

Initial And Long-Term Price Performance Of
Initial Public Offerings:
Turkish Experience 1990-1993

MBA THESIS

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TURKISH EXPERIENCE 1990-1993

A THESIS

Submitted to the Faculty of Management
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By

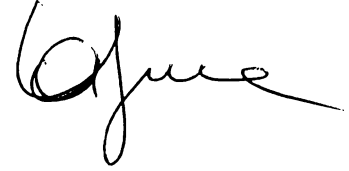
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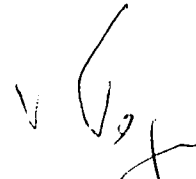


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ABSTRACT

INITIAL AND LONG-TERM PRICE PERFORMANCE OF INITIAL PUBLIC OFFERINGS: TURKISH EXPERIENCE 1990-1993

Z. NUŞİN YAVUZ

M.B.A. Thesis

Supervisor: Assist. Prof. Ayşe Yüce

The purpose of this study is to examine both the initial and medium-long term price performance of initial public offerings in Istanbul Stock Exchange during the continuous 1990-1993 period.

In the light of the findings, initial public offerings are found to be underpriced meaning that investors in initial public offering market can exercise significant short-term returns relative to the market. In addition, in the whole period, the effect of this initial underpricing continues up to the second month. However, when we look at the long-term results, it is seen that IPOs underperformed the market although the results are not significant. As a result, investors in the IPO market can exercise initial abnormal returns but in the long-run they produce a negative return although not significant.

ÖZET

HALKA AÇILAN ŞİRKETLERİN KISA VE UZUN DÖNEM FİYAT PERFORMANSLARI: TÜRKİYE ÖRNEĞİ 1990-1993

Z. NUŞİN YAVUZ

M.B.A. Tezi

Tez Yöneticisi: Yardımcı Doç. Dr. Ayşe Yüce

Bu çalışmanın amacı İstanbul Menkul Kıymetler Borsasında 1990-1993 döneminde halka arz edilen hisse senetlerinin kısa ve uzun dönemli fiyat performanslarını incelemektir.

Bulunan verilerin ışığında, halka arz edilen senetlerin düşük fiyatlandırıldığı bulunmuş, ve böylece halka arz edilen senetlere yatırım yapanların kısa dönemde piyasa karşısında belirgin bir getiri sağladıkları saptanmıştır. Bununla birlikte, bütün dönemde düşük fiyatlandırma etkisi ikinci aya kadar sürmektedir. Ancak, uzun dönem sonuçlarına baktığımızda, halka arz edilen hisse senetlerinin piyasanın altında bir getiri yaptığı saptanmış ama bu getiri belirgin olmamıştır. Sonuc olarak, halka arz edilen hisse senetlerine yatırım yapan yatırımcılar, kısa dönemde anormal pozitif getiri sağlarken, uzun vadede kötü bir performansla karşılaşmaktadır.

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1. INTRODUCTION

A linking mechanism between the users and the providers of capital are exercised through capital markets. Financial intermediaries bring together the surplus savers who have excess funds, with the deficit units in the economy who are in need of funds; by this way issuers are able to raise capital and investors are able to place their capital, in the most efficient way for both parties. This is provided by the primary market.

Public offerings of debt and equity constitute the primary market. Public offerings are made mainly of two reasons: 1) Providing direct capital to the company as a way of financing, and 2) Acquiring new shareholders and hence, broadening the number of shareholders with the desire to be known widespread. Some of the other reasons are: to allow original owner to convert his equity in the company to cash; to facilitate future funding by means of subsequent equity offerings and tax advantages.

The performance of initial public offerings (IPOs) is the main concern in this study and it is believed that a clear understanding of IPO market is important for investors, firms and also for underwriters. The performance of IPOs is important for investors, as the major problem of the small investor is said to be the accessibility for the favorable new issues because of the asymmetry in information between informed and uninformed investors. Financial managers should also observe the IPO market for their evaluation of financial alternatives.

Similarly, firms planning to go public should be closely interested in the pricing because a downward pricing bias of the new issue introduces a loss of funds for the firm. Pricing is one of the most important and perhaps the most difficult decision in an IPO. The price

should not be too low; the issuer firm will not get the advantage of the offering as the issue will be sold at discount and this would be unnecessarily costly to the issuer. The price also should not be too high; investors will not be willing to purchase the new issue readily and this might cause losses for the underwriters.

Underwriting a new issue is important for the incurred costs and risks of the underwriter. It is widely claimed that underwriters may attempt to 'underprice' new issues of common stock so that the initial public offerings will be fully subscribed and a rise in price subsequent to issue is observed. This may cause a good reputation on behalf of the underwriter. The theory of efficient markets suggests that the price of the newly issued stock will quickly adjust to reflect relevant information. To the extent that underpricing exists, the difference between offering price and subsequent market price constitutes an amount (initial rate of return) that is distributed by the underwriter to initial purchasers of the stock that is significantly positive in this period.

As soon as the IPOs are started trading in the market, a large amount of information about the new issues will be released. Furthermore, as new information becomes available, price of the shares that have already been listed in the market may change. According to the efficient markets theory, market will adjust the prices of new shares to reflect all available information when there are enough discerning traders in the market. As a result, pricing errors will be random and no arbitrage opportunity from certain trading rules can be derived. If however, any inefficiencies in the secondary market exist, investors can find ways to profit from the situation.

There are numerous studies that examine the performance of IPOs in the U.S. and in some other countries. They report the existence of positive average initial returns. Although there is considerable debate on the underlying rationale of such returns, in the

literature, it is mostly concluded that the presence of positive average initial returns constitutes evidence of deliberate underpricing. On the other hand, some evidence on the U.S., the U.K., Germany, Australia, Latin America and others suggest that what appears to be underpricing in short run may be overpricing in the long run, and agree on the point that IPOs' long run after-market performance is negative. These studies make the efficiency of IPO market in doubt.

The purpose of this study is to investigate the price behavior of IPOs issued between 1990-1993 and traded in the ISE, over one year period after they are listed. Both the short-run and long-run price performances will be investigated throughout the study. This will provide information on the efficiency of Turkish IPO market both in the short and the long run and we will find out if opportunities for superior profits exist. The price performance results will not only tell us about the efficiency of the Turkish IPO market but also help for comparison with the initial and the long-run performance studies done throughout the world. As Istanbul Stock Exchange (ISE) is gaining interest in the last few years and there is an increasing tendency for the firms to go public, the study will try to shed light on the present situation of IPO market.

The long-run performance of Initial Public Offerings is important for several reasons. As Ritter (1991) emphasizes: first, from the investor's point of view, the existence of price patterns may present opportunities for active trading strategies to produce superior returns. Second, a non zero aftermarket performance questions the informational efficiency of the IPO market. Third, the volume of IPOs showing large variations over time may indicate that issuers are timing new issues to take advantage of opportunities. Fourth, cost of external equity capital for companies going public depends not only upon the transaction costs incurred in going public but also upon the returns that investors receive in the aftermarket.

2. INSTITUTIONAL SETTING

An initial public offering is the first effort by firms to raise capital in a public equity market. When companies go public, the intention is particularly to raise new capital for the company. But also there can be such circumstances where all the shares on offer are being sold by existing shareholders. In fact some of the biggest initial public offerings occur when governments sell off their share-holdings in companies as privatization programs which was the situation in Turkey in 1990 and 1991.

Before the establishment of Istanbul Stock Exchange (ISE), Turkish firms had very few alternatives other than bank loans to provide capital for the firm. After ISE began operations in 1985, equity finance became a bright alternative of raising equity. As the liquidity of ISE increased (Table 1), initial public offerings became a popular way of financing and showed a high performance since 1990. This allowed firms to raise capital in more favorable conditions .

Table 1. Common Stock Issues in the Primary Market

Year	# of IPOs	Nominal Value (million \$)	Market Value (million \$)
1990	35	357.40	812.23
1991	24	448.06	551.99
1992	13	438.36	487.14
1993	16	494.58	568.87
1994	25	804.88	1,009.98
1995	29	610.06	734.93

Source: Capital Markets Board (12/1995), p.4.

2.1 Procedures

The regulation of the primary and secondary markets in Turkey are established by The Capital Markets Law, enacted in 1981, which at the same time indicates the characteristics of financial instruments and the principals which the financial institutions have to practice. All firms that go public are under the supervision of The Capital Market Board (CMB), which supervises and regulates the capital markets.

According to Capital Markets Law, there are procedural requirements for every firm that wants to go public. The firms can either issue new shares as a direct issue or as an indirect issue by making use of an underwriter's service. Usually, underwriters act as financial intermediaries to a new issue. They first provide the company with procedural and financial advice, handle the administrative tasks, then underwrite the issue and finally resell and distribute it to the public. If the issuer and investment banker agree to proceed with a primary issue, experts give their assessments of the situation and investment banking firm arranges a tentative underwriting agreement with the issuer. The agreement specifies all terms of the issue except the price for the new issue.

The originator or lead underwriter, that is the investment banker which first agrees with the issuer, coordinates two groups: underwriting syndicate and the selling group, to handle the underwriting and distribution of the primary issue. Underwriting syndicate consist of some other investment bankers or brokerage firms which share the underwriting risk. The selling group is made up of some banks and brokerage firms that agree to sell the primary offering to investors.

The CMB requires primary issues be accompanied by a registration statement which is a detailed document that presents information about the proposed financing, the firm's

history, existing business, and detailed balance sheet and income statement for three preceding years. After the CMB analyzes the registration and decides that the firm provides all the information required by the capital market law, it gets an approval. The CMB may delay approval by requesting additional information. After the approval has been taken and after the price has been set, the prospectus, a portion of the registration statement, which disclose all relevant facts that a potential investor needs to evaluate the new offering, is reproduced in quantity and delivered to potential investors. The prospectus includes information on the issuer's products, history and location, names and addresses of the issuer's officers and directors and the underwriters, detailed balance sheet and income statement for three preceding years and the offering price of the issue. Circular is published in the official gazette to announce that the shares of the firm will be sold. Through this period underwriter and the firm make advertisements to sell the issues that are offered to public.

2.2 Underwriting Contracts

There are two forms of underwriting contracts that are commonly used in IPOs. The first one is the 'firm commitment' where underwriter agrees to purchase the whole issue from the firm at a specified price for resale to the public. The second one is the 'best efforts' where underwriter acts only as a marketing agent of the firm. Underwriter acts only as an intermediary to sell the security to the public for a predetermined spread without carrying any risk of failure.

2.3 Sales Methods

Sales of IPOs can be made either at the stock exchange or by book building. The first transaction is made at the offer price and the margin is set at 5% for the first five trading days in sales at the stock exchange. For the next five days the margin stays at 5% and only the intermediary can quote bid order. In book building, offers are collected within the sales period and distribution of shares are made according to a fair scheme (Öztop,1996).

IPOs can be made through three basic methods by book building. Underwriters can make offers for sale at a fixed price, or tender, or a placement. In the fixed price offer, the issuing bank or intermediary fixes the price of the issue before dealings in the issue begin. Once the price is fixed, it can be neither modified in case of a changing demand for the new issues, nor withdrawn. While the applications for a specific number of shares are invited from the public, the issue is sub-underwritten by a group of financial institutions at the same fixed price. If there is excess demand, the issuer has to allocate the shares according to a fair system.

In tender offers, a minimum price limit is specified and applicants are expected to state the price (at or above the minimum price) and the number of shares they wish to subscribe. After the applications have been received, a strike price is set below which the applications are rejected. If the strike price is set below the market clearing price then a system of rationing is required.

In a placement, shares are not made publicly available but instead are sold directly to a group of investors who are usually large institutions. The price of the issue is fixed before shares start trading.

2.4 Cost of Issue

There are two components of the cost of an initial public offering: first one is the direct cost of employing the services of the underwriters, advisors, accountants, and the administrative expenses such as payment of taxes, fees for registering the new securities, printing and mailing costs; the second cost is the hidden cost of underpricing of the new issue. When the offering price is set lower than the true value of the issue, investors who buy the issue get a bargain at the expense of the firm's original stockholders. Whenever any company goes public, it is difficult for the underwriter to judge how much investors will be willing to pay the settled price for the new issue so the underwriter tries to underprice the issue to lower its exposure to risk. A number of researchers have tried to measure the extent of underpricing. The studies done throughout the world about the underpricing phenomenon are discussed in the next section.

3. LITERATURE SURVEY

Many studies examined the price performance of initial public offerings and the rationale behind the underpricing puzzle. They have used different methods of computation and set different hypothesis for the reason of underpricing phenomenon. In general, explanations of underpricing can be examined in two main groups: The first group tries to identify market imperfections. They argue that underpricing should disappear (at least partially) by eliminating or reducing them. The second group considers underpricing as an equilibrium situation and tries to propose theoretically valid explanations for the persistence underpricing. Kunz and Aggarwal (1994), present a brief review of theories that have been suggested to explain underpricing of IPOs.

3.1 Hypotheses on Underpricing of IPOs

A. Institutional Lag Hypothesis

The underpricing of IPOs could be attributed to rising stock markets between the fixing of the offering price and the price at the first trading day

B. Risk Averse Investment Bankers Hypothesis

Since the investment bank in its function as an underwriter is interested in selling all the stock in order not to lose money, it will prefer a low issue price to keep that risk as low as possible. There is no doubt that investment banks are risk averse, but the argument is not very satisfactory because it does not explain why the issuers do not force investment bank to set a higher issue price. Three different possibilities that may explain this are: monopoly power of investment banks, investment banks' having better information, the issuers' advantage expectations from underpricing.

C. Monopoly-Power Hypothesis

The monopoly power hypothesis assumes that lack of competition among investment banks gives them a strong position to negotiate with the issuer who has to depend on them. One reason might be the fact that for the issuer, going public is a one time process. The investment bank, on the other hand, has more experience and also has important contacts with its clients. Because of its reputation, it can impose relatively unattractive conditions for the issuer. Following Ritter (1984), this monopsonic power would especially harm small, less known companies that tend to be more speculative. According to this argument, investment bankers can directly profit by setting the issue price too low: they can give these 'gifts' to their best clients and keep or strengthen the relationship with them. The investment bank would then earn more money on other activities. By definition monopoly power hypothesis is defensible only if there is not enough competition among various investment banks. Otherwise, the issuer could simply select the one that offers the highest net price and the best services. The banks then try to out bid each other in order to get the underwriter commissions.

D. Lack of Experience

Another explanation for underpricing is inexperience of the involved parties in an IPO. The issue price can be set very conservatively in order to sell the entire issue. High initial returns in the secondary market would therefore tend to be built into the offer price.

E. Asymmetric Information Hypothesis

Baron (1982) focuses on the asymmetry of information between the issuing firm and the investment banker. He hypothesizes that the investment banker is better informed about the market demand for the firm's securities than the firm and that underpricing is due to the fact that the investment banker is better informed about capital markets than the

issuer. Further, he argues that the reputation of the investment bank indicates quality of an IPO and can therefore generate more demand for new stocks. Although the issuer can only incompletely monitor the services provided by the investment bank, using the services of the investment bank is still better than attempting to bring the issue to the market itself. Since the firm must compensate the investment banker for providing advice in setting the offer price for the issue and for marketing securities, the optimal offer price is a decreasing function of the uncertainty about the market demand for the issue, while the value of delegation to the underwriter is an increasing function of uncertainty. In the model, the investment bank can therefore to some extent profit from its information advantage by setting the issue price too low.

Other authors focus on the asymmetry in information between informed and uninformed potential investors. Rock (1986) assumes that markets are efficient in the way that the marginal investment in information yields a normal expected return. Potential investors can be divided mainly into two groups: First group is the investors who are better informed and thus earn abnormal returns. Second is the group of investors who rationally choose not to invest in information. In an offering, there is uncertainty about the market clearing price. If the offer price of the new issue is overpriced, only uninformed investors will submit purchase orders. Consequently, uninformed customers will be subscribed to the issues that trade at a discount in the aftermarket. If an issue is underpriced, informed investors will also submit bids and the issue is rationed. Hence, uninformed investors systematically receive more of overpriced issues and less of underpriced issues. They face a winner's curse: if an uninformed investor is allocated shares in an IPO, there is a greater than usual chance that the offering will start trading at a discount. In order to keep them as customers in the IPO market, average issue price has to be set low enough to compensate their losses caused by overpriced stocks. In equilibrium, the uninformed

investors get a risk adjusted normal return on their capital, while the informed investors get excess returns that just compensate their efforts to obtain an information advantage.

In Rock's model, the degree of underpricing is related to the ex ante uncertainty about the value of the issue. The greater the ex ante uncertainty, the greater is the number of investors who choose to become informed and so the greater is the winner's curse faced by the uninformed. Rock's model implies that riskier firms should have higher average initial returns than firms that are easier to evaluate.

Ritter (1984) supposes that high-risk IPOs are underpriced more than low risk offerings. Uhlir (1989) takes the standard deviations of the daily stock price returns during the first 20 trading days to measure the uncertainty of an IPO. His regression with underpricing (dependent variable) and standard deviation (independent variable) leads to a highly significant results. Beatty and Ritter (1986), test two propositions: first proposition is "The greater is the ex ante uncertainty about the value of an issue, the greater is the expected underpricing". This is supported by empirical evidence and they conclude that an issuing firm has an incentive to reduce this uncertainty by voluntarily disclosing information. The second proposition is that "Underwriters whose offerings have average initial returns that are not balanced with their ex ante uncertainty lose subsequent market share". They argue that there is an equilibrium amount of underpricing. If an investment banker underprices the issue too much, given the characteristics of the issue, the investment banker loses future offerings. If the investment banker underprices too little, he loses investors. They examine the average deviation of 49 investment bankers during the period 1977-1981 and compare subsequent performance of the 24 underwriters whose average deviation from their estimated normal underpricing is greatest with that of the remaining 25 underwriters whose average deviation is least. For the 24 with greatest deviation, their market share goes from 46.6 to 24.5 percent and five of the 24 terminate

the operations during 1981-1982. The market share of the 25 with the smallest deviation goes from 27.2 to 21.0 percent and only one of the 25 terminates the operation. These results further suggest that, there may be other factors in the market, since market share of all parties have fallen.

F. Information Cascades Hypothesis

This hypothesis state that potential investors pay attention also to other investors as well as their own information about a new issue. If an investor sees that no one else wants to buy the new issue, he may decide not to buy even when he has favorable information. Ibbotson, Sindelar and Ritter (1994) say that, an issuer may want to underprice an issue to induce the first few potential investors to buy and thereby set off a cascade in which all subsequent investors want to buy irrespective of their private information.

G. Speculative Bubble Hypothesis

When the fixed price offer cannot serve as a successful allocation for the new issues, the 'hot issues' which are characterized by a demand that largely exceeds the disposable supply of securities take place. As a result, investors who could not get enough securities in the primary market will buy them in the secondary market. Even though the offering prices of the issues are consistent with their underlying economic values, the speculation in the aftermarket push the prices above their real worth temporarily. The bubble would burst some time later and initial positive excess returns of the IPO should be followed by negative excess returns in a short period of time.

Uhlir (1989) examines the performance of German IPOs for one year after the offer and finds a continuous underperformance between 10th and 12th months, but could not observe a sharp price drop. Ritter (1991) also detects a continuous underperformance of

IPOs in the US for a period up to three years and the returns come out to be even negative although he includes the large initial returns of the first trading day.

H. Protection Against Legal Pursuit

Ibbotson (1975) and Tinic (1988) suggest that the issuing firms may underprice their IPOs to reduce their vulnerability to lawsuits. As there is a large uncertainty in the IPO market about the relevant information, wrong or incomplete information can lead to large losses.

To test this hypothesis, Tinic (1988) compares IPOs before and after introduction of the Securities Act in 1933. His sample of IPOs between 1923 and 1930 shows lower underpricing than those between 1966 and 1971, confirming the hypothesis. The shortcoming of the study was the lag between the time periods compared because not only the legal situation but probably many other factors might have been changed, that is why the findings has to be interpreted with caution.

Ibbotson (1975) finds a possible explanation for the underpricing that the issuer and the investment bank agree on protecting themselves against legal pursuits by setting the issue price low enough to avoid losses to investors. The underpricing could then be interpreted as an insurance premium. But there is no empirical evidence in his study.

I. Advantages for the Issuer

According to Ibbotson (1975), underpriced new issues 'leave good taste in investors' mouths' so that the future underwritings from the same issuer could be sold at attractive prices although this is in contradiction to an efficient market. It is pointed out that there is no reason why investors who got a good 'gift' in the past, are ready to accept a price above the market price for a future security offering of the same issuer.

Another argument is that the issuers could invest in their reputation by intentionally underpricing their IPO. Keeley (1986) proposes that ‘an oversubscribed issue may carry a certain aura of success, and may even be regarded as a good marketing exercise’. In theory, this hypothesis can explain underpricing to the extent that the same amount of money would have been spent for public relations or advertising to reach a certain aim of the issuer. Kunz and Aggarwal (1994) state that it would be wrong to deny the influence of the reputation hypothesis on underpricing adding that it is however hardly possible to quantify it.

Most of these hypothesis depend on some empirical findings that investigate the performance of IPO market both in short and long-terms. In this study, short-term and long-term results of international evidence will be discussed in separate headings in order to progress in a systematic way.

3.2 Empirical Studies

3.2.1 Short-Term

Many studies suggest that initial public offerings of common stocks are priced at a discount to their subsequent trading price. Earlier studies on IPOs were done by researchers such as McDonald and Fisher (1972), Ibbotson (1975), Reilly (1977), Logue (1973), Neuberger and Hammond (1974), and Block and Stanley (1980). Strong evidence in these studies presented the occurrence of a premium associated with the initial offering of new common stock, followed by normal market performance.

McDonald and Fisher (1972) reported significantly large returns in the first week following the offering with data on 142 new issues in the first quarter of 1969. Logue

(1973), found a 41.7% performance over one month period for the sample of 250 IPOs issued between 1965 and 1969. Neuberger and Hammond (1974), in their sample of 816 issues between 1965 and 1969 found 17.1% return in one week from the offer date. McDonald and Jacquillat (1974), studied 31 French new issues for 1968-1971. Mean offering price came out to be only slightly below mean market price in early trading, resulting in a mean market adjusted return of 3% in the first trading day. They concluded that initial price adjustment was rapid in terms of available information and that their results were consistent with the efficient market hypothesis. Ibbotson (1975), reported average underpricing of 11.4% in the first month with a t-statistic of 3.48 for the newly issued common stocks which were offered to public during the period 1960 through 1969. Block and Stanley (1980), in their study of 102 IPOs between 1974 and 1978, found an average underpricing of 5.96% which is significant at 0.01 level of significance. Neuberger and La Chapelle (1983), examined the price performance of 118 new issues between 1975 and 1980 and found an underpricing of 27.7% one week after the offering.

Ritter (1984) analyzed the 'hot issue' market of 1980, the 15 month period from January 1980 to March 1981, during which the average initial return on unseasoned new issues of common stock was 48.4%. This was in contrast to an average return of 16.3% during the 'cold issue' market comprising the rest of the 1977-1982 period. An equilibrium explanation for this difference is investigated by Ritter, but is found to be insufficient. Instead, this 'hot issue' market is found to be associated almost exclusively with natural resource issues. For firms in other industries, a 'hot issue' market was hardly apparent. Lately, Ritter in 1991, measured an average first day initial return of 14.32% for a sample of 1526 IPOs during the period 1975-1984. Also, Ibbotson, Sindelar and Ritter (1988) observed an average underpricing of 16.4% in the period 1960-1987. Miller and Reilly (1987), examined the mispricing of 510 IPOs with respect to daily returns, daily volume and bid-ask spreads, from the offering date to the fifth and twenty-first trading

days following the offering. The average net return of 9.87% was found to be significant at the 0.01 level. The results indicated that the market adjusts to any mispricing during the first day of public trading, and the excess returns are not available to investors in the aftermarket. Similarly, the results of Aggarwal and Rivoli (1990), indicate that if an investor had purchased each IPO at the offering date and price and held the investments for 1 day, the rate of return earned would be 10.67% higher than the return of NASDAQ index in the same time. According to Aggarwal and Rivoli, there are two possible explanations for the abnormal returns in the IPO market: 1) IPOs are underpriced at the initial offering, or 2) IPOs are temporarily overvalued by investors in early trading. They state that abnormal returns can be interpreted as evidence of underpricing only if it is shown or assumed that aftermarket for IPOs is efficient. Consequently, they claim that IPOs are underpriced more than their intrinsic values in early aftermarket trading due to overvaluations and fads, given their finding of abnormal initial returns and negative market adjusted long-term returns.

Underpricing of IPOs are also very significant in several markets other than U.S. Japanese market showed an initial underpricing of 51.9% for 106 IPOs during the period 1979-1984 documented by Dawson and Hiraki (1985). In Canada, Jog and Riding (1987), found the average underpricing as 11% in the first day of trading from the issuance. Moreover, it is stated that the underpricing is related to 3 variables, trading volume, business sector of the firm and the use to which funds from the offerings were put. Finn and Higham (1988), studied the joint process of initial-issue-cum-listing for 93 Australian issues on the Sydney Stock Exchange during the period 1966-1978. The average initial market-adjusted return was 29.2% with a t-statistic of 7.80. In Germany, the level of underpricing reported by Uhlir (1989) was 21.5% whereas it was only 5.1% in the Netherlands as reported by Wessels (1989). Jenkinson and Mayer (1988), further examined the extent of underpricing for 11 French issues during 1986-1987 and 20 U.K.

issues involved in privatization programs during 1979-1987. The average discount on the first day's closing market price relative to the offer price was 25.05% for French tender offers, 32.79% for 14 U.K. fixed price offers, and only 2.5% for 6 U.K. tender offers producing an average discount of 22.2% for all U.K. privatizations. In another study of U.K. market, Levis (1993), reported average first day returns of 14.3% for 712 IPOs between 1980 and 1988. In Switzerland, Kunz and Aggarwal (1994) documented that for a sample of 42 stocks that were issued in the market between 1983 and 1989, a 35.8% average initial first day return is found.

Similar short-run performances were documented for the developing markets. Dawson (1987), examined the IPOs in Malaysia, Hong Kong and Singapore. Malaysia showed the most severe underpricing about 167% for a sample of 21 IPOs in the years 1978-1983. The average underpricing in Hong Kong was 13.8% for 21 IPOs and 39.4% for 39 IPOs in Singapore. Dawson states that new issues in Malaysia, Hong Kong and Singapore are small in number, heavily oversubscribed, and characterized by extensive information becoming available about the issuer. Aggarwal, Leal and Hernandez (1993), examined three Latin American markets and documented the existence of positive average initial returns of 78.5%, 16.3%, 2.8% for Brazilian, Chilean and Mexican IPOs respectively. It is obviously documented that there exist positive average initial returns in the U.S. and other countries. However, recent evidence suggests that in the U.S. what appears to be underpricing in short-run may be overpricing when one considers long-run performances of IPOs.

There is not many studies on Istanbul Stock Exchange which examine the price performance of Turkish IPOs. However, Oztop (1996), examines the short and medium-term performances during 1994 and 1995. The average market adjusted return of 45 IPOs in 1994 and 1995 on the first day after the issue is reported as 5.37% with a standard

deviation of 12.58%. The average market adjusted return in medium-term of three month is found as -3.20% and standard deviation of 34.81%. He concludes that the existence of significant abnormal positive returns of new issues on the first and fifth trading days is the proof of underpricing. On the contrary, on the first and third month after the initial trading, the IPOs are overpriced since there exist significant abnormal negative returns. As a result, IPOs are considered as profitable investments in the short-term, but perform quite poorly after the first month following the initial trading.

3.2.2 Medium and Long-Term

It is also important to study the performance of IPOs in the long-run for a number of reasons. Aggarwal and Rivoli (1990), note that in the short-run there are imperfections in the IPO market, such as restrictions on short selling and active price support being provided to new issues by the associated investment bankers. Ritter (1991), mentions that systematic price patterns in the long-run would raise questions concerning aftermarket efficiency. From the investors point of view the ability to develop trading strategies is of interest, and from the issuer's point of view it is the costs of going public (Aggarwal and Rivoli, 1991). The empirical evidence in the U.S. suggests that IPOs underperform in the long-run. Ibbotson (1975), reported that IPOs underperform by an average of approximately 1% per month in the second through fourth years. In like manner, Reilly (1977), found that IPOs purchased in early aftermarket trading and held for one year underperform market averages by 11.6% for his sample of 486 IPOs between 1972 and 1975. However, because his analysis period is dominated by the falling 1973-1974 market, Reilly concludes that the underperformance is due to the higher systematic risk of new issues. Ritter (1984), examined the aftermarket behavior of natural resource sector stocks. During the observation period there was a 'hot market' in this sector. He examined the aftermarket returns for natural resource stocks going public between 1977-1982. The aftermarket returns for IPOs underperformed an index of seasoned natural

resource stocks by 15%. In addition, in his study done in 1991, Ritter found that the average three year holding period returns to be 34.47% after going public compared to 61.86% for a sample of matched firms and suggests that the IPO market may be subject to fads. Similarly, Aggarwal and Rivoli (1990), reported market adjusted returns of -13.73% after 250 trading days for a sample of 1598 IPOs during the period 1977-1987. Underperformance was also evident in aggregate in various cross-sectional groupings based on size of issue, offering price, year of issue, and underwriter class. In Australia, Finn and Higham (1988), computed the mean compound return equivalent to a buy and hold strategy of buying new issues at the closing price of the listing month and holding through to the end of month 12. This strategy showed a mean return of -6.52% with a t-statistic of -1.87 which was not found significant. Levis (1993), in his examination of British IPOs, found a long-run performance of -30.6% in three years following the first day of trading. He then came out with a number of conclusions. First, poor aftermarket performance is said to be a persistent feature of IPOs in U.K. Second, results suggest that the long-run underperformance extends beyond 36 months. Third, there is an apparent tendency for the firms with the highest initial returns to have worst aftermarket performance. He concludes that the emerging evidence is more consistent with the proposition that while a certain level of first day returns is the result of deliberate underpricing, marked deviations from this baseline level present some form of market overreaction. In Switzerland, the study of Kunz and Aggarwal (1994), found no underperformance in long-run when initial returns are considered. However, if initial returns are excluded, then the three year returns are found as negative.

The long-run results of Asian markets showed mixed results. The percentage change in the average market-adjusted price from the closing price on first day to 12 months later was -9.3% for Hong Kong, -2.7% for Singapore, +18.2% for Malaysia. Since none of

these results are significantly different from zero, Dawson (1987) concluded that the aftermarket was quite efficient.

The aftermarket performance in the Latin American countries of Brazil and Mexico showed significant long-run under performance. Investors who purchased the issues at the closing price of first trading day and held for three years received mean return of -47.0%, -23.7% in Brazil and Chile respectively. After a holding period of one year, Mexican IPOs displayed a significant underperformance by -19.6%.

To summarize, so far the international evidence consistently finds short-term excess returns, while the long-run performances in many countries showing negative excess returns. Table 2 summarizes the results of the previous studies on IPOs throughout the world.

Table 2. Studies of Price Performance about IPOs in World Markets

A. Developed Markets

Country	Study	Period	Sample Size	Short-run performance (%) ^a			Long-run performance (%) ^a				
				1. day	1. week	1. month	1. year	2. year	3. year	4. year	5. year
Australia	Finn & Higham	1966-1978	93	29.20*		0.80	-11.60*				
Canada	Jog & Riding	1971-1983	100	11.00*	10.50*						
France	Jenkinson & Mayer	1986-1987	11 ^b	25.05							
France	Husson & Jacquillat	1983-1986	131	4.00*							
France	McDonald & Jacquillat	1968-1971	31	3.03*	4.22*	4.64*	15.60*				
Germany	Uhlir	1977-1987	97	21.50*			-7.40				
Japan	Dawson & Hiraki	1979-1984	106	51.90*							
Netherlands	Wessels	1982-1987	46	5.10							
Switzerland	Kunz & Aggarwal	1983-1989	42	35.8*			6.70	1.80	-6.10		
UK	Levis	1980-1988	712	14.30*		14.75*			-30.59*		
UK	Jenkinson & Mayer	1979-1987	20 ^b	22.20	20.85						
USA	McDonald & Fisher	1969-1970	142		28.5*		-18.10*				
USA	Ibbotson	1960-1969	128			11.40*	2.40 ^c	0.40 ^c	0.40 ^c	0.40 ^c	0.70 ^c
USA	Ritter	1975-1984	1526	14.32*		0.38	-10.23*	-16.89	-29.13*		
USA	Aggarwal & Rivoli	1977-1987	1598	10.67*			-13.73*				
USA	Reilly	1972-1975	486	10.90*		1.50	-11.6*				

* Interpreted by the authors as significantly different than zero.

a All results other than initial returns are exclusive of initial returns, and are adjusted for market movements.

b These results are only for firms involved in privatisation programs.

c The returns include the initial returns.

B. Newly Industrialized and Developing Countries

Country	Study	Period	Sample Size	Short-run performance (%) ^a			Long-run performance (%) ^a					
				1. day	1. week	1. month	1. year	2. year	3. year	4. year	5. year	
Hong Kong	Dawson	1978-1983	21	13.80	-1.90	-1.00	-9.3					
Korea	Kim & Lee	1984-1986	41	37.00								
Korea	Krinsky, Kim & Lee	1985-1990	275	79.00*								
Malaysia	Dawson	1978-1983	21	166.70*	3.90	6.20*	18.2					
Singapore	Dawson	1978-1983	39	39.40	0.00	0.60	-2.7					
Singapore	Koh & Walter	1973-1987	66	27.20*								
Finland	Keloharju	1984-1989	80	8.70			-9.80	-22.90*	-26.40*			
Brazil	Aggarwal, Leal & Hernandez	1980-1990	62	78.5*		2.30	-9.00	-34.90*	-47.00*			
Chile	Aggarwal, Leal & Hernandez	1982-1990	19	16.30		5.60	1.10	-2.00	-23.70			
Mexico	Aggarwal, Leal & Hernandez	1987-1990	44	2.80		21.60	-19.60					

* Interpreted by the authors as significantly different than zero.

a All results other than initial returns are exclusive of initial returns, and are adjusted for market movements.

b These results are only for firms involved in privatisation programs.

4. RESEARCH METHODOLOGY

4.1 Purpose of the Study

The purpose of this study is to examine both the initial and aftermarket performance of IPOs to test for departures from market efficiency in Turkish Stock Market. If any inefficiencies are uncovered in the aftermarket, investors can make arbitrage profits.

The sample of new issues are selected from underwritten offerings that are initially offered to public which are registered to the Capital Market Board during the period January 1990-October 1993. The sample of IPOs are taken from the ISE sources. The sample consists of 64 IPOs out of the 87 IPOs issued in this period. The rest were not considered because of two reasons: either the stock was in the regional market or the data on the stocks were insufficient or incorrect.

There are mainly two objectives of the study:

- i. to measure the short-run performance which consists of the initial return (1.day), second, third, fourth, fifth trading day return (1. week), second week return, third week return, first month return, second month return, and third month return.
- ii. to measure the aftermarket performance subsequent to listing, where six month return and one year return are observed.

The returns are calculated from daily data which is adjusted for capital increases and dividends. Istanbul Stock Market Index (ISEI) is chosen to be the benchmark of the study. The returns are defined as the natural logarithm of the ratio of the closing price of day t to the closing price of the previous day $t-1$, less the equivalent change in the

appropriate benchmark (ISEI). The first day adjusted return is defined as the logarithm of the percentage change in price from the offering date to the close at the first day of trading less the equivalent change in the appropriate benchmark which is the Istanbul Stock Exchange Index (ISEI).

4.2 Assumptions of the Study

We assume that daily returns of selected IPOs follow a normal distribution in the whole population. In addition, the volume of the offering is not taken into consideration. As a result, volume effect on the performance is neglected.

4.3 Time Period of the Study

The sample of 64 IPOs out of 87 IPOs issued in the continuous January 1990-December 1993 are taken for the analysis. IPOs for which continuous price data are not available are excluded from the sample. 22 out of 35 IPOs in 1990, 20 out of 23 IPOs in 1991, 10 out of 13 IPOs in 1992 and 12 out of 16 IPOs in 1993 are used for the study. Short-run performances are analyzed considering the first, second, third, fourth, fifth trading days; second, third, fourth weeks and second, third months after the firms are listed in the Istanbul Stock Exchange. Medium and long-term performances are examined in six months and one year following the listing.

4.4 Data of the Study

This study investigates the aftermarket performance of 64 firms in total. Stocks issued between 1990-93 can be grouped into 17 groups when the operating industries are taken into consideration. 9 of the companies are in the industry of glass, cement and ceramic. There are 7 companies in each of the following industries: 1) chemical, petroleum, rubber and plastic products production, 2) textile and leather, 3) metal

work, machine and equipment fabrication, 4) banking. In addition, 5 firms are functioning in each of the industry of paper, paper products, printing and publication; and financial institutions like holdings and investment firms. There are 4 firms in leasing and factoring firms category as well. Furthermore, in each of the four categories: primary metal industry; sector of electric, gas and water; restaurants and hotels; and insurance firms, 2 IPOs from the sample are covered. Moreover, only one firm from the groups: food industry, wood work industry, retail trading, wholesale trading are included in the sample.

IPOs in the sample were either sold as offers for sale at a fixed price or tender. The volume of the offerings in the sample for 1990-93 period adds up to 5,282,281,560,000 TL (Appendix 1.). In 1990, total number of shares issued for the 22 IPOs were 433, 899,014 producing 2,476,863,265,000 TL. In 1991, a visible decline in both the number of shares issued and the total proceed is seen as 99,979,790 shares and 844,512,220,000 TL. respectively. Subsequently in 1992, 90,930,975 shares supplied proceeds of 508,906,075,000 TL. Lastly in 1993, proceeds were 1,452,000,000,000 TL with 183,450,000 shares.

4.5 Methodology of the Study

Numerous studies were done throughout the world that examined the initial and aftermarket performance of IPOs and tried to solve the underpricing puzzle. The market model used by: McDonald-Fisher (1972), Ritter (1991), Levis (1993), Aggarwal-Leal-Hernandez (1993), Peavy (1990) is chosen to be applied for the computation of short- and long-run price performances.

Adjusting the security prices for market wide movements on individual stock returns is said to be a general problem that take considerable attention. Estimating the parameters of Sharpe-Linter-Mossin capital asset pricing model for each security and

interpreting the residual in each period, ar_{jt} , as an abnormal return of stock j , is a useful procedure.

$$R_{jt} = \alpha_j + \beta_j R_{mt} + ar_{jt} \quad (1)$$

In this study, the transformation of stock returns to excess returns in equation (2) serves to adjust roughly for market effects on IPO returns to investors.

$$ar_{jt} = R_{jt} - R_{mt} \quad (2)$$

where, R_{jt} is the return on stock j in day t , and R_{mt} is the return on the benchmark in the same period.

$$R_{jt} = \ln (P_{j,t} / P_{j,t-1}) \quad (3)$$

where, $P_{j,t}$ is adjusted closing price of stock j on day t

$P_{j,t-1}$ is adjusted closing price of stock j on day $t-1$

The return on the benchmark $R_{m,t}$ is defined in a similar fashion as the natural logarithm of the percentage change in ISE composite index .

$$R_{mt} = \ln (P_{m,t} / P_{m,t-1}) \quad (4)$$

where, $P_{m,t}$ is the closing price of ISEI on day t

$P_{m,t-1}$ is the closing price of ISEI on day $t-1$

Then, the average benchmark adjusted return on a portfolio of n stocks for event day t is the equally-weighted arithmetic average of the benchmark adjusted returns:

$$AR_t = \left(\sum_{j=1}^n ar_{jt} \right) / n \quad (5)$$

The cumulative benchmark adjusted aftermarket performance from the beginning of the first day of trading to day s is the summation of the average benchmark adjusted returns from the first day of trading to day s :

$$CAR_{i,s} = \sum_{t=1}^s AR_t \quad (6)$$

Hypothesis Testing

The hypothesis that, "Investors obtain initial positive abnormal returns relative to the market because of underpricing issue. In long-term, however, they encounter underperformance with respect to the market." will be tested by the examination of price changes with respect to the return of the ISEI.

Short term: Ho: no positive abnormal returns exist in short term relative to the market

Ha: there exist positive abnormal returns in short term relative to the market

Long term: Ho: no underperformance of IPOs exist in long term

Ha: IPOs underperform in long term

The significance of the results will be tested by using t-test. Aftermarket performances of the sample IPOs are being observed for 1 year (255 trading days) in order to compare results with the international studies.

Hypothesis is tested by the natural logarithm of percentage price changes of sample IPOs which were adjusted for capital increases (to have a reliable set of returns for the studied period).

For the null hypothesis to be tested that the mean day t abnormal return is smaller or equal to zero, we compute t -statistic as:

$$t = AR_t / \sigma (AR_t) \quad (7)$$

where $\sigma (AR_t)$ is the standard deviation of the sample mean on day t .

To test whether the cumulative abnormal return from day t_1 until day t_2 is significantly positive, we compute the statistical significance of CAR by t -test:

$$t = CAR / \sigma (CAR) \quad (8)$$

$$\sigma (CAR) = \sigma (AR_t) * (t_2 - t_1 + 1)^{1/2} \quad (8.1)$$

5. FINDINGS AND DISCUSSION

We will examine return performances in two sections: short-term and medium-long-term. The returns of first, second, third, fourth and fifth (1 week) trading days followed by second, third and fourth weeks and second and third months are reported in the short-term price performance section. The medium- and long-term include the sixth month and one year returns from the offering date. The data is composed of 22 IPOs out of 35 in 1990, 20 IPOs out of 23 in 1991, 10 IPOs out of 13 in 1992 and 12 IPOs out of 16 in 1993. The rest of the IPOs was not analyzed because of the data unavailability. The average returns, the cumulative average returns and the corresponding t-statistics of this study for the years 1990-1993 are given in tabular form. The following tables contain the results both for the short-term and for the medium- and long-term price performances.

Table 3. Performance of IPOs in 1990-1993 (N=64)

TIME	ARt (%)	t-statistic (ARt)	CARt (%)	t-statistic (CARt)
Day 1	4.406	3.276*	4.406	3.276*
Day 2	3.956	2.606*	8.362	3.894*
Day 3	1.149	1.635	9.510	7.819*
Day 4	0.569	0.709	10.079	6.276*
Day 5	-0.537	-0.774	9.542	6.146*
Week 2	0.341	0.617	11.761	6.733*
Week 3	0.028	0.055	13.120	6.608*
Week 4	0.099	0.122	13.001	3.569*
Month 2	-0.242	-0.456	10.836	3.226*
Month 3	0.573	0.983	9.048	1.927*
<i>Month 6</i>	<i>0.208</i>	<i>0.333</i>	<i>1.423</i>	<i>0.204</i>
<i>Year 1</i>	<i>-0.388</i>	<i>-0.900</i>	<i>-8.808</i>	<i>-1.278</i>

* Significant at 0.05 significance level and 63 degrees of freedom (t critical = 1.645)

Table 4. Performance of IPOs in 1990 (N=22)

TIME	ARt (%)	t-statistic (ARt)	CARt (%)	t-statistic (CARt)
Day 1	1.953	1.194	1.953	1.194
Day 2	1.956	2.219*	3.909	3.135*
Day 3	0.820	1.034	4.729	3.444*
Day 4	-0.046	-0.033	4.683	1.657
Day 5	0.102	0.099	4.783	2.068*
Week 2	0.479	0.516	3.010	1.026
Week 3	0.555	0.702	2.513	0.820
Week 4	0.915	0.464	4.725	0.536
Month 2	-1.508	-2.197	4.031	0.929
Month 3	0.512	0.643	1.102	0.172
<i>Month 6</i>	<i>0.875</i>	<i>0.877</i>	<i>6.217</i>	<i>0.557</i>
<i>Year 1</i>	<i>-0.432</i>	<i>-0.462</i>	<i>-6.421</i>	<i>-0.411</i>

* Significant at 0.05 significance level and 21 degrees of freedom (t critical = 1.721)

Table 5. Performance of IPOs in 1991 (N=20)

TIME	ARt (%)	t-statistic (ARt)	CARt (%)	t-statistic (CARt)
Day 1	4.025	1.463	4.025	1.463
Day 2	5.509	1.203	9.534	1.471
Day 3	-0.370	-0.258	9.168	3.731*
Day 4	-0.060	-0.040	9.110	3.163*
Day 5	-3.200	-2.491	5.909	2.058*
Week 2	-1.096	-1.225	2.829	1.083
Week 3	0.984	1.432	2.661	1.451
Week 4	0.580	0.518	3.855	0.770
Month 2	0.724	0.762	4.738	0.789
Month 3	0.579	0.606	2.970	0.383
<i>Month 6</i>	<i>0.798</i>	<i>0.610</i>	<i>-5.210</i>	<i>-0.357</i>
<i>Year 1</i>	<i>-0.608</i>	<i>-0.906</i>	<i>-5.320</i>	<i>-0.496</i>

* Significant at 0.05 significance level and 19 degrees of freedom (t critical = 1.729)

Table 6. Performance of IPOs in 1992 (N=10)

TIME	ARt (%)	t-statistic (ARt)	CARt (%)	t-statistic (CARt)
Day 1	5.343	2.897*	5.343	2.897*
Day 2	0.242	0.149	5.586	2.434*
Day 3	-0.401	-0.213	5.184	1.590
Day 4	-1.305	-0.789	3.879	1.185
Day 5	0.168	0.790	4.647	2.138*
Week 2	-0.220	-0.100	4.443	0.715
Week 3	0.141	0.073	7.027	1.017
Week 4	-0.458	-0.526	5.471	1.407
Month 2	0.661	0.439	-1.110	-0.119
Month 3	-1.895	-1.866	-4.081	-0.489
<i>Month 6</i>	<i>-1.645</i>	<i>-1.367</i>	<i>-11.470</i>	<i>-0.860</i>
<i>Year 1</i>	<i>-2.783</i>	<i>-1.907*</i>	<i>-32.262</i>	<i>-1.390</i>

* Significant at 0.05 significance level and 9 degrees of freedom (t critical = 1.833)

Table 7. Performance of IPOs in 1993 (N=12)

TIME	ARt (%)	t-statistic (ARt)	CARt (%)	t-statistic (CARt)
Day 1	8.756	2.009*	8.756	2.009*
Day 2	8.128	6.002*	16.884	8.815*
Day 3	5.567	3.631*	22.452	8.453*
Day 4	4.305	2.385*	26.756	7.442*
Day 5	1.640	0.833	28.396	6.450*
Week 2	2.427	1.901*	47.780	11.836*
Week 3	-0.272	-1.894	51.880	9.310*
Week 4	-1.733	-1.211	49.690	7.761*
Month 2	0.115	0.060	44.540	3.686*
Month 3	-0.328	-0.175	47.510	3.141*
<i>Month 6</i>	<i>-2.354</i>	<i>-3.037*</i>	<i>14.360</i>	<i>1.658</i>
<i>Year 1</i>	<i>-0.006</i>	<i>-0.006</i>	<i>0.070</i>	<i>0.005</i>

* Significant at 0.05 significance level and 11 degrees of freedom (t critical = 1.796)

5.1 Short-Term Results

As the whole 1990-1993 period is considered, it is seen that 49 out of 64 IPOs produced positive returns in the first day of trading whereas 15 showed negative performances when compared with the return of market index. In this whole period, Facto Finans Factoring had the highest return of 44.37% and Esbank had the lowest return of -21.79%. The average market adjusted return on the first trading day was 4.406% with a t-ratio of 3.276 which is found to be significant at 0.05 significance level. The critical t-ratio for one sided test at 0,05 significance level and 63 degrees of freedom is 1.645. Second day after the trading also showed high significant returns with an average adjusted return (AR_2) of 3.956% and a t-statistic of 2.606. Third day's AR_3 was 1.149% and the corresponding t-ratio was 1.635. After the third day, the AR_t decreased under 1% level being 0.569%, -0.537% for the fourth and fifth trading days, but the cumulative average return (CAR) were 10.079% and 9.542% with t-statistics of 6.276 and 6.146 respectively. At the end of second week, CAR found to be 11.761% with a t-ratio of 6.733. In the third week the CAR was 13.120, having a t-ratio of 6.608. CAR appears to be 13.001% in the fourth week obtaining a t-statistic of 3.569. Second month, CAR was 10.836% and the corresponding t-ratio being 3.266. Positive CAR still continue in the third month with 9.048% and still significant. To summarize, in the first two days of trading IPO market exercise high and significant positive average returns. Although the average returns drop down to insignificant levels afterwards, the significance of cumulative average returns continue up to the end of month 3.

If we investigate the results year by year; in 1990, it is found that 18 IPOs out of 22 showed positive excess returns in the first day of trading and only 4 IPOs indicated negative returns. The average adjusted first day return come out to be 1.953% with a t-ratio of 1.194 which is not significant at 0.05 significance level, critical t-value being 1.721 for 21 degrees of freedom and 0.05 level. Second day performance

showed nearly similar AR with 1.956% which was now significant. Average adjusted return in the third day was 0.820% followed by a negative return in the fourth day with -0.046%. The CARs for weeks one, two, three and four were 4.785%, 3.010%, 2.513%, 4.725% respectively which were all insignificant. The second and third month results showed a decreasing trend with CAR of 4.031% and 1.102% which were not significant at 0.05 level either.

For the analysis of 20 IPOs issued in 1991, 14 of them exercised positive returns in the first day of trading and the average adjusted first day return appeared to be 4.025% with an associated t statistic of 1.463. The first day return was not significant because the critical t-value for 19 degrees of freedom and 0.05 significance level was 1.729. Second, third, fourth and fifth day average returns are in a decreasing trend being 5.509%, -0.37%, -0.06%, -3.2% respectively. Second week after the first trading, CAR was found to be 2.829% which is not significant. Third and fourth week cumulative average returns were 2.661% and 3.855%. After the second month with a CAR of 4.738%, returns display a decreasing trend, being 2.970% in month 3 and negative values in medium- and long-term.

In 1992, 9 out of 10 IPOs led positive excess returns in the first day of trading. The average first day return was 5.343% that is significant with a t-ratio of 2.897. The critical t-value is 1.833 for 9 degrees of freedom and 0.05 level of significance. The aftermarket adjusts rapidly having a second day average return of 0.242% with a t-ratio of 0.149. The cumulative average returns for third, fourth, fifth days are, 5.184%, 3.879%, 4.647% respectively. Similarly, CARs for weeks two, three and four are calculated as, 4.443%, 7.027%, and 5.471% in the order. Later, in the second and third months, the CAR falls to negative values of -1.11% and -4.081% although they are insignificant.

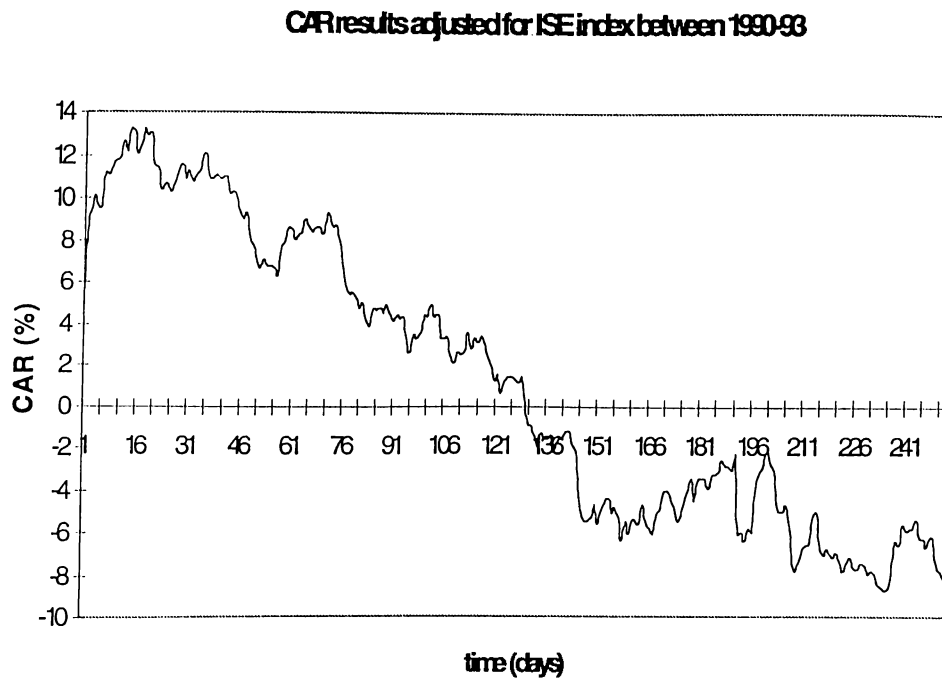
It is observed that in 1993, 8 out of 12 IPOs issued in this year, showed positive returns. The first day average return is 8.756% with an associated t-statistic of 2.009, which is significant at 0.05 level of significance and 11 degrees of freedom that necessitate a critical t-statistic of 1.796. The second, third, and fourth day returns are 8.128%, 5.567% and 4.305% respectively. The corresponding t-statistics are equal to 6.002, 3.631 and 2.385. The first weekly return of 12 IPOs averaged to 28.396% with a corresponding t-statistic of 6.450. The significant cumulative returns continue in the second, third and fourth weeks performing 47.78%, 51.88% and 49.69%. After then, returns show a small decline reaching a 44.54% return in cumulative for the second month. The third month returns from the offering perform a 47.51% positive return with a t-ratio of 3.141.

5.2 Medium and Long-Term Results

When we consider medium-term as 6 weeks after the offering, through the period of 1990-1993, the cumulative return for this period is found to be 1.423% with a t-statistic of 0.204; and in the long-term which is considered as one year, the CAR is calculated as -8.808% including the initial return. The corresponding t-statistics was -1.278 which is not significant at 0.05 level of significance.

As the medium- and long-term performances are observed according to year of issuance of IPOs, we are confronted with the following results in the aftermarket. In 1990, the medium-term cumulative average return was found as 6.217% with a t-ratio of 0.557. The long-term result however was negative, -6.421%, being insignificant. In 1991, cumulative average return for the first six months was, -5.210%, and for one year the corresponding CAR was -5.320%. For the year 1992, 10 IPOs produced a negative CAR of -11.47% in six months, and -32.262% in one year period. The highest medium and long-term cumulative average returns are observed in 1993. The

six month return of 14.36% and a one year return of 0.07% were recognized although they were insignificant in 0.05 level of significance.



In the light of all these findings, we can briefly summarize the results: Firstly in short-run, there exist positive average abnormal returns which are very significant in the first two days of early trading. As a result, we reject the first hypothesis of no positive abnormal returns exist in short term relative to the market index and conclude that significant positive abnormal returns exist in short-run. In long-term, although the cumulative abnormal return is negative by -8.808%, it is found to be insignificant in 0.05 level of significance. For this reason, we cannot reject the null hypothesis of no underperformance exist in long run returns relative to the market.

However one should analyze the results keeping in mind that there are many limitations of the study. The selected IPOs are assumed to be representative of the IPO market whereas any external effect or intra-firm effect that is considered above

may cause the sample being nonrepresentative. Furthermore, in order to measure IPO performance relative to outstanding stocks in the market, Istanbul Stock Exchange Index is assumed to be representative of the stock market. But it is not very meaningful for an investor to have a portfolio covering all the stocks that are present in the index. In addition, the model used assumes that the non-diversifiable risk of each new issue of Turkish Stocks for the period 1990-1993, is the same as that of the ISEI average. However, inter-firm differences in β_j are found to exist in the studies done world wide among recent offerings, and that the average β_j of new issues exceeds one according to these studies, that means most new issues are riskier than the benchmark. In order to say an exact word about the riskiness of the sample of firms, one has to find β_j for each stock in the sample and compare it with the riskiness of ISEI average. This may create a necessity for another study which will take the riskiness of the sample into consideration.

6. CONCLUSION

The study examined the short and long term price performance of initial public offerings. It is hypothesized that, in short term the newly issued stocks will show abnormal return relative to the market and in long term, they will underperform with respect to the market.

Although the short term results fall in line with the international evidence, the medium and long term results did not support the alternative hypothesis. The initial abnormal return of sample IPOs relative to ISEI was statistically significant, which supports the idea that investors can experience high abnormal returns in short term. On the other hand, market adjusts after the third day that an investor who buys the issue at the first day of aftermarket and hold for two days do not get the abnormal return. In medium term of 6 weeks, a positive cumulative average return of 1.423% is realized but it is not significant. Lastly, in long run, a negative cumulative average return of -8.808% is exercised; however, the second hypothesis related to long term was insignificant stating that IPOs do not under perform relative to the market index.

As a conclusion, we can say the IPO market is inefficient which gives significant opportunity for abnormal returns. It can be easily observed from the results that, Turkish IPO market cannot rapidly adjust the prices of new shares to reflect the available information. The adjustment takes place after a long time interval of three months. But we should not disregard the limitations of this study as: the sample size being very limited, representativeness of the samples to the IPO population, the period being examined.

This inefficiency might be because of the low information usage on the part of investors. ISE is relatively a new market which is in its early stages of development; besides public offerings are a more recent phenomena in the market. Furthermore, the financial tables do not reflect much information. Price manipulation in the aftermarket and uncertainty in the economic environment of Turkey might be responsible for the inefficiency.

In this study, Istanbul Stock Exchange Index (ISEI) is used as a benchmark. It is advised to use the same model by some other benchmarks, as the results are very much dependent on the selection of benchmark. Further study with a larger sample size and consideration of different benchmarks may be helpful for better investigation of IPO market. In addition, segmentation according to risk class, issuer type, size, industry and price group, underwriter type and reputation, choice of offering method may help to solve the underpricing puzzle.

APPENDIX A.

INITIAL PUBLIC OFFERINGS
IN ISTANBUL STOCK EXCHANGE
DURING 1990-1993

APPENDIX A.1. IPOs IN 1990

NAME OF THE COMPANY	PRICE (TL)	IPO DATE	FIRST TRADING DATE	NUMBER OF SHARES	AMOUNT SOLD (*1000 TL)	UNDERWRITER NAME
1.SABAH YAYINCILIK	5000	10/5/90	11/6/90	*	*	TEKSTILBANK
2.EMEK SIGORTA	4500	23/5/90	11/6/90	3,000,000	13,500,000	IKTISAT BANKASI
3.TEKSTILBANK	6750	23/5/90	11/6/90	6,274,250	42,351,188	TEKSTILBANK
4.GARANTI BANKASI	4500	6/6/90	11/6/90	52,500,000	236,250,000	GARANTI BANKASI
5. ECZACIBAŞI ILAC	20000	25/6/90	25/6/90	4,500,000	90,000,000	ECZACIBASI MENKUL
6. PETKIM	2500	25/6/90	9/7/90	158,871,005	397,177,512	IS BANKASI
7. DEMIRBANK	7500	11/7/90	11/7/90	4,500,000	33,750,000	YATIRIM FINANSMAN
8. AKBANK	12000	23/7/90	26/7/90	75,000,000	900,000,000	AKBANK
9. ASELSAN	4200	1/8/90	1/8/90	43,400,000	182,280,000	IS BANKASI
10. KELEBEK MOBILYA	10000	1/8/90	1/8/90	900,000	9,000,000	IKTISAT BANKASI
11. ISTANBUL MOTOR PISTON	10000	20/8/90	20/8/90	3,300,000	33,000,000	DISBANK
12. TUTUNBANK	6000	5/9/90	5/9/90	7,500,000	45,000,000	TUTUNBANK
13. T. DISBANK	6500	13/9/90	13/9/90	15,000,000	97,500,000	IS BANKASI
14. KUTAHYA PORSELEN	10000	24/9/90	24/9/90	505,494	5,054,940	TSKB
15. FENIS ALUMINYUM	6500	26/9/90	26/9/90	1,500,000	9,750,000	FINANSBANK
16. PARSAN	7000	8/10/90	16/10/90	1,800,000	12,600,000	TEKSTILBANK
17. MARSHALL BOYA	9500	17/10/90	7/11/90	3,420,000	32,490,000	KORFEZBANK
18. KONYA CIMENTO	25000	24/10/90	26/10/90	2,494,265	62,281,625	IS BANKASI
19. TRAKYA CAM	7000	5/11/90	5/11/90	29,274,000	204,918,000	CAMIS MENKUL
20. NET TURIZM	6000	7/11/90	7/11/90	2,160,000	12,960,000	NETBANK
21. THY	3000	29/11/90	10/12/90	15,000,000	45,000,000	IS BANKASI
22. EDIP IPLIK	4000	17/12/90	18/1/91	3,000,000	12,000,000	TEKSTILBANK
			TOTAL	433,899,014	2,476,863,265	

* Not available

APPENDIX A.2. IPOs IN 1991

NAME OF THE COMPANY	PRICE (TL)	IPO DATE	FIRST TRADING DATE	NUMBER OF SHARES	AMOUNT SOLD (+1000 TL)	UNDERWRITER NAME
1. ADANA CIMENTO (A)	270000	18/2/91	21/2/91	407,477	110,018,790	IS BANKASI
2. ADANA CIMENTO (C)	30000	18/2/91	21/2/91	400,038	12,001,140	IS BANKASI
3. MIGROS	8000	25/2/91	27/2/91	2,638,750	21,110,000	IS BANKASI
4. AFYON CIMENTO	30000	25/3/91	27/3/91	1,214,955	36,448,650	IS BANKASI
5. VAKIF LEASING	6000	8/4/91	24/4/91	4,800,000	28,800,000	VAKIF BANK
6. LUKS KADIFE	7000	29/4/91	29/4/91	872,670	6,108,690	IS BANKASI
7. DITAS DOGAN	7000	6/5/91	8/5/91	726,725	5,087,075	IS BANKASI
8. NIGDE CIMENTO	165000	13/5/91	15/5/91	499,175	82,363,875	IS BANKASI
9. ESBANK	4000	3/6/91	3/6/91	13,500,000	54,000,000	IS BANKASI
10. PETROL OFISI	4000	27/5/91	30/5/91	18,000,000	72,000,000	IS BANKASI
11. TUPRAS	2000	27/5/91	30/5/91	18,250,000	36,500,000	IS BANKASI
12. DERIMOD	16000	3/6/91	3/6/91	750,000	12,000,000	GARANTI BANKASI
13. TIRE KUTSAN	3300	4/6/91	18/6/91	6,000,000	19,800,000	HALK BANKASI
14. TOFAS OTO TICARET	15000	13/6/91	1/7/91	2,000,000	30,000,000	IS BANKASI
15. TOFAS TURK OTO.	19000	13/6/91	1/7/91	10,000,000	190,000,000	IS BANKASI
16. DURAN OFSET	9000	15/7/91	15/7/91	420,000	3,780,000	GARANTI BANKASI
17. VAKIF YATIRIM ORT.	1000	23/8/91	23/8/91	4,500,000	4,500,000	IS BANKASI
18. PETROKENT TURIZM	2200	9/10/91	9/10/91	*	*	KARON MENKUL
19. SONMEZ FILAMENT	8000	23/6/91	23/6/91	6,000,000	48,000,000	INTERBANK
20. ALTINYILDIZ	8000	17/12/91	24/12/91	9,000,000	72,000,000	T. EKONOMI BANKASI
			TOTAL	99,979,790	844,518,220	

* Not available

APPENDIX A.3. IPOs IN 1992

NAME OF THE COMPANY	PRICE (TL)	IPO DATE	FIRST TRADING DATE	NUMBER OF SHARES	AMOUNT SOLD (+1000 TL)	UNDERWRITER NAME
1. HURRIYET GAZETE.	7800	18/2/92	25/2/92	5,200,000	40,560,000	IS BANKASI
2. ABANA ELEKTRONIK	2500	26/2/92	26/2/92	1,000,000	2,500,000	TSKB
3. GLOBAL MENKUL YO.	1000	17/3/92	21/4/92	20,000,000	20,000,000	GLOBAL MENKUL
4. TURCAS PETROL.	7000	25/5/92	4/6/92	16,500,000	115,500,000	OSMANLI BANKASI
5. MEDYA HOLDING	4700	27/5/92	9/6/92	17,198,000	80,830,600	INTERBANK
6. BURCELİK	5600	18/8/92	18/8/92	1,012,500	5,670,000	IMPEXBANK
7. TRANSTURK HOLDING	1000	8/9/92	8/9/92	3,045,475	3,045,475	IKTISAT BANKASI
8. CIMENTAS	10500	20/10/92	20/10/92	6,000,000	63,000,000	TSKB
9. BEKOTEKNIK	8500	26/10/92	26/10/92	20,000,000	170,000,000	KOC BANK, IS BANK
10. BANVIT	8000	26/11/92	27/11/92	975,000	7,800,000	GARANTI MENKUL
			TOTAL	90,930,975	508,906,075	

APPENDIX A.4. IPOs IN 1993

NAME OF THE COMPANY	PRICE (TL)	IPO DATE	FIRST TRADING DATE	NUMBER OF SHARES	AMOUNT SOLD (*1000 TL)	UNDERWRITER NAME
1. EGE SERAMIK	6750	9/2/93	15/2/93	9,000,000	60,750,000	FINANSBANK, ISBANK, TSKB, YATIRIM FINAN.
2. NETAS ELEKTRIK	8250	11/3/93	15/3/93	25,200,000	207,900,000	IS BANKASI
3. AKTAS ELEKTRIK	6000	27/5/93	7/6/93	3,000,000	18,000,000	KORFEZBANK
4. DOGAN HOLDING	5200	14/6/93	21/6/93	19,500,000	101,400,000	TEB, IS BANKASI
5. KONITEKS KONFEKS.	2750	21/6/93	3/8/93	1,500,000	4,125,000	IS BANKASI
6. RAKS ELEKTRONIK	3900	20/7/93	9/8/93	22,000,000	85,800,000	KORFEZBANK, GLOBAL, EGE BANK
7. MILLIYET GAZETE	25500	20/9/93	27/9/93	12,000,000	306,000,000	TEB, IS BANKASI
8. FINANS LEASING	4500	28/9/93	5/10/93	28,000,000	126,000,000	FINANSBANK, KORFEZ EGE BANK, GARANTI
9. FACTOFINANS	7000	11/10/93	25/10/93	4,500,000	31,500,000	IKTISAT BANKASI
10. ANADOLU SIGORTA	11500	11/10/93	25/10/93	18,750,000	215,625,000	IS BANKASI
11. AKSU IPLIK	7500	1/11/93	15/11/93	30,000,000	225,000,000	IS BANKASI, TSKB
12. AKTIF FINANS FACT.	7000	29/11/93	20/12/93	10,000,000	70,000,000	VAKIF M.K., TEKSTIL B. FINANSBANK
			TOTAL	183,450,000	1,452,100,000	

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