INITIAL PUBLIC OFFERINGS TIMING: EVIDENCE FROM TURKEY

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İSTANBUL BİLGİ ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ
ULUSLARARASI FİNANS YÜKSEK LİSANS PROGRAMI

Prof. Dr. Oral ERDOĞAN
2007

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(Birincil Halka Arzlarda Zamanlama: Türkiye Örneği)

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Tezin Onaylandığı Tarih : 20.06.20007

Toplam Sayfa Sayısı: 160

Anahtar Kelimeler (Türkçe)	Anahtar Kelimeler (İngilizce)
1) Birincil Halka Arz	1) IPO
2) Halka Arz Dönemi	2) Timing
3) Başlangıç Getirisi	3) Initial Return
4) Halka Arz Sonrası Performans	4) Aftermarket performance
5) Düşük Fiyatlandırma	5) Underpricing

ABSTRACT

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The literature on Initial Public Offerings offers a wide variety of explanations to justify the dramatic swings in the volume and number of IPOs observed in the market. Although there are some studies about underpricing and aftermarket performance of IPOs, there is not enough research conducted about timing Turkish IPO market, Istanbul Stock Exchange. During this dissertation, the literature on IPO is examined and the results are compared to those reached in ISE.

The study's result concludes that, corresponding to timing, IPO market in Turkey has significant positive relationship with market level and initial returns of IPOs but negative relationship with risk variables, such as volatility in markets. No strong evidence of GDP growth and IPO market is reached, in contrast to expectations.

Özet

Birincil halka arzlarla ilgili literatür, halka arz sayı ve hasılatında gözlemlenen dalgalanma ile ilgili birçok yorum getirmektedir. Fakat düşük fiyatlandırma ve halka arz sonrası performans ile ilgili olarak birçok çalışma olmasına rağmen, Türkiye'deki birincil halka arzların zamanlaması ile ilgili olarak yeterince çalışma bulunmamaktadır. Bu çalışma boyunca, halka arzlara ilişkin literatür incelenmiş ve İstanbul Menkul Kıymetler Borsası'nda yapılan birincil halka arzlarla karşılaştırılmıştır.

Bu çalışmanın sonuçlarına göre, zamanlamaya ilişkin olarak, birincil halka arzların piyasa seviyesi, halka arzların başlangıç getirisi ile pozitif ve anlamlı, risk değişkenleriyle, örneğin piyasadaki oynaklık ile negatif ve anlamlı ilişkisi vardır. Bununla beraber, yaygın inanışın aksine, ekonomik büyüme ile halka arz piyasası arasında anlamlı bir ilişkiye ulaşılmamıştır.

ACKNOWLEDGEMENT

I would like to thank to my dissertation adviser Prof. Dr. Oral ERDOĞAN for his valuable advices and guidance and Yelda KUŞCU for her support throughout the completion of this dissertation and Tülay ZAİMOĞLU for her support before this study.

TABLE OF CONTENTS

LIST OF TABLES

List of Abbreviations

IPO: Initial Public Offerings
CMB: Capital Markets Board of Turkey
MB, M/B: Market to Book Ratio
PE; P/E Ratio: Price to Earnings Ratio
NYSE: New York Stock Exchange
NASDAQ: National Association of Securities Dealers Automated Quotations

1. Introduction

The literature on IPOs offers a wide variety of explanations to justify the dramatic swings in the volume of IPOs observed in the market. Many theories predict that hot IPO markets are characterized by clusters of firms in particular industries for which a technological innovation has occurred, suggesting that hot and cold market IPO firms will differ in quality, prospects, or types of business. Others suggest hot market IPOs are firms that take advantage of irrational investors. Some others argue that IPOs tend to be increase when markets are in their peaks or after some changes in economic and financial indicators, such as market return, volatility, GDP growth and etc.

So, according to many researches, firms decide to go public not only by private motives but also according to market conditions or general economical environment; when these conditions are desirable, hot markets appear.

Istanbul Stock Exchange, where 325 companies' stocks are listed by 31.10.2006, is only stock exchange in Turkey founded in 1986. Although number of publicly traded firms is low as cannot be compared to New York Stock Exchange or NASDAQ, there are some researches made about IPOs in ISE. However these are almost about underpricing or aftermarket performance of newly issued firms' stocks and there isn't any research followed about timing of IPOs in ISE and the general economic's and financial indicators' effect on IPO decision of individual actors of capital markets.

The purpose of this study is exploring the relation of IPOs and some indicators assumed to be essential about IPO timing. IPOs changes are analyzed in the light of regulations imposed by government or CMB, local authority in capital markets in Turkey. After introducing the simple model, graphics, correlation and regression analyses conducted are displayed in the empirical results part.

In the first part of the study, for the entrance, the financing of firms are defined by Modigliani-Miller theorem. Then types of financing are determined and kinds of equity are specified and it is majored on IPOs for more detailed analysis. The essential phenomenons related to IPOs are also determined. At this part; most important anomalies; underpricing phenomenon, poor aftermarket performance of IPOs, hot issue

markets are explicated. Besides, asymmetric information, adverse selection and moral hazard problems are explained as some researchers argue that IPO timing is related to information difference between firms and potential investors. The reasons for these anomalies are also given during this part of the study. In addition, critical research solutions about these subjects and studies which make contribution to the literature are also explained.

At the literature review part more specifically, important research results about IPO timing are represented and the main indicators found to be effective in IPO timing are determined from the studies conducted in other countries' market, for the data analysis part and for making comparison with the results in Turkish IPO market.

After introducing simple model, correlation and regression analysis conducted are represented in the data and methodology section. The economic, market level, risk and market return variables are used. It is expected to have strong positive relation between market level, initial return in IPOs and market return changes, strong negative relation between volatility in market and interest rates level or changes with hot IPO markets. The rumour is that GDP growth rate and IPO market has positive and high correlation. All these hypotheses are tested in empirical results part.

The results are compared with the researches conducted before in different stock exchanges or different countries and the results with the special conditions of capital markets and general economic developments in Turkey are interpreted.

On the other hand, the regulations imposed by CMB and important events in financial markets which can affect IPO market are also explored in details with possible effects, at the beginning of empirical results part.

The data used during this study, covers the period of 1990-2006, since the data before 1990 is not proper for a healthy analysis.

1.1 Financing in Firms

The firms need some capital for growing, for financing some projects or for other motives. The question is whether this need will be fulfilled by debt or equity. This question's response was investigated by many researchers, especially after Franco Modigliani and Merton Miller (M&M) theory in 1958. They had argued that the company's value is independent of its capital structure. They had added that the company's best capital structure is one that supports the operations and investments of the business. First of their irrelevance propositions was related to capital structure; second proposition was that the dividend payout doesn't affect the value of the company. But it was the first proposition of these two that has always attracted most of the attention. Pagano (2005) indicates that M&M produced the dividend invariance proposition mainly to deflect criticisms of their first proposition.

The proof of the theory was also so easy:

Proposition I: $V_U = V_L$

where V_U *is the value of an unlevered firm* = price of buying a firm composed only of equity, and V_L *is the value of a levered firm* = price of buying a firm that is composed of some mix of debt and equity.

To see why this should be true, it is supposed that an investor is considering buying one of the two firms Unlevered (U) or Levered (L). Instead of purchasing the shares of the levered firm L, he would purchase the shares of firm U and borrow the same amount of money B that firm L does. The eventual returns to either of these investments would be the same. Therefore the price of L must be the same as the price of U minus the money borrowed B, which is the value of L's debt.

This discussion also clarifies the role of some of the theorem's assumptions. It is implicitly assumed that the investor's cost of borrowing money is the same as that of the firm, which doesn't need to be true in the presence of asymmetric information or in the absence of efficient markets.

When it was proposed for the first time, the M&M leverage irrelevance proposition raised much controversy and attracted much criticism also for methodological reasons. However, when M&M set out to prove their first proposition, they could not yet count on the well developed equilibrium models of securities pricing that it is found today in every finance textbook. This explains why they based their proof on a more fundamental and at the same time on less demanding notion than that of competitive equilibrium: they went for an arbitrage argument.[1]

The arbitrage pricing is very essential for pricing derivatives and this is in a step further than equilibrium models. This was another cause of being cornerstone in finance for M&M's theorem, although it is not valid in real world, with the assumptions mentioned above.

Proposition II: $r_S = r_0 + B/S\ (r_0 - r_B)$

- *r_S is the cost of equity.*
- *r_0 is the cost of capital for an all equity firm.*
- *r_B is the cost of debt.*
- *B / S is the debt-to-equity ratio.*

This proposition states that the cost of equity is a linear function of the firm's debt to equity ratio. A higher debt-to-equity ratio leads to a higher required return on equity, because of the higher risk involved for equity-holders in a company with debt. The formula is derived from the theory of weighted average cost of capital (WACC).

The assumptions made for these propositions to be true were:

- ✓ No taxes exist,
- ✓ No transaction costs exist,
- ✓ The markets are frictionless, i.e., the markets are efficient and there is no asymmetric information,

[1] Marc PAGANO, 2005, Working Paper No: 139 Centers for Economics and Finance, The Modigliani-Miller Theorems: A Cornerstone of Finance

- ✓ No bankruptcy Risk.

Too many critiques were made about the theory's assumptions; such as the ones about taxes or agency cost as made by Jensen and Meckling (1976), about a company's operating and investment decisions. Besides, its cash flows were not independent from its debt-equity ratio. The rise of stock options keeps managers focused on shareholder's value, etc.

About taxes, M&M published a correction paper in 1963; according to this paper, it was possible to create a value with debt in the case of taxes, it is tax shield.

Proposition I: $VL = VU + T_CB$

- *V_L is the value of a levered firm.*
- *V_U is the value of an unlevered firm.*
- *T_CB is the tax rate (T_C) x the value of debt (B)*

This means that there are advantages for firms to be levered, since corporations can deduct interest payments. Therefore leverage lowers tax payments. Dividend payments are non-deductible.

Proposition II: : $r_S = r_0 + B/S\ (r_0 - r_B) + (1+T_cB)$

- *r_S is the cost of equity.*
- *r_0 is the cost of capital for an all equity firm.*
- *r_B is the cost of debt.*
- *B / S is the debt-to-equity ratio.*
- *T_c is the tax rate.*

The same relationship stating that the cost of equity rises with leverage, because the risk to equity rises, still holds. The formula however has some implications for the difference from the WACC.

The following assumptions are made in the propositions with taxes:

- ✓ corporations are taxed at the rate T_C on earnings after interest,
- ✓ no transaction cost exist, and
- ✓ individuals and corporations borrow at the same rate

Another reason that capital structure matters in the real world is information asymmetries. Investors can be somewhat suspicious of equity offerings, managers may not be willing or able to tell all they know and drive down a company's stock price. This "insider's advantage" has been cited in much of the post-M&M literature as one of the reasons that decisions to issue debt or equity can affect the value of a company.

Information asymmetry phenomenon which takes important place in M&M literature is explained in detail in following pages.

The original M&M propositions are consisted of three closely related points[2]:

Proposition I: The value of a company is dictated first by the earning power and riskiness of its assets, not by how those assets are financed.

Proposition II: The cost of equity capital is an increasing function of leverage.

Proposition III: In the authors' words, "The type of instrument used to finance an investment is irrelevant to the question of whether or not the investment is worthwhile." Having shown capital structure to be irrelevant for the company as a whole, M&M then extends irrelevance to the individual investment. In M&M's ideal world, issuing debt to finance a new plant won't make it a more profitable investment than issuing equity.

The résumé of this story about choice between equity or debt is a little bit out of the subject of this research. The target of this study is defined as the timing of IPO, after having decided to finance by equity. This brief story about debt or equity financing is to mention the first step of financing decision. So the entrance is made by M&M theory which is very essential in finance literature. After that, the kinds of equity and debt financing are defined briefly, with their characteristics and their benefits to investors, in the following section. This makes us recognize potential IPO investors' alternatives

[2] http://pages.stern.nyu.edu/~adamodar/New_Home_Page/articles/MM40yearslater.htm

investments and possible actions according to financial indicators, as this is also so important for firms which have intention to go public for timing issue. Then financing by first public offering is looked over.

Types of financing are determined in the following section:

In classical point of view, there are two types of financing in which any business can raise money, debt or equity; however there are also some that have the characteristics of equity and debt called “hybrid securities”. While the distinction between debt and equity is made in terms of bonds and stocks, its roots lie in the nature of cash flow claims of each type of financing. Debt is defined as any financing vehicle that is contractual claim on the firm (not a function of operating performance), creates tax-deductible payments, has a fixed life, and has priority claims on cash flows in both operating periods and bankruptcy. Conversely, equity is defined as any financing vehicle that is a residual claim on the firm, does not create a any tax advantage from its payments, has an infinite life, does not have priority in bankruptcy, and provides managerial control to the owner. Any security that that has characteristics from both is a hybrid security.

Cash flows generated by the existing assets of a firm can be categorized as internal financing. Since these cash flows belong to the equity owners of the business, they are called **internal equity**. Cash flows raised outside the firm whether from private sources or from financial markets can be categorized as **external financing**. External financing can, of course, take the form of new debt, new equity or hybrids.

A firm may prefer internal financing to the external one for several reasons. For private firms, external financing is typically difficult to raise, and even when it is available (through a venture capitalist, for instance) it is accompanied by a loss of control and flexibility. For publicly traded firms, external financing may be easier to raise, but it is still expensive in terms of issuance costs (in the case of new equity) or lost flexibility (in the case of new debt). Internally generated cash flows, on the other hand, can be used to finance operations without incurring large transactions costs or losing flexibility.

(Aswath DAMADORAN, Chapter 7: Capital Structure: overview of the financing decision, page 17)[3]

Equity

Owner's Equity

The funds, brought to the company by the owners of the company, are referred as the owner's equity and provide the basis for the growth to the company. However, this is the first stage in a small firm's establishment and this is a financing type in a broad sense.

Venture Capital

These are funds made available for startup firms and small businesses with exceptional growth potential, especially in high-tech industries. This is a very important source of funding for startups that do not have access to capital markets. It typically entails higher risk for the investor, but it has the potential for above-average returns. Venture capitalists take concentrated equity positions. After beginning, they liquidate their position in financial markets; because of this, most venture capital funds have a fixed life of 10 to 15 years.

Common Stock

These are the securities representing equity ownership in a corporation, providing voting rights, and entitling the holder of a share of the company's, success through dividends and/or capital appreciation. In the event of liquidation, common stockholders have rights to the company's assets only after the bondholders, other debt holders, and preferred stockholders have been satisfied. Typically, common stockholders have the right to use one vote per share in election of the company's board of directors (although the number of votes is not always directly proportional to the number of shares owned. Common shareholders also obtain voting rights regarding on the company-related matters such as stock splits and company objectives. In addition to voting rights, common shareholders also enjoy what are called "preemptive rights". Preemptive rights allow common shareholders to maintain their proportional ownership in the company in the event that the company issues another stock offering. This means that common

[3] www.hss.caltech.edu/courses/2005

shareholders with preemptive rights have the right but not the obligation to purchase as many new shares of the stock as it would take to maintain their proportional ownership in the company.

Initial Public Offerings

Initial Public Offerings (IPOs) are the first time a company sells its stock to the public. If the corporation chooses to sell ownership to the public, it engages in an IPO. Corporations choose to "go public" instead of issuing debt securities for several reasons. The most common reason is that capital raised through an IPO does not have to be repaid, whereas debt securities such as bonds must be repaid with interest. Despite this apparent benefit, there are also many drawbacks of an IPO. One of the main drawbacks to go public is that the current owners of the privately held corporation lose a part of their ownership. Corporations weigh the costs and benefits of an IPO carefully before performing an IPO.[4]

A direct public offering (DPO), similar to traditional IPO, is a stock's introduction to the stock market. The stock is offered to the public for the first time. Unlike the IPO shares for which it is used an underwriter to sell to public, DPO shares are purchased directly from the issuing company. Individual investors have limited opportunities to participate in IPOs, so DPOs give an average person a chance to invest in a public offering. However, because DPOs are typically low-profile, it can be difficult to study and locate these offerings.

Besides, the sale of securities directly to institutional investors, such as banks, mutual funds, insurance companies, pension funds, and foundations are called as *Private Placement*. It does not require SEC registration in USA, provided that the securities are bought for investment purposes rather than resale

Seasoned-Equity Offerings

It is an issue of securities from an established company whose existing shares have exhibited stable price movements and substantial trading volume over time.[5] Once a firm is publicly traded, it can raise new financing by issuing more common stock, equity

[4] http://www.investorguide.com
[5] http://www.answers.com

options or corporate bonds. Additional equity offerings made by firms that are already publicly traded are called seasoned-equity issues.

Warrants

Warrants are long-term securities that give a holder the right to buy a stock at a specified price, known as the subscription price. They are similar to long-dated call options. If the current market value of a stock is greater than the subscription price, the warrant has intrinsic value.[6] Since their value is derived from the price of underlying common stock, warrants have to be treated as another form of equity.

Contingent Value Rights

A continent value right (CVR) provides the holder with the right to sell a share of a stock in the underlying company at a fixed price during the life of the right. Firm may offer a CVR when it believes that the stock is undervalued by the market. In this way it takes the advantage of this belief and send signal to the market about underestimation of the stock.

Besides, Employee Stock Ownership Plan (ESOP) and Direct Reinvestment Plans (DRIP) automatically transform employee compensation and shareholder dividends, respectively into shares. These are also some other ways of issuing equity by issuing securities that can be converted into equity later.

Debt

Bank Debt

The primary source of borrowed money for all private firms and many publicly traded firms has been commercial banks with the interest rate determined by these commercial banks is based on the perceived risk of the borrower.

Bonds

It is a debt instrument issued for a period of more than one year with the purpose of raising capital by borrowing. The Federal Government, states, cities, corporations, and

[6] http://en.wikipedia.org/wiki

many other types of institutions sell bonds. Generally, a bond is a promise to repay the principal along with interest (coupons) on a specified date (maturity). Some bonds do not pay interest, but all bonds require a repayment of principal. When an investor buys a bond, he/she becomes a creditor of the issuer. However, the buyer does not gain any kind of ownership right to the issuer, unlike the situation in the case of equities. On the other hand, a bond holder has a greater claim on an issuer's income than a shareholder in the case of financial distress which is the case for all creditors. Bonds are often divided into different categories based on tax status, credit quality, issuer type, maturity and secured/unsecured security (and there are several other ways to classify bonds as well). The yield from a bond is made up of three components: coupon interest, capital gains and interest on interest (if a bond pays no coupon interest, the only yield will be capital gains). A bond might be sold at above or below par (the amount paid out at maturity), but the market price will approach par value, as the bond approaches maturity. A riskier bond has to provide a higher payout to compensate for that additional risk.

Leases

A firm often borrows money to finance the acquisition of an asset required for its operations. An alternative approach that might accomplish the same goal is to lease the asset. In a lease, the right to use the property is given by the firm to another person in return for paying the firm a fixed payment. These fixed payments are either fully or partially tax deductible, depending upon how the lease is categorized for accounting purposes. (Aswath DAMADORAN, Chapter 7: Capital Structure: overview of the financing decision, page 10)[7]

Hybrid Securities

Convertible Debt

Convertible Debt is a corporate bond, usually a junior debenture that can be exchanged, at the option of the holder, for a specific number of shares of the company's preferred stock or common stock. Convertibility affects the performance of the bond in certain ways. First and foremost, convertible bonds tend to have lower interest rates than non-convertible ones because they also accrue value as the price of the underlying stock

[7] www.hss.caltech.edu/courses/2005

rises. In this way, convertible bonds offer some of the benefits of both stocks and bonds. Convertibles earn interest even when the stock is trading down or sideways, but when the stock prices raise the value of the convertible increases. Therefore, convertibles can offer protection against a decline in stock price. In some cases, convertibles may be callable, at which point the yield will cease.[8] Firms generally add conversion options to bonds in order to lower the interest paid on the bonds.

Preferred Stock

It is capital stock type which provides a specific dividend that is paid before any dividends are paid to common stock holders, and which takes precedence over common stock in the event of liquidation. Like common stock, preferred stocks represent partial ownership in the company, though preferred stock shareholders do not enjoy any of the voting rights of the common stockholders. Also unlike common stock, a preferred stock pays a fixed dividend that does not fluctuate, although the company does not have to pay this dividend if it lacks the financial ability to do so.[9] The main benefit of owning preferred stock is that the investor has a greater claim on the company's assets than a common stockholder has. Preferred shareholders always receive their dividends first and, in company's bankruptcy, preferred shareholders are paid off before common stockholders. It is not tax-deductible.

Option-Linked Bonds

If a commodity company issues bonds by linking the principal and/or interest payments to the price of commodity it is a commodity-linked bond. The benefit to issue a security like this is that it tailors the cash flows on the bond depending on the cash flows from its assets so; it reduces the possibility of default. It can be viewed as a combination of a straight bond and a call option on the underlying commodity.

[8] www.investorwords.com
[9] www.investorwords.com

Mezzanine Financing

Mezzanine capital has both the characteristics of equity and debt. It is debt loaned to your business that many times is not secured by hard assets. Mezzanine lenders are either institutions or lending groups who will loan money and work with management to help them to execute their business strategy. Mezzanine financing, also sometimes referred to as subordinated debt or financing, is a rarely used but viable financing option for small businesses in search of capital for rapid growth. Under this arrangement, an entrepreneur borrows some of the money that he or she requires to execute the next stage of company growth (whether through acquisition, expansion of existing operations, etc.), then raises additional funds by selling stock in the company to the same lenders. Mezzanine debt is usually unsecured or junior debt that is subordinate to traditional loans or senior debt.[10]

Between all these financing possibilities, to find the most preferred one by firms is the crucial question. The financing hierarchy survey and pecking order theory should respond to this question.

Hierarchy of Financing

There is evidence that firms follow a *financing hierarchy*: retained earnings are the most preferred choice for financing, followed by debt, new equity, common and preferred; and convertible preferred is the least preferred choice one. For instance, in the survey by Pinegar and Wilbricht, managers were asked to rank six different sources of financing - internal equity, external equity, external debt, preferred stock, and hybrids (convertible debt and preferred stock) - from most preferred to least preferred.

Survey Results on Planning Principles

Ranking Source	*Planning Principle cited*
1 Retained Earnings	None
2 Straight Debt	Maximize security prices
3 Convertible Debt	Cash Flow & Survivability

[10] http://business.enotes.com/small-business-encyclopedia

4 Common Stock	Avoiding Dilution
5 Straight Preferred Stock	Comparability
6 Convertible Preferred	None

One reason for this hierarchy is that managers value *flexibility and control*. To the extent that external financing reduces flexibility for future financing (especially if it is debt) and control (bonds have covenants; new equity attracts new stockholders into the company and may reduce insider holdings as a percentage of total holding), managers prefer retained earnings as a source of capital. Another reason is it costs nothing in terms of issuance costs to use retained earnings, it costs more to use external debt and even more to use external equity (Aswath DAMADORAN, Applied Corporate Finance-1999, Chapter 7: Capital Structure: overview of the financing decision, page 248-249).

Pecking Order Theory;

According to Myers (1984),

Contrast to the static trade-off theory, with a competing popular story based on a financing pecking order:

1) *Firms prefer internal finance.*
2) *They adapt their target dividend payout ratios to their investment opportunities, although dividends are sticky and target payout ratios are only gradually adjusted to shifts in the extent of valuable investment opportunities.*
3) *Sticky dividend policies, plus unpredictable fluctuations in profitability and investment opportunities, mean that internally generated cash flow may be more or less than investment outlays. If it is less, the firm first draws down its cash balance or marketable securities portfolio.*
4) *If external finance is required, firms issue the safest security first. That is, they start with debt, then possibly hybrid securities, then perhaps equity as a last resort. There is no well-defined target debt-equity mix, because there are two kinds of equity: internal and external, one at the top of the pecking order and at the other at the bottom. Each firm's observed debt ratio reflects its cumulative requirements for external financing.*

However, most companies start out by raising equity capital from a small number of investors, with nonexistent liquid market in which these investors wish to sell their stock. Because young firms frequently have much of their value represented by intangibles such as growth opportunities, rather than assets in place, outside investors face a difficult job of valuing them. With limited resources, however, the ability to grow rapidly will be constrained if external sources of capital are not used. Because of the discipline imposed by social networks, friends and relatives might be the next source of capital. The ability to disclose proprietary information to potential investors encourages the use of private financing, either from banks, "angels," or venture capitalists. Angel financing is the term used for capital provided by wealthy individuals who aren't part of formal venture capital organizations. If a company prospers and needs additional equity capital, at some point it generally finds desirable to "go public" by selling stock to a large number of diversified investors. Once the stock is publicly traded, this enhanced liquidity allows the company to raise capital on more favorable terms than to compensate investors for the lack of liquidity associated with a privately-held company. Existing shareholders can sell their shares in open-market transactions. With these benefits, however, some other costs arise. In particular, there are certain ongoing costs associated with the need to supply information on a regular basis to investors and regulators for publicly-traded firms. Furthermore, there are substantial one-time costs associated with initial public offerings that can be categorized as direct and indirect costs. The direct costs include the legal, auditing, and underwriting fees. The indirect costs are the management time and effort devoted to conducting the offering, and the dilution associated with selling shares at an offering price that is, on average, below the price prevailing in the market shortly after the IPO. These direct and indirect costs affect the cost of capital for firms going public.(Ritter, Initial Public Offerings, Contemporary Finance Digest Vol. 2, No.1 page1)

Besides, going public provides the firm with more capital while at the same time allowing the original owners to diversify their holdings. The publicly traded price also provides management and shareholders with important outside information about the firm's value. (*Roger G. Ibbotson Jody L. Sindelar, Jay R. Ritter* ***Initial Public Offerings****, Journal of Applied Corporate Finance volume 1-2 1988, p.38)*

About benefits of public markets, when we look into to the literature we see different claims;

Zingales(1995) claims that, entrepreneurs helps facilitate the acquisition of their company for a higher value than what they would get from an outright sale.

From another point of view Chemmanur and Fulghieri (1999) indicate that early in its life cycle a firm will be private, but if it grows sufficiently large, it becomes optimal to go public.

Being public adds value to a firm according Maksimovic and Pichler (2001), as it inspires more faith in the firm from other investors, customers, creditors, and suppliers. And they also add being the first in an industry to go public sometimes confers a first-mover advantage.

Pagano, Panetta, and Zingales (1998) find that larger companies and companies in industries with high market-to-book ratios are more likely to go public, and that companies going public seem to have reduced their costs of credit. They also find that IPO activity follows high investment and growth, not vice versa.

Ritter (1998) finds that for young companies, most or all of the shares being sold are typically newly-issued (primary shares), when with older companies, it is common that many of the shares being sold come from existing stockholders (secondary shares).

Beginning in the mid-1990s in U.S., a growing number of small companies have gone public without using an investment banker which have come to be called direct public offerings (DPOs). An advantage for an issuing firm of a direct public offering is the possibility of reduced costs. However, it lacks of underwriter putting its reputation on the line, especially as regards due diligence and valuation. But in Turkey, according to the regulations of CMB, it is not possible to issue equity directly to the public. The issuer must sell securities via underwriter.

These sample researches' results given above show that financing decision and way are not only related to outside factors as economic environment, but also to firms' age, size, financial aspect, industry, briefly to firms' self-characteristics. So financing method taken by firms is a very dimensional type of decision. However the scope of this study is based on the firms which had already decided to go public for the first time.

If the equity financing is driven, the essential question is “when to issue equity?” If we ask the question in a more specific way, the question is “when to issue equity for more successful public offerings?” Success comes from higher demand for IPO or more capital. This is a look from the equity issuer firm’s perspective. However at the other side, there are investors who seek for the company stock by which they can increase their wealth. So they want to buy undervalued stocks although the issuer firm wants to sell stocks at highest price. There is a conflict of interest. Investors are not obliged to buy, however companies have to sell their shares, if they do not postpone IPO. So if it is postponed, company can maintain more funds in the case of some developments about environmental conditions, general economy or investor’s expectations, as well as company’s performance. Therefore, IPOs’ performance is not only related to the firms’ specific conditions. “What are other factors?”, “When IPOs are increasing?”, “When the demand for IPOs are increasing?”, “Does the offering price reflect the value of the company?” are the important questions for which the responses are looked during the finance history.

During this study, an analysis enabling the comparison of IPO timing in Turkey and in other countries is conducted after exploring the studies made about this subject. Many researchers have developed some theories and have reached some results about IPOs during last 30 years. Some of them were interested with the pricing, aftermarket or long-horizon performance of IPOs, while some others attended to timing of IPO and hot markets or IPO waves. This study’s main purpose is to do research on the causes which have effect on swings of IPO.

Before introducing arguments about IPO timing, there are some essential phenomenons to explore as these are assessed many times with IPO waves.

Underpricing phenomenon reported by Ibbotson (1975) firstly and hot issue markets introduced by Ibbotson and Jaffe (1975) are cornerstones in IPO literature. Aftermarket performance, which is after first day to 3 or 5 years share price performance of IPO firms, is also broadly examined phenomenons in the literature. Underpricing, which will be explained in detail, is defined as IPO shares’ first day abnormal performance relative to the market. Hot issue markets refer to particular stock issues that have risen from their offering prices to higher than average premium in the aftermarket.

These periods are the ones where the volume of IPOs is also increasing. So, according to some studies, high initial return leads high volume and high number of IPOs.

Is underpricing the only incentive for going public or can there be other reasons for IPO waves? Or Can high market returns, increasing growth in general economy, high market to book ratio, high volatility…etc. be the puller on the trigger of IPOs in a country? The IPO literature including essential researches where these questions' responses were looked up are explained in detail in the following parts.

Asymmetric information, adverse selection and moral hazard are also important but more general anomalies that are touched on in IPO literature.

1.2 Main Phenomenons in IPO Market

1.2.1 Asymmetric information

It can be defined as information that is known to some people but not to other people.

Information asymmetries can move along a difference in the cost of internal and external finance, i.e. making internal net worth more valuable, holding constant investment opportunities (this is a 'lemon market' problem in valuation).

The classical argument is that some sellers with inside information about the quality of an asset will be unwilling to accept the terms offered by a less informed buyer. This may cause the market to break down, or at least force the sale of an asset at a price lower than it would command if all buyers and sellers had full information. This idea has been applied to both equity and debt finance.

In debt market, a borrower who takes out a loan usually has better information about the potential returns and risk associated with the investment projects for which the funds are earmarked. The lender on the other side does not have sufficient information concerning the borrower. Lack of enough information creates problems before and after the transaction occurred. The presence of asymmetric information normally leads to adverse selection and moral hazards problems.

For equity finance, shareholders demand a premium to purchase shares of relatively good firms to offset the losses arising from funding lemons. This premium

raises the cost of new equity finance faced by managers of relatively high-quality firms above the opportunity cost of internal finance faced by existing shareholders.

Models of asymmetric information assume that managers' private information gives them a superior ability to value their firm's common stock. This information advantage creates an adverse selection problem since firms can exploit valuation errors on the part of investors (*A window of opportunity for seasoned equity issuance? Bayliss and Chaplinsky p255).* At the same time, investors are aware of the information asymmetry problem, then, they view the equity issue as high risk for overvalued firm's announcement. So, it raises the cost of equity issue for firms that are not overvalued.

Information Asymmetry causes two issues worth to discuss.

Adverse Selection

Akerlof (1970) first noted adverse selection problem (sometimes referred to as the lemon problem), which arises from the inability of traders/buyers to differentiate among the quality of certain products.

The most cited example is the second hand car industry. Potential buyers of used car are not able to assess the quality of the car, since he lacks some information about the car. It can be a good used car, or a "lemon" which cause to have problem with it. Then the buyer is not willing to pay high price for the car, the price that the buyer pays must therefore reflect the average quality of the cars in he market, somewhere between the low value of a lemon and the high value of a good car. The seller knows if his car is lemon or a good car. If it's a lemon, he will sell his car at the price which the buyer wants to pay. In other case, he won't want to sell his car, so all the sellers whose car is peach will leave the market and only the lemons will stay in the market.

There are three components to this theory:

(1) There is a random variation in product quality in the market;

(2) An asymmetry of information exists about the product quality;

(3) There is a greater willingness for poor quality car seller to trade at low prices than higher-quality owners. Insurance and credit markets are areas in which adverse selection is important.

This refers to a situation in which sellers have relevant information that buyers lack (or vice versa) about some aspect of product quality. This is the problem created by asymmetric information before the transaction occurs.

In the simplest case, lenders cannot discriminate price (i.e. vary interest rates) between good and bad borrowers in loan contracts, because the risk of projects is unobservable. Thus, when interest rates increase, relatively good borrowers drop out of the market, increasing the probability of default and possibly decreasing lenders' expected profits. In equilibrium, lenders may set an interest rate that leaves an excess demand for loans. Some borrowers receive loans, while other observationally equivalent borrowers are rationed.

In IPO side, like the car market, only issuers at worse than average quality are willing to sell their shares at the average price to the investors. Investors don't want to pay for high price of high quality firms because of lack of information about the quality of firms. To distinguish themselves from the low quality firms, high quality issuers may signal their quality or leave the market without issuing. Better quality issuers deliberately sell their shares at a lower price than the market believes they are worth, which deters lower quality issuers from imitating. This situation may cause "underpricing" in IPO markets.

The solution for eliminating adverse selection problem in financial markets is to eliminate asymmetric information by furnishing people by supplying funds with full details about the individuals or firms seeking to finance their investments activities. However, the system of private production and sale of information does not completely solve the adverse selection problem in securities markets. The people who do not pay for information take advantage of the information that other people have paid for, by following those people having already paid for the information. In this way, the undervalued firms' securities' price will go up with the increased demand. So the investors having the information cannot buy the securities at low price. It is not meaningful to pay for the information as realized by these investors. If all investors realize this, private firms and individuals may not be able to sell enough of this information to make it worth. Then less information is produced in the marketplace, and so consequently adverse selection will be still interfering with the sufficient functioning

of securities market. This problem is called as **"free rider problem"**. The free riders are investors who do not pay for the information and follow the having ones.

Myers and Majluf (1984) suggest two ways in which the cost of adverse selection may be reduced. First, firms may experience lower adverse selection costs if investors interpret the equity issue decision favorably. They argue that firm-specific or macroeconomic conditions can effect investors' interpretation of the motivation to issue. Firms that appear to have an attractive investment project because of strong capital spending experience reduced announcement date prediction errors. They also suggest that adverse selection costs can vary if the discrepancy between managers and investors' information varies over time.

Ritter (2002) suggests another method; an issuer may reduce the degree of information asymmetry surrounding its initial public offering by hiring agents (auditors and underwriters) who, because they have reputation for capital at stake, will have the incentive to certify that the offer price is consistent with inside information. Repeating business gives underwriters a role that issuing firms cannot credibly duplicate. Consistent with this (but not with market efficiency), the long-run returns on IPOs underwritten by less prestigious investment bankers are low.

In general, models of asymmetric information suggest that the price reaction to equity issues is dependent on the ability of firms to signal their value and intent. For example, firm-specific characteristics such as high levels of capital spending may signal the presence of strong investment opportunities, while other characteristics such as high operating risk may indicate low debt capacity. These characteristics, therefore can condition investors to believe that equity is rational funding choice (**"Is there a window opportunity for seasoned equity Issuance".** Mark Bayless Susan Chaplinsky; Journal of finance, volume: 51, no:1 p. 254) This is a contradiction to the Myers and Majluf (1984) view such that asymmetric information results in information costs that have sufficient magnitude to force firms into a financing **"pecking order**". The argument that external financing transaction costs, especially those associated with the problem of adverse selection, create a dynamic environment in which firms have a preference, or pecking-order of preferred sources of financing. Internally generated funds are the most

preferred, new debt is the second one, debt-equity hybrids are the coming ones, and new equity is the least preferred source.

Moral Hazard

Moral hazard is the consequence of asymmetric information after the transaction occurs. The lender runs the risk that the borrower will engage in activities that are undesirable from the lender's point of view because they make it less likely that the loan will be paid back. The debt contract is a contractual agreement by the borrower to pay the lender a fixed amount of money at periodic intervals. When the firm has high profits, the lender receives the contractual payments and does not need to know the exact profits of the borrower. If the managers are pursuing activities that do not increase profitability of the firm, the lender does not care as long as the activities do not interfere with the ability of the firm to make its debt payments on time. Only when the firm cannot meet its debt payments, thereby being in a state of default, is there a need for the lender to verify the state of the firm's profits.

Related to IPOs, Kevin Rock (1986) indicates that the investor is compensated for his costly investigations into assets' value and becomes informed investor and gets the remuneration of mispriced stock. This is an asymmetric information case. If there are informed and uninformed investors in the market, informed investors will give order for underpriced securities but not for overpriced, then uninformed investors will receive rationed stocks for underpriced IPOs but all their order for overpriced IPOs. Then he will revise downward his valuation of new shares. He does not participate in the new issue market until the price falls enough to compensate for the "bias" in allocation. This phenomenon is called **"winner's curse"**. This is like the case in Turkey in previous years especially in 2004-2005. We can say that; then underwriter underprice the new IPOs for attracting uninformed investors and for avoiding potential loss, may be because of this, 2006 IPOs' initial returns were more successful in ISE. However Rock claims that issuers are uninformed too and the sufficient IPO discount cannot be known before issue. He indicates that issuer discloses 'material information' about its plans and activities to the market with prospectus. Indirectly, the firm and underwriter disclose their assessment of

the firm's financial future, besides; the firm and its agents know less than all the individuals in the market combined, so issuers are uninformed.

Nevertheless, Baker and Wurgler(2000) state that managers issue equity when they believe it is overvalued and repurchase equity or issue debt when they believe it is undervalued. Then temporary fluctuations have permanent effect on capital structure of firms. This is a contradictory argument to all underpricing theories, but in parallel with the theories of IPOs waves after high initial returns and stock market runups, since the stocks will be overvalued in IPOs. This is consistent with Lowry and Schwert's saying which is, IPOs volume increases after high initial returns periods.

1.2.2 Underpricing

Underpricing is a very important anomaly in IPOs in financial markets. Although either as the main subject or as a part of theory, underpricing will be seen in the coming parts of the thesis, it is better to start with a clear definition.

It is pricing of an initial public offering below its market value. When the offer price is lower than the price of the first trade, the stock is considered to be underpriced. A stock is usually underpriced only temporarily because the law of supply and demand will eventually drive it toward its intrinsic value. It is believed that IPOs are often underpriced because of concerns relating to liquidity and uncertainty about the level at which the stock will trade. The less liquid and less predictable the shares are, the more underpriced they will have to be in order to compensate investors for the risk they are taking. Because an IPO's issuer tends to know more about the value of the shares than the investor, the issuer must underprice its stock to encourage investors to participate in the IPO.

Ibbotson (1975) reports that as the initial performance of IPOs, a positive trend is present; however it is not enough to reject the hypothesis that an investor in a single random issue has an equal chance for a gain or loss. But the likelihood of positive returns is higher than compared to negative returns. In addition, he asserts that positive initial returns are not inconsistent with efficient market so it means that new issue offerings are underpriced.

Here are some scenarios suggested by Ibbotson (1975) about underpricing:

(1) Regulations require underwriters to set the offering price below the expected value.

(2) Underpriced new issues 'leave a good taste in investors' mouths' so that future underwritings from the same issuer could be sold at attractive prices.
(3) Underwriters collude or individually exploit inexperienced issuers to favor investors.
(4) Firm commitment underwriting spreads do not include all of the risk assumption costs, so that the underwriter must underprice to minimize these risks.
(5) Through tradition, or some other arrangement, the underwriting process consists of underpricing offerings with full (or partial) compensation via side payments from investors to underwriters to issuers.
(6) The issuing corporation and underwriter perceive that underpricing constitutes a form of insurance against legal suits. For example, errors in the prospectus may be less likely to result in legal suits when the stock's initial performance is positive.

Investment bankers generally underprice initial public offerings and are fairly open about the fact that they do. Why don't the offering firms express more outrage about the value left on the table by the underpricing?

According to Loughran and Ritter (2002), issuers don't get upset about leaving money on the table, because, the bad news that a lot of money was left on the table arrive at the same time that the good news of high proceeds and a high market price arrive. Because a lot of money is left on the table almost exclusively when it is packaged with good news, issuers rarely complain.

However, Reuter' (2006) findings report that mutual fund families retained the majority of the dollars left on the table in 1999. Besides since lead underwriters are able to capture some part of the dollars left on the table by underpricing through incremental brokerage business coming from investors seeking shares in IPOs, issuers should be upset for leaving money in the table.

In addition to all these, Ibbotson and Sindelar (1994) attracts attention that when equally weighted computed average initial return tends to be overstated since smaller and lower priced issues tend to be underpriced by more in the short run.

In addition to Ibbotson's scenarios about underpricing listed above, there are some other theories of underpricing suggested during the years:

Reasons for Underpricing

a) Lemons Problem (adverse selection) in the Market

Rational investors are anxious about lemons problem; only issuers with worse-than-average quality are willing to sell their shares at the average price. To distinguish themselves from the pool of low-quality issuers, high-quality issuers may attempt to signal their quality. In these models, better quality issuers deliberately sell their shares at a lower price than the market believes they are worth, which deters lower quality issuers from imitating.

b) The winner's curse hypothesis

If the demand for stocks is strong, the rationed number of shares will be allocated to the investors; so the uninformed investors will have rationed shares if the share is undervalued but all the order if they are overvalued, since informed investors don't want to have overvalued shares. This is an important phenomenon for underpricing.

c) The market feedback hypothesis (Dynamic Information Acquisition)

Benveniste and Spindt (1989), Benveniste and Wilhelm (1990), and Spatt and Srivastava (1991) argue that the common practice of "bookbuilding" allows underwriters to obtain information from informed investors. When bookbuilding is used, investment bankers may underprice the IPOs to induce regular investors to reveal information during the pre-selling period, which can then be used to assist in pricing the issue. This is like a renumeration for investors which assist in valuation period.

- *Bookbuilding* means that the lead investment banker takes potential buyers and records who is interested in buying how much at what price. In other words, a demand curve is constructed. The offering is then priced based upon this information.

Ritter(1998) finds that countries using fixed price offerings typically have more underpricing than in countries using book-building procedures.

Furthermore, Sherman (2000) noted that the average level of underpricing required to induce information revelation is reduced if underwriters have the ability to allocate shares in future IPOs to investors. Sherman and Titman (2002) argue that there is an equilibrium degree of underpricing which compensates investors for acquiring costly information.

d) The bandwagon hypothesis

If some potential investors decide to buy according to not only their own information about a new issue, but also other investors' purchase, bandwagon effects may develop. If an investor sees that no one else wants to buy, he or she may decide not to buy even when there is favorable information. To prevent this to happen, issuer or investment bank may want to underprice an issue to induce the first few potential investors to buy, and start a bandwagon, or cascade, in which all subsequent investors want to buy irrespective of their own information.

e) The investment banker's monopsony power hypothesis

Investment bankers take advantage of their superior knowledge of market conditions to underprice offerings, which permits them to make less marketing effort and ingratiate themselves with buy-side clients. The investment bankers assure that people believe underpricing is a normal phenomenon for the market.

However; Muscarella and Vetsuypens (1989) examine the investment bankers which go public find that; for the 38 investment banks that went public during 1970-87, the average initial return was 7.1 percent-an amount of underpricing comparable to that of other similar size IPOs. Ibbotson Sindelar and Ritter(1988) interpret this fact that presumably well-informed investment bankers also appear to underprice their own IPOs suggests that there may indeed be an "equilibrium" level of underpricing–a level which issuers, underwriters, and investors thus appear to accept as necessary to the process.

Besides, venture capital firms invest in many companies that they expect to go public in the future; and accordingly they may wish to underprice current new issues if it

makes easier, in the future, to sell other new issues that they have financed. However, Christopher Barry, Chris Muscarella, John Peavy, and Michael Vetsuypens (Venture Capital and Initial Public Offerings) have found that venture capital-backed IPOs are underpriced by approximately the same amount as other IPOs of comparable size. This finding is inconsistent with the argument of underpricing reflects the systematic exploitation of disadvantaged issuers by underwriters, which would predict lower underpricing of venture capital-backed issues. (Roger G. Ibbotson, Jody L. Sindelar, Jay R. Ritter, 1988 "Initial Public Offerings" Journal of Applied Corporate Finance 1-2)

f) Implicit Insurance Hypothesis

Baron (1982) offers a different theory, similar to monopsony hypothesis, but differently from that, the issuer has less information than underwriter, to induce underwriter for the best effort, issuer accepts underpricing, because the issuer cannot monitor the underwriter without cost.

Muscarella and Vetsuypens (1989), however, find that when underwriters themselves go public, their shares are just underpriced even though there is no monitoring problem. They may want to underprice their own offerings in order to make the case that underpricing is a necessary cost of going public as in the monopsony theory.

At the other hand, Rajan and Servaes (2002) tried to explain underpricing with market conditions and find that it increases when investor sentiment (price insensitive part) decreases and feedback risk (demand of trend chasers who decide according to past price movements) increases.

These theories are based on asymmetric information hypothesis, while there are also some possibilities in symmetric information case;

g) The lawsuit avoidance hypothesis

This theory is based on the liability of the prospectus and since the price is in prospectus, one way of reducing the frequency and severity of future lawsuits is to underprice. Tinic (1988) argue that issuers and underwriters underprice to reduce their legal liability. He supports this argument, by reporting IPOs issued after Securities Act of

1933 exhibiting larger initial excess return than the IPOs before the Enactment of Securities Act where the liabilities of issuers and underwrites increased. Ibbotson (1975) also suggests that the regulations described in the Securities Act of 1933 and the Securities and Exchange Act of 1934 affect the initial performance of IPOs. On the other hand, Ritter (2002) asserts that leaving money on the table appears to be a cost-ineffective way of avoiding subsequent lawsuits.

However, Drake and Vetsuypens (1993) find that IPOs had average initial returns similar to control firms that did not get sued, where Ibbotson and Sindelar (1994) claim that legal liability considerations are at most a minor reason for underpricing.

In Turkey, CMB registers the securities of the firm if the prospectus reflects the truth or it is reliable, but is not interested in price, i.e., doesn't control the valuation methods or check the price if it is overvalued or undervalued. It is the business of the potential investors. If investor believes that IPO is overvalued, he will most probably not buy.

h) The signaling hypothesis

By underpricing in first issue, issuers guarantee seasoned offerings to be successful in the future. They follow a dynamic issue strategy, in which the IPO will be followed by a seasoned offering. However, various empirical studies show that the hypothesized relation between initial returns and subsequent seasoned new issues is not present.

ı) The ownership dispersion hypothesis

Issuing firms may intentionally underprice their shares in order to generate excess demand and so be able to have a large number of small shareholders.

j) Risk-Averse Underwriter Hypothesis

Especially for firm commitment IPOs, investment bank or underwriters underprice the shares for eliminating unsuccessful issue risk. In best efforts issue, for reputation of the underwriter, it may be present too.

In addition to these theories, sometimes *Regulatory Constraints;* as Underpricing in IPOs may be caused by regulatory requirements that offering prices be set lower than they otherwise would be or *Political Motives;* as issuers as well as investment bankers may be able to use allocations of underpriced IPO shares to pursue political objectives can be the causes of underpricing.

Jonathan Reuter (2006) implicitly shows that, underpricing is a result of favoritism made by underwriters to mutual funds. *The favoritism hypothesis* says that lead underwriters will use allocations of underpriced IPOs to reward those institutions with which they have strong business relationships.

Moreover, Ljungqvist (Pricing initial public offerings: Further evidence from Germany. European Economic Review 41) reports that a positive macroeconomic climate raises the average amount of underpricing.

In this part, overallotment option is defined, as it has important effect on the first month price performance of stock offering.

Overallotment options and stabilization

Overallotment option is an agreement with which the issuer gives the investment banker the right to sell up to 15% more shares than guaranteed. The overallotment option is also called the Green Shoe option, since the first offering example was the February 1963 offering of the Green Shoe Manufacturing Company. The advantage of preselling extra shares is that if many shares are "flipped," that is, immediately sold in the aftermarket by investors who had been allocated shares, the investment banker can buy them back and retire the shares, just as if they had never been issued in the first place, just as stabilizer. While it is generally illegal to manipulate a stock price, investment bankers have legal authority make "stabilizing" bid after IPOs for a specified time period. (Initial Public Offerings, Jay R. Ritter 1998, Warren Gorham & Lamont Handbook of Modern Finance p.21)

1.2.3 Hot Issue Markets

"Hot issues" refer to particular stock issues that have risen from their offering prices to higher than average premia in the aftermarket[11]. Hot issue markets are defined as average first month or aftermarket performance of new issues is abnormally high. Ibbotson and Jaffe (1975) focus on the prediction of "Hot issue" markets. They test the dependency of new issue premia (and aftermarket performance) in a given month on the premia (and aftermarket performance) of other new issues in the past months and then they examine the relationships between new issue premia, aftermarket performance, the frequency of offerings, and the performance of the markets. Finally the results for implications to the investors and issuers are analyzed.

The existence of serial dependence in the series of average first month residuals (residual is the difference between the return of the new issue in the first month and market return) is investigated since it allows to predict the level of the first month performance in the future months, besides serial dependence in the series of average second month residuals are measured for testing the predictability of aftermarket behavior. According to the results, the first month series exhibit strong serial dependency, this means "hot issue" markets are predictable. The second month series are dependent but weaker than the first month's series. This suggests that hot issue aftermarket is predictable. The first month differenced series exhibited negative dependency suggests that the first month series is a stationary[12] process, not a random walk.

Ritter (1984) finds as Ibbotson that IPOs are underpriced on average. Ritter (1998) finds the first order autocorrelation coefficient for the time series of monthly average initial returns as 0.62 and the first order autocorrelation coefficient for monthly volume figures as 0.88. Ibbotson, Sindelar and Ritter (1988)'s research the first order autocorrelation of monthly average initial returns is 0.62 for the full 28-year period (1960-1987; Roger G. Ibbotson and Jody L. Sindelar (1994) find that it is 0.66 for the period 1960-1992). As for the Howe and Zhang's (2004) results for the period 1973-

[11] Ibbotson (1975)
[12] A *stationary* time series is one whose statistical properties such as mean, variance, autocorrelation, etc. are all constant over time.

2002, the autocorrelation of monthly number of IPO series is 0.820 at lag 1 and 0.410 at lag 12.

The relationship between new issue premium of an issue and its aftermarket performance is investigated, in Ibbotson and Jaffe's research as well. According to regression result, the data does not suggest that any abnormal first month performance is erased in the second month. Neither they nor McDonald and Fisher (1972), Reilly and Hatfield (1979) do not find any negative relation between first month and aftermarket performance. And also, the relationship between new issue premia and past market performance's investigation shows there isn't any relationship.

In his work "Stock Price Performance of New Common Stock New Issues", Ibbotson finds that the distribution of initial returns was highly skewed, with a positive mean and a median near zero for the 120 IPOs during the period 1960-1969.

Possible explanations about hot issue markets made by some authors are as following (The Market's Problems With the Pricing of Initial Public Offerings Roger G. Ibbotson and Jody L. Sindelar, Journal of Applied Corporate Finance volume 7.1 (1994), p.72);

Changes in Firm Risk:

Jay R. Ritter, "The 'Hot Issue' Market of 1980," has hypothesized that, since riskier issues tend to be underpriced to a greater extent than their less risky counterparts, "changing risk composition" might be able to account for the dramatic swings in the average initial returns.

Positive Feedback or "Momentum" Strategies:

Some investors follow "positive feedback" strategies, in which they assume that there is positive autocorrelation in the initial returns on IPOs. These investors are willing to bid up the price of an issue once it starts trading if other recent issues have risen in price. If enough investors follow such a strategy, they may end up causing the expected positive autocorrelation of initial returns in a kind of self-fulfilling prophecy.

Windows of Opportunity

Hot issue market cycles may exist because there are periods when IPOs can be sold at relatively higher price earnings and market-to-book ratios, or at higher levels

compared to other measures of value. This induces higher volume of new issues, and a relative willingness on the part of issuers to sell the offerings below the aftermarket price.

Besides, if there are some periods where investors are overly optimistic, it is easy to see hot issue markets.

1.2.4 Aftermarket Performance

Another essential phenomenon taken into consideration in researches related with IPOs is aftermarket performance. This subject has attracted significant attention especially after underpricing is explored in many studies.

According to the researches conducted about long-run performance of IPOs, there are unexpected results in the long-run:

The table taken from Lougrhan and Ritter's research (1995) in which 5 year stock price performance of initial public offerings and seasoned equity offering firms with nonissuing firms were compared shows the aftermarket performance of IPO's in some countries.

Table 1: Aftermarket Performance of IPO's

Country	Authors	Number of IPOs	Period	Aftermarket Performance
Germany	Ljunqwist	145	1970-90	-12.10%
Australia	Lee, Taylor ve Walter	266	1976-89	-46.50%
Austria	Aussenegg	57	1965-93	-27.30%
Brazil	Aggarwal, Leal and Hernandez	62	1980-90	-47.00%
Canada	Jog	130	1971-92	(-35.15%)-(-43.66%)
Chile	Aggarwal,Leal and Hernandez	28	1982-90	-23.70%
Korea	Kim, Krinsky ve Lee	99	1985-88	2.00%
USA	Loughran ve Ritter	4753	1970-90	-20.00%
Finland	Keloharju	79	1984-89	-21.10%
Japan	Cai ve Wei	172	1971-90	-27.00%
UK	Levis	712	1980-88	-8.10%
New Zealand	Michael Firth	143	1979-87	-10.00%
Switzerland	Loughran, Rydqvist and Ritter	162	1980-90	1.20%

As it is seen in the table the long-run performance of new issues is not attractive. Some other researches conducted about this subject are given below:

Koroli and Suret (2001) find that in first issues in Canada in 1991-1998 period, investors had negative return after 5 years of initial offering, although there was 20,57% return in first trading day in average.

According to the Eric Brown (1999)' work about the aftermarket performance of IPOs in UK between 1990-1995, the three year performance of 232 IPOs was %54 in average, however this return computed by "Buy and Hold Strategy (BHAR)" was %-20,94 abnormal.

Stoll and Curley (1970) find that IPOs have high initial returns but poor aftermarket performance.

Buser and Chan (1987) report that in the period the 1981-1985, 1078 IPOs stock returns had 6,2% initial return and 11,2% of return within two years. Their findings are different such that IPOs do not underperform in the long-run.

Finn and Higham (1988) find that in Sydney Exchange, between the years 1966 and 1978, 93 firms' stock which are issued for the first time had 29,2 % initial returns and %6,5 aftermarket returns. This long-run performance is very low compared to first day return.

Finn and Uhlir (1989) report that in Frankfurt Exchange, within the period of 1977-1987 the first performance of 97 IPOs' stock was 21,5 %, whereas one year performance was below %7,4 than indices.

Ritter (1991), in his detailed work, documents that 1526 stocks issued for the first time in New York Stock Exchange between 1975-1984 have a 14,3% first day return in average, continue with positive return until the end of second month after the issue day and drop starting from the end of second month.

In some researches, the aftermarket performance is analyzed or evaluated with other factors. In a study like this, Rajan and Servaes (1997) argue that firms with higher projected earnings-growth of analysts underperform compared to their benchmarks, in contrast, firms with the lowest growth projection outperform. So aftermarket underperformance is related to analysts' overoptimism.

As recognized from the studies which examine the aftermarket performance of IPO firms, the aftermarket performance of new equity offerings is very low. But Loughran and Ritter (1995), in addition to aftermarket performance of IPO's, look for the response of relative performance of IPO's and seasoned equity offerings. They compare the results with the benchmark of non-issuing firms' performance.[13] They find that IPO or SEO significantly underperform relative to nonissuing firms for five years after the offering date; an investor would have invested 44% more money in the issuers than in nonissuers of the same size to have same wealth five years after the offering date.

Bayless and Chaplinsky (1996) also try to respond, whether this poor performance is return reversal, since most SEOs occur after a period of high returns. But they find that extreme winners that do not issue dramatically outperform extreme winners that do issue. Besides, they document that the degree to which issuing firms underperform varies over time and the firms issuing during low volume of issue do not underperform much at all, whereas firm selling stock during high volume periods underperform more. This is very important point which shows that during high volume periods, the stocks may be overvalued.

They report that this relative poor performance of issuers in the long-run is not attributable to differences in beta or to book-to market ratio. They also suggest that firms take advantage of windows of opportunity by issuing equity, when, on average, they are substantially overvalued.

Ritter (1998) find that for IPOs that are stabilized, on average the price drops by about 4% in average, during the subsequent month. For the roughly two-thirds of issues that aren't stabilized, there is a slight uptrend in price during the month after the issue. He also finds that when all IPOs are grouped together, the downtrend for stabilized issues and the uptrend for other IPOs tend to cancel out. Thus, in average, there is so little possibility for an abnormal performance, in the months after an IPO's first day of trading. For IPOs that increase on the first day, trend is mostly to have a positive momentum during the following six months. This is especially true when there is relatively little

[13] They choose matching firm that not issued stock within the last five years and closest to issuer firm market capitalization.

flipping by institutions on the first day. (Initial Public Offerings, Jay R. Ritter 1998, Warren Gorham & Lamont Handbook of Modern Finance p.21)

Nevertheless, Ritter (1998) find that, most firms going public have relatively high market-to-book ratios, and most of them are small capitalization stocks. Small growth stocks have very low returns in general, besides, if IPOs are compared with nonissuers that are chosen on the basis of market-to-book ratios and size, the underperformance is less than the situation where the nonissuers are chosen on the basis of only size. He also states that the underperformance is concentrated among firms that were younger and that went public in the heavy-volume years. IPOs that are not associated with venture capital financing, and those that are not associated with high-quality investment bankers, also tend to do poorly.

As misvaluation of IPOs, Jain and Kini (1994) show that for 682 firms going public during the period 1976-1988, the median operating cash flow-to-assets ratio falls dramatically within three years after going public. Mikkelson and Shah (1994) also report that sales grow but total cash flows doesn't grow sufficiently to justify high valuations at the time of offerings. Megginson (2000) report that in period the 1990-1996, although the profitability and real sales increase after privatization of 85 firms by selling shares to public, the operating performance drops after IPOs.

Schultz (2001) makes another explanation if the IPOs go on successfully they are followed by an increasing number of IPOs. However, the last large groups of IPOs that are a relatively large fraction of the sample underperform. And also if underperformance is measured by weighting each IPO equally, it is examined that the high volume periods carry a larger weight, resulting in underperformance, in average.

Another finding is that share price drops at the end of the lockup period as Bradley, Jordan, Roten, and Yi (2001), Field and Hanka (2001), and Brav and Gompers (2002) document. **"*Lockup Period***" is the period (3 to 6 months after the first issue) where pre-issue shareholder cannot his shares. Then in this way the aftermarket performance becomes low.

The theories about poor long-run performance are:

a) The divergence of opinion hypothesis

One argument is that investors who are most optimistic about an IPO will be the buyers. If there is a great deal of uncertainty about the value of an IPO the valuations of optimistic investors is much higher than those of pessimistic investors. As time goes on and more information becomes available, the divergence of opinion between optimistic and pessimistic investors becomes narrow, and consequently, the market price drops.

b) The impresario hypothesis

The "impresario" hypothesis argues that the market for IPOs is subject to fads and that IPOs are underpriced by investment bankers (the impresarios) to create the appearance of excess demand. This hypothesis predicts that companies with the highest initial returns should have the lowest subsequent returns.

c) The windows of opportunity hypothesis

The windows of opportunity hypothesis predicts that firms going public in high volume periods are more likely to be overvalued than the other IPOs.

However, some research and comments show that it is crucial to be careful in evaluating aftermarket performance when it is compared to the market. Long-run returns, even if remarkably low, are sufficiently noisy to make any statistical inference says Ritter and Welch (2002) and they give the example of Brav's (2000) research where -40% abnormal return shouldn't be accepted as underperformance since non-IPO firms with similar size and book-to market ratio performed poorly as well. However, despite such examples, it is not enough for being able to reject the reality of IPOs' underperformance in the aftermarket.

On the other hand, the recent bubbles in US including internet firms IPOs makes this aftermarket performance phenomenon more puzzling. Even if there is systematic long-run underperformance, it is difficult or impossible to exploit it in a reliable and consistent manner, as seen in the example of many short sellers who loss a great deal of money on internet bubble IPOs.

2 Literature Review

Some researches about underpricing and long-run performance are mentioned in the previous parts of the dissertation. In this part, mostly studies that are interested in timing in IPO markets are presented in addition to the research results about underpricing and long-run performance and other important theories related to IPO markets. Because these anomalies are not completely dependent from each other, it seems crucial to interpret them together.

Ibbotson and Sindelar (1994) argue that there are three anomalies associated with IPOs: (1) first-day returns that average 10-15% (2) cycles in both the volume of new issues and the magnitude of first-day returns, and (3) long-run underperformance. According to them, these anomalies are interrelated such that periodic overoptimism by investors creates "windows of opportunity" which results in poor long-run performance. In contrast, firms that issue during low-volume periods typically experience neither high initial price run-ups nor subsequent long-run underperformance. And more importantly, they add that these anomalies are much more seen for smaller, younger companies that are going public. This is consistent with evidence suggesting inefficiencies in markets for smaller-cap stocks.

For long-run underperformance, they state that the young firms perform poorer; which is consistent with the higher average initial returns of young and small companies, since higher initial returns lead to long-run underperformance. On the other hand, Shiller (1990) finds that the long-run performance of IPOs should be negatively related to the short-run underpricing. Surprisingly, the long-run underperformance was present for the firms that go public during the high-volume years whereas it was absent for cold-issue markets. Loughran and Ritter (2002) find that the underperformance of IPOs lasts a full five-year period after the offering.

Ibbotson and Sindelar want to show that young and small companies' long-run performance is normally poor. Besides, windows of opportunity which also creates hot IPO markets cause lemon problem, so the long-run performance is poor. Long-run performance difference between hot and cold market prove this argument. When investors are overoptimistic, the information asymmetry supports this phenomenon.

Myers and Majluf (1984) also develop their theory in timing according to asymmetric information approach:

They start by explaining the negative price reaction in issue announcement; if the managers have favorable inside information, if it acts in the interest of old stockholders[14], they will not issue share even there is a good investment opportunity on the table. The cost of equity issuing to old shareholders may outweigh the project's NPV. As it can be expected, investors know their ignorance and interpret the firm's decision not to issue as good news and to issue as bad or less good news. Of course this affects the price investors are willing to pay. On the other hand, Miller and Rock (1982), in their model of dividend policy under asymmetric information, explain that if the amount of investment and external financing is held fixed, the cash dividend paid by the firm reveals larger than expected cash flow, and stock price increases. A larger than expected external financing reveals lower than expected cash flow to the firm, which is bad news for investors. So new issue announcement cause to stock price drop.

In Myers and Majluf's model, the firms and old stockholders are comfortable when the financial slack[15] is high, because the lack of lack means the loss of chance to issue security when it is overvalued, since the investors know the requirement to issue equity for firm, which is a bad signal for the market. They suppose that it can be time for equity issue, when value of assets in place is low and overvaluation is high.

Financial slack may be increased by restricting dividends when investments requirements are modest or by issuing equity when asymmetric information is reduced according to Myers and Majluf.

From another perspective, Rock (1986) claims that high initial return is not the result of overoptimistic demand but the compensation for high uncertainty.

About hot issue markets of 1980's, Ritter (1984) makes an implication of Rock's model which says if the uncertainty is high the underpricing is also high for compensating the investors for this uncertainty. He argues that if there is autocorrelation in the risk composition of firms conducting IPOs, then the realized average initial returns should be autocorrelated as well. He finds that for the 1977-1982 period, the higher risk

[14] Stockholders before new issue
[15] Cash, liquid, assets or unused borrowing power

(means lower sales in Ritter's model) firms have substantially higher average initial returns than the larger firms have, consistently with Rock's hypothesis. The heteroskedasticity implication of Rock is also supported; higher risk categories (depending on firms' size according to their sales figures) have greater variation of the initial returns. However for hot issue markets, there is no evidence for supporting this hypothesis; for each category of sales, average initial returns is higher during hot issue periods. When Ritter separates 1977-1982 period into two categories, one with natural resource and one non-natural resource IPOs, average initial returns were much higher during the period when oil sector's market value peaked, however there was any evidence that hot issue market occurred. So, underpricing and hot issue markets can be present in industry basis according to him.

Besides, Ritter shows that, the hot issue market for natural resource in 1980s with strong evidence was because of monopsony power hypothesis. There was no evidence for institutional lag hypothesis and speculative bubble hypothesis.

Most importantly, Ritter interprets the difference between the behavior of natural resource and non-natural resource sectors as strong evidence of market segmentation. There is small degree of underpricing for established firms. So, while this expected underpricing appears to have cyclical component, the amplitude of the cycle is relatively small, so that issuing firms do not have to be overly concerned with market-timing considerations.

Ritter speaks about two possible scenarios for what happens at the end of hot market, when the volume of IPOs increases and when average initial returns are low. The first possibility is that low return is the result of the decreased demand. Ritter indicates that this is not a good time for going public. The other possibility is that investment bankers are valuing IPOs at higher multiples, so with unchanged demand, less money is left on the table. This is the best time for going public. Since he finds strong evidence for monopsony power hypothesis, his result is clear: For issuing firms, the best time going public is after hot issue markets when the volume is high.

Ritter, in his study made in 1998, finds that, earnings per share of the companies that are going public typically grow rapidly within the years before to go public, but then

actually decline in the first few years after the IPO. During the first two quarters after going public, firms rarely have negative earnings surprises. It is an important indicator of information asymmetry.

In addition, Ritter and Welch (2002) say that, in the 1960s and 1970s, it was unusual for a prestigious investment banker to take a firm public that did not have at least four years of positive earnings. In the 1980s, four quarters of positive earnings was still standard. In the 1990s, fewer and fewer firms met this threshold. However, they find that the increase in the fraction of firms with negative earnings is not a primary cause of the increase in underpricing over time.

About underpricing and IPO waves again, Loughran and Ritter (2002) find that, money left in the table in IPOs, defined as the number of shares sold times the difference first-day closing price and the offer price, is 9.1 million USD in average. So issues are not overvalued according to Lougrhan and Ritter. This amount was 27 million for the period of 1990-1998. Krigman, Shaw and Womack ("Why do Firms Switch Underwriters?", Journal of Financial Economics 60, 2001) report that issuers retain the lead underwriters for subsequent offerings, although there were severe underpricing in their IPOs. This shows that leaving money on the table don't disturb issuers. Loughran and Ritter argue that the prospect theory explains this puzzle. Prospect theory suggests that issuer care about the change in their wealth rather than the level of wealth, so preissue shareholders are comfortable with the increase in the price of retained shares. Because of this, issuers bargain more with underwriter for IPO price when demand is unexpectedly weak. They also report that the IPOs leaving most money on the table are whose their offer price revised upward.

Prospect theory says that people value gains and losses differently and, as such, they base their decisions on perceived gains rather than perceived losses. Thus, if a person were given two equal choices, one expressed in terms of possible gains and the other in possible losses, people would choose the former. It is also known as "loss-aversion theory".

In addition, Loughran and Ritter claim that average first day return is predictable based on public information, i.e., market movement. Since first-day returns are predictable based on lagged market returns and lagged market returns are correlated for

IPOs whose preselling period overlaps, this produces autocorrelation in first day returns. They try to develop an equilibrium model for Ibbotson's hot issue markets theory, by determining the cause of autocorrelation of first day-returns. In addition, they claim that hot and cold issue markets are the result of book-building method.

In parallel to Lougrhan and Ritter's arguments, Lowry and Schwert (2002) show that there a significant positive relation between initial returns and future IPO volume, so increased numbers of companies go public after observing that IPOs are being underpriced by the greatest amount.[16] They reach negative correlation between current initial returns and past numbers of IPOs, along with strong positive correlation between current initial returns and future numbers of IPOs. Like Ibbotson and Jaffe (1975), they find that both the number of IPOs and the average initial returns are highly autocorrelated. Besides, they announce that the behavior of the number of IPOs is not the result of variation in registration times. Ritter (1998) also states that high initial returns tend to be followed by rising IPO volume.

For the high initial returns' explanation, once again Loughran and Ritter's (2002) prospect theory explanation should be mentioned. It argues that initial returns are related to public information that becomes available during the registration period. In addition, Hanley (1993) finds that initial returns are related to private information learned in this period. Van Bommel and Vermaelen (2000) show that firms with higher initial return spend more money on investment after the IPO, suggesting that initial returns are positively related to the market's assessment of the firm's prospects. By the same way, Stoughton, Wong, and Zechner (2001) find that firms with higher first-day returns should gain larger market share in the product market. So, as Benveniste, Busaba, and Wilhelm (2002) note that the information produced by firms that go public influences not only their own production decisions but also those of their rivals; the decision to go public is also related to rival firms' action.

These results give the idea that the initial returns' correlation is significant between the same type of firms and the number and timing of IPOs should be influenced by firm type and industry or sector. Not surprisingly, Lowry and Schwert find that the

[16] Initial returns equal the difference between the underwriters' valuation of the firm, as represented by the offer price, and the secondary market's valuation.

serial correlation in initial returns is entirely driven by changes in the types of firms that go public over time and by information that becomes available during the registration period but is only partially incorporated into the offer price.

Importantly, they show that the level of recent average initial returns contains no information about the expected underpricing of new IPOs. It is to say; firm cannot determine the level of underpricing by timing of IPOs. Then, the average initial returns of these firms are largely unpredictable.

Consistent with their prior findings (2002, Lowry and Schwert, Working papers), they find that the price update has an asymmetric effect on initial returns. Thus, the initial return responds more to positive price updates than to negative price updates. Investment bankers and issuing firms incorporate negative information more fully into the offer price than positive information. This is consistent with underwriters trying to avoid losses on overpriced issues while allowing informed investors to share the gains on underpriced issues.

They also find that high initial returns are associated with longer registration times in future months. Essentially, this result seems strange since it is possible that high initial returns lead so many companies to file IPOs rapidly and decrease in the registration period of IPOs; however as in the case of Turkey IPO market, there are high number of applications for registration in hot periods and CMB[17] can not be able to process the registration statements in a timely manner, or that investment banks cannot provide service to all of these firms simultaneously, resulting in longer registration period.

Lowry and Schwert decompose initial return to the expected and unexpected part, and find that expected initial return has little power to predict number of IPOs but the unexpected initial return is a highly significant predictor. This means that the relevant information must be related to either information learned during the registration period or to the incremental information provided by the secondary market at the time of the offer, but not to the types of companies going public. When the information which becomes available during a new offering's registration period, is positive, company experiences a positive initial return and a larger number of other companies choose to go public, resulting in an increase in the numbers of subsequent filings and offerings.

[17] Capital Markets Board of Turkey

Ibbotson, Sindelar and Ritter (1988) prove in their research one more time that following hot periods, there tend to be periods of "heavy" volume accompanied by relatively low initial returns (and thus less underpricing). They also find that the cycles in underpricing allow one to predict next month's average initial return based upon the current month's average with a high degree of accuracy. The first order autocorrelation of monthly average initial returns was 0.62 for the full 28-year period (1960-1987); in their following study, Ibbotson and Sindelar found that it was 0.66 for the period 1960-1992. In addition to this, the persistence of volume from month to month was even stronger, the first-order autocorrelation of monthly volume was 0.88; Ibbotson and Sindelar (1994) find that it was 0.89 for the period 1960-1992. High-volume months are almost always followed by high-volume months, with the exceptions being associated with sharp market drops, such as October 1987 crash.

As it is recognized from researches presented, there is powerful relationship between IPO density and initial return performance of IPOs. Hot IPO markets and high initial returns are all events which bread each other.

Ibbotson, Sindelar and Ritter also measured the correlation between the average initial return and the number of new offerings. The correlation using contemporaneous yearly data is 0.12, while the correlation of the average initial return with the following year's number of new offerings is 0.49. They interpret these correlation results between the average initial returns and contemporaneous and following year number of offerings, as evidence that initial returns lead volume. Because it takes at least several months from the decision to go public until the offering is consummated, it appears that many firms initiate the process when they observe a very receptive market to the offerings of other firms, especially for firms in their own industry.

They find that:

(1) Initial public offerings are significantly underpriced, on average;

(2) The more established an issuer and hence the less investor uncertainty about the firm's real value, the lower the amount of underpricing;

(3) Hot and cold performances come in waves, the persistence of which is predictable;

(4) Cold issue markets have average initial returns that are not necessarily positive;

(5) The number of new offerings also comes in waves of heavy and light activity which are highly serially correlated;

(6) Underpricing appears to lead the number of new offerings by roughly six to twelve months.

Since consecutiveness, presence and importance of high number or volume and systematic underpricing periods' are presented, although it is not fully in the scope of this study, it is useful to touch on going public decision from the perspective of company's characteristics themselves. As special conditions of firms have importance on the decision to go public, it is not so easy to differentiate them from outside factors' such as the effects of general market conditions on this decision. So within this part these characteristics are mentioned time to time, but the core point is seen as the timing according to outside factors.

Zingales (1995) determines the decision to go public as the result of value-maximizing decision made by an initial owner who wants eventually to sell his company. This decision contains two factors inside it. By selling to dispersed shareholders, the owner maximizes his proceeds from the sale of cash flow rights, however by directly bargaining with a potential buyer, he maximizes his proceeds from sale of control rights. Initial owners time IPOs and going private transactions according to their expectation. So, the present value of cash flow rights is high when the level of stock prices is high, there is an increase in IPOs activity.

Related to this, Mikkelson and Shah (1994) report a 29% turnover in control in the five years following the IPO for established firms and 13% for IPOs of young start-up companies. So, established firms go public more than start-ups. This argument is opposite to that of Ibbotson and Sindelar which state that new firms go public. However, the conventional wisdom is that going public is a stage in the growth of company but this does not mean that all companies should go public in the growth period. It is a choice as Pagano, Panetta and Zingales (1998) point out.

Fundemantally, as mentioned in the introduction part young firms mostly prefer venture capital or angel financing, since new firms carry greater uncertainty, so investors

should not be willing to participate in this firm's offering. When young firm have grown with venture capital, anyway venture capitalist liquidate his position in IPO market. So in general, "young companies go public" belief is not valid, nonetheless, in hot markets, with investors' overoptimism, or in some periods like technological boom in 1990s, it can be possible for some short period.

Moreover, Chemmanur and Fulgheri (1999) found that, firms in European Countries go public at much later age than firms in USA.

Not maturity but about value or financial appearance of firms going public, Altı (2006) reports that the average cold-market firm's IPO proceeds amount to 54% of its pre-IPO asset value. The same ratio for the average hot-market firm is 76% and market timers issue more equity than their capital needs. Besides, Eckbo (2005) find that IPO firms are of average size and have low M/B ratio. But it is important to make clear that this M/B ratio is related to firm, not the market of which the effect on IPO market is explored in future pages.

Pagano, Panetta and Zingales (1988) examine Italian IPO market and they observe companies before going public and the bank credits for being able to see if the cost of credit affects the timing of IPOs.

They define the cost of going public as follows:

Adverse Selection

As investors are less informed than the issuers about the true value of the company, this information asymmetry affects the average quality of the companies going public and the price of the share and the level of underpricing.

Administrative Expenses and Fees

Besides the direct costs such as registration fees, underwriting fees, there are also yearly auditing, dissemination of accounting information costs, stock exchange fees etc.

Loss of Confidentiality

The disclosure of information such as R&D, projects or future marketing strategies may be crucial for companies as they can loose their competitive advantage.

And they define the benefits of going public as:

Overcoming borrowing constraints:

Gaining access to financial source as an alternative to banks is the main advantage of going public. The opportunity to access public markets for funds should be particularly appealing for companies with large current and future investments, high leverage, and high growth.

Greater Bargaining Power with banks

Banks gain access to the privileged information more easily. As also Rajan (1992) points out, IPO firms supply more information to the investors; it gains competitive advantage and lowers cost of credit which means greater bargaining power with banks.

Liquidity and Portfolio Diversification

The decision of going public affects the liquidity of a company's stock and the scope for diversification by the initial holders of the company. Liquidity should also lower the cost of bank credit since the stocks are given to banks as collateral and they can be sold in stock exchanges. Besides, taking a company public provides with owners the opportunities for diversification by divesting from the company and reinvesting in other assets.

Monitoring

The stock market provides a managerial discipline device by exposing the markets assessment of managerial decisions.

Investor Recognition

Investors mostly invest in a small fraction of shares by ignoring other public companies. In this case, if their awareness of IPO can be increased with the help of an advertisement, the stock prices become higher; as Merton (1987) shows, it is higher when more investors are aware of the company's securities.

Change of Control

Control of the company adds some premium to the stock price of the company. Zingales (1995) claims that the decision of going public means value maximization activity of the owner who eventually wants to sell it. By going public, the initial owner changes the proportion of cash flow and control rights. But by still retaining control he proceeds all extra money from dispersed shareholders. For 2004-2005 IPO market in Turkey, Savaşkan (2005) argues the IPOs were priced as the control of the firm was transferred to the investors, i.e. as the firm's was sold to a single purchaser. So offering price was overvalued and the aftermarket performance was low.

Windows of Opportunity

During the periods in which stocks are mispriced, the companies recognizing that other companies in their industry are overvalued have incentive to go public. (Ritter 1991, The long-run performance of initial public offerings, Journal of Finance 46, 3-27)

The cost and benefit equilibrium is an important factor in going public decision according to Pagano, Panetta and Zingales (1998). When the financing needs are increasing, the probability of being listed increases too. Contrary to expectations, both the relative cost of bank credit and a firm's leverage has negative impact on the likelihood of an IPO, however, the concentration of bank credit appears to increase the likelihood of an IPO. They also argue that company's size is an important determinant of an IPO; an increase of one standard deviation in the sales logarithm, which is a proxy for the firm size, results in an increase of 33% in the probability of IPO.

When they make the analysis of ex-post consequences of IPOs, they find that the profitability drops permanently after IPO; it is a further support to the windows of opportunity hypothesis, but it is different than the case of Degeorge and Zeckhauser (1993) which points out that the firms go public when the profitability is unusually high and the decrease in profitability after IPO is a regression to the mean. They explore that this permanent drop is the result of adverse selection and moral hazard; companies go public when profitability is about to decline permanently and controlling shareholders have a greater incentive to extract private benefits at the expense of minority shareholders. They also make clear that companies' capital expenditures decrease after

the decision to go public so they tend to go public to rebalance their capital structure after implementing substantial investment plans. As additional information, the relative costs of credit drop after IPO but this drop weakens after three years according to Pagano, Panetta and Zingales' results.

As additional and interesting information about Italian IPO market, the initial owners still retain a stake much larger than 50% after going public; so they still have control over firms. This ratio is 44% in USA and 35% in Britain. Similar to Italy, in Turkey, the family companies don't want to transfer control to other shareholders. However, even though the controlling group always retains a large controlling block after IPO, the control turnover rate is abnormally high in Italy and this is consistent with Zingales' (1995) argument that IPOs are undertaken to maximize the incumbent proceeds of sale of the company.

Over the debate of age of company going public, Pagano, Panetta and Zingales point out that in Continental Europe, large and mature companies go public. They interpret this situation as a greater visibility of listed companies to tax and legal authorities. This makes small firms to abandon the idea to go public considering higher tax pressure and more regulations in Europe than in USA. The Economist (January 25, 1997) identifies two other possible obstacles in IPO markets for European small companies. These are the lack of institutional investors specialized in venture capital and the absence of a liquid stock market dedicated to small firms.

Stoughton, Wong and Zechner (2001) say that firms often go public when they have substantial cash in their balance sheet. So they go public by other motives than cash rising. They argue that firms go public for image and publicity, then, being the first firm going public gives strategic advantage. Going public decision's effect in rival firm is explored by Slovin, Sushka and Benedeck (1991). According to results, negative announcement effect of going public on rival firms is about -1%. By contrast, Ward (1997, Going public and product market reactions, Unpublished manuscript, Vienna: University of Vienna, Department of Finance) argues that the average effect of IPO announcements on rival firms depends on the motive given in the prospectus.

As recognized from Stoughton, Wong and Zechner's argument, competition, image, publicity or similar issues sometimes may become the first motive for firms while deciding to go public, and take precedence over firm's or market's financial situation.

When the financial motives are maintained again, it is seen that in their study in which it is looked for the response of the question about the timing of the equity issue or debt issue of the firms and the price reaction of the market to these firms' decisions, Jung, Kim and Stulz (1995) find strong support for the agency model's ability for explaining the firm's decision between three models: the pecking-order model, the agency model and the timing model. Pecking-order model was defined in recent pages.

The timing model says that if equity is overpriced and the market underreacts to equity issues, management maximizes the wealth of existing shareholders by issuing equity. This hypothesis assumes that the firms issue equity according to past and current market returns.

On the other hand, *the agency model* says that managers seek for maximizing their own objectives at the expense of shareholder's value. By the way, if the managers' objective is in the same direction with shareholders' benefits, such as growth objective, equity issues are worth for shareholders, but not otherwise.

In addition, Jung, Kim and Stulz find that firms issuing equity are of IPO types: (i) firms with valuable investment opportunities that seek financing to grow profitably and (ii) firms that do not have valuable investment opportunities and have debt capacity. Firms without valuable investment opportunities have negative stock price reaction compared to firms with valuable ones. They claim that some firms issue equity to benefit management rather than shareholders. They show that some firms with poor investment opportunities issue equity and experience substantially higher asset growth than debt-issuing firms. However, their share price drops significantly after issue. This can be seen consistent with the timing model in terms of overvaluation argument, but on the other hand they assert that it is inconsistent with timing model; the firms that have valuable investment opportunities which are not recognized by the financial markets should not be issuing equity. In this way their equity is underpriced. If such is the case, they could issue debt. However hot issue markets are not explicable by this result.

Jung, Kim and Stulz; Pagano, Panetta and Zingales; Stoughton, Wong and Zechner and other researchers' arguments mentioned above are much more related to firms' special conditions than general market conditions, although market conditions cannot be omitted in some specific firm conditions.

From market perspective, Lee, Shleifer, and Thaler (1991) and Lerner (1994) suggest that IPO volume is related to various forms of market irrationality. But this is an argument which makes all debate about IPO market timing null, as well as other theories related to stock markets, since it is not logical to talk about firms' or investors' systematic actions, if they are all irrational.

Rajan and Servaes (1997) find positive relation between analyst following and IPO underpricing. Analysts are overoptimistic about IPO, even about the earning growth prospect of IPO firms. Then the investors following analysts are optimistic. They report a positive relation between the number of IPOs coming to the market in a given industry and earning-growth projections of analysts for recent IPOs in these industries. In this way they argue that analysts have great effect in investors' decisions nevertheless, Erdoğan, Palmon and Yezegel (2007) argue that, market participants do not appear to react strongly to analyst recommendations. According to them, this result may be because of inaccessibility of analyst recommendation ratings to the public, but whichever the cause is analyst recommendations receive less attention. at means stock analysts do not have the stock picking ability, thereby analysts' reflections in Turkey do not have effect in neither IPOs and nor aftermarket performance.

Subrahmanyam and Titman (1999) defend government intervention in their study and they argue that in emerging economies, small government actions that stimulate the stock market can have snowball effect and the market can be more liquid and efficient with new IPOs and this in turn induces more firms to go public. Because, as stock markets become more liquid and informationally efficient, they are more attractive source of capital. Subrahmanyam and Titman also claim that public financing is preferred when serendipitous information for resource allocation is important; however, private financing is preferred when information relevant to resource allocation is costly to obtain.

Serendipitous information is information which investors may obtain by chance, in their day-to-day activities. For example an analyst analyzing a firm can come across information about another firm or when if competition is high in an industry there can be more serendipitous information since monitoring is high. This information type is more common in developed financial markets. Subrahmanyam and Titman are more interested in information costs and government effect. If these two are thought together for IPO market, it is obvious that in an emerging market where all information is available and the government assures the transparency, IPOs increase.

Hoffmann-Burchardi's (1999) clustering model of IPOs is based on the positive industry information feedback. This information is common-value component in the wake of price determination. This factor might represent the prospects for industry or business cycle. So the model of Hoffmann-Burchardi, in a market where both entrepreneurs and investors do not have complete information about industry prospects, assume that if the signal of the first IPO is good, the risk-averse entrepreneur of second firm decides to go public, since risk of remaining private is increasing. This risk increases when the firm's value variance increases. It means that if the uncertainty about the state of the industry rises after the first IPO, the waiting strategy involves the risk for both high- and low-quality firms, that another high-quality firm precedes with an IPO and reveals poor industry prospects. Then risk-averse entrepreneurs of high or low quality firm type will always independently choose to go public in the first period in able to avoid the risk of a total loss.

Second effect, which triggers hot issue markets, depends upon whether the expected IPO proceeds rise to a larger extent than the expected private firm value after one firm in the industry has gone public. This in turn depends on whether investors' free-ride on the industry information revealed in the first IPO. If the marginal benefit of further information production does not outweigh its costs, investors' uninformed valuation of the firm can increase to a larger extent than the expected private firm value.

On the other hand, Chemmanur and Fulgheri (1999) argue that firms with longer track records, meaning older ones, will have lower costs of information acquisition for outsiders, so firms go public when a sufficient amount of information about them has accumulated in the public domain. Then older firms don't need to compensate the

investors for costs of information by lowering share price. Younger firms, with greater information acquisition cost, choose venture capitalist by envisaging the premium of non-dispersed shareholder and bargaining power of venture capitalist. In a first look, this argument may seem in contradiction with theories of underpricing, however it take into account all the time but not only hot or cold issue markets for going public decision and all the firms in all industries, so not only a specific period of time where some anomaly can be seen. Nevertheless, Chemmanur and Fulgheri (1999) argue that firms which have larger capital requirements and firms in industries where the technological uncertainty is high choose the public equity markets, although they are at earlier stage in their life. They also mention that, hot issue market arises when there is a productivity shock in a particular industry.

In parallel with Chemmanur and Fulgheri, Jovanovic and Rousseau (Why Wait? A Century of Life before IPO) report that the electricity-era at the beginning of 20th century and information technology–era in 1990s leaded to younger firms to go public and M/B ratio was high for these periods. However, in general of the century, older firms went public mostly. Jovanovic and Rousseau's findings support the idea that young firms benefit from windows of opportunity and that established firms go public mostly.

From another point of view, Lerner, Shane, and Tsai's (2003) results suggest that periods of low IPO volume represent times when private firms "can not" access the equity markets on favorable terms, thus it forces them to enter into less favorable financing arrangements. Specifically, they find that during periods of low equity issuance, the agreements signed between small biotechnology firms and major corporations are less successful and more likely to be renegotiated, compared to those agreements signed during periods of higher equity issuance.

Stoughton, Pong and Zechner (2001) argue that firms above a critical quality level decide to go public, whereas firms with low quality levels stay private. So the underpricing phenomenon is because of unexpected high product quality. It is an argument contrary to many hypotheses however, for example it means that there isn't any windows opportunity for firms if their quality is not high or if the quality is high there mustn't be bad performance in the long-run.

Stoughton, Pong and Zechner also argue that, if prior issuers' initial market size is important and the initial prospectus of the first firm going public reveals more information, than the subsequent IPOs in such industries will be in waves.

Rajan and Servaes (2002), in their study where they research whether two of market conditions, investor sentiment or price-insensitive demand; and feedback trader risk or the propensity of investors to chase trends, gain explain three anomalies and their relationship with some risks and IPOs; underpricing, windows of opportunity for new issues and long-term underperformance, find that underpricing is positively related to feedback risk, but it is negatively related to size and the economic effect of sentiment on underpricing is small. They also report that the long term excess returns decrease with sentiment, decrease with feedback risk, but result in feedback risk isn't significant in all levels. The effect of sentiment is larger. Rajan and Servaes also find that the size is negatively effects the long-run performance and they estimate the results may simply reflect the poor performance of small firms over the 1980s. They report that an increase in sentiment significantly affects the number of initial public offerings coming to market. They also look for whether IPOs coming to market when their industry is 'overvalued' relative to the rest of the market. At first look, it seems different than Ritter and Loughran's finding arguing that IPOs come to market when the overall market peaks, but they find consistent results with Ritter and Loughran's findings. Besides, they report that the number of IPOs coming to market is significantly related to past investment growth in that industry, but not to future investment growth.

From another point of view, Helvege and Liang (2002) find that IPOs in hot (high volume) markets are not more concentrated in particular industries than IPOs in cold markets; during periods of high IPO volume, offerings are more likely to arise from many of these industries, leading to lower concentration measures of industry clustering. They also recover that most industries' hot markets occur at about the same time, i.e., when the market for IPOs in general is hot. It is never the case that the overall market is hot as a result of only one or two industries' issuance, and it is very rarely the case that any industry is hot when the overall market is cold. This is very sharp claim against the argument which supports industry based hot markets.

In addition to their findings about sectoral analysis, they find little support for the models which says hot market firms are better quality firms with greater asymmetric information than cold market firms, besides they do not find support for the long term performance view that hot market firms are sharply weaker.

Again about the debate between young and innovative firms and the older ones for going public, Helvege and Liang state that there is no clear support for theories that hot market firms are more likely to be start-ups in highly innovative sectors, or to have a greater desire to change their ownership, since they find hot market IPOs have less R&D and more fixed assets, and do not exhibit faster sales growth in the five years following the IPO than cold market IPOs. This argument is in the same parallel with Mikkelson and Shah's (1994) and Pagano, Panetta and Zingales' (1998) findings suggesting that mature firms go public more than start-up firms and is also supporting the profitability argument of Degeorge and Zeckhauser (1993).

Lastly, as additional information, they report that hot market IPOs actually has higher institutional ownership than the cold market IPOs and the demand of IPOs is an important determinant of IPO cycles. Helvege and Liang's findings are very interesting and important, as they dealt with the subjects that are neither examined nor maintained before.

Another essential research is the one published by Lowry in 2002. In his research, he determines the objective as examining three potential explanations for the variation in IPO volume. One common perception regarding IPO volume is that it simply varies with the business cycle. During economic expansions, economy-wide demand for capital is higher and therefore more firms go public. A second widely held viewpoint is that the variation in IPO volume is primarily driven by changes in investor optimism. The popular press contains many examples of this viewpoint as "The [current] rule in the IPO market seems to be: Buy it at any price" (Wall Street Journal, May 20, 1996, p. C2), and "When [investors] get bearish, you can't go public. But when they go bullish, just about anyone can go public." (Wall Street Journal, April 19, 1999, p. C1.) Finally, the lower numbers of IPOs during periods of high uncertainty potentially reflect a lemons problem, and this is a third explanation of the observed fluctuations in IPO volume. Variation in investors'

uncertainty regarding the true value of firms may cause the adverse-selection costs and therefore to fluctuate IPO volume over time.

Three proposed explanations for variation in aggregate IPO volume are defined: the capital demands hypothesis, the information asymmetry hypothesis, and the investor sentiment hypothesis.

As the information asymmetry hypothesis was defined before, the capital demands and the investor sentiment hypothesis are defined here:

The capital demands hypothesis says that variation in IPO volume is caused by changes in private firms' aggregate demand for capital. General economic conditions vary over time. When conditions are better and expected growth in the economy is higher, companies tend to have higher demands for capital. This hypothesis is not different from Ibbotson and Sindelar's (1994) overoptisim narration.

The investor sentiment hypothesis posits that variation in the level of investor optimism causes the costs of issuing equity and therefore IPO volume to fluctuate over time. During some periods, investors are overly optimistic and are willing to pay more for firms than they are worth. During these periods, the costs of going public are especially low. Consequently, a large number of firms find it optimal to go public. In contrast, during periods of low sentiment, investors may undervalue firms, causing IPO volume to be low. Similarly, Lee, Shleifer, and Thaler (1991) conclude that changes in investor sentiment significantly affect IPO volume over time.

According to Lowry, results indicate that changes in firms' demands for capital and changes in the level of investor optimism explain a substantial portion of the variation in IPO volume. Adverse selection costs are marginally significant and appear to be of secondary importance.

The findings of Lowry are: industry-level dynamics in the stock market have a significant effect on the number of companies going public, as evidenced by the significance of the average industry M/B ratio and industry returns. Second, capital demands and investor sentiment both contribute significantly to the observed fluctuations in IPO volume. Information asymmetry is only marginally significant in these industry level regressions. Finally, industry factors have a substantial effect on IPO volume, incremental to market-wide dynamics.

In addition, Lowry suggests that there are significant negative relations between post-IPO raw firm returns and IPO volume and between post-IPO market returns and IPO volume. However, surprisingly he doesn't find any relation between abnormal IPO returns and IPO volume. Firms go public successfully when they and also other similar firms are valued especially highly by the market. This is a supporting finding for industrial segmentation claims as similar firms are mostly in the same industry.

Ritter and Welch (2002) also interpret evidence on the going public decision as suggesting that firms go public in response to favorable market conditions, but only if they are beyond a certain stage in their life cycle, similar to findings of Shah's (1994) and Pagano, Panetta and Zingales' (1998). Ritter and Welch also argue that IPOs have a high level of systematic risk. This is in accordance with belief that IPOs tend to be risky stocks.

According to Lowry (2002), both the M/B ratio and the MB-returns interaction term are significantly positive, indicating that the number of companies going public varies significantly with the stock market. More firms go public when the average M/B ratio is especially high. In addition, market returns have a significant effect when the market-wide ratio is also high. Market return and market level are crucial indicators in the decision of going public, since when market level is high and expectations are good enough after high return period, it is possible to catch success in public offerings, with increasing investor optimism.

Pagano, Panetta and Zingales (1998) also suggest that the industry market-to-book ratio appears to be the most significant determinant of the probability of listing.

Baker and Wurgler (2000) also show that firms issue relatively more equity around market peaks, just prior to periods of low market returns. Besides, Ritter (1991) finds that IPO volume is negatively related to post-IPO stock returns.

In addition, Lowry and Schwert's (2002) findings suggest that positive information learned during the registration period indicates that other companies can go public at higher valuations than they had previously expected. This interpretation is consistent with the prior findings of Lowry (2002) that more companies tend to go public when the average market-to-book ratio (M/B) of public firms in their industry is especially high.

Schultz (2002), in his study where he evaluates timing and long-run performance of IPOs together like Benninga, Helmantel and Sarig, argues that the poor aftermarket performance is consistent with an efficient market and it is real. More firms go public when they can receive a higher price for their shares, so IPOs will cluster when the market level is high and there are more offerings at peaks. This is pseudo market timing. However, issuers didn't know prices were at a peak when they issued stock. If prices had kept rising, even more offerings would have been forthcoming until prices eventually fell and offerings dried up. So it is assumed that managers don't have the ability to time the market. This is an argument refusing that hot IPO markets are predictable.

Market level and market return are the indicators which can be easily observed and they don't need detailed analysis for issuers. In Turkish capital market, it is expected to see strong relationship between market level and return with IPO market. When general economy performs well, stock market returns increase, so indirectly it is also expected to see causality between GDP growth rate and hot IPO markets.

So, if the analysis is directed to more general factors, as macroeconomic indicators, Benninga, Helmantel and Sarig (2003) explain hot market phenomenon as changes in macroeconomic conditions simultaneously affect multiple industries and companies, firm profitability tends to be positively correlated. This is in the same parallel with Lowry's findings. In particular, good economic circumstances positively affect the cash flows of many firms. Since when cash flows are high firms go public and reprivatize in their model when cash flows are low, these cash flow changes cause to create IPO waves. This argument should be present for Turkish IPO market, since there is very broad belief that hot markets come only with good economic circumstances.

On the other hand, Benninga, Helmantel and Sarig report that if in macroeconomic conditions are good and in this way firm's cash flows are high, there are IPO waves, but since good economic conditions affect the cash flows of both publicly traded and privately held firms, the cash flows of publicly traded firms are high as well. Thus, IPO waves coincide with times of relatively high share prices. In parallel, going-private transactions (by an MBO, LBO, or otherwise) will also occur in waves, and that these waves will coincide with times of relatively low stock prices.

So findings and arguments of Benninga, Helmantel and Sarig are based on cash flows of firms and consequently IPO waves caused by the changes in cash flows. Moreover, according to them, cash flows are high when economic circumstances are better. Besides, good economic circumstances create high share price, so IPO waves coincide with high market level. The cash flow channel is only a level in this chain and adding this channel to the analysis is not enough to make an impression of fresh idea. However, this is another way of showing the positive effect of good macroeconomic conditions on IPO market.

They also argue that since the correlation between the cash flows of firms within the same industry is likely to be greater than the cross-sectional correlation, hot issue markets are observable in industry basis. There are other supporters of industrial hot markets.

An interpretation about underperformance of IPOs from Benninga, Helmantel and Sarig, asserts a relationship between poor aftermarket performance and timing. They try to explain the underperformance in the long-run by their model in which the IPO firm has the option to reprivatize, with its implication for owner strategies and firm risk. They argue that the value of the firm as the sum of two values: the ‘‘public’’ value of the risky cash flows and the value of the option to reprivatize. This decomposition of firm value implies that firm risk also has two components: cash-flow risk and the risk of the reprivatization option. Since small and new IPO firms have lower cash flow risk and since the reprivatization option is relatively higher for these firms, the cash flow risk is lower than older firms. In brief, they say that newly listed firms, when cash flows pass over the threshold between stay private and go public, go public, however since these new issue firms’ cash flow risk is low, the discounted future cash flow is also low, therefore, the aftermarket performance of stock is also low. So, Benninga, Helmantel and Sarig implicitly assume that the relatively new firms go public, opposite to many researches mentioned before.

Directly opposite argument comes from Altı (2002) who tries to cluster IPOs, parallel to the findings of Pagano, Panetta and Zingales (1998) which report that most IPO firms don’t have urgent funding needs and firms’ public offering decision is driven by the effort of timing the market, the hot market is formed by the followers. Meaning,

the outcome of an IPO reflects information that was previously private; this diminishes the pricing uncertainty for later issuers and induces more IPOs. High offer price realizations provide strong spillover effect and trigger more IPOs than low price realization do. Because the high price realization decreases the information asymmetry. This means firms go public not when they need funds but when they believe that they timed IPO. He also finds that the beginning of the hot market is very sensitive to the market conditions, where later it decreases. So he touches on the market conditions effect on IPO market. Altı also report market condition effects in IPO market. According to him, the pioneers are more quality firms with high growth potential where followers are more likely to sit on the cash. Competition among informed investors increases the issuer quality as institutional investors' participation result in IPO clusters where both the pioneers and followers are less likely to sit on the cash. This is a supporting argument for windows of opportunity hypothesis.

In the first look, Altı's and Schultz's arguments are seen completely opposite, as Schultz claim that managers are not able to time to market, where Altı reports that firms only time market and don't act according to financing needs. However, both of the two researchers represent that when market level is high, some firms benefits from this opportunity. But, in Altı model the quality firms go public first, firm which want to sit on cash follows and hot markets arise, where in Schultz's model, firms go public until prices fall in the market. The only difference is that going public decision when market return is high is called pseudo market timing by Schultz, where Altı evaluates this as rational market timing.

Boehmer and Ljungqvist (2004) analyzed 330 privately-held companies in Germany, which announced their intention to go public between 1984 and 1995. In contrast to great number of studies in this area, they started from the private firms. It is partially because of German IPO market's characteristic, since it takes approximately 2 years after announcement to go public and it is long-enough to analyze the conditions before IPOs. However, it gives the possibility to see the firm's decision, in lieu of proxy for all firms' decision to go public; i.e., IPO waves.

According to the results of Boehmer and Ljungqvist (2004), IPO announcements are preceded by high stock index returns in the IPO candidate's industry, firms tend to

announce IPO plans after increases in the volatility of share prices in their industry, consumer confidence which is used as proxy for macroeconomic conditions peaks in the announcement year and declines thereafter. Compared to other variables, such as M/B ratio, market return, economic indicators, return volatility is less examined in the analyses made before about IPO markets. For Turkey IPO market case, both stock market return volatility's and exchange rates volatility's effect on new issues is represented in the empirical results part of this study.

Boehmer and Ljungqvist's (2004) analysis of variables between the private firms' the announcement date and IPO date, which is 2 years in average, shows that, increase in industry-adjusted sales growth, in industry-adjusted earnings growth, in industry-adjusted return on sales and in proxies for firm-level value drivers, rises the probability of going public. Besides, the stock market performance of the issuer's industry increases the firm's probability of going public. In addition, firms are more likely to complete an IPO when macroeconomic conditions improve. But this is valid when macroeconomic condition proxied by the index of consumer confidence, as none of GDP growth, forward-looking indicators of business conditions, and capacity utilization is significant. Nonetheless, GDP growth rate is used for macroeconomic condition proxy, in this study.

Like Pastor and Veronesi, Boehmer and Ljungqvist report that firms prefer going public when uncertainty about their future profitability is high in Germany data, however its importance is modest. As additional information, family firms are less likely to go public in Germany, as in Turkey.

However, Boehmer and Ljungqvist argue that the median M/B ratio in the sample firm's industry has no effect in the decision to go public, in contrast many researches, especially Pagano and Zingales' one (1998). In the same parallel, Pastor and Veronesi argue that market level, i.e. M/B ratio, cannot predict IPO waves.

Pastor and Veronesi (2005) develop a model where they reach remarkable conclusions. They do not agree with any mispricing story, so with any information asymmetry theory. They develop a model in which fluctuation in IPO volume arises in the absence of any mispricing, and in which IPO volume is more closely related to recent changes in stock prices than to the level of stock prices. They try to develop a model of

optimal IPO timing in which IPO volume fluctuates due to time variation in market conditions. They define market conditions as having three dimensions: expected market return, expected aggregate profitability, and prior uncertainty about the post-IPO average profitability in excess of market profitability. They state that market conditions indeed appear to vary in these dimensions. Time variation in expected market return is consistent with empirical evidence on return predictability. Time variation in expected aggregate profitability is related to business cycles. Time variation in prior uncertainty seems plausible as well according to them. For example, technological revolutions are likely to be accompanied by high prior uncertainty, because they make the prospects of new firms highly uncertain.

They solve for the optimal time to go public, and show that private firms are attracted to capital markets especially when market conditions are favorable in the sense that expected market return is low, expected aggregate profitability is high, and prior uncertainty is high.

Pastor and Veronesi claim that at any point in time, private firms are waiting for an improvement in market conditions, i.e., for a decline in expected market return or for an increase in expected aggregate profitability or prior uncertainty. When market conditions improve sufficiently, many inventors exercise their options to go public, thus creating a cluster of IPOs, or an IPO wave.

They find that IPO volume is positively related to recent market returns, which suggests that many firms go public after expected market return declines or after expected aggregate profitability increases. Another implication in their model is that IPO volume is more closely related to recent changes in stock prices than to the level of stock prices. Firms are induced to go public by improvements in market conditions, and these improvements lift stock prices at the same time. However, IPO volume is not necessarily high when the level of stock prices is high because the high price level is a result of cumulative improvements in market conditions, and many private firms that had been waiting for such improvements went public while prices were rising. Consistent with these arguments, they find that IPO volume is significantly related to recent market returns, but unrelated to the level of the aggregate M/B ratio. Important point is that this evidence is not the overvaluation story (mispricing theory).

They find IPO volume is negatively related to changes in market return volatility, contrary to the findings of Boehmer and Ljungqvist, and positively related to changes in aggregate profitability and to changes in the difference between the return volatilities of new and old firms.

Pastor and Veronesi (2005) agree with Ritter and Welch's (2002) conclusion that "market conditions are the most important factor in the decision to go public.", but as explained they point out three dimensions of market conditions that appear especially relevant. They also answer the Ritter and Welch's statement "perhaps the most important unanswered question is why issuing volume drops so precipitously following stock market drops." by saying that when market conditions worsen, stock prices drop and IPO volume declines because private firms choose to wait for more favorable market conditions before going public.

There is a very broad literature in IPOs, some part of them; especially the ones related to timing and hot market were explored and different findings, ideas and debates were represented during this session. Stock market level, market returns and initial return have positive effect on IPO market according to majority. General economic conditions, especially GDP growth don't attract as much attention as market indicators. General economy has non-negligible effect on stock market indicators, so when general economy performs well, it is expected that to have a well- performed stock market as well, in this way, researchers should have chosen to deal with market variables. Stock market price volatility is not included in most of analyses, as many as GDP growth rate. Industrial and sectoral effect and overoptimism or asymmetric information are other phenomenons associated with hot IPO markets. Researchers are so far away from reaching to a consensus about these facts compared to stock market variables.

After exploring essential theories and arguments about timing on new issue markets, there are some other findings which are not directly related but which are in touch with IPO markets.

Altı (2006) reports that hot-market firms pay their pre-IPO shareholders large special dividends financed out of the IPO proceeds. This finding is consistent with windows of opportunity hypothesis, in this way; shareholders liquidate their positions relatively easily.

Altinkilic and Hansen (2000) argue that high volume may increase the cost of going public: when the IPO calendar is crowded, underwriters may offer less attractive terms. It is in contrast with Ritter's argument.

Seasoned Equity Offerings (SEO) is one step further of IPOs but it is expected that the same conditions can affect unseasoned and seasoned equity offerings.

Hyuk, Masulis and Nanda (1993), in their work, want to show that, firms sell seasoned equity offerings when they face lower adverse selection costs, which occurs in periods with more investment opportunities and with less uncertainty about assets in place. This is consistent with the thought that large number of firms issue common stock or they choose to raise funds with equity financing in expansionary phases. Equity issue announcements are predicted to convey less adverse information about equity values in such periods. So they extend Myers-Majluf model by adding the debt issue into the model.

They find that the relative frequency of monthly corporate equity to debt offers is positively related to expansionary phases of the business cycle and stock price volatility. Unlike the earlier results of Marsh (1982) and Taggart (1977), they find no evidence of a significant interest rate effect. They do find evidence of a positive impact of prior stock market price changes on the frequency of equity and convertible debt offers relative to straight debt offers.

Besides, the results of Hyuk, Masulis and Nanda show that business cycle variables have significant explanatory power in report of the magnitudes of the excess announcement period stock returns. In addition, the relative volume of equity issues in the announcement month is significantly positively related to announcement period stock returns. They state that these findings are consistent with the adverse selection model's prediction that periods of economic growth are associated with both greater volumes of equity issues as well as lower adverse selection costs. The stock price increase is significantly negatively related to the market's price reaction to the equity offering announcement. Several other issue characteristics as leverage change and shareholder concentration are also statistically significant.

So for seasoned equity offerings, Hyuk, Masulis and Nanda report that information asymmetry drops and equity issues increases in business expansionary phases. Economic growth is not directly associated with first offerings; however they included stock price volatility in their analysis.

Bayless and Chaplinsky (1996) look for windows of opportunity by linking the decision to issue seasoned equity with the cost of issue. They argue that if information costs deter significantly equity issue, then periods of reduced information costs should be periods of relatively high issue volume. They do not claim that macroeconomic factors are not important on issue decision but they aren't exclusive factor that motivates issuing. The windows of opportunity are defined to be time periods when information costs are reduced for all firms. The cumulative announcement date prediction errors[18] for equity issue are less negative during these periods. Besides, observed variations in announcement date prediction errors are independent of the characteristics of the issuing firm.

Bayless and Chaplinsky state that, in general, in the models of asymmetric information, the price reaction is dependent of the issuing firm's ability to signal their value and intention. High level of capital spending and high operating risk means low debt capacity. In parallel to this argument, Myers and Majluf (1984) argue that, if firms are able to persuade investors that characteristics are not because of overvaluation but because of firms' other reasons, the price reaction will be lower. Bayless and Chaplinsky see this argument as; the influence of firm characteristics on announcement date prediction error suggests that hot and cold markets could result from the clustering of certain types of firms in high and low volume periods. However, Jean Helvege and Nellie Liang (2002) find evidence that hot or cold markets are no related to industry or firms characteristics.

Bayless and Chaplinsky find that identical firms experience lower prediction error during hot market than cold or normal markets. They suggest that observed differences in prediction errors are not attributable to differences in market or macroeconomic conditions. Nor it is because of a time trend. They argue that the use of volume to define hot issue markets reveals other causes for windows of opportunity when information

[18] Prediction error is the excess return in stock at the seasoned equity announcement day

costs are reduced. They estimate the hot market issuer would give up $13 million in average in additional equity value, if they were issued in cold markets. They also report that investors react differently to firm and market characteristics in hot and cold markets in ways that suggest greater concern for firm specific information, and indirectly asymmetric information, in cold markets. They find that windows of opportunity for equity issue result at least partially from reduced levels of asymmetric information.

So Bayless and Chaplinsky claim that equity issue is increasing when information asymmetry is diminishing. They interpret windows of opportunity differently from other researchers as Jindra's results suggest that firms are significantly more likely to have seasoned equity offerings when they are overvalued.[19]

In addition, in their study where the effect of secondary public offerings of shares by state owned corporations in ISE are focused on, Erdoğan, Albayrak and Tata (2007) conclude that cumulative average returns before and after the issue indicates asymmetry in the investor side. Anyway ISE was determined an emerging market where regulations appear to fall short to maximize informational symmetry, according to Erdoğan, Palmon and Yezegel (2007). So it is not so easy to talk about reduced information asymmetry during equity offering periods, also for Turkish capital market.

As it is recognized, seasoned equity offerings are expected to increase in reduced information costs and expansionary phases of business cycles or when the market level is high according to the results of researches mentioned above. These findings are similar to IPO Market researches results.

For more concrete relationship between SEOs and IPOs, Howe and Zhang (2004), in their study where the SEO and IPO relationship is examined, finds that high IPO volume causes high SEO volume, but, after the SEO market gets hot, the IPO market turns cold or normal. Besides, the SEO market is less volatile than IPO market. The IPO hot or cold markets last longer than those of SEOs.

Howe and Zhang also report that all the hypotheses, information asymmetry, investor sentiments, future investment opportunities, and timing, can explain IPO cycles, but to varying degrees, however when all these hypotheses are examined in one

[19] Jindra, J., 2001. Seasoned equity offerings, valuation, and timing. Unpublished working paper. Cornerstone Research, Menlo Park, CA.

regression, there is support for asymmetric information, future investment opportunities and timing hypotheses, but not for investor sentiments.

Until here, essential research results about timing in IPOs and some theories about public offerings are detailed to form a comparative base for Turkish IPO and market data analysis. There are data analysis results and comments on these results in following sections.

3 The Model

The literature on Initial Public Offerings offers a wide variety of explanations to justify the dramatic swings in the volume and number of IPOs observed in the market. According to some researches conducted on this area, IPOs pick up after value changes in some financial or economic variables, or vice versa. Since some results of these researches were already detailed in the literature review part, they are given briefly in this part in order to compose the model;

Lowry (2002) Pastor and Veronesi (2005) found that the IPO volume is positively related to business cycles. Baker and Wurgler (2000) Liang and Helvege (2002) showed that firms issue relatively more equity around market peaks, just before the periods of low market returns where Pastor and Veronesi (2005) found that IPO volume is positively related to recent market returns but not to the level.

Lowry and Schwert's (2002) findings were consistent with the previous findings of Pagano, Panetta, and Zingales (1998), Lowry (2002) and Schultz (2002) that more companies tend to go public when the average M/B of public firms in their industry is especially high.

Ibbotson and Jaffe (1975) showed that the offerings' density was increasing when initial return was higher than the average.

The findings of Pastor and Veronesi (2005) support that IPO volume was negatively related to the changes in market return volatility while those of Hyuk, Masulis and Nanda (1993) show that the relative frequency of monthly corporate equity to debt offers was positively related to stock price volatility. Similar to Hyuk, Masulis and

Nanda, Boehmer and Ljungqvist (2004) argue that firms tend to announce IPO plans after increases in the volatility of share prices in their industry.

In the light of these findings, the simple model was composed as following;

(# of IPOs) = f ($GDP_{\%}$, r, Return, Level, Vol, InR, Volexc)

# of IPOs = Number of IPOs completed

$GDP_{\%}$ = GDP Growth Rate

r = Real Interest Rates

Return = Market Return

Level = Market Level (M/B Ratio, P/E Ratio)

Vol = Market Volatility

InR= Initial Return

Volexc = Exchange Rates Volatility

In Turkish economy, exchanges rates are important indicators and, the great effect of economic turbulence was first seen in exchange rates, with the devaluation of Turkish Lira in 1994, 1997, 2000 and 2001 financial crises. Dollarization rate in Turkey was 57.6% in 2001. Although, in recent years, this rate showed a tendency to drop, it was still high, and the Dollarization was 37.5% in bank deposit and 45% in financial instruments in 2005.[20] In this way, exchanges rates were also used in the model. As the researches mentioned above were mostly conducted in countries where dollarization or inflation rates were low, this variable was naturally omitted.

According to results reached in the previous researches and some expectations about Turkish IPO Market, the following hypotheses were suggested within the scope of this study:

- Good economic conditions, such as increase in GDP growth rate and low exchange rates volatility are followed by increase in IPOs activity in Turkish market.

[20] **Dolarizasyon / Ters Dolarizasyon**, Presentation 03.11.2005 Eskişehir, Süreyya SERDENGEÇTI

- Increase in stock market variables, i.e. market level, market return, market return volatility, have positive effect on Turkish IPO market.
- IPO swings come with high initial return, although there is no clear precedence between high initial return and IPO waves.
- High interest rates cause the crowding out effect, as a different investment opportunity.

These hypotheses were first evaluated by statistical and graphical analysis without introducing any test, after that, correlation; simple and hierarchical regressions were conducted.

4 The Methodology and Data

The Istanbul Stock Exchange (ISE) as a public legal entity where capital market instruments are traded was founded in 1986. By the end of 2006, there are 325 firms listed in ISE Stock Market. The number of investor is approximately 1 million and market capitalization is about $164 million. Foreign investors' share in stock market is 70% according to clearing house data. The IPOs completed in ISE Stock Market between 1990 and 2006 is the interest area of this study and the analyses about IPO swings according to this period's IPOs and other variables.

For the empirical analysis, the data was taken from ISE, CMB, Treasury, Finnet, IBS Analiz and Central Bank of Turkey. There are 304 IPOs in total, between the years 01.01.1990-31.10.2006 (1990-2006), according to the data taken from ISE. The analysis started from 1990 as the data before 1990 was not reliable. Besides, analysis was made in a yearly manner as the number of IPOs was not enough to make an analysis on a monthly basis. However, when analysis was made in yearly basis, the time horizon was very short and there were only 17 samples, which made the sample size inadequate for regression and other analyses. In order to overcome this problem one to four years bunch sample was used, so that more than 60 samples was used. The data became self-repeating with this operation but it is critical to mention that this entails the assumption that the number of IPOs in the future would follow a similar pattern and average values were assumed to be like intermediate value which represents virtual year value.

Table 1 shows the number of IPOs, the volume, the type of issue and average free float rate of IPOs in a yearly manner. Investment trust companies are obliged to have free float rate greater than 49% according to capital market legislation. Since they tend to increase the average, free float rate was calculated with investment trust company included as well as excluded. Besides, Table 1 contains number of IPOs, methods of offering used in first offerings, nominal and total volume of IPOs. According to table, the number of IPOs was highest in 1990 and 2005 with 35; total volume was highest in 2000 with 2.8 billion USD.

Table 2 contains all the values of variables per year which were used in empirical analysis. Number and volume of IPOs per year, interest rates, market returns, market risk premium (Rm-Rf), volatility in stock market and in exchange rates, market level and initial return per year were all included in the table.

For bunch of years shown in the tables 1 and 3, the mean of the years were taken, for example the number of IPOs in the period 1990-1992 is calculated by the sum of IPOs in every year and divided by the number of years; because of this, the number of IPOs were sometimes expressed in decimal places.

5 Empirical Results

Before dealing with empirical results, it is aimed to match the high number of IPO periods with some regulations made by CMB or with some other important developments in capital markets and in stock markets in ISE. This list of developments in Turkish Capital Market between 1990 and 2006 was maintained from the official site of CMB of Turkey. Regulations and forensic changes which can be effective in IPO market were interested with, than general economic changes as these were included in the empirical results part .

With Decree No. 32 regarding The Protection of The Value of The Turkish Currency amended in 1989, the capital inflows and outflows were set free, after that, as the investment in Turkish capital markets was easier, the number of public firms and trading volume increased gradually, as well as since Turkish economy was an emerging economy, it was very interesting market for foreign capital. In this way, ISE, where 55

stocks were trading until the end of 1989, had 112 IPOs in 1990-1995 with the participation of foreign investors, today approximately 65% of shares of public firms in ISE, are held by foreign investors, according to Clearing House data. After mentioned this critical decree for all Turkish economy, as the period examined in this study covered time interval 1990-2006, the regulations affected possibly IPOs in ISE in this period was dealt with.

The regulations, imposed in period 1990-2006, that were thought to be important in Turkish IPO market are displayed in the table below, the most important regulations were tried to be determined.

Year	Regulations	Expected Effect
1992	Changes in Capital Market Law: Shift to registration system from permission system in IPOs.	Easier access to Stock Exchange for firms
1993	Communiqué on disclosure system is amended	More information in stock exchange, more credible capital markets and efficient markets
1994	The settlement time for stock exchange is extended (T+2)	Increase in Liquidity
1995	Disclosure system is revised and public companies are obliged to publish financial statements much more detailed.	More information in stock exchange, more credible capital markets and efficient markets
1995	Communiqué on Margin trading, shortselling and lending and borrowing of securities is amended	Increase in Liquidity
1999	The List of stocks that can be subject to margin trading is extended	Increase in Liquidity
2003	The amendment of Private Pension Plan and Publicly offering of private Pension funds	Institutional Investors and increasing demand for stocks

2004	Foundation of Exchange Traded Funds Market	Increase in Liquidity
2004	Changes in Communiqué on principles regarding registration with the CMB and sale of shares: Amendment of Green Shoe Option and Transactions Providing Price Stability After Public Offering	Expected increase in demand for stock of IPOs, so increasing in public offerings.

In 1992, changes in CML and in system of public offerings ensured to become public to willing firms, in the case of all the information in the prospect and financial statements were obvious and true. So the procedure of permission of CMB was eliminated. In registration system, CMB is investigating only the accuracy of information in the prospect, in the case of some requirements is met; the potential investor, in the lieu of CMB, decides about company. An increase in the numbers of IPOs was expected since the level of CMB authorization was picked up.

In 1993, communiqué on Special Cases of Public Disclosure provided more accurate information to potential investors and credibility of publicly traded firms increased. So a rise in demand in stock market and in IPOs was assumed.

In 1994, the settlement time was extended to T+2, especially for huge funds which invest in emerging markets, for capital placement one day is very important period of time, so lengthening of settlement period has annulled the disadvantage of ISE in competition with other exchanges in emerging markets. It was assumed to have positive effect on IPOs, with increasing demand for Turkish stocks.

With same motives in the amendment of communiqué on Special Cases of Public Disclosure, it was presumed that if information is disseminated more accurately and quickly, in the world where capital inflows are mobile, the funds holders prefer credible markets. Moreover, they look for companies where corporate governance rules are applied, so detailed information is essential.

Communiqué on Margin trading, shortselling and lending and borrowing of securities was amended in 1995. Naturally, the volume and credit line in the money, the opportunity of selling when the market breaks down increase the liquidity and trade volume in the market, in this way in publicly traded firms in theory. In addition,

extension of listing on margin trading, in 1999, might also increase liquidity in the market.

All the time, institutional investors were important in the development of stock markets. Private Pension Plan is an important and working properly system in Turkey, so it supplies considerable funds for markets including stock markets. So this event was also included in the table for this function. The foundation of Exchange Traded Funds Market in 2004 was included for similar reasons.

Finally, the direct regulation with IPOs was the changes in Communiqué on principles regarding registration with the CMB and sale of shares provided the possibility to use green shoe option by IPO firms and transaction possibility Providing Price Stability After Public Offering for intermediary institutions, so in this way, the price stabilization and blocking of price drop just after offering was expected to bring more IPOs to the market.

Greenshoe option is legally referred to as an over-allotment option, a provision contained in an underwriting agreement which gives the underwriter the right to sell investors more shares than originally planned by the issuer. This would normally be done if the demand for a security issue proves higher than expected. A greenshoe option can provide additional price stability to a security issue, since the underwriter has the ability to increase supply and smooth out price fluctuations if demand surges too high. Greenshoe options typically allow underwriters to sell up to 15% more shares than the original number set by the issuer, like in Turkey.

Price stabilization ensure the possibility to buy shares as long as the price gets below the offering price, to brokerage firm acting in public offering and the brokerage firm mentioned in the prospectus after the shares begin to be traded on the stock exchange, provided that the prospectus consists in enough disclosure. Transactions providing price stability after public offering are applicable at most for 30 days after the date beginning of trade on the stock exchange in Turkey.

When the number of IPOs in ISE by year is remembered;

Years	Number of IPOs
1990	35
1991	23
1992	13
1993	16
1994	25
1995	29
1996	27
1997	29
1998	20
1999	10
2000	35
2001	1
2002	4
2003	2
2004	12
2005	9
2006	14

Table: Number of IPOs in ISE in 1990-2006

It is seen that, in years 1994-1998, there were 130 IPOs, may be the hottest sub-period for 17 years period, although many investors lost their savings because of 1994 crisis. In this pattern, it is possible that the regulations made in these years (1993-1995 from table) have contribution. The same thing is true for 2003 and 2004 regulations, but it is not possible to claim strongly that these are the only cause of increase in the numbers of IPOs, when their contribution can not be disregarded.

Before introducing the empirical results, the historical development of Turkish Capital Market between 1990 and 2006 was explored since Turkish Capital Market is an emerging market and regulations imposed during this period and other important economic events have undeniable impact in all market, in this way in IPOs. So, following analyses were healthier in the light of this historical analysis.

In the table 1, there are the number of IPOs, the volume, the type of issue and average free float rate of IPOs in a yearly manner. Investment trust companies are obliged to have free float rate greater than 49% according to capital market legislation, so, they

increase the average. Because of this, free float rate is presented with investment trust companies included as well as excluded.

According to Capital Market Legislation and Turkish Commercial Code, first time issuing equity is possible in three ways; i.e. by gradual foundation which is not used too much as it is a hard process, by capital increase and by shareholder sale methods. By gradual foundation, the firm is founded for issuing equity to the public and beginning from the start-up day it is a public company. The already established firm which is not a public one can become publicly traded by actual shareholder's sale of own shares to the public or by capital increase method. Naturally, both of these last two IPO methods can be used at the same time. According to table 1, in period 1990-2006, 142 times shareholder issue method, 119 times capital increase method, 38 times both of two and only 3 times gradual foundation method are used in 304 IPOs realized. The data of issue method in two IPOs committed in 1990 couldn't be reached.

In the same period, the mean of the number of IPOs was 18 per year. 1990 and 2005 were the years with the highest average of 35. After the liquidity crisis in November 2000 and devaluation in February 2001, there was only 1 IPO in 2001, 4 in 2002 and 2 in 2003. The effect of devaluation in 1994 and Asian crisis in 1997 doesn't seem as powerful as crisis in 2001. As future analysis shows, there was no significant relationship between growth rate and number of IPOs, it can be because of the situation that during the years 1994 and 1999 where the GDP growth rate was negative, there is no decrease in both of number and volume of IPOs contrary to year 2001 where number of IPOs and GDP growth rate slowed down sharply; moreover there was an increase in 1994. When the volume of IPOs was analyzed, the highest amounts were seen in 2000 and 2005, however the second highest was in year 2005 although the number was only 9. This is because of high free float rate and issue of 4 ITC, since in 1990 the average free float rate was only 17.95%.

As the inflation rate was too high in Turkey especially between years 1990-2002 (74.59% in average), the volume was more reliable when it was expressed in USD terms. It was 2,806,222,339 USD in year 2000, when in 1990 where the same number of IPO have realized, it was only 985,310,872 USD. In 2002, the IPO volume was only 242.654 USD. In 2005, 1,743,964,256 and in 2006, 929,464,658 were the amount raised by first

time issuing equity. During this period 38 ITC was issued to public and 142 of 304 issues was made by shareholder issue, 119 by capital increase method and 38 by both. Although after 1995 issuing by capital increase method has risen, the weight of shareholder issue was greater because of high utilization between 1990 and 1995. Gradual foundation method was used only 3 times in these 17 years; it is not often preferred as it is very long and hard period.

As the main aim of this study was to see the comovements of number of IPOs or IPO volume with other variables, i.e. GDP growth rate, return in the market, volatility of the return in the market, M/B ratio, initial return of IPOs and interest rates, all these variables' relationship with IPO market were analyzed by order for the period of 1990-2006. The following sections explain results reached in these analyses.

Business cycles or economic growth was an important factor for all industry and financial markets actors. So there are many researchers interested with business cycles and IPO timing.

Briefly, studies conducted on this subject were as following;

Lowry (2002) determined his objective as examining three potential explanations for the variation in IPO volume and one of this was if IPO volume is that it simply varies with the business cycle. He argued that when conditions are better and expected growth in the economy is higher, companies tend to have higher demands for capital.

Pastor and Veronesi (2005) found that IPO volume is positively related to changes in aggregate profitability and time variation in expected aggregate profitability is related to business cycles. So the IPO volume is positively related business cycles.

Hoffmann-Burchardi's (1999) clustering model of IPOs was based on the positive industry information feedback. This information was common-value component in the wake of price determination. This factor might represent the prospects for industry or business cycle. So the model of Hoffmann-Burchardi, in a market where both entrepreneurs and investors do not have complete information about industry prospects, assumed that if the signal of the first IPO is good, the risk-averse entrepreneur of second firm decides to go public, since risk of remaining private is increasing. In this way, according to them, if the economic conditions are good, remaining private increases the risk and the number of going public firms increase since they don't want to take risk.

These variables and the number or volume of IPOs are presented for comparison in the same graphs which are presented at the end part of this study.

Years	Number of IPOs	Growth Rate	Total Volume(USD)
1990	35	9.4	985,310,871.9
1991	23	0.3	391,627,012.4
1992	13	6.4	94,423,549.9
1993	16	8.1	152,446,679.0
1994	25	-6.1	270,480,024.6
1995	29	8.0	246,782,514.6
1996	27	7.1	167,921,615.7
1997	29	8.3	420,376,565.8
1998	20	3.9	383,348,400.8
1999	10	-6.1	90,722,366.2
2000	35	6.3	2,806,222,339.0
2001	1	-9.5	242,654
2002	4	7.9	56,467,358.4
2003	2	5.9	11,252,272.7
2004	12	9.9	482,575,184.7
2005	9	7.6	1,743,964,255.7
2006	14	5.0	929,464,657.6

Table: *Number and volume of IPOs in ISE and GDP growth rate per year*

Table above and the graph 1 and 2, reveals that there was a comovement between the number of IPO and the GDP growth rate, when the growth rate decreased, the number and volume of IPO decreased too, or vice versa. Only in 1992 and 1994 and 2006 there was inverse relationship between these variables. This makes us to think that there may be high correlation between GDP growth rate and number or volume of IPOs. The table below shows the change rates of these variables.

Years	Number of IPOs	GDP Growth Rate	Total Volume(USD)
1991	-34.29%	-96.27%	-60.25%
1992	-43.48%	1733.89%	-75.89%
1993	23.08%	27.16%	61.45%

1994	56.25%	-174.74%	77.43%
1995	16.00%	230.69%	-8.76%
1996	-6.90%	-10.46%	-31.96%
1997	7.41%	16.43%	150.34%
1998	-31.03%	-53.49%	-8.81%
1999	-50.00%	-257.82%	-76.33%
2000	250.00%	204.15%	2993.20%
2001	-97.14%	-250.47%	-99.99%
2002	300.00%	183.23%	23170.68%
2003	-50.00%	-26.06%	-80.07%
2004	500.00%	68.69%	4188.69%
2005	-25.00%	-23.23%	261.39%
2006	55.56%	-34.21%	-46.70%

Table: *Percentage Change in the Number and Volume of IPOs in ISE and GDP Growth Rate*

According to the results in the table above, although the direction of variables' change were same, variances are not same, i.e., the percentage change in GDP growth rate and number of IPOs, even volume, were very different from each other. In addition, percentage change volume and the number of IPO volume were very different from each other. But it must be confessed that as the number of IPO in ISE is very low and the number of publicly traded firms is only about 400, the percentage change evaluation could be deceitful, because as in the example of 2001 to 2002, increase in number of IPO from 1 to 2 means 100% change, overblown increase. But the decrease from 35 to 1 is only about 97% decrease, so percentage change can be fallacious if the number is low. The critical point was the direction of these two variables by year. In 13 of 17 sample years, the change in direction of these variables was same. If total volume with GDP growth rate was examined it was recognized that in 12 years, the volume changes in the same direction with GDP, i.e., increases when GDP growth rate increases, or vice versa. Because, in 1995, 2005 and 2006, IPOs' total volume and IPOs numbers changed in opposite direction relative to previous year. In the light of these facts, the core point is that according to the results, the GDP growth rate, so economic conditions have considerable impact on IPOs in Turkey. Although same conclusion in regression analysis was expected to appeared, the percentage change rate differences threatened the possible

significance of regression analysis for these two variables. This is analyzed in depth in following pages.

If these variables were compared, i.e. total volume and GDP, by accepting the values in year 1990 as 1 and by expressing following years in relative number, the results in table below were reached:

Years	Relative IPO Volume(USD)	Relative GNP(USD)
1990	1.00	1.00
1991	0.40	1.00
1992	0.10	1.05
1993	0.15	1.19
1994	0.27	0.88
1995	0.25	1.13
1996	0.17	1.22
1997	0.43	1.28
1998	0.39	1.37
1999	0.09	1.23
2000	2.85	1.33
2001	0.00	0.97
2002	0.06	1.20
2003	0.01	1.59
2004	0.49	1.99
2005	1.77	2.39
2006	0.94	2.52

Table: *Relative Values of IPO Total Volume and GDP (Base Year: 1990)*

The relative results in the graph 3 reveals that there is no obvious comovement of yearly GDP growth rate and yearly IPO total volume in ISE especially in period 1999-2001. However, if this period is omitted, this relative analysis makes us hopeful about the effect of economic conditions in IPO market in Turkey.

Interest rate is another important indicator of general economy. GDP growth rate should be low when interest rates are high since investment and consumption component of GDP are low, so inflation rate is expected to be low too. However, in the long-run, as the saving rate increases when interest rates are high, the growth rate would increase. In relation to this, if hot IPO markets are present when GDP growth rate is high, it is expected to have inverse relationship between interest rates and IPO volume.

Nevertheless, according to the numbers and graph 4, this relationship was not seen. However if inflation rates were not reckoned, analysis might be wrong. Because, real interest rates are more significant for saving and consumption as potential investor will decide according to real rates, so more significant for GDP. When real rates were considered, expected results were more present than the nominal interest rates' case. But in the countries where the interest rates and inflation rates were too high, sometimes hyperinflation was present, like the 1990-2001 period in Turkey, the interest rates, GDP growth rates, saving and consumption relations in normal economies, i.e. low inflation rates, were broken down. In this way, after 2001 there were more logical relationships.

Years	Number of IPOs	GDP Growth Rate	Total Volume(USD)	Interest Rate(12_months;end of the previous year)	Real Interest Rates
1990	35	9.4	985,310,871.9	58.83%	-5.45%
1991	23	0.3	391,627,012.4	59.35%	-1.06%
1992	13	6.4	94,423,549.9	72.70%	1.56%
1993	16	8.1	152,446,679.0	74.24%	8.27%
1994	25	-6.1	270,480,024.6	74.76%	3.68%
1995	29	8.0	246,782,514.6	95.56%	-29.93%
1996	27	7.1	167,921,615.7	92.32%	16.27%
1997	29	8.3	420,376,565.8	93.77%	14.01%
1998	20	3.9	383,348,400.8	96.56%	-2.53%
1999	10	-6.1	90,722,366.2	95.50%	25.77%
2000	35	6.3	2,806,222,339.0	46.73%	-22.06%
2001	1	-9.5	242,654	45.64%	6.61%
2002	4	7.9	56,467,358.4	62.50%	-6.03%
2003	2	5.9	11,252,272.7	48.19%	18.44%
2004	12	9.9	482,575,184.7	28.59%	10.23%
2005	9	7.6	1,743,964,255.7	22.06%	12.74%
2006	14	5.0	929,464,657.6	20.38%	12.66%

Table: *Interest Rate, Market Return and IPOs*

In the analysis above, the interest rates for following year was taken as the 12 months' rates of the last year's December, because it was assumed that sample investor

decides to invest his money in bank deposits for 1 year in January first, regarding to rates for last one year, or looks for another alternative like capital markets. The interest rates were computed as interest rates minus inflation rates at the end of the last year.

Years	Number of IPOs	Interest Rates(End of last year_12 Months)	Total Volume(USD)
1990	35	58.83%	985,310,871.9
1991	23	59.35%	391,627,012.4
1992	13	72.70%	94,423,549.9
1993	16	74.24%	152,446,679.0
1994	25	74.76%	270,480,024.6
1995	29	95.56%	246,782,514.6
1996	27	92.32%	167,921,615.7
1997	29	93.77%	420,376,565.8
1998	20	96.56%	383,348,400.8
1999	10	95.50%	90,722,366.2
2000	35	46.73%	2,806,222,339.0
2001	1	45.64%	242,654
2002	4	62.50%	56,467,358.4
2003	2	48.19%	11,252,272.7
2004	12	28.59%	482,575,184.7
2005	9	22.06%	1,743,964,255.7
2006	14	20.38%	929,464,657.6

Table: *IPOs and Interest Rates (R_F)*

According to the results in the table above and to graph 5, the expected inverse relationship between interest rates and number of IPOs wasn't seen clearly, but when the numbers were explored in details, it was recognized that, the dramatic decrease in interest rates come with dramatic increase in IPOs, or vice versa, as in 1992, number of IPOs decreased from 23 to 12 when interest rates increased by 20%, as in 2000, it increased from 10 to 35 when interest rates slowed down from 95% to 45%, as in 2004. The moral of the story is that when interest rates stay almost same, the number of IPO changes, it isn't amazing as the interest rates are not only factor that affect IPO market, however shocks in this indicator cause to changes in IPOs, at least for samples above.

Market return can be thought to be most important factor in IPO market, since offered stocks will be traded in stock exchange. Besides, if the expectations about market are fine, selling shares is easier for IPO firms. Nevertheless, these factors, i.e. the indicators evaluated with IPOs, were correlated with each other. The correlation table of these indicators is given at the end of this section.

The timing model says that if equity is overpriced and the market underreacts to equity issues, then management maximizes the wealth of existing shareholders by issuing equity. This hypothesis means that the firms issue equity according to past and current market returns.

When prior studies are explored;

Baker and Wurgler (2000) showed that firms issue relatively more equity around market peaks, just prior to periods of low market returns.

Pastor and Veronesi (2005) found that IPO volume is positively related to recent market returns, which suggests that many firms go public after expected market return declines or after expected aggregate profitability increases. At same time, they evaluated market returns from different view and they argued private firms are attracted to capital markets especially when market conditions are favorable in the sense that expected market return is low.

In market return calculation, ISE-100 indices daily returns were used. It was computed in two ways: cumulative and simple return then as the interest rates are ones of Central Bank of Turkey, it was accepted as risk-free rate and Net Return in the market was computed as Market Return minus Risk Free Rate (R_M- R_F).

Cumulative return was computed by:

$$CR_M = \sum_{N=1}^{N=K}((P_N/P_{N-1}) - 1)$$

CR_M: Cumulative Return in the Market

P_N: Closing value in n_{th} day

P_{N-1}: Closing Value in $(n-1)_{th}$ day

Simple Return is computed by:

$R_M = ((P_N/P_{N-1})-1)$

R_M: Simple Return in the Market

P_N: Closing value in n_{th} day

P_1: Closing Value in first day

$ER_M=CR_M-R_F$

ER_M: Excess Return in the market

R_F: Risk-free Rate

Both cumulative and simple returns were computed per year, for the period 1990-2006. According to the results in the table below and the graph 6, the cumulative return was smoother than simple return per year, as expected.

Years	Simple Return(ISE100)	Cum Return(ISE_100)
1990	46.81%	53.65%
1991	34.03%	45.11%
1992	-8.18%	-3.15%
1993	414.98%	172.51%
1994	31.95%	47.13%
1995	47.55%	46.77%
1996	140.79%	92.91%
1997	271.45%	145.97%
1998	-22.76%	-5.47%
1999	498.31%	192.95%
2000	-37.59%	-29.37%
2001	47.95%	58.11%
2002	-23.81%	-17.57%
2003	82.28%	68.15%
2004	36.67%	35.14%
2005	63.81%	52.44%
2006	2.77%	6.56%

Table: *Market Returns*

The return in the market was very high in 1993, 1996, 1997 and 1999 with values greater than 100%. Besides, in 1992, 1998 and 2002, there was negative return in ISE according to the indices. For computing excess return, simple return and 12 months-interest rates values at the end of the last year were used, since assumed that, buy and hold strategy (BAH) was used by sample investor. The cumulative excess return was showed in the table for references and comparison with simple excess return, but it was not used in analysis and graph, because this was computed by cumulative return minus 12_months-interest rates, instead of computing by subtracting daily interest rates from daily return. When the excess return was added in the analysis, the results in the table below were reached.

Years	Number of IPOs	IPOs' Total Volume	Int Rates	Simple Return(ISE100)	Rm-Rf	Cum Return(ISE_100)	Rm-Rf
1990	35	985,310,871.9	58.83%	46.81%	-12.02%	53.65%	-5.18%
1991	23	391,627,012.4	59.35%	34.03%	-25.32%	45.11%	-14.24%
1992	13	94,423,549.9	72.70%	-8.18%	-80.88%	-3.15%	-75.85%
1993	16	152,446,679.0	74.24%	414.98%	340.74%	172.51%	98.27%
1994	25	270,480,024.6	74.76%	31.95%	-42.81%	47.13%	-27.63%
1995	29	246,782,514.6	95.56%	47.55%	-48.01%	46.77%	-48.79%
1996	27	167,921,615.7	92.32%	140.79%	48.47%	92.91%	0.59%
1997	29	420,376,565.8	93.77%	271.45%	177.68%	145.97%	52.20%
1998	20	383,348,400.8	96.56%	-22.76%	-119.32%	-5.47%	-102.03%
1999	10	90,722,366.2	95.50%	498.31%	402.81%	192.95%	97.45%
2000	35	2,806,222,339.0	46.73%	-37.59%	-84.32%	-29.37%	-76.10%
2001	1	242,654	45.64%	47.95%	2.31%	58.11%	12.47%
2002	4	56,467,358.4	62.50%	-23.81%	-86.31%	-17.57%	-80.07%
2003	2	11,252,272.7	48.19%	82.28%	34.09%	68.15%	19.96%
2004	12	482,575,184.7	28.59%	36.67%	8.08%	35.14%	6.55%
2005	9	1,743,964,255.7	22.06%	63.81%	41.75%	52.44%	30.38%
2006	14	929,464,657.6	20.38%	2.77%	-17.61%	6.56%	-13.82%

Table: *IPOs and Market Return*

The graph 6 and the numbers above displays that the number of IPOs and the market return in the same year do not seem in relation with each other, however, if

analysis was made with the R_M-R_F of the last year and IPO market of actual year, there was some stronger relationship between these variables:

Years	Number of IPOs	R_M-R_F(Last Year)	IPOs' Total Volume
31.12.1990	35	*409.00%	985,310,871.9
31.12.1991	23	-12.02%	391,627,012.4
31.12.1992	13	-25.32%	94,423,549.9
31.12.1993	16	-80.88%	152,446,679.0
31.12.1994	25	340.74%	270,480,024.6
31.12.1995	29	-42.81%	246,782,514.6
31.12.1996	27	-48.01%	167,921,615.7
31.12.1997	29	48.47%	420,376,565.8
31.12.1998	20	177.68%	383,348,400.8
31.12.1999	10	-119.32%	90,722,366.2
31.12.2000	35	402.81%	2,806,222,339.0
31.12.2001	1	-84.32%	242,654
31.12.2002	4	2.31%	56,467,358.4
31.12.2003	2	-86.31%	11,252,272.7
31.12.2004	12	34.09%	482,575,184.7
31.12.2005	9	8.08%	1,743,964,255.7
31.12.2006	14	41.75%	929,464,657.6

Table: *IPOs and Previous year's Market Return*

In 1990, there were 35 IPOs after 410% excess return in the market in 1989, the negative returns in 1990 and 1991 caused to colder issue markets in 1991 and 1992; although there was negative return in 1992 there was an increase in the number of IPOs in 1993. Positive excess market returns in 1996 and 1997 provided high volume in following years. The great impact of market return on IPO market in 1999, 2000 and 2001 was seen; so the comovement was clear. The graph 8 also shows this situation explicitly. Besides when the IPO volume was added in the analysis, the correlation between IPO volume and previous year's excess return was seen obviously in graph 9.

* 1989 (R_M1989 –R_F1989=4.93-0.84)

It should be considered that in 1990, 4 and in 1991, 9 privatizations took place by initial public offerings. Privatization by Public Offering is successful, like other IPOs, when economic environment is convenient, but it is a bit different than private company public offering. Because the privatization waves come with the policy of the government and the process is much longer than private company's offering process. It means that, government tries best for timing privatization, as private company, however the governments make their plans for longer time horizon compared to private company and they act according to a program specified in advance. It is not easy to drop off some decisions when the conditions are not as expected for government, since the structure of government is bureaucratic. So, there might be a lag of years between the decision of privatization and the privatization waves themselves. Besides, the politicians can have decision according to other arguments different than market conditions. In summary the aim is to show that the privatizations by IPO or another way can emanate from other reasons as well as good economic condition, such as political issues, thus, by taking into account, the possible lag between decision and privatization, 23 IPOs including 9 privatizations in 1992 can be misleading. After negative market return in 1990, the decrease in the number of IPOs in 1991 had been smoothed by privatizations same year. May be the lag was 2 or more years, high market return in 1989 caused to increase privatizations in 1991 or in following years.

On the other hand, in parallel to Subrahmanyam and Titman (1999) argument which assert that in emerging economies, small government actions that stimulate the stock market can have snowball effect, this privatization waves might have positive effect in IPOs in Turkish market during these years.

After completing the analysis about market yield effect on IPOs, market level influence in them was examined in detail.

The market level is so important in IPO timing according to many researchers as it is mentioned before. M/B ratio, proxy of market level, is essential in IPO waves like Liang and Helvege (2002) indicated, some others argued that not market level but market returns before IPO, so market movements are critical for hot issue markets, like Pastor and Veronesi (2005) stated.

Pastor and Veronesi developed a model and in which IPO volume was more closely related to recent changes in stock prices than to the level of stock prices. They found that IPO volume was significantly related to recent market returns, but unrelated to the level of the aggregate M/B ratio. They noted also that market conditions were related not only to IPO volume but also to stock prices, as represented by the firms' ratios of market to book value of equity (M/B). IPO volume was then naturally related to stock prices as well. This was an important and different interpretation than many researchers' findings. Besides, Boehmer and Ljungqvist (2004) found that the median M/B ratio in the sample firm's industry has no effect in the decision to go public.

Nevertheless, in general, many researchers indicated that market levels, so M/B ratio is an important puller on the trigger for IPOs and many firms go public when this ratio in general market is high.

As it was given in detail before, these researches can be passed off only by brief repetition; Schultz (2002) also argued that more firms go public when they can receive a higher price for their shares, so IPOs will cluster when the market level is high and there are more offerings at peaks.

Jovanovic and Rousseau (Why Wait? A Century of Life before IPO) also reported that the electricity-era at the beginning of 20th century and information technology–era in 1990s leaded to younger firms to go public and M/B ratio was high for these periods.

Lowry and Schwert's (2002) findings was consistent with the prior findings of Pagano, Panetta, and Zingales (1998) and Lowry (2002) that more companies tend to go public when the average M/B of public firms in their industry is especially high.

Lowry (2002) also indicated that both the M/B ratio and the M/B-returns interaction term were significantly positive, indicating that the number of companies going public varies significantly with the stock market. More firms go public when the average M/B ratio is especially high. In addition, market returns have a significant effect when the market-wide M/B ratio is also high. This is a little bit different point of view, for IPO market to move, the high market return should be present in the market where M/B ratio is high.

In this study, main aim was to find any relationship between general market level and IPOs number and volume; firms' or industry' ratio weren't dealt with, since the number of IPOs and data were not sufficient for this type of more micro analysis.

In the table below, there are M/B ratio and number and volume of IPO by year. The M/B ratios were taken from ISE annual activity report and ISE web page.[21] For the table below, the comovement of market and IPO number or volume for the same year were searched. If there was, it would meant that the market and IPO number increases at the same time or book value decreases, but it was not so expected when the market conditions were getting better.

Years	Number of IPOs	Total Volume(USD)	M/B Ratio
1990	35	985,310,871.9	4,05
1991	23	391,627,012.4	2,59
1992	13	94,423,549.9	1,67
1993	16	152,446,679.0	6,78
1994	25	270,480,024.6	5,09
1995	29	246,782,514.6	3,71
1996	27	167,921,615.7	4,52
1997	29	420,376,565.8	8,31
1998	20	383,348,400.8	3,21
1999	10	90,722,366.2	7,70
2000	35	2,806,222,339.0	3,02
2001	1	242,654	3,71
2002	4	56,467,358.4	2,01
2003	2	11,252,272.7	2,16
2004	12	482,575,184.7	1,51
2005	9	1,743,964,255.7	2,11
2006	14	929,464,657.6	1,92

Table: *IPOs and Market Level*

Numbers and graph 10 don't display significant relationship between these indicators for all picture of the period of 17 years starting from 1990. There is only sub-

[21] http://www.ISE.gov.tr/veri.htm

period 1990-1994 which can be interpreted as there can be a relationship, but this is not satisfying.

Like market returns, when lagged results were evaluated, there was more significant comovement between M/B ratio of previous year and number of IPOs. This is healthier analysis since firms take decisions according to the past. M/B ratio is a market level in one time during a year. For example, M/B ratio for 2000 was taken as December M/B ratio, so it was assumed that in year 2001, firms decided according to the end of December ratio. Of course, in reality, these decisions are not taken according to the last month's value, but, the level was taken from the end year at the first step.

When the numbers and graph 11 were analyzed in depth, there was clear comovement of M/B of previous year and actual number of IPOs. It can be state that firms decide to go public according to the past price level of the market.

Years	Number of IPOs	M/B Ratio(Previous year end)
12/31/1990	35	4,12
12/31/1991	23	4,05
12/31/1992	13	2,59
12/31/1993	16	1,67
12/31/1994	25	6,78
12/31/1995	29	5,09
12/31/1996	27	3,71
12/31/1997	29	4,52
12/31/1998	20	8,31
12/31/1999	10	3,21
12/31/2000	35	7,70
12/31/2001	1	3,02
12/31/2002	4	3,71
12/31/2003	2	2,01
12/31/2004	12	2,16
12/31/2005	9	1,51
12/31/2006	14	2,11

Table: *IPOs and previous year M/B ratio*

As it was seen in detail during this study, may be the most interesting phenomenon in IPO market were underpricing, initial return in IPOs and hot issue markets. After mentioning about high first day initial returns in research of SEC, Ibbotson (1975) reported that the positive mean initial performance of IPOs was present and asserted that positive initial returns were not inconsistent with efficient market so it means that new issue offerings are underpriced. After this determination, underpricing has been tested in many countries. According to the results, the underpricing was present in many countries' IPO market. In this way, too many theories are developed about underpricing. As until here these theories are explored in detail they are not repeated once again.

The studies made in Turkey, in ISE are as below;

Güzelhan and Ağar (1991) found that in IPOs realized during the period January 1989-March 1991, first day return was 2.6%, first week return was 9.5%; first month return was 9.5% in average, so they argued that there was underpricing in ISE for this period.

Aydoğan and Yıldırım (1992) examined 33 IPO fulfilled between December 1989 and April 1991. They explored that these IPOs supplied 1.2% return in first day, -0.1% in twentieth day and -18% after 100 day, however they added that the results were not statistically significant. In addition to this, they found that, the underpricing was more present in IPO of Public Participation Administration (PPA). When the 25 private sector and 8 PPA IPOs were examined separately, the private sector average initial return was 1.3 % at the end of first day, 0.4% in twentieth day and -10.7% in 100. day, but PPA average was 0.7% at the end of first day, -98% in twentieth day and 30.4% in 100. day. Increase in returns of PPA IPO after 100 day showed that there is intervention of PPA for pulling on the trigger of other IPOs according to Aydoğan and Yıldırım. This interpretation supported my argument about privatization mentioned in the relationship interest rate, market return and IPOs part, so the privatization doesn't have to take place in the same conditions with private sector IPOs.

Kıymaz (1999), in his study where he examined 1990-1996 period's initial and aftermarket performance of 163 public firms in ISE, found that IPOs were underpriced

13.6% on average. This rate was 12.2% for manufacturing sector, 15.3% for financial institutions and 18.5% for other sectors. First day abnormal returns were %13.1 in all IPOs, 11.7% in manufacturing sector, 15% in financial institutions and 17.6% in other sectors.

Teker and Ekit (2003) found that for 34 IPOs fulfilled in ISE in the year 2000, first three day abnormal return was positive and statistically significant; however, return was negative and statistically insignificant for 30. day. In the same study, they dealt with the investment strategy, according to the IPO method. If the market is a bullish one, IPOs should be invested without caring the IPO method and if the motivation behind offering is providing extra capital for the firm, investing in it but closing the position after three days should be preferred, but for all other IPOs, the position should be closed at first day, according to their results. But if the market is a bearish one, investor can invest to all type of IPOs, but for capital increase method, he should sell his shares after 4 days of first trading day and for all other IPOs, the position should be closed at first day.

Özer (1999) examined November 1989-December 1994 period and showed that, IPOs provide positive return in first three days and abnormal return is highest at the first day. First three days movements are independent than market. Although there is some relationship between IPOs and market at all, she couldn't find between ISE and seasonal IPOs. This relationship began to appear in following days after 3. day and there was no important difference between market and IPOs return. Although daily returns were not different than market, as the returns increased cumulatively, the effect of first 3 days continued until 250. day. In this study first day average raw return was 12.41%, raw returns was changing between -10.7% and 233.3%, but the first day standard deviation was 31.17%, Finansbank and Gentaş's first day returns were too high[22], so when these outliers were excluded first day average return was 8.47% and standard deviation was 15.7%. Abnormal first day return was 12.24% and 8.35% when Finansbank and Gentaş were excluded.

Ayden and Karan (2000) argued that there was no underpricing phenomenon in IPOs fulfilled between 1992 and 1995, according to their study where 36 months' performance of IPOs were examined.

[22] 233.3% and 134.29% in order.

Yaşar (1997) found that, in IPOs of 1995, the raw return was -47.7% at the end of first day, -49.3% at the end of first week, -43.5% at the end of first month and again -43.5% at the end of first three months. When the effect of market was excluded, the returns were -47%, -47.7%, -50% and -51%, for first of day, week, month and three months in order. The results for 1996 was so different, the raw return was 3.9% at the end of first day, 7.6% at the end of first week, 11.7% at the end of first month and again 39.3% at the end of first three months. But when Çelebi Hava Servisi A.Ş. was excluded with its 226% raw return in first trading day, first day return was 2.8%, first week return was 4.2%, first month return was 6.4% and first three month return was 34%. For abnormal returns, the results were, 2.3% and 1.2% in first day, 5.8% and 2.5% in first week, 4.8% and -0.2% in first month, 1.2% and -0.1% in first three month, with outlier included and excluded, in order. But the results weren't statistically significant according to analysis. In this study, the results showed that there was no underpricing for the year 1995 but there was for 1996.

Kıymaz (1997) examined IPOs of manufacturing sector in period 1990-1995 long-run performance and found 11% abnormal return in 30 months after first offering. When this analysis was separated in sub-sector, there was %29.7 abnormal return in insurance sector, 59% in Leasing/Factoring sector, 16.9% in Holding/Investment sector and -20.2% in banking sector. So for this analysis it is not possible to talk about the long-run underperformance.

Küçükkocaoğlu and Alagöz (2006), in their work where they examined the methods used in IPOs in ISE, using 1993-2005 firm and issued data, compared the book building mechanism and the fixed price offer available in the ISE. The empirical analysis revealed significant first day underpricing of 7.13% in fixed price offers and 10.61% in book building mechanism.

So when all these results made about ISE are interpreted, it is concluded that there is underpricing phenomenon for first day and there is underperformance of IPOs in general.

Ibbotson and Jaffe (1975) focused on the prediction of "Hot issue" markets. Hot issue markets were defined as average first month or aftermarket performance of new issues was abnormally high. During these periods, the offerings' density was increasing,

so it was named hot issue markets. Then many theories were developed for this phenomenon, mentioned before in this study. After that, the poor long-run performance of IPOs was in common across many countries IPO market and so on. It is not gone ahead about these theories, but the cause of repeating them here, is remembering before seeing the initial market return and IPOs relationship.

So although there are so many researches about underpricing or long-run performance about ISE, there is not enough study about timing of IPOs and about initial return and IPOs relationship. Main purpose is to catch some comovement or causal relationship between IPO number and initial return.

Years	Number of IPOs	IPOs' Total Volume	Average Initial Raw Return	Average Initial Abn Return
1990	35	985,310,871.9	25.01%	24.21%
1991	23	391,627,012.4	5.86%	5.94%
1992	13	94,423,549.9	5.71%	4.79%
1993	16	152,446,679.0	13.51%	12.84%
1994	25	270,480,024.6	5.00%	5.55%
1995	29	246,782,514.6	12.99%	13.49%
1996	27	167,921,615.7	7.28%	6.90%
1997	29	420,376,565.8	10.41%	11.86%
1998	20	383,348,400.8	7.77%	7.82%
1999	10	90,722,366.2	12.21%	9.79%
2000	35	2,806,222,339.0	8.24%	8.02%
2001	1	242,654	4.76%	3.89%
2002	4	56,467,358.4	-3.87%	-2.11%
2003	2	11,252,272.7	5.25%	5.92%
2004	12	482,575,184.7	1.65%	2.34%
2005	9	1,743,964,255.7	6.03%	7.19%
2006	14	929,464,657.6	6.73%	7.83%

Table: *IPOs and Initial Return Ratio*

When the results were analyzed, it was recognized that there is underpricing phenomenon in Turkish IPO Market, between 1990 and 2006. In some of years, this was more significant, as in 1990, 1993, 1995, 1997 and 1999. But in the study made by

Savaşkan (2005), although the first day average return was positive in 2004 and 2005, 9 of 17 IPOs' first day return were negative. When the researches made before and other countries' cases are taken into account, the short-term and long-term performance of IPOs in ISE decreased too much. Küçükkocaoğlu and Alagöz's (2006), Savaşkan's (2005) and this study's results showed that the performance was below the past and other countries. The mean first day raw return of 304 IPOs, between 01.01.1990 and 31.10.2006, was 7.91% and abnormal return was 8.02% according to the results in the table above. Besides in 2004-2005 the mean first day raw return of 17 IPOs was 1.8% and abnormal return was 2.81% according to Savaşkan (2005). When these results are compared to Kıymaz (1999), Kıymaz (1997), Özer (1999), Teker and Ekit (2003), the decreasing aspect of IPOs first day return after 1990 are present.

The graph 12 and the table above show that initial raw return and initial abnormal return move in parallel as expected so only abnormal one was used in the analysis. Then, the graph 13 displays that there is some period of comovement as 1990-1993 periods or 1995-1998 periods, but it is not possible to say that there is important relationship between them. When the initial return of previous year and actual number of IPOs were analyzed, as in graph 14; some comovement in periods, such as 2003-2006, 1990-1994 were present. But it was not easy to speak about strong correlation according to the graphs.

There was not a strong relationship, opposite to our expectations, according to the graphs, but it will be analyzed according to the regression results too.

May be researches weren't interested in market volatility as much as business cycles, initial returns or market level, but there are also some variables' volatility's relationship with IPO market examined.

For instance, according to the results of Boehmer and Ljungqvist (2004), firms tend to announce IPO plans after increases in the volatility of share prices in their industry.

Besides, Pastor and Veronesi (2005) found IPO volume was negatively related to changes in market return volatility.

Hyuk, Masulis and Nanda (1993) also dealt with stock market volatility and reached the result that the relative frequency of monthly corporate equity to debt offers was positively related to stock price volatility.

In the graph 15 there are 100 days stock market moving average volatilities in ISE. The volatility in ISE increased in 1991 after gulf war, in 1994 after the devaluation, in 1998 after systemic effect of Russian crisis in Turkey and in 2001 after liquidity crisis at the end of 2000 and the devaluation at the beginning of 2001. There is a clear decrease starting from 2002 until the end of 2006. So, as in Turkey after 2001, there was a systematic decrease in inflation and stable growth rate in GDP. It presents that stock market volatility decreases when expectations are good, then, when expectations are good there are money flows to emerging markets as Turkey example. In this way there is economic growth financed by cash inflows, i.e. direct investment or portfolio investment or short-run capital inflows. By the way, if there is a correlation between economic growth and IPO market, it is expected to see hot issue markets when market volatility decreases, or vice versa.

In the table below, there are average stock market volatility, GDP growth rates and number and volume of IPOs by year.

Years	Number of IPOs	GDP Growth Rate	IPOs' Total Volume	Vol(ISE_100)
1990	35	9.4	985,310,871.9	3.51%
1991	23	0.3	391,627,012.4	3.60%
1992	13	6.4	94,423,549.9	2.08%
1993	16	8.1	152,446,679.0	2.57%
1994	25	-6.1	270,480,024.6	3.91%
1995	29	8.0	246,782,514.6	2.50%
1996	27	7.1	167,921,615.7	2.00%
1997	29	8.3	420,376,565.8	2.99%
1998	20	3.9	383,348,400.8	4.02%
1999	10	-6.1	90,722,366.2	3.39%
2000	35	6.3	2,806,222,339.0	3.74%
2001	1	-9.5	242,654	3.90%

2002	4	7.9	56,467,358.4	3.00%
2003	2	5.9	11,252,272.7	2.55%
2004	12	9.9	482,575,184.7	1.76%
2005	9	7.6	1,743,964,255.7	1.53%
2006	14	5.0	929,464,657.6	1.93%

Table: Average stock market volatility, GDP growth rates and number and volume of IPOs in 1990-2006

It is seen from the numbers above that except 2002-2006, it is not possible to say that there is an inverse relationship between volatility and number of IPOs and GNP growth rate. When the previous years' volatility and number of IPOs were analyzed there wasn't any expected relationship too. According to the graph 16 there isn't any comovement between these variables.

Until now there were only analysis of the graphs of number or volume of IPOs with other variables and some interpretations introduced by considering historical events as privatization or financial distress in Turkey. These variables' relationship with IPOs according to statistical data was also analyzed. Beginning from this part they are shown; so in first step there are correlation results briefly, after that the bivariate and multiple regression results and some comments about them will be present.

Correlation Analysis

Correlation is used to describe the observed relationship between instances of two events. A systematic pattern can be seen in the occurrences of events that are correlated. When the events involve numbers, a positive correlation means that as one increase, the other increases as well. A negative correlation means that as one increase, the other decreases. Correlation does NOT imply causation in any way. In other words, just because two events are correlated does not mean that one causes another, or has anything to do with the other; correlations deal only with observed instances of events, and any further conclusions cannot be inferred from correlation alone. Strong correlation, however, does often warrant further investigation to determine causation.[23]

[23] http://www.biochem.northwestern.edu/holmgren/Glossary/Definitions/Def-C/correlation.html

In the light of the definition above, from the table below, the relationship of the variables with each other is seen but there is not causality.

Variables	Number of IPOs	GDP Growth Rate	IPO Volume (USD)	Interest Rates	Simple Return ISE100	Cum Return ISE100	Rm-Rf	Vol ISE_100	Initial Raw Return	Initial Abn Return	Volexc	P/E	M/B
Number of IPOs	1.00												
GDP Growth Rate	0.28	1.00											
IPO Volume(USD)	0.42	0.27	1.00										
Interest Rates	0.37	-0.11	-0.46	1.00									
Simple Return(ISE100)	-0.07	-0.16	-0.30	0.42	1.00								
Cum Return(ISE100)	-0.03	-0.19	-0.37	0.41	0.96**	1.00							
Rm-Rf	-0.20	-0.16	-0.20	0.00	0.86**	0.91**	1.00						
Vol(ISE_100)	0.25	-0.58**	0.00	0.36	-0.03	-0.04	-0.20	1.00					
Initial Raw Return	0.59*	0.14	0.16	0.29	0.37	0.41	0.32	0.18	1.00				
Initial Abn Return	0.62**	0.23	0.19	0.25	0.31	0.37	0.29	0.14	0.99**	1.00			
Volexc	-0.28	-0.73**	-0.22	-0.20	-0.24	-0.13	-0.05	0.37	-0.35	-0.36	1.00		
P/E	-0.48*	-0.19	-0.25	-0.09	-0.11	-0.17	-0.15	0.21	-0.46	-0.46	0.32	1.00	
M/B	0.30	-0.25	-0.21	0.64**	0.83**	0.84	0.63**	0.32	0.47	0.44	-0.05	-0.10	1.00

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table: Correlation Table between the variables' series in the period 1990-2006

The results in the correlation table display that there is high positive correlation between number of IPOs and initial raw and abnormal return. Normally, the abnormal and raw return are approximately same thing, so they had 0.99 correlation between them and in this way, raw return was excluded and only abnormal was used one for initial return and IPOs relationship. As expected, the correlation coefficients of simple market return, cumulative market return and market return minus risk free rate (R_m-R_f) had 0.96, 0.91 and 0.86 correlation, so only R_m-R_f was evaluated in the analysis.

When relationship between IPOs and initial return was explored once again; 0.62 correlation coefficient was high enough, consequently, there are more IPOs in ISE when IPOs' initial first day return were high. This can be natural result of competition between the firms which went public, it is to say, if there are many IPOs, potential investor have

many choices, so firms have to set price lower for successful offering. On the other hand, it can be because of, like Ibbotson and Sindelar (1994) argued that overoptimism by investors creates "windows of opportunity" and increase on the demand for IPOs creates more IPOs and more demand for new stocks. In this way high initial return and above average number of IPOs were seen concurrently. However there were not strong relationship between number and volume of IPOs, the coefficient was only 0.42. This may be because of inverse movement of number and volume of IPOs 1994-1995 and 2004-2006, in addition to this, as stated before, the percentage change of number and volume was very different, so this caused low coefficient. But if this kind of relationship has been seen between these two variables, which were naturally expected to have very high coefficient, coefficients between other variables can be evaluated according to this peg. So, 0.62 (significant) coefficient of correlation for initial return and number of IPOs was very important relationship for this data.

Besides, although it was not significant, there was same direction relationship between number of IPOs and interest rates variables, different than assumed. When interest rates increase it is expected that IPOs slow down. This pattern has been seen for volume of IPOs and interest rates, so the capital allocated in IPOs decrease when opportunity cost increases. But it is obvious that inverse relationship for number and volume will cause problem in interpreting the following results.

Increase in market return came with decrease in IPOs, this negative relationship was not as strong as volume for number of IPOs or cumulative and simple return, but same for R_m-R_f, surprisingly, 0.20. GDP growth rate and IPOs had positive but insignificant correlation of coefficient and it was almost same for number and volume of IPOs (0.27).

When market level variables and IPOs were analyzed, P/E ratio and IPOs relationship was negative for each of volume and number of IPOs, while M/B ratio had negative comovement with volume but positive with number of IPOs. Although these coefficients were not so high (only the coefficient of P/E and number of IPOs was significant -0.48), market level and IPOs relationship was inverse for P/E ratio. But it requires an alert on time; this result which shows that negative relationship is present for IPOs and market level, is never a contradictory to many researchers' argument that IPO

clusters when the market level is high. Because many firms go public after M/B or P/E ratios are at the top, so when hot issue markets are present it is expected that market level decreases. Besides it is also parallel to the argument that IPOs increase after market returns increase. But once again, negative relationship between M/B and P/E ratio distorts the analysis.

Not directly related to the scope of this dissertation, the high correlation coefficients between other variables were differentiated. The relationship between stock market volatility and GDP growth rate was negative with -0.58. It means that when risk increases in capital markets, Turkey economy growth which is pulled on trigger by consumption financed by portfolio investment breaks down, i.e. when capital inflows slow down. The same situation is present for exchange rates' volatility and GDP growth rate for the same reasons with significant and high correlation coefficient.

Market returns and P/E ratio have very strong relationship between them, since when prices increase return also increase; however according to results, in Turkish capital market, there had inverse relationship between market returns and M/B ratio and between M/B and P/E ratio in (in addition very weak relationship) trivially.

The correlation table for actual year's number and volume of IPO and previous years' values for other variables is showed below. Although, correlation coefficient doesn't give any causality result about variables, comovement between previous years' values and actual year's values may give some idea about pursuit of previous year's financial aspect for IPOs.

	Number of IPOs	GDP Growth Rate	IPO Volume (USD)	Interest Rates	Simple Return (ISE100)	Rm-Rf	Vol (ISE_100)	Initial Raw Return	Initial Abn Return	Volexc	M/B	P/E
Number of IPOs	1											
GDP Growth Rate	-0.16	1										
IPO Volume(USD)	0.42	-0.19	1									
Interest Rates	0.62**	-0.12	0.00	1								
Simple Return	0.71**	-0.19	0.57*	0.42	1							
Rm-Rf	0.66**	-0.18	0.60*	0.31	0.99**	1						
Vol(ISE_100)	-0.08	-0.60**	-0.23	0.27	-0.05	-0.09	1					
Initial Raw Return	0.59*	0.04	0.16	0.48	0.37	0.32	-0.07	1				
Initial Abn Return	0.62**	0.03	0.19	0.43	0.40	0.36	-0.15	0.99**	1			
Volexc	-0.16	-0.71**	-0.22	-0.23	-0.28	-0.26	0.38	-0.27	-0.22	1		
M/B	0.61**	-0.25	0.28	0.61**	0.72**	0.67**	0.29	0.09	0.10	-0.04	1	
P/E	-0.43	-0.18	-0.17	-0.14	-0.15	-0.14	0.15	-0.35	-0.31	0.33	-0.12	1

Table: Correlation Table between the variables' series in the period 1990-2006 (variables^{-1})

Surprisingly, previous year's variables had closer relationship with following year's number of IPOs except GDP growth rate. Market return increase in previous year had 0.66 correlations with this year's number of IPOs. It is not unexpected situation since stock market returns increase leads hot markets as Pastor and Veronesi (2005) found. Besides, market level increase had positive relationship with number of IPOs and coefficient was 0.61 and it was significant. However, as M/B and P/E ratios were not correlated, moreover coefficient correlation was negative, once again P/E ratio had negative relationship with number of IPOs, but it was insignificant. Initial returns had again positive and high relationship with number of IPOs. This was in the same parallel with the findings of Ibbotson, Sindelar and Ritter (1988), that contemporaneous year initial returns' have strong relationship with next year's number of issues and that initial returns lead volume. Besides, previous year's return had positive and significant relationship with both of number and volume of IPOs. Increase in previous year's initial return came with increase in this year's IPOs, as actual year. This time, we are comfortable with M/B ratio and number of IPOs, since there was 0.62 (significant) coefficient of correlation.

It is amazing to see again positive and high relationship with interest rates and IPOs. But we should recognize that the variables which show a level as, M/B, P/E and interest rates ratios had more unexpected results; M/B ratio had significant and positive relationship with interest rates, no relationship with P/E ratio. It may be because of variable's characteristic itself, since the level is essential than changes in variables. Besides, as stated before, during 90s high inflation rates in Turkey caused unexpected results for economic and financial analysis. It was more logical to deal with real interest rates; when the correlation for real interest rates and number of IPOs were computed, coefficients were -0.50[24], so we are comfortable with this result as the sign was negative. So, arguing these relationships is dropped out until regression results.

Regression Analysis

Regression measures the same relationship between two variables as correlation does, in correlation two variables are standardized before examining the relationship. In regression analysis, the relationship is expressed in the original units of the two variables. In this analysis the response of if one variable predict significantly another, rather than significant relationship between them as correlation does, is looked for.

Linear regression provides an R-Squared value for the historical data. If this value is too small, the data is not linear, so the original assumptions must change. If R-Squared is large enough, then the linear regression will provide the best prediction of the second move each day based on the first move. R-Squared is a statistical term saying how good one term is at predicting another. More generally, a higher value of R-Squared means to predict one term from another can be better predicted. R-Squared is named also *Coefficient of Determination* and shows amount of variability in dependent variable that can be explained by the independent variable.

There are a response variable Y and an explanatory variable x, and then the simple linear regression model for Y on x is given by

$$Y_i = \beta_0 + \beta_1 x_i + \varepsilon_i \qquad i = 1,...,n.$$

[24] Not shown in tables.

where β_0 and $\beta_1$are unknown parameters, and the ε_i are independent random variables with zero mean and constant variance for all i=1,2…..,n.

The parameters β_0 and β_1 are called regression parameters (or regression coefficients), and the line h (x) = $\beta_0 + \beta_1 x$ is called the regression line or the linear predictor. The regression parameters β_0 and β_1 are unknown, non-random parameters. They are the intercept and the slope, respectively, of the straight line relating Y to x.

If the regression model is applied for the analysis made in this study, the response variable is number or volume of IPO, where $GDP_{\%}$, r, Level, Vol, InR, Volexc and Return are explanatory variables:

$$Y_i = \beta_0 + \beta_1 GDP_{\%} + \beta_1 r + \beta_1 vol + \beta_4 M/B + \beta_1 Ret + \beta_1 InR + \beta_1 Volexc + \varepsilon_i$$

$GDP_{\%}$ = GDP Growth Rate

r = Real Interest Rates

Return = Market Return

Level = Market Level (M/B Ratio, P/E Ratio)

Vol = Market Volatility

InR= Initial Return

Volexc = Exchange Rates Volatility

In the following parts, the regression equation was conducted with all explanatory and response variables; at first step, the simple regression equation for all variables was used, and after that the hierarchical regression was used according to the simple regression results. So the regression model given above is the one which comprehends all these regression equations used during the empirical analysis.

T-Test and F-Test were used to test the statistical significance of coefficients of explanatory variables. The hypothesis the coefficient of explanatory variable was different than 0 was tested.

H_0: $\beta_1 = 0$

H_1: $\beta 1 \neq 0$

Regression Results

In this study, the purpose of regression analysis was to investigate the role of some variables denoted before in explaining changes in number of IPOs, or hot or cold issue markets. Hierarchical Regression Analysis (HRA) was employed, as well as simple regression, in order to determine the influence of variables as predictors of IPOs and to find out if some variables contributed to explanation of IPO changes after controlling some variables which have high correlation with IPOs.

Simple regression analysis was conducted at first step. There are four tables below; these are results of simple regression analysis with all independent variables with dependent variable number or volume of IPOs. As in correlation analysis, it was also used the independent variables' previous year's values with dependent variable's actual year values once again for being able to see the predictability of next year's IPO pattern with this year variables. In addition to this, as defined above, the increased data* was used, for same processes, i.e., actual or previous year independent variables. Increased data was computed by adding the one year value, two years average value, three years average value and four year's average value of variables. For interest rates the compound interest rate four 2 or 3 or 4 was computed, than one year interest rate was calculated. This data was used in regression for being able to eliminate the possibility of missing some significant results, because of low number of data between 1990 and 2006 (only 304 IPOs in aggregate).

Tables display the standardized regression coefficients (β), which shows the significance and relative importance of that variable in the equation; R^2, which is the variance explained in the outcome variable, Adjusted R^2, which is adjusted for simple size, is displayed here in able to understand the low data effect on results. *F* statistic shows the significance of the change for each step. It will be useful in hierarchical regression.

* Sometimes it is named by "bunch of years", as the purpose is increasing data in this process, during data examination, we use "increase data" term

** p<.01 and * p<.05

Reg Results Independent Variables	*Beta (stcoef)*	R^2	*Adjusted* R^2	*F for Change*
GDP Growth Rate	0.28	0.079	0.017	1.279
Interest Rates(End of last Year)	0.367	0.135	0.077	2.341
Simple Return(ISE100)	-0.07	0.005	-0.061	0.074
Cum Return(ISE100)	-0.032	0.001	-0.066	0.015
Rm-Rf	-0.202	0.041	-0.023	0.636
Vol(ISE_100)	0.316	0.1	0.04	1.665
Initial Raw Return	0.575*	0.331	0.286	7.42*
Initial Abn Return	0.62**	0.384	0.343	9.367**
Volexc	-0.278	0.077	0.016	1.253
P/E	-0.482*	0.233	0.181	4.545*
M/B	0.297	0.088	0.028	0.247

Table: Regression Results; variables explaining number of IPOs in 1990-2006

According to the regression results of number of IPOs and all independent variables used during this study, only initial abnormal return was significant in 0.01 level and P/E ratio and initial raw return were significant at 0.05 level. In the table, initial raw and abnormal return, simple and cumulative return are shown together, but in future tables, there are only abnormal and simple return in the analysis. Initial raw return had significant relationship with dependent variable, as abnormal one had. M/B ratio had positive but insignificant relationship. As regression measures the same relationship between two variables as correlation does, the results were same, so analysis passes to hierarchical regression after dealing with increased data, by not loosing so much time in analysis of actual and previous year's normal data.[25] As the simple regression results were same with correlation results, normal data simple regression results for previous year with number of IPOs and simple regression results with volume of IPOs are displayed in tables 4-6, but not here.

[25] Normal data term is used to determine 1990-2006 variables, i.e., N=17 and average values excluded.

** p<.01 and * p<.05

Reg Results				
Independent Variables	*Beta (stcoef)*	*R^2*	*Adjusted R^2*	*F for Change*
GDP Growth Rate	0.13	0.017	0.001	1.031
Interest Rates(End of last Year)	0.604**	0.365	0.355	34.519**
Simple Return(ISE100)	0.147	0.022	0.005	1.322
Rm-Rf	-0.1	0	-0.017	0.006
Vol(ISE_100)	0.285*	0.081	0.066	5.308*
Initial Abn Return	0.706**	0.498	0.49	59.591**
Volexc	-0.262*	0.069	0.053	4.431*
M/B	0.546**	0.298	0.287	25.514**
P/E	-0.588**	0.346	0.335	31.476**

Table: Regression Results; variables explaining number of IPOs in 1990-2006 (increased data)

Reg Results				
Independent Variables	*Beta (stcoef)*	*R^2*	*Adjusted R^2*	*F for Change*
GDP Growth Rate	0.003	0	-0.17	0.001
Interest Rates(End of last Year)	0.693**	0.48	0.471	55.396**
Simple Return(ISE100)	0.665**	0.443	0.433	47.462**
Rm-Rf	0.569**	0.323	0.312	28.666**
Vol(ISE_100)	-0.128	0.016	0	1.004
Initial Abn Return	0.706**	0.498	0.49	59.591**
Volexc	-0.182	0.033	0.017	2.064
M/B	0.631**	0.398	0.388	39.66**
P/E	-0.625**	0.391	0.381	38.495**
Real Interest Rates	-0.090	0.008	-0.058	0.122

Table: Regression Results; variables explaining number of IPOs in 1990-2006 (increased data-previous year)

Reg Results				
Independent Variables	*Beta (stcoef)*	*R^2*	*Adjusted R^2*	*F for Change*
GDP Growth Rate	0.074	0.005	-0.011	0.331
Interest Rates(End of last Year)	-0.447**	0.2	0.187	14.997**
Simple Return(ISE100)	0.147	0.022	0.005	1.322
Rm-Rf	-0.186	0.035	0.019	2.161
Vol(ISE_100)	0.149	0.022	0.006	1.367

Initial Abn Return	0.123	0.015	-0.001	0.922
Volexc	-0.132	0.017	0.001	1.068
M/B	-0.195	0.38	0.022	2.368
P/E	-0.145	0.021	0.005	1.293

Table: Regression Results; variables explaining IPO Volume in 1990-2006 (increased data)

Reg Results				
Independent Variables	*Beta (stcoef)*	*R^2*	*Adjusted R^2*	*F for Change*
GDP Growth Rate	-0.124	0.015	-0.001	0.932
Interest Rates(End of last Year)	-0.071	0.005	-0.012	0.306
Simple Return(ISE100)	0.4333**	0.187	0.174	13.824**
Rm-Rf	0.474**	0.225	0.212	17.383**
Vol(ISE_100)	-0.082	0.007	-0.01	0.407
Initial Abn Return	0.123	0.015	-0.001	0.922
Volexc	-0.282*	0.079	0.064	5.17*
M/B	0.17	0.029	0.013	1.785
P/E	-0.167	0.028	0.012	1.729

Table: Regression Results; variables explaining IPO Volume in 1990-2006 (increased data-previous year)

According to regression results maintained with increased data, it is recognized that IPO volume and independent variables were not significantly related, as normal data analysis. For coming year, only interest rates can predict number of IPOs, with coefficient -0.447. If the previous year data was taken into analysis, coefficient of interest rates was not significant this time, but simple return and abnormal return (R_m-R_f) had significant relationship. Besides, previous year's exchanges rates volatility had negative and significant relationship with actual year's IPO volume. These results were expected ones, since if the return in the market increases, the volume of IPO is anticipated to increase too, besides, if risk, i.e., market volatility increases, IPOs should decrease. However, volume of IPO hadn't significant relationship with GDP, initial return and market level indicators.

The results with the number of IPOs revealed much more significant relationship with independent variables. Especially previous years' results figured out expected patterns; simple returns, abnormal market return, initial abnormal return, M/B ratio

should predict significantly number of IPOs of next year. These findings are similar to many researchers' empirical evidence explained during this study.

P/E ratio had significant but negative relationship for actual and next year's IPOs. It is obliged to say something about this situation; it may be because of that when firms' earnings decrease, P/E ratio increases, firms earnings decrease when the market conditions getting worse, in this way bad conditions cause to firms to renounce offerings. This argument deals with denominator of the fraction since nominator is almost same for P/E and M/B ratio, so it is not so meaningful to evaluate it.

Once again, the positive relationship between interest rates with number of IPOs was amazing for both previous and actual year results, so it should be repeated that high inflation rates could distort analysis. When analysis was made with real interest rates, coefficient was -0.398 and significant for actual year and -0.264 and significant in 0.05 level for previous year. However R^2s were very low; 0.16 and 0.07 in order, ultimately the coefficients were negative for this time. Although R^2 was not low as nominal interest rates, it is very important to betray the real and nominal interest rates differences effect in results, in countries where hyperinflation was present.

As defined before, R^2 (*Coefficient of Determination)* is an important indicator about predictability of dependent variable by independent variable. If R^2 is 100% then given the value of one term, the value of another term should be perfectly predicted. More generally, a higher value of R^2 means that it may be better predicted one term from another. It shows amount of variability in dependent variable that can be explained by the independent variable. When R^2 figures were looked in detail for normal data analysis, initial abnormal return's R-squared was about 39%, it was almost enough to predict the dependent variable, although coefficient was significant. Adjusted R^2 results were normally lower. From table 4, R-squared pattern was much better, with 43% for abnormal return, 37% for M/B ratio and once again 38.4% for initial abnormal return.

With increased data, R^2s increased, besides adjusted ones were not so lower than non-adjusted R^2. Abnormal return had 50%, P/E ratio 35%, interest rates 36% coefficient of determination. Previous year data showed that initial abnormal return had same, simple return had 44%, M/B had 39%, P/E had 39% again, abnormal return had 32% coefficient of determination. However it is not so easy to talk about the best R-squared result,

because the result is much related to stationarity of the series which was used, according to series, for example stock returns, 25% is enough according to some researchers.[26] So we may be comfortable with these relatively higher R^2 results, as the stationarity of series is beyond of scope of this study.

In following part there are the results of hierarchical regression. A series of hierarchical regression analyses were conducted for each dependent variable to determine the variance explained by each independent variable after controlling for the influence of significantly correlated variables as well as to find out if return variables explained variance over and above general economic variables for example.

Prediction of Number of IPOs

In this analysis, highly correlated variable was controlled and other significantly correlated variables were regressed step by step in able to find direct effect of other variables after controlling highly correlated variables. It means that this regression was in the order of correlation coefficients between significant ones.

Hierarchical Regression Analysis (HRA) was employed in order to determine the influence of one dependent variable (first dependent) as predictors of number of IPOs to find out if another independent variable (second dependent) fit contributed to explanation of number of IPOs over and above first dependent after controlling for the effect third independent, which correlated significantly with dependent variable. If there were not enough significant measures as in the sample of actual year normal data, only the additional effect of independent variable, after controlling highly correlated variable, has been seen.

So for actual years result as there are only initial abnormal return and P/E ratio, so separate 2-step hierarchical regression analysis was used for each variables. The order of entry was as follows: 1) Initial Abnormal Return (IAR), 2) P/E ratio (P/E):

Table displays the standardized regression coefficients (β), which shows the significance and relative importance of that variable in the equation; R^2, which is the variance explained in the outcome variable; the change in R^2 as a result of the lastly added variable and *F* statistic showing the significance of the change for each step.

[26] http://www.duke.edu/~rnau/rsquared.htm

	Beta (stcoef)	R^2	R^2 Change	F for Change
Step 1: Return		.384	.384	9.367**
Initial Abnormal Return	.62**			
Step 2: Market Level(P/E)		.353	.049	1.221
Initial Abnormal Return	.505**			
P/E Ratio	-.25			

At first step, IAR explained 38% of the variance (F =9.367, p < .01) in all regression equations. When P/E was entered as the market level measure at step 2, it explained only an additional 0.49% variance (F = 1.221, insignificant) and initial abnormal return was still significant.

For IPO volume, any HRA wasn't conducted for actual year normal data, as there was only one significant correlated independent variable.

When it is shifted to the previous year's independent variables with normal data, HRA was conducted in this way: A separate 3-step hierarchical regression analysis for each variable was conducted. The order of entry was as follows: 1) Initial Abnormal Return (IAR), 2) Simple Return ISE-100 (Simple Ret), 3) M/B Ratio (M/B). Since Abnormal Return and simple return can be accepted as same variable for this analysis, simple return, whose correlation coefficient was higher, was preferred, besides as real interest rates result was very different than nominal ones, interest rates were excluded than analysis and in an additional, i.e., fourth step real interest rates was included.

	Beta (stcoef)	R^2	R^2 Change	F for Change
Step 1: Initial Return		.384	.384	9.367**
Initial Abnormal Return	.62**			
Step 2: Market Return		.633	.249	9.484**
Initial Abnormal Return	.399*			
Simple Return ISE100	.545**			
Step 3: Market Level		.700	.067	2.912
Initial Abnormal Return	.484*			

Simple Return ISE100	.233			
M/B Ratio	.388			
Economic Variable(Real Int Rates)				
Step 4: Economic Variable		.707	.006	.264
Initial Abnormal Return	.470**			
Simple Return ISE100	-.304			
MB Ratio	.316			
Real Interest Rates	-.095			
Step 3: Economic Variable		0.674	.041	1.631
Initial Abnormal Return	.403*			
Simple Return ISE100	.574**			
Real Interest Rates	-.204			

From table above, at first step, IAR explained 38.4% of the variance (F =9367, $p < .01$) in all regression equations. When simple return was entered as the market return measure at step 2, it explained an additional 24.9% variance (F = 9.484, $p < .01$) and IAR was still significant. And finally at step 3, M/B stayed insignificant (F = 2.912) and simple market return became insignificant. The amount of variance explained by IAR decreased at step 3 but remained significant with $\beta = .484$, $p < .05$.

In the fourth step, real interest rates explained additional 6% variance but it was insignificant (F = .264), with a $\beta = -.045$. When real interest rates are added as final step, simple return became insignificant.

When real interest rates was entered as the economic variable at third step instead of M/B Ratio, it explained only additional 4.1% variance in number of IPOs at step and it was insignificant (F = 1.631); whereas, simple return became significant surprisingly ($\beta=.574$, $p < .01$) .

These findings indicate that number of IPOs is best predicted by initial abnormal return, after that simple return in the market is also can be used to predict, but when M/B ratio or real interest rates are in overall analysis, simple return, M/B ratio and real interest rates are not correlated to overall performance measure.

	Beta (stcoef)	R^2	R^2 Change	F for Change
Step 1: Initial Return		.384	.384	9.367**
Initial Abnormal Return	.62**			
Step 2: Market Level		.68	.295	12.902**
Initial Abnormal Return	.562**			
M/B Ratio	.546**			
Step 3: Market Level[27]		.700	.021	.890
Initial Abnormal Return	.484*			
M/B Ratio	.388			
Simple Return ISE100	.233			

However, when HRA was conducted by steps as 1) Initial Abnormal Return (IAR), 2) M/B Ratio (M/B) 3) Simple Return ISE100 (Simple Ret), the picture didn't change and this time at step 2, M/B explained additional 29.5% variance(F=12.902, $p <$ .01), but at third step when simple return is included, became insignificant, as simple return.

	Beta (stcoef)	R^2	R^2 Change	F for Change
Step 1: Initial Return		.384	.384	9.367**
Initial Abnormal Return	.62**			
Step 2: Market Level		.403	.019	.440
Initial Abnormal Return	.63**			
Real Interest Rates	-.137			

When two steps HRA were conducted as 1) Initial Abnormal Return (IAR), 2) Real Interest Rates, real interest rates variable was insignificant.

So, according to previous year's independent variables effect in number of IPOs' results, initial abnormal return predicts hot issue market significantly, in overall performance measure, if M/B ratio or simple return were included in the analysis, they

[27] Same with the step 3 in the table above

added important additional variance in explaining amount of variance in number of IPOs, however when they were included together, they became insignificant. It can be because of high correlation between these two variables (0.72). So as a result, previous year's market returns, as a result market level and average initial return in IPOs together, predict next year's number of IPOs significantly. Although real interest rates had negative correlation with number of IPOs had not significant prediction possibility of IPO market. So our findings is in same parallel Liang and Helvege(2002), Schultz (2002), Jovanovic and Rousseau, Lowry and Schwert's (2002), Pagano, Panetta, and Zingales (1998) and Lowry (2002); they also argued that M/B ratio, proxy of market level, is essential in IPO waves. Surprisingly, Pastor and Veronesi (2005)'s argument was also true for Turkish IPO market since market returns is important factor in decision to go public, although our findings about M/B ratio was controversy to their finding which argued that market level is not essential in IPO decision. But it requires a point here that Pastor and Veronesi made their analysis with many of data and for much shorter period, so when there was hot issue markets, market level was not highest before hot market. Boehmer and Ljungqvist (2004)'s industrial analysis was in the same parallel with Pastor and Veronesi, but in our analysis the time period was one year, in this way market level increase could have great effect in hot issue markets normally, even there was. Besides market level increased with increase in market returns, naturally market return increase leads to IPOs increase, as Pastor and Veronesi found.

Besides, initial return increase led to hot markets, parallel to Ibbotson and Jaffe (1975)'s findings. But it must also be considered the high correlation between number of IPOs and initial abnormal return in the same year from other perspective. This high correlation can emanate from hot markets, i.e., when offerings density increase, potential firms should decrease their offering price because of competition, so initial abnormal return accelerate in hot markets, this is an argument mentioned above, and it is not easy to evaluate which predicts other, however, as previous year initial return predicts coming year, it is more meaningful to comment that initial abnormal return leads more IPOs. At all events, they come together.

From table 6, in simple regression results, IPO volume had significant relationship only with simple return and R_m-R_f (abnormal return), and as these had 0.99 correlation,

the HRA was not conducted for actual year and previous year's independent variables and IPO volume.

During this study, many of times bunch of years or increased data terms have passed and why this method is used is explained. Same HRA regression analysis was conducted with increased data, in this way it was assumed that the possible strong relationships between market return, general economic and market level variables weren't lost because of low data. However, with increased data, same years' number were repeated, may be the trend was developed artificially. Main assumption was that as bunch of years is the average data, if time horizon was longer, the relationship between variables would be the same in Turkish capital market and economy. In addition, as it is seen at the end of regression analysis, the results were not irrational and unexpected according to researches made before.

So, the same process was applied and according to simple regression results with increased data, HRA was conducted.

If the results from the regression table with increased data are remembered: it is realized that interest rates, volatility in return in ISE-100 and volatility in exchange rates became significant, initial return variables and P\E ratio was still significant.

Reg Results				
Independent Variables	*Beta (stcoef)*	*R^2*	*Adjusted R^2*	*F for Change*
GDP Growth Rate	0.13	0.017	0.001	1.031
Real Interest Rates	-0.398**	0.158	0.144	11.289**
Simple Return(ISE100)	0.147	0.022	0.005	1.322
Rm-Rf	-0.1	0	-0.017	0.006
Vol(ISE_100)	0.285*	0.081	0.066	5.308*
Initial Abn Return	0.706**	0.498	0.49	59.591**
Volexc	-0.262*	0.069	0.053	4.431*
M/B	0.546**	0.298	0.287	25.514**
P/E	-0.588**	0.346	0.335	31.476**

Table: Regression Results; variables explaining number of IPOs in 1990-2006 (increased data)

But as explained before, because of high inflation during 1990s, once again, real interest rates instead of nominal rates were used. As anticipated before, real interest rates had inverse relationship with number of IPOs, contrary to nominal interest rates. In normal conditions, when interest rates are high, opportunity cost of investing in stocks and IPOs increase, because of this it is expected that there is negative correlation between interest rates and IPO market, as it was seen in real rates.

A separate 6-step hierarchical regression analysis was conducted for each variable. The order of entry was as follows: 1) Initial Abnormal Return (IAR), 2) M/B Ratio (M/B) (Simple Ret), 3) P/E Ratio (P/E), 4) Real Interest Rates (RIR), 5) Volatility in ISE100 (VolRet), 6) Volatility in Exchange Rates (Volexc)

	Beta (stcoef)	R^2	R^2 Change	F for Change
Step 1: Initial Return		.498	.498	59.591**
Initial Abnormal Return	.706**			
Step 2: Market Level		.558	.059	7.899**
Initial Abnormal Return	.577**			
M/B Ratio	.276**			
Step 3: Market Level		.618	.061	9.209**
Initial Abnormal Return	.415**			
M/B Ratio	.279**			
P/E Ratio	-.294**			
Economic Variable(Real Int Rates)				
Step 4: Economic Variable		.646	.028	4.499*
Initial Abnormal Return	.384**			
M/B Ratio	.189**			
P/E Ratio	-.291**			
Real Interest Rates	-.177*			
Risk Variable (Vol in ISE, exchrates)				
Step 5: Risk Variable (VolRet)		.665	.019	3.122
Initial Abnormal Return	.344**			
M/B Ratio	.189*			

P/E Ratio	-.358**			
Real Interest Rates	-.155			
Volatility in ISE100	.162			
Step 6: Risk Variable (Volexc)		.715	.051	9.803**
Initial Abnormal Return	.264*			
M/B Ratio	.096			
P/E Ratio	-.237*			
Real Interest Rates	-472**			
Volatility in ISE100	.155			
Volatility in Exchange Rates	-.401**			

From table above, at first step, IAR explained 49.8% of the variance (F =59.591, $p < .01$) in all regression equations. When market level variable, M/B was entered at step 2, it explained an additional 5.9% variance (F = 7.899, $p < .01$) and IAR is still significant. At step 3, P/E ratio explained additional 6.1% variance (F = 9.209), both initial and M/B ratio coefficients were still significant, even though, their effect decrease. At fourth step, real interest rates was added to equation; it explained additional 2.8% variance (F = 4.499, $p < .05$). At fifth step, first time, a risk variable for the stock market was included in the analysis and Volatility in ISE100 was included in the equation, so it was insignificant (F = 3.122, p = .083) at 5% but significant 10% level. In final step, risk variable for total economy was included and volatility in exchange rates added to equation, in this way, total amount of variance in number of IPOs explained by independent variables reached to 71.5% and it was considerable result.

When HRA analysis was conducted without initial abnormal return which was always highly correlated with number of IPOs and which explained approximately 50% of variance of number of IPOs, we are very comfortable with the results. They are shown below:

	Beta (stcoef)	R^2	R^2 Change	F for Change
Step 1: Market Level		.298	.298	25.514**
M/B Ratio	.546**			
Step 2: Market Level		.518	.219	26.814**
M/B Ratio	.427**			
P/E Ratio	-.483**			
Step 3: Economic Variable		.562	.044	5.815**
M/B Ratio	.37**			
P/E Ratio	-.463**			
Real Interest Rates	-.22*			
Step 4: Economic Variable		.600	.038	5.487*
M/B Ratio	.274**			
P/E Ratio	-.531**			
Real Interest Rates	-.183*			
Volatility in ISE100	.227**			
Step 5: Risk Variable (VolRet)		.680	.080	13.977**
M/B Ratio	.137			
P/E Ratio	.-336**			
Real Interest Rates	-.560**			
Volatility in ISE100	.200*			
Volatility in Exchange Rates	-.486**			

From table above, at first step, M/B explained 29.8% of the variance (F =25.514, $p < .01$) in all regression equations. When another market level variable, P/E was entered at step 2, it explained an additional 21.9% variance (F = 26.814, $p < .01$) and IAR was still significant. At step 3, Real Interest Rates explained additional 4.4% variance (F = 5.815), market level coefficients were still significant, even though, their effect decreased. At fourth step, volatility variable was added to equation; it explained additional 3.8% variance (F = 5.487, $p < .05$). At this step M/B ratio, real interest rates coefficients decreased whereas P/E ratio increased ($\beta = -.531$). At fifth step, Volatility in exchange rates was included in the equation, so it explained 8% additional variance (F =

13.977, $p< .01$). In overall performance 68% variance in number of IPOs was explained by these independent variables, when initial abnormal return was excluded, besides in all steps, except M/B ratio at fifth one, coefficients were all significant, majority at 1% level.

Thus, there were much more evident solutions with increased data for same year independent variable and number of IPOs. Market level of the same year was also important for IPOs with M/B ratio of the same year, but we are still confused with this strong negative relationship of P/E ratio. It is not possible to go ahead of explanation that is made before about earnings of firms. Besides risk factor like volatility in exchange rates leaded to decrease in IPOs as expected, however volatility in ISE100 had positive significant effect in IPOs.

Same analysis for previous years' independent variables with number of IPOs was made. The simple regression results according to which variables which were included in HRA analysis were chosen are displayed in the table below once again; nominal interest rates are replaced with real rates.

Reg Results				
Independent Variables	*Beta (stcoef)*	R^2	*Adjusted* R^2	*F for Change*
GDP Growth Rate	0.003	0	-0.17	0.001
Real Interest Rates	-0.264*	0.07	0.054	4.491*
Simple Return(ISE100)	0.665**	0.443	0.433	47.462**
Rm-Rf	0.569**	0.323	0.312	28.666**
Vol(ISE_100)	-0.128	0.016	0	1.004
Initial Abn Return	0.706**	0.498	0.49	59.591**
Volexc	-0.182	0.033	0.017	2.064
M/B	0.631**	0.398	0.388	39.66**
P/E	-0.625**	0.391	0.381	38.495**

Table: Regression Results; variables explaining number of IPOs in 1990-2006 (increased data-previous year)

A separate 5-step hierarchical regression analysis was conducted for each variable. The order of entry was as follows: 1) Initial Abnormal Return (IAR), 2) Simple return 3) M/B Ratio (M/B), 4) P/E Ratio (P/E), 5) Real Interest Rates (RIR). Between market return variable only simple return was used, so there was 5-step analysis.

	Beta (stcoef)	R^2	R^2 Change	F for Change
Step 1: Initial Return		.498	.498	59.591**
Initial Abnormal Return	.706**			
Step 2: Market Return		.641	.142	23.372**
Initial Abnormal Return	.504**			
Simple Return	.428**			
Step 3: Market Level		.721	.080	16.702**
Initial Abnormal Return	.500**			
Simple Return	.217**			
M/B Ratio	.354**			
Economic Variable(Real Int Rates)				
Step 4: Market Level		.782	.061	16.001*
Initial Abnormal Return	.359**			
Simple Return	.235**			
M/B Ratio	.301**			
P/E Ratio	-.292**			
Step 5: Economic Variable(Real Int Rates)		.795	.013	3.494
Initial Abnormal Return	.340**			
Simple Return	.286**			
M/B Ratio	.247**			
P/E Ratio	-.281**			
Real Interest Rates	-.124			

From table above, at first step, IAR explained 49.8% of the variance (F =59.591, $p < .01$) in all regression equations. When market return variable, i.e. simple return was entered at step 2, it explained an additional 14.2% variance (F = 23.372, $p < .01$) and IAR was still significant. At step 3, M/B ratio explained additional 8% variance (F = 16.702), both initial and return coefficients were still significant, even though, their effects decreased. At fourth step, P/E ratio was added to equation; it explained additional 6.1% variance (F = 16.001, $p < .05$). At fifth step, real interest rates was included in the equation, so it was insignificant (F = 3.494, $p = .067$) at 5% but significant 10% level.

Total amount of variance in number of IPOs explained by independent variables reached to 79.5%, so it is respectable result.

When results of increased data with actual and previous year results were evaluated, it was seen that initial abnormal return was always significant, previous year return predicted coming year's number of IPOs significantly, but actual year market return had no relationship with IPO market, in this parallel, M/B ratio of previous and actual year was significant for number of IPOs, P/E ratio was also significant for both but negatively related to number of IPOs, real interest rates was significant at 1% level and negatively related to number of IPOs for actual year as volatility in ISE and volatility in exchange rates, but it was not so significant in previous year effect on coming year IPOs analysis, it was significant only at 10% level.

When increased data was used, initial abnormal return, simple return, P/E ratio, M/B ratio and real interest rates of previous year had relationship with number of IPOs. R^2's were higher and their coefficients were more significant as targeted by increasing data. For actual year increased data, in addition to initial abnormal return, P/E ratio, M/B ratio, real interest rates, volatility in stock market and in exchange rates were significantly effective in predicting number of IPOs of same year.

Consequently, market level variables (M/B and P/E) of previous year can predict hot issue markets, as well as same year. Market level and initial return explanations are not be repeated as it was mentioned after normal data results. We can only refer to other researchers' findings about windows of opportunity, as Ibbotson and Sindelar (1994) stated, or as Ritter (1991) argued that if there are periods in which stocks are mispriced, the companies recognizing that other companies in their industry are overvalued, have incentive to go public or as Marc, Panetta and Zingales (1998) have signaled that industry M/B appears to be the most significant determinant of the probability of listing, or as Bayliss and Chaplinsky (1996) said as managers' private information gives them a superior ability to value their firm's common stock. This information advantage creates an adverse selection problem since firms can exploit valuation errors on the part of investors. It is also an information asymmetry theory prediction.

For actual year analysis it was seen that, volatility in stock market volatility in exchange rates and real interest rates had negative effects on IPO markets, but they had

no effect in coming year, so this result may be interpreted as; these are risk variables (until here for real interest rates were evaluated as economic variables but it is also risk variable) for general economy or for capital markets, have negative effect in the same year. In this way, when risk increase the number of IPOs decrease directly and there is no lag in IPO market for these variables.

According to the results of Boehmer and Ljungqvist (2004), IPO announcements were preceded by high stock index returns; it means that firms tend to announce IPO plans after increases in the volatility of share prices in their industry. It is not parallel to our findings. However, Boehmer and Ljungqvist's one is an industry analysis. Besides, Hyuk, Masulis and Nanda (1993) found that the relative frequency of monthly corporate equity to debt offers was positively related to stock price volatility. It is also contrary to our argument, but this was ratio analysis, may be debt offer is affected much more negatively than equity from stock price volatility, so it doesn't mean that equity offers are positively related. However, Pastor and Veronesi (2005) found that IPO volume is negatively related to changes in market return volatility parallel to our findings.

Marsh (1982) and Taggart (1977) found significant effect evidence of interest rates in IPOs, as reached in this work, especially for same year rates.

For IPO volume HRA was not conducted because there were only two significant relationships between independent variables and IPO volume for both actual and previous year analysis. So in total no significant relationships of IPO volume with risk, economic and market return variables were maintained, except with simple market return and exchange rates volatility.

By considering the regression results reached above, the previous year variables and actual year variables were mixed for being able to maintain single equation. According to simple regression analysis; independent variables, which were significantly related to number of IPOs in normal data, were chosen. If previous year's and actual year's variable was significantly related, the more significant would be taken, i.e., for example, when both initial abnormal return of previous and actual year were significant for actual year IPO, most significant was chosen.

For normal data, initial abnormal return, simple return, M/B ratio, real interest rates of previous year and P/E ratio of same year were used in predicting the number of IPOs.

	Stand. Coefficients	F statistic	R-Squraed
Initial Abn Return[x]	0.317	F = 7.134 $p < .01$	76.40%
M/B Ratio[x]	0.208		
Simple Ret[x]	0.402		
Real Int Rates[x]	-0.201		
P/E Ratio	-0.290		

[x]Previous Year Values

** p<.01 and * p<.05

The coefficient of determination was very high and according to F-statistic, it was significant at 1% level, however any of coefficients was significant when they were added to same regression equation.

For increased data, initial abnormal return, simple return, M/B ratio and P/E ratio of previous year, volatility in ISE, volatility in exchange rates and real interest rates of same year were used in predicting the number of IPOs.

	Stand. Coefficients	F statistic	R-Squraed
Initial Abn Return[x]	0.281**	F = 50.405 $p < .01$	86.70%
M/B Ratio[x]	0.523**		
Simple Ret[x]	0.142*		
P/E Ratio[x]	-0.089		
Real In Rates	-0.436**		
ISE Vol	-0.273**		
Volexc	-0.393**		

[x]Previous Year Values

** p<.01 and * p<.05

The coefficient of determination was so high and it is significant at 1% level. It means these independent variables explained approximately 87% of amount of variance

in number of IPO's variance. Besides, better than normal data, except P/E ratio, all of coefficients were significant at 1% level, simple return was significant at 5% level. We are not so disappointed with P/E ratio, since it was only variable different than expected, with negative coefficient.

Finally the results above were reached, after conducting very detailed regression analysis with normal and increased with bunch of years' data:

- Turkish IPO market is positively and significantly related to average initial abnormal return of previous year's IPOs as well as same year's average initial abnormal return.
- Number of IPOs in ISE in coming year can be predicted from actual year's Market Level indicators, M/B ratio is positively and significantly but P/E ratio is significantly but negatively related to number of IPOs. Actual year's market level ratios are also significant for actual year's number of IPOs.
- Stock market volatility, economic risks such as exchange rates volatility or real interest rates changes during the year effects significantly number of offerings made in this year.
- Contrary to very broad belief, there is no significant relationship between IPO market in ISE and GDP growth rate according to regression analysis, although it seems there is in graphical analysis.
- The number of IPOs are significantly predicted by previous year' M/B ratio, average initial abnormal return of IPOs and return in ISE-100, same year's volatility in ISE, volatility in exchange rates and real interest rates.

Conclusion

The firms need some capital for some purposes like growth, financing some projects or some other motives. The question is whether this need will be fulfilled by debt or equity. This question's response was investigated by many researchers, especially after Franco Modigliani and Merton Miller (M&M) theory in 1958. They had argued that the company's value is independent from its capital structure and added that the company's best capital structure is the one that supports the operations and investments of the business. Although M&M theory claims that the capital structure has no effect in firm value but financing by debt has tax shield advantage, firms don't have the ability to be financed perpetually by debt, so financing by equity should be used in the some stage of firm's lifecycle in order to fulfill some great projects. Besides becoming public have also other advantages for firms. However timing in issuing equity is a crucial decision taken by firm in order to accomplish a successful offering.

In this way, this study mainly focused on financing from equity side, more specifically on Initial Public Offerings (IPO) and the periods on which the density of first offerings is high. The literature on IPOs offers a wide variety of explanations to justify the dramatic swings in the volume of IPOs observed in the market. Many theories predict that hot IPO markets are characterized by clusters of firms in particular industries for which a technological innovation has occurred, suggesting that hot and cold market IPO firms will differ in quality, prospects, or types of business. Others suggest hot market IPOs are firms that take the advantage of irrational investors. Some others argue that IPOs tend to be increase when markets are in their peaks or after some changes in economic and financial indicators, such as market return, volatility, GDP growth and etc.

The purpose of this study was to explore the economic and financial conditions of the periods in which IPOs were more intense in Turkish IPO market, by taking the regulations imposed by government and some other important developments which affect capital markets.

IPOs fulfilled in Istanbul Stock Exchange during 16 years, i.e. 1990-2006, have been examined within the scope of this study, from the perspective of IPOs timing according to some indicators that are supposed to be essential in many conducted

researches related with the same subjects in the stock markets from many different countries during the period of 1960-2005.

After exploring some critical anomalies in IPO markets and other researches made about IPOs, the Turkish IPO market was analyzed in a detailed manner, by historical, graphical, correlation and finally regression analysis.

During these analyses, number of IPOs and volume were determined as dependent variable, whereas GDP growth rate, Interest rates, Return in ISE, Volatility in Return in ISE, Initial Return in IPOs, Exchange Rate Volatility, Market to Book Ratio and Price Earnings Level of all market were used as independent variables. GDP growth rate, Interest Rates were grouped as general economic variables, Volatility indicators were named risk variables, M/B and P/E ratios were market level variables and finally Initial Return and Return in ISE were taken as Market Return variables. In addition, at the beginning of the study, the characteristics of IPOs between 1990 and 2006 were defined in a detailed table including issue methods used in IPOs, average free float rate, nominal and total volume of IPOs.

In empirical results part, statistical findings about number and volume of IPOs with other variables and some historical developments in Turkish economy and capital markets showed that 1997 Asian crisis and especially year 2000 liquidity crisis and year 2001 devaluation had a huge negative effect of IPOs, as well as in every market. Besides, surprisingly, the volume and the number of IPOs do not move in parallel in Turkish IPO market. There are some sub-period comovement with M/B ratio, market return and initial return with number or volume of IPOs according to the graphs represented.

CMB's shift from permission system to registration system, as decreasing the possibility to be refused in offering period, amendment of communiqué on *Special Cases of Public Disclosure* which provided more accurate information to potential investors and credibility of publicly traded firms, the settlement time lengthening and amendment of communiqué on *Margin Trading, Shortselling and Lending and Borrowing of Securities* providing liquidity were important regulations imposed which had positive effect in 1994-1998 period in which 130 IPOs were realized.

Finally, according to simple and hierarchical regression analyses conducted with normal and increased data, where dependent variables were number of IPOs and IPO

volume and independent variables were all indicators defined in all variable groups, the results reached were;

- *Turkish IPO market is positively and significantly related to average initial abnormal return of previous year's IPOs as well as that of the same year.*

- *Number of IPOs in ISE in the coming year can be predicted from actual year's Market Level indicators. M/B ratio is positively and significantly but P/E ratio is significantly but negatively related to the number of IPOs. Actual year's market level ratios are also significant for actual year's number of IPOs.*

- *Stock market volatility, economic risk such as exchange rates volatility or real interest rates changes during the year affects significantly the number of offerings made in this year.*

- *Contrary to a very broad belief, there is no significant relationship between IPO market in ISE and GDP growth rate.*

- *The number of IPOs are significantly predicted by previous year' M/B ratio, average initial abnormal return of IPOs and return in ISE-100, same year's volatility in ISE, volatility in exchange rates and real interest rates.*

- *IPO Volume is only predicted significantly by previous year market return.*

Consequently, Turkish stock market deals with more IPOs, when its level is high and hot issue markets phenomenon is present with increasing number of IPOs in high initial return periods. There is no direct relationship between GDP growth rate and number of IPOs, and the exchange rate volatility and increase in real interest rates have negative impact in Turkish IPO market.

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TABLES and GRAPHS

Years	Number of IPOs	Inv. Trust Companies	Shareholder Issue(SI)	Capital Increase(CI)	Both CI and SI	Gradual Foundation	Nominal Volume(TL)	Nominal Volume(USD)	Total Volume(000 TL)	Total Volume(USD)	Average Free Float (Inc ITC)	Average Free Float (Exc ITC)
1990	35	0	31	2	0	0	323,375,740	125,135,704.8	2,575,192,303	985,310,871.9	17.95	17.95
1991	23	1	19	3	0	1	308,238,654	77,476,998.2	1,476,792,676	391,627,012.4	30.79	27.97
1992	13	1	9	4	0	0	103,080,975	15,170,720.5	643,718,575	94,423,549.9	18.13	12.98
1993	16	0	12	4	0	0	208,706,000	18,129,634.3	1,784,264,000	152,446,679.0	18.17	18.17
1994	25	1	17	8	0	0	708,742,032	24,418,874.1	7,683,665,012	270,480,024.6	20.28	17.60
1995	29	6	11	13	3	2	1,944,450,000	44,439,629.8	10,698,432,046	246,782,514.6	33.08	17.80
1996	27	7	11	13	3	0	2,984,896,249	34,625,739.2	14,700,795,721	167,921,615.7	28.42	19.98
1997	29	2	5	19	5	0	9,668,869,100	66,090,511.6	63,569,336,920	420,376,565.8	18.81	16.54
1998	20	4	1	13	6	0	16,962,951,000	66,997,728.1	94,318,286,750	383,348,400.8	26.32	19.58
1999	10	7	4	5	1	0	26,812,998,000	82,492,902.3	46,472,932,825	90,722,366.2	38.33	9.44
2000	35	1	5	22	8	0	95,369,545,969	157,537,878.9	1,720,621,999,357	2,806,222,339.0	19.36	18.83
2001	1	0	1	0	0	0	367,500,000	231,099.5	385,875,000	242,654	49.00	49.00
2002	4	1	2	2	0	0	23,102,100,000	17,061,930.5	76,618,450,000	56,467,358.4	25.00	17.00
2003	2	0	0	2	0	0	3,150,000,000	1,957,704.5	18,395,342,500	11,252,272.7	35.12	35.12
2004	12	2	3	3	6	0	158,531,251,991	107,114,362.2	713,936,043,185	482,575,184.7	33.20	26.17
2005	9	4	5	2	2	0	364,818,635,000	268,918,245.3	2,362,053,076,000	1,743,964,255.7	50.74	31.84
2006	14	5	6	4	4	0	280,498,041,000	210,571,351.1	1,238,121,967,990	929,464,657.6	48.78	28.92
1990-1991	29	0.5	25	2.5	0	1	315,807,197.0	101,306,352	2,025,992,489.3	688,468,942.15	24.37	22.96
1991-1992	18	1	14.5	3.5	0	1	205,659,814.5	46,323,859	1,060,255,625.5	243,025,281.14	24.46	20.47
1992-1993	14.5	0.5	10.5	4	0	0	155,893,487.5	16,650,177	1,213,991,287.5	123,435,114.43	18.15	15.57
1993-1994	20.5	0.5	14.5	6	0	0	458,724,016.0	21,274,254	4,733,964,506.0	211,463,351.77	19.22	17.88
1994-1995	27	3.5	14	10.5	1.5	1	1,326,596,016.0	34,429,252	9,191,048,529.0	258,631,269.57	26.68	17.70
1995-1996	28	6.5	11	13	3	1	2,464,673,124.5	39,532,684	12,699,613,883.5	207,352,065.12	30.75	18.89
1996-1997	28	4.5	8	16	4	0	6,326,882,674.5	50,358,125	39,135,066,320.5	294,149,090.75	23.61	18.26
1997-1998	24.5	3	3	16	5.5	0	13,315,910,050.0	66,544,120	78,943,811,835.0	401,862,483.32	22.56	18.06
1998-1999	15	5.5	2.5	9	3.5	0	21,887,974,500.0	74,745,315	70,395,609,787.5	237,035,383.49	32.32	14.51
1999-2000	22.5	4	4.5	13.5	4.5	0	61,091,271,984.5	120,015,391	883,547,466,091.0	1,448,472,352.59	28.85	14.14
2000-2001	18	0.5	3	11	4	0	47,868,522,984.5	78,884,489	860,503,937,178.5	1,403,232,496.75	34.18	33.92
2001-2002	2.5	0.5	1.5	1	0	0	11,734,800,000.0	8,646,515	38,502,162,500.0	28,355,006.46	37.00	33.00
2002-2003	3	0.5	1	2	0	0	13,126,050,000.0	9,509,817	47,506,896,250.0	33,859,815.57	30.06	26.06
2003-2004	7	1	1.5	2.5	3	0	80,840,625,995.5	54,536,033	366,165,692,842.3	246,913,728.69	34.16	30.64
2004-2005	10.5	3	4	2.5	4	0	261,674,943,495.5	188,016,304	1,537,994,559,592.3	1,113,269,720.17	41.97	29.01
2005-2006	11.5	4.5	5.5	3.0	3.0	0	322,658,338,000.0	239,744,798	1,800,087,521,995.0	1,336,714,456.64	49.76	30.38
1990-1992	23.7	0.7	19.7	3.0	0.0	0	244,898,456.3	72,594,474	1,565,234,517.8	490,453,811.40	22.29	19.63

1991-1993	17.3	0.7	13.7	3.7	0.0	0	206,675,209.7	36,925,784	1,301,591,750.3	212,832,413.75	22.36	19.70
1992-1994	18.0	0.7	12.7	5.3	0.0	0	340,176,335.7	19,239,743	3,370,549,195.7	172,450,084.47	18.86	16.25
1993-1995	23.3	2.3	13.3	8.3	1.0	1	953,966,010.7	28,996,046	6,722,120,352.7	223,236,406.04	23.84	17.85
1994-1996	27.0	4.7	13.0	11.3	2.0	1	1,879,362,760.3	34,494,748	11,027,630,926.3	228,394,718.27	27.26	18.46
1995-1997	28.3	5.0	9.0	15.0	3.7	1	4,866,071,783.0	48,385,294	29,656,188,229.0	278,360,232.03	26.77	18.11
1996-1998	25.3	4.3	5.7	15.0	4.7	0	9,872,238,783.0	55,904,660	57,529,473,130.3	323,882,194.10	24.51	18.70
1997-1999	19.7	4.3	3.3	12.3	4.0	0	17,814,939,366.7	71,860,381	68,120,185,498.3	298,149,110.94	27.82	15.19
1998-2000	21.7	4.0	3.3	13.3	5.0	0	46,381,831,656.3	102,342,836	620,471,072,977.3	1,093,431,035.33	28.00	15.95
1999-2001	15.3	2.7	3.3	9.0	3.0	0	40,850,014,656.3	80,087,294	589,160,269,060.7	965,729,119.89	35.57	25.76
2000-2002	13.3	0.7	2.7	8.0	2.7	0	39,613,048,656.3	58,276,970	599,208,774,785.7	954,310,783.98	31.12	28.28
2001-2003	2.3	0.3	1.0	1.3	0.0	0	8,873,200,000.0	6,416,911	31,799,889,166.7	22,654,095.21	36.37	33.71
2002-2004	6.0	1.0	1.7	2.3	2.0	0	61,594,450,663.7	42,044,666	269,649,945,228.2	183,431,605.27	31.11	26.09
2003-2005	7.7	2.0	2.7	2.3	2.7	0	175,499,962,330.3	125,996,771	1,031,461,487,228.2	745,930,571.02	39.68	31.04
2004-2006	11.67	3.67	4.67	3.00	4.00	0	267,949,309,330.3	195,534,653	1,438,037,029,058.2	1,052,001,365.98	44.24	28.98
1990-1993	21.75	0.50	17.75	3.25	0.00	0	235,850,342.3	58,978,264	1,619,991,888.4	405,952,028.29	21.26	19.27
1991-1994	19.25	0.75	14.50	4.75	0.00	0	332,191,915.3	33,799,057	2,897,110,065.8	227,244,316.45	21.84	19.18
1992-1995	20.75	2.00	12.25	7.25	0.75	1	741,244,751.8	25,539,715	5,202,519,908.3	191,033,192.00	22.41	16.64
1993-1996	24.25	3.50	12.75	9.50	1.50	1	1,461,698,570.3	30,403,469	8,716,789,194.8	209,407,708.44	24.99	18.39
1994-1997	27.50	4.00	11.00	13.25	2.75	1	3,826,739,345.3	42,393,689	24,163,057,424.8	276,390,180.16	25.15	17.98
1995-1998	26.25	4.75	7.00	14.50	4.25	1	7,890,291,587.3	53,038,402	45,821,712,859.3	304,607,274.22	26.66	18.48
1996-1999	21.50	5.00	5.25	12.50	3.75	0	14,107,428,587.3	62,551,720	54,765,338,054.0	265,592,237.12	27.97	16.39
1997-2000	23.50	3.50	3.75	14.75	5.00	0	37,203,591,017.3	93,279,755	481,245,638,963.0	925,167,417.96	25.71	16.10
1998-2001	16.50	3.00	2.75	10.00	3.75	0	34,878,248,742.3	76,814,902	465,449,773,483.0	820,133,940.12	33.25	24.21
1999-2002	12.50	2.25	3.00	7.25	2.25	0	36,413,035,992.3	64,330,953	461,024,814,295.5	738,413,679.53	32.92	23.57
2000-2003	10.50	0.50	2.00	6.50	2.00	0	30,497,286,492.3	44,197,153	454,005,416,714.3	718,546,156.16	32.12	29.99
2001-2004	4.75	0.75	1.50	1.75	1.50	0	46,287,712,997.8	31,591,274	202,333,927,671.1	137,634,367.57	35.58	31.82
2002-2005	6.75	1.75	2.50	2.25	2.00	0	137,400,496,747.8	98,763,061	792,750,727,921.1	573,564,767.87	36.01	27.53
2003-2006	9.25	2.75	3.5	2.75	3	0	201,749,481,997.8	147,140,416	1,083,126,607,418.6	791,814,092.66	41.96	30.51

Table 2: IPOs' Chatactheristics in ISE between 1990-1996 (per year and bunch of year)

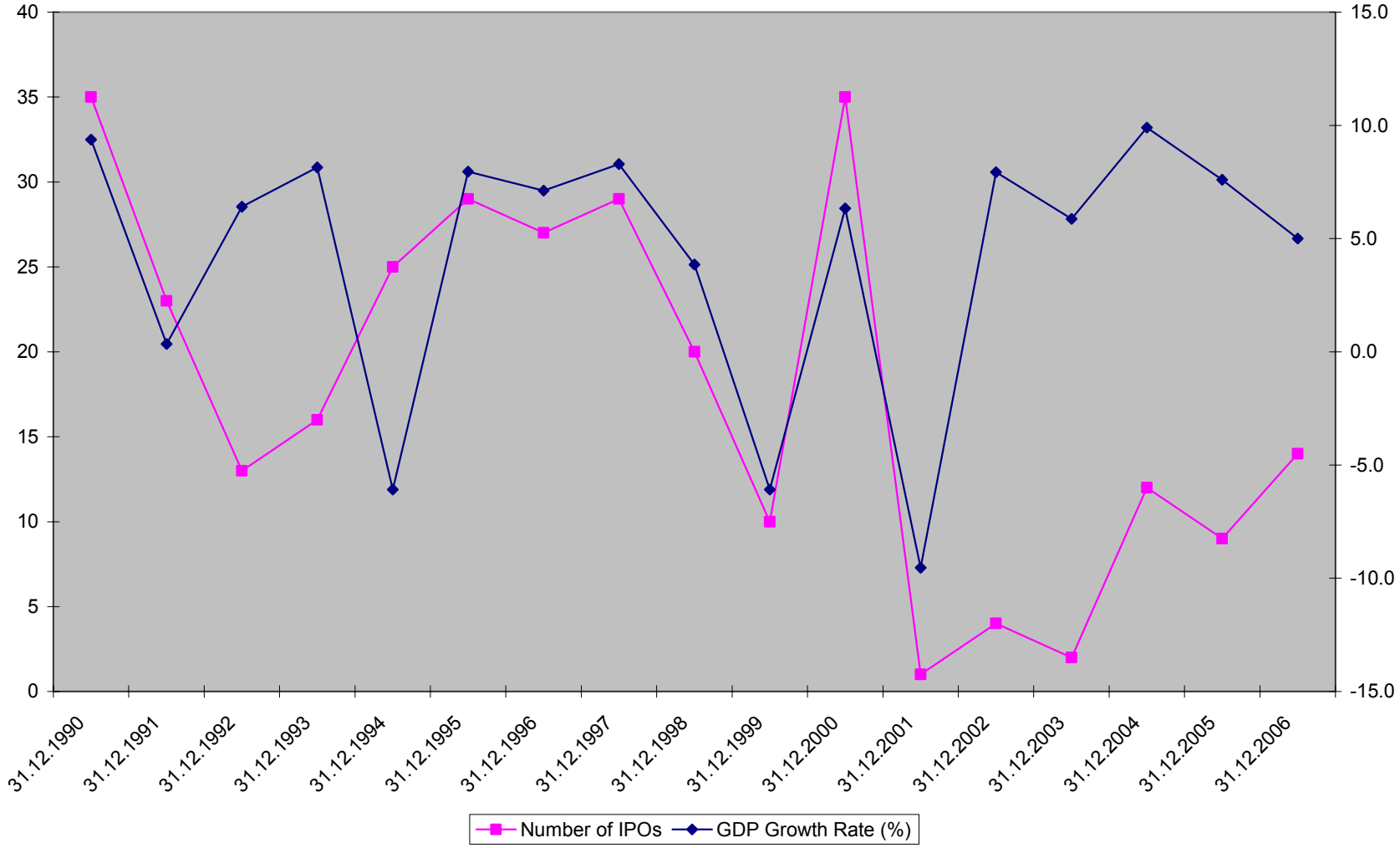
Years	Number of IPOs	Growth Rate	Total Volume(USD)	Interest Rate(12_months;end of the previous year)	Simple Return(İMKB_100)	Cum Return(İMKB_100)	Rm-Rf	Vol(İMKB_100)	İnitial Raw Return	İnitial Abn Return	Vol_Echange Rates(USD/TL)	M/B Ratio
1990	35	9.4	985,310,871.9	58.83%	46.81%	53.65%	-5.18%	3.51%	25.01%	24.21%	0.23%	4,12
1991	23	0.3	391,627,012.4	59.35%	34.03%	45.11%	-14.24%	3.60%	5.86%	5.94%	0.94%	4,05
1992	13	6.4	94,423,549.9	72.70%	-8.18%	-3.15%	-75.85%	2.08%	5.71%	4.79%	0.49%	2,59
1993	16	8.1	152,446,679.0	74.24%	414.98%	172.51%	98.27%	2.57%	13.51%	12.84%	0.36%	1,67
1994	25	-6.1	270,480,024.6	74.76%	31.95%	47.13%	-27.63%	3.91%	5.00%	5.55%	3.52%	6,78
1995	29	8.0	246,782,514.6	95.56%	47.55%	46.77%	-48.79%	2.50%	12.99%	13.49%	0.50%	5,09
1996	27	7.1	167,921,615.7	92.32%	140.79%	92.91%	0.59%	2.00%	7.28%	6.90%	0.35%	3,71
1997	29	8.3	420,376,565.8	93.77%	271.45%	145.97%	52.20%	2.99%	10.41%	11.86%	0.34%	4,52
1998	20	3.9	383,348,400.8	96.56%	-22.76%	-5.47%	-102.03%	4.02%	7.77%	7.82%	0.34%	8,31
1999	10	-6.1	90,722,366.2	95.50%	498.31%	192.95%	97.45%	3.39%	12.21%	9.79%	0.31%	3,21
2000	35	6.3	2,806,222,339.0	46.73%	-37.59%	-29.37%	-76.10%	3.74%	8.24%	8.02%	0.34%	7,70
2001	1	-9.5	242,654	45.64%	47.95%	58.11%	12.47%	3.90%	4.76%	3.89%	3.35%	3,02
2002	4	7.9	56,467,358.4	62.50%	-23.81%	-17.57%	-80.07%	3.00%	-3.87%	-2.11%	0.93%	3,71
2003	2	5.9	11,252,272.7	48.19%	82.28%	68.15%	19.96%	2.55%	5.25%	5.92%	0.74%	2,01
2004	12	9.9	482,575,184.7	28.59%	36.67%	35.14%	6.55%	1.76%	1.65%	2.34%	0.75%	2,16
2005	9	7.6	1,743,964,255.7	22.06%	63.81%	52.44%	30.38%	1.53%	6.03%	7.19%	0.69%	1,51
2006	14	5.0	929,464,657.6	20.38%	2.77%	6.56%	-13.82%	1.93%	6.73%	7.83%	1.04%	2,11

Table 2: The Number and Volume of IPOs and other variables per year

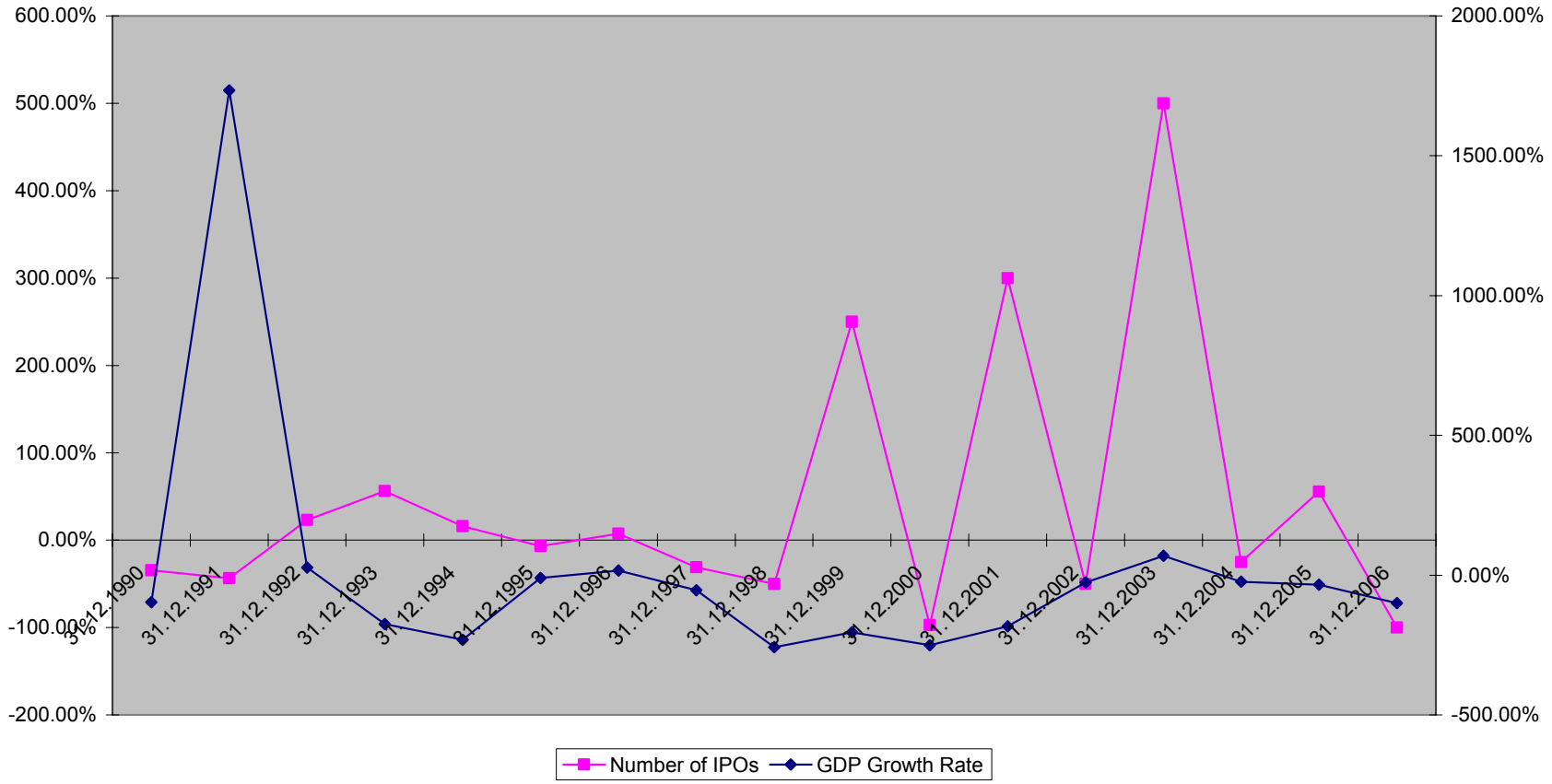
Years	Number of IPOs	GDP Growth Rate	Total Volume(USD)	Interest Rate(12_months;end of the previous year)	Simple Return(İMKB_100)	Rm-Rf	Vol(İMKB_100)	İnitial Raw Return	İnitial Abn Return	Vol_Echange Rates(USD/TL)	M/B Ratio	P/E Ratio
1990-1991	29	4,86	688.468.942,15	0,59	0,40	-0,19	0,035	0,172	0,168	0,007	3,32	19,93
1991-1992	18	3,38	243.025.281,14	0,66	0,11	-0,55	0,029	0,058	0,055	0,007	2,13	13,64
1992-1993	15	7,27	123.435.114,43	0,73	1,17	0,44	0,024	0,100	0,092	0,004	4,23	18,57
1993-1994	21	1,03	211.463.351,77	0,74	1,61	0,86	0,033	0,083	0,084	0,025	5,94	25,29
1994-1995	27	0,93	258.631.269,57	0,85	0,40	-0,45	0,033	0,093	0,098	0,025	4,40	17,03
1995-1996	28	7,54	207.352.065,12	0,94	0,88	-0,05	0,023	0,102	0,103	0,005	4,12	10,69
1996-1997	28	7,71	294.149.090,75	0,93	1,99	1,06	0,026	0,089	0,095	0,003	6,42	18,27
1997-1998	25	6,07	401.862.483,32	0,95	0,69	-0,26	0,036	0,093	0,102	0,003	5,76	16,61
1998-1999	15	-1,11	237.035.383,49	0,96	1,15	0,19	0,038	0,092	0,085	0,003	5,45	23,18
1999-2000	23	0,13	1.448.472.352,59	0,69	0,93	0,24	0,037	0,091	0,084	0,003	5,36	27,17
2000-2001	18	-1,60	1.403.232.496,75	0,46	-0,04	-0,50	0,039	0,081	0,079	0,024	3,37	62,58
2001-2002	3	-0,80	28.355.006,46	0,54	0,06	-0,48	0,034	-0,021	-0,009	0,025	2,86	152,13
2002-2003	3	6,90	33.859.815,57	0,55	0,18	-0,37	0,027	-0,008	0,006	0,008	2,08	105,23
2003-2004	7	7,88	246.913.728,69	0,38	0,58	0,20	0,022	0,022	0,029	0,007	1,84	14,36
2004-2005	11	8,75	1.113.269.720,17	0,25	0,50	0,24	0,017	0,035	0,044	0,007	1,81	15,69
2005-2006	12	6,30	1.336.714.456,64	0,21	0,30	0,09	0,017	0,065	0,076	0,009	2,02	19,90
1990-1992	24	5,37	490.453.811,40	0,64	0,22	-0,42	0,031	0,185	0,178	0,006	2,77	17,08
1991-1993	17	4,96	212.832.413,75	0,69	0,85	0,17	0,028	0,116	0,111	0,006	3,68	17,67
1992-1994	18	2,82	172.450.084,47	0,74	0,84	0,10	0,030	0,143	0,140	0,021	4,51	20,66
1993-1995	23	3,34	223.236.406,04	0,81	1,16	0,34	0,031	0,175	0,179	0,021	5,19	19,94
1994-1996	27	3,00	228.394.718,27	0,87	0,67	-0,20	0,029	0,129	0,133	0,021	4,44	15,40
1995-1997	28	7,79	278.360.232,03	0,94	1,36	0,42	0,025	0,156	0,165	0,004	5,51	15,26
1996-1998	25	6,42	323.882.194,10	0,94	0,91	-0,04	0,031	0,117	0,123	0,003	5,35	15,13
1997-1999	20	2,02	298.149.110,94	0,95	1,58	0,63	0,035	0,118	0,122	0,003	6,41	23,58
1998-2000	22	1,37	1.093.431.035,33	0,78	0,42	-0,36	0,038	0,189	0,178	0,003	4,64	21,06
1999-2001	15	-3,09	965.729.119,89	0,61	0,77	0,16	0,037	0,092	0,085	0,020	4,81	54,23
2000-2002	13	1,58	954.310.783,98	0,51	-0,11	-0,63	0,035	0,077	0,077	0,020	2,91	107,03
2001-2003	2	1,42	22.654.095,21	0,52	0,27	-0,25	0,031	0,000	0,015	0,021	2,62	106,27
2002-2004	6	7,90	183.431.605,27	0,46	0,24	-0,22	0,024	0,025	0,053	0,008	1,89	74,88
2003-2005	8	7,79	745.930.571,02	0,33	0,60	0,27	0,021	0,060	0,075	0,007	1,93	15,30
2004-2006	12	7,50	1.052.001.365,98	0,24	0,32	0,09	0,018	0,080	0,096	0,008	1,85	17,99
1990-1993	22	6,07	405.952.028,29	0,66	0,75	0,09	0,030	0,148	0,143	0,006	3,77	19,25
1991-1994	19	2,20	227.244.316,45	0,70	0,70	0,00	0,031	0,071	0,070	0,019	4,03	19,46
1992-1995	21	4,10	191.033.192,00	0,79	0,74	-0,05	0,029	0,095	0,096	0,018	4,31	17,80

1993-1996	24	4,28	209.407.708,44	0,84	1,22	0,38	0,028	0,094	0,095	0,018	5,03	17,99
1994-1997	28	4,32	276.390.180,16	0,89	1,04	0,15	0,029	0,091	0,096	0,018	5,41	17,65
1995-1998	26	6,80	304.607.274,22	0,95	0,79	-0,16	0,030	0,098	0,103	0,004	4,94	13,65
1996-1999	22	3,30	265.592.237,12	0,95	1,54	0,59	0,043	0,090	0,091	0,003	5,94	20,73
1997-2000	24	3,10	925.167.417,96	0,82	0,81	-0,01	0,036	0,092	0,093	0,003	5,56	21,89
1998-2001	17	-1,36	820.133.940,12	0,69	0,44	-0,26	0,038	0,086	0,082	0,017	4,41	42,88
1999-2002	13	-0,34	738.413.679,53	0,61	0,43	-0,18	0,035	0,080	0,075	0,018	4,11	89,65
2000-2003	11	2,65	718.546.156,16	0,51	0,06	-0,44	0,033	0,069	0,069	0,018	2,72	83,91
2001-2004	5	3,54	137.634.367,57	0,46	0,29	-0,16	0,029	0,010	0,019	0,018	2,35	83,24
2002-2005	7	7,83	573.564.767,87	0,39	0,33	-0,07	0,038	0,026	0,036	0,008	1,95	60,46
2003-2006	9	7,09	791.814.092,66	0,29	0,43	0,14	0,020	0,048	0,058	0,008	1,93	17,13

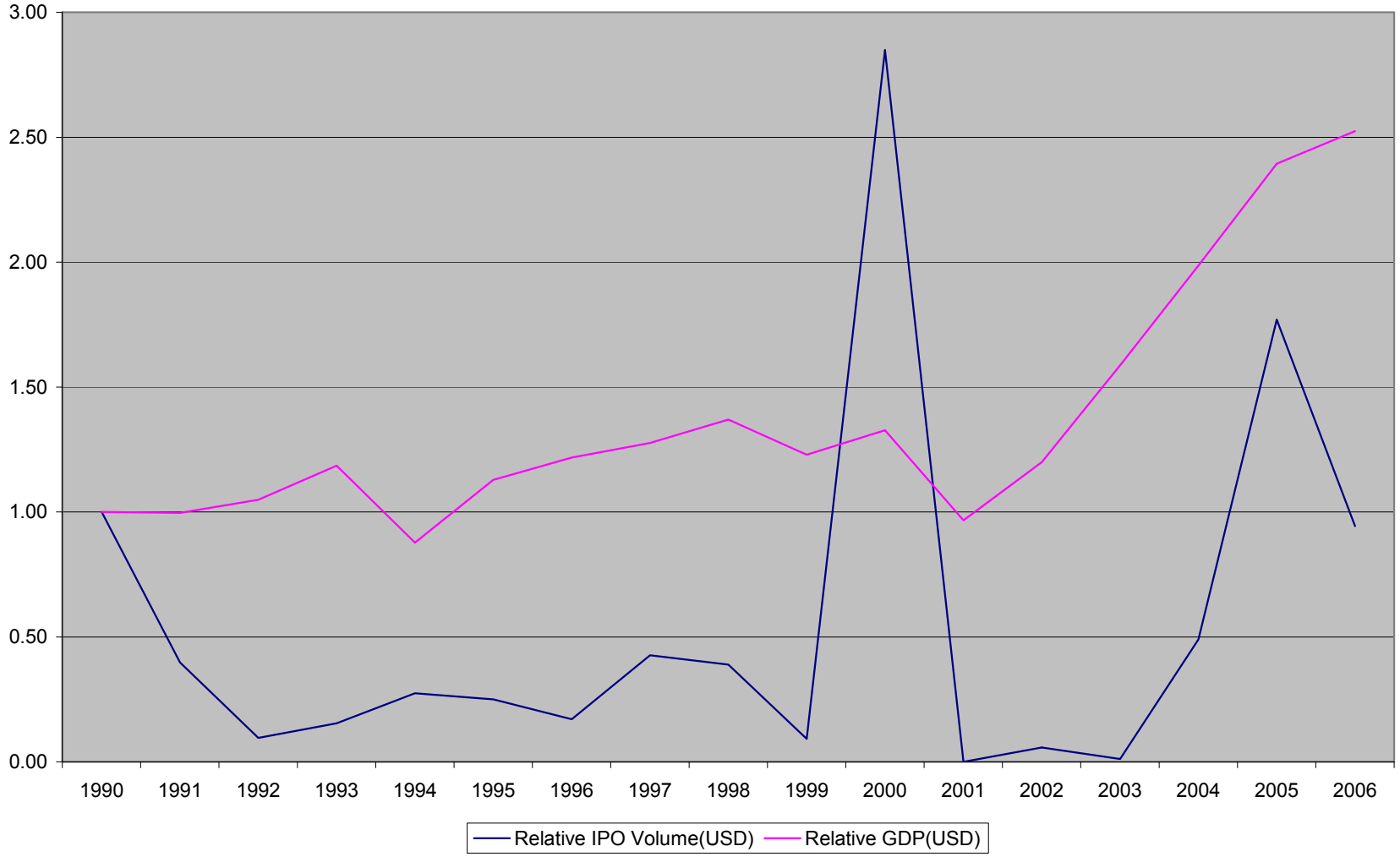
Table 3: The Number of IPOs and other variables (Bunch of years)



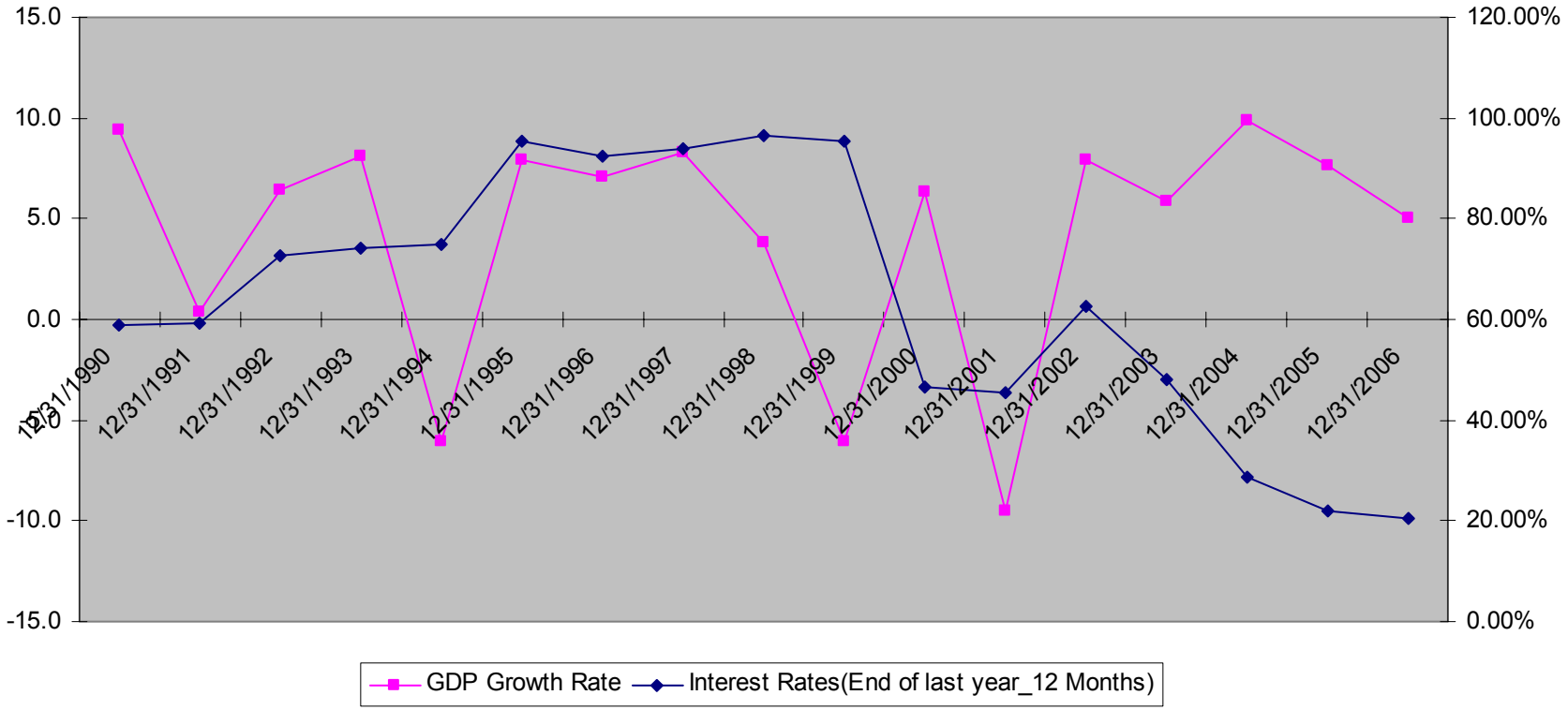
Graph 1: *Number of IPOs and GDP Growth Rate per Year*



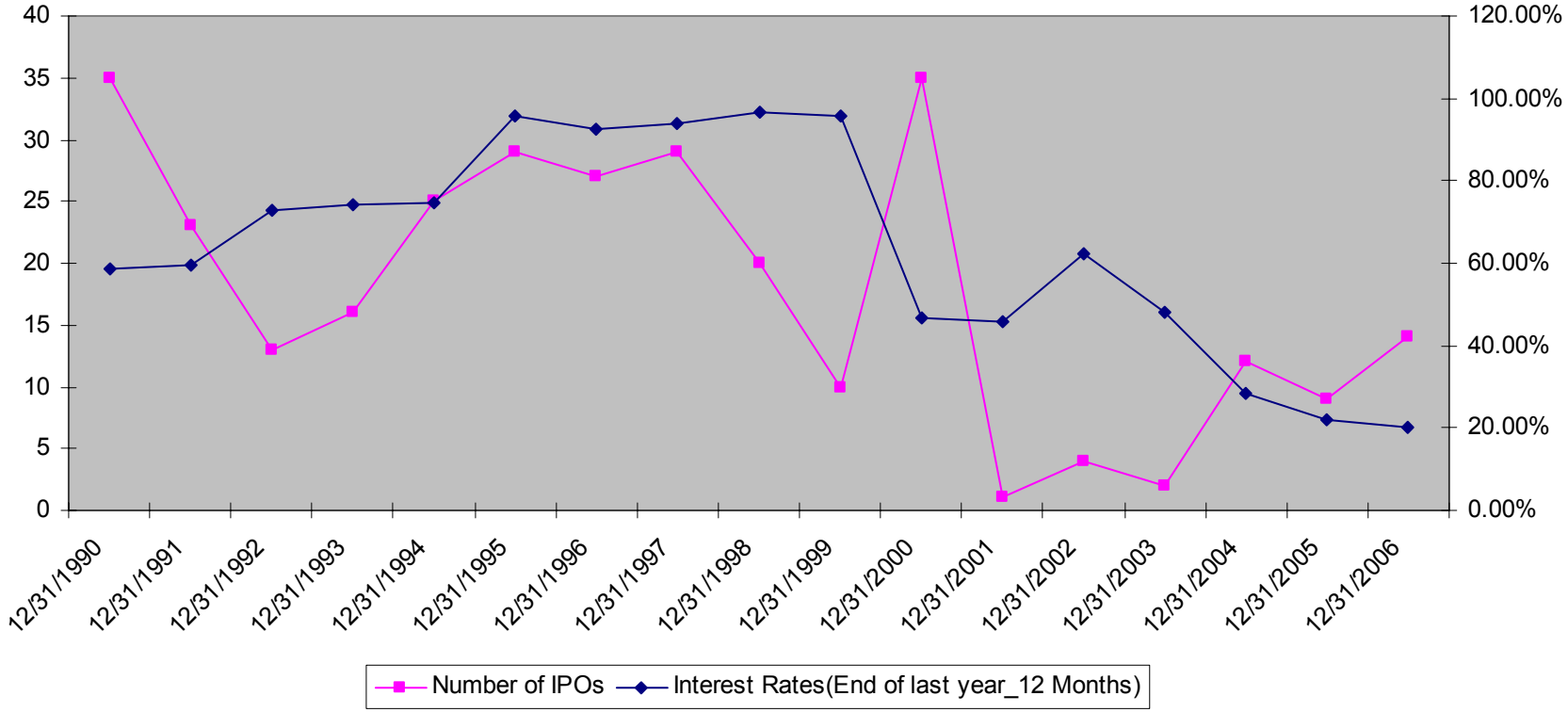
Graph 2: *Percentage Change Rate of Number of IPOs and GDP Growth Rate*



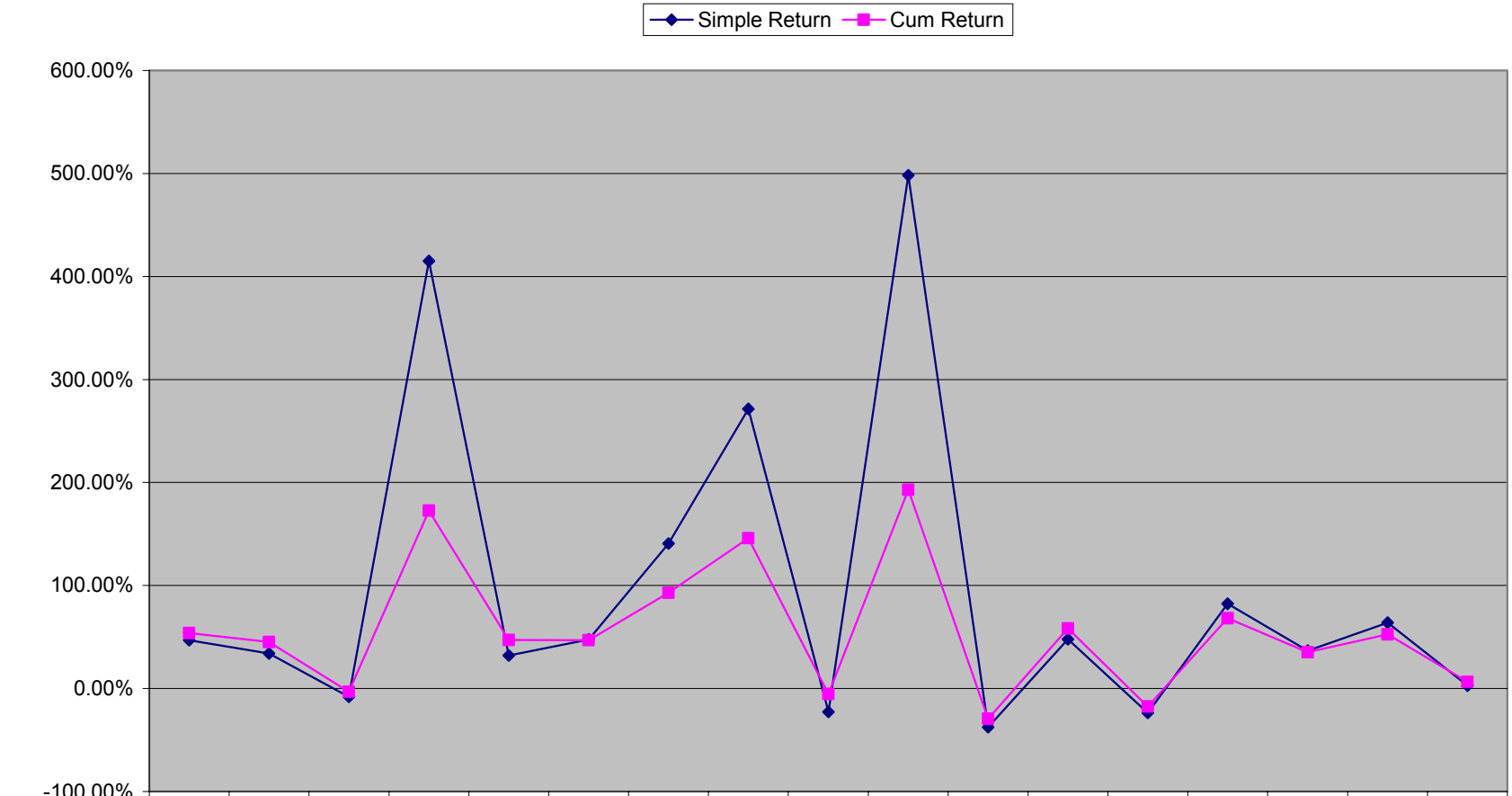
Graph 3: *Relative Values of IPO Total Volume and GDP Growth Rate (Base Year: 1990)*



Graph 4: *GDP Growth Rate and Interest Rates per Year*

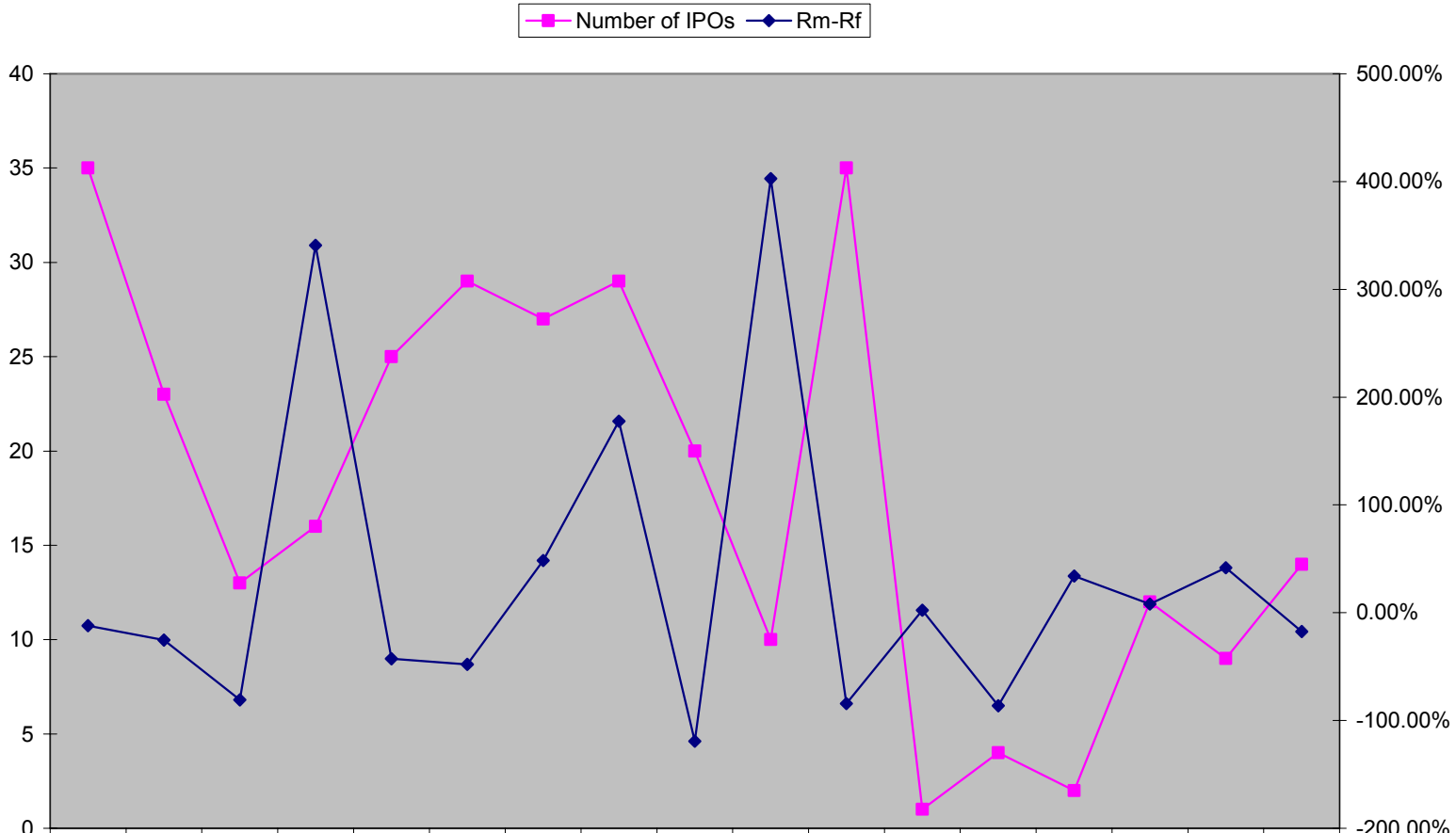


Graph 5: *Number of IPOs and Interest Rates per Year*



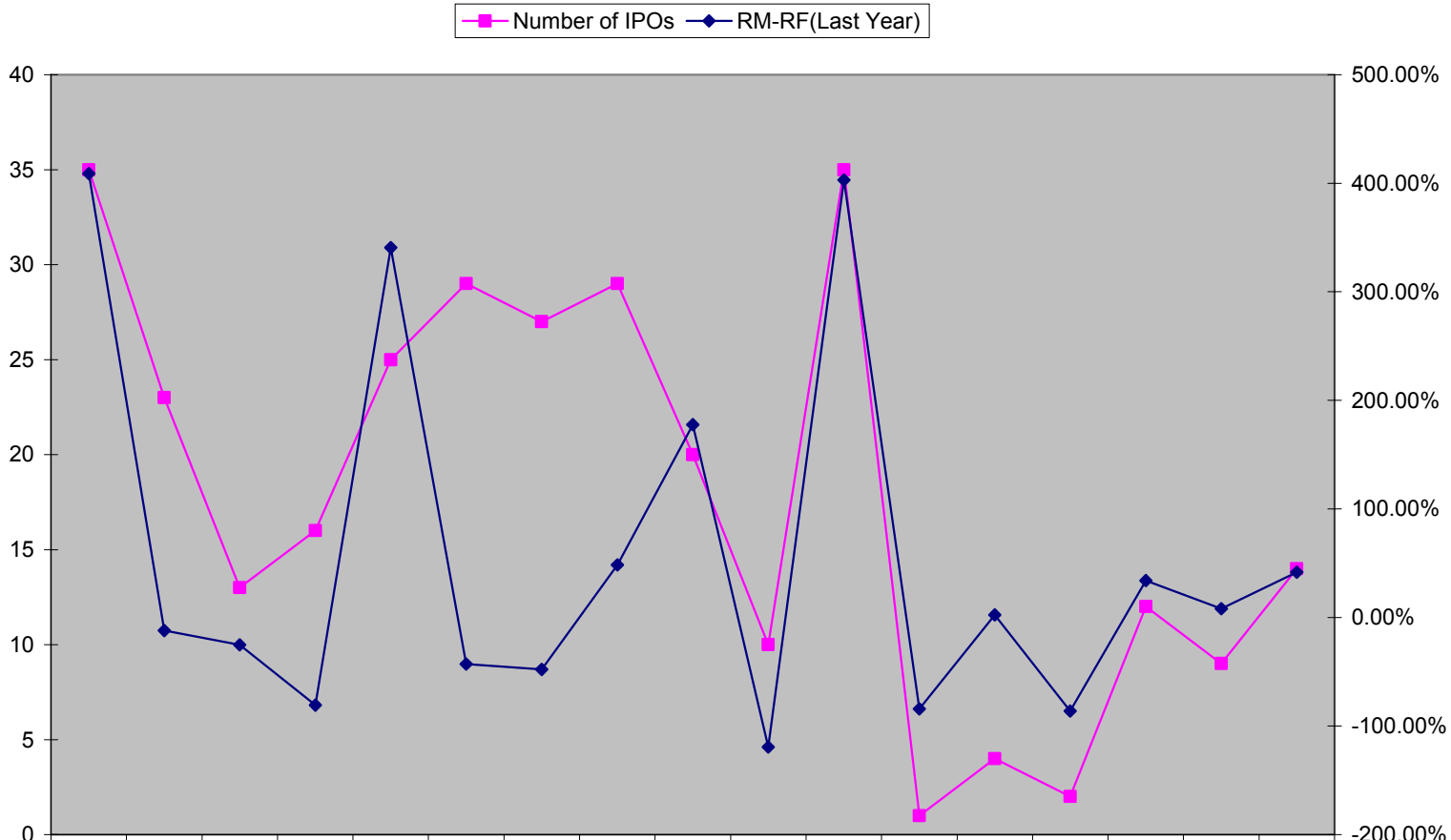
	31-12-90	31-12-91	31-12-92	31-12-93	31-12-94	31-12-95	31-12-96	31-12-97	31-12-98	31-12-99	31-12-00	31-12-01	31-12-02	31-12-03	31-12-04	31-12-05	31-12-06
Simple Return	46.81%	34.03%	-8.18%	414.98	31.95%	47.55%	140.79	271.45	-22.76	498.31	-37.59	47.95%	-23.81	82.28%	36.67%	63.81%	2.77%
Cum Return	53.65%	45.11%	-3.15%	172.51	47.13%	46.77%	92.91%	145.97	-5.47%	192.95	-29.37	58.11%	-17.57	68.15%	35.14%	52.44%	6.56%

Graph 6: *Cumulative and Simple Return in İMKB_100 in period 1990-2006*



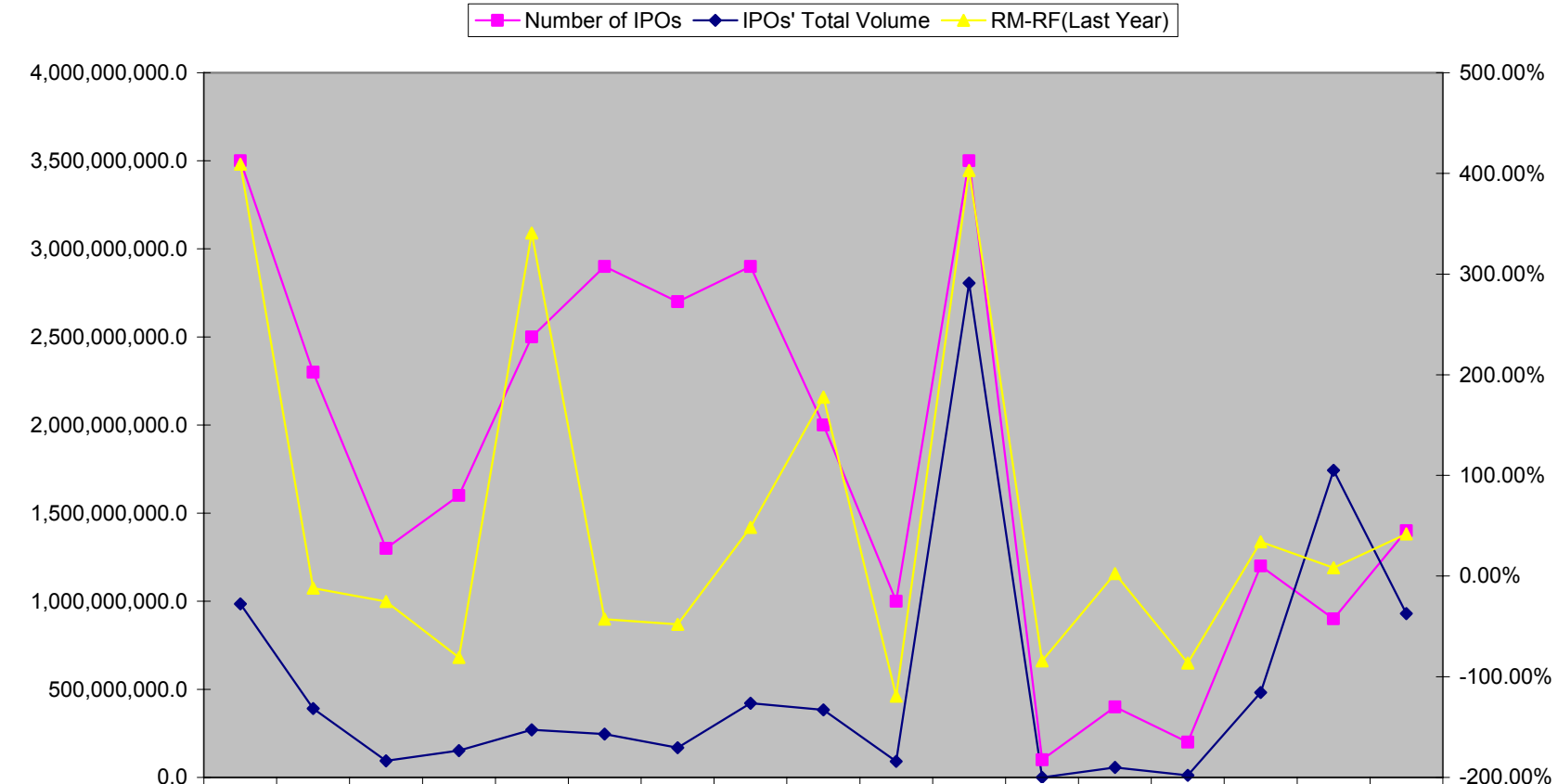
	31.12.1990	31.12.1991	31.12.1992	31.12.1993	31.12.1994	31.12.1995	31.12.1996	31.12.1997	31.12.1998	31.12.1999	31.12.2000	31.12.2001	31.12.2002	31.12.2003	31.12.2004	31.12.2005	31.12.2006
Number of IPOs	35	23	13	16	25	29	27	29	20	10	35	1	4	2	12	9	14
Rm-Rf	-12.02	-25.32	-80.88	340.74	-42.81	-48.01	48.47	177.68	-119.3	402.81	-84.32	2.31%	-86.31	34.09	8.08%	41.75	-17.61

Graph 7: *Simple Excess Return in İMKB_100 and number of IPOs in period 1990-2006*



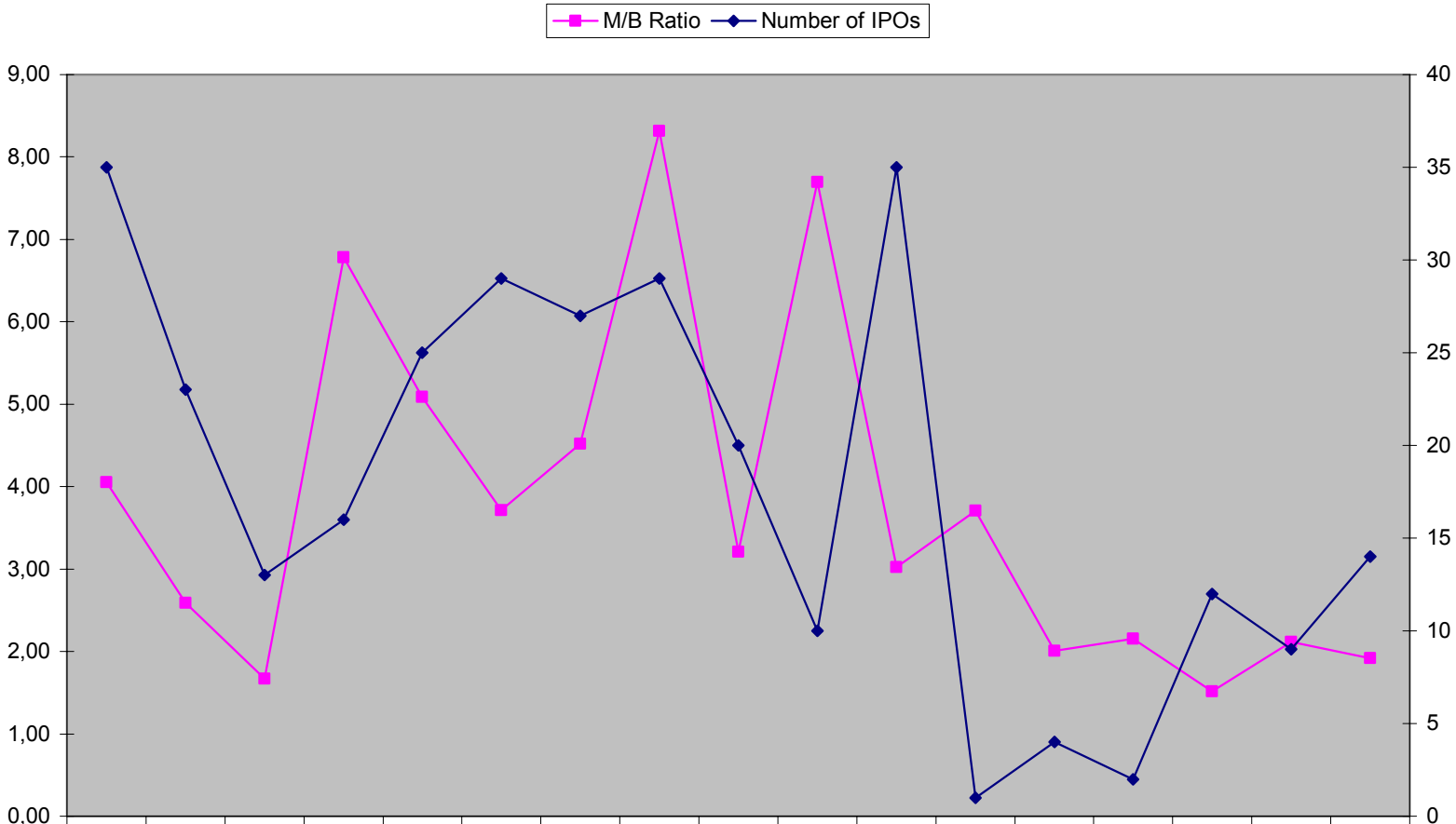
	31.12.1990	31.12.1991	31.12.1992	31.12.1993	31.12.1994	31.12.1995	31.12.1996	31.12.1997	31.12.1998	31.12.1999	31.12.2000	31.12.2001	31.12.2002	31.12.2003	31.12.2004	31.12.2005	31.12.2006
Number of IPOs	35	23	13	16	25	29	27	29	20	10	35	1	4	2	12	9	14
RM-RF(Last Year)	409.00	-12.02	-25.32	-80.88	340.74	-42.81	-48.01	48.47	177.68	-119.3	402.81	-84.32	2.31%	-86.31	34.09	8.08%	41.75

Graph 8: *Previous year's Simple Excess Return in İMKB_100 and number of IPOs in period 1990-2006*



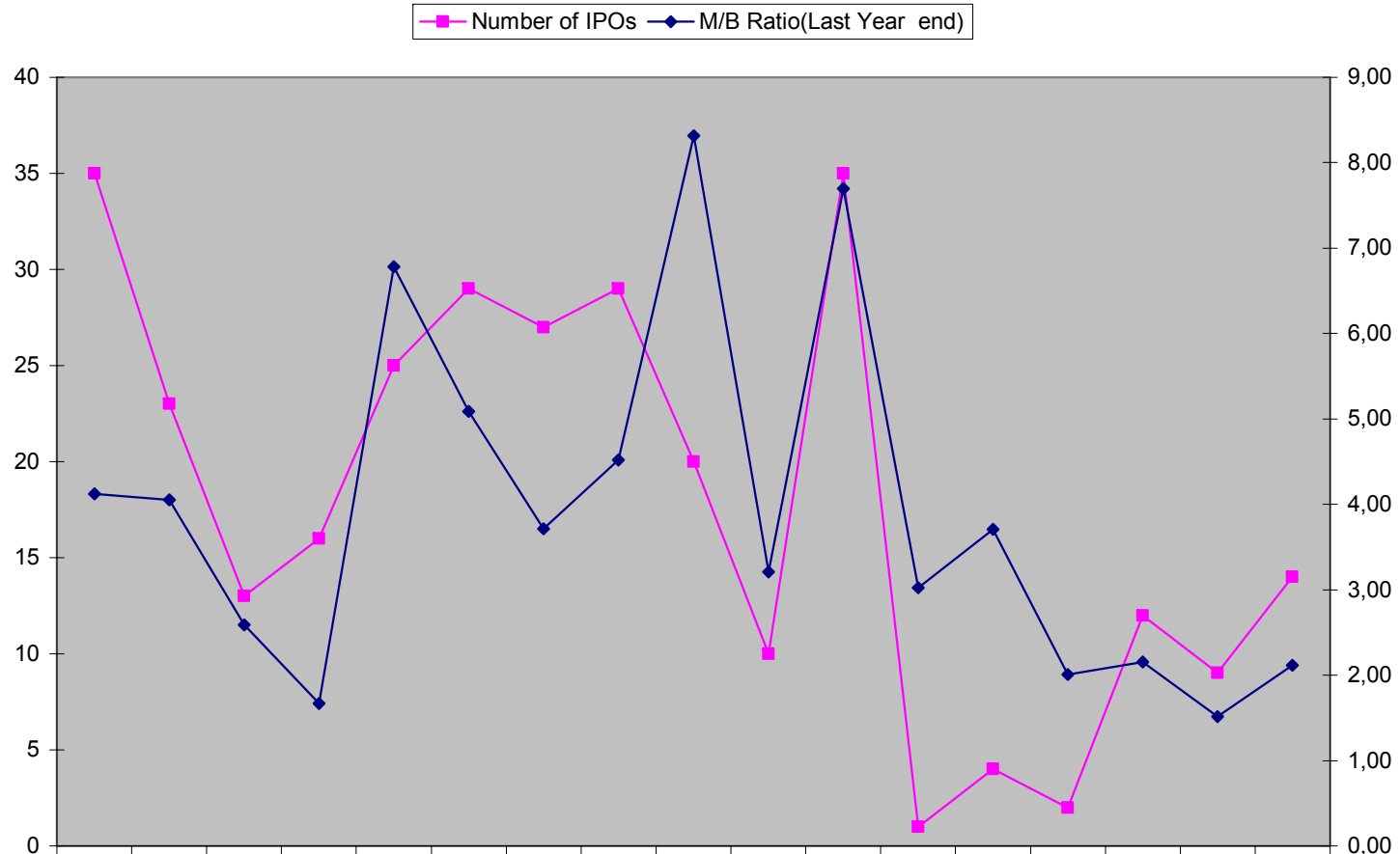
	31.12. 1990	31.12. 1991	31.12. 1992	31.12. 1993	31.12. 1994	31.12. 1995	31.12. 1996	31.12. 1997	31.12. 1998	31.12. 1999	31.12. 2000	31.12. 2001	31.12. 2002	31.12. 2003	31.12. 2004	31.12. 2005	31.12. 2006
Number of IPOs	3,500,	2,300,	1,300,	1,600,	2,500,	2,900,	2,700,	2,900,	2,000,	1,000,	3,500,	100,00	400,00	200,00	1,200,	900,00	1,400,
IPOs' Total Volume	985,31	391,62	94,423	152,44	270,48	246,78	167,92	420,37	383,34	90,722	2,806,	242,65	56,467	11,252	482,57	1,743,	929,46
RM-RF(Last Year)	409.00	-12.02	-25.32	-80.88	340.74	-42.81	-48.01	48.47	177.68	-119.3	402.81	-84.32	2.31%	-86.31	34.09	8.08%	41.75

Graph 9: *Previous year's Simple Excess Return in İMKB_100 and number and volume of IPOs in period 1990-2006*



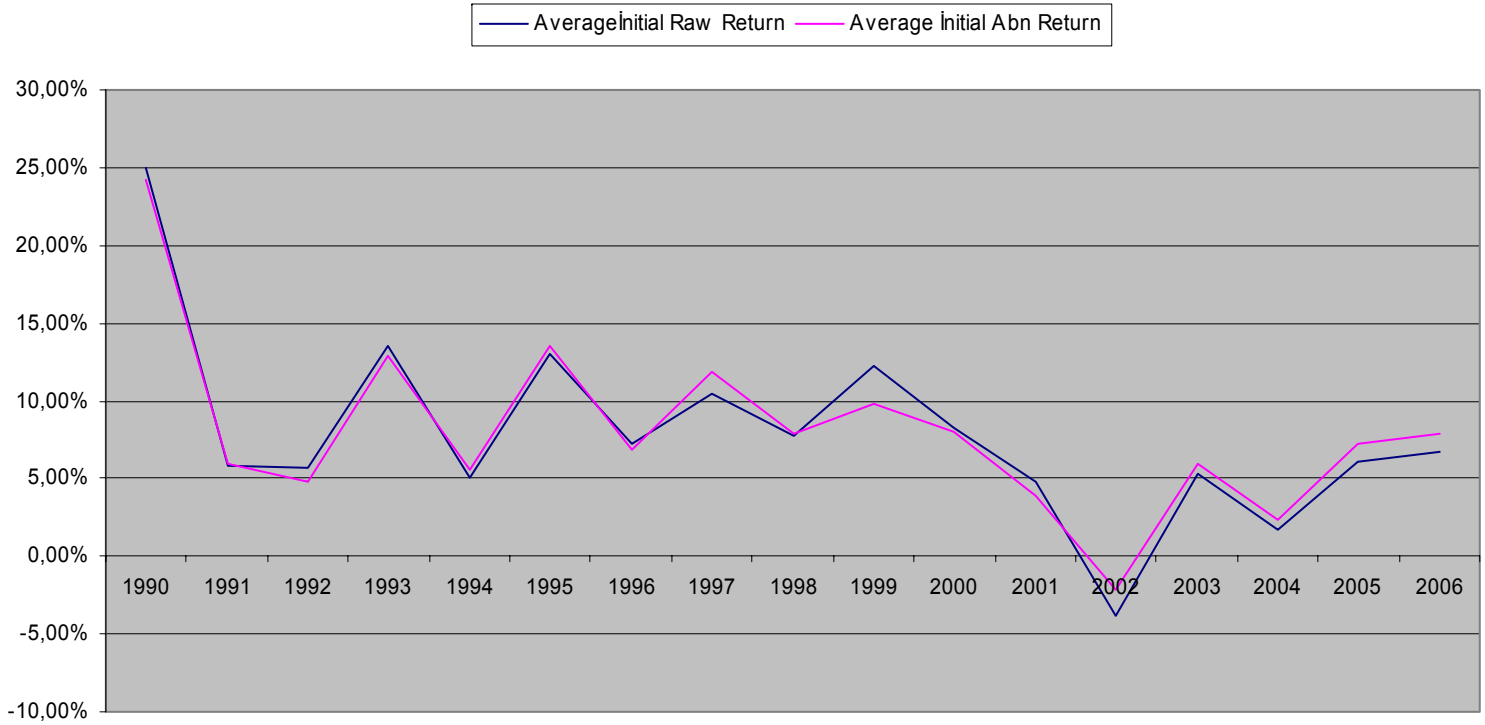
	31.12. 1990	31.12. 1991	31.12. 1992	31.12. 1993	31.12. 1994	31.12. 1995	31.12. 1996	31.12. 1997	31.12. 1998	31.12. 1999	31.12. 2000	31.12. 2001	31.12. 2002	31.12. 2003	31.12. 2004	31.12. 2005	31.12. 2006
M/B Ratio	4,05	2,59	1,67	6,78	5,09	3,71	4,52	8,31	3,21	7,70	3,02	3,71	2,01	2,16	1,51	2,11	1,92
Number of IPOs	35	23	13	16	25	29	27	29	20	10	35	1	4	2	12	9	14

Graph 10: *M/B Ratio and Number of IPOs in period 1990-2006*



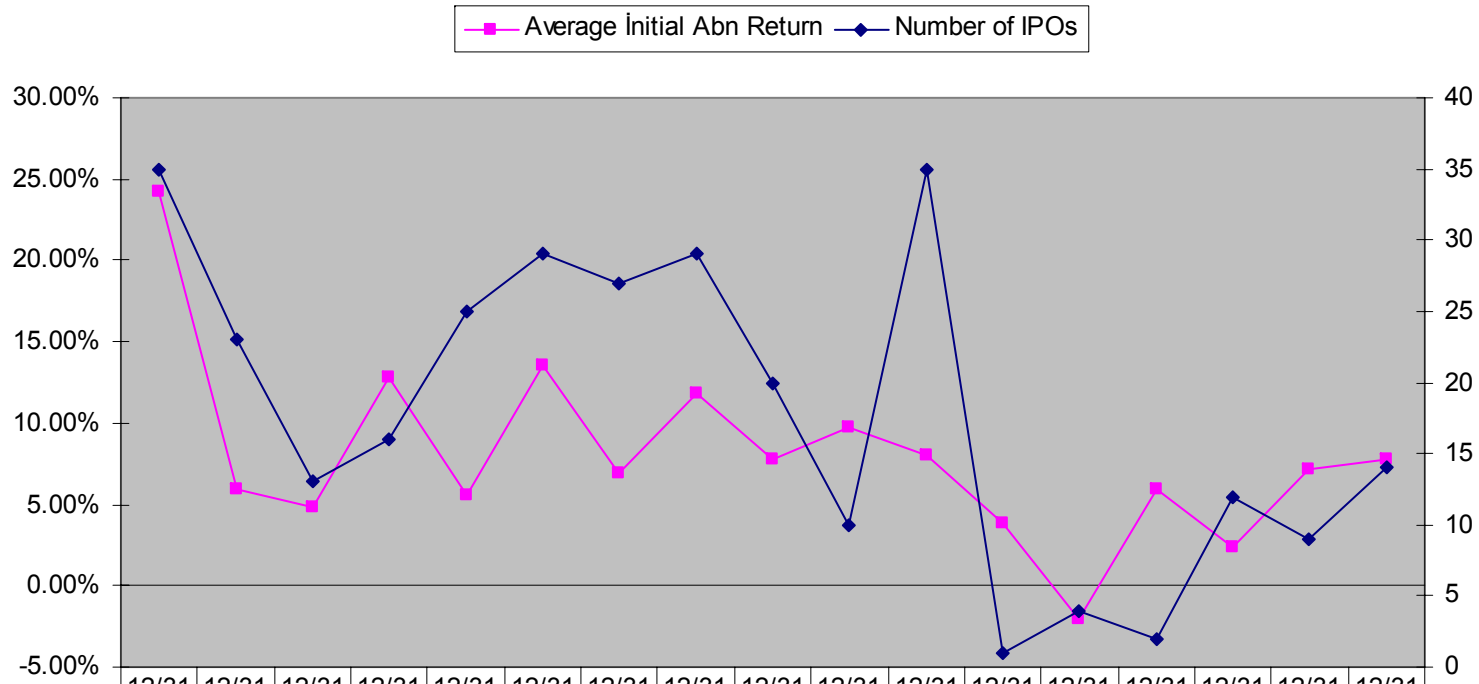
	12/31/1990	12/31/1991	12/31/1992	12/31/1993	12/31/1994	12/31/1995	12/31/1996	12/31/1997	12/31/1998	12/31/1999	12/31/2000	12/31/2001	12/31/2002	12/31/2003	12/31/2004	12/31/2005	12/31/2006
Number of IPOs	35	23	13	16	25	29	27	29	20	10	35	1	4	2	12	9	14
M/B Ratio(Last Year end)	4,12	4,05	2,59	1,67	6,78	5,09	3,71	4,52	8,31	3,21	7,70	3,02	3,71	2,01	2,16	1,51	2,11

Graph 11: *Previous Year M/B Ratio and Number of IPOs in period 1990-2006*



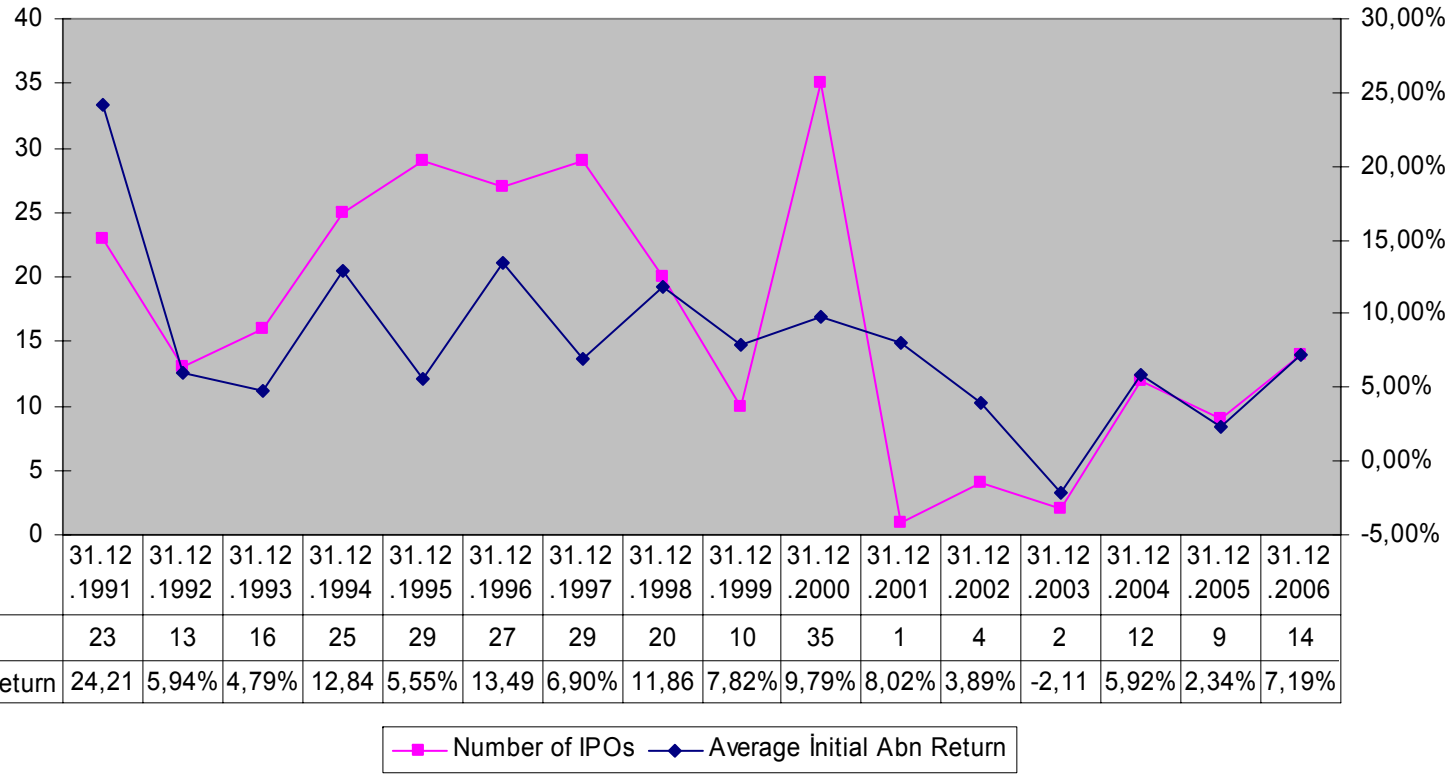
	31.12.1990	31.12.1991	31.12.1992	31.12.1993	31.12.1994	31.12.1995	31.12.1996	31.12.1997	31.12.1998	31.12.1999	31.12.2000	31.12.2001	31.12.2002	31.12.2003	31.12.2004	31.12.2005	31.12.2006
AverageInitial Raw Return	0,2501	0,0586	0,0571	0,1351	0,05	0,1299	0,0728	0,1041	0,0777	0,1221	0,0824	0,0476	-0,0387	0,0525	0,0165	0,0603	0,0673
Average Initial Abn Return	0,2421	0,0594	0,0479	0,1284	0,0555	0,1349	0,069	0,1186	0,0782	0,0979	0,0802	0,0389	-0,0211	0,0592	0,0234	0,0719	0,0783

Graph 12: *Average Raw and Abnormal Initial Return of IPOs in period 1990-2006*



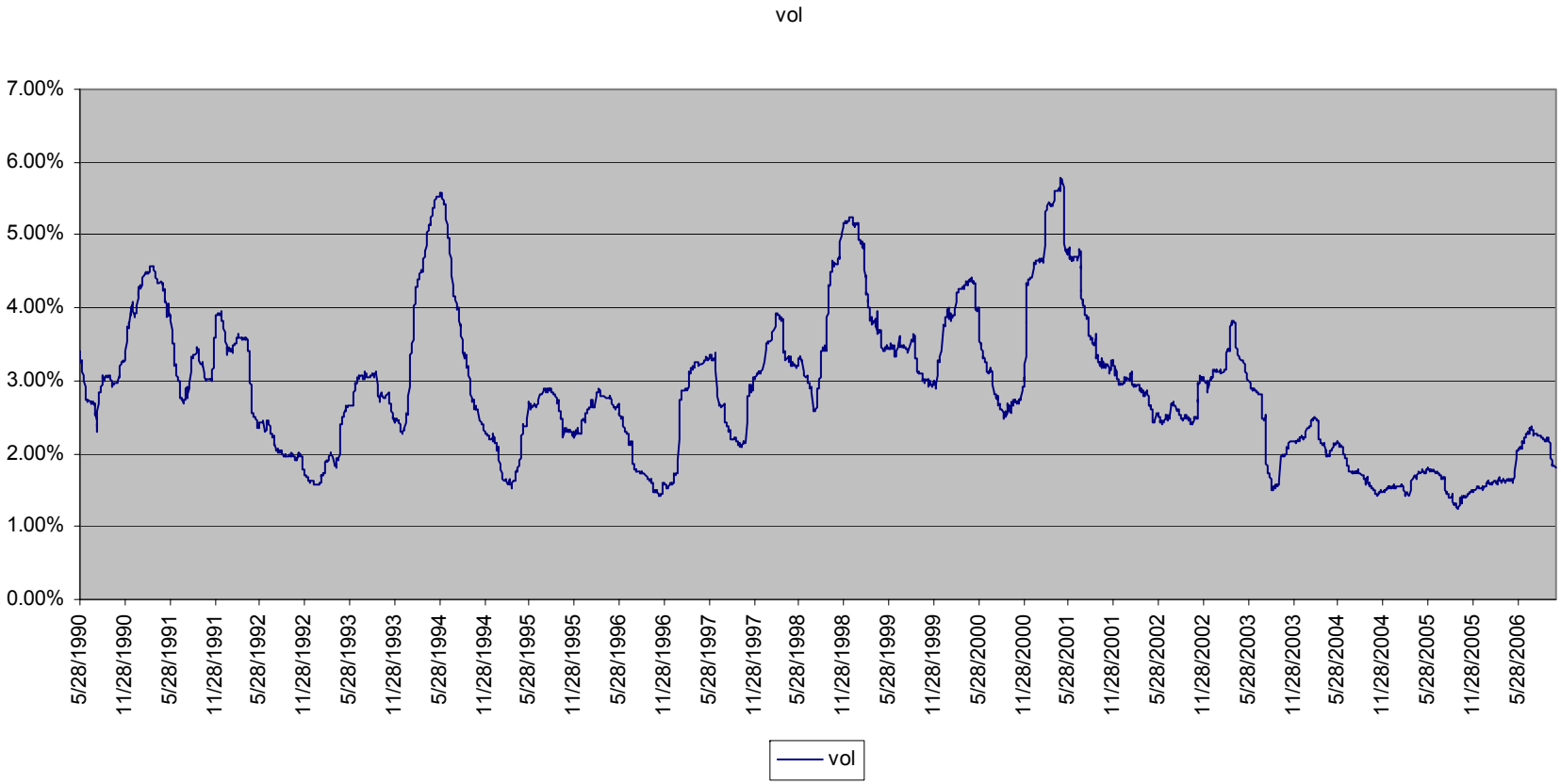
	12/31/1990	12/31/1991	12/31/1992	12/31/1993	12/31/1994	12/31/1995	12/31/1996	12/31/1997	12/31/1998	12/31/1999	12/31/2000	12/31/2001	12/31/2002	12/31/2003	12/31/2004	12/31/2005	12/31/2006
Average İnitial Abn Return	24.21	5.94%	4.79%	12.84	5.55%	13.49	6.90%	11.86	7.82%	9.79%	8.02%	3.89%	-2.11	5.92%	2.34%	7.19%	7.83%
Number of IPOs	35	23	13	16	25	29	27	29	20	10	35	1	4	2	12	9	14

Graph 13: *Average Abnormal Initial Return and IPOs in period 1990-2006*

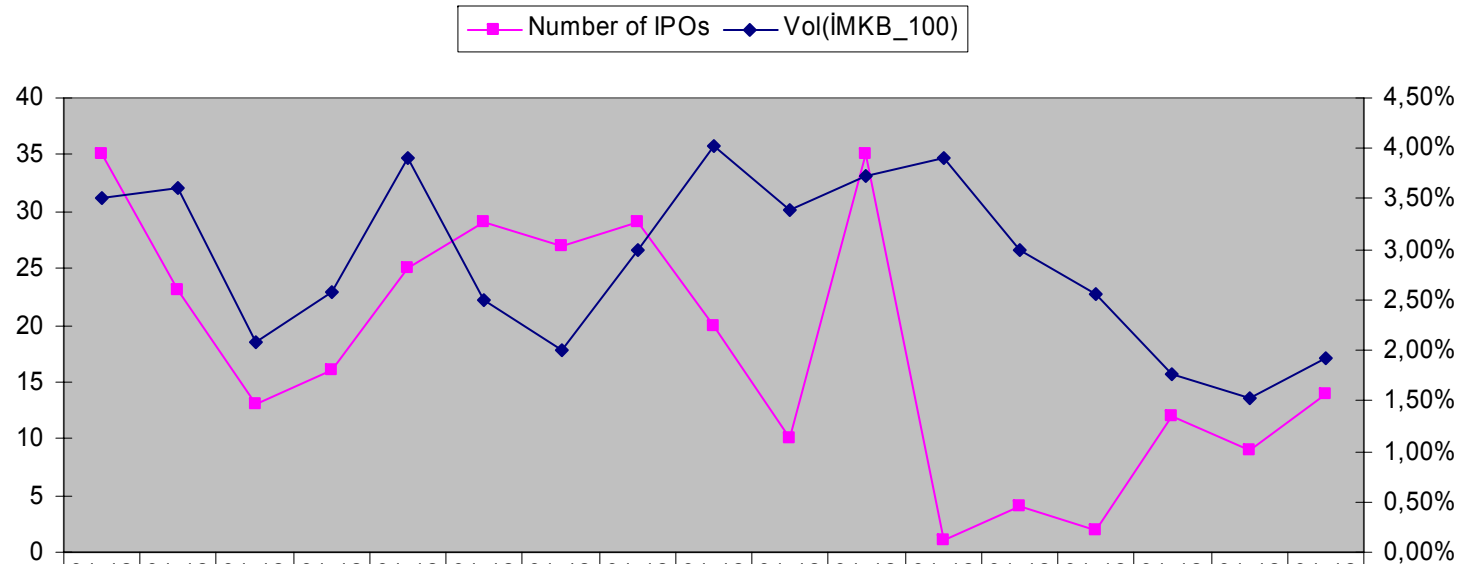


	31.12.1991	31.12.1992	31.12.1993	31.12.1994	31.12.1995	31.12.1996	31.12.1997	31.12.1998	31.12.1999	31.12.2000	31.12.2001	31.12.2002	31.12.2003	31.12.2004	31.12.2005	31.12.2006
Number of IPOs	23	13	16	25	29	27	29	20	10	35	1	4	2	12	9	14
Average İnitial Abn Return	24,21	5,94%	4,79%	12,84	5,55%	13,49	6,90%	11,86	7,82%	9,79%	8,02%	3,89%	-2,11	5,92%	2,34%	7,19%

Graph 14: *Average Abnormal Initial Return of Previous Year and IPOs in period 1990-2006*



Graph 15: *100 days' MA of IMKB-100 volatility between 1990 and 2006*



	31.12.1990	31.12.1991	31.12.1992	31.12.1993	31.12.1994	31.12.1995	31.12.1996	31.12.1997	31.12.1998	31.12.1999	31.12.2000	31.12.2001	31.12.2002	31.12.2003	31.12.2004	31.12.2005	31.12.2006
Number of IPOs	35	23	13	16	25	29	27	29	20	10	35	1	4	2	12	9	14
Vol(İMKB_100)	3,51%	3,60%	2,08%	2,57%	3,91%	2,50%	2,00%	2,99%	4,02%	3,39%	3,74%	3,90%	3,00%	2,55%	1,76%	1,53%	1,93%

Graph 16: *IMKB-100 volatility and number of IPOs between 1990 and 2006*

Reg Results				
Independent Variables	*Beta (stcoef)*	*R^2*	*Adjusted R^2*	*F for Change*
GDP Growth Rate	-0.157	0.025	-0.04	0.38
Interest Rates(End of Previous Year)	0.614**	0.377	0.335	9.059**
Simple Return(IMKB100)	0.707**	0.5	0.467	14.994**
Rm-Rf	0.656**	0.43	0.392	11.328**
Vol(İMKB_100)	-0.123	0.015	-0.051	0.229
İnitial Abn Return	0.62**	0.384	0.343	9.367**
ExcRates_Vol	-0.179	0.032	-0.033	0.495
M/B	0.606*	0.367	0.325	8.707*
P/E	-0.426	0.181	0.127	3.324

Table 4: Regression Results; variables explaining number of IPOs in 1990-2006 (previous year)

Reg Results				
Independent Variables	*Beta (stcoef)*	*R^2*	*Adjusted R^2*	*F for Change*
GDP Growth Rate	0.267	0.071	0.009	1.151
Interest Rates(End of last Year)	-0.457	0.209	0.156	3.964
Simple Return(IMKB100)	-0.298	0.089	0.028	1.464
Cum Return(IMKB100)	-0.369	0.136	0.078	2.361
Rm-Rf	-0.199	0.04	-0.24	0.62
Vol(İMKB_100)	0.09	0.008	-0.058	0.123
İnitial Raw Return	0.149	0.022	-0.043	0.342
İnitial Abn Return	0.183	0.034	-0.031	0.522
ExcRates_Vol	-0.222	0.049	-0.014	0.781
M/B	-0.215	0.046	-0.018	0.724
P/E	-0.246	0.61	-0.002	0.969

Table 5: Regression Results; variables explaining IPO Volume in 1990-2006

Reg Results				
Independent Variables	*Beta (stcoef)*	*R^2*	*Adjusted R^2*	*F for Change*
GDP Growth Rate	-0.185	0.034	-0.03	0.532
Interest Rates(End of Previous Year)	0.003	0	-0.067	0
Simple Return(IMKB100)	0.572*	0.327	0.282	7.288*
Rm-Rf	0.601*	0.361	0.318	8.472*
Vol(İMKB_100)	-0.3409	0.122	0.063	2.075
İnitial Abn Return	0.183	0.34	-0.31	0.522
ExcRates_Vol	-0.154	0.024	-0.041	0.364
M/B	0.278	0.077	0.016	1.254
P/E	-0.167	0.028	-0.037	0.432

Table 6: Regression Results; variables explaining IPO Volume in 1990-2006(Previous Year)