shares of a particular stock three months from now–perhaps from an estate distribution–but by then you are afraid the price may have declined. Selling futures contracts provides a way to lock in today's price.

Example:

Assume that you won't have funds to buy a stock until a Bank Deposit matures next month, but you really like company ISCTR and think the stock price will rally before you can get the money to buy the stock. To initiate a Long Hedge, you purchase 1 ISCTR SSF today for TRY5.

If the stock goes up to TRY5.50 when your bank deposit matures, you will have already made TRY50 (assuming each future represents an investment in 100 shares) on the SSF and can turn around and sell the SSF and use the proceeds to purchase the stock - effectively reducing your cost basis to TRY5.

- If the stock goes down to TRY4.50 when your bank deposit matures, you will lose TRY50 on the SSF, but you can pick up shares of stock for TRY4.50. Unfortunately, the cost basis in your stock will still be TRY5.
- If the stock stays right at TRY5, then you neither make nor lose money. You will be able to cash in the bank deposit, buy the stock at TRY5 and sell the SSF for TRY5. Your long hedge has broken even.

6.2.7. Cash flow Management

Some funds have frequent cash inflows and outflows, created as investors adjust their portfolios. Futures can be used to ensure that cash balances are fully invested at all times. Single Stock Futures can be used to tailor investments to match current fund preferences rather than the stock benchmark weighting produced by investing in stock futures alone.

Example:

An investment fund retains 2% of its total value in cash, to provide liquidity for potential withdrawals.

The fund manager wishes to remain fully invested, and achieves this by buying single stock futures. At present the fund is seeking to be underweight in the banking sector – holding ISCTR futures produces a weighting in the sector which is higher than desired. The fund manager compensates for this by selling futures on ISCTR. Current market prices are as follows:

	Bid	**Offer**
ISCTR Share	TRY4.80	TRY4.82
ISCTR Future	TRY4.84	TRY4.86

The fund is valued at TRY2bn, and therefore holds approximately TRY40m in cash. Equity exposure is replicated by a holding of approximately 800 ISCTR future contracts. The manager wishes to reduce the exposure to ISCTR by an amount equal to 1% of the ISCTR stock futures investment, i.e. TRY400,000 – he therefore buys 800 ISCTR futures at TRY4.86. He buys additional ISCTR stock futures to ensure that the fund is fully invested.

Two months later, the ISCTR future contract has risen 2%, while the banking sector – including ISCTR –has not changed in price.

	Bid	Offer
ISCTR Share	TRY4.80	TRY4.82
ISCTR Future	TRY4.87	TRY4.89

The ISCTR single stock futures have risen slightly less than 2% - the difference reflecting the drop in the futures remaining cost of carry over the period. The fund manager's position has outperformed this benchmark. The additional stock futures provided extra return, while the long futures on ISCTR did not result in a cost to the fund – in fact they provided a marginal positive return equal to TRY3 per share, again due to the fall in the cost of carry of the future. Selling futures on specific equities has adjusted the stock returns to reflect the fund's stock and/or sector specific expectations.

6.2.8. Covered Options Writing

The covered call strategy has been a favorite of option traders for many years. This strategy involves the purchase of shares and the writing of a call option, which is usually at an out-of-the-money strike price. The premium income from the call option improves the investment return on the shares.

Single Stock Futures provide additional benefits to this strategy. Buying futures and writing out-of-the money calls creates a more capital efficient strategy. An initial payment is not required for the purchase of the shares. The premium income will be the same. The rate of return will be larger due to the lower amount of the initial investment. Should the share price fall, losses will be made on the futures contracts-such losses will be equivalent to the loss made by holding shares in this situation.

The payout of the covered call strategy an expiry can be shown as follows:

Example:

An investor wishes to generate income through writing covered call options. Using single stock futures is an alternative means of creating this strategy. Market prices for ISCTR are as follows:

	Bid	**Offer**
ISCTR Share	TRY4.80	TRY4.82
ISCTR Future	TRY4.84	TRY4.86
ISCTR Call	10Ykr	12Ykr

An investor could either buy the share and sell the call, or buy the future and sell the call. Two months later, the share price is unchanged at TRY4.80 - TRY4.82. The call option expires worthless, and the futures contract expires at a price of TRY4.82.

With either strategy, selling the call will have generated an income of 10Ykr per share. Combined with a purchase of shares, the strategy would yield a return on investment of 0.2%. Combining the option with a long futures position, and depositing money equivalent to the cost of the shares to earn interest, could produce the same returns. Single stock futures can also be used to introduce an element of gearing into the strategy - potentially increasing the rate of return on investment. Compare two strategies, both using futures to cover the options liability - one where a cash amount equal to the value of the shares is deposited to earn interest and one where any amount is deposited.

Using futures has increased the gearing of the position, which has resulted in an increase in the return on investment in this example. It should be noted here that using futures to increase the gearing of a covered call position can result in losses being made if the share price falls. Unlike the case when shares are used, these losses will have to be paid for in cash as they are made.

6.2.9. Conversions and Reversals

A commonplace fodder of equity options market-makers; these traditionally involve basically creating a synthetic long/short position and then hedging it against a cash equity position. With the development of SSFs, it is increasingly possible to employ SSFs instead of the cash equity leg.

A conversion involves three legs:

. sell a call;

. buy a put at the same strike (i.e., creating a synthetic short position);

. buy the SSF.

A reversal involves three slightly different legs to achieve the opposite result:

. buy a call;

. sell a put at the same strike (creating a synthetic long position);

. sell a future.

Essentially, the end result is a volatility-neutral and directionally-neutral trade. What you are doing here is trying to lock in a profit on entry, by exploiting the profit difference between the synthetic options position and the futures position. Presuming the pricing differential can be exploited on entry into the position, then you will be left with a profit on expiry. However, remember that the extent of the mispricing, which dictates your profit, will need to be sufficient to cover the brokerage cost of three separately executed legs of a position. Also, if you don't want to end up with to delivery on a physically settled exchange, then you will also need to be able to trade out of the position ahead of expiry and pay the concomitant profits while still netting a profit. Conversions and reversals are standard fodder for market-makers who have almost negligible costs of execution. Other traders may simply find they cannot access the market cheaply enough to make any money from these trades

6.2.10. Equity Option Combinations

In addition to using different combinations of stock and single stock futures, you can also combine single stock futures and equity derivatives to create different risk and reward scenarios.

Single stock futures can be used in place of the underlying stock to cover a short call position in the same way the stock covers a short call position at a fraction of the cost.

Below is an example of application of the possible leverage in single stock futures.

Example:

Suppose ISCTR stock is trading for TRY5. The January TRY6 calls are selling for TRY2.50. Under a traditional covered call strategy you could buy 100 shares of stock for TRY500 and sell the calls for TRY250 income. If the stock closes at TRY6.5, then you will be called out of your stock, making a grand total of TRY350 on the entire trade (TRY250 from selling the option and TRY100 from the increase in the stock price).

Instead of buying the stock for TRY500, you decide to spend TRY100 on ISCTR single stock futures. Price at TRY5. You sell a call option for ISCTR January contract at TRY6 and receive TRY250 in premium. Now, when the stock goes up TRY6.5, you sell the SSF for TRY6.5 and make TRY150. You have an obligation to deliver stock, so you go into the stock market and buy 100 shares of stock for TRY6.5 and give the stock to the option buyer for TRY6 - losing TRY50 on the transaction. Plus, you keep the TRY250 premium for the option. The net effect is respectively; +TRY150 on the SSF, -TRY50 on the stock and +TRY250 on the option, for a grand total of TRY350, the same as the covered call above - only you made it on a TRY100 investment. You can also use extra TRY400 for another investment.

VII. CONCLUSION

This study provides an overview on Single Stock Futures which is a relatively new investment instrument for Turkish market. It displays various ways of using these products according to different investment strategies and discusses a number of reasons for investors to be interested in this product, such as risk management. Historical developments of these products, theoretical and practical differences with the spot market are also examined in this thesis.

Derivative instruments are not still well known or widely used in the Turkish financial sector. Such products are used in banking sector, but only on a limited scale in the absence of an organized derivatives market, currency forward contracts, currency swaps or other types of derivative products. However, these products have great potential for the financial sector in Turkey, thanks to their risk management function, considering the high levels of currency risk, interest rate risk, political risks, etc. faced in Turkey.

The findings of the study imply that, using Single Stock Future contracts in hedging and speculative trades can contribute to minimizing the risk. Single stock futures provide various risk management techniques and profit opportunities to hedgers and speculators. And also, single stock future contracts are more useful in long term investments hedging with the index

future contracts. If you want to take a long-term position then single stock future contracts are can be a good solution for hedging the amount of the index future contract. In order to contribute to risk management single stock futures or index futures, investors can take equal amount of shares in single stock futures or index futures as hedging against the stock position in long term according to the market way. In this concept single stock futures are also take the same gain with the index future in the long term period and investor can hedge his or her position in long term. And also this situation can be possible tax benefits in long term period for the investor's side.

Single stock futures differ from other futures contracts in the sense that they require either cash settlement based on a daily settlement price or physical delivery of the underlying stock. Cash settlement improves single stock futures contracts' degree of liquidity and also eliminates the attempts for cornering the market.

According to literature, market liquidity is an asset's ability to be sold without causing a significant movement in the price and with minimum loss of value. In the futures markets, also there is no assurance that a liquid market may exist for offsetting a commodity contract at all times. Accordingly to single stock future contracts, specific delivery months tend to have increasingly more trading activity and have higher liquidity than others. In this concept, the most useful indicators of liquidity for these contracts are the trading volume and open interest.

Regarding the comparison of single stock futures contracts and stocks, the latter has been seen as a risky investment tool in Turkey because of the volatility. By including single stock futures contracts in hedged portfolios, the uncertainty in stock prices and dividends can be removed to a large extent. This thesis has demonstrated that, single stock futures can be employed successfully to manage the risk of the portfolio and provide practical hedging tool. Furthermore, single stock futures offer a solution to portfolio managers' main problems, such as high transaction costs and taxes for beta adjustments. In addition, single stock futures provide opportunity to speculators for trading stocks that reacts to basic economic and market factors.

Despite several advantages, single stock futures contracts are also having some disadvantages against stocks such as not benefiting of dividends and other company promotions or campaigns. Also, in markets which have high transaction costs, single stock futures contracts are much more expensive than spot market stocks. Generally, single stock futures contracts are model products in market interactions between spot and futures markets but in more risky markets like emerging markets spot markets must be strong and must be in dialogue with stock companies. Any lack of dialogue missing with stock companies will damage both markets.

Furthermore, the main difference between choosing single stock future contracts against stock index future contracts like ISE-30 Future is the index contracts are presenting an average profit to investors and generally not offer a high profits to investors with speculative actions. But in single stock future contracts speculators can take more profit in company-specific form. And also hedgers can hedge them with single stock future contracts more easily and flexible than taking a stock index future contracts against buying a company stock in spot market.

During the writing process of this thesis, the operational structure, trading and clearing systems of the single stock future contracts have already been prepared by the TURKDEX. Derivative markets needs some regulations and preconditions over single stock futures contracts. These are listed below respectively.

- Accounting and tax procedures of futures market should be clearly determined and explained to traders. In order to avoid any misunderstandings, the Capital Market Boards of Turkey should clearly define all regulations, limits and other legal procedures and ensure all trading and clearing operations are done with transparency.

- The performance of the futures market depends on the underlying spot market. Thereby, the spot market must function well and there should be a minimum level of price determination in the governance of the market.

The spot market must operate effectively and there should be a certain level of variety in spot prices. A high volume of demand or supply is crucially important to facilitate the determination of prices.

- The underlying stocks of this type of futures contract, (AKBNK, DOHOL, EREGL, GARAN, ISCTR, KCHOL, SAHOL, TCELL, TUPRS and YKBNK) should be well priced carefully selected and widely used contracts. The selected stocks must accurately reflect market performance. Contract specifications must also be clearly determined. Since futures markets are highly sophisticated, they require high levels of information. High levels of leverage also discourage individual investors from trading derivatives.

REFERENCES

Ang, J., Cheng, Y., (2004a) Single Stock Futures: Selection for Listing and Trading Volume, Florida State University

Ang, J., Cheng, Y., (2004b) Financial Innovations and Market Efficiency: The Case of Single Stock Futures, Florida State University

Carret, Philip L. (1997) The Art of Speculation, John Wiley & Sons

Chang, E., Chou R., Nelling E. (2000) Market Volatility and The Demand for Hedging in Stock Index Futures, Georgia Institute of Technology

Ciccotello, C. (2001) Single Stock Risk, Georgia State University

Ergincan Yakup (1996) Endekse Dayalı Vadeli İşlem Sözleşmeleri, SPK Yayınları No:53

Frankie C., Holmes P and Paudyal K. (2005), The Impact of Single Stock Futures on Feedback Trading and the Market Dynamıcs of the Cash Market.

Fridson, Martin (ed.), Mackay, Charles and de la Vega, Joseph (1996) Extraordinary Popular Delusions and the Madness of Crowds and Confusio´n de Confusiones, John Wiley & Sons

Greenberg, Steven A. (2002) Single Stock Futures: The Complete Guide, Traders Press

Gupta, L.C. (2002) Short Selling and Its Regulation in India: An International Perspective, NSE Research Initiative Paper No. 2, National Stock Exchange of India Limited.

Kindleberger, Charles P. (1993) A Financial History of Western Europe, Oxford University Press

Kuldeep S, Ramabhadran S. T, and Chad J. Z.(2005) Informatıon RevelatİIon in the Futures Market,

Kumar, U., Tse, Y., (2007) Single-Stock Futures: Evidence from the Indian Securities Market, University of Texas

Moles, Peter and Terry, Nicholas, (1999) The Handbook of International Financial Terms, Oxford University Press

Rothchild, John (1998) The Bear Book—Survive and Profit in Ferocious Markets, John Wiley & Sons

Rzepczynski, Mark (2002) Quoted in ‘‘Security futures: The buy side speaks out.’’ Futures Industry Magazine, September/October.

Salcedo, Y. (2003b). Fundamentals for Trading Single Stock Futures. *Futures*, August, 60.

Schultz, Harry D. (2002) Bear Market Investing Strategies, John Wiley & Sons

Sevil, Güven (2001) 'Finansal Risk Yönetimi Çerçevesinde Piyasa Volatilitesinin Tahmini ve Portföy Var Hesaplamaları' Eskişehir Üniversitesi

Sisk, M. (2003). Banished for Twenty Years, Now out of the Box. *USBanker*, February, 54.

Sutcliffe, Charles M.S. (1993) Stock Index Futures: Theories and International Evidence, Chapman & Hall

Travis J., Robert B., (2005) An Analysis of Single Stock Futures Trading in the U.S.

Universal Stock Futures, A Guide to Trading Strategies, LIFFE

Vobjektif Dergisi, Vadeli İşlem ve Opsiyon Borsası Bülteni, (Nisan 2009) Sayı 11

Vobjektif Dergisi, Vadeli İşlem ve Opsiyon Borsası Bülteni (Ekim 2007) Sayı 10

Young, Patrick (2003) New Capital Market Revolution: The Winners, Losers and the Future of Finance, Texere Publishing

Young, Patrick (2003) Single Stock Futures: A Trader's Guide, Jon Wiley & Sons, Ltd. Publishing.