Do Pre-IPO Shareholders Determine Underpricing? – Evidence from Germany in Different Market Cycles

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Abstract

This paper analyzes shareholder ownership of IPO firms before going public in different market periods of the German stock exchange between 1997 and 2007. Previous theories have confirmed that agency conflicts between firm owners, investors and financial intermediaries determine initial returns after the first trading day of newly issued shares. Furthermore, a highly clustered pre-IPO shareholder structure increases the incentives to bargain over optimal offer prices and therewith reduces the level of underpricing. This paper focuses on the question, if shareholder intentions change according to the market environment, which could explain different levels of initial returns in the IPO market cycles. The results confirm differences in firms' ownership structure over time, but do not show highly dispersed ownership in market periods characterized by high initial returns. The determinants of underpricing have changed during the sample period, whereas pre-IPO shareholders' interests and willingness to "leave money on the table" differ according to market conditions and investors' perceptions about the IPO.

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I Introduction

Since the first attempts to explain the phenomenon of underpricing of initial public offerings (IPOs) by Logue (1973), Reilly (1973), and Ibbotson (1975) in the 1970s, several interesting theories have been developed and examined looking more closely into this research topic. One strand of literature has focused on asymmetric information distribution between the participants of the going public process. Divergent information, intentions and resulting agency conflicts between issuer, underwriter and investors are considered to explain initial returns after the first trading day of newly issued shares. Ljungqvist/Wilhelm (2003) summarized previous approaches and hypothesized that the ownership structure of a firm before the IPO is decisive in the level of underpricing. Dispersed ownership of management, financial investors or other shareholders results in higher agency conflicts between pre-IPO owners, and reduces their incentives to monitor the underwriter's setting of an optimal offer price. They found empirical evidence for this theory during the dot-com bubble (1996-2000), which has been considered as the latest "hot" IPO market period. Also in Germany, average underpricing reached enormous levels during the active period of the "Neuer Markt" between 1996 and 2001. However, after the bursting of this bubble in 2001, the IPO volume and average underpricing decreased sharply and remained low in the following years. This leads to the interesting research question, if ownership structure and potential agency conflicts determine IPO underpricing in the same way in extremely different market environments. It is hypothesized in this paper, that IPO participant's interests and bargaining incentives change according to IPO market conditions and therefore determine initial returns in distinct ways. Therewith, clustering of pre-IPO shareholders' stakes is expected to become less relevant explaining the development of underpricing and the public equity market.

The results of the empirical investigation with data from the German stock exchange between 1997 and 2007 support the hypothesis. The data from Deutsche Börse AG enables to investigate firms with traditionally high clustering of ownership stakes compared to the USA. The limited abilities of offer price revision within the German IPO process give further interesting insight to shareholder's bargaining willingness about the optimal offer price. The ownership structure of firms going public has changed during the 10 year period and in different IPO market phases, but does not indicate less dispersed ownership in periods with low average underpricing. Also the determinants of initial returns differ in the sub-samples of "hot" and "cold" market periods. Evidence is found that firms' insiders and invested financial intermediaries change their willingness to "leave money on the table" under different market

conditions. Many previous studies, particularly of the German "Neuer Markt", have tried to explain the influence of different pre-IPO shareholders and found a positive affect on initial returns. So this paper contributes to the existing literature about IPO underpricing in accepting previous findings for positive market environments, but also rejecting the general validity of previous theories. The differences of pre-IPO firm's ownership structures according to the market phases have not been investigated before, allowing this paper to contribute some general ideas to the reasons behind market cycles.

To investigate firm's ownership structure as a determinant of underpricing, the paper is structured as follows: Section II analyses previous literature and related theories. Furthermore, the hypothesis regarding the shareholders incentives and the level of underpricing is developed. In section III the research design of this paper is considered, and the proxies discussed are linked to previous studies, and section IV presents the empirical results. First, descriptive statistics about the firm, transaction and ownership characteristics of the IPOs for "hot" and "cold" market periods; second, the results of the multivariate regression models are presented to demonstrate support for the hypothesis. Section V concludes and summarizes the most important results.

II Related Literature and Development of Hypotheses

One strand of literature explaining IPO underpricing concentrates on the asymmetric information distribution between the participants of the going public process: issuer, underwriter and the investors. The early theories developed by Allen/Faulhaber (1989), Welch (1989) and Grinblatt/Hwang (1989) predict an informational advantage on the part of the issuing firm, compared to investment banks and potential investors. In these models the decision to underprice the offered shares is a deliberate choice by the issuer, to signal the firm's quality. Only high quality firms are able to "leave money on the table", because they expect positive capital market reactions on future dividend announcements or higher offer prices at seasoned equity offerings (SEO). These future pay-offs cannot be expected by low quality firms, so underpricing would be too costly. The empirical results relevant to these theories are ambiguous (e.g., Michaely/Shaw (1994: 305 et. seqq.), Jagadeesh/Weinstein/Welch (1993: 173 et. seqq.)). Also, Barry (1989: 1101 et.seqq.) states that underpricing becomes more costly for owners the more they sell of their original holdings (secondary shares) and the more new shares are offered (primary shares) in the IPO. High participation of pre-IPO shareholders and high dilution due to an increase of shares result in

low initial returns. Evidence is found by Habib/Ljungvist (2001: 449), Ljungvist (1997: 1316) and by Giudici/Roosenboom (2002: 22) in Europe during the dot-com bubble. Petersen (2007: 8 et.seqq.) tests the theory of underpricing as a deliberate choice by a group of pre-IPO owners for the German IPO market between 1997-2002. He considers the trade-off between costs and benefits of underpricing and finds evidence for the hypothesis. When insiders, including supervisory and board members, managers and their families, are in control of the firm, there is a positive relation to the level of underpricing.

However, issuers are able to reduce the level of underpricing if a third party is involved to certify the quality of the firm. For example venture capitalists (VCs) have the opportunity to monitor a firm over a long period of time prior to the IPO and to give managerial advice. Megginson/Weiss (1991: 880 et. seqq.) developed the theory that this is a signal of quality, which can be recognized by potential investors. Contradictory evidence is found during the last hot issue period: the level of underpricing in VC-backed IPOs did not differ from that in non VC-backed firms (e.g., Bradley/Jordan (2002: 613)). Also Franzke (2003: 20) and Bessler/Kurth (2007: 39) note a positive relation between VC ownership and initial return during the "Neuer Markt" in Germany. One explanation suggests that VCs are exit driven: A fast exit from the financed firm provides the VC with resources to either disburse fund investors or to reinvest in new promising projects. Another reason is known as "grandstanding", where young VCs particularly bring firms to the public equity market to build up a positive reputation, although the firms are still associated with high uncertainty about future profits.

The position and objectives of the underwriter can also be discussed from different perspectives. Booth/Smith (1986: 262 et. seqq.) argue that they can also certify the quality of the issuing firm. However, Baron (1982) proves that underwriters with informational advantage over the issuer choose lower offer prices, to find investors and distribute shares more easily. A dispersed ownership structure after the IPO also ensures higher liquidity and increases the underwriter's trading revenue, when becoming a market maker in the secondary market (Booth/Chua (1996: 294 et. seqq.), Boehmer/Fishe (2000: 29 et. seqq.), Ellis/Michaely/O'Hara (2000: 1060)). Also Schultz/Zaman (1993: 204 et. seq.) or Aggarwal (2000: 1082 et. seqq.) show that underwriters often provide price support in the secondary market by repurchasing the newly issued shares and exercising overallotment options. With lower offering prices the implicit costs of price support decrease. Besides this, some studies suggest that underwriters use underpriced issues to favor some of their clients (e.g.,

Aggarwal/Prabhala/Puri (2002: 1427 et seqq.), Loughran/Ritter (2004: 11 et. seqq.)). Reuter (2006: 2307 et seqq.) finds evidence that mutual funds receive favorable allocation of underpriced shares when they provide brokerage commission payments to the underwriter in turn. The association between brokerage payments and the IPO holdings of mutual funds are highest for IPOs with initial returns greater than 20%. However, in most IPOs the investment bank's compensation for the underwriter business is given as a percentage of gross proceeds.[1] Therefore higher offer prices and associated higher gross proceeds would result in higher underwriter fees, so underpricing also comes to a cost to the investment bank.

Based on the theories of informational asymmetries and divergent interests of the issuer and the underwriter as well as between pre-IPO shareholders, Ljungqvist/Wilhelm (2003: 724 et. seq.) developed the theory that a fragmented ownership structure became responsible for the abnormally high underpricing seen in the dot-com bubble. Board members or the chief executive officer (CEO) have fewer incentives to bargain over the offer price and monitor the underwriter when their stakes in the transaction are smaller and other pre-IPO shareholders have a different focus of interest. Also, more different shareholder groups are subject to "moral hazard in teams" problems, which result in lower monitoring and higher underpricing when going public. Additionally, the selling behavior of the pre-IPO owners is important, as low participation ratios make underpricing less costly and therefore the incentive to negotiate over higher offer prices less immediate. Ljungqvist/Wilhelm (2003: 729 et. seqq.) found evidence for this hypothesis in their empirical study of the development of ownership structure and selling behavior in their effects on underpricing with a sample period from 1996-2000. Giudici/Roosenboom (2002: 17 et. seqq.) developed a similar study for Europe during the period from 1995 to 2001. They found evidence that, in Europe, firms are more often closely held and managed by their founders than in the USA. Also, increasing stakes of different owners are negatively related to the level of underpricing, as the incentives to bargain over the optimal offer price increase. Both papers consider IPOs before and during the boom of the new economy, but lack any evidence of the following years where an enormous downturn of the market could have been recognized. Not only the IPO volume but also the level of underpricing decreased after the bursting of the dot-com bubble. In Germany for example the mean value of IPO initial returns dropped from 42.8% (median: 9.99%) during 1997-2001 to 4.6% (median: 1.2%) between 2002 and 2007. With these extreme IPO market changes, the intuitive question comes up, if the ownership structure and potential

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[1] See for example Chen/Ritter (2002: 1108 et.seq.), who find evidence that in the USA the spread on IPOs is highly clustered at about 7%.

agency conflicts determine IPO underpricing in the same way in the years following the dot-com bubble. Three different scenarios are possible: the firms which chose to go public in the period following the Neuer Markt, could show different ownership structures. They are, presumably, more developed, with dominating pre-IPO shareholders or, for example, fewer venture capital investors. On the other hand, the level of initial returns could simply have shifted downwards for all IPOs, with the explanatory factors and ownership structures remaining the same. Furthermore, it is possible that participants' interests and the resulting agency conflicts have changed according to the market environment, and so affect underpricing differently.

The investigation focuses on German IPOs between 1997 and 2007. In general, firms are held much more closely by a concentrated shareholder group in Germany than in the US, so the investigation of changes in ownership should give very important insights to the pre-IPO agency conflicts in firms. The paper focuses on the question of whether ownership explains or determines IPO underpricing in every market phase in the same way. The shareholders' stakes and selling behavior are analyzed during different market conditions to show whether e.g. insiders, financial investors or other blockholders promote the firm's IPO and offer price. The market environment is categorized into "hot" and "cold" periods according to monthly IPO volume and previous underpricing. It is hypothesized that pre-IPO owners' willingness to leave money on the table changes according to the market phases. Their bargaining interests and intentions are likely to differ, so that ownership which may not necessarily be dispersed explains agency conflicts and the level of underpricing. Loughran/Ritter (2002: 424 et. seqq.), for example, applied a model of prospect theory to issuer behavior. They state that pre-IPO shareholders' wealth gains due to a previous upward revision of the offer price are integrated into the money left on the table. The higher the previous unexpected wealth increase, the more issuers are willing to accept initial returns for investors participating in the IPO. Previous positive market return is not fully incorporated in higher offer prices, so underwriters can combine positive information of market development with relatively more money left on the table. Issuers are less concerned about lower than possible proceeds, as they still experience a wealth gain due to a slight upward revision of the offer price. If overall market return decreases before the IPO, underwriters are less likely to revise the offer price, so firm owners do not experience any wealth gains and are more likely to bargain over the optimal offer price and the amount of money left on the table. Additionally, Ljungqvist/Nanda/Singh (2006: 1671 et. seqq.) and Derrien (2005: 490 et. seqq.), show that

underwriters and issuers are able to time the IPO to take advantage of highly positive market perception. With increasing optimism on the part of market participants, more firms have an incentive to go public, profiting from the relatively low costs of issuing equity, and so are less concerned about the amount of money left on the table. To refer back to pre-IPO ownership structure, a positive market environment in hot periods is expected to reduce the bargaining incentive of the various shareholder groups. This market phase allows greater flexibility in setting the offer price, which could also increase potential agency conflicts due to differing interests among pre-IPO shareholders. However, in cold markets, the groups of insiders, financial investors and other blockholders are expected to have more concerns about leaving money on the table. Furthermore, less flexibility by the market in terms of offering prices could reduce potential agency conflicts. In summary, the owner's interest in the optimal offer price and willingness to leave money on the table should change with the market phases. This could also explain the various empirical results presented above for managers signaling the firm's quality or the certifying function of venture capitalists. Many studies on IPO underpricing have considered the effects of different owner groups, such as banks as shareholders (e.g. Tykvova/Walz (2007: 365) Slovin/Young (1990: 736), Klein/Zoller (2003: 10)) during the period of the Neuer Markt in Germany. Their findings suggest that different ownership before the IPO increases agency conflicts between issuers, underwriters and investors, resulting in higher underpricing. However, another explanation with this paper's topic could be that the pre-IPO shareholders were simply less concerned about the money left on the table because the positive market environments provided little incentive to bargain with underwriters about higher offering prices.

III Research Design

III.1 Sample Selection and Data Sources

Between January 1997 and December 2007: 595 IPOs took place at the Frankfurter stock exchange, which is run by Deutsche Börse AG and represents the most important stock market in Germany. This stock exchange is organized into several segments with different transparent standards and admission requirements. The Regulated Market, with its sub-segments General Standard and Prime Standard, is based on public law and fulfills the admission criteria and highest transparency requirements of the European legislator. The Open Market (Freiverkehr), with its sub-segment Entry Standard (since 2005), is based on private law, and firms' shares are traded with lower transparency requirements. The Entry

Standard is supposed to offer young, small and medium-sized firms access to the capital market and is the successor segment to the "Neuer Markt". The sample includes all initial public equity issues, while private placements and the transfer from one stock exchange or market tier to another are excluded. Also IPOs from Banks and Reits due to differences in financial accounting statements are not taken into consideration. The paper's focus is on pre-IPO ownership structure, so only firms with this information available are included in the sample. Furthermore, initial public offerings are only analyzed, when their offer price has been determined with the bookbuilding process. Finally, the sample consists of 439 IPOs between 1997-2007. This still represents a large sample for the German market. Previous studies mainly investigated the "Neuer Markt" and therefore considerd only up to 350 IPOs.

Deutsche Börse AG provides information about all offerings in terms of new issues, listings, and exchange transfers. The primary market statistics, available on their website, provide information on IPO dates, offer prices, first prices at the beginning of trading, bookbuilding spans as well as the volume of the issues. The information about the structure of the offering in terms of primary and secondary shares and the size of the overallotment option are obtained from the IPO prospectus. Furthermore, the ownership structure before and directly after the IPO also has been determined with this source. Often additional research has been required for classification of ownership, because owners are often involved, directly or indirectly, with other shareholder groups or companies. Internet research provided some clarification, as well as the paragraphs in the issuing prospectus about the history and development of capital stocks. The firm's financial and income statements closest to the IPO date are obtained from Reuters Knowledge to receive data on total assets, intangible assets, debt as well as sales or capital expenditure. Another important data source has been Thomson Financial's Datastream. This database provides the closing price on the first trading day after the IPO and information on percentage price changes and historical volatility of all shares traded at German stock exchanges in the analyzed years. Also the Industry Classification Benchmark (ICB) for the sample IPOs are obtained from this database to determine the firms' industry sector.

III.2 Definition of Variables

In order to assess if underpricing is determined by the ownership structure before and after going public, the empirical test is oriented on Ljungqvist/Wilhelm (2003) and several ordinary-least-squares (OLS) regression models are estimated to test the hypothesis.

Underpricing is generally defined as the difference between the first day closing price and the offer prices, divided by the offer price. Previous studies applied an adjustment to index returns, e.g. NEMAX All Shares, FAZ-index or CDax, to account for market effects on price, in the time span when the offer price is set and beginning of trading (e.g. Wasserfallen/Wittleder (1994:1508), Ljungqvist (1997:1311), Hunger (2001:132 et. seqq.)). However, more recent studies suggest that it is more difficult to find an appropriate benchmark which does not include the initial returns, but which reflects the industry and firm characteristics (e.g., Ohler/Rummer/Smith (2004: 14), Kurth (2005:313), Kraus (2002:10)). Moreover, Ritter (1984: 217 et. seqq.) states that adjustment by market movement only changes the results of initial returns slightly. Loughran/Ritter (2002: 417) also do not adjust the initial returns, because the return per day of their benchmark averages 0.05% and thus is assumed to have little impact on the conclusion. Also, for our sample period the stock market performance is not included in the calculation of initial returns, but as an explanatory variable. Moreover, to reduce the skewness and kurtosis of the distribution, a logarithmic transformation of underpricing is applied. The dependent variable (UP) is measured as the natural logarithm of underpricing plus one (similar to Hill (2006: 111)).

The data on ownership prior to the IPO is collected from the IPO prospectus, and is categorized as relating to: insiders, financial investors and blockholders. The classification of "insider" includes all shares of members of the supervisory and management board, as well as private holdings and trusts these persons have an interest in and can influence the decision making process. Also, employees and family members of firm's founders often hold shares before the IPO. These private persons are also included in the group of insiders. Overall, the classification takes into account the shares, which are most likely to exercise their voting rights in the interests of firm's founders and management team. The investments in terms of venture capital, bridge financing for the IPO and private equity are all classified as "investor", including where private equity of the respective fund has been provided in previous buy-outs. However, the classification is limited to firms and funds with the corporate objective related to private investments where this can be identified from their internet representation or company report. Therewith, firms registered at the German Venture Capital Association e.V. (BVK e.V.), European Venture Capital Association (EVCA), and the National Venture Capital Association (NVCA) are included. Also banks and affiliated corporations which are pre-IPO shareholder are classified in this group. Particularly in Germany, close banking relationships exist and banks often provide equity via related venture capital or private equity

funds as well as being able to act as an underwriter. "Landesbanken"[2], for example, often have more than one function in the process of going public. The description "blockholder" is used for shareholders who own more than 25% and are not included in other categories, e.g. company ownership. The limit is set to stakes of more than 25%, because according to German law this enables the shareholder to veto decisions in shareholder meetings or changes to the articles of incorporation. In the case of a different focus of interests from that of other owners, this shareholder is authorized, due to control and voting rights, to enforce objectives when going public. The owners' stakes are calculated as their shares in relation to total shares outstanding before the IPO.

Furthermore, to have an overall measure for clustering of ownership, the Herfindahl index is calculated, which is defined as the sum of squared pre-IPO ownership stakes of insiders, investors, and blockholders (Giudici/Roosenboom (2002: 18), Ljungqvist/Wilhelm (2003: 733)). The index ranges from zero to one: the value of zero indicates a highly fragmented ownership structure and the value of one indicates only one shareholder prior to the IPO. Other common variables in the underpricing literature are the proxies of "participation" and "dilution", which capture wealth effects of pre-IPO owners and their potential interests in the offering. Wealth transfer from old shareholders to new ones in terms of initial return is higher when the number of offered shares is high, relative to shares previously outstanding. So dilution is defined as primary shares divided by the total of pre-IPO shares and is also expected to have a negative effect on the level of underpricing. The overall participation ratio of owners is calculated as the number of secondary shares divided by pre-IPO shares. The selling behavior of pre-IPO owners influence their perception of the amount of money left on the table, as well. As the owners sell more of the pre-IPO shares outstanding higher wealth losses are incurred as a result of underpricing. The effects of shareholders selling behavior and potential conflicts are also captured by measuring sales of each owner classification directly and therewith replacing the variable for participation. The shareholder groups' sales are measured as the difference between pre- and post-IPO shares divided by the total of pre-IPO shares outstanding (similar to Giudici/Roosenboom (2002:42)). The statistical estimates are repeated with variables of pre-IPO shareholders' stakes and sales.

The regression model includes control variables for the effects of company or transaction characteristics on initial returns, which have been proven in previous studies. For example,

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[2] "Landesbanken" are public-sector banks partly owned by German regional governments. They also undertake functions of universal banks.

higher gross proceeds at the IPO, which are calculated as the natural logarithm of the offer price multiplied with the number of shares issued, are associated with lower investors' uncertainty about the issue and therefore with lower underpricing (e.g., Ljungqvist (1997: 1316), Löffler/Panther/Theissen (2005: 478)). Often, the standard deviation of daily returns after the IPO is used as a proxy to account for this relation. However, this variable would fail to allow for the uncertainty of market participants, especially in weak issues, because of price stabilization activities in the secondary market of underwriters in Germany. Furthermore, the industry classification is included in the analysis, as firms related to the software, internet, media or technology sectors experienced extremely high initial returns in the dot-com bubble. For every sample IPO the ICB categorization is obtained and dummy variables "tech" and "media" equal one, if the firm is classified into these two respective sectors otherwise they are equal to zero. Additionally, market characteristics or publicly available information affect underpricing. For example, Hanley (1993: 246) and Loughran/Ritter (2002: 415) have shown that high market returns before the offer date are only partially included in the offer prices and firms going public in a positive market environment show higher levels of initial returns. Therefore, IPO underpricing is highly autocorrelated over time and becomes predictable to some extent, so that average cumulative return of all tradable shares in the German stock exchanges during 30 trading days before each IPO is considered as another variable ("return"). The prices for all shares traded at the German stock market between 1997 and 2007 are from Thomson Fiancial Datastream. This also includes the stocks, which have been delisted over time. So this measure is a better indicator than, for example, the CDax performance index, which only includes share prices of firms, which stocks are still traded at the Regulated Market. Because many firms have been delisted after the bursting of the dot-com bubble, this is likely to be a biased variable to control for public information and market performance in the past. Additionally, the variable "vola" measures the average monthly volatility of these shares in the month of the IPO. This variable is included to provide a control for the valuation uncertainty of the market. For example, Pástor/Veronesi (2005:1720) argue that more firms go public when uncertainty about the future profitability is high but also that this is likely to increase the market valuation of a firm. Instead of aftermarket volatility, previous share price changes are included in the analysis, which can also be considered as publicly available information to potential investors. Further indications of offer prices and initial return are derived from the volume and average underpricing of previous IPOs. For example, Ritter (1984: 219) shows that periods of high average initial returns tend to be followed by periods of high IPO volume. Also Lowry/Schwert (2002: 1171 et. seqq.) and

Lowry (2003: 17 et. seqq.) confirm this lead-lag relationship, and suggest that firms are more likely to go public after periods of high initial returns, because increasing first day trading prices are associated with positive (private) information of investors, which are not fully incorporated in the offer price. As a result, firms find it more attractive to go public and consider the related costs as especially low. However, the time a company decides to go public does not necessarily indicate any information about that firm's underpricing. Although empirical patterns have shown, that periods of high IPO volume are often followed by lower underpriced IPOs. One possible explanation is that more information can be captured in the offer prices over time. The explanatory variables of "volume" (number of IPOs in the month of the offering date) and "IR" (initial return of IPOs in the month prior to the IPO) therefore take account of the information of previous IPOs available to the underwriters and investors. Also, in a study of Baker/Wurgler (2006: 1657) both indicators are used as proxies for overall investor's sentiment, where they are associated with positive market perception. In this context, many previous studies control for the ability of underwriters to reveal information and their customer relations. During the last hot issue period the hypothesis that underwriters provide positive recommendation and analyst coverage, when issuers are willing to accept high underpricing was confirmed (e.g., Aggarwal/Krigman/Womack (2002: 109 et. seqq.), (Loughran/Ritter (2004: 9 et. seqq.)). For this paper also a dummy variable for prestigious underwriter reputation has been calculated, measured in the same way as in Franzke (2003: 14). The relative market share of an underwriter is calculated by equally weighting the relative share of lead managements of IPOs and the relative volume of proceeds of these issues, where only the investment banks within the highest rating category are classified as prestigious. In this sample, 55 different investment banks have been active as a lead underwriter.[3] Unfortunately, the variable has been insignificant (economically and statistically) and did not contribute to the explanatory power of the regression models, so the results are reported without this measure. For a better overview, the described variables and definitions are also presented at table I.

[Insert table I]

III.3 Definition of Hot and Cold Periods

In recent literature several classifications and definitions of hot and cold IPO phases can be found. For example, Helwege/Liange (2004:548 et. seqq.) investigate how firms in both periods differ, and which alternative characterization of hot and cold markets is appropriate.

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[3] See table XV in the appendix for underwriter activities.

They calculate three month moving average of the number of IPOs, where month with more IPO counts than the top quartile are defined as hot, and the lower third of the sample is defined as cold. Furthermore, they classify the IPO based on its underpricing: Offerings with higher (lower) initial returns than the value of the top (bottom) quartile are defined as hot (cold) IPOs. They find that high underpriced offerings are more distinct from low underpriced IPOs in terms of firm age, proceeds and investments. The firm and offer differences according to IPO volume are not pronounced. They also analyze firm ownership in terms of institutional investors' holdings after the IPO and find that hot markets' IPOs (defined by volume) have higher institutional ownership than IPOs in a cold market. However, they do not investigate the firm's ownership structure before firms go public.

The classifications of market cycles, used in this study, are also defined by offering volume and initial returns. When an IPO is completed in a month with more IPO counts than the monthly median value, it is classified as "HotVolume" and the respective dummy variable equals to one. When average underpricing of IPOs in the month prior to the offering exceeds the median value of monthly underpricing across the sample, the firm is categorized as "HotIR". Because of the smaller total sample size, the classification is orientated at the median values and only two sub-samples are grouped. It has been described before that months with high underpricing and IPO volume often coincide or follow each other, so it is not surprising that in 60% of the sample the "hot" classifications consist with each other. Additionally, the IPOs are split into two sub-samples according to the year of the IPO: 1997-2001 and 2002-2007. After bursting of the dot-com bubble in 2001, the level of underpricing as well as IPO volume decreased sharply. So it is necessary to confirm firm, transaction as well as ownership characteristics in both periods, to discuss the suggestion that owner's intention are likely to changed with the market characteristics.

IV Empirical Results

IV.1 Firm and Transaction Characteristics

The complete sample consists of 439 IPOs, and their monthly counts between 1997 and 2007 are shown in figure I. During the first 5 years of the period in question, 257 firms went public, mainly in the stock segment for small and medium sized companies. While the IPO market in Germany was almost inactive in 2002 and 2003, the number of IPOs increased in 2004. The volume averages 4.166 IPOs per month in the last two years of the sample period. The graph in figure II shows average monthly initial returns. In the boom period of Neuer Markt, from

1997-2001, monthly underpricing averaged 31% and was much higher than in the following 6 years. Initial returns also remained much lower, with an average of 6% after 2006, at which point the IPO market seems to have recovered.

 [Insert figure I/II here]

Table II provides characteristics of the issuing firms, presenting the mean, median, maximum, minimum and standard deviations from the values. Additionally, more important insight is obtained from table III, where the differences in the respective variables are analyzed in hot and cold market periods. The mean and median values are presented, as well as the p-value. This p-value denotes the probability of a refutation of the null-hypotheses of both the equality of means t-test and the Wilcoxon-Mann-Whitney test, which assumes that the samples come from the same distribution. The results for the sub-samples, divided by the offering date (panel A: 1997-2001; 2002-2007), do not show any significant differences in the mean and median values for firms' total and intangible assets, book value of equity, total debt and sales. Only capital expenditure, which indicates the firm's spending on assets, shows a significant difference and higher spending on future benefits for IPOs between 1997 and 2001. Also, some transaction characteristics differ significantly between sub-periods. Proceeds, defined as the total number of offered shares multiplied by the offering price, are higher in the early market phase (1997-2001) than in the later ones, with a mean of € 37.9 mio., compared to € 27.475 mio. The number of secondary shares (mean: 1.957 mio.) and primary shares (mean: 3.419 mio.) show a higher likelihood of confirmation of the null-hypotheses of the t-test and Wilcoxon-Mann-Whitney test. Overall, more new shares are issued than are sold by pre-IPO owners. The variable "freefloat" accounts for the relationship between publicly traded shares and firm's total shares after the IPO, and indicates more wealth diversification among pre-IPO shareholders between 2002 and 2007. As suggested above, the differences in the firms' initial returns in both market phases are very high, at 38.2%, and the likelihood of confirmation of the null-hypotheses are close to zero.

Similar conclusions can be drawn when firm- and transaction characteristics in hot and cold phases are considered in terms of IPO volume and underpricing. The t-test and Wilcoxon-Mann-Whitney test confirm that firms going public in months succeeding periods of high underpricing do not significantly differ from IPOs in the other sub-sample (panel B). The transaction characteristics approve the pattern described above, if the period 1997-2001 is considered as a hot phase and 2002-2007 as a comparatively cold period. IPOs have higher

proceeds and initial returns, as well as a lower percentage of freefloat in the shares, in hot months. Also, with this sample distinction in panel B, the mean of pre-IPO owner participation in terms of secondary shares is lower in hot (mean: 0.728 mio.) than in cold months (mean: 3.140 mio.). This suggests that old shareholders prefer to raise more cheap capital in hot issue phases, rather than to sell part of their stock and participate in the offering. Furthermore, in panel C the classification of the sub-samples based on the IPO volume per month show differences in firms' size, leverage and profitability. The median values are higher in cold months, and the p-values of the Wilcoxon-Mann-Whitney test indicate low probability (up to 5%) of both samples having the same distribution. The variables for IPO characteristics also confirm that the amounts of secondary shares, percentage freefloat and initial returns differ in hot and cold samples. Only the statistical tests for IPO proceeds do not support previous findings that firms raise more equity in an advantageous market environment. Overall, the results are consistent with Helwege/Liang (2004: 558), although they find more distinctions in the sub-samples classified by underpricing, rather than by IPO volume. Hot market periods are a favorable opportunity for young start-ups with greater growth potential to go public, but not only for this group. The differences in the transactions characteristics confirm that this market environment is a window of opportunity for all types of firms and issuers to increase their proceeds, to obtain more relatively cheap equity. In contrast, pre-IPO shareholders' participation is higher in cold issue periods, and they distribute more of their shares on the public market.

[Insert table II/III here]

IV.2 Pre-IPO Ownership Characteristics

To gain an insight into pre-IPO shareholders' intentions in different market periods, the ownership structure is analysed in more detail. Table IV provides evidence for the development of the shareholder classification of insiders, investors, and blockholders, as well as the Herfindahl index. "Mean of IPOs" shows the percentage of IPOs with the considered shareholder group before going public represented in the sample. "Stakes before" is calculated as the ratio of respective owner's shares to total shares outstanding before the IPO. "Stakes after" is calculated as the ratio of respective owner's shares after the IPO in relation to the total number of shares after the IPO (excluding shares from the overallotment option). "Sales" is calculated as the respective shareholder's difference in shares before and after the IPO, divided by the number of shares held before the firm went public. The ratios described are calculated solely from the sample of IPOs in which the respective shareholder group is

represented. Throughout the sample period, managers, supervisory board, or related persons own stakes in the firm in almost every IPO (mean: 93.8%). The holdings average 68.9%, forming the largest group of pre-IPO owners. When going public, an average of 4.8% of the outstanding shares are sold. Their stakes fall below 50% after the IPO has been completed because of dilution. No major changes are seen in the long term, excepting possibly that in 1997 the insider stakes (mean: 72.7%) and sales were higher (mean: 8.5%) than in the following years. The results for the period 2002-2004 are not conclusive, as there is only a limited amount of data available for these years.

The financial investors, such as VCs or private equity funds, are involved in 54.7% of the sample IPOs and hold, on average, 35.4%. Compared to insiders, they participate in more secondary shares at the IPO and sell, on average, 7.2%. This confirms that financial investors use the IPO as an opportunity to exit the investment, while founders use it as an opportunity to raise equity. Development during the sample period after 2004 shows more IPO firms with shares held by these investors than seen in the boom period of the new markets. Surprisingly, the percentage of financial investors' stakes falls below the mean value during the years with very high IPO volume (1998-2000). Percentage sales are also especially low in 2000 and 2001. The third classification includes all blockholders with more than 25% of the firm's equity. This group of pre-IPO owners is represented in 16.4% of the sample's firms, and their stakes average 66.9%. The percentage of sales is also relatively high, at 9.6%, so their stakes decrease by about 20% during the IPO, which is similar to the findings on insider wealth changes. The Herfindahl index varies around a mean value of 0.75, and indicates much greater clustering in ownership structures in the German IPO sample. In the study by Ljungvist/ Wilhelm (2003: 732) in the USA, the Herfindahl index shows a value of 0.35. During the 11 year period, the index does not indicate that the ownership structure has changed exceptionally. In 2005 and 2006, relatively low values were achieved, which would indicate higher underpricing than in the hot phases of 1997-2001.

[Insert table IV here]

In table V, the ownership structures in hot and cold IPO periods are presented. The stakes before and after the IPO are calculated, as are the shares sold, as an overall percentage of the sample and not only for the IPO group relating to the particular shareholder. The classification "insider" shows significant differences between hot and cold samples according to offer date and IPO volume. In panels A and C, the management and supervisory board members held larger stakes in the firm before and after going public in hot periods than in

cold. The p-values indicate low probability, up to 5%, of the mean values being equal, and the samples show the same distribution. These results are not confirmed by the sample differentiation according to underpricing in the prior month of the offering. However, further distinctions can be made considering financial investors' ownership. In panels A, B, and C, the investor stakes in cold months average 22%, compared to 16% in hot IPOs. The differences are significant according to the t-test. The mean stakes after the IPO are also higher in the cold periods, which is confirmed by the statistical tests in panels A and C. The differences in mean stakes or shares sold in the third category "blockholders" are not extreme. The t-test and Wilcoxon-Mann-Whitney test indicate a probability of accepting the null-hypotheses. Overall, ownership by blockholders is relatively low, if the value is not calculated for a separate sample of IPOs with these shareholders being involved. Lastly, the Herfindahl index indicates differences in the samples. The classifications in terms of offering date and volume (Panel A and C) suggest higher ownership clustering and a higher index value in hot than in cold IPOs. These findings contradict the hypothesis and results presented by Ljungqvist/ Wilhelm (2003). Considering the IPOs according to their market environment, months with presumably higher initial returns indicate higher clustering of pre-IPO shareholders. This means that the argument that more dispersed ownership over time results in higher underpricing cannot be accepted. Furthermore, the results suggest that the insider group, rather than financial investors, promotes the decision to go public in hot phases, because of their higher ownership stakes. The idea of a fast, profitable exit by venture capital or private equity investors from their investment during active months in the IPO market is not necessarily confirmed by their smaller stakes in outstanding shares. They hold considerably larger stakes in IPO firms, and sell more in cold phases. Overall, the descriptive statistics suggest that the ownership structure of IPOs has changed slightly between the periods of 1997-2001 and 2002-2007. The findings are also supported when the IPOs are classified according to the market environment. However, the index of clustering has not increased, which would support the previous argument put forward by Ljungqvist/Wilhelm (2003). Therefore analysis is required into which factors determine IPO underpricing, and whether or not their explanatory power has changed over time.

 [Insert table V here]

IV.3 Regression Analysis

IV.3.1 Variables Explaining IPO Underpricing

To demonstrate the influences of shareholder ownership and related agency conflicts on IPO underpricing, several regression equations have been examined using the IPO data from 1997-2007. The ordinary-least-square (OLS) regression models are estimated with White's (1980) standard errors and covariance, to provide a control for heteroskedasticity of the residuals. The coefficient estimates and the t-statistic values for the null-hypothesises are presented in table VI. First of all, regression UP [1] indicates the importance of the control variables and their effects on the dependent variable of underpricing. The variable of gross proceeds as a proxy for investor uncertainty about an issue shows the expected negative coefficient, although not significant at the relevant levels. Previous performance of all tradable shares on the German stock exchanges during the 30 trading days before the IPO ("return") has a positive, and the volatility ("vola") of the shares in the same month a negative, effect on IPO underpricing. Both variables are significant at the 1% level. This supports previous findings: positive market movements are not fully taken into account in higher offer prices, which results in higher initial returns. Higher volatility seems to influence issuers' and underwriters' insecurity about investors' willingness to pay for new shares. Significant t-statistics (at 5%) are found for the variable of "IR", the average of IPOs' initial returns one month prior to the offering of the sample firm. Bradley/Jordon (2002: 610) find significant positive results for the average underpricing of the IPOs 30 days before the offering date, and conclude that publicly available information is not fully incorporated in the offering price and so underpricing becomes predictable to some extent. The coefficient is not significant, but shows a positive sign for IPO "volume". This means that no confirmation is found for the argument that underwriters learn more about the market as IPO volume increases and so information are not completely incorporated into the offering price over time. The dummy variables "tech" and "media", which equal one if the firm operates in respective industry segments, shows a significant positive correlation to underpricing at levels of 5% and 10%.

The explanatory power of these variables, for underpricing, remains unchanged when several proxies for firm ownership are included. However, the R-squares of the following models increase, suggesting dependency of ownership structure and underpricing. The regression estimates for UP [2] and UP [3] provide a control factor for the percentage stakes of the three shareholder classifications, which only show significant statistical values for "blockholder", at 10%. The larger the holdings of outside blockholders, the lower the initial returns. A negative coefficient is found for the relationship between financial investors' stakes and first day returns. The positive sign of the coefficient for insiders' stakes in UP [2] would predict that

the board members' and managers' group bargains for underpricing, presumably to signal the high quality of the firm. However, when the "participation" and "dilution" variables are applied, to control for shareholder wealth effects, the sign of the coefficient for insiders' stakes also turns negative. When owners participation in the IPO, by offering secondary shares, is high, and when more primary shares are issued, initial returns decrease. Ljungqvist/Wilhelm's (2003: 743) related investigation also estimates equation coefficients of shareholder stakes with negative signs. Larger shareholders' ownership stakes result in higher monitoring of underwriters and in increased interest in reducing underpricing. Furthermore, this is supported by the estimates of UP [4], where the explanatory power of the Herfindahl index is tested, rather than ownership stakes separately. The coefficient is negative and significant at the 5% level. Many previous studies have determined the effects of several shareholder groups using dummy variables, which equal one if the respective shareholder group is represented, and otherwise zero. In regression UP [5] and UP [6], the dummy for insiders and financial investors shows a positive relation, while the presence of large blockholders has a negative affect on the dependent variable. The results for the first regression models are similar to Ljungqvist/Wilhelm (2003), meaning that further estimates are completed using owner's stakes variables instead of dummy variables.

 [Insert table VI here]

In table VII, equation estimates for the effects of pre-IPO owners' sales are presented. Insiders and blockholders are associated with less money left on the table when their participation in the offering is high: the more shares are sold, the lower are the initial returns. The results of the t-statistics also confirm significant effects of these variables (to the 1% level). VCs' or other financial investors' selling behavior has a positive correlation to initial returns in UP [7]. However, when the Herfindahl index is included as an additional variable in the regression model (UP [8]), the sign of the coefficient also becomes negative. Surprisingly, when the estimates are repeated with dummy variables for owners' sales (UP [9], UP [10]), no effects are confirmed at statistically relevant levels. Furthermore, when insiders and financial investors sell shares, higher underpricing is achieved. It is likely that market investors interpret the participation of pre-IPO owners as a positive sign and so demand higher initial returns. The variables for shares sold in relation to total shares outstanding, however, capture the owner's negative wealth effect of underpricing and therefore have a negative correlation to the dependent variable. Ljungqvist/Wilhelm (2003) also show the

expected negative influence of owner participation and increased incentives to bargain about optimal (higher) offering prices.

 [Insert table VII here]

IV.3.2 Determinants of IPO Underpricing in 1997-2001 and 2002-2007

The regression results confirm that ownership structures before and after the IPO determine the level of initial returns. Additionally, the descriptive statistics in IV.2 indicate some changes in pre-IPO shareholders over time and in different market cycles. These factors necessitate an analysis of whether the determining factors of underpricing have remained the same over time and whether changes in ownership structure could explain differences in levels of initial returns. Furthermore, a general shift downwards in the level of underpricing could be responsible for the high differences in initial returns seen between 1997-2001 and 2002-2007, meaning that the considered variables have the same influence in both market periods. For this reason, the complete sample is split into the two sub-periods 1997-2001 and 2002-2007, and the OLS-regressions are repeated. The main results are presented in table VIII. For the first period (1997-2001), the coefficients and t-tests are similar to the results described in IV.3.1. The variables of previous return, previous IPO underpricing and industry segments have a positive influence, while volatility decreases initial return on the first trading day. Ownership stakes and proxies for participation and dilution show negative coefficients. The regression model analyzing shareholders' sales confirms the negative correlation for "insider sales" and "blockholder sales" to underpricing, significant at the 5% and 10% levels. However, financial investors' sales indicate a positive correlation and suggest that those owners' concern about money left on the table is inversely proportionate to how much they sell.

In the second sample period (2002-2007) the explanatory power of the variables considered in the OLS-regression models changes. In UP [14], only the "participation" and "dilution" proxies have a significant negative coefficient to underpricing. The industry dummy variable for technology firms is also significant at the 10% level, but with a negative sign of the coefficient. In the earlier period, technology-orientated firms dominated the IPO market and experienced enormous initial return. With decreasing IPO volume in this industry segment, investors' compensation for participating in the respective offerings decreased. IPO firms in the media sector, however, were still associated with more money left on the table. The "return" variable, controlling for previous market performance, shows a high positive

coefficient (4.858). Although the t-test does not indicate the significance of this variable at the respective levels, the economic meaning has become more important in explaining "UP". Further variables in the regression model have changed signs. "Proceeds" and "vola" have a positive effect, while higher values of "volume" and "IR" decrease initial return. Additionally, the coefficients signs for pre-IPO ownership proxies change in UP [14]: higher shareholders' stakes before the IPO result in higher underpricing when going public. A similar development can be seen in UP [15], where proxies for owners' selling behavior are included as independent variables. The managers' and related persons' group accepts higher underpricing when they sell more of their shares, while financial investors seem to bargain in the opposite direction. "Blockholder sales" is negatively related to the dependent variable, which confirms previous results. Additionally, UP [15] and UP [16] include the variable for ownership clustering before going public ("Herfindahl"). Interestingly, the effects of more clustered ownership structures are positive for the period between 2002 and 2007, although the coefficients are much smaller and not significant. Overall, the F-statistics in UP [14]-UP [16] are relatively small and do not, compared to the previous estimates, indicate high explanatory power on the part of the variables considered in respect of underpricing. The results are also puzzling, because shareholders in IPO firms are expected to be more concerned about money left on the table in negative market environments, whereas the positive coefficients suggest the opposite.

 [Insert table VIII here]

The regression analysis is repeated for the complete sample, with an interaction term "HotDate" to reassess whether the determinants or relevance of the variables have changed between the two periods. Also, this dummy variable "HotDate" is introduced as a further independent variable and equals one if the IPO took place between 1997 and 2001. Otherwise it is zero. The explanatory variables are also multiplied by this interaction term in the regression models, and the coefficients indicate the differences in these variables between the market periods 1997-2001 (hot) and 2002-2007 (cold). The results are presented in table IX and the t-statistics indicate the significance of the changes. The dummy variables "HotDate" in UP [17] and UP [18] indicate changes of the intercept in the regression equations during hot and cold periods. The variable is positive and significant at the 10% level, which suggests that in the hot period of 1997-2001 underpricing was indeed higher in general. The level of initial returns fell after the active Neuer Markt period. However, the estimates for the interaction term confirm high changes in the respective coefficients in the opposite direction for hot and cold periods, whereas the difference in the variables "tech" and "vola" are

significant at the 1% level. The results confirm that the explanatory power of the variables also changed in both periods. In addition to the different intercepts, the slope of the regression models and thereby also the determinants of underpricing differ in the sub-samples.

[Insert table IX here]

IV.3.3 Pre-IPO Ownership and Underpricing in Different Market Phases

Not only has ownership structure changed over time and in different market phases, but also the influence of pre-IPO owners on the level of underpricing differs within the 11-year sample period. It is hypothesized that the willingness of pre-IPO owners to leave money on the table changes according to the market cycles. In this section the different shareholder groups' bargaining incentives within hot and cold IPOs are investigated. In table X the results, where a hot market is classified according to average underpricing in the month prior to the offering of the sample firm, are presented. The variable "HotIR" is introduced as a simple dummy variable, and equals one if the firm's IPO follows a month with higher average underpricing than the median value of the sample, otherwise being zero. The variable "IR" is thereby no longer included in the regression models, as it controls for the same effect. Furthermore, an interaction term is introduced: the dummy variable is multiplied by the variables of insiders', investors', and blockholders' shares before the IPO, and their percentage sales. These coefficients indicate the change in the respective variable and the effect on underpricing when the IPO takes place in a hot month. Regression model UP [19] indicates a positive relation for insider holdings, as well as negative relations for financial investors' and blockholders' stakes to initial returns. The same variables with the interaction dummy "HotIR" confirm the coefficient sign for insiders and blockholders, also showing relatively small changes in economic meanings. However, the coefficient for "HotIR*Investor" is high, and also implies a positive correlation of financial investor's stakes to underpricing in hot market phases. Venture capitalists and private equity investors seem to prefer a fast exit, have lower bargaining incentives over higher offer prices, and leave more money on the table in a positive market environment. Agency conflicts between pre-IPO shareholders could be higher in hot markets and in cases of larger firm ownership by financial investors, which results in higher underpricing. An explanation for divergent interests could be higher flexibility in setting an offer price acceptable to potential buyers. However, this shareholder group owns fewer shares in hot market IPOs and pushes forward the decision to go public in comparatively cold months, which can be concluded from the results of table V. The t-

statistics do not indicate high significance of ownership stakes variables or coefficient changes in hot months.

Similar estimates are shown in regression models with the independent variables for owner participation (UP [21] and UP [22]). The more pre-IPO shareholders sell in terms of secondary shares, the higher are their wealth losses due to underpricing, and therefore the greater are their incentives to bargain for higher offering prices. In hot months, the coefficients signs for the classification of insiders and investors change. However, the overall effects remain negative, because the positive coefficients of the intercept term are lower than the negative values for "insider sales" and "investor sales".

 [Insert table X here]

In table XI the results for the classification of hot and cold markets according to IPO volume in the month of the sample firm's offering are reported.[4] The same conclusion can be drawn regarding the changes in owners' interest in the different market cycles. The coefficient for financial investors' stakes changes from negative to positive in months with more counts of IPOs than the median value. The t-statistics in UP [24] do not indicate high significance of these variables in explaining underpricing of shares when a firm goes public. When the sales of the three owner classifications are introduced as explanatory variables, the interaction term changes are not significant at conventional levels (UP [26]). Only the coefficient for "HotVolume*Investor Sale" changes sign from negative to positive, but the overall effect on initial return remains negative. The results confirm that agency conflicts and incentives for financial intermediaries show the most noticeable change in response to market phases. In periods of favorable market environment, these shareholders leave more money on the table when their stakes prior to the IPO are higher. Many previous studies (e.g. Franzke (2003:20), Tykvova/Walz (2007: 364)) have investigated the influence of several financial investors on the level of underpricing during Germany's Neuer Markt, and have found positive dependency for these variables. These results confirm the findings of previous papers, but also support evidence for the theory that owners are likely to bargain more for higher offering prices with higher monitoring incentives in place in relatively cold or normal periods.

[Insert table XI here]

IV.3.4 Pre-IPO Ownership and Underpricing with Positive Investor's Information

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[4] In the regression models the variable "volume" is no longer included as an explanatory variable as it controls for the similar market conditions.

The hypothesis that pre-IPO shareholders' willingness to leave money on the table changes according to market phases is not confirmed by the necessary highly significant interaction term variables. Therefore, another classification for market and investor perception of the IPO is introduced, to reassess the results. Loughran/Ritter (2002: 424 et. seqq.) show that, with upward revisions of the offer price, owners profit from an unexpected wealth gain and are willing to leave relatively more money on the table. Hanley (1993:233) has also proven that the final offer price revision is made in response to private investors' information, revealed during bookbuilding, as well as in response to overall stock market conditions. An upward revision of the preliminary offer price indicates higher initial returns for investors. According to the Benveniste/Spindt model (1989:347 et. seqq.), higher returns are seen as additional compensation for investors, revealing true positive information during the bookbuilding period. Ljungqvist/Wilhelm (2003:736) also consider offer price revision, and predict a positive relation to owner's stakes and sales in the IPO. Pre-IPO shareholders are likely to bargain more aggressively for higher offer price revision when their wealth gains are higher due to larger stakes. In Germany, the possibility of price revision is limited, and final offer prices are normally set within a given price range (e.g. Löffler/Panther/Theissen (2005: 468), Aussenegg/Pichler/Stomper (2002: 3 et. seqq)). The reason for this is that participation in the bookbuilding process constitutes a binding offer by investors, which is not the case in the USA, and a higher offer price would be related to enormous effort on the part of the underwriter in repeating the whole road show process and so would delay the offering date. In this paper the relationship between the final offer price and the preliminary offer price is used as an additional indicator of investor perception. To this purpose, the dummy variable "HotPrice" is introduced. This variable equals one if the offer price is higher than the preliminary price, which is defined as the midpoint of the bookbuilding price span, and otherwise it is zero. This sheds more light on offer price revision due to investor's information signaled to underwriters. Although the scope for increasing the final offer price is very limited, issuers and underwriters are more likely to set the offer price at the upper end of the price range when they receive positive feedback about the market. With somewhat negative or absent information of potential investors, the offer price is set below the issuer's previous expectations. In this sample, the average bookbuilding range is 19%, limiting unexpected wealth gains for pre-IPO owners. The final price is set above the preliminary price in 60% of the sample IPOs.

In table XII, the results for the regression models including the dummy variable and the interaction term with ownership proxies are reported. In UP [27], the control variables show the same results as before, and "HotPrice" indicates a positive relation to underpricing, significant at the 1% level, with a t-statistic of 5.944. IPOs with a final offer price above the midpoint of the file price range also show considerably higher initial returns after the first trading day. The R-square also increases, which indicates greater explanatory power for the model in respect of the IPO underpricing data. The interaction term with the respective dummy variable is analyzed in UP [28]. First of all, the coefficients for the owner's stakes are negative, including those for the percentage holdings of managers and supervisory board members. Interestingly, this differs from the results of UP [20] and UP [21]. The relationship between insider stakes and underpricing in offerings with positive investor's perception changes in the opposite, positive, direction. However, the coefficient is relatively small, and so the overall affect remains negative. The findings for the changing bargaining interests of financial investors support the results shown in table X and XI. This investor group is associated with higher underpricing in IPOs with offer prices exceeding the midpoint of the bookbuilding span. Interpretating owners' bargaining power is less straightforward. It can be presumed that the offer price is not set as high as possible (remaining within the price range), and therefore more money is left on the table, when financial investors own large stakes in the firm. Higher stakes held by blockholders and insiders suggest a tendency to bargain for the highest possible offer price (more unexpected wealth gain) and to monitor the underwriter so that lower initial returns are achieved. Another argument could be that agency conflicts among pre-IPO shareholders increase when financial investors own a large percentage of shares and the offer price is set relatively high in comparison to previous expectations. These financial intermediaries could be willing to benefit future potential customers or signaling investors and forego their own wealth increase. Furthermore, investors with positive perceptions of the IPO may pay more for the shares offered if financial investors own a large part of the firm's stocks and certify the quality, which results in high price increases.

The investigation into owner participation show similar results to the previous classification of hot and cold markets. First of all, the dummy variable for high offer prices is also significant, and is positively related to underpricing in UP [29] and UP [30]. The shareholder sales variables also show negative effects (UP [29]), because they have higher wealth losses due to underpricing when they sell more shares at the IPO. The t-statistics for "insider sale" and "blockholder sale" are significant at the 1% and 5% levels. Regarding the interaction term

"HotPrice" in UP [30], monitoring incentives for insiders and blockholders also seem to reduce the amount of money left on the table. The "insider sale" variable is positive and the interaction term of this variable indicates a significant negative change for the "HotPrice" IPOs. In the case of high insider sales, offer prices are set as high as possible so that share prices increase less after the first trading day. The opposite proposition can be made for the financial investor's incentives. When the final offer price is set in the upper range of the bookbuilding span, these shareholders experience (unexpected) wealth gains and are willing to compensate investors by means of higher initial returns.

[Insert table XII here]

In the final regression models seen in tables XIII and XIV, owners' intentions to bargain over the optimal offer price according to investor perception of the IPO and the market environment are presented. The dummy variables for the price level ("HotPrice") and the hot market periods ("HotVolume" and "HotIR") are applied to the ownership variables. Pre-IPO owners' willingness to monitor underwriters in an IPO with high investor demand and in months with high IPO volume or high previous initial returns is estimated. The results in table XIII show estimates for the hot IPO classification according to previous underpricing. The insider stakes variable shows a positive coefficient, while the relation of investors and blockholder stakes to UP is negative. The simple interaction term with "HotIR" also indicates a negative relation between higher ownership stakes and initial returns realized after the firm becoming listed. However, significant positive coefficient changes at the 1% and 5% level of significance are obtained for the "HotPrice*HotIR*Insider" and "HotPrice*HotIR*Investor" variables in UP[31] and UP[32]. This suggests a positive change in the relation between underpricing and insiders' and investors' stakes in IPOs with favorable investor perception and high previous underpricing. Also, the high coefficient values indicate considerable economic relevance. On one hand, owners are willing to leave more money on the table under these conditions and do not bargain for the highest possible offer price in the upper half of the price range (or simply the offer price cannot be revised upwards). On the other hand, higher ownership by insiders and financial investors could be interpreted positively by new investors in the given market environment, meaning that they are still willing to pay higher prices than the highest possible offer price, thereby increasing initial returns. The presence of blockholders shows no significant statistic and economic effects in the given interaction terms. Owner participation and willingness to monitor underwriters in setting the optimal offer price are also analyzed. Here the coefficients change from negative to positive for

insiders', investors' and blockholders' sales with the two interaction dummy variables in UP [33] and UP [34]. However, only the t-values for the investors' sales indicate a significant difference at the 5% level in both regression models. Pre-IPO owners are associated with higher underpricing where a high percentage of secondary shares in IPOs is characterized by offer prices in the upper preliminary price range in combination with high previous underpricing. Owners seem to have less incentive to bargain over high offer prices, or they are not able to revise the offer price upwards, resulting in higher initial returns.

 [Insert table XIII here]

In table XIV the results for hot categorization according to IPO volume in the given month are presented. The results confirm previous estimates, and the same conclusion can be drawn. Significant changes in the relations of ownership structure and underpricing are found in a positive market environment with positive investor's information. IPOs with a final offer price above the midpoint of the file price range in a hot market have higher initial returns when the owners' stakes and sales are higher. The relation is negative under less positive market conditions, which is also suggested by Ljungqvist/Wilhelm (2003). Agency conflicts and insiders' and financial investors' bargaining interests are especially likely to change. In most of the results, the overall blockholders' interests are negatively related to initial returns. Firms' ownership structures have changed over time, but the differences in the IPO markets cannot necessarily be explained by increased clustering of pre-IPO shareholdings. Evidence is found for the hypothesis that owners' objectives in terms of offering prices change according to market conditions.

[Insert table XIV here]

V Conclusion

This paper offers interesting insights into the pricing decisions and the related levels of underpricing of IPOs during different market periods. The IPO environment is classified into hot and cold market phases according to average underpricing of previous offerings and the number of IPOs per month. The sample is split into two sub-periods (1997-2001 and 2002-2007) to detect relevant developments in the German stock exchanges and newly listed firms over time. First of all, firm characteristics do not indicate considerable differences between hot and cold market phases. Not only between 1997 and 2001 did a large number of young start-up companies in the technology and internet sector go public: the hot periods also offer a

window of opportunity for all types of companies to raise relatively cheap equity with comparatively low participation by pre-IPO shareholders. Interesting results are also obtained in terms of ownership structure, which is classified into three categories of shareholders: insiders, investors and blockholders. Insiders, such as managers and supervisory board members, own higher equity stakes in IPOs going public in hot months, whereas financial investors, e.g. venture capitalists or private equity firms, have more shares in cold than in hot IPOs. However, the Herfindahl index shows higher values in hot market phases, which indicates a more clustered ownership in favorable market conditions associated with higher initial returns. This result contradicts the hypothesis put forward by Ljungqvist/Wilhelm (2003). Furthermore, the regression analysis confirms assumptions that determinants and explanatory variables have changed significantly over time; the level of underpricing did not simply decrease in general after the closing of the Neuer Markt. The ownership structure variables indicate changes in bargaining interests in terms of pre-IPO shareholders' offering prices. Financial investors are particularly willing to leave more money on the table in hot IPOs. When the final offer price in relation to the initial bookbuilding range is considered as another criterion for estimating positive investor perception about the firm going public, a significant positive relation change is estimated. During positive market phases and high offer prices within the given price range, larger insiders' and investors' holdings of pre-IPO shares determine higher levels of initial returns. The interpretation of the results is less straightforward, as in Germany, unlike in the USA, an upward offer price revision above the upper limit of the bookbuilding range is not a common mechanism. Overall, the results make major contributions to the existing literature about the German IPO market and general assumptions about owners' interests in IPO firms. Additionally, potential shareholder agency conflicts in market cycles have not been analyzed before. Although the research question is relevant in a market with overall low ownership dispersion of private and public firms, the results could be approved with different shareholder structures. Furthermore, stock exchanges with less extreme market changes over time could confirm the results of this paper.

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Table I

Definition of Variables

Name	Definition
UP	Natural logarithm of underpricing plus one. Underpricing is defined as the share price after the first trading day divided by the offer price minus one.
Proceeds	Natural logarithm of the offer price multiplied with the number of shares issued at the IPO.
Return	Percentage price change of all tradable shares in Germany in the previous 30 days before the IPO.
Vola	Average volatility of all tradable shares in Germany in the month of the IPO.
Volume	Total number of IPOs in the month of the IPO. Also IPOs which are not included in the sample are included.
IR	Average underpricing of IPOs in the month before the IPO.
Tech	Dummy variable which equals one if the IPO firm is classified "technology " by the ICB.
Media	Dummy variable which equals one if the IPO firm is classified "media" by the ICB.
Dilution	Primary shares divided by pre-IPO shares of the firms.
Participation	Secondary shares divided by pre-IPO shares of the firm.
Insider	Insider shares divided by pre-IPO shares outstanding. "Insider" includes board members, managers, family members and their private holdings.
Investor	Financial investors' shares (venture capitalist, private equity fund, bank funds) divided by pre-IPO shares outstanding.
Blockholder	Blockholders' shares divided by pre-IPO shares outstanding. Blockholders are shareholders which own more than 25% of the pre-IPO shares and are not classified in the other shareholder groups.
Insider Sale	Difference between pre- and post-IPO shares of insiders divided by pre-IPO shares outstanding.
Investor Sale	Difference between pre- and post-IPO shares of investors divided by pre-IPO shares outstanding.
Blockholder Sale	Difference between pre- and post-IPO shares of blockholder divided by pre-IPO shares outstanding.
Dum Insider	Dummy variable that equals one if an insider is shareholder before the IPO.
Dum Investor	Dummy variable that equals one if a financial investors is shareholder before the IPO.
Dum Blockholder	Dummy variable that equals one if a blockholder is shareholder (with more than 25% of the shares) before the IPO.
Dum Insider Sale	Dummy variable that equals one if an insider sells part of his shares at the IPO.
Dum Investor Sale	Dummy variable that equals one if a financial investors sells part of his shares the IPO.
Dum Blockholder Sale	Dummy variable that equals one if a blockholder sells part of his shares the IPO.
Herfindahl	Herfindahl index: Sum of squared equity stakes of insiders, investors and blockholders.
HotVolume	Dummy variable which equals one if the IPO took place in a month with more than the median value of IPOs per month.
HotIR	Dummy variable which equals one if the average underpricing of the IPOs in the month before the offering date exceeds the median value.
HotPrice	Dummy variable which equals one if the offer price is higher than the preliminary price, which is defined as the midpoint of the bookbuilding price range.

Figure I: IPOs per Month between 1997-2007
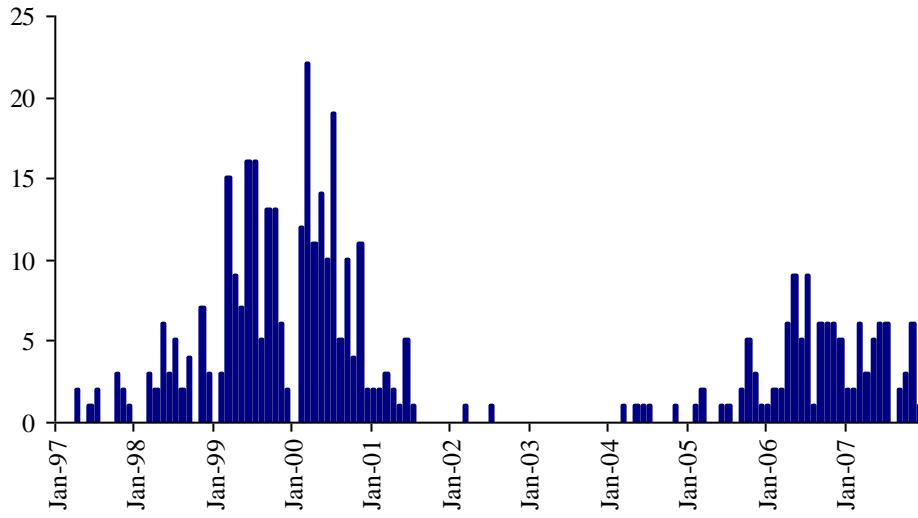
Figure II: Initial Returns per Month between 1997-2007
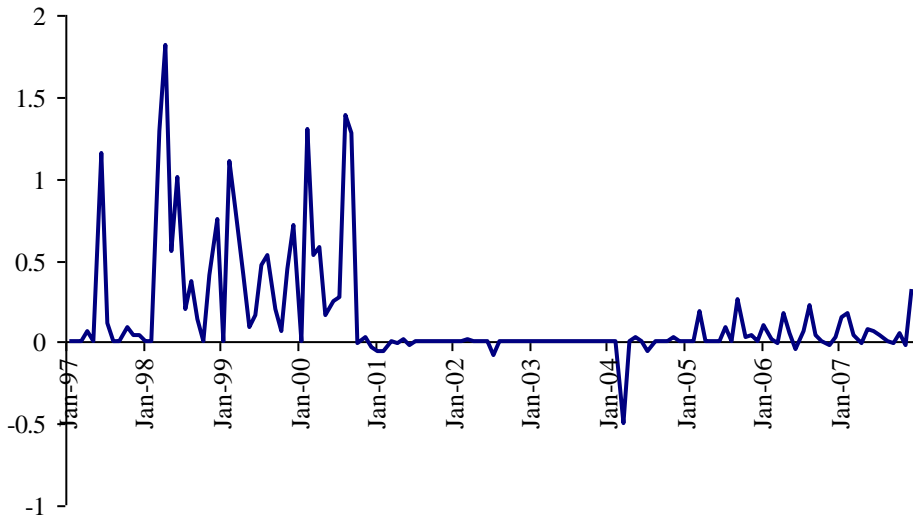
Table II

Firm and Offer Characteristics

The accounting variables are from the IPO firm's financial reporting closest to the IPO date. The book value of equity, total debt, total assets, intangible assets, net sales and capital expenditure are denoted in mio. €. "Proceeds" is calculated as the number of offered shares (primary and secondary shares) multiplied with the offer price. "Freefloat" is calculated as the number of total offered shares at the IPO divided by the number of total shares of the firm after the IPO (including primary shares)."Initial Return" is measured as first trading day closing price divided by the offer price minus one.

	Mean	Median	Max.	Min.	St. Dev.
Equity	203.885	17.895	34701.000	0.020	1937.679
Debt	174.820	2.155	42337.000	0.000	2230.973
Assets	880.48	36.505	150280.000	0.030	9294.915
Intangible Assets	17.472	0.380	1574.000	0.000	103.548
Sales	308.646	21.200	35470.000	0.000	2347.17
Capex	39.452	1.655	5974.000	0.000	357.167
Proceeds	119,000,000	37,161,000	1,170,000,000	400,000	103.548
Primary Shares	3,419,343	1,500,000	278,000,000	0.000	14,395,551
Secondary Shares	1,957,787	182,500	278,000,000	0.000	1,4031,587
Freefloat (in %)	32.071	29.028	100.000	0.000	14.056
Initial Return (in %)	31.973	5.131	8.523	-94.429	77.841

Table III

Firm Characteristics in Hot and Cold Markets

See table II for definition of variables. IPO Underpricing: "Hot" ("cold") defines IPOs where the average underpricing of IPOs in the previous month is higher (lower) than the median value of the sample's monthly underpricing. IPO Volume: "Hot"("cold") defines IPOs occurring in month with higher (lower) total number of IPOs than the median value of monthly IPO counts of the complete sample. The p-value denotes the probability of rejecting the null-hypothesis of the t-test of equality of means and the Wilcoxon-Mann-Whitney test, if the hot and cold samples have the same distribution.

		Panel A: IPO Date			Panel B: IPO Underpricing			Panel C: IPO Volume		
		1997-2001	2002-2007	P-value	Hot	Cold	P-value	Hot	Cold	P-value
Assets	Mean	1215.362	276.724	0.356	1624.433	235.904	0.154	748.604	1010.716	0.787
	Median	36.805	34.900	0.573	34.040	38.785	0.467	33.220	41.175	0.057
Intangible Assets	Mean	13.809	25.255	0.357	16.976	17.996	0.925	13.862	21.020	0.509
	Median	0.420	0.310	0.851	0.430	0.370	0.600	0.380	0.390	0.839
Equity	Mean	270.722	83.590	0.377	343.732	82.907	0.199	314.142	99.981	0.281
	Median	17.790	18.530	0.663	16.200	19.235	0.652	14.450	19.750	0.136
Debt	Mean	214.310	104.114	0.651	284.381	80.087	0.382	286.449	69.425	0.352
	Median	2.190	2.095	0.733	2.460	1.925	0.984	1.530	3.295	0.010
Sales	Mean	385.287	171.263	0.404	490.977	151.123	0.167	326.356	293.402	0.893
	Median	20.340	24.695	0.607	21.080	21.340	0.896	18.320	25.625	0.027
Capex	Mean	53.758	13.480	0.302	68.013	14.406	0.155	55.566	24.195	0.401
	Median	2.000	0.855	0.013	1.910	1.250	0.421	1.575	1.735	0.819
Proceeds	Mean	116,000,000	122,000,000	0.918	80,238,193	154,000,000	0.192	120,000,000	116,000,000	0.949
	Median	37,900,000	27,475,001	0.011	40,500,000	32,028,750	0.011	38,422,168	32,719,326	0.179
Primary Shares	Mean	3,550,048	3,126,846	0.779	2,910,895	3,920,253	0.465	3,836,496	2,981,808	0.536
	Median	1,700,000	1,300,000	0.245	1,500,000	1,500,000	0.465	1,675,000	1,400,000	0.196
Secondary Shares	Mean	1,648,230	2,701,421	0.474	728,170	3,140,401	0.072	1,868,647	2,056,929	0.888
	Median	176,235	221,530	0.149	175,500	200,000	0.939	162,596	200,000	0.040
Freefloat	Mean	0.306	0.352	0.004	0.305	0.334	0.033	0.287	0.355	0.000
	Median	0.279	0.339	0.001	0.279	0.300	0.020	0.271	0.328	0.000
Initial Returns	Mean	0.428	0.046	0.000	0.405	0.227	0.015	0.705	0.262	0.175
	Median	0.099	0.012	0.000	0.081	0.039	0.103	0.077	0.037	0.022

Table IV

Ownership Structure

The ownership data is hand collected from the IPO prospectus. "Insider" includes stakes of board members, top management and related persons. Also related holding companies of these persons are classified as "insiders". "Investor" includes venture capital, bridge financing and private equity funds also provided by banks, or bank related funds. "Blockholder" are shareholders which own more than 25% of the pre-IPO shares and are not classified in other shareholder groups. "IPOs" stands for the percentage of IPOs in this year with this type of owner. "Stakes before" is calculated as the ratio of shares of the respective owner to total shares before the IPO. "Stakes after" is calculated as the ratio of shares after the IPO of the respective owner in relation to the total number of shares after the IPO (excluding shares from the overallotment option). "Sales" is calculated as the difference of shares before and after the IPO of the respective shareholder divided by the number of shares before the IPO. The ratios are calculated only from the IPOs, in which the respective shareholder group is present. The "Herfindahl" index measures the ownership concentration: sum of squared equity stakes of insiders, investors and blockholders.

		1997-2007 Mean	1997-2007 Median	1997 Mean	1998 Mean	1999 Mean	2000 Mean	2001 Mean	2002 Mean	2003 Mean	2004 Mean	2005 Mean	2006 Mean	2007 Mean
Insider	IPOs	0.938		0.727	1.000	0.927	0.992	0.813	1.000	/	1.000	0.938	0.912	0.905
	Stakes Before	0.689	0.774	0.796	0.762	0.773	0.700	0.787	0.429	/	0.422	0.372	0.594	0.586
	Stakes After	0.468	0.548	0.491	0.554	0.572	0.501	0.526	0.354	/	0.264	0.247	0.436	0.427
	Sales	0.048	0.004	0.085	0.059	0.068	0.022	0.031	0.000	/	0.000	0.062	0.044	0.058
Investors	IPOs	0.547		0.364	0.528	0.540	0.542	0.500	1.000	/	0.667	0.688	0.574	0.571
	Stakes Before	0.354	0.300	0.420	0.335	0.316	0.279	0.385	0.542	/	0.866	0.549	0.419	0.405
	Stakes After	0.241	0.172	0.228	0.169	0.192	0.185	0.245	0.354	/	0.678	0.326	0.246	0.223
	Sales	0.072	0.018	0.115	0.115	0.077	0.029	0.019	0.000	/	0.000	0.107	0.104	0.098
Blockholder	IPOs	0.164		0.273	0.056	0.113	0.208	0.188	0.000	/	0.000	0.313	0.147	0.286
	Stakes Before	0.669	0.733	0.869	0.483	0.785	0.661	0.757	0.000	/	0.000	0.569	0.674	0.539
	Stakes After	0.464	0.486	0.610	0.101	0.552	0.489	0.457	0.000	/	0.000	0.284	0.476	0.381
	Sales	0.096	0.001	0.187	0.302	0.107	0.048	0.343	0.000	/	0.000	0.227	0.057	0.005
Herfindahl	Herfindahl	0.747	0.760	0.829	0.771	0.792	0.751	0.783	0.635	/	0.846	0.575	0.656	0.751

Table V

Ownership Structure in Hot and Cold Markets

See table IV for definition of variables. Underpricing: "Hot" ("cold") defines IPOs where the average underpricing of IPOs in the previous month is higher (lower) than the median value of the sample's monthly underpricing. IPO Volume: "Hot"("cold") defines IPOs occurring in month with higher (lower) total number of IPOs than the median value of monthly IPO counts of the complete sample. The p-value denotes the probability of rejecting the null-hypothesis of the t-test of equality of means and the Wilcoxon-Mann-Whitney test, if the hot and cold samples have the same distribution.

| | | **Panel A: IPO Date** | | | **Panel B: Underpricing** | | | **Panel C: IPO Volume** | | |
		1997-2001	2002-2007	P-value	Hot	Cold	P-value	Hot	Cold	P-value
Insider Stakes	Mean	0.708	0.510	0.000	0.675	0.623	0.134	0.697	0.596	0.003
	Median	0.800	0.520	0.000	0.760	0.747	0.206	0.799	0.680	0.043
Insider Stakes After	Mean	0.498	0.362	0.000	0.473	0.443	0.252	0.498	0.414	0.001
	Median	0.567	0.367	0.000	0.531	0.518	0.245	0.588	0.475	0.005
Insider Sales	Mean	0.047	0.045	0.904	0.050	0.043	0.564	0.044	0.049	0.409
	Median	0.000	0.004	0.164	0.002	0.000	0.994	0.000	0.004	0.075
Investor Stakes	Mean	0.160	0.266	0.000	0.161	0.221	0.019	0.164	0.222	0.024
	Median	0.014	0.081	0.014	0.014	0.059	0.176	0.013	0.059	0.115
Investor Stakes After	Mean	0.096	0.151	0.001	0.099	0.125	0.110	0.100	0.126	0.012
	Median	0.000	0.034	0.049	0.000	0.029	0.267	0.000	0.022	0.021
Investor Sales	Mean	0.100	0.126	0.120	0.030	0.051	0.031	0.031	0.051	0.041
	Median	0.000	0.000	0.136	0.000	0.000	0.429	0.000	0.000	0.504
Blockholder	Mean	0.264	0.118	0.726	0.124	0.098	0.321	0.110	0.112	0.940
	Median	0.000	0.000	0.795	0.000	0.000	0.588	0.000	0.000	0.795
Blockholder Stakes After	Mean	0.074	0.080	0.782	0.085	0.067	0.333	0.079	0.071	0.665
	Median	0.000	0.000	0.491	0.000	0.000	0.523	0.000	0.000	0.911
Blockholder Sales	Mean	0.014	0.016	0.781	0.015	0.014	0.901	0.010	0.019	0.288
	Median	0.000	0.000	0.918	0.000	0.000	0.484	0.000	0.000	0.889
Herfindahl	Mean	0.776	0.681	0.000	0.748	0.747	0.956	0.769	0.724	0.080
	Median	0.811	0.673	0.002	0.777	0.745	0.805	0.805	0.723	0.039

Table VI

Regression Models on Underpricing

For definition of variables look at table I. The regression models use White's (1980) heteroskedasticity-consistent standard errors and covariance. The values of the t-statistics are denoted in parentheses. Significance is indicated with * for 10% level of significance, ** for 5% level of significance, *** for 1% level of significance.

	UP [1]	UP [2]	UP [3]	UP [4]	UP [5]	UP [6]
Proceeds	-0.016	-0.010	-0.004	-0.07	-0.001	0.001
	(-1.466)	(-1.057)	(-0.218)	(-0.424)	(-0.071)	(0.009)
Return	0.196	0.187	0.189	0.198	0.193	0.193
	(4.076)***	(3.861)***	(3.892)***	(4.095)***	(4.001)***	(3.959)***
Vola	-1.105	-1.093	-1.209	-1.314	-1.423	-1.446
	(-2.630)***	(-1.057)***	(-3.089)***	(-3.222)***	(-3.118)***	(-3.150)***
Volume	0.003	0.003	0.003	0.003	0.002	0.002
	(1.411)	(1.361)	(1.082)	(1.196)	(0.982)	(1.034)
IR	0.145	0.151	0.145	0.138	0.135	0.136
	(2.323)**	(2.437)***	(2.330)**	(2.205)**	(2.210)**	(2.224)**
Tech	0.121	0.109	0.106	0.123	0.111	0.113
	(2.959)**	(2.663)***	(2.604)***	(2.978)***	(2.708)***	(2.756)***
Media	0.150	0.148	0.140	0.144	0.128	0.132
	(1.973)*	(1.965)**	(1.841)*	(1.883)*	(1.683)*	(1.733)*
Dilution			-0.027	0.005	-0.031	-0.026
			(-0.377)	(0.085)	(-0.468)	(-0.384)
Participation			-0.221	-0.264	-0.234	-0.252
			(-1.623)*	(-2.247)**	(-1.744)*	(-1.909)**
Insider		0.013	-0.001			
		(0.195)	(-0.006)			
Investor		-0.030	-0.022			
		(-0.290)	(-0.188)			
Blockholder		-0.148	-0.157			
		(-1.666)*	(-1.764)*			
Dum Insider					0.148	0.128
					(1.247)	(1.112)
Dum Investor					0.072	0.046
					(2.020)*	(1.219)
Dum Blockholder					-0.044	-0.062
					(-0.790)	(-1.096)
Herfindahl				-0.143		-0.092
				(-2.124)**		(-1.434)
Intercept	0.744	0.659	0.637	0.815	0.489	0.577
	(2.508)***	(2.281)***	(1.587)***	(2.023)**	(1.591)	(1.779)*
R²	0.141	0.151	0.156	0.155	0.168	0.170
F-Statistic	10.109	7.647	6.566	7.842	7.136	6.688

Table VII

Regression Models on Underpricing

For definition of variables look at table I. The regression models use White's (1980) heteroskedasticity-consistent standard errors and covariance. The values of the t-statistics are denoted in parentheses. Significance is indicated with * for 10% level of significance, ** for 5% level of significance, *** for 1% level of significance.

	UP [7]	UP [8]	UP [9]	UP [10]
Proceeds	-0.132	-0.010	-0.019	-0.016
	(-0.692)	(-0.586)	(-1.126)	(-0.958)
Return	0.192	0.193	0.195	0.194
	(4.002)***	(4.012)***	(4.010)***	(3.987)***
Vola	-1.211	-1.277	-1.107	-1.168
	(-3.033)***	(-3.113)***	(-2.697)***	(-2.805)***
Volume	0.003	0.003	0.004	0.004
	(1.261)	(1.325)	(1.438)	(1.502)
IR	0.146	0.145	0.153	0.152
	(2.310)**	(2.298)**	(2.455)***	(2.453)***
Tech	0.113	0.118	0.119	0.124
	(2.748)***	(2.865)***	(2.905)***	(2.990)***
Media	0.144	0.148	0.149	0.153
	(1.891)**	(1.946)**	(1.946)**	(1.998)**
Dilution	-0.039	-0.032	0.003	0.005
	(-0.541)	(-0.445)	(0.043)	(0.078)
Insider Sale	-0.300	-0.276		
	(-3.367)***	(-3.148)***		
Investor Sale	0.046	-0.028		
	(0.275)	(-0.177)		
Blockholder Sale	-0.399	-0.388		
	(-2.502)***	(-2.433)***		
Dum Insider Sale			0.033	0.036
			(0.897)	(0.995)
Dum Investor Sale			0.058	0.029
			(0.143)	(0.754)
Dum Blockholder Sale			-0.074	-0.086
			(-1.317)	(-1.521)
Herfindahl		-0.144		-0.118
		(-1.761)*		(-1.739)*
Intercept	0.766	0.835	0.758	0.823
	(1.962)**	(2.079)**	(2.078)**	(2.209)
R²	0.154	0.159	0.152	0.157
F-Statistic	7.059	6.705	6.925	6.565

Table VIII

Regression Models on Underpricing: 1997-2001, 2002-2007

For definition of variables look at table I. The regression models use White's (1980) heteroskedasticity-consistent standard errors and covariance. The values of the t-statistics are denoted in parentheses. Significance is indicated with * for 10% level of significance, ** for 5% level of significance, *** for 1% level of significance.

	1997-2001			2002-2007		
	UP [11]	UP [12]	UP [13]	UP [14]	UP [15]	UP [16]
Proceeds	-0.030	-0.046	-0.045	0.008	-0.003	0.008
	(-0.747)	(-1.188)	(-1.245)	(0.977)	(-0.378)	(0.935)
Return	0.174	0.185	0.189	4.858	4.701	4.884
	(3.478)***	(3.820)***	(3.836)***	(1.101)	(1.050)	(2.654)***
Vola	-1.470	-1.527	-1.627	0.128	0.041	-0.001
	(-2.506)***	(-2.534)***	(-2.775)***	(0.450)	(0.140)	(-0.578)
Volume	0.002	0.002	0.002	-0.001	-0.001	-0.001
	(0.465)	(0.543)	(0.468)	(-0.635)	(-0.453)	(-0.578)
IR	0.137	0.133	0.127	-0.051	-0.044	-0.049
	(1.923)**	(1.881)*	(1.790)*	(-0.430)	(-0.348)	(-0.360)
Tech	0.120	0.143	0.144	-0.040	-0.051	-0.040
	(2.280)**	(2.720)***	(2.734)***	(-1.706)*	(-2.019)**	(-1.276)
Media	0.153	0.165	0.154	0.017	0.010	0.016
	(1.654)*	(1.801)*	(1.657)*	(0.380)	(0.238)	(0.318)
Dilution	-0.015	-0.038	0.017	-0.127	-0.083	-0.129
	(-0.169)	(-0.415)	(0.209)	(-2.126)**	(-1.164)	(-1.942)**
Participation	-0.249		-0.308	-0.253		-0.252
	(-1.794)*		(-2.594)***	(-2.146)**		(-2.220)**
Insider	-0.169			0.019		
	(-0.697)			(0.503)		
Investor	-0.190			0.025		
	(-0.620)			(0.504)		
Blockholder	-0.341			0.052		
	(-1.379)			(0.985)		
Insider Sale		-0.318			0.046	
		(-3.352)***			(0.290)	
Investor Sale		0.022			-0.051	
		(0.088)			(-0.549)	
Blockholder Sale		-0.379			-0.023	
		(1.866)*			(-0.136)	
Herfindahl		-0.254	-0.308		0.006	0.001
		(-2.100)**	(-2.594)***		(0.240)	(0.003)
Intercept	1.399	1.689	1.757	-0.086	0.130	-0.061
	(1.611)*	(2.085)**	(2.316)**	(-0.465)	(0.650)	(-0.322)
R²	0.137	0.153	0.148	0.131	0.089	0.125
F-Statistic	3.923	4.462	5.192	1.464	0.943	1.696

Table IX

Regression Models on Underpricing: Hot/Cold Time Period

For definition of variables look at table XIII. The regression models use White's (1980) heteroskedasticity-consistent standard errors and covariance. The values of the t-statistics are denoted in parentheses. Significance is indicated with * for 10% level of significance, ** for 5% level of significance, *** for 1% level of significance.

	UP [17]		UP [17]		UP [18]		UP [18]
Proceeds	0.008	HotDate*Proceeds	-0.038	Proceeds	-0.003	HotDate*Proceeds	-0.042
	(0.999)		(-0.917)		(-0.387)		(-1.045)
Return	4.858	HotDate*Return	-4.684	Return	4.701	HotDate*Return	-4.516
	(1.126)		(-1.086)		(1.074)		(-1.031)
Vola	0.128	HotDate*Vola	-1.598	Vola	0.041	HotDate*Vola	-1.568
	(0.461)		(-2.443)***		(0.143)		(-2.322)**
Volume	-0.001	HotDate*Volume	0.003	Volume	-0.001	HotDate*Volume	0.003
	(-0.650)		(0.710)		(-0.464)		(0.699)
IR	-0.051	HotDate*IR	0.188	IR	-0.044	HotDate*IR	0.178
	(-0.440)		(1.377)		(-0.356)		(1.235)
Tech	-0.040	HotDate*Tech	0.161	Tech	-0.051	HotDate*Tech	0.195
	(1.745)*		(2.769)***		(-2.066)**		(3.314)***
Media	0.0176	HotDate*Media	0.136	Media	0.010	HotDate*Media	0.154
	(0.389)		(1.305)		(0.244)		(1.519)
Dilution	-0.127	HotDate*Dilution	0.111	Dilution	-0.083	HotDate*Dilution	0.045
	(-2.195)**		(1.001)		(-1.191)		(0.391)
Participation	-0.253	HotDate*Participation	0.004	Herfindahl	0.006	HotDate*Herfindahl	-0.260
	(-2.195)**		(0.026)		(0.246)		(-2.087)**
Insider	0.019	HotDate*Insider	-0.189	Insider Sale	0.046	HotDate*Insider Sale	-0.365
	(0.514)		(-0.761)		(0.297)		(-1.980)**
Investor	0.025	HotDate*Investor	-0.189	Investor Sale	-0.051	HotDate*Investor Sale	0.073
	(0.515)		(-0.761)		(0.091)		(0.271)
Blockholder	0.052	HotDate*Blockholder	-0.393	Blockholder Sale	-0.023	HotDate*Blockholder Sale	-0.356
	(1.007)		(-1.544)		(-0.139)		(-1.351)
		HotDate	1.486			HotDate	1.559
			(1.660)*				(1.855)*
		Intercept	0.086			Intercept	0.130
			(-0.476)				(0.665)
		R²	0.1811			R²	0.194
		F-Statistic	3.636			F-Statistic	3.952

Table X

Regression Models on Underpricing: Hot IPO Underpricing

For definition of variables look at table XIII. The regression models use White's (1980) heteroskedasticity-consistent standard errors and covariance. The values of the t-statistics are denoted in parentheses. Significance is indicated with * for 10% level of significance, ** for 5% level of significance, *** for 1% level of significance.

	UP [19]	UP [20]		UP [21]	UP [22]
Proceeds	0.003	0.005	Proceeds	-0.003	-0.002
	(0.165)	(0.295)		-0.204	(-0.095)
Return	0.186	0.191	Return	0.190	0.187
	(3.941)***	(3.975)***		(3.978)***	(3.905)***
Vola	-1.367	-1.288	Vola	-1.433	-1.447
	(-3.527)***	(-3.265)***		(-3.491)***	(-3.496)***
Volume	0.004	0.004	Volume	0.005	0.005
	(1.566)	(1.452)		(1.841)*	(1.726)*
Tech	0.108	0.114	Tech	0.120	0.120
	(2.582)***	(2.670)***		(2.845)***	(2.825)***
Media	0.129	0.139	Media	0.138	0.137
	(1.676)*	(1.776)*		(1.805)*	(1.774)*
Dilution	-0.025	-0.016	Dilution	-0.036	-0.039
	(-0.370)	(-0.231)		(-0.491)	(-0.537)
Participation	-0.256	-0.244	Participation		
	(-1.854)*	(-1.709)*			
Insider	0.021	0.002	Insider Sale	-0.285	-0.481
	(0.291)	(0.031)		(3.208)***	(2.293)**
Investor	-0.009	-0.103	Investor Sale	-0.080	-0.093
	(-0.084)	(-0.703)		(-0.503)	(-0.433)
Blockholder	-0.124	-0.086	Blockholder Sale	-0.405	-0.409
	(-1.407)	(-0.917)		(-2.568)***	(1.775)*
HotIR*Insider		0.077	HotIR*Insider Sale		0.271
		(0.459)			(1.191)
HotIR*Investor		0.277	HotIR*Investor Sale		0.031
		(1.272)			(0.086)
HotIR*Blockholder		-0.201	HotIR*Blockholder Sale		-0.030
		(-0.114)			(-0.121)
HotIR	0.045	-0.053	HotIR	0.047	0.033
	(1.203)	(-0.354)		(1.218)	(0.658)
Herfindahl			Herfindahl	-0.113	-0.113
				(-1.746)*	(-1.713)*
Intercept	0.566	0.524	Intercept	0.783	0.769
	(1.410)	(1.371)		(1.947)	(1.773)*
R²	0.141	0.146	R²	0.144	0.145
F-Statistic	5.800	4.831	F-Statistic	5.945	4.778

Table XI

Regression Models on Underpricing: Hot IPO Volume

For definition of variables look at table I. The regression models use White's (1980) heteroskedasticity-consistent standard errors and covariance. The values of the t-statistics are denoted in parentheses. Significance is indicated with * for 10% level of significance, ** for 5% level of significance, *** for 1% level of significance.

	UP [23]	UP [24]		UP [25]	UP [26]
Proceeds	-0.002	0.001	Proceeds	-0.010	-0.010
	(-0.155)	(0.016)		(-0.556)	(-0.513)
Return	0.187	0.186	Return	0.192	0.192
	(3.806)***	(3.783)***		(3.938)***	(3.923)***
Vola	-1.252	-1.211	Vola	-1.328	-1.324
	(-3.139)***	(-3.031)***		(-3.157)***	(-3.182)***
IR	0.154	0.151	IR	0.155	0.156
	(2.487)***	(2.448)***		(2.464)***	(2.461)***
Tech	0.114	0.116	Tech	0.126	0.125
	(2.729)***	(2.766)***		(2.991)***	(2.978)***
Media	0.144	0.158	Media	0.151	0.152
	(1.868)*	(2.001)**		(1.961)**	(1.947)**
Dilution	-0.033	-0.037	Dilution	-0.039	-0.038
	(-0.455)	(-0.529)		(-0.525)	(-0.499)
Participation	-0.237	-0.246	Participation		
	(-1.703)*	(-1.776)*			
Insider	0.010	0.019	Insider Sale	-0.278	-0.247
	(0.140)	(0.300)		(-3.138)***	(-1.541)
Investor	-0.016	-0.084	Investor Sale	-0.033	-0.030
	(-0.137)	(-0.610)		(-0.211)	(-0.127)
Blockholder	-0.149	-0.070	Blockholder Sale	-0.405	-0.338
	(-1.655)*	(-0.768)		(-2.544)***	(-1.654)*
HotVolume*Insider		0.024	HotVolume*Insider Sale		-0.062
		(0.083)			(-0.311)
HotVolume*Investor		0.219	HotVolume*Investor Sale		0.009
		(0.651)			(0.026)
HotVolume*Blockholder		-0.106	HotVolume*Blockholder Sale		-0.241
		(-0.348)			(-0.912)
HotVolume	0.012	-0.036	HotVolume	0.023	0.029
	(0.267)	(-0.125)		(0.539)	(0.518)
Herfindahl			Herfindahl	-0.111	-0.111
				(-1.731)*	(-1.698)*
Intercept	0.657	0.588	Intercept	0.880	0.879
	(1.584)	(1.476)		(2.124)**	(2.004)**
R²	0.154	0.161	R²	0.156	0.156
F-Statistic	6.440	5.398	F-Statistic	6.536	5.213

Table XII

Regression Models on Underpricing: Price Level

For definition of variables look at table I. The regression models use White's (1980) heteroskedasticity-consistent standard errors and covariance. The values of the t-statistics are denoted in parentheses. Significance is indicated with * for 10% level of significance, ** for 5% level of significance, *** for 1% level of significance.

	UP [27]	UP [28]		UP [29]	UP [30]
Proceeds	-0.023	-0.021	Proceeds	-0.029	-0.030
	(-1.340)	(-1.197)		(-1.662)*	(-1.730)*
Return	0.179	0.177	Return	0.182	0.184
	(3.736)***	(3.665)***		(3.819)***	(3.814)***
Vola	-0.728	-0.760	Vola	-0.765	-0.820
	(-1.865)*	(2.050)**		(-1.862)*	(-1.916)**
Volume	0.001	0.001	Volume	0.001	0.001
	(0.498)	(0.524)		(0.617)	(0.513)
IR	0.105	0.111	IR	0.101	0.105
	(1.717)*	(1.813)*		(1.642)*	(1.688)*
Tech	0.106	0.107	Tech	0.114	0.116
	(2.731)***	(2.771)***		(2.895)***	(2.890)***
Media	0.122	0.121	Media	0.125	0.124
	(1.595)	(1.575)		(1.648)*	(1.631)*
Dilution	-0.007	-0.006	Dilution	-0.008	-0.020
	(-0.122)	(-0.104)		(-0.122)	(-0.317)
Participation	-0.176	-0.201	Participation		
	(-1.329)	(-1.427)			
Insider	-0.059	-0.106	Insider Sale	-0.306	0.023
	(-0.857)	(-1.159)		(-3.412)***	(0.139)
Investor	-0.032	-0.083	Investor Sale	0.071	-0.026
	(-0.294	(-0.955)		(0.501)	(-0.244)
Blockholder	-0.183	-0.088	Blockholder Sale	-0.306	-0.130
	(-2.178)**	(-0.924)		(-1.903)**	(-0.540)
HotPrice*Insider		0.084	HotPrice*Insider Sale		-0.394
		(0.635)			(-2.041)**
HotPrice*Investor		0.107	HotPrice*Investor Sale		0.266
		(0.450)			(0.907)
HotPrice*Blockholder		-0.133	HotPrice*Blockholder Sale		-0.371
		(-0.862)			(-1.422)
HotPrice	0.221	0.157	HotPrice	0.231	0.241
	(5.944)***	(1.249)		(6.769)***	(5.792)***
Herfindahl			Herfindahl	-0.118	-0.116
				(-2.011)**	(-1.998)**
Intercept	0.729	0.738	Intercept	0.861	0.891
	(1.822)*	(1.988)		(2.141)**	(2.212)**
R²	0.213	0.218	R²	0.222	0.226
F-Statistic	8.817	7.331	F-Statistic	9.277	7.672

Table XIII

Regression Models on Underpricing: IPO Underpricing and Price Level

For definition of variables look at table I. The regression models use White's (1980) heteroskedasticity-consistent standard errors and covariance. The values of the t-statistics are denoted in parentheses. Significance is indicated with * for 10% level of significance, ** for 5% level of significance, *** for 1% level of significance.

	UP [31]	UP [32]		UP [33]	UP [34]
Proceeds	-0.001	-0.001	Proceeds	-0.001	-0.002
	(-0.023)	(-0.031)		(-0.008)	(-0.124)
Return	0.193	0.193	Return	0.189	0.189
	(3.924)***	(3.827)***		(3.949)***	(3.939)***
Vola	-1.112	-1.115	Vola	-1.409	-1.414
	(-2.876)***	(-2.858)***		(-3.377)***	(-3.412)***
Volume	0.003	0.003	Volume	0.005	0.005
	(1.373)	(1.394)		(1.755)*	(1.775)*
Tech	0.117	0.117	Tech	0.121	0.115
	(2.888)***	(2.858)***		(2.893)***	(2.655)***
Media	0.137	0.137	Media	0.135	0.130
	(1.737)*	(1.704)*		(1.736)*	(1.659)*
Dilution	0.001	0.001	Dilution	-0.038	-0.046
	(0.011)	(0.015)		(-0.521)	(-0.652)
Participation	-0.221	-0.221	Participation		
	(-1.580)	(-1.569)			
Insider	0.003	0.007	Insider Sale	-0.506	-0.486
	(0.049)	(0.097)		(-2.841)***	(-2.298)**
Investor	-0.107	-0.100	Investor Sale	-0.192	-0.078
	(-0.873)	(-0.679)		(1.161)	(-0.358)
Blockholder	-0.082	-0.073	Blockholder Sale	-0.447	-0.416
	(-1.006)	(-0.766)		(-2.129)**	(-1.797)*
HotIR* Insider		-0.013	HotIR*Insider Sale		-0.033
		(-0.074)			(-0.079)
HotIR*Investor		-0.022	HotIR*Investor Sale		-0.477
		(-0.116)			(-1.545)
HotIR*Blockholder		-0.034	HotIR*Blockholder Sale		-0.161
		(-0.192)			(-0.428)
HotPrice*HotIR* Insider	0.192	0.190	HotPrice*HotIR*Insider Sale	0.350	0.356
	(2.657)***	(2.209)**		(1.779)*	(0.947)
HotPrice*HotIR* Investor	0.597	0.600	HotPrice*HotIR*Investor Sale	0.814	1.145
	(3.482)***	(3.774)**		(1.989)**	(2.820)**
HotPrice*HotIR* Blockholder	0.080	0.093	HotPrice*HotIR* Blockholder Sale	0.087	0.203
	(0.677)	(0.720)		(0.358)	(0.506)
HotIR	-0.117	-0.101	HotIR	0.014	0.027
	(-2.783)***	(-0.662)		(0.327)	(0.527)
Herfindahl			Herfindahl	-0.095	-0.093
				(-1.492)	(-1.467)
Intercept	0.546	0.544	Intercept	0.715	0.753
	(1.386)	(1.417)		(1.687)*	(1.712)*
R²	0.190	0.190	R²	0.152	0.154
F-Statistic	6.602	5.463	F-Statistic	5.053	4.248

Table XIV

Regression Models on Underpricing: IPO Volume and Price Level

For definition of variables look at table I. The regression models use White's (1980) heteroskedasticity-consistent standard errors and covariance. The values of the t-statistics are denoted in parentheses. Significance is indicated with * for 10% level of significance, ** for 5% level of significance, *** for 1% level of significance.

	UP [35]	UP [36]		UP [37]	UP [38]
Proceeds	-0.007	-0.005	Proceeds	-0.007	-0.010
	(-0.406)	(-0.333)		(-0.379)	(-0.492)
Return	0.186	0.184	Return	0.190	0.191
	(4.017)***	(3.953)***		(3.903)***	(3.926)***
Vola	-1.146	-1.119	Vola	-1.335	-1.317
	(-2.912)***	(-2.841)***		(-3.147)***	(-3.156)***
IR	0.117	0.111	IR	0.150	0.149
	(1.886)*	(1.796)*		(2.353)**	(2.321)**
Tech	0.122	0.122	Tech	0.128	0.124
	(2.988)***	(2.978)***		(3.069)***	(2.929)***
Media	0.157	0.157	Media	0.155	0.148
	(2.046)**	(2.028)**		(1.997)**	(1.875)*
Dilution	-0.053	-0.048	Dilution	-0.058	-0.052
	(-0.850)	(-0.765)		(-0.802)	(-0.710)
Participation	-0.210	-0.211	Participation		
	(-1.482)	(-1.518)			
Insider	0.002	0.034	Insider Sale	-0.365	-0.251
	(0.035)	(0.510)		(-2.589)***	(-1.557)
Investor	-0.062	-0.079	Investor Sale	-0.148	-0.034
	(-0.490)	(-0.510)		(-0.825)	(-0.142)
Blockholder	-0.058	-0.053	Blockholder Sale	-0.400	-0.349
	(-0.612)	(-0.567)		(-2.106)**	(-1.693)*
HotVolume* Insider		-0.155	HotVolume*Insider Sale		-0.503
		(-0.513)			(-1.052)
HotVolume*Investor		0.039	HotVolume*Investor Sale		-0.391
		(0.122)			(-1.285)
HotVolume*Blockholder		-0.050	HotVolume*Blockholder Sale		-0.335
		(-0.160)			(-0.879)
HotPrice*HotVolume* Insider	0.264	0.303	HotPrice*HotVolume* Insider Sale	0.113	0.490
	(4.741)***	(5.312)***		(0.569)	(1.043)
HotPrice*HotVolume* Investor	0.524	0.414	HotPrice*HotVolume* Investor Sale	0.639	0.857
	(3.169)***	(2.693)***		(1.199)	(1.684)*
HotPrice*HotVolume* Blockholder	0.030	-0.006	HotPrice*HotVolume* Blockholder Sale	-0.134	0.131
	(0.283)	(-0.056)		(-0.491)	(0.303)
HotVolume	-0.167	-0.067	HotVolume	0.003	0.029
	(-4.324)***	(-0.228)		(0.077)	(0.029)
Herfindahl			Herfindahl	-0.100	-0.102
				(-1.563)	(-1.582)
Intercept	0.709	0.655	Intercept	0.841	0.872
	(1.750)*	(1.642)*		(1.957)**	(1.972)**
R²	0.216	0.218	R²	0.160	0.164
F-Statistic	7.749	6.505	F-Statistic	5.361	4.559

Appendix

Table XV (1)

Underwriter Activity

Underwriter ranking is similar to Franzke (2003: 14). "Relative Number" stands for the investment bank's number of lead management IPOs in relation to total sample IPOs. "Relative Proceeds" accounts for the volume of underwritten proceeds of the bank in relation to total proceeds of the sample IPOs.

	Relative Number	Relative Proceeds
ABN Amro	0.0044	0.0042
Atlas Acquisition Holdings Corp.	0.0133	0.0192
Baader Wertpapierhandelsbank	0.0288	0.0093
Bank J. Vontobel & Co. AG	0.0066	0.0018
Bankgesellschaft Berlin	0.0022	0.0019
Bankhaus Hermann Lampe KG	0.0022	0.0199
Bayerische Landesbank	0.0044	0.0024
Berenberk Bank	0.0044	0.0004
Berliner Effektenbank AG	0.0110	0.0060
BHF Bank	0.0288	0.0107
BNP Paribas Bank	0.0155	0.0049
CC Bank	0.0022	0.0004
Citigroup	0.0133	0.0010
Commerzbank	0.0664	0.0876
Concord Effekten AG	0.0354	0.0673
Conrad Hinrich Donnerbank	0.0000	0.0000
Credit Suiss Group	0.0221	0.0159
Deutsche Bank	0.1084	0.4215
Dresdner Kleinwort	0.0907	0.0773
DZ Bank AG	0.0973	0.1197
Equinet AG	0.0177	0.0075
FleetBoston Robertson Stephens International Ltd.	0.0088	0.0026
Gebhardt Bank	0.0022	0.0476
Goldman Sachs	0.0243	0.0108
Gontard & MetallBank AG	0.0265	0.0157
Hamburgische Landesbank	0.0022	0.0043
Hauck & Auffhäuser Privatbankiers KGaA	0.0022	0.0199
HSBC Trinkaus & Burkhardt KGaA	0.0265	0.0078
HWAG Hanseatisches Wertpapierhandelshaus AG	0.0022	0.0043
Hypovereinsbank/Unicredit	0.0575	0.0287
ICE Securities Limited	0.0022	0.0002
J. Henry Schroder & Co. Limited	0.0088	0.0040
JP Morgan	0.0288	0.0230
K/L/M Equity AG	0.0022	0.0004
Kling Jelko Wertpapierhandelsbank AG	0.0066	0.0034
Landesbank Baden-Wuerttemberg	0.0531	0.0496
Landesbank Hessen-Thüringen	0.0022	0.0000
Landesbank Rheinland-Pfalz	0.0022	0.0039
Lang & Schwarz Wertpapierhandelsbank AG	0.0022	0.0003
Lehman Brothers International	0.0111	0.0158
M. M. Warburg & Co. KGaA	0.0265	0.0079
'Merck, Finck & Co. Privatbankiers	0.0044	0.0004

Table XV (2)

Underwriter Activity

Morgan Stanley	0.0288	0.0165
Norddeutsche Landesbank Girozentrale	0.0199	0.0153
Quirin Bank	0.0133	0.0328
Raiffeisen Zentralbank Österreich AG	0.0022	0.0001
SAB AG	0.0022	0.0003
Sal. Oppenheim jr & Cie. KGaA	0.0531	0.0234
Société Générale	0.0022	0.0013
Trigon Wertpapierhandelsbank AG	0.0022	0.0009
UBS	0.0265	0.0435
VEM Bank	0.0310	0.0276
Viscardi AG	0.0044	0.0005
Weserbank AG	0.0022	0.0018
Westdeutsche Landesbank	0.0487	0.0159