When do Investment Banks use IPO Price Support?

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Abstract

Practitioners, regulators, and the financial media argue that underwriters tie Initial Public Offering (IPO) allocations to investor post-listing buying of the issuer shares in a process labelled price support. Arguably, this excess demand boosts post-listing returns which underwriters trade quid-pro-quo with investor stock-trading-commission payments. In this paper, I investigate unique data from the Oslo Stock Exchange (OSE) including investor stock-trading-commissions, IPO allocations, and post-listing trading. I document that investors who provide high returns to underwriters before IPOs benefit from price support through increased returns in IPOs. I conclude that price support is used when investors share boosted returns with underwriters.

Keywords: IPOs, Price Support, Stock-trading commission

JEL Classification: G24

1. Introduction

Following recent financial scandals, regulators have investigated some of the leading international IPO underwriters for allegedly allocating underpriced shares in return for additional rent-seeking services from investors. Arguably, underwriters tie allocations to stock-trading commission payments, additional share purchases in the after-market to boost prices (a process referred to as price support), and future corporate business (a process referred to as spinning).[1] Each of these IPO scandals has since been investigated empirically one by one.[2] However, these allocation mechanisms are more likely to be used in combination and thereby exacerbate the effects. Hao (2007) shows theoretically how underwriters benefit by combining price support with allocations to high stock-trading commission investors and thereby share in the boosted profits.

In this paper, I ask: Do underwriters tie IPO allocations to price support for some investors so that other high ex-ante stock-trading commission investors benefit through increased realized profits?

Obtaining data to investigate IPO practices has in the past proven difficult. The underwriter generates the allocation data and many of the alleged practices are illegal.[3] The incentives for investment banks to share data are therefore limited. To investigate the research question, I also need data on investor stock-trading commissions as well as investor post listing trades.

To overcome these data obstacles, I investigate IPOs on the OSE. In Norway, all privately held companies must register shareholdings in the OSE VPS (the share depositary) as part of the

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[1] Tying IPO allocations to services has generated a massive interest from the financial media, practitioners, and regulators in addition to academic research; see Farbrot (2011) for Norwegian evidence and Puliam and Smith (2001) for U.S. evidence. The U.S. SEC has also sued several global investment banks over allegedly tying IPO allocations to price support; see the SEC 2003, 2005A, and 2005B litigation releases.

[2] See Reuter (2006), Liu and Ritter (2010), and Griffin, Harris, Topaloglu (2007).

[3] In Norway IPO price support when performed above the offering price is illegal under chapter 3 section 12 of the Norwegian Securities Trading Act.

listing process. This data is continually updated with secondary trading. From the OSE VPS I obtain IPO allocations for 188 companies as well as stock-trading commission and secondary trading for all investors (not just IPO investors) in the period January 1993 to September 2007.

I find a strong and robust relation between investor realized IPO profits and price support for high stock-trading commission investors. I find that investors who increase abnormal stock-trading commissions by $1 million before the IPO are repaid $2.34 million in realized profits from IPOs with price support. Underwriters keep a large share of the IPO profits ($1 million from abnormal stock-trading commission) and the allocated investors receive the remainder IPO profits ($1.34 million). I control for investors portfolio values, past allocations between investors and underwrites as well as other company specific variables and fixed effects. Investors do not increase IPO realized profits from having bigger portfolio values or prior dealings with the underwriter.

I also document that the increase in realized profits for high commission investors comes from three sources. First, price support inflates returns in the immediate period after new listings. This allows allocated investors to sell shares at higher prices. Price support is then related to negative returns in the following months after the listing as price support investors offload their unwanted shares. Second, allocations to high commission investors are increased when expected returns after the listings goes up. I measure expected returns using IPO overall subscription levels as well as with realized returns. I find that underwriters who expect there will be inflated prices after the listing allocate more shares to high commission investors (and thus further increases realized profits). Finally, when there is more price support there is also more flipping by high commission investors. Increased flipping further indicates that this is part of rent-seeking agreements as the high commission investors are aware that prices will eventually fall and therefore flip their allocations. Price support is related to negative returns starting one month after new listings as price support investors start offloading shares. Any investor who has not sold their

allocations by this time will forgo the benefits from price support.

I conclude that underwriters tie IPO allocations to price support for some investors so that other high ex-ante stock-trading commission investors benefit through increased realized profits.

My main contribution to the literature is that I document how high commission investors benefit economically from price support. High commission investors are allocated more shares in IPOs with higher expected returns. These shares are then flipped at higher prices before returns drop in the months after the listing. This relation indicates that price support is used to share the profits made by allocated investors from inflated prices. My findings extend to Liu and Ritter (2011), Signori, Meoli and Vismara (2013), and Hao (2007) who points out the irregular use of price support and posits that it is related to stock-trading-commissions. Additional contributions are given by documenting a relation between different IPO allocation practices. In the empirical literature, price support and allocations to high commission investors are treated as separate issues. Consistent with Hao (2007), I show that allocations to high commission investors and price support are related. Finally, I contribute by documenting that IPO allocations are given to investors in return for services. Investors who apply for IPO shares are likely to be required to provide services in return for the allocations.

The remainder of this paper is organized as follows. Section 2 describes the related literature while section 3 describes the institutional setup. Section 4 describes the data and section 5 gives empirical results. Section 6 concludes.

2. Related literature

This paper relates to a growing area of the literature that investigates financial misconduct; see Cumming, Dannhauser, and Johan (2015). In the IPO literature Fulghieri and Spiegel (1993) and Loughran and Ritter (2002) explain how investors are willing to engage in rent-seeking agreements

with underwriters to secure allocations. Liu and Ritter (2010) explain that the main rent-seeking agreements are IPO spinning (where shares are allocated to corporate executives in return for future business), IPO laddering/price support (where shares are allocated in return for post-listing purchases in the IPO shares), IPO analyst conflict of interest (where issuers agree to underpricing in return for post-IPO analyst coverage), and IPO allocations in return for stock-trading commissions.

Chen and Wilhelm (2008), Hao (2007), and Jenkinson and Jones (2007) investigate IPO price support theoretically. Chen and Wilhelm (2008) explain how certain investors flip their allocations soon after new listings. Underwriters therefore tie allocations to secondary purchases to avoid negative price spirals from selling pressure in the aftermarket. Investor price support is then good for investment banks as it reduces the cost of investment bank direct price stabilization trades (at least without overallotment options). Hao (2007) additionally explains how underwriters benefit from price support through rent-seeking behavior by investor clients. If investors share the profit from underpriced IPO allocations with the underwriter, the price support will increase underwriter profits. Jenkinson and Jones (2007) show that regulators allow certain types of price support (stabilization purchases above the offering price) as it prevents or retards a fall in price after the listing. Wilhelm (1999) and Griffin et al. (2007) explain that investment banks are likely to use a small group of large investors for the price support trades to economize on monitoring costs. The investors that are used for price support are rewarded with a continued access to underpriced allocations.

Empirically, Liu and Ritter (2010) find evidence of IPO spinning while Cliff and Denis (2004) and Liu and Ritter (2011) find evidence of analyst conflict of interest. Reuter (2006), Nimalendran, Ritter, and Zhang (2007), Goldstein, Irvine and Puckett (2011), and Jenkinson, Jones, and Suntheim (2017) document that IPO allocations are tied to stock-trading commissions.

Ellis (2006) and Griffin et al. (2007) document that investment banks tie IPO allocations to price support. Signori, Meoli and Vismara (2013) and Meoli, Signori, and Vismara (2015) explain that underwriters provide traditional services such as due-diligence, roadshows, book-building, and placements in all IPOs, but that fewer than half of the IPOs that require price support actually receive this service. Fjesme (2016) additionally documents that the investors who provide price support temporarily increase their holdings of IPO shares in the aftermarket. These price support investors have no interest in holding these additional shares as witnessed by the slowly offloading of their holdings over the next months after the listing. The result is a short-term price increase that eventually leads to lower returns after the listing. Any investor buying immediately after the listing will then incur losses as the price support investors offload their shares. Price support investors are rewarded with future hot IPO allocations for this service. Fjesme (2016) finally shows that international institutional investors are used for price support and that naive non-allocated investors increase buying in companies with more price support. Vismara, Signori, and Paleari (2015) additionally show how underwriters select peer firms when determining IPO offer prices that intentionally gives higher IPO underpricing. This shows that investment banks can intentionally increase underpricing.

I contribute to the related literature by documenting that allocations to high stock-trading commission investors is related to IPO price support.

3. Institutional setup

The OSE is similar to U.S. exchanges in most aspects of the IPO process. The investment banking industry in Norway is highly competitive with 32 different managers in my sample of 188 IPOs. However, a small number of banks have the bulk of the new issues market either as lead or as co-

managers. Investment banks on the OSE use book-building for the pricing and allocation of shares.[4]

Many international investment banks also act as co-managers on the OSE. Before each IPO all

investors who have applied for shares are ranked on A, B, and C lists. The investors on the A list

get a higher proportion of applied for shares than investors on the B list and so forth.[5] The average

first day return, capital raised, and allocation to institutional investors is 10%, $89 million, and

79%, respectively; see Fjesme (2016).

One difference is that on the U.S. exchanges, IPO shares are allocated on or very close to

the day of the listing. On the OSE, IPO shares are often allocated to investors weeks before the

actual listing. Companies are also required, as part of the listing process, to register all shareholders

in the OSE VPS database (the share depository). Secondary trading is then continually updated in

the database. Some companies list in the OSE VPS many years before the listing. Others register

in the OSE VPS shortly before secondary trading commences. When companies register into the

database appears random. I use these differences in VPS registration dates to calculate actual IPO

allocations on the OSE.

4. Data

4.1 Investor identification

In total, 266 IPOs took place on the OSE in the period January 1993 to September 2007. From the

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[4] Derrien and Womack (2003) documents that in France issuers can choose between auctions, bookbuilding, and fixed price offerings. Ritter (2003) documents that bookbuilding is now the dominant method for issuing European IPOs.

[5] The information about the allocation process is obtained from the seminar "The Road to the Listing" (Nov. 3, 2009) by Deloitte Public Accountants, the OSE, and meetings with former investment bankers in top tier Norwegian investment banks.

OSE VPS I observe all investor holdings on a month-end basis. On the OSE the IPO shares are often transferred to primary investors some time before secondary trading commences. In total, 35 companies transfer shares in a calendar month before the listing month. For these 35 companies, I completely discriminate between allocated and secondary investors.

Appendix Table A1 provides the time line given in the IPO prospectuses of one of these 35 companies. In this company investors are invited to apply for applications between November 26 and December 10, 1993. Successful applicants are notified on December 17 and payments are made by December 23. Shares are transferred to investors in the OSE VPS data on December 30. The company lists on the exchange and secondary trading commences on January 10, 1994. For this IPO I observe investor holdings at the end of November 1993, December 1993, January 1994, and February 1994. I identify IPO allocated investors as those that held shares at the end of December 1993 but not at the end of November 1993. I identify flipping investors as those allocated investors who have sold their shares by the end of January 1994 (and separately by the end of February 1994). I identify price support investors as those allocated investors who have purchased more shares by the end of January 1994 (and separately by the end of February 1994). There are 26,858 allocated IPO investors in these 35 IPOs. When investigating returns, IPO allocations, and flipping I drop the investors who provide price support to avoid the situation where high-commission and price support investors being the same individuals. This leaves me with a sample of 26,390 investors in these 35 IPOs. I can only observe that shares have been sold by the end of the month and not on what day. I calculate *Realized return* from flipping shares as the number of sold shares times the offer price and the holding period return from the offer price to the first day, one week, two weeks, three weeks, and four weeks closing prices.

I also observe shareholdings before and after the IPO for another 153 companies. These 153 companies transfer shares to new investors in the same calendar month as the actual listing.

8

For these companies I calculate IPO allocations as the new investors that hold shares at the end of the listing month but not at the end of the month before the listing month. These 153 issues are contaminated by some post-listing trading. Investors who flip their allocations are those who sell their shares by the end of the month after the listing. I calculate *Realized return* from flipping shares as the number of sold shares times the offer price and the holding period return from the offer price to the first day, one week, two weeks, three weeks, and four weeks closing prices. There are 187,570 allocated IPO investors in the 188 all sample IPOs (153 + 35). I drop the investors who provide price support. This leaves a sample of 184,207 IPO investors in the 188 all sample IPOs.

The remainder 78 companies allocate the IPO shares before they list in the database. The final sample consists of 188 IPOs. This is the same sample as used in Fjesme (2016). When possible, I show the results for all 188 companies as well as for the subsample of the 35 companies with exact data on IPO allocations and post listing trading. Table 1 lists all the IPOs per year.

4.2 Stock-trading commissions

For each investor on the OSE I observe month-end portfolio holdings of all publicly traded shares. I calculate a *Share trading fee* for each investor in each calendar month as the change in portfolio holdings from the previous month times share prices and percentage stock-trading commission rates.[6] The data are observed on a month-end basis so *Share trading fee* will be a lower bound. Investors who buy and sell the same share in the same calendar month will not be detected in the data.

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[6] Jones (2002) show using data from the U.S. that the average stock-trading commissions rate on round-lot transactions on NYSE stocks was about 0.20% in 1993 and 0.10% in 2002. In Norway the average stock-trading commission was 0.075% in 2006; see Fjesme (2016). I assume that Norway followed the same trend and that stock-trading fees are linear over the period with a decreasing rate from 0.2% to 0.075% from 1993 to 2006.

I calculate *Stock-trading commission* as the cumulated *Share trading fee* per investor over the last 12 months before each IPO. I only include *Share trading fee* from buy trades to avoid issues related to portfolio rebalancing in the process of making room for IPO shares.

4.3 Variable definitions

IPO allocation is the number of allocated shares divided by the number of issued shares in percentage points. *Flipped allocations* are the number of allocated shares that are sold in the first month after the listing divided by the number of issued shares in percentage points. *Realized profit* is the realized investor dollar profit from selling IPO allocations in the first month after the listing. The shareholder data are observed as month-end holdings. This means that I can only observe the net shares that have been sold during a month. I cannot determine on which day within a month the shares are sold. I therefore calculate *Realized profit* as the number of net shares sold in the first month after the listing over the three, two, and one week Holding Period Returns (HPRs) as well as the first day return. *Commission* is abnormal investor stock-trading commission calculated as: [The average monthly stock-trading commission over the 12 months before the IPO for each investor] – [The average monthly stock-trading commission over the 12 months before the IPO for the appropriate investor group (retail or institutional)]. *Portfolio* is the total investor portfolio holdings of shares traded at the OSE at 31.12.xx in the year before the IPO.

Price support is the percent of the IPO issue that is purchased by allocated international institutional investors in the first month after the listing. This is the same definition of *Price support* as Fjesme (2016). *Oversubscribed* is a dummy variable that takes the value of one (otherwise zero) for IPOs that are reported as being oversubscribed in the newspapers in the weeks following the

10

listing.[7] *First day return* is calculated as: [(the first day closing price – the IPO offer price)/ the IPO offer price)]. *MV* is the number of outstanding shares at the listing multiplied by the first day closing price in billions of USD. *BV/MV* is the book value of equity divided by the *MV*. *VC* is a dummy variable that takes the value of one (otherwise zero) if the IPO has venture capital backing. *Top tier manager* takes the value of one (otherwise zero) for the eight biggest investment banks based on market size of the 188 issuers. This is the same top tier manager ranking as developed by Megginson and Weiss (1991). *Tech* is a dummy variable that takes the value of one (otherwise zero) for companies in the information technology sector. *Offer size* is the fraction of the outstanding shares issued in the IPO. *Hot dummy* takes the value of one (otherwise zero) for IPOs in 2005. 2005 is the year with the highest number of IPOs. *Post hot* dummy takes the value of one for IPOs in 2006 and 2007. *Time gap* is the time-period between the IPO issue and the listing in months. The *1-week HPR, 2-week HPR, and 3-week HPR* are the Holding Period Returns from the IPO offer price to the first, second, and third week closing prices in price in percentage points. *6 m. HPER* is the six-month Holding Period Excess Return for the IPO company over the main market index from the first day closing price to the sixth month closing price in percentage points.

4.4 Descriptive statistics

Table 2 provides descriptive statistics for investor level variables. Table 2 Panel A shows descriptive statistics for the 184,207 investors in the 188 all IPOs sample. The average IPO investor receives 0.094% of the IPO issue (*IPO allocation*) and flips 0.028% of the issue immediately after

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[7] Investment banks voluntarily report subscription levels in the newspapers in the period after the listing. For the 82 (out of the 188) issues where the number of applied for shares is not reported, I assume that the IPO was not oversubscribed.

the listing (*Flipped allocations*). The average IPO investor generates $731 in *Commission* and has

a *Portfolio* value of $4,164,000. The average IPO *Realized profit* is $1,107 and on average 9.5%

of the IPO investors have received an allocation from the same underwriter in the past (*Past pair*).

Table 2 Panel B shows that variables are very similar for the 35 IPOs with exact data on IPO

allocations.

Table 3 Panel A provides descriptive statistics for IPO level variables in the 188 all IPOs

sample. The average IPO receives 5.65% *Price support* and has *First day return*, *1-week HPR, 2-

week HPR, and 3-week HPR* of 10%, 8.69%, 7.95%, and 7.95%, respectively. The average market

value is $300 million USD (*MV*) with a book-to-market ratio of 0.59. On average 15%, 54%, and

18% of IPO companies have venture capital backing (*VC*), have a *Top-tier manager*, and are *Tech*

companies, respectively. Table 3 Panel B shows that variables are very similar for the 35 IPOs with

exact data on IPO allocations.

5. Empirical results

5.1 Realized profits, stock-trading commission and price support

In this paper, I ask if underwriters tie IPO allocations to price support for some investors so that

other high ex-ante stock-trading commission investors benefit through increased realized profits.

In Table 4A I regress *Realized profit* on *Commission, Price support,* and controls in a standard

OLS model for the 26,390 investors in the 35 IPOs with exact data. *Realized profit* is the investor

dollar profit from flipping allocated IPO shares in the first month after the listing. *Commission* is

the investor abnormal stock-trading commission. *Price support* is the percentage of the IPO issue

that is purchased by allocated institutional investors in the first month after the listing. Investors

who provide *Price support* are dropped from the analysis to avoid the situation where high

commission and *Price support* investors are the same individuals.

In column 1 of Table 4 I investigate *Realized profit* over the *3-week HPR* as Griffin et al. (2007) show that *Price support* goes on for up to three weeks. In column 1 I interact *Commission* with the dummy variable that that takes the value of one if *Price support* is greater than the average + one-standard-deviation and otherwise zero (*Price support d.*). From column 1 we see that the coefficient of *Realized profit* on *Commission*Price support d.* is 2.34 and statistically significant at the 1% level. The interpretation is that an investor who increases *Commission* by $1 million will increase *Realized profit by* $2.34 million in IPOs with high *Price support*. This indicates that investors profit from the transaction to the amount of $1.34 million. A big gain from the transaction is kept by the investment bank through abnormal stock-trading commissions ($1 million).

An alternative explanation is that large and high trading investors are helpful in the IPO process by for instance helping in price discovery. It is therefore possible that deeper relations between investment banks and certain investors are the reason for the higher realized retunes. However, meetings between investors an investment banks are likely to take place in private and are therefore not observable. Not controlling for these relations can lead to endogeneity problems due to omitted variables. To remedy for this I use a proxy variable for investor-investment bank relationships by including *Past pair* in all regressions. *Past pair* is the dummy variable that takes the value of one (otherwise zero) for investors who have received allocations from the underwriter in the past. I additionally control for the same variables as Boehmer, Boehmer, and Fishe (2006) and Liu and Ritter (2011) when they investigate post-IPO long term and short-term returns, respectively. I also control for the size of each investor by their portfolio value at 31.12.xx in the year before the IPO (*Portfolio*). Finally, I control for the time period between the allocation and the listing (*Time gap*) as well as year and investor type (retail, financial institution, non-financial institution, government, foreign institution, and foreign retail) fixed effects. Neither of the control

variables are consistently related to *Realized profit*.

In column 2 of Table 4 I regress *Realized profit* on *Commission*, *Price support* and the continues interaction term *Commission*Price support* (rather than the dummy variable interaction term). From column 2 we see that there is a positive relation between *Realized profit* and *Commission*Price support.* The coefficients on *Commission* and *Price support* by themselves are not consistently related to *Realized return*. This means that increasing *Commission* for an investor in an IPO with zero *Price support* will not increase *Realized return* (and conversely increasing *Price support* in an IPO for an investor with zero *Commission* will also not increase *Realized return*). It is necessary to have both positive *Commission* and positive *Price support* to increase *Realized return*. For ease of interpretation, in column 3 I standardize all variables.

It could be argued that some investors trade more because they have a bigger *Portfolio*. In the main analysis I include *Portfolio* as a control variable. In column 4 of Table 4 I replace *Commission* and *Portfolio* with the scaled variable *Commission* divided by *Portfolio* (*Commission/Portfolio*). The results remain unchanged.

The ownership data is observed at the end of each month. In the main analysis I investigate if investors have sold their shares by the end of the first month after the listing. I do this to cumulate all shares sold as some companies list late in the calendar month. In column 5 I investigate the number of shares that are sold only within the listing month. This means that for companies listing late in the month I only observe a few days where investors sell shares. From column 5 we see that the results are stronger. This shows that the results are robust to measuring shares sold within the listing month.

It is likely that most of the high commission investors are institutional rather than retail investors. In column 6 I drop all retail investors from the analysis. The results are now slightly

stronger.[8] It could also be argued that the results are driven by investors who do not trade shares in the period after the listing. To control for this, I drop all investors with *Realized profit* = 0. The results are now also slightly stronger (column 7). Griffin et al. (2007) explain that most of the *Price support* takes place shortly after the listing even if it may go on for some weeks. In column 8, 9, and 10 of Table 4 I calculate *Realized profit* using the *2-week HPR, the 1-week HPR, and the First day return* after the listing, respectively. The results remain unchanged.

Finally, it can be argued that profitability is a function of investment opportunity and not only a dollar return. In column 11 I measure profitability as a function of the total portfolio value by scaling *Realized profit* by *Portfolio*. This means that I can only observe the 13,006 investors (out of the 26,390 investors) that have a positive *Portfolio*. The results remain unchanged. I conclude that the results are robust to investors included in the analysis and how *Realized profit* is measured.

In Table 4B I replicate the results using all the 188 companies with data on IPO allocations. In column 1 I interact *Commission* with *Price support d*. From column 1 we see that the relation between *Realized profit* and *Commission*Price support d.* is now slightly weaker. The interpretation is that an investor who increases *Commission* by $1 million will increase *Realized profit* by $1.58 million in IPOs with high *Price support.* In column 2 I interact *Commission* with the continuous *Price support*. The results remain unchanged. In column 3 I standardize all variables. In column 4 I replace *Commission* and *Portfolio* with the scaled variable *Commission* divided by Portfolio (*Commission/Portfolio*). The results also remain unchanged.

I conclude that *Price support* increases *Realized profit* for high commission investors. I also conclude that high commission investors benefit from the IPO participation even after paying

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[8] Keloharju and Torstila (2002), however, show using a sample of Finnish IPOs that institutional investors appear no more skillful than retail investors at selecting underpriced issues.

abnormal stock-trading commissions.

5.2 How realized profits are increased

Realized profit is the dollar return from selling IPO allocations during the first month after the listing. The increase in *Realized profit* for high commission investors from *Price support* can come from 1) an increase in holding period returns in the immediate period after the listing, 2) an increase in the allocation to high commission investors in IPOs with higher expected post-listing returns, or 3) an increase in *Flipped allocations* for high commission investors in IPOs with more price support. In this section I investigate all of these alternatives.

In Table 5 I investigate if *Price support* inflates prices in the immediate period after new listings. In columns 1, 2, 3, and 4 of Table 5 I regress the *3-week, 2-week, 1-week HPRs* and the *First day return* on *Price support* and controls, respectively. From columns 1, 2, 3, and 4 we see that increasing *Price support* by one-standard-deviation is associated with an increase in the *3-week, 2-week, 1-week HPRs* and the *First day return* of 2.241%, 2.295%, 1.944%, and 2.268%, respectively (0.083*27, 0.085*27, 0.072*27, 0.084*27). The results are also economically significant given that the *3-week, 2-week, 1-week HPRs and the First day return* are 7.95%, 7.95%, 8.69%, and 9.99%, respectively.

In column 5 I regress the six-month post-listing Holding Period Excess Return of the company over the main market index (*6 mo. HPER*) on *Price support* and controls. The relation between *Price support* and return has now changed dramatically. Increasing *Price support* by one-standard-deviation is associated with a drop in the *6 mo. HPER* by -8.8% (-0.326 * 27). Any investors who have not flipped their allocations early after the listing will miss out on the *Price support* inflated profits and eventually start losing money. I conclude that an increased *Price*

support is associated with an increased *HPR* in the short-term period after the listing, but that this is temporarily and must be used at once.[9]

Investment banks can also inflate investor profits by increasing allocations whey they expect that the effect of price support on return will be the hightest. In Table 6 I investigate if there is an increase in the allocation to high commission investors in IPOs with a higher expected post-listing return. Expected post-listing return is an unobserved variable. I proxy for the expected return using the *realized First day return* and *Oversubscribed* IPOs. It is likely that the expected *First day return* is correlated with the realized *First day return.* It is also likely that more investors will apply for more shares when the expected return is higher. In Table 6 I regress Ln (1 + *IPO allocation*) on *Commission* and controls.

In column 1 I interact *Commission* with the dummy variable that takes the value of one if *First day return* is greater than the average + one-standard-deviation and otherwise zero (*First day return d.*) for the 26,390 investors in the 35 exact sample IPOs. In columns 1 we see that there is a positive relation between *IPO allocation* and *Commission*First day return d.* The interpretation is that increasing *Commission* by one-standard-deviation will increase underpriced *IPO allocations* by 65.2% (49.58 + 9.17 * 100 * 0.0111). I also find that investors with a higher *Portfolio* receive more *IPO allocations*. In columns 2 and 3 the *IPO allocation* and *Commission*First day return* are not statistically related to *Realized return* when *First day return* is measured continuously, and

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[9] This is consistent with Fjesme (2016) who documents that *Price support* investors start to offload their shares soon after the listing. Secondary investors who buys immediately after the listing (and hold the shares) incurs great losses. Allocated investors need to flip allocations to capitalize on allocated IPO shares.

all variables are standardized, respectively. Finally, in column 4 I interact *Commission* with *Oversubscribed*. *Oversubscribed* is the dummy variable that takes the value of one (otherwise zero) when total subscribed shares is more than the intended number of issued shares from the listing prospectus. The interpretation is that increasing *Commission* by one-standard-deviation will increase IPO allocations by 21.5% for oversubscribed IPOs (11.81+ 7.53* 100 * 0.0111). I conclude that *IPO allocations* are increased to high commission investors in IPOs with higher expected post-listing returns.

In columns 5 to 8 I replicate the results using the 188 all companies sample. In column 5 I interact *Commission* by *First day return d.* The results are now slightly weaker. From column 5 we see that increasing *Commission* by one-standard-deviation is associated with an increase in *IPO allocations* in IPOs with a high *First day return* by 28% (14.08+ 11.59* 100 * 0.0109). We also see that increasing *Portfolio* by one-standard-deviation is associated with an increase in *IPO allocation* by 4% (0.45 * 0.09 * 100). Having a past relation with the underwriter increase IPO allocations by 20% (0.2 * 1 *100), but this is only statistically significant at the 10% level in a standard t-test (*Past pair*).

In column 6 I interact *Commission* with *First day return*. There is a positive relation between *IPO allocation* and *Commission*First day return*. In column 7 I standardize all variables. In column 8 I interact *Commission* with *Oversubscribed*. From column 8 we see that increasing *Commission* by one-standard-deviation is associated with an increase in *Oversubscribed IPO allocations* by 17.4% (7.1 + 8.86 * 100 * 0.0109).

Commission can be related to *IPO allocations* in two ways. First, investors can increase *Commission* as pre-payment for future *IPO allocations*. Investors will then pay *Commission* to underwriters with subsequent hot IPOs. Secondly, underwriters can target investors who already generate high *Commission* with hot IPO allocations in hope to attract this *Commission* in the future.

In the data I can only observe that *Commission* has been generated and not that *Commission* has been paid from the allocated investor to the underwriter. To distinguish between these alternatives, I separately investigate IPOs underwritten by the underwriter with the highest quantity of oversubscribed IPOs (column 9). The relation between *Commission* First day return d.* and *IPO allocation* is now stronger. Increasing *Commission* by one-standard-deviation is associated with an increase in *IPO allocations* in IPOs with a high *First day return* by 39% (33.69 + 2.31* 100 * 0.0109). As a comparison in column 10 I investigate only IPOs underwritten by underwriters with a *Top tier manager* = 0. These IPOs have underwriters with few hot IPOs. Now there is no relation between *Commission* First day return d.* and *IPO allocation.* Although this is not conclusive that *Commission* is an upfront payment for underpriced IPO allocations the findings are more consistent with this being the case. Underwriters with many hot IPOs relate allocations to commission more than underwriters with few hot IPOs.

Finally, in Table 7 I investigate if high commission investors flip more shares in IPOs with *Price support*. I regress Ln (1+*Flipped allocations*) on *Commission*, *Price support*, *Commission*Price support,* and controls in a standard OLS model. *Flipped allocations* are the number of allocated shares that are sold in the first month after the listing as a percent of issued shares. In column 1 I interact *Commission* with *Price support d.* for the sample of 26,390 investors in the 35 exact sample IPOs. Increasing *Commission* by one-standard-deviation will increase *Flipped allocations* in IPOs with high *Price support* by 6% (2.68+ 2.69* 0.0111* 100). Investors with larger portfolio values or prior engagements with the underwriter do not consistently flip more or less shares than other investors. In columns 2 I interact *Commission* with the continuous *Price support* and in column 3 I standardize all variables. The results remain unchanged.

In columns 4 to 6 I replicate the results for the all 188 companies sample. The results remain the same. In column 4 I interact *Commission* with *Price support d.* The interpretation is that

increasing *Commission* by one-standard-deviation will increase *Flipped allocations* in IPOs with high *Price support* by 5.8% (3.06 + 2.25* 0.0109* 100). In columns 5 I interact *Commission* with the continuous *Price support* and in column 6 I standardize all variables. The results remain unchanged. Neither of the control variables are consistently related to flipping. *Price support* increase *Flipped allocations* for high commission investors.

I conclude that the increase in *Realized profits* for high commission investors comes as *Price support* inflates returns in the immediate market after the listing at the same time as underwriters allocate more shares to high commission investors who flip their allocations.

6. Conclusion

In this paper, I investigate if the price support documented in Fjesme (2016) is combined with allocations to high stock-trading commission investors. The main finding is a strong and robust relation between investor *Realized profit* and stock-trading commissions in IPOs with *Price support*. *Price support* inflates prices after the listings at the same time as underwriters allocate more shares to high commission investors who flip their allocations at higher prices.

From this I conclude that price support is used to share in the profits made by allocated investors. Underwriters make money on stock-trading commissions from active investors. These results indicate that underwriters enthusiastically work to maintain these business relations.

The main practical implication of these findings is that high commission investors are given an extra safety-net not afforded to other investors when they buy IPO shares. In Norway, there have not been any litigation cases brought forward on price support charges. These findings indicate that more investigating might be appropriate. Currently it is not necessary to make known to the market which trades are intended as price support. My findings show that regulators could change the rules such that supportive trades are flagged in the system. This change would reduce the probability

that naive secondary investors will misunderstand supportive trades as positive information. If naive secondary investors do not increase buying following price support, it is less likely that price support will have the intended effect.

The main theoretical implication of these findings is that future models of IPO price support should also account for stock-trading commissions.

Appendix

Table A1

Example of an IPO Time Line

This table shows the planned listing time line provided in one of the IPO prospectuses. The prospectus was issued in November 1993.

	1993
First day of applications	November 26
Last day of applications	December 10
Allocation notification sent to applicants	December 17
Payment date	December 23
Registration of new shares in the OSE VPS	December 30
	1994
Listing on the stock exchange	January 10

Table A2

Variable Definitions

BV/MV	The book value of equity divided by the market value (*MV*).
Commission	Abnormal investor stock-trading commission calculated as: [The average monthly stock-trading commission over the 12 months before the IPO for each investor] – [The average monthly stock-trading commission over the 12 months before the IPO for the appropriate investor group (retail or institutional)].
First day return	Calculated as: [(the first day closing price – the IPO offer price)/ the IPO offer price)] * 100.
First day return d.	A dummy variable that takes the value of one (otherwise zero) when *First day return* is greater than the mean + one-standard-deviation.
Flipped allocations	The number of allocated shares that are sold in the first month after the listing as a percent of issued shares.
Hot dummy	A dummy variable that takes the value of one (otherwise zero) for IPOs in 2005.
IPO allocation	The number of allocated shares divided by the number of issued shares in percentage points.
Investor type FE	Investor type fixed effects for the investor classifications retail, financial institution, non-financial institution, government, foreign institution, and foreign retail.
MV	Market value of equity calculated as the number of outstanding shares times the first day closing price in billion USD.
Offer size	The fraction of the outstanding shares issued in the IPO.
Oversubscribed	A dummy variable that takes the value of one (otherwise zero) for IPOs that are reported as being oversubscribed in the newspapers in the weeks following the listing.
Past pair	A dummy variable that takes the value of one (otherwise zero) for investors who have received allocations from the underwriter in the past.
Portfolio	The total investor portfolio value of shares traded at the OSE at 31.12.xx in the year before the IPO in billion USD.
Post hot dummy	A dummy variable that takes the value of one (otherwise zero) for IPOs in 2006 and 2007.

Price support	The % of the IPO issue that is purchased by allocated international institutional investors in the one month after the listing; see Fjesme (2016).
Price support d.	A dummy variable that takes the value of one (otherwise zero) when *Price support* is greater than the mean + one-standard-deviation.
Realized profit	Realized profit 3 weeks, 2 weeks, 1 week, and 1 day are the number of shares sold in the month after the listing by allocated investors times the IPO offering price times and the 3-week, 2-week, 1-week HPRs, and the First day return in million USD, respectively.
Tech	A dummy variable that takes the value of one (otherwise zero) for companies in the information technology sector.
Time gap	The time-period between the IPO issue and the listing in months.
Top tier manager	A dummy variable that takes the value of one (otherwise zero) for the eight biggest managers based on market size of the issuers; see Megginson and Weiss (1991).
VC	A dummy variable that takes the value of one (otherwise zero) if the IPO has venture capital backing.
Year FE	Year fixed effects for the years 1993 to 2007 (the sample period).
6 m. HPER	The six-month Holding Period Excess Return for the IPO company over the main market index from the first day closing price to the sixth month closing price in percentage points.
3-week HPR	The 3-week Holding Period Return from the IPO offer price to the third week price in percentage points.
2-week HPR	The 2-week Holding Period Return from the IPO offer price to the second week price in percentage points.
1-week HPR	The 1-week Holding Period Returns from the IPO offer price to the first week price in percentage points.

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Table 1

IPOs Per Year

This table list all the IPOs with allocation data on the OSE in the period January 1993 to September 2007.

Year	IPOs
1993	6
1994	16
1995	12
1996	13
1997	27
1998	15
1999	3
2000	13
2001	6
2002	2
2003	
2004	13
2005	33
2006	20
2007	9
Total	188

Table 2

Investor level Descriptive Statistics

This table defines all investor level variables. *IPO allocation* is the number of allocated shares divided by the number of issued shares in percentage points. *Flipped allocations* are the number of allocated shares that are sold in the first month after the listing as a percent of issued shares. *Commission* is the abnormal investor stock-trading commission calculated as: [the average monthly stock-trading commission over the 12 months before the IPO for each investor] – [the average monthly stock-trading commission over the 12 months before the IPO for the appropriate investor group (retail or institutional)]. *Portfolio* is the total investor portfolio value of shares traded at the OSE at 31.12.xx in the year before the IPO. *Realized profit* is the number of shares sold in the month after the listing by allocated investors times the IPO offering price and the 3-week HPR in USD. In the remainder of the tables *Commission* and *Realized profit* are displayed in million USD and *Portfolio* in billion USD. *Past pair* is a dummy variable that takes the value of one (otherwise zero) for investors who have received allocations from the underwriter in the past. Panels A and B includes all companies and only companies with exact data on IPO allocations, respectively.

Panel A: All companies				
Variable	Obs.	Mean	Std. Dev.	Median
IPO allocation	184,207	0.094%	0.858%	0.004%
Flipped allocations	184,207	0.028%	0.444%	0.000%
Commission	184,207	$731	$10,864	$0
Portfolio	184,207	$4,164,000	$89,821,300	$0
Realized profit	184,207	$1,107	$73,558	$0
Past pair	184,207	0.095	0.293	0.0

Panel B: Only companies with exact IPO allocations				
Variable	Obs.	Mean	Std. Dev.	Median
IPO allocation	26,390	0.117%	0.808%	0.013%
Flipped allocations	26,390	0.050%	0.541%	0.000%
Commission	26,390	$764	$11,115	$0
Portfolio	26,390	$3,222,700	$57,361,100	$0
Realized profit	26,390	$2,430	$93,035	$0
Past pair	26,390	0.064	0.244	0.0

Table 3

IPO level Descriptive Statistics

This table defines all IPO level variables. *Oversubscribed* is a dummy variable that takes the value of one (otherwise zero) for IPOs that are reported as being oversubscribed in the newspapers in the weeks following the listing. *Price support* is the % of the IPO issue that is purchased by allocated international institutional investors in the one month after the listing; see Fjesme (2016). *Price support* d. is a dummy variable that takes the value of one (otherwise zero) when *Price support* is greater than the mean + one-standard-deviation. The *3-week, 2-week, and 1-week HPR*s are the Holding Period Returns from the IPO offer price to the third week, second week, and first week closing prices in percentage points, respectively. *First day return* is calculated as: [(first day closing price – the IPO offer price)/ the IPO offer price)]*100. *First day return d* is a dummy variable that takes the value of one (otherwise zero) when *First day return* is greater than the mean + one-standard-deviation. *6 m. HPER* is the six-month Holding Period Excess Return for the IPO company over the main market index from the first day closing price to the sixth month closing price in percentage points. *MV* is the number of outstanding shares times the first day closing price in billion USD. *BV/MV* is the book value of equity divided by the *MV*. *VC* is a dummy variable that takes the value of one (otherwise zero) if the IPO has venture capital backing. *Top tier manager* takes the value of one (otherwise zero) for the eight biggest managers based on market size of the issuers; see Megginson and Weiss (1991). *Tech* is a dummy variable that takes the value of one (otherwise zero) for companies in the information technology sector. *Offer size* is the fraction of the outstanding shares issued in the IPO. *Hot dummy* takes the value of one (otherwise zero) for IPOs in 2005. *Post hot dummy* takes the value of one for IPOs in 2006 and 2007. *Time gap* is the time period between the IPO issue and the listing in months. Panels A and B includes all companies and only companies with exact data on IPO allocations, respectively.

Panel A: All companies

Variable	Obs.	Mean	Std. Dev.	Median
Oversubscribed	188	0.49	0.5	0
Price support	188	5.65	27.11	0.55
Price support d.	188	0.01	0.1	0
3-week HPR	188	7.95	26.43	1.94
2-week HPR	188	7.95	25.48	2.54
1-week HPR	188	8.69	26.13	1.96
First day return	188	9.99	25.26	3.66
First day return d.	188	0.09	0.29	0.00
6 m. HPER	188	2.11	52.72	0.37
MV	188	0.3	0.84	0.1
BV/MV	188	0.59	0.75	0.42
VC	188	0.15	0.36	0
Top tier manager	188	0.54	0.5	1
Tech	188	0.18	0.38	0
Offer size	188	0.35	0.27	0.29
Hot dummy	188	0.18	0.38	0
Post hot dummy	188	0.15	0.36	0
Time gap	188	0.68	1.08	0

Panel B: Only companies with exact IPO allocations

Variable	Obs.	Mean	Std. Dev.	Median
Oversubscribed	35	0.23	0.43	0.00
Price support	35	13.99	61.67	0.00
Price support d.	35	0.06	0.24	0.00
3-week HPR	35	16.90	41.16	6.65
2-week HPR	35	16.45	40.80	8.43
1-week HPR	35	17.87	43.46	7.69
First day return	35	0.21	0.46	0.09
First day return d	35	0.14	0.36	0.00
MV	35	0.24	0.32	0.15
BV/MV	35	0.82	1.29	0.46
VC	35	0.06	0.24	0.00
Top tier manager	35	0.34	0.48	0.00
Tech	35	0.20	0.41	0.00
Offer size	35	0.42	0.35	0.31
Hot dummy	35	0.17	0.38	0.00
Post hot dummy	35	0.09	0.28	0.00
Time gap	35	1.63	1.00	1.00

Stock-trading Commission, Price Support, and Realized Profits

This table reports intercept coefficients and t-statistics in parentheses for standard OLS regressions of *Realized profit* on *Commission* and controls for the 35 companies with exact data on IPO allocations. *Realized profit* is the number of shares sold in the month after the listing times the IPO offering price and the *3-week HPR*. *Commission* is the investor abnormal stock-trading commission in million USD. *Price support* is the % of the IPO issue that is purchased by allocated international institutional investors in the one month after the listing. *Price support d.* is dummy variable that takes the value of one (otherwise zero) when *Price support* is greater than the mean + one-standard-deviation. The investors who provide *Price support* are dropped from the analysis. *Portfolio* is the total investor portfolio holdings of shares traded at the OSE at 31.12.xx in the year before the IPO in billion USD. t-statistics are clustered by year. All variables are defined in Appendix Table A2. Statistical significance at the 10%, 5%, and 1% level are indicated by *, **, and ***, respectively. In column 3, 6, and 7 all variables are standardized, all retail investors are dropped, and all investors with *Realized profit*=0 are dropped, respectively. In columns 8, 9, and 10 *Realized profit* is calculated using the *2-week HPR, the 1-week HPR,* and the *First day return*, respectively. Column 11 divides *Realized profit* by the investor portfolio value in thousand USD.

	Realized profit										Profit/ Portfolio
	1	2	3	4	5	6	7	8	9	10	11
Commission*Price Support d.	2.34***										
	(4.4)										
Commission*Price Support		1.20***	0.05***		2.07***	1.25***	1.29***	1.05***	0.93***	0.95***	0.97**
		(4.3)	(4.3)		(9.6)	(3.7)	(3.3)	(4.3)	(4.2)	(6.0)	(2.5)
Commission	-0.50	-0.51	-0.06		-0.04	-0.50	-0.69	-0.37	-0.16	-0.19	-0.74
	-(1.0)	-(1.0)	-(1.0)		-(0.1)	-(1.0)	-(1.1)	-(0.7)	-(0.4)	-(0.7)	-(1.2)
(Commission/Portfolio) *Price Support				0.04**							
				(2.3)							
(Commission/Portfolio)				0.00							
				(0.6)							
Price Support		-0.01*	-0.02*	-0.01	-0.03***	-0.03	-0.02	-0.02**	-0.01**	-0.01	-0.09
		-(1.7)	-(1.7)	-(0.5)	-(5.9)	-(1.2)	-(1.5)	-(2.3)	-(2.2)	-(1.6)	-(1.1)
Price Support d.	-0.09***										
	-(6.6)										
Portfolio	0.04	0.04	0.02		-0.01	0.03	0.05	-0.04	-0.01	0.01	
	(0.7)	(0.5)	(0.5)		-(0.2)	(0.5)	(0.6)	-(0.5)	-(0.2)	(0.5)	

Past pair	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	-0.14*
	(0.2)	(0.6)	(0.6)	(0.6)	-(0.7)	(1.0)	(0.6)	(1.1)	(1.0)	(0.6)	-(1.8)
MV	0.05***	0.01	0.02	0.01	0.03***	0.04**	0.02	0.00	0.00	0.00	-0.26
	(4.9)	(1.3)	(1.3)	(0.9)	(6.0)	(2.4)	(1.2)	(0.2)	-(0.1)	(0.3)	-(1.3)
BV/MV	0.00***	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.14
	(3.0)	(1.2)	(1.2)	(1.1)	(1.5)	(0.8)	(0.1)	(1.3)	(0.8)	-(0.2)	-(1.0)
VC	-0.01**	-0.02***	-0.05***	-0.02***	-0.01***	-0.13***	-0.14***	-0.02***	-0.01***	-0.01**	-0.97
	-(2.1)	-(4.6)	-(4.6)	-(5.5)	-(2.8)	-(18.0)	-(22.8)	-(3.5)	-(2.9)	-(2.4)	-(1.3)
Top tier manager	0.00	0.00	0.01	0.00	0.00	0.00	0.01*	0.00	0.00	0.00	0.79
	(0.2)	(0.9)	(0.9)	(1.0)	-(0.1)	(0.4)	(1.7)	(1.2)	(1.2)	(1.4)	(1.3)
Tech	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.93
	-(0.7)	(0.0)	(0.0)	(0.1)	-(0.2)	-(0.3)	(0.4)	(0.6)	(0.8)	(0.9)	(1.1)
Offer size	-0.01*	-0.01**	-0.04**	-0.01**	-0.01	-0.03	0.00	-0.01***	-0.01***	0.00	0.23
	-(1.9)	-(2.4)	-(2.4)	-(2.1)	-(1.5)	-(1.0)	-(0.1)	-(2.6)	-(3.0)	-(1.1)	(0.7)
Hot dummy	0.02**	0.00	0.01	0.00	0.01	-0.07***	-0.07***	0.01	0.01	0.00	-0.64
	(2.5)	(0.3)	(0.3)	-(0.3)	(1.3)	-(3.9)	-(4.4)	(1.1)	(1.4)	(0.5)	-(1.0)
Post hot dummy	0.00	-0.01**	-0.02**	-0.01***	0.00	-0.09***	-0.08***	0.00	0.00	0.00	-1.07
	(1.2)	-(2.1)	-(2.1)	-(2.9)	(0.9)	-(7.0)	-(6.0)	-(1.1)	-(0.4)	(0.7)	-(1.3)
Time gap	0.00	0.00	0.04	0.00	0.00	0.00	0.01	0.00*	0.00	0.00*	0.24
	(0.7)	(1.3)	(1.3)	(1.6)	(1.3)	(0.3)	(0.6)	(1.8)	(1.5)	(1.9)	(1.0)
Constant	0.03	0.04*	0.45*	0.04	0.03	0.13***	0.15***	0.04*	0.03*	0.03	-0.13
	(1.1)	(1.7)	(1.7)	(1.5)	(1.2)	(4.8)	(2.8)	(1.9)	(1.7)	(1.5)	-(0.6)
N	26,390	26,390	26,390	26,390	26,390	4,889	9,315	26,390	26,390	26,390	13,006
Investor type FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	1.4%	1.3%	1.3%	0.9%	1.2%	2.6%	3.2%	1.8%	1.4%	1.0%	0.2%

Table 4 B

Stock-trading Commission, Price Support, and Realized Profits

This table reports intercept coefficients and t-statistics in parentheses for standard OLS regressions of *Realized profit* on *Commission* and controls for the 188 companies with data on IPO allocations. *Realized profit* is the number of shares sold in the month after the listing times the IPO offering price and the *3-week HPR*. *Commission* is the investor abnormal stock-trading commission in million USD. *Price support* is the % of the IPO issue that is purchased by allocated international institutional investors in the one month after the listing. *Price support d.* is dummy variable that takes the value of one (otherwise zero) when *Price support* is greater than the mean + one-standard-deviation. The investors who provide *Price support* are dropped from the analysis. *Portfolio* is the total investor portfolio holdings of shares traded at the OSE at 31.12.xx in the year before the IPO in billion USD. t-statistics are clustered by year. All variables are defined in Appendix Table A2. Statistical significance at the 10%, 5%, and 1% level are indicated by *, **, and ***, respectively. In column 3 all variables are standardized.

	Realized profit			
	1	2	3	4
Commission*Price Support d.	1.583***			
	(4.3)			
Commission*Price Support		1.268***	0.028***	
		(5.9)	(5.9)	
Commission	0.140	0.071	0.011	
	(0.4)	(0.2)	(0.2)	
(Commission/Portfolio)*Price Support				0.064***
				(3.5)
(Commission/Portfolio)				0.000
				-(0.2)
Price Support		-0.003	-0.003	0.002
		-(0.5)	-(0.5)	(0.2)
Price Support d.	0.015***			
	(6.8)			
Portfolio	-0.006	-0.007	-0.009	
	-(0.3)	-(0.4)	-(0.4)	
Past pair	0.000	0.000	0.002	0.001
	(0.4)	(0.4)	(0.4)	(0.5)
MV	0.000	0.000*	0.012*	0.000*
	(1.5)	(1.9)	(1.9)	(1.9)
BV/MV	0.000	0.000	0.002	0.000
	(0.3)	(0.3)	(0.3)	(0.3)
VC	-0.002	-0.002	-0.011	-0.002
	-(1.2)	-(1.3)	-(1.3)	-(1.2)
Top tier manager	0.000	0.000	-0.001	0.000
	-(0.1)	-(0.1)	-(0.1)	-(0.1)
Tech	0.001	0.000	0.002	0.001
	(0.7)	(0.4)	(0.4)	(0.6)
Offer size	0.000	0.000	0.000	0.000

	(0.1)	(0.0)	(0.0)	(0.1)
Hot dummy	0.000	0.000	0.001	0.000
	-(0.3)	(0.1)	(0.1)	(0.0)
Post hot dummy	-0.007***	-0.007***	-0.032***	-0.007***
	-(7.2)	-(7.1)	-(7.1)	-(8.3)
Time gap	0.002	0.002*	0.020*	0.002*
	(1.6)	(1.7)	(1.7)	(1.7)
Constant	0.018**	0.019**	0.240*	0.019**
	(2.0)	(2.1)	(1.8)	(2.1)
N	184,207	184,207	184,207	184,207
Investor type FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj R^2	0.3%	0.4%	0.4%	0.3%

Table 5

Price Support and Post-Listing Returns

This table reports intercept coefficients and t-statistics in parentheses for standard OLS regressions of the *3- week HPR, 2-week HPR, 1-week HPR*, *First day return,* and *6 m. HPER* after the listing on *Price support* and controls. *Price support* is the % of the IPO issue that is purchased by allocated international institutional investors in the one month after the listing. t-statistics are clustered by year. All variables are defined in Appendix Table A2. Statistical significance at the 10%, 5%, and 1% level are indicated by *, **, and ***, respectively.

	1	2	3	4	5
	3-week HPR	2-week HPR	1-week HPR	First day return	6 m. HPER
Price Support	0.083***	0.085***	0.072***	0.084***	-0.326***
	(6.8)	(7.2)	(4.7)	(6.6)	-(7.1)
MV	-1.482**	-2.245**	-1.200	1.900	-0.018
	-(2.1)	-(2.2)	-(1.1)	(1.6)	-(0.7)
BV/MV	-1.429	-1.844	-2.279	-3.788	0.060**
	-(0.6)	-(0.7)	-(0.8)	-(1.3)	(2.0)
VC	-6.691	-3.579	-2.213	-3.606	-0.248**
	-(1.4)	-(0.7)	-(0.5)	-(0.9)	-(2.0)
Top tier manager	-1.993	-0.027	2.281	1.266	-0.052
	-(0.5)	(0.0)	(0.5)	(0.3)	-(1.0)
Tech	12.308**	10.970	12.717	11.393	0.180
	(2.1)	(1.3)	(1.4)	(1.4)	(1.2)
Offer size	8.081**	9.176**	8.755**	10.887*	-0.118
	(2.1)	(2.3)	(2.0)	(1.8)	-(1.3)
Hot dummy	-1.902	-8.524**	-10.233**	-18.138***	0.336***
	-(0.5)	-(2.3)	-(2.5)	-(4.6)	(6.5)
Post hot dummy	-14.899***	-20.114***	-20.085***	-21.241***	0.146**
	-(4.7)	-(6.7)	-(7.0)	-(8.8)	(2.4)
Time gap	3.569	3.683	3.994	4.657	-0.057
	(1.1)	(1.1)	(1.1)	(1.1)	-(1.2)
Constant	8.059***	11.007***	10.670***	14.834***	0.025
	(2.9)	(3.6)	(3.4)	(4.1)	(1.1)
N	188	188	188	188	188
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Adj R^2	15.8%	13.2%	13.6%	14.5%	7.7%

Table 6

IPO Allocations and Expected Post-Listing Returns

This table reports intercept coefficients and t-statistics in parentheses for standard OLS regressions of Ln (1+*IPO allocation*) on *Commission*, *First day return* and controls. t-statistics are clustered by year. *IPO allocation* is the number of allocated shares divided by the number of issued shares in percentage points. *Commission* is the investor abnormal stock-trading commission in million USD. *Oversubscribed* is a dummy variable that takes the value of one (otherwise zero) for IPOs that are reported as being oversubscribed in the newspapers in the weeks following the listing. All variables are defined in Appendix Table A2. Columns 1-4 and 5-8 include only the 35 companies with exact data on IPO allocations and post-listing trading and all 188 companies, respectively. Column 9 and 10 includes only IPOs by the underwriter with the most IPOs and all the IPOs by underwriters with *Top tier manager* = 0, respectively. Statistical significance at the 10%, 5%, and 1% level are indicated by *, **, and ***, respectively. In columns 3 and 7 all variables are standardized.

	Ln (1+IPO allocation)									
	1	2	3	4	5	6	7	8	9	10
Commission*First day return d.	49.58***				14.08***				33.69***	8.84
	(3.0)				(2.1)				(5.5)	(1.6)
Commission*First day return		7.84	0.00			36.65***	0.02***			
		(1.0)	(1.0)			(5.3)	(5.3)			
Commission*Oversubscribed				11.81**				7.10***		
				(2.2)				(3.4)		
Commission	9.17***	9.47***	0.03***	7.53***	11.59***	10.16***	0.03***	8.86***	2.31	12.65
	(6.5)	(7.1)	(7.1)	(5.4)	(5.1)	(4.9)	(4.9)	(4.4)	(0.9)	(3.9)
First day return		0.10	0.01			-0.67***	-0.05***			
		(0.2)	(0.2)			-(2.9)	-(2.9)			
First day return d.	0.47				-0.19				4.19***	-0.61*
	(1.0)				-(0.9)				(3.5)	-(1.7)
Oversubscribed				-0.45				-0.38***		
				-(1.0)				-(3.2)		
Portfolio	1.45***	1.47***	0.03***	1.60***	0.45***	0.40***	0.01***	0.36**	0.38***	0.99***
	(3.3)	(3.0)	(3.0)	(3.2)	(3.5)	(2.8)	(2.8)	(2.4)	(2.6)	(3.7)
Past pair	0.19	0.17	0.01	0.13	0.20*	0.19*	0.02*	0.17	0.48**	0.03
	(0.9)	(0.8)	(0.8)	(0.7)	(1.7)	(1.7)	(1.7)	(1.6)	(2.0)	(0.3)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
MV	-1.22	-1.53**	-0.11	-1.91*	-0.59***	-0.57***	-0.47***	-0.57***	-0.75***	-2.68***
	-(1.4)	-(1.7)	-(1.7)	-(1.8)	-(6.3)	-(6.4)	-(6.4)	-(6.0)	-(9.7)	-(4.0)
BV/MV	0.31**	0.30***	0.14***	0.33**	0.51**	0.49**	0.12**	0.50**	0.61**	0.25*
	(2.5)	(2.8)	(2.8)	(2.5)	(2.4)	(2.4)	(2.4)	(2.5)	(2.2)	(1.8)
VC	1.26**	1.16*	0.09*	1.47	0.66**	0.61**	0.06**	0.57*	2.13***	-0.21
	(2.1)	(1.9)	(1.9)	(2.1)	(2.2)	(2.0)	(2.0)	(1.7)	(19.4)	-(0.6)
Top tier manager	-0.18	-0.10	-0.01	-0.06	-0.28	-0.30	-0.05	-0.27		0.00
	-(0.3)	-(0.2)	-(0.2)	-(0.1)	-(1.1)	-(1.2)	-(1.2)	-(1.2)		
Tech	0.18	0.21	0.02	-0.01	1.02***	1.11***	0.12***	0.98***	2.09***	0.39*
	(0.4)	(0.4)	(0.4)	(0.0)	(8.1)	(9.4)	(9.4)	(6.2)	(4.3)	(1.9)
Offer size	-0.87	-1.21***	-0.13***	-1.58*	-3.13***	-3.04***	-0.34***	-3.03***	-7.65***	-2.41***
	-(1.2)	-(3.1)	-(3.1)	-(1.9)	-(4.3)	-(4.3)	-(4.3)	-(4.3)	-(10.0)	-(3.3)
Hot dummy	2.96***	3.03***	0.26***	3.62***	0.98***	1.01***	0.10***	1.16***	1.71**	2.85***
	(4.4)	(5.9)	(5.9)	(3.5)	(6.4)	(6.7)	(6.7)	(8.7)	(2.3)	(4.3)
Post hot dummy	2.03***	2.19***	0.17***	2.76***	1.86***	1.90***	0.19***	2.08***	1.08	1.93***
	(6.3)	(11.3)	(11.3)	(4.7)	(10.1)	(9.9)	(9.9)	(12.9)	(1.6)	(4.6)
Time gap	0.31	0.39	0.11	0.31	0.26***	0.32***	0.08***	0.24**	1.66***	0.27***
	(0.7)	(0.9)	(0.9)	(0.8)	(3.0)	(4.1)	(4.1)	(2.5)	(5.8)	(3.0)
Constant	-3.21***	-3.09***	1.12***	-2.88***	-1.42***	-1.49***	0.88***	-1.35***	-1.03	0.96***
	-(5.5)	-(6.4)	(7.0)	-(3.9)	-(4.5)	-(4.7)	(21.9)	-(4.3)	-(1.1)	-(3.2)
N	26,390	26,390	26,390	26,390	184,207	184,207	184,207	184,207	67,101	67,943
Investor type FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	42.1%	41.6%	41.6%	42.2%	74.2%	74.3%	74.3%	74.4%	74.7%	55.7%

Table 7

Stock-trading Commission, Price support, and Flipped allocations

This table reports intercept coefficients and t-statistics in parentheses for standard OLS regressions of Ln (1+*Flipped allocations*) on *Commission*, *Price support* and controls. *Flipped allocations* are the number of allocated shares that are sold in the first month after the listing as a percent of issued shares. *Price support* is the % of the IPO issue that is purchased by allocated international institutional investors in the one month after the listing. *Price support d.* is a dummy variable that takes the value of one (otherwise zero) when *Price support* is greater than the mean + one-standard-deviation. *Commission* is the investor abnormal stock-trading commission in million USD. Columns 1-3 and 4-6 includes only the 35 companies with exact data on IPO allocations and all companies, respectively. t-statistics are clustered by year. All variables are defined in Appendix Table A2. Statistical significance at the 10%, 5%, and 1% level are indicated by *, **, and ***, respectively. In columns 3 and 6 all variables are standardized.

	Ln (1+ Flipped allocations)					
	1	2	3	4	5	6
Commission*Price Support d.	2.680***			3.063***		
	(4.0)			(9.0)		
Commission*Price Support		2.095***	0.055**		2.468***	0.037***
		(4.8)	(4.8)		(6.7)	(6.7)
Commission	2.686***	2.624***	0.205***	2.245***	2.111***	0.207***
	(3.9)	(3.7)	(3.7)	(7.6)	(7.3)	(7.3)
Price Support		-0.013	-0.012		-0.031	-0.020
		-(0.8)	-(0.8)		-(1.5)	-(1.5)
Price Support d.	-0.133**			0.011		
	-(2.1)			(1.5)		
Portfolio	0.059	0.050	0.020	-0.058*	-0.060*	-0.049*
	(0.7)	(0.5)	(0.5)	-(1.7)	-(1.7)	-(1.7)
Past pair	0.000	0.003	0.005	0.007***	0.007***	0.018***
	(0.0)	(0.4)	(0.4)	(2.7)	(2.6)	(2.6)
MV	0.010	-0.055*	-0.086*	-0.002***	-0.002***	-0.041***
	(0.2)	-(1.8)	-(1.8)	-(3.9)	-(3.3)	-(3.3)
BV/MV	0.006	0.003	0.034	0.000	0.000	-0.003
	(1.0)	(0.6)	(0.6)	-(0.3)	-(0.3)	-(0.3)
VC	-0.024	-0.039	-0.070	0.003	0.002	0.007
	-(0.6)	-(1.1)	-(1.1)	(0.6)	(0.5)	(0.5)
Top tier manager	0.017	0.021	0.060	-0.005	-0.005	-0.021
	(0.7)	(0.9)	(0.9)	-(1.6)	-(1.6)	-(1.6)
Tech	0.016	0.019	0.045	0.010	0.009	0.028
	(0.4)	(0.5)	(0.5)	(1.6)	(1.4)	(1.4)
Offer size	-0.054***	-0.049**	-0.120**	-0.019***	-0.020***	-0.064***
	-(2.8)	-(2.1)	-(2.1)	-(3.6)	-(3.9)	-(3.9)
Hot dummy	0.047	0.021	0.040	-0.019***	-0.016***	-0.044***
	(1.0)	(0.6)	(0.6)	-(6.2)	-(4.5)	-(4.5)
Post hot dummy	0.060***	0.045***	0.079***	0.048***	0.048***	0.141***

	(3.7)	(3.6)	(3.6)	(14.3)	(15.0)	(15.0)
Time gap	0.032	0.035	0.223	0.005*	0.005*	0.038*
	(1.4)	(1.6)	(1.6)	(1.7)	(1.8)	(1.8)
Constant	0.155***	0.177***	1.217***	0.166***	0.168***	1.297***
	(3.1)	(3.7)	(3.4)	(7.1)	(7.2)	(6.0)
N	26,390	26,390	26,390	184,207	184,207	184,207
Investor type FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj R^2	17.2%	17.2%	17.2%	12.0%	12.0%	12.0%