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Using Brokerage Commissions to Secure IPO Allocations

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Abstract

Using data, at the investor level, on the allocations of shares in initial public offerings (IPOs), we document a strong positive relationship between the amount of stock-trading commission and the number of shares an investor receives in a subsequent IPO. We find no evidence to support the idea that investment banks allocate shares to investors that are perceived to be long-term investors. Our findings are consistent with the view that investment banks are able to capture some of the profits earned by investors when participating in underpriced IPOs.

1. Introduction

The Securities and Exchange Commission (SEC) has since the early 2000s investigated the initial public offering (IPO) allocation practices of several major investment banks. One concern is that IPO allocations are tied to excessively large stock-trading commissions and that such a practice would constitute illegal kickbacks from investors to investment banks. Reuter (2006) points out that such kickbacks would allow the underwriter to share more of the benefits of underpriced IPOs— and, therefore, exacerbate the agency conflict that exists between the issuing firm and the lead underwriter of the IPO. This paper investigates whether or not investors that has generated large stock-trading commissions in the past receives a preferential treatment in future IPO allocations.

Using data on the stock-holdings for every single investor that owned common shares that was listed or became listed on the Oslo Stock Exchange during the period 1993 through 2007, we are able to link stock-trading commission and IPO allocation at the investor level. The main finding of the paper is a strong and robust positive relationship between the level of stock-trading commission generated by an investor prior to the IPO and the number of shares the same investor receives through the IPO allocation. It can be argued that large investors that generate more commissions are likely to apply for more IPO shares. However, the economic and statistical significance of the relationship between commission and allocation is robust to controlling for the market value of the investors portfolio, as well as to other investor characteristics. We conclude that investors generating large stock-trading commission receives the most IPO shares because of the commission they generate. Other investor characteristics are of less or no importance for IPO allocations.

The empirical research on the allocation practices of investment banks have been hampered by the lack of data on IPO allocations.[3] Since information about stock-trading commissions are equally hard to come by, there is little empirical research on the relationship between commissions

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[3]See Ritter (2003) and Jenkinson and Jones (2004) for papers that study IPO allocations and summarizes IPO allocation studies.

and allocations. One exception, and the paper closest to ours, is Reuter (2006) who finds a positive correlation between brokerage commission paid by mutual funds to lead investment banks and the holdings in IPOs underwritten by the same banks. This suggests, in general, that having a business relationship with the lead underwriter increases the chance of getting shares in underpriced IPOs. In particular, it suggests that investors can "buy" allocations by channeling their trades through the brokerage arm of the lead underwriter. In another related paper, Nimalendran, Ritter and Zhang (2006) show that there is a positive relationship between money left on the table in IPOs and trading volume in liquid shares around IPO allocation dates. This is indirect evidence of a positive relationship between trading commission and IPO allocations.

The strength of our paper, compared to the existing literature, is that we are able to analyze exact allocations at the investor level. In the main part of the paper, we study 24,560 IPO allocations.[4] The existing literature has suggested at least three potential explanations for what determines investment banks' decision of which investors are getting shares in oversubscribed IPOs. First, Benveniste and Spindt (1989) suggest that investment banks allocate IPO shares to informed investors in return for a truthful revelation of their valuation of the issuer. Second, investment banks themselves tend to argue that they are looking for long-term investors. Third, investment banks allocate shares to investors that can provide some form of kickback.

The empirical literature provides mixed results in terms of understanding IPO allocation in the light of the above three potential explanations.[5] An important contribution of our paper is that we examine and contrast all three potential explanations simultaneously. As already mentioned, our data strongly support the view that investors can secure themselves IPO allocations through large stock-trading commissions. We find no evidence of a preferential treatment of buy-and-hold

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[4] These exact allocations are from 30 different IPOs. In other words, there are 24,560 unique investor-IPO combinations in our data. In robustness tests, we also study 165,562 investor-IPO pairs where the IPO allocation data might be contaminated with some post-IPO trading.

[5] Table 1 summarizes related papers.

investors. Neither do we find any support for the idea that investors get allocation in return for revealing private information about issuing firm value.

The rest of paper is organized as follows: Section 2 describes the related literature. Section 3 describes theoretical predictions and the testable implications. Section 4 describes the data set. Section 5 gives the empirical results, and section 6 concludes.

2. Related literature

Ritter (2003) and Jenkinson and Jones (2004) argue that there are three views on how IPOs are allocated. First, is the academic view based on Benveniste and Spindt (1989). In this view, investment banks allocate IPO shares to informed investors in return for true valuation and demand information. Second, is the pitchbook view where investment banks allocate shares to institutional investors that are likely to be buy-and-hold. Finally, is the rent seeking view (profit sharing view) where investment banks allocate shares to investors in return for some form of kickback. Previous studies have found support for each of these views and against the academic view and the pitchbook view. These views are not mutually exclusive. It is also limited empirical research on the rent seeking view due to data limitations. In this paper, we compare the three views to determine which view is more important. Previous studies have investigated these views one by one. The exception is Jenkinson and Jones (2004) that compares the academic view to the pitchbook view. All related papers are summarized in Table 1.

Many papers investigates the academic view alone, as described by Benveniste and Spindt (1989). Cornelli and Goldreich (2001) investigate the order book of 23 and 16 international IPOs and SEOs. They find that regularly participating, large bid and domestic participants are favored in allocations. They also find that bidders that participate in both hot and cold issues are given larger allocations in hot issues. Cornelli and Goldreich (2003) investigate the order book of 37 and 26 international IPOs and SEOs. They find that bids from large, frequent bidders that include a limit price affect

the issue price. It is concluded that book-building is designed to extract information from investors. Underwriters use investor bids when determining the offer price. Ljungqvist and Wilhelm (2002) look at allocations between institutional and retail investors for 1,032 international IPOs. They find that institutional investors are favored over retail investors. They find that increased institutional allocations results in higher offer price deviations from the midpoints of the book-building pricing ranges. They conclude that underwriters use institutional bids to set offer prices in the IPOs.

Binay, Gatchev and Pirinsky (2007) investigate 4,668 U.S. IPOs and find that underwriters favor institutions they have previously worked with. They find that a relationship with the underwriter is more important in IPOs with strong demand, IPOs of less liquid firms and IPOs by less famous underwriters. It is argued that favoring regular investors is done to price IPOs more correctly. Regular investors have incentives to report their true value in the book-building so that they will be favored in future IPOs. Bubna and Prabhala (2007) investigate 137 Indian IPO allocations. They find that book-building and discretion in allocation enhances pre-market price discovery. All these papers are consistent with the academic view.

Jenkinson and Jones (2004) study 27 European IPO order books. They find that there is limited information gathering in the book-building procedure. This is inconsistent with the academic view. Aggarwal (2002) investigate the pitchbook view by looking at flipping activity of institutional and retail investors for 193 U.S. IPOs. Aggarwal (2002) find that institutions flip a larger part of allocations than retail investors. This is taken as evidence against the pitchbook view. This view argues that institutions are allocated more IPO shares because institutions are more likely to be buy-and-hold than retail investors. Jenkinson and Jones (2004) find evidence in favor of the pitchbook view. Allocations are made to buy-and-hold investors.

There are four types of IPO rent seeking that have led to investigations (and settlements) between the SEC or NASD and different investment banks, see Liu and Ritter (2010). IPO allocations can

be tied to future corporate business (IPO spinning), aftermarket purchases of IPO shares (IPO laddering) and brokerage commissions. Companies can also agree to heavy underpricing in return for aftermarket coverage from star analysts provided by the investment bank (analyst conflict of interest). The underpriced shares are then allocated to clients that generate high commissions. All of these allocation practices have been looked at in different studies. Liu and Ritter (2010) investigate IPO spinning, Fjesme (2010) investigate IPO laddering, Cliff and Denis (2004) investigate analyst conflict of interest and Reuter (2006) and Nimalendran, Ritter and Zhang (2006) investigate IPO allocations for commission trading. See Figure 1 for a description of the four types of IPO rent seeking. See Table 1 for a description of the different papers that study IPO rent seeking.

Reuter (2006) investigates if IPO allocations are tied to brokerage commissions by studying 1,868 IPOs on NYSE, AMEX and Nasdaq in the period 1996 to 1999. Reuter (2006) finds a positive relationship between commissions paid by mutual funds to IPO lead underwriters and mutual fund holdings of IPO shares after the listing. It is concluded that commission generation is a likely reason behind IPO allocations (for mutual funds). Nimalendran, Ritter and Zhang (2006) study investor trades in the 50 most liquid stocks in the U.S. during the days surrounding IPO allocations. They show that trading volume in the 50 most liquid stocks is positively related to the money left on the table in IPOs. It is suggested that this increased trading is done purely to increase commissions as payment for share allocations. Both of these papers support the rent seeking view. Reuter (2006) establish a link between IPO allocations and commission for mutual funds, but it is not investigated if commission is important for IPO allocations to other investors due to data limitations.

3. Theoretical predictions and testable implications

Investors are placed on A, B and C lists by investment banks before any IPO.[6] (See Figure 2

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[6]The information about IPO allocation practices is obtained from meetings with former Norwegian investment bankers.

for the steps in the IPO allocation process). Investors from the A list, that applies for shares, are more likely to receive more IPO allocations than investors on the B lists etc. We do not know how investors are placed on the A, B and C lists. The investment bank prepares a list with proposed allocations after the book building/pricing of the IPOs. This list is given to the board of the issuing company, and the board of the issuing company determines IPO allocations from this proposed list. Anecdotal evidence suggests that most boards approve the proposed list without adjustments. Being on the A list of the lead investment bank is therefore very important when applying for IPO shares.

In this paper, we test if information gathering, allocation to long term buy-and-hold investors or rent seeking are likely reasons behind IPO allocations. We measure if providing price information, price stability or brokerage commission are able to place investors on the A list of investment banks. It is tested if any of these services will increase the number of allocated IPO shares. All three views are investigated in the same data set. The three allocation views are not mutually exclusive within or between IPOs. It is possible that different IPOs are allocated mainly on different views. It is also possible that different shares are allocated based on different views within one IPO.

3.1 The rent seeking view of IPO allocations

Rent seeking is an area that have received allot of attention in the media, but not allot of empirical research. A likely reason for this is that it is very hard to obtain data to test for rent seeking. Testing for money transfers from one bank account to another obviously requires a very detailed data set. The cover up activities needed to hide transfers as legitimate activities can be very creative. In this paper we focus on the rent seeking suggested in Reuter (2006) and Nimalendran, Ritter and Zhang (2006). In this paper we study if IPO allocations are tied to brokerage commission rates. See Figure 1 for a overview of the different ways it is suggested that rent seeking can take place (Liu and Ritter, 2010).

In the Robert Stevenson settlement (an investment bank settled to pay a fine for alledgedly tying IPO allocations to commissions) it was argued that clients both increased trading and increased actual commission rates per trade to receive IPO shares.[7] It is not possible to detect increases in payments for actual trades in the data, but it is possible to detect if investors that trade more are also allocated more IPO shares.

The basic idea of commission trading is that investors generate commissions as payments for IPO allocations. The data only let us test for commission generation on monthly trading.[8] It is possible that commission trading takes place even if it does not show in the analysis. It is also tested if commission generation is more important for some investor groups than for others. It is possible that institutional investors have to commit to excessive trading and that retail investors do not. It is also necessary to test if there is a link between the number of IPO participations and commission. If rent seeking is an active strategy, there will be a strong relation between brokerage commission and the number of IPO participations. It is possible that investors that get repeated allocations do so because they generate high commissions. IPO investors with single time IPO allocation may be kept out of future IPOs because they do not generate sufficient levels of commission.

The dependent variable is the number of allocated shares, to each investor, divided by the number of shares issued in the IPOs. This variable is regressed on the accumulated commission generated by the allocated investors and a set of control variables. Commission is accumulated over monthly portfolio changes in the past 24 months prior to any IPO. Only buy generated commission is included to avoid any issues related to portfolio rebalancing (to make room for the new shares).

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[7]See January 9, 2003 NASD settlement http://www.finra.org/Newsroom/NewsReleases/2003/P002957

[8]Commissions are generated from monthly data and not daily data. Because of this it is possible that commission trading takes place even if we are not able to find it in our data set. If commissions are generated from daily buy and sell orders in the same shares we are not able to detect this. It is also possible that some investors pay higher commission rates to get allocations. This should, however, be discovered in auditing. Liu and Ritter (2010) suggest that allocations can be given for 1) Spinning or the allocation to CEOs in return for future business (Loughran and Ritter, 2004). 2) Laddering or allocation in return for subsequent purchases of the IPO share in the aftermarket (Hao, 2007 and Fjesme, 2010). 3) Excessive trading (Reuter, 2006). 4) Analyst coverage (Cliff and Denis, 2004).

If investors that generate more commission are also allocated more IPO shares, we conclude that the rent seeking view is an accurate view of the IPO market. If there is no relationship between commission and IPO allocations, we are not able to reject the rent seeking view because it is possible to hide this type of trading.

3.2 The Pitchbook view of IPO allocations

The pitchbook view comes from the sales pitch slides of the investment banks (Ritter, 2003). In these slides it is usually argued that investments banks will allocate shares to long term buy-and-hold investors. It is argued that buy-and-hold investors will create price stability. If buy-and-hold is an accurate view, investors that buy-and-hold IPO shares must also receive future IPO allocations. There must also be a punishment in terms of no future IPO allocations for investors that sell shares early (flipping).[9]

An investment bank that underwrite many IPOs will have a more reliable reward/threat system than less active investment banks. Therefore, it should be more buy-and-hold investors in IPOs by active investment banks. It should also not be possible for investors to repeat a flipping strategy in IPOs by the same bank over time. If buy-and-hold investors do not have the potential threat of not receiving future allocations, there is no point of being buy-and-hold. If investors that continue to flip their shares still get IPO allocations, this is support against the pitchbook view. Allocated investors are divided into two groups. Group one investors flip their shares (sell within the first month) and group two investors are long term investors (hold their shares over six months). Flipping investors are normally meant to be investors that sell their allocated shares during the first day of trading (Krigman, Shaw and Womack, 1999). We really want to test how selling shares early affects future allocations. It is therefore more accurate for our analysis to include all shareholders that sell their

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[9]The rent seeking view and the academic view can be tested in one specific of several unrelated IPOs. The buy-and-hold view should be tested in several related IPOs. The key of the buy-and-hold view is that investors that provide this service over time are allocated shares over time. Investors that hold shares in the long run are rewarded with more shares in the future. Investors that sell shares early are punished by no future allocations.

shares within the first month as flipping investors. To control for past buy-and-hold behaviors we add the number of times investors have been, out of all past IPO participations, placed in category one or two. This will control for past buy-and-hold and past flipping activity in all previous IPO participations. The past buy-and-hold and past flipping variables are calculated both on the total sample and on a bank by bank basis.

The view is tested by regressing IPO allocations on the past level of buy-and-hold and flipping. If investors are allocated shares because they are buy-and-hold, the buy-and-hold variable will be positively related to IPO allocations, and the flipping variable will be negatively related to IPO allocations. It is possible that both the buy-and-hold and commissions are important for IPO allocations because the views are not mutually exclusive. Because of this, the past trading buy-and-hold and pas flipping are included as control variables when testing the other views as well.

3.3 The academic view of IPO allocations

The idea of Benveniste and Spindt (1989) is that investment banks meet with investors to set the price and demand of the IPOs. The investment banks use this information to build a demand curve of the company shares. Investors are rewarded for their service from IPO shares that are underpriced on average. It is controlled that the academic view is not driving the results by including a dummy variable that takes the value of one for all professional investors (financial institutions) in all regressions. It is possible that other investors, like non-finacial institutions or retail investors, are participating in pricing of the shares, but it is not expected that this is very common. Investment banks are likely to go to professional investors when they price the issues. To test the academic view more directly we proceed in the direction of Ljungqvist and Wilhelm (2002). The percentage change from the midpoint in the initial pricing range to the offer price is used as the measure of pricing information. This variable should change when more pricing information is collected. The percentage change from the midpoint in the pricing range to the offer price is regressed on the

combined allocation percentage to financial institutions and a set of control variables. If there is pricing information, the financial institution allocation percentage will be significantly related to the percentage change in the pricing range. When financial institutions get IPO allocations there should be a significant effect on the price. This analysis can only be performed on the 71 IPOs that are priced through book-building.

4. Data

There are 403 new listings on the Oslo Stock Exchange (OSE) in the period January 1993 to September 2007. In total, 193 of the 403 companies listed through private placements, cross listings, spin-offs to existing shareholders or directly without any offerings. There are 89 companies with no offerings to new shareholders. The remaining 210 companies listed through IPOs. In 30 of these IPOs we have obtained the 24,560 IPO allocations. In 156 IPOs we have obtained 165,562 IPO allocations with less than one month of aftermarket trading. The 165,562 IPO allocations are used to robustness test the results.

One listing requirement on the Oslo Stock Exchange (OSE) is that all shareholders must be registered in the Norwegian Central Depository (VPS) before the listing. The number of shares owned by each investor must be given to the VPS before any company can list publicly. This database is 100% accurate, as it is not possible to list otherwise. The VPS database includes all shareholders in all companies that are publicly listed or intend to list publicly. This database is used to obtain the IPO allocations by taking the difference in company ownership before and after allocation dates.[10] Table 2 gives the annual distribution of IPOs on the OSE in the period 1993

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[10]In 16 of the 210 IPOs it has not been possible to calculate IPO allocations from the ownership data. These companies are listed in the database (VPS) in the same month as the listing month. These companies are therefore removed from the sample. In two companies there is missing allocation data, and in four companies it has not been possible to locate the pricing information (no offer price). These IPOs are therefore not included in the analysis. There are two privatizations in the period that are removed. The final sample is 186 IPOs with allocation and pricing data. 210 IPO companies - 16 companies that list in both VPS, OSE and IPO in the same month - 2 privatizations - 2 missing VPS data - 4 missing prospectus and newspaper articles on pricing = 186 companies.

to 2007. Only IPO allocations to new shareholders are investigated. More allocations to existing shareholders are removed. Allocation dates are collected from the IPO listing prospectuses. Figure 3 gives a detailed description of how the IPO allocations are obtained for the different company groups.

Some companies list in the VPS database in years before the listing, and other companies list in VPS as part of the listing process. From this database the IPO allocations are obtained. Allocations, by investor ID, are calculated as the difference in company share holdings before and after allocation dates. The number of shares by each investor ID is observed at the end of each month. All companies list in VPS, sell shares in the IPO and list on OSE. In terms of IPO allocations there are three dates that are important in the listing process. When companies list in the VPS ownership database, when companies distribute shares in the IPO and when companies list on OSE influence IPO allocations. Companies do this process in different orders. This leads to three different levels of detail in the obtained IPO allocations. All ownership is observed on a monthly level, so if more than one listing event is performed within the same calendar month we are not able to distinguish between the events.

4.1 The IPO allocations

Group one companies list their ownership in the database in good time before the IPO. These companies also list on OSE in the calendar month after the IPO. For these companies the IPO allocations are completely accurate. There are 24,560 IPO allocations in these 30 IPOs (group one). Some of these allocations are the same investors that are allocated shares in more than one IPO. IPO allocations for group one companies are obtained as the end of IPO month company ownership minus the ownership prior to the IPO month ownership. The owners that are left are the IPO allocated investors. Over The Counter (OTC) trading in the IPO allocation month will be treated as IPO allocations. It is not expected that OTC trading will be a big issue because few

investors are likely to trade shares in this period. Few IPO allocated investors are likely to sell their allocation and potentially lose out on the first day return. The average time between IPO allocations and listing is less than two weeks in the 30 sample IPOs.

4.2 Aftermarket ownership

Group two companies list in VPS in good time before the IPO, but these companies list on OSE in the same month as the IPO allocation month. These companies have IPO allocations that include the actual IPO allocations and some aftermarket trading (151 companies out of 186). The IPO allocations for these companies includes from one to 30 days of aftermarket trading. IPO allocations for group two companies is calculated as the listing month (and IPO allocation month) end of month company ownership minus the company ownership prior to the listing month. The investor holdings that are left are the allocated investors and the investors that have purchased shares in the period between the listing day and the end of the listing month. Group two company IPO allocations includes some aftermarket trading, but it is expected that most of these allocations are actual IPO allocations. If past trading activity is important for current allocations, this will be reflected in the data even if it includes some aftermarket trading. This is especially true for the past buy-and-hold trading variables. Buy-and-hold investors will not sell their allocated shares, so if past buy-and-hold behavior is important for future IPO allocations this will be observed in the group two IPO allocations. Group two IPO allocations can, however, not be used to reject that flipping investors are not punished for selling shares early even if this is not found in the data. This is because some of the flipping investors are lost in the way the group two IPO allocations are obtained.

Group three companies list in the VPS database in the same month as the IPO allocation month. These companies have allocations that consist of both allocated investors and existing owners who have not sold their shares (5 companies). These IPO allocations does not include any aftermarket

trading. IPO allocations for these companies are calculated as the end of listing in VPS month ownership (and IPO allocation month ownership). Previous owners for these companies are not removed. Group two and three IPO allocations are used to robustness test results. The past aftermarket trading in group two and three IPOs are also used to test how past IPO trading is related to current IPO aftermarket holdings.

4.3 Variable description

Investor characteristics, for the individual investors on OSE in the period 1993 to 2007, are described in Table 3. The dependent variable "(Allocated shares/shares issued) %" is allocated shares to each investor divided by the total number of shares issued in the IPO. This is the same dependent variable as in Reuter (2006). The all IPO sample of 190,504 IPO allocations (in 186 IPOs) is trimmed at 0.1% to 190,122 allocations. This has no effect on results. This is done to remove the most extreme IPO allocations. These allocations are not likely to be made to investors because of their past trading characteristics (e.g. more than 20% of the IPO shares). "Commission" is the accumulated brokerage commission generated by each investor in the two years before the IPO allocation dates.[11] Commission is calculated as the monthly portfolio turnover times share prices and a fixed percentage commission rate.[12] Commission is calculated as buy generated commissions

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[11]Commissions are generated from monthly data and not daily data. Because of this it is possible that commission trading takes place even if we are not able to find it in our data set. If commissions are generated from daily buy and sell orders in the same shares, then we are not able to detect this. It is also possible that some investors pay higher commission rates to get allocations. This should, however, be discovered in auditing. Previous literature suggests that allocations can be given for 1) Spinning or the allocation to CEOs in return for future business (Loughran and Ritter, 2004 and Xiaoding and Ritter, 2009). 2) Laddering or allocation in return for subsequent purchases of the IPO share in the aftermarket (Hao, 2007). 3) Excessive trading (Reuter, 2006 and Nimalendran, Ritter and Zhang, 2007).

[12]We construct two separate data sets. In the first data set we obtain the allocated shares in the IPOs. The second data set is constructed by using the allocated shares in the first data set. For all allocated investors we collect the portfolio of publicly traded shares on OSE. We collect the change in the monthly portfolio ownership for each investor and this is multiplied with the correct market stock prices and the standard commission rates. The average commission rate offered by the 11 biggest internet share trading companies in Norway is 0,075%. Some investors are likely to buy shares directly from their broker at a higher commission rate. We use the commission rate of 0,075% for all investors. The final number is the monthly commissions paid by each investor. The commission generated in each specific IPO is removed.

only. Commission is accumulated in the 24 month period before and after each IPO for all allocated investors in all IPOs.[13] Only commission by investors that do at least one trade in each of the four six months periods before the IPO are included. This has no effect on results as most investors trade in all four periods. This is done to remove investors that buy a large block of a company in one period without trading in the other periods. Generated commission below the minimum rate is replaced by the fixed minimum fee for one transaction ($15). The "non-negative underpricing dummy" is a dummy variable that takes the value of one for all IPOs with zero or positive underpricing. The variable "commission*D" is commission times the non-negative underpricing dummy. This variable is calculated to test if generated commission is more important in IPOs with a non-negative underpricing. The variable "Portfolio value" is the portfolio value in million USD for each allocated investor at 31.12.xx in the year before the IPO allocation date. This is calculated as the accumulated value of shares held at 31.12xx times share prices for each allocated investor.

"Previous IPOs" is the accumulated previous IPO participations by the investors divided by the accumulated IPO number in the sample. This is used to measure how many IPOs, out of all possible, each investor have participated in. "Previous buy-and-hold" is the accumulated previous number of times the allocated investor has been a buy-and-hold investor divided by all previous IPO participations. This is the number of times, out of all previous IPO participations, the investor has held some IPO allocated shares for more than six months.

"Previous flipping" is the accumulated number of times the investor have flipped previous IPOs divided by all previous IPO participations. Flipping is when all shares are sold within one month after a listing. This is the number of times, out of all previous IPO participations, the investor has held all IPO allocated shares for less than one month. "Held cold IPO dummy" is a dummy variable

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[13]All commission variables are related to IPO allocations. Only buy generated commission in the 24 month period before the IPOs is used as commission in the current version of the paper. This is to avoid any issues related to sell generated commissions from rebalancing portfolios before IPOs. The results are the same when different measures of commission are used.

that takes the value of one if the IPO has a positive underpricing and the investor is allocated shares in a previous IPO with negative underpricing. This variable is used to test if investors receive shares in hot IPOs because they accepted to take shares in previous cold IPOs. The "Previous IPOs", "Previous buy-and-hold", "Previous flipping" and "Held cold IPO dummy" are calculated on all 186 IPOs when allocations of the 30 exact IPOs are studied separately. The variables are also recalculated on a bank by bank basis when the banks are studied separately. "Financial institution dummy" is a dummy variable that takes the value of one for investors that are either Norwegian or foreign financial institutions.

IPO level characteristics and the aggregate distribution of allocations between the different investor groups are given in Table 4. "Market value" is the total market value in USD at the listing date of the IPO company. This is calculated as the number of outstanding shares times the first day closing price. "BV/MV" is the book to market ratio of the IPO company at the listing date. This is calculated as the book value of equity, after the IPO, divided by the market value. "Offer price" is the offer prices in USD reported in the listing prospectus or in the newspapers. "VC dummy" is a dummy variable that takes the value of one for companies with venture capital baking. "Tech dummy" is a dummy variable that takes the value of one for IT -companies. "Year dummy" are dummy variables for each of the 15 years in the sample period. "Company dummy" are dummy variables for each of the 186 companies in the sample. "Lead manager IPOs" is the number of times the manager has been lead in the sample period. "Lead manager market share" is the market share of the lead manager. This is calculated by the percentage market capitalization of the companies taken public out of total in the sample. There are 32 different mangers in the 186 IPOs. There is one very big manager with 23 IPOs. There are 13 managers with one IPO each. The ten biggest managers underwrite 144 of the 186 IPOs. There are 15 different managers that underwrite the 30 sample IPOs. The five biggest managers underwrite 21 out of 30 IPOs.

5. Empirical results

The main empirical result is that there is a strong and robust relationship between brokerage commission generated in the period before the IPO allocation and the number of allocated IPO shares. This is true for all investor types (retail and institutions). There is no consistent relationship between previous IPO share holding periods and current IPO allocations. There is not more change in the pricing range of book-built IPOs when more shares are allocated to financial institutions. We conclude that IPOs are allocated to the investors that generate the most brokerage commissions.

5.1 The Rent seeking view of IPO allocations

Table 5 show that there is a positive relationship between generated brokerage commission and IPO allocations for the 30 allocation IPO sample (group one companies). IPO allocated shares (scaled by total issued shares in the IPO) is regressed on the accumulated brokerage commission in the 24 month period before the IPO allocation and a set of control variables. The level of generated commission is highly related to the number of allocated shares. The results control for investor size (measured by investors portfolio value), investor past trading behavior (past buy-and-hold, past flipping, past IPO participations and past accepted cold IPO allocations), investor type (financial institution or not), company fixed effects, year fixed effects and company specific variables.

Commission is also calculated in only IPOs with a non-negative underpricing. E.g. Commission is multiplied with a dummy variable that takes the value of one for IPOs with a non-negative underpricing. This variable "Commission*D" is used to control if IPOs are only allocated to investors with a high level of commission when the IPOs are underpriced. The commission in only IPOs with a positive underpricing is not always significant. This means that high commission investors are allocated more shares in general and not only in underpriced IPOs.[14] Investors that generate

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[14]Investors are, however, not likely to always know if IPOs will be under or overpriced. Investors are likely to apply for the shares they want. It is not certain that it is always the expected underpricing that drives the IPO application. If this was the case, there would be no IPO applicants in overpriced issues. Investors are likely to apply for shares

high commission rates are likely to be preferred when they apply for IPO shares regardless of the underpricing. It is likely that high brokerage commission will place investors on the A, B and C lists. When investors from these lists apply for shares they are likely to be allocated. It seems unlikely that investment banks will discourage investors from accepting IPO allocations even if the issues may fall in price after the listing (even if the investors are from the A, B or C list). IPO allocations are also studied on the sub groups only retail investors and only institutional investors. The results remain unchanged.

In Table 6, IPO allocations in group two and three are also included in the analysis. Table 6 show that there is a positive relationship between generated brokerage commission and IPO allocations for all IPOs. IPO allocations are made to investors that generate high levels of commissions before the allocation dates. It is only observed that brokerage commission is generated. It is not observed that the commission is paid from the investors to the investment banks. This can mean that IPO shares are allocated to investors as a reward for the received commissions. This can also mean that banks know what investors that are generating high levels of commission and then IPO shares are directed to these investors. This can be done in hope of receiving the high commission rates in the future (this is, however, less likely).[15]

The number of IPO participations by each investor is also regressed on total brokerage commission generated by each investor. The results are highly significant and explanatory. There is a strong relationship between generated commissions and the number of IPO participations by each investor. Investors that generate more commission also participate in more IPOs than investors that generate less commission (not reported). The sample sizes in all regressions are very large. The

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in some issues that will fall in price after the listing. It is also likely that investment banks will allocate to investors that generate high commission rates when they apply for IPO shares.

[15]Commission is calculated as buy generated commission on monthly portfolio changes. This is to avoid any issues related to portfolio rebalancing to make space for the new IPO shares in the investor portfolios. When sell generated commission is studied alone or together with buy generated commission the results are the same.

significance levels are also correspondingly large. Even if the sample sizes (and the corresponding t -statistics) are reduced by a large factor, the findings would still be significant. The results are not driven by sample sizes (Kecskes, Michaely and Womack, 2010). We conclude that IPO shares are allocated to investors depending on their generated brokerage commission in the period before the IPO.

5.2 The pitchbook view

In previous tables it is controlled that the buy-and-hold view is not driving the results of the rent seeking view. This is done by including the past number of times investors have been buy-and-hold or flipping out of past IPO participations in the regressions. In the pitchbook view it is argued that IPO shares are allocated to investors that are long term buy-and-hold investors. These investors will create long term price stabilization of the IPO shares. The long term investors will hold their shares to avoid being blacklisted in future IPOs. Long term buy-and-hold investors can develop a relationship with investment banks and then be rewarded with future IPO allocations in return for previous buy-and-hold services.

In Table 5 (the exact IPO allocations) it can be seen that the number of times an investor has been buy-and-hold in the past is negatively related or unrelated to current IPO allocations. For retail investors there is actually a positive relationship between past flipping activity and current IPO allocations. In Table 6 (all IPO allocations) the exact same results appear. This indicates that there is no or limited IPO allocations to buy-and-hold investors.

The 30 exact IPOs are underwritten by several different investment banks. The same is true when all 186 IPOs are studied together. It is possible that this is causing the results. In many listing prospectuses there are two to three participating investment banks. It is then assumed that the bank that is mentioned first on the cover page of the listing prospectus is the lead investment bank. The single most active bank underwrites 23 IPOs in the sample period. To really study the

pitchbook view it is necessary to study this sample separately.[16]

In Table 7 we show that there is not allocations to buy-and-hold investors for the active bank. There is no significant relationship between previous holding periods and future IPO allocations when only the active bank is studied separately. This is the exact same result as in tables 5 and 6. In Table 7 (regression 2 and 4) investors are also classified as only buy-and-hold investors if they are never flipping investors in the past. An investors that have a positive value for flipping in the past will take a zero value for the buy-and-hold by definition. The results remain unchanged. We are not able to detect any positive relationship between holding periods and IPO allocations. It is concluded that the pitchbook view is not a likely reason for IPO allocations.

5.3 The academic view

In the previous tables a dummy variable that takes the value of one for the expected pricing investors (financial institutions) is included in all regressions. This is to control that the results are not driven by financial institutions alone. (Reuter (2006) only study mutual funds that are classified as financial institutions). It is, however, not expected that the rent seeking view and the academic view will generate the same implications in the data. It is not expected that pricing information investors will generate any more commission than other investors in general.

In Table 8, the academic view is tested more directly. In Table 8, the percentage price revision in book-built IPOs is regressed on the allocation percentage to financial institutions and a set of control variables. This is similar to Ljungqvist and Wilhelm (2002) that regress the percentage price revision on the percentage IPO allocation between institutional and retail investors. Ljungqvist and

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[16]Most of the IPOs of the very active banks are of the group two IPO allocations. This means that these IPO allocations includes from one to 30 days of aftermarket trading. We argue that this is of smaller importance when we study the pitchbook view, as this view argues that the investors hold their shares in the long run. The IPO allocations from group two will include the long term buy-and-hold investors if they are really buy-and-hold investors. In the sample it is observed if investors that hold shares in the long run are allocated more shares in future IPOs. The only problem is that some investors may buy shares after the listing and then hold these shares in the long run. These investors will be treated as buy-and-hold investors in the data, but they will not be awarded with future shares. It is expected that there will be less of this type of investors than actual buy-and-hold if buy-and-hold is an accurate view. Group two IPOs allocations should therefore detect any IPO allocations in return for past buy-and-hold.

Wilhelm (2002) show that IPO allocations to institutional investors have a significant impact on the price revision. They show that there is more change from the midpoint in the initial pricing range to the offer price when more shares are allocated to institutional investors. In Table 8, we show that IPO allocations to financial institutions have no impact on the percentage price revision. IPO allocations to financial institutions is actually negatively related to changes in the offer price in the book-building period. This indicates that there is no price information collected from financial institutions. The same results are found when total allocations to institutions is investigated separately. The sample size is, however, very low with only 71 book-built IPOs in the sample.

5.4 Robustness

To test the robustness of the results we test if there is a relationship between share ownership right after the listing and generated commission for companies with no IPO. There are 89 companies with a sufficient share spread and equity value to list directly at OSE without conducting an IPO first. These 89 straight listings are used as a comparable sample. In Table 9 it can be seen that there is a relationship between commission and share holdings after the listing in non-IPO companies (listings with no IPO), but that this relationship is weaker than for IPOs. The IPO allocations are also not trimmed at the 0.1% level for either IPO or non IPO companies. Investor commission is multiplied with a dummy variable that takes the value of one for the IPO companies. Aftermarket ownership for both IPO companies and no IPO companies is regressed on brokerage commission. Brokerage commission is related to aftermarket ownership in non-IPOs, but this relation is much stronger in IPOs. It is concluded that the relationship between aftermarket share ownership and brokerage commission is driven by IPO allocations.

In Table 10 the allocated investors are matched one for one with a non allocated investor in a Tobit regression. These IPO allocations are also not trimmed at the 0.1% level. There are

24,621 allocated investors. In total 9,498 of these investors are first observed in the data file with their IPO allocation. These investors have no previous commission, past trading or portfolio size. The remaining 15,123 investors are matched one for one with a non allocated investor with no IPO participations in the last 12 months on investor type, country and number of shares in the portfolio. Among these investors the investor with the closest portfolio size is selected as the matching investor. The allocation percentage is then regressed on commission and control variables in a Tobit regression. Commission is still highly related to IPO allocations. This show that investors that are allocated IPO shares generate more commission than investors that are not allocated IPO shares.

6. Conclusion

The main finding is that there is a strong and robust relationship between brokerage commissions generated by investors before IPOs and the number of shares allocated in IPOs. It its observed that the investors that generate the most commission also receive the most IPO shares. This result is consistent for all investor types in all IPOs and in all sample years. This result control for the portfolio value of the allocated investors, so it is commission and not investor size that gives IPO allocations. The results also control for past trading behavior (the pithcbook view) and investor types (information gathering view). The meaning of these results is that there are strong indications that investors are able to buy IPO allocations with brokerage commissions. The investors that are the most profitable clients for the investment banks are rewarded with the most profitable investments. It can be argued that investors that trade more are also likely to apply for more shares. The IPOs are, however, on average highly oversubscribed, so some investors are given more shares than others. We show that the investors that generate more commission also receive more shares. More IPO allocations are given to investors that generate more commissions in general.

There is no evidence that support the information gathering view. There is not a bigger change in the percentage price revision from the midpoint in the pricing range to the offer price when financial institutions (or institutions in general) are allocated more shares. There is no support for the pitchbook view either. There is no detectable relationship between past IPO share holding periods and current IPO share allocations. This is also true when IPOs are studied on a bank by bank basis. Some investors are also able to obtain IPO allocations even if they repeatedly flip their shares.

The conclusion is that more IPO shares are allocated to investors that generate more brokerage commission. IPO shares are allocated based on rent seeking. The findings are consistent with Reuter (2006) and Nimalendran, Ritter and Zhang (2007) in that some IPO shares are allocated in return for commission trading. A main contribution to the previous literature is that we are able to combine all views in the same data set. We rank the views as the most to the least important view. This has not been possible to do before. There is strong evidence supporting the rent seeking view. There is no evidence supporting the academic view or the pitchbook view.

There are also some practical implications of the study. Investors can be able to increase IPO allocations by increasing their trading and brokerage commission before IPOs. Investors can be able to increase IPO allocations by directing trades to certain banks. There should also be more regulatory investigations into IPO allocation practices by investment banks. It seems like the exchange of IPO shares with commissions is a widespread practice.

There are some limitations to the study. It is not observed that commission is paid from the allocated investor to the investment bank. It is only observed that the commission is generated. Commission is also calculated based on monthly data. This is likely to underestimates commission. For future research it would be interesting to study brokerage commission that is paid directly to the investment bank for all the allocated investors on a daily basis.

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Table 1
Related Empirical Papers

Rent seeking view	
Reuter (2006)	Positive relationship between commissions and holdings of IPO shares after new listings
Nimalendran, Ritter and Zhang (2006)	Positive relationship between money on table and trading volume in liquid shares
Liu and Ritter (2010)	Find evidence of IPO spinning
Cliff and Denis (2004)	Find evidence of analyst conflict of interest
Academic view	
Cornelli and Goldreich (2001)	Regularly participating, large bid and domestic participants are favored in allocations.
Cornelli and Goldreich (2003)	Bids from large, frequent bidders that include a limit price affect the issue price
Ljungqvist and Wilhelm (2002)	Increased institutional allocations results in higher offer price deviations from the midpoints of the book-building pricing ranges
Binay, Gatchev and Pirinsky (2007)	Underwriters favor institutions they have previously worked with
Bubna and Prabhala (2007)	Book-building and discretion in allocation enhances pre-market price discovery
Jenkinson and Jones (2004)	Find evidence against the academic view
Pitchbook view	
Aggarwal (2002)	Institutions flip more than retail investors (Evidence against the pitchbook view)
Jenkinson and Jones (2004)	Find evidence in favor of the pitchbook view

Table 2
The Number of Initial Public Offerings on the Oslo Stock Exchange

The column labeled "Population" lists the number of Initial Public Offerings on the Oslo Stock Exchange in the sample period. The column labeled "Data" indicates the IPOs with allocation data. The column labeled "Prospectus" lists the IPOs where we have been able to locate the listing prospectus. The column labeled "Sample" lists the 30 sample IPOs. The columns labeled "Value of shares" list the annually aggregate million USD values of shares sold in the 173 IPOs with listing prospectus. "All", "New" and "Secondary" indicates the value of all shares, only newly issued shares and shares sold by existing shareholders respectively. The columns labeled "Prospectus" and "Sample" is the annual aggregated USD million value of shares sold in the IPOs with prospectuses and in the 30 IPO sample respectively. Value of shares sold is reported in USD using a USD/NOK exchange rate of 0.1792. The sample period is January 1993 through September 2007.

| | Number of IPOs | | | | Value of shares USD | | | | | |
| | | | | | All | | New | | Secondary | |
Year	Population	Data	Prospectus	Sample	Prospectus	Sample	Prospectus	Sample	Prospectus	Sample
1993	11	9	8		541		539		2	
1994	18	12	11	5	626	392	218	142	409	250
1995	18	14	11	3	516	47	113	47	403	
1996	14	12	8	3	146	89	65	9	81	80
1997	30	27	21	9	988	229	516	20	472	208
1998	15	11	11	2	233	95	190	94	43	1
1999	4	4	4		60		31		29	
2000	12	12	12	2	839	112	765	90	74	22
2001	4	4	4		183		166		17	
2002	2	2	2	2	70	70	64	64	6	6
2003	2	2	2		83		78		5	
2004	14	14	14		1,605		1,319		287	
2005	32	31	31	3	2,069	61	594	51	1,475	11
2006	18	17	17		2,730		2,237		493	
2007	16	15	16	1	931	20	537	20	395	
Total	210	186	173	30	11,621	1,130	7,431	550	4,190	580

Table 3
Summary Statistics of Firms Going Public on the Oslo Stock Exchange

Panel A reports the average percentage distributions of the IPOs. The exact sample includes the 30 IPOs with no aftermarket trading. The total sample includes all 186 IPOs with IPO allocations. Panel B reports the IPO company characteristics for the 186 and the 30 companies. "Market value (Mill USD)" is the number of shares outstanding on the listing day times the first day closing price. "Offer price" is the USD IPO price in the listing prospectuses. "Book/Market" is the book value of equity after the IPO divided by the market value on the listing day. "VC backed dummy" is a dummy variable that takes the value of one if the company has venture capital backing."Tech dummy" is a dummy variable that takes the value of one for IT companies. "Percentage change in pricing range" is change from the midpoint in the pricing range to the offer price in book-building IPOs. "Lead manager IPOs" is the average number of times the lead manager has been lead in the total 186 sample period. "Lead manager market share" is the market share of the lead manager. This is calculated by the percentage market capitalization of the companies taken public out of total in the sample. USD values are calculated from a USD/NOK exchange rate of 0.1792. IPO allocations are trimmed at 0.1%

Variable	N	Exact allocations			N	Full Sample		
		Mean	Std.Dev	Median		Mean	Std.Dev	Median
A. Average Percent Allocation								
Retail %	30	30.1%	21.5%	25.8%	186	28.3%	22.3%	23.0%
Norwegian non financial %	30	29.3%	17.1%	28.6%	186	23.9%	16.1%	19.9%
Norwegian financial %	30	24.0%	19.3%	23.2%	186	20.8%	15.7%	18.3%
Foreign %	30	10.2%	13.5%	4.4%	186	23.5%	24.7%	12.3%
Other %	30	6.4%	6.6%	3.9%	186	3.5%	6.0%	1.0%
B. IPO Characteristics								
Market value (Mill USD)	30	$128.0	$135.1	$98.2	186	$288.3	$837.2	$101
Offer price USD	30	$11.4	$7.8	$8.2	186	$9.3	$7.0	$7.2
Book/Market	30	0.77	1,4	0.29	186	0.66	0.84	0.42
VC backed dummy	30	0.13	0.35	0	186	0.16	0.37	0
Tech dummy	30	0.07	0.25	0	186	0.11	0.32	0
% change pricing range	30	0	0	0	71	8.3%	8.2%	7.3%
Lead manager IPOs	30	9.8	7.5	7	186	6.3	7.6	3
Lead manager market share	30	4.6%	11.9%	1.3%	186	3.1%	8.2%	0.5%

Table 4
Summary Statistics on IPO Allocations and on Investors Trading

This table reports the summary statistics for the individual trading prior to the 30 sample IPOs and all 186 IPOs on the Oslo Stock Exchange in the period 1993 to 2007. Panel A reports the percentage share distribution between the investor groups. Panel B reports the investor characteristics. "Commission" is the accumulated commission generated in USD by the investors in the two years before the IPO allocation date. "Non negative underpricing dummy" takes the value of one for all IPOs with zero or positive underpricing. "Commission *D" is commission times the Non-negative underpricing dummy. "Portfolio value" is the portfolio value in million USD for each allocated investor at 31.12.XX in the year before the IPO allocation date. "Previous IPOs" is the accumulated previous IPO participations by the investors divided by the accumulated IPO number in the sample. "Previous buy-and-hold" is the accumulated previous number of times the allocated investor has been a buy and hold investor as a percent of all previous IPO participations. This is the number of times the investor has held some IPO allocated shares for more then six months in previous IPOs." Previous flipping" is the accumulated number of times the investor have flipped previous IPOs as a percent of all previous IPO participations before the IPO allocation. Flipping is when all shares are sold within one month of the listing. "Held cold IPO dummy" takes the value of one if the IPO has a positive underpricing and the investor is allocated shares in a previous IPO with negative underpricing. USD values are calculated from a USD/NOK exchange rate of 0.1792. IPO allocations are trimmed at 0.1%

	Exact Sample 30 IPOs				Full Sample 186 IPOs			
	N	Mean	Std.Dev	Median	N	Mean	Std.Dev	Median
	A. Average Percent Allocation							
All %%	24,560	0.1%	0.47%	0.01%	190,122	0.07%	0.46%	0.004%
Retail %	20,030	0.04%	0.20%	0.01%	159,841	0.02%	0.16%	0.003%
Norwegian non financial %	2,415	0.3%	0.82%	0.05%	14,750	0.23%	0.79%	0.02%
Norwegian financial %	615	0.88%	1.45%	0.3%	3,881	0.78%	1.55%	0.16%
Foreigners %	969	0.23%	0.84%	0.03%	7,602	0.44%	1.28%	0.02%
Others %	531	0.27%	0.93%	0.03%	4,048	0.13%	0.62%	0.013%
	B. Investor Characteristics							
Commission USD	24,560	$3,299	$47,380	0	190,122	$8,065	$121,461	0
Non-negative underpricing dummy	24,560	0.73	0.44	1	190,122	0.86	0.35	1
Commission *D	24,560	2,794	43,775	0	190,122	$5,890	$97,280	0
Portfolio value million USD	24,560	3.33	51.3	0	190,122	$4.99	$87.12	0.003
Previous IPOs	24,560	0.05	0.05	0.04	190,122	0.04	0.05	0.02
Previous Buy-and-hold	24,560	0.19	0.36	0	190,122	0.20	0.37	0
Previous Flipping	24,560	0.12	0.28	0	190,122	0.09	0.25	0
Held cold IPO dummy	24,560	0.10	0.30	0	190,122	0.12	0.33	0

Table 5
IPO Allocations and Generated Commission for the 30 Sample IPOs

This table reports the coefficients and heteroscedastic consistent t -statistics (errors adjusted for clustering across firms Rogers, 1993) in parentheses for the regressions with the number of allocated shares divided by the total number of shares issued in the IPO as the dependent variable. This is a standard OLS model. Only the 30 IPOs with exact allocations in the sample period September 1993 to January 2007 are included. All variables are as described in Table 3 and Table 4. Regression 1 includes all investors. Regression 2 includes only retail investors. Regression 3 includes only institutional investors. IPO allocations are trimmed at 0.1%

	log (Allocated shares/shares issued) %		
	Reg 1	Reg 2	Reg 3
Intercept	19.2355	-17.6154	3.4154
	(79.6)	(-51.7)	(12.0)
Log (commission)	0.0953	0.0974	0.0564
	(5.7)	(6.0)	(4.0)
Log (commission) *D	-0.0801	-0.0788	-0.0282
	(-3.7)	(-3.7)	(-1.9)
Dummy non-negative underpricing	-1.5487	2.978	-1.2652
	(-40.4)	(72.7)	(-23.5)
Log (portfolio value)	0.0538	0.0327	0.0709
	(4.3)	(3.6)	(6.0)
Previous IPOs of possible	1.5917	-0.3499	2.4142
	(1.8)	(-0.8)	(2.7)
Previous buy-and-hold of possible	-0.1584	-0.0761	-0.1049
	(-3.3)	(-2.1)	(-1.4)
Previous flipping of possible	0.1055	0.2006	-0.3214
	(2.8)	(3.5)	(-2.5)
Held cold IPO dummy	0.0945	0.0113	0.0203
	(1.3)	(0.3)	(0.2)
Financial institution dummy	2.20754	dropped	0.638
	(11.4)		(4.7)
Log (market value)	(-1.2488	(0.5725	(-0.4117
	(-84.2)	(34.1)	(-25.2)
BV / MV equity	0.1095	0.5582	0.3775
	(9.4)	(65.8)	(45.8)
Offer price	0.0129	-0.0104	0.0008
	(22.0)	(-36.6)	(2.4)
VC backed dummy	-2.0392	0.7819	0.8612
	(-21.8)	(10.8)	(14.3)
High-tech dummy	dropped	4.85	3.0532
		(201.7)	(15.9)
Year dummy and Company dummy	yes	yes	yes
Observations	24,560	20,030	4,530
Adjusted R -squared	43.6%	49.0%	37.2%
Investor group	All	Retail	Institution

Table 6
IPO Allocations and Generated Commission for All 186 IPOs

This table reports the coefficients and heteroscedastic consistent t -statistics (errors adjusted for clustering across firms Rogers, 1993) in parentheses for the regressions with the number of allocated shares divided by the total number of shares issued in the IPO as the dependent variable. This is a standard OLS model. All 186 IPOs with exact allocations in the sample period September 1993 to January 2007 are included. All variables are as described in Table 3 and Table 4. Regression 1 includes all investors. Regression 2 includes only retail investors. Regression 3 includes only institutional investors. IPO allocations are trimmed at 0.1%

	log (Allocated shares/shares issued) %		
	Reg 1	Reg 2	Reg 3
Intercept	0.6333	-14.7869	-5.1541
	(7.5)	(7.5)	(-24.5)
Log (commission)	0.082	0.0372	0.0824
	(6.9)	(3.8)	(6.8)
Log (commission) *D	0.006	0.0082	0.0117
	(0.3)	(0.5)	(0.6)
Dummy non-negative underpricing	-0.5387	-1.2929	-0.8446
	(-3.8)	(-19.8)	(-7.5)
Log (portfolio value)	0.0466	0.03299	0.0585
	(13.1)	(12.2)	(13.8)
Previous IPOs of possible	-0.553	-1.2796	0.9224
	(-0.7)	(-2.4)	(1.3)
Previous buy-and-hold of possible	0.029	0.1258	-0.1417
	(0.2)	(0.9)	(-2.2)
Previous flipping of possible	0.2357	0.3435	-0.2505
	(2.4)	(4.0)	(-2.8)
Held cold IPO dummy	0.0821	0.046	0.0234
	(2.2)	(1.4)	(0.5)
Financial institution dummy	2.0379	dropped	0.6676
	(22.6)		(7.7)
Log (market value)	-0.3067	0.4587	-0.0127
	(-76.8)	(42.3)	(-8.8)
BV / MV equity	0.1383	0.0897	0.0301
	(23.3)	(6.7)	(4.4)
Offer price	-0.0045	-0.0131	0.0111
	(-4.8)	(-37.8)	(51.2)
VC backed dummy	0.351	-2.0255	-0.5148
	(30.8)	(-537.8)	(-29.1)
High-tech dummy	-1.378	2.4444	-0.6164
	(-119.8)	(77.4)	(-13.3)
Year dummy and Company dummy	yes	yes	yes
Observations	190,122	159,841	30,281
Adjusted R -squared	78.8%	83.5%	54.5%
Investor group	All	Retail	Institution

Table 7
IPO Allocations to Buy-And-Hold Investors

This table reports the coefficients and White (1980) heteroscedasticity consistent t-statistics in parentheses for the regressions with the number of allocated shares divided by the total number of shares issued in the IPO as the dependent variable. All variables are as described in Table 3 and Table 4. All regressions are standard OLS models, and the sample period is from January 1993 to September 2007. Only the 23 IPOs by the most active bank in the sample period is investigated. Previous trading variables are only in past IPOs by the most active bank. Regression 1 and 2 includes all IPO allocations. Regression 3 and 4 includes only allocation in the 13 underpriced (hot) IPOs. Regression 2 and 4 includes only past buy-and-hold who have never been flipping investors before. IPO allocations are trimmed at 0.1%

	(Allocated shares/shares issued) %			
	Reg 1	Reg 2	Reg 3	Reg 4
Intercept	8.0775	8.0483	10.0923	-1.5412
	(4.6)	(4.6)	(5.0)	(-3.2)
Log (commission)	0.0373	0.0372	0.0061	0.0087
	(4.6)	(5.2)	(11.3)	(11.0)
Log (commission) *D	-0.027	-0.0268	dropped	dropped
	(-3.8)	(-3.8)		
Dummy non-negative underpricing	0.0035	0.005	dropped	dropped
	(0.1)	(0.1)		
Log (portfolio value)	0.0006	0.0007	0.0005	0.0009
	(-0.0)	(2.4)	(2.3)	(3.8)
Previous IPOs of possible	0.1318	0.1366	0.0584	0.0658
	(3.5)	(3.7)	(2.0)	(2.4)
Previous buy-and-hold of possible	0.0145	-0.0018	0.0131	0.0037
	(1.7)	(-0.2)	(1.7)	(0.4)
Previous flipping of possible	-0.0377		-0.027	dropped
	(-3.3)		(-1.7)	
Held cold IPO dummy	0.0614	0.0595	0.0727	0.0741
	(2.2)	(2.3)	(2.6)	(2.6)
Financial institution dummy	0.337	0.3385	0.2236	0.2261
	(7.1)	(7.1)	(5.4)	(5.5)
Log (market value)	-0.6354	-0.6335	-0.5307	-0.0223
	(-4.7)	(-4.7)	(-4.9)	(-0.8)
BV / MV equity	1.5328	1.5297	-0.4793	0.4226
	(4.5)	(4.5)	(-5.3)	(3.5)
Offer price	0.0162	0.0415	0.0344	0.0578
	(4.4)	(4.4)	(4.6)	(4.7)
VC backed dummy	-1.7779	-1.7695	-2.5801	dropped
	(-4.7)	(-4.7)	(-4.9)	
High-tech dummy	-0.4974	-0.4945	-0.0772	0.2248
	(-3.6)	(4.6)	(-0.5)	(1.6)
Year dummy and Company dummy	yes	yes	yes	yes
Observations	69,041	69,041	64,566	64,566
Adjusted R -squared	10.6%	10.8%	14.7	11.0%
Included IPOs	23	23	13	13

Table 8
Allocations of IPOs in Return for Pricing Information

This table reports the coefficients and White (1980) heteroscedasticity consistent t -statistics in parentheses for the regressions with the absolute percentage change in the price revision as the dependent variable. These are standard OLS models, and all book-built IPOs in the sample period from January 1993 to September 2007 are included. All variables are described in Table 3 and Table 4. Regression 1 includes "Financial institution allocation %" in all book-built IPOs. Regression 2 includes "Institutional allocation %" in all book-built IPOs.

	Absolute % price revision	
	Reg 1	Reg 2
Intercept	17.7888	11.9459
	(2.3)	(1.1)
Financial institution allocation %	-0.1046	
	(-2.0)	
Institutional allocation %		-0.0022
		(-0.0)
Log (market value)	-0.472	-0.2403
	(-1.1)	(-0.5)
BV / MV equity	-1.3576	-1.4011
	(-0.5)	(-0.5)
Offer price	0.016	0.0008
	(0.5)	(0.0)
VC backed dummy	3.6374	4.1113
	(1.5)	(1.6)
High-tech dummy	1.2246	0.2923
	(0.5)	(0.1)
Observations	71	71
Adjusted R -squared	5.8%	0.4%

Table 9

Commission and Share holdings of Newly Listed Companies with No IPO

This table report the coefficients and White (1980) heteroscedasticity consistent t-statistics in parentheses for the regressions with the shares owned per investor at the end of the listing month divided by outstanding shares in the listed company as the dependent variable. There are 89 companies that list with no offering to new shareholders. All variables are as described in Table 3 and Table 4. Regression 1 includes allocations and aftermarket ownership in all 186 IPO companies and all 89 companies with no IPO. The Log (commission) is multiplied with a dummy variable that takes the value of one for all 186 IPO companies. The regressions are standard OLS models, and the sample period is from January 1993 to September 2007. The dummy IPO takes that value of one for all investors in the 186 IPOs and zero for all the investors in the 89 no IPO companies. "Log (commission) * Dummy IPO" is investor commission in all IPOs and zero commission in all 89 no IPOs. IPO allocations are not trimmed for either IPO or non IPO companies.

Variables	(Shares holdings/shares outstanding) %
	Reg 1
Intercept	-11.2013
	(-2.6)
Log (commission)	0.0043
	(4.2)
Log (commission) * Dummy IPO	0.02
	(12.3)
Dummy IPO	13.8932
	(4.5)
Log (portfolio value)	-0.0007
	(-1.7)
Previous IPOs of possible	1.7109
	(10.1)
Previous buy-and-hold of possible	-0.0803
	(-10.7)
Previous flipping of possible	-0.0627
	(0.6)
Financial institution dummy	0.5956
	(15.5)
Year dummy	yes
Company dummy	yes
Observations	382,210
Adjusted R -squared	10.0%

Table 10
Matching Allocated Investors with Non-Allocated Investors

This table reports the coefficients and White (1980) heteroscedasticity consistent t -statistics in parentheses for the regressions with the number of allocated shares divided by the total number of shares issued in the IPO as the dependent variable. This is a standard Tobit regression. All allocated investors are matched one for one with a non allocated investor. The non allocated investors takes a value of zero for "(Allocated shares/shares issued) %". IPO allocations are not trimmed. Regression 1 includes the 24,621 exact IPO allocations and 15,123 matched investors that did not receive IPO allocations. Regression 2 includes only investors with a positive level of commission. There are then 13,340 IPO allocations and 10,322 non allocated matching investors.

	(Allocated shares/shares issued) %	
	Reg 1	Reg 2
Intercept	28.2926	44.631
	(6.6)	(5.9)
Log (commission)	0.0268	0.0826
	(5.3)	(5.2)
Log (commission) *D	-0.0017	0.0304
	(-0.3)	(1.4)
Dummy non-negative underpricing	-0.9684	-7.1474
	(-4.1)	(-5.6)
Log (portfolio value)	-0.0409	-0.0356
	(-6.8)	(-5.6)
Previous IPOs of possible	12.2889	11.9004
	(6.5)	(5.7)
Previous buy-and-hold of possible	0.0632	0.2206
	(1.9)	(4.9)
Previous flipping of possible	0.0431	0.2409
	(1.5)	(4.5)
Held cold IPO dummy	-0.4904	-0.5522
	(-7.0)	(-6.4)
Financial institution dummy	0.514	0.2052
	(5.0)	(2.5)
Log (market value)	-1.343	-2.28
	(-6.5)	(-6.0)
BV / MV equity	-0.3316	-0.5226
	(-6.2)	(-5.6)
Offer price	-0.0255	0.0047
	(-6.2)	(5.4)
VC backed dummy	-3.657	11.2446
	(-6.0)	(5.2)
High-tech dummy	-4.7316	-23.4354
	(-6.1)	(-5.6)
Year dummy, Company dummy	yes	yes
Observations	39,744	23,662
Pseudo R -squared	9.7%	10.5%

Figure 1
The different IPO Allocation Views

Ritter (2003) and Jenkinson and Jones (2004) argue that there are three views on how IPOs are allocated. First, is the academic view based on Benveniste and Spindt (1989). In this view, investment banks allocate IPO shares to informed investors in return for true valuation and demand information. Second, is the pitchbook view where investment banks allocate shares to institutional investors that are likely to be buy-and-hold. Finally, is the rent seeking view where investment banks allocate shares to investors in return for some form of kickback. Table 1 includes a reference to the different articles that investigate each of the views.

The Rent seeking view	
Commission	Shares are allocated to investors that generate high levels of brokerage commissions.
IPO spinning	Shares are allocated to company executives to attract corporate business.
IPO laddering	Shares are allocated to investors that will provide aftermarket share price support. Underpriced shares are allocated to investors that generate high brokerage commissions.
Analyst overage	Companies accept underpricing in exchange for future. research coverage. Underpriced shares are allocated to investors that generate high brokerage commissions.

The pitchbook view

Shares are allocated to investors that are expected to be
buy-and-hold. This will create long run price stability

The academic view (information gathering)

Shares are allocated to investors that report true share values.
Shares are exchanged with price information

Figure 2
Timeline of the Listings on the Oslo Stock Exchange

Listing in VPS is when the company list ownership records in the ownership database. This is when the ownership records are observed in the data the first time. Public Offering is when the companies distribute the allocated shares in the ownership database. The public offering is in most cases in the month before (30 exact IPOs) or the month of the listing (151 IPOs).

Timeline of the listing	
Six months before the listing	Company list shares in the VPS database
	The company selects an investment bank
	The initial meeting between company, investment bank and OSE
	Compliance report is finalized by the investment bank
	The legal and accounting due diligence is performed
	The formal application is submitted to OSE
	Prospectus is finalized and distributed
	IPO shares are priced through meetings with investors
One month before the listing	Shares are transferred in the Public Offering
Listing month	Listing

Figure 3
Timeline of the IPO allocations for the different groups

Listing in database is when the company list ownership records in the ownership database. This is when the ownership records are observed in the data the first time. IPO allocation is when the companies distribute the allocated shares in the ownership database. Group 1 to 3 is the ordering of the group of detail in the allocations. Group 1 is 100% accurate IPO allocations. Group 2 IPO allocations includes one to 30 days of aftermarket trading. Group 3 IPO allocations includes existing owners who have not sold all of their shares in the IPO. There are 30, 151 and 5 companies in group 1, 2 and 3 respectively.

Timeline of the listing	Six months before the listing	One month before the listing	Listing month
Group 1	Listing in database	IPO allocation	Listing
Group 2	Listing in database		IPO allocation Listing
Group 3	Listing in database IPO allocation		Listing

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