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Analyst recommendations, post-IPO stock returns and underwriter analysts' conflict of interest

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Abstract

This study provides evidence on the significant investment value of analyst recommendations on newly public companies. The sample of this study comprises of 1,825 initial public offerings conducted 2010 to 2018 in NASDAQ, NYSE and NYSE American exchanges. I document that investment strategy following consensus recommendations by purchasing (selling short) stocks with most (least) favorable consensus recommendations yields significant monthly abnormal gross return of 1.6 percent. Moreover, this predictive power of consensus recommendations appears to be more pronounced for post-IPO stock performance in the first subsequent year of the IPO.

In turn, the investment value of underwriter analysts' recommendations is inferior to consensus recommendations as the recommendations of affiliated analysts do not produce significant excess returns.

The existing research has not covered the relation between analyst recommendations and post-IPO stock performance. However, the results are consistent with the prior research suggesting that analysts, in general, possess predictive power on stock performance.

Keywords Analyst recommendations, Initial public offerings, Stock returns, Underwriter analysts' conflict of interest

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1. Introduction

Equity research has historically been a profitable business for investment banks, but recently the industry has been facing substantial transformation while the buy side has increasingly moved to produce its own research instead of buying services from brokerage analysts. Consequently, the demand for analyst coverage, provided by investment banks and other third-party research providers, have decreased considerably throughout the 2010s, and the number of analysts at major investment banks have dropped by 20% since 2010. Also, the recent regulation, especially MiFID II, effective on 3 January 2018, have increased the reluctance of the buy side to spend on the third-party research. (Monk, 2018) Nevertheless, as of 2017, the aggregate size of the global equity market was $16 billion with more than 40,000 every-day reports (Financial Times, 2017). For the buy side the question is whether third-party analysts can create value to them or not.

While the buy side is weighing in their mind whether produce research in-house or buy it as a service, many private investors still rely on analyst recommendation, especially on publicly available consensus recommendations. That is, often small private investors have not educated themselves in finance matters and even if they are educated, analysts presumably possess more in-depth information on companies they follow. This presumption is relevant as analysts e.g. tend to have regular analyst calls with company representatives. Therefore, it is natural that analyst recommendations have weight when private investors are allocating their investments. Thus, it can be argued that analyst performance has economic significance.

One special occasion, when public information is rather restricted, and equity researchers may have particular insight on firm performance, is companies which have recently undertaken an initial public offering (IPO). In case of newly public firm, analyst coverage is vital for both company and investors. First, Michaely and Womack (1999) state that most new firms are not known in the market, and thus they believe their market value will be enhancing as soon as the coverage is initiated. Second, investors value a precise information provided by analysts as all the details, and e.g. the historical performance, of newly public firm is not publicly available. IPO aftermarket is highly volatile and there is evidence of positive early term and negative longer-run stock performance.[1] Therefore, it is

[1] Ritter (1991) documents an average cumulative firm-adjusted return of -15.08% in the three years following the issuance for 1,526 IPOs during 1975-1984.

conceivable that many investors count on analyst recommendations when a company has recently undertaken IPO. On the other hand, to assess the reasonability of relying on analysts, must be asked: is there evidence on superior analyst performance in the difficult IPO aftermarket?

In the IPO aftermarket one potentially influencing factor is whether an analyst is affiliated or unaffiliated analyst. In this context, affiliated analyst is a synonym for underwriter analyst, which means that analyst represents the investment bank which has underwritten an IPO. There is a considerable conflict of interest between bank's corporate finance and brokerage sections, which may affect the credibility of underwriter analysts' recommendations. The corporate finance section is responsible for serving bank's corporate clients in completing transactions, such as equity offerings, mergers and acquisitions. The brokerage section and its equity research department, on the other hand, aims at providing clients with accurate and objective information on companies. However, corporate finance clients benefit from optimistic research and there is a strict competition for underwriting mandates. E.g. Ljunqvist et al. (2006) find that economic incentives affect analyst recommendations, albeit analyst behavior does not significantly increase the probability of winning underwriting mandates.

Michaely and Womack (1999) state that for investment banks the IPO-market is a lucrative playground. They state that in the underwriter-issuer relation is an implicit presumption that underwriter will provide the newly issued security with an analyst coverage and do that by producing positive reports. As discussed above, this analyst coverage is vital for newly public companies. Overall, corporate finance is a huge business for investment banks and there is implicit pressure on analysts to release favorable recommendations on investment banking clients or potential clients. Even the selection of covered firms can be affected. Morgan Stanley internal memo (Wall Street Journal, July 14, 1992), extracted from the research paper of Michaely and Womack (1999) a), illustrates that: "Our objective… is to adopt a policy, fully understood by the entire firm, including the Research Department, that we do not make negative or controversial comments about our clients as a matter of sound business practice." More recently, Dechow et al. (2010) find a positive relation between the level of underwriter analysts' growth forecasts and the fees paid to their employees. Moreover, Hong and Kubik (2003) note that promotions of affiliated analysts are more dependent on

optimism than accuracy of their recommendations. All this raise a question, are underwriter analyst recommendations positively biased?

All these questions steer us further into the big question: can analysts forecast future stock performance? In this research paper I focus on the aforementioned special occasion and therefore I examine analyst recommendations and post-IPO stock performance. Also, underwriter analysts' conflict of interest is under my investigation due to its significance in the IPO aftermarket. This study aims at answering the following questions: can analysts forecast post-IPO stock performance and does underwriter analysts' conflict of interest affect the investment value of their recommendations?

Analysts' ability to predict post-IPO stock returns, as such, is not covered in the existing research. However, Barber et al. (2001) find that, in general, purchasing (selling short) stocks with the most (least) favorable recommendations, in conjunction with daily portfolio rebalancing and timely response, yield annual abnormal gross returns greater than 4%. This result indicates that analysts possess an ability to predict stock performance. The historical performance of analyst recommendations is used as an approach also in my study. Moreover, Ritter (1991) documents an average cumulative firm-adjusted return of -15.08% in the three years following the issuance for 1,526 IPOs during 1975-1984. Furthermore, he finds the underperformance to be more significant for young growth companies and for companies going public in a hot IPO market.

Underwriter analysts' conflict of interest is widely-acknowledged and well-examined phenomenon, but underwriter analyst performance has received only little attention in the existing research. However, Iskoz (2004) documents the performance of underwriter analysts' strong buy-recommendations inferior to the unaffiliated ones. Also, Michaely and Womack (1999) find the long run post-recommendation performance of underwriter analyst recommendations to be significantly worse than the performance of unaffiliated analysts' buy-recommendations. They document a difference in size-adjusted buy-and-hold returns between underwriters and unaffiliated groups of more than 50% when holding period is two years. However, the long-term and short-term performance of affiliated analysts' recommendations, in general, is not covered in the existing research.

I build my hypothesis based on the prior research. Therefore, the hypothesis is that despite the volatility and long-term underperformance of initial public offerings, analysts possess predictive power on post-IPO stock performance. Moreover, I hypothesize that the investment value of underwriter analysts' recommendations is inferior to the consensus recommendations. The motivation for that is that the existing research suggests that underwriters tend to issue more favorable recommendations, especially when they should issue negative recommendations.[2]

The approach of this study is similar to the one used by Barber et al. (2001). First, I collect data on initial public offerings conducted 2010 to 2018 in NASDAQ, NYSE and NYSE American exchanges from the SDC Platinum. Then, I merge this data with the recommendations data which is retrieved from Thomson Reuters' Institutional Brokers Estimate System (IBES) database. Next, daily returns for these stocks are extracted from the Compustat North America Daily Security database. The predictive power and investment value is examined by constructing portfolios of stocks grouped by valid analyst recommendations. Then, I study long-short portfolios purchasing (selling short) stocks with most (least) favorable recommendations in the three subsequent years of the IPO. Finally, the performance of these portfolios is measured by applying both the Capital Asset Pricing Model (CAPM) and the five-factor model provided by Fama and French (1993).

I find that the long-short portfolio for consensus recommendations produces positive and significant monthly excess return of 1.6 percent, gross of transactions costs. In turn, long-short portfolio formed on the basis of underwriter analysts' recommendations does not earn statistically significant excess return. Moreover, I find abnormal monthly return of 2.5 percent for consensus long-short portfolio when a holding period is the first subsequent year instead of the original three years following the IPO.

I draw three main findings from these results. First, analysts can forecast post-IPO stock performance. Second, the investment value of underwriter analysts' recommendations is inferior to consensus recommendations. Third, this predictive power of analyst recommendations on post-IPO stock performance appears to be most pronounced in the first subsequent year of the IPO. The structure of

[2] E.g. Michaely and Womack (1999) find that affiliated analysts rate stocks overly favorably based on their own EPS estimates when compared to unaffiliated analysts' recommendations and EPS estimates.

this paper is as follows: (I) Literature review, (II) Data and methodology, (III) Results and (IV) Conclusions.

2. Literature review

A. Analyst recommendations

Theoretical background for analyst recommendations as such, is broad. One thing potentially adding value of analyst recommendations is a market reaction to recommendations and the post-recommendation stock price drift. Stickel (1995) and Womack (1996) show that favorable (unfavorable) changes in recommendations are accompanied with instant positive (negative) returns. Moreover, Womack find post-recommendation stock price drift which is longer (shorter) for downgrades (upgrades), lasting up to six months (one month). Additionally, Jegadeesh and Kim (2006) state that both stock price reaction and stock price drift are largest in the US, which is also the geographic scope of my research. Nevertheless, they find indication that the most likely explanation for the largest effect on stock prices is the US analysts' skills at finding mispriced stocks. Furthermore, Green (2006) finds that early access to the pre-market release of analyst recommendations provides brokerage firm clients with roughly 30% of positive abnormal returns since early reaction permits clients to benefit from the stock market reaction.

When evaluating the investment value of analyst recommendations, analyst behavior must be taken into consideration. First, Conrad et al. (2006) find that analysts' response to large changes in stock price depends on the direction of change. Their finding is that analysts are equally likely to upgrade or downgrade after large stock price increases. However, after large stock price declines analysts tend to downgrade with higher probability. Second, as Jegadeesh and Kim (2009) state, analysts tend to herd around consensus, and therefore the more considerable the deviation from the consensus is, the larger is the stock price reaction. This herding behavior is stronger when the analyst is from large brokerage, they make less frequent revisions or the dispersion across recommendations on the followed stock is smaller.

B. Post-IPO stock returns

In the context of this study, there are two remarkable viewpoints on initial public offerings. First, post-IPO stock performance, as such, is a widely-covered theme in the existing research. Three commonly acknowledged anomalies have been discovered: (i) new issue underpricing, (ii) cycles in the extent of underpricing and (iii) long-run underperformance. The portfolios constructed in this study does not benefit from underpricing, but long-run performance of initial public offerings is of my interest.

Carter et al. (1998) find that the long-run underperformance is less severe for companies taken public by more reputable underwriters. Moreover, Rajan and Servaes (2012) find the stocks for which analysts estimates a high growth potential, to have lower returns in the long run. Therefore, they suggest that the long-run underperformance of IPOs is partially driven by overoptimism. However, also the finding of Jain and Kini (1995) that there is a significant decline in operative performance after IPO, can be seen as a plausible explanation for the long-run underperformance of IPOs.

Second, according to the existing research, stock performance appears to be related to analyst coverage. Das et al. (2006) draw residual analyst coverage from the model of initial analyst coverage and find an evidence that companies with high residual coverage have significantly better returns and operating performance in the three years following the IPO than the companies with low residual coverage. They justify the results by the reluctance of analysts to issue negative recommendations and suggest that analysts preferably discontinue coverage when a sell-recommendation is warranted.

Moreover, so called quiet period is an important concept in examining the relationship between post-IPO stock returns and analyst recommendations. That is, syndicated members cannot comment on valuation during the quiet period and therefore until the end of the quiet period typically all the information available for investors are prospectus and audited financial information. Bradley et al. (2006) find that at the end of the quiet period, analyst coverage is almost exclusively initiated by underwriter analyst. Furthermore, contrary to the previous evidence, they find that underpricing does not have an effect on analyst coverage in the first year and there is no relation between the number of underwriters and the amount of analysts covering a firm during the first 11 months.

C. Underwriter analysts' conflict of interest

Multiple researches have been done on conflict of interest of underwriter analysts. Michaely and Womack (1999) find that in the month after the end of the quiet period, affiliated analysts issue 50% more buy recommendations than unaffiliated analysts. Moreover, Michaely and Womack note that buy recommendations of underwriter analysts were accompanied with 2.7% initial size-adjusted excess return versus 4.4% for unaffiliated analysts' buy recommendations. However, both of these excess returns were significantly different from zero.

This is consistent with the findings of Lin and McNichols (1998) who find underwriter analysts' recommendations to be more favorable albeit their earnings estimates are not significantly higher than unaffiliated analysts' ones. In addition, they document three-day returns to underwriters' hold-recommendations which are significantly more negative than hold-recommendations of other brokerage firms. They suggest that market considers underwriters to issue more likely a hold-recommendation when 'sell' is warranted. Also, Dechow et al. (2010) find that affiliated analysts tend to issue most optimistic growth forecasts.

Also, underwriter analysts have been found to provide "booster shots" if the stock is experiencing poor aftermarket performance. Michaely and Womack (1999) document that characteristic for underwriter buy recommendations is that they are preceded by falling stock prices whereas non-underwriters are more likely to issue buy recommendation for stocks which are increasing in price. Furthermore, James and Karceski (2006) add that in general poor aftermarket performance is accompanied with higher target prices in the subsequent six months, and this is more pronounced for target prices issued by underwriter analysts. In addition, O'Brien et al. (2005) find that affiliated analysts are slower to downgrade from buy- and hold-recommendations and significantly faster to upgrade from hold-recommendations after IPO. Also, they note that underwriter analysts retain coverage more persistently while unaffiliated analysts are more likely to drop coverage.

However, also information asymmetry and a superior information advantage of underwriter analysts, gained by completing due diligence process and maintaining good relationship with the client firm,

is a convincing explanation for underwriter analysts' recommendations which are significantly away from consensus. After controlling for recommendation characteristics and timing, Bradley et al. (2006) find no evidence that the market discounts underwriter analyst recommendations. Also, excluding recommendations issued initially after the initial public offering, Dunbar et al. (1997) find significantly more positive market reaction to underwriter analysts' buy-recommendations compared to unaffiliated ones. They conclude that indicating that market judge underwriter analysts to possess superior information on the companies they have taken public.

3. Data and methodology

The data used in this study comes from three different sources. First, I retrieve data on initial public offerings undertaken in NASDAQ, NYSE and NYSE American (previously known as AMEX) exchanges between years 2010-2018, from the SDC Platinum database. Second, analyst recommendations, both consensus and underwriter analysts' recommendations, for these firms are from the Institutional Brokers Estimate System (IBES). Last, I extract daily post-IPO stock returns from the Compustat North America database.

A. IPO data

The sample is comprised of 1,825 initial public offerings conducted 2010 to 2018 in NASDAQ, NYSE and NYSE American exchanges. I exclude unit offerings and American Depository Receipts (ADRs). Contrary to many prior IPO studies, financial institutions are not excluded since the reasons for excluding them are not relevant for this study.[3] For these 1,825 companies I collect data on offer dates, SIC codes, exchanges, dollar-denominated deal sizes and underwriters. All this data is extracted from the SDC Platinum database, through an access provided by Aalto Department of Finance.

[3] The principal reasons for excluding financial institution presented by prior researchers are as follows: First, banks may undertake IPO involuntarily in order to meet capital requirements. Second, comparing the operating performance of financial institutions and industrial companies is difficult. However, when examining forecasting ability of analysts, there is no need for restricting the sample to cover merely the most traditional stocks. Reasons for undertaking IPOs are itself a factor that analyst should observe properly and therefore is an affecting factor also in this study. Moreover, operating performance is not relevant for my approach.

Table I describes the sample in terms of deal size and industry groups. A majority, total of 53.3 percent of IPOs, have a deal size between $50 million and $200 million. However, as much as 9.4 percent of deals are greater than $500 million measured in amount of raised capital and furthermore 16.2 percent of deals have raised less than $50 million of equity capital. The sample is not limited by deal size and thus it includes a minimum deal size of $2.8 million and a maximum deal size of $21,767 million. Moreover, SDC Platinum does not provide a deal size for 0.5 percent of deals. Can be said, that the sample is skewed towards its tails and it is not normally distributed. However, this is representative for IPOs undertaken between years 2010 and 2018 and any significant biases resulting from the distribution of deal sizes are not observed as analysts are able to select firms to be covered, considering deal sizes as given.

Three industries are particularly well-presented in the sample. SIC codes denoted for Manufacturing and Finance, Real Estate and Insurance both covers over 30 percent of the sample. Moreover, a share of Services companies totals for 22.2 percent. Comparably, the representation of other industries does not excess 5.5 percent. Different industries have different developments, but, as this is again representative for IPOs conducted in years 2010-2018, there is no need for adjusting the imbalance.

Table II exhibits yearly distribution of the sample with respect to number of initial public offerings and exchanges in which stocks are listed. The most represented exchange is NASDAQ with its proportion of 57.7 percent of all IPOs undertaken while only 0.9% listings are denoted in NYSE American (AMEX). The number of IPOs varies across years and there is not logical pattern observed. However, remarkable for this study is that 30.9 percent of newly listed companies have undertaken IPO during years 2016-2018, meaning that the original holding period of the three subsequent years of the IPO used in this study, does not become covered for these stocks and this may affect results if the aftermarket price development for stocks is constant over time.

Table I

Descriptive Statistics on IPOs, 2010 to 2018

Panel A describes the sample grouped by deal size in millions. Deal sizes are retrieved from the SDC Platinum database. *Number of IPOs* is a total amount of IPOs undertaken in 2010-2018 meeting the deal size criteria on the left. *Percent of IPOs* is amount of IPOs meeting the criteria as a percentage of the total number of IPOs. *Nonclassifiable* is IPOs for which deal size is not available.

Panel B describes the sample grouped by industry. As a base of grouping is SIC codes, as follows: Agriculture, Forestry and Fishing (0100-0999); Mining (1000-1499); Construction (1500-1799); Manufacturing (2000-3999); Transportation, Communications, Electric, Gas and Sanitary service (4000-4999); Wholesale Trade (5000-5199); Retail Trade (5200-5999); Finance, Insurance and Real Estate (6000-6799); Services (7000-8999); Public Administration (9100-9729). SIC codes are extracted from the SDC Platinum. *Number of IPOs* is a total amount of IPOs undertaken in 2010-2018 meeting the industry criteria on the left. *Percent of IPOs* is amount of IPOs meeting the criteria as a percentage of the total number of IPOs.

Panel A: IPO firms distributed by deal size in millions

Deal size	Number of IPOs	Percent of IPOs
Less than $50	296	16.2%
$50-99.9$	496	27.2%
$100-$199.9	477	26.1%
$200-$299.9	194	10.6%
$300-$399.9	118	6.5%
$400-$499	63	3.5%
Greater than $500	171	9.4%
Nonclassifiable	10	0.5%
Total	1,825	100.0%

Panel B: IPO firms distributed by industry groups (grouped by SIC codes)

Industry	Number of IPOs	Percent of IPOs
Agriculture, Forestry and Fishing	5	0.3%
Mining	76	4.2%
Construction	12	0.7%
Manufacturing	568	31.1%
Transportation, Communications, Electric, Gas and Sanitary Service	98	5.4%
Wholesale Trade	32	1.8%
Retail Trade	80	4.4%
Finance, Insurance and Real Estate	548	30.0%
Services	405	22.2%
Public Administration	1	0.1%
Total	1,825	100.0%

Table II

Descriptive Statistics on IPOs and IBES Coverage Ratios, 2010 to 2018

Number of IPOs includes all companies recorded in the SDC Platinum IPO database for years 2010 to 2018 excluding unit offerings and ADRs, by year. *Primary exchange* is an exchange (NASDAQ/NYSE/AMEX) in which the stock is denoted at a time of initial public offering. The IPO data is further merged with the Institutional Brokers Estimate System (IBES) database in order to obtain analyst recommendations for the sample firms. *Number of firms having consensus recommendation on IBES* is aggregated number of listed stocks for which is found at least one consensus recommendation on IBES in 2010 to 2018. (In parentheses) is presented the percentage of firms having consensus recommendation in relation to the total number of IPOs. In turn, *Number of firms having identifiable lead-underwriter recommendation on IBES* is aggregated number of listed stocks for which is found at least one lead-underwriter recommendation on IBES. Information of lead-underwriters is obtained from SDC Platinum IPO database. (In parentheses) is presented the percentage of firms having identifiable lead underwriter recommendation in relation to the total number of IPOs.

		Primary exchange				
Year	Number of IPOs	NASDAQ	NYSE	AMEX	Number of firms having consensus recommendation on IBES	Number of firms having identifiable lead-underwriter recommendation on IBES
2010	186	90	96	0	159 (85.5%)	100 (53.8%)
2011	159	74	85	0	133 (83.6%)	84 (52.8%)
2012	175	76	97	2	136 (77.7%)	89 (50.9%)
2013	254	119	130	5	217 (85.4%)	142 (55.9%)
2014	304	184	115	5	279 (91.8%)	159 (52.3%)
2015	183	127	54	2	144 (78.7%)	87 (47.5%)
2016	114	83	31	0	91 (79.8%)	43 (37.7%)
2017	206	125	79	2	147 (71.4%)	55 (26.7%)
2018	244	172	72	0	160 (65.6%)	27 (11.1%)
Total	1,825	1,050	759	16	1,466 (80.3%)	786 (43.1%)

Also, IBES coverage ratios are presented for both consensus and lead-underwriter recommendations in Table II. Significantly lower number of firms having identifiable lead-underwriter recommendation results primarily from IBES restructuring of identifiers which is effective on October 18, 2018. [4] This may lead to a selection bias, which is discussed in more detail when the recommendations data is presented. Also, the development of IBES coverage ratios for both consensus and lead-underwriter recommendations is decreasing. This is consistent with constantly dropping number of analysts but may also be affected by two technical reasons. First, simultaneously with the aforementioned restructuring of identifiers, certain brokers decided to exclude their recommendations from the

[4] As of October 18, 2018 Thomson-Reuters anonymized a large portion of brokers and analysts in IBES. The data provider estimates 13.8% of all broker IDs to be reassigned including characteristically large brokerage houses. (WRDS, 2019)

academic version of IBES. This decision has a possible impact solely on lead-underwriter recommendations as consensus recommendations are not affected. Second, the sample includes 25 companies which have conducted IPO in November, 2018 or December, 2018 and does not have neither consensus nor lead-underwriter recommendation by 31 December, 2018. As the initial coverage have been provided in the two subsequent months of the IPO for all sample stocks having recommendation on IBES, this may indicate that there is no analyst coverage for these stocks as of 31 December, 2018. Adding these 25 companies to coverage figures would increase the coverage ratios of 2018 by 10.2 percentage points.

B. Recommendations data

Recommendations data for the sample firms is fetched from the Institutional Brokers Estimate System (IBES) which is a database from Thomson Reuters. IBES has forecast and recommendation information on 60,000 companies across over 100 markets. More than 3,000 brokerages contribute to the database. Thomson Reuters has certain principles in treating recommendations data. It consider a recommendation to be stopped if it is not updated or confirmed for 180 days. Moreover, recommendations which have not been updated for 105 days are excluded from consensus recommendations data. However, Thomson Reuters maintain also recommendations which have already been stopped and data on companies not existing anymore. That is done in order to avoid survivorship bias. (WRDS, 2019)

Consensus recommendations for the sample firms are extracted from the IBES summary history which is updated monthly based on individual analysts' recommendations. [5] Consensus recommendations are obtained for 1,466 companies, totaling for 80.3 percent of the sample and 63,693 consensus recommendations. In addition to company identifiers, consensus recommendations data retrieved from IBES, includes dates for recommendation updates, mean recommendations, median recommendations, standard deviations of individual analysts' recommendations and numbers of analysts covering the firm. I consider mean recommendation as a consensus recommendation as mean is more robust measure than median and therefore consistent with the findings of e.g. Jegadeesh

[5] "…the snapshots are as of the Thursday before the third Friday of every month" (WRDS, 2019)

and Kim (2009) and Loh and Stulz (2010) that a recommendation change is more influential when it is issued away from consensus. Moreover, mean recommendations are also more easily available for small private investors than median recommendations and thus presumably more reflected in price. Also, the consensus data is merged with the IBES stopped recommendations data in order to identify omitted stocks and dates of dropped analyst coverage.

Individual analyst recommendations for the sample firms are extracted from the IBES detailed estimates which are updated each day as they are released by analysts. Again, additional data is collected including activation dates of recommendations, estimator IDs and IBES recommendation codes. The IBES recommendation code is a consistent measure for the level of recommendation provided by Thomson Reuters. The rendition of IBES recommendation code is as follows: 1 (Strong Buy), 2 (Buy), 3 (Hold), 4 (Sell) and 5 (Strong Sell) and hence this classification is used in this research paper.

The individual analyst recommendations are further merged with the information of lead underwriters, retrieved from the SDC Platinum, in order to filter individual analyst recommendations data to cover exclusively lead underwriter recommendations. However, as discussed above, as a result of the IBES data restructuring, a large portion of estimators is unidentifiable. Nevertheless, I construct a method to identify ten of thirteen investment banks appearing most as a lead underwriter. For constructing the method, I use an assumption that lead underwriter most likely is the one initiating coverage and also more persistently maintain coverage for the company. These assumptions are consistent with e.g. the findings of Bradley et al. (2006) and O'Brien et al. (2005).[6] That would result in significantly higher frequency between certain estimator codes and underwriters, and subsequently enables me to match estimators to underwriters with significantly higher frequencies. The method, and a rationale for it, is presented more in detail in Appendix I. After applying the method, identifiable estimator IDs is obtained for 47 percent of lead underwriters. Furthermore, the identified underwriters have taken public, as a lead underwriter, as many as 74.2 percent of the sample firms. Lead underwriter

[6] Bradley et al. (2006) find that the initial coverage is almost exclusively provided by underwriter analysts. Moreover, O'Brien et al. (2005) note that underwriter analysts maintain coverage more persistently while unaffiliated analysts are more likely to drop the coverage. Also, the conventional wisdom suggests that underwriter analysts provide the coverage for firms they have taken public as a compensation for underpricing.

recommendations is obtained for 786 companies, totaling for 43.1 percent of the sample and 3,534 lead underwriter recommendations.

The characters of these two datasets, consensus and underwriter recommendations, differ to some extent and therefore may cause biases if not addressed properly. First, Thomson Reuters' updating frequencies are different for these datasets. Therefore, in addition to the original results, also the results when matching more frequent underwriter recommendations to the dates of consensus data updates, are discussed in the Results-section. Second, after applying the method to identify lead underwriters' estimator IDs, large investment banks are over-represented in underwriter analyst recommendations data in relation to mid-sized investment banks which are largely unidentified. Referring Loh and Stulz (2010) who find that most reputable analysts outperform less reputable analysts, this may result in positively biased performance of underwriter analysts. This is discussed in more detail when the results are presented.

Table III presents descriptive statistics by year for both consensus and lead underwriter recommendations. It reveals remarkably increasing development in number of recommendations for both types of recommendations. That is natural since the number of listed companies increases year by year and they are not excluded from the recommendation data unless the coverage is dropped. The frequency of lead underwriter recommendation revisions is on average 81 days. Also, both yearly means and yearly medians are presented for number of analysts covering firms. Table reveals that medians are almost consistently smaller than means, indicating that the distribution of number of analysts is skewed towards large numbers of analysts. Accordingly, the maximum analyst coverage is as high as 52 analysts. Less favorable average recommendations of lead underwriters versus consensus recommendations is also worth of notion as it is more or less in conflict with the prior research.

Table IV provides a view on analyst recommendations presented by years after undertaking the initial public offering. Three characteristics of analyst recommendations are worth of highlighting in the context of this study. First, recommendations are more likely to be favorable when there is no much time gone by after IPO. Especially, during the first year subsequent of IPO both consensus and lead underwriters issue considerably more buy-recommendations than sell-recommendations. As many as

Table III

Descriptive Statistics on Analyst Recommendations, Consensus and Lead Underwriter

Number of consensus recommendations includes all consensus recommendations issued on sample firms in the year in question. *Analysts per covered firm* is the number of individual analysts following a firm and it is presented as both mean and median, by year. *Average consensus recommendation* is mean of all consensus recommendations issued in the year in question. Recommendations are classified as follows: 1 (Strong Buy), 2 (Buy), 3 (Hold), 4 (Sell) and 5 (Strong Sell). *Number of lead-underwriter recommendations* includes all identifiable lead-underwriter recommendations issued on sample firms in the year in question. *Average lead-underwriter recommendation* is mean of all lead-underwriter recommendations issued in the year in question.

		Analysts per covered firm				
Year	Number of consensus recommendations	Mean	Median	Average consensus recommendation	Number of lead-underwriter recommendations	Average lead-underwriter recommendation
2010	608	4,89	5	1,88	119	2,14
2011	2,558	5,87	5	1,95	226	2,15
2012	3,951	7,00	6	2,05	246	2,32
2013	5,425	7,47	6	2,11	379	2,33
2014	8,115	7,65	6	2,07	550	2,25
2015	10,181	7,97	6	2,07	525	2,44
2016	10,532	8,27	7	2,11	471	2,56
2017	10.707	8,32	7	2,15	474	2,39
2018	11,616	8,20	7	2,12	544	2,47
Total	63,693	7,86	6	2,09	3,534	2,37

70 percent of the first year consensus recommendations and 67 percent of the first year lead underwriter recommendations are lower than 2.00 signifying a recommendation of Strong Buy (1) or Buy (2). Meanwhile, the portions of sell-recommendations (higher than 3.00) of consensus and lead underwriters are 1 percent and 2 percent, respectively. However, the trend of buy-recommendations, especially 'strong buys', is decreasing with time, while the amount of sell-recommendations increases moderately. If this reallocation of recommendations is in line with aftermarket stock performance, this is consistent with the prior research suggesting that long term post-IPO performance is poor.

Second, surprisingly underwriter analysts are less favorable in their recommendations than consensus. Overall, underwriters issue 48 percent hold or sell –recommendations whereas only 20 percent of consensus recommendations are not recommending buying. This may partially be a result of selection bias discussed above, leading to over-representation of large investment banks. However, also, the superior information advantage of underwriter analysts can be seen as a plausible explanation. Third,

Table IV

Descriptive Statistics on the Level of Analyst Recommendations and Coverage

Panel A presents consensus recommendation, by years after the IPO. Recommendations are classified as follows: 1 (Strong Buy), 2 (Buy), 3 (Hold), 4 (Sell) and 5 (Strong Sell). First is a total number of recommendations in the range presented above. (In parentheses) is recommendations in the range, as a percentage of total number of recommendations issued during the range of *Years after the IPO* in question.

Panel B presents lead underwriter recommendation and neglected stocks, by years after the IPO. Recommendations are classified as follows: 1 (Strong Buy), 2 (Buy), 3 (Hold), 4 (Sell) and 5 (Strong Sell). First is a total number of recommendations in the range presented above. (In parentheses) is recommendations in the range, as a percentage of total recommendations issued during the range of *Years after the IPO* in question.

Panel A: Consensus recommendations presented by years after IPO

	Consensus recommendations					
Years after IPO	1.00 - 1.50	1.51 - 2.00	2.01 - 2.50	2.51 - 3.00	> 3.01	Total
< 1 year	3490 (24%)	6757 (46%)	3123 (21%)	1197 (8%)	129 (1%)	14696
1-3 years	3300 (13%)	10734 (43%)	6805 (27%)	3629 (14%)	741 (3%)	25209
3-5 years	1103 (7%)	5582 (36%)	4658 (30%)	3345 (21%)	922 (6%)	15610
> 5 years	387 (5%)	2555 (33%)	2541 (33%)	1878 (24%)	431 (6%)	7792
Total	8280 (13%)	25628 (40%)	17127 (27%)	10049 (16%)	2223 (4%)	63307

Panel B: lead underwriter recommendations and neglected stocks presented by years after IPO

	Lead underwriter recommendations						
Years after IPO	1	2	3	4	5	Total	Coverage dropped
< 1 year	356 (25%)	613 (42%)	450 (31%)	33 (2%)	0 (0%)	1452	22 (2%)
1-3 years	92 (14%)	153 (23%)	348 (51%)	79 (12%)	4 (1%)	676	155 (11%)
3-5 years	41 (12%)	75 (21%)	171 (49%)	63 (18%)	0 (0%)	350	138 (9%)
> 5 years	15 (8%)	62 (31%)	89 (45%)	33 (17%)	1 (1%)	200	74 (5%)
Total	504 (19%)	903 (34%)	1058 (40%)	208 (8%)	5 (0%)	2678	389 (27%)

although the amount of distinctly favorable recommendations decreases over time, the number of unfavorable recommendations remains at a relatively low level throughout the examination period. This may be explained by conventional wisdom that analysts are reluctant to issue unfavorable recommendations and more likely drop the coverage instead. Worth of notion is relatively high portion of omitted stocks which totals for 27 percent of the sample.

C. Portfolios

After merging the IPO data with recommendations data, I construct portfolios based on consensus and underwriter recommendations in order to determine whether analysts can forecast post-IPO stock

performance. The holding period of a stock is the three subsequent years of the IPO for portfolios based on both consensus and underwriter ratings. Three subsequent years is chosen to be an original holding period since it is used by several researchers examining post-IPO long-term performance.[7] However, also other holding periods are examined.

As discussed before, consensus recommendation is a mean recommendation provided by Thomson Reuters IBES database. Each firm with an existing consensus recommendation $A_{i\tau}$ is placed into one of four portfolios as of the close of the trading day $\tau - 1$. The portfolio named as *Consensus 1* consists of the most highly recommended stocks, those for which $1.00 \leq A_{i\tau-1} \leq 1.50$. For *Consensus 2 to 4* is used criteria as follows, respectively: $1.50 < A_{i\tau-1} \leq 2.00$; $2.00 < A_{i\tau-1} \leq 2.50$; $A_{i\tau-1} > 2.50$. The approach is similar to the one used by Barber et al. (2001) with an exception that there is not fifth portfolio, for which $A_{i\tau-1} > 3.00$ and the fourth and fifth portfolios are combined. Reason for combining them is that, as can be observed from the Table IV, the amount of stocks for which $A_{i\tau-1} > 3.00$ is considerably small.

In turn, every stock with a valid lead underwriter recommendation $B_{i\tau}$ is placed into one of three portfolios, again, as of the close of trading on date $\tau - 1$. There is only one lead underwriter recommendation for each firm at time and therefore the criteria for constructing underwriter recommendation portfolios is different. The portfolio named as *Underwriter 1* consists of stocks with a 'Strong Buy' lead underwriter rating. Respectively, *Underwriter 2* includes stocks with a 'Buy' recommendation and *Underwriter 3* is formed of stocks for which $B_{i\tau-1} \geq 3$. Of course, the criteria differing between consensus and underwriter portfolios may cause some biases when comparing the performance of underwriters and consensus. However, both the most and least favorable portfolios are comparable in a sense that *Consensus 1* consists of stocks having more weight by 'Strong Buys' whereas 'Holds', 'Sells' and 'Strong Sells' have most weight on stocks in *Consensus 4* portfolio.

Moreover, two additional portfolios are constructed in order to address potential biases. I construct a portfolio for neglected stocks in order to examine whether analysts' decision to not follow certain

[7] E.g. Ritter (1991) documents an average cumulative matching firm-adjusted return of -15.08% in 3 years following the issuance for 1526 IPOs during 1975-1984.

Table V

Descriptive Statistics on Portfolios, Original Portfolios

Consensus 1 to 4 are consensus portfolios. The criteria for stocks being included in the portfolio is respectively 1 to 4: $1 \leq A_{i\tau-1} \leq 1.50$; $1.50 < A_{i\tau-1} \leq 2.00$; $2.00 < A_{i\tau-1} \leq 2.50$; $A_{i\tau-1} > 2.50$. *Underwriter 1* to *3* are underwriter portfolios. The criteria for stocks being included in the portfolio is respectively 1 to 3: $B_{i\tau} = 1$; $B_{i\tau} = 2$; $B_{i\tau} \geq 3$. *Neglected stocks* is stocks which have been started to trade publicly in the previous three years and are neglected or the coverage has been dropped during the year in question and obtain daily security data on Compustat North America Security database.

Panel A exhibits number of stocks in portfolios as daily average, by year. First is presented daily average of the number of stocks in portfolio in the year in question. Second, (in parentheses) is daily average of the number of stocks in portfolio, as a percentage of daily average of all stocks in any portfolio of its type. For neglected stocks this percentage (in parentheses) is a percentage of all companies which have undertaken IPO during the three previous years and obtains daily security data on Compustat North America Daily Security database.

Panel B presents the average market values ($ million) of stocks in portfolios, by year.

Panel A: Number of stocks in portfolios, average by year

Year	Consensus 1	Consensus 2	Consensus 3	Consensus 4	Underwriter 1	Underwriter 2	Underwriter 3	Neglected stocks
2010	13 (28%)	21 (47%)	8 (18%)	3 (7%)	7 (21%)	16 (50%)	9 (29%)	8 (15%)
2011	39 (23%)	68 (41%)	36 (22%)	23 (14%)	29 (26%)	48 (43%)	33 (30%)	29 (15%)
2012	44 (17%)	103 (39%)	68 (26%)	49 (19%)	34 (21%)	77 (48%)	50 (31%)	61 (19%)
2013	42 (13%)	135 (41%)	90 (28%)	60 (18%)	49 (23%)	98 (45%)	69 (32%)	90 (22%)
2014	69 (16%)	186 (44%)	104 (25%)	61 (14%)	75 (26%)	137 (47%)	78 (27%)	85 (17%)
2015	98 (19%)	230 (45%)	128 (25%)	57 (11%)	100 (29%)	161 (46%)	85 (25%)	87 (14%)
2016	90 (19%)	209 (43%)	115 (24%)	71 (15%)	91 (29%)	142 (46%)	78 (25%)	80 (14%)
2017	54 (15%)	169 (47%)	87 (24%)	51 (14%)	63 (29%)	99 (45%)	57 (26%)	81 (18%)
2018	52 (15%)	158 (47%)	90 (27%)	37 (11%)	67 (31%)	95 (44%)	55 (26%)	93 (22%)
Total	56 (17%)	145 (44%)	83 (25%)	47 (14%)	58 (27%)	99 (46%)	58 (27%)	70 (17%)

Panel B: Market value ($ million) of stocks in portfolios, average by year

Year	Consensus 1	Consensus 2	Consensus 3	Consensus 4	Underwriter 1	Underwriter 2	Underwriter 3	Neglected stocks
2010	596.3	885.8	985.4	1,341.4	455.5	725.3	1,449.8	275.8
2011	522.2	1,884.7	1,346.1	4,051.5	896.9	2,704.6	2,311.6	390.4
2012	383.6	1,431.9	1,869.4	1,261.8	974.8	2,094.3	1,317.6	343.2
2013	519.1	1,821.7	3,169.8	905.7	1,080.6	3,282.5	2,091.8	331.2
2014	870.0	2,778.2	2,502.8	1,423.6	1,157.4	3,260.7	2,227.4	282.4
2015	510.4	2,915.4	2,800.0	951.4	1,140.4	2,782.6	3,098.1	255.1
2016	544.0	2,466.1	1,944.2	1,008.2	1,054.9	2,060.5	2,491.5	283.4
2017	908.6	2,745.2	2,322.2	1,059.6	1,602.4	2,086.3	2,417.9	353.5
2018	852.3	2,173.6	2,844.0	1,407.7	1,287.2	3,095.2	3,225.7	362.1
Total	634.9	2,151.3	2,206.5	1,494.0	1,085.8	2,494.4	2,317.5	321.7

firms is rationalized by weaker stock returns. That is, the existing research suggests that it is conventional wisdom that analysts rather shy away the coverage than issue negative ratings. In addition, also a portfolio including all sample stocks with a data of daily returns available in the Compustat North America database, is constructed.

Table V presents descriptive statistics on original portfolios with a holding period of the three years following the IPO. Three observations are made on the Panel A exhibiting number of stocks of each portfolio throughout the examination period of nine years. First, the allocation between portfolios is rather consistent over time. However, as the holding period is the three years following the IPO, significantly smaller number of stocks in every portfolio in 2010 to 2013, can be observed. Second, the most weight, in terms of number of stocks, is on portfolios in the middle, meaning that there is not overly many 'Strong buys' or unfavorable ratings. Third, a percentage of neglected stocks of the sample is relatively high moving around its average of 17%.

Panel B exhibits average market values of stocks in each portfolio. There are two characteristics for portfolios. First, both consensus and underwriter analysts allocate relatively small stocks, measured by market value, into the most highly ranked portfolios. However, when it comes to consensus recommendations, also least favorably recommended stocks are relatively small in market value whereas underwriters do not make a distinction in market values between portfolios two and three. Second, again presumably resulting from the potential selection bias, firms in underwriter portfolios, in general, are larger in relation to firms in consensus portfolios. However, if this affects returns, they are adjusted by factors and furthermore portfolios which are matched by sample are presented in the Results-section.

D. Methodology

When the composition of each seven portfolios is determined, the value-weighted return for date τ is calculated based on the daily returns provided by the Compustat North America Daily Security database. The equation for determining this return $R_{p\tau}$ for portfolio p is:

$$R_{pt} = \sum_{,i=1}^{n_{p\tau-1}} x_{i\tau-1} R_{i\tau},$$

where

$x_{i\tau-1}$ = the weight, which is the market value of company i as of the close of trading on date $\tau - 1$ divided by the aggregate market value of all companies in portfolio p as of the close of that trading day

$R_{i\tau}$ = the return of the stock of company i on date t, and

$n_{p\tau-1}$ = the number of firms in portfolio p at the close of trading on date $t - 1$

The value-weighted return is chosen since it requires less rebalancing, consequently reduces transaction costs and enables me to examine whether investment strategy based on post-IPO analyst recommendations is profitable. Moreover, as Barber et al. (2001) state value-weighted returns are economically more significant, as the stock returns of large firms are represented with more weight than the returns of small firms.

Next, I calculate monthly returns R_{pt} for each portfolio by compounding daily returns over the n trading days of the month, as the following equation presents:

$$R_{pt} = \prod_{\tau=1}^{n}(1 + R_{p\tau}) - 1.$$

In order to examine whether analysts can forecast post-IPO stock performance, I employ intercept tests. First, I run regressions using the Capital Asset Pricing Model (CAPM). The equation is the following:

$$R_{pt} - R_{ft} = \propto_p + \beta_p(R_{mt} - R_{ft)} + \in_{pt},$$

where

R_{ft} = The "risk-free" return on 1 month Treasury bill of month t

R_{mt} = The return on the market, value-weighted return of all CRSP firms incorporated in the US and listed on the NYSE, AMEX or Nasdaq

$\propto_p$ = The estimated intercept (Jensen's alpha) of portfolio

β_p = The estimated market beta of portfolio

Second, I use the five-factor model developed by Fama and French (1993). The five-factor model is employed in order to adjust portfolio returns for five widely-acknowledged risk factors. I estimate the following monthly time-series regression:

$$R_{pt} - R_{ft} = \propto_p + \beta_p(R_{mt} - R_{ft)} + s_p SMB_t + h_p HML_t + r_p RMW_t + c_p CMA_t + \in_{pt},$$

where

SMB_t = The size premium. Nine value-weighted portfolios of small stocks minus nine of large stocks in a month t.

HML_t= The value premium. Two value weighted portfolios of high book-to-market stocks minus two of low book-to-market in a month t

RMW_t= Two value weighted portfolios of robust operating profitability firms minus two of weak operating profitability in a month t

CMA_t= Two value-weighted portfolios of conservatively investing firms minus two of aggressively investing firms[8]

Moreover, the regression returns parameter estimates of s_p , h_p , r_p and c_p for each portfolio. These coefficient estimates provides a base for interpretations on portfolio characteristics when discussed in the Results-section. If a value of β_p is higher (lower) than one it indicates that the portfolio, and stocks contributing to it, are on average riskier (less risky) than the market. Also, other factors contributes to the interpretation of potential excess returns. A positive (negative) value of s_p implies a tilt towards small (large) stocks whereas a value of h_p greater (lower) than zero indicates a portfolio tilted towards value (growth) stocks. Correspondingly, if a regression returns a positive (negative) coefficient estimate of r_p, signifies that a portfolio has more weight on stocks obtaining robust (weak) operating performance. Finally, a value of c_p greater (lower) than zero implies a portfolio including firms with conservative (aggressive) investment policies.

[8] All these factors are from Fama and French (1993). More information can be found in Fama and French (1993). I thank Ken French for providing me with these factors.

4. Results

Table VI exhibits estimated portfolio coefficients for the Fama-French 5-factor model. The bottom line reveals characteristics for newly public firms in general, by presenting coefficient estimates of the value-weighted portfolio of all sample stocks. The holding period is consistently three years.

First, the sample portfolio seems to obtain negative and significant RMW and CMA coefficients indicating that newly public companies have weaker operating profitability and they proceed into more aggressive investments than US companies on average. These are more or less inherent attributes to IPOs but still there is variation among portfolios in coefficient estimates of *RMW* and *CMA*. *RMW* estimates are more negative for consensus portfolios, but again this can be a result of possible selection bias of underwriter portfolios. However, both consensus and underwriters seem to be more likely to either strongly recommend buying, or not to buy, if operating profitability is weak. Nevertheless, after controlling for sample selection, this attribute is more pronounced for consensus portfolios than underwriter portfolios.[9] Furthermore, consensus appears to be more favorable towards firms with aggressive investment policies which is in conflict with the rationale behind the model.

Second, *All Sample Stocks Portfolio*'s *SMB* and *HML* coefficient estimates demonstrates that the sample is tilted towards small growth stocks, which is again consistent with the character of IPOs. Affiliated analysts appear to be more likely to base their ratings on *HML* factor as there is no clear distribution or trend among *Consensus portfolios* when it comes to *HML* estimates. That is, underwriter analysts are more likely to issue unfavorable (favorable) recommendations for growth (value) firms having low (high) book-to-market ratio.

When comparing covered stocks to neglected stocks, Table VI reveals that neglected stocks are significantly less risky than market and tilted towards stocks with aggressive investment policies. In turn, covered stocks seem to have significantly weaker operating profitability and they are more

[9] I construct consensus portfolios which include exclusively the stocks which have an underwriter recommendation to control for selection bias. *RMW* estimates for these *Consensus 1* and *Consensus 2* are -2.53 and -1.42 with a t-values of -5.257 and -3.135, respectively.

Table VI

Portfolio Coefficient Estimates for Fama-French Five-Factor Model

This table provides coefficient estimates for several portfolios. *Consensus 1* to *4* are consensus portfolios and *Consensus 1 – Consensus 4* is a zero-investment long-short portfolio purchasing *Consensus 1* and selling short *Consensus 4. Underwriter 1* to *3* are consensus portfolios and *Underwriter 1 – Underwriter 3* is a zero-investment long-short portfolio purchasing *Underwriter 1* and selling short *Underwriter 3. All covered* is a value-weighted portfolio including all stocks with a valid analyst coverage. *Neglected* is value-weighted portfolio including all stocks without analyst coverage. *All covered – Neglected* is a zero-investment long-short portfolio purchasing *All covered* and selling short *Neglected. All sample stocks* is a value-weighted portfolio comprising of all sample stocks.

Rm-Rf (excess market return), *SMB* (Small-Minus-Big), *HML* (High Minus Low), *RMW* (Robust-Minus-Weak) and *CMA* (Conservative-Minus-Aggressive) all are coefficient estimates for portfolios (with t-values underneath in parentheses). *, ** and *** indicate significance at the 10%, 5% and 1% levels, responsibly.

Portfolio	Rm - Rf	SMB	HML	RMW	CMA	R-squared
Consensus 1 (most favorable)	0.654	0.566	-0.486	-2.396	-1.063	0.504
	(0.933)	(1.912)*	(-1.316)	(-5.242)***	(-1.920)*	
Consensus 2	1.537	0.431	-0.495	-2.327	-0.839	0.755
	(3.823)***	(1.856)*	(-1.706)*	(-6.488)***	(-1.933)*	
Consensus 3	1.072	0.545	-0.345	-0.425	-0.609	0.672
	(0.685)	(3.152)***	(-1.602)	(-1.595)	(-1.888)*	
Consensus 4 (least favorable)	1.090	0.617	-0.342	-1.545	-0.493	0.530
	(0.519)	(2.162)**	(-0.959)	(-3.506)***	(-0.925)	
Consensus 1 - Consensus 4	-0.435	-0.051	-0.145	-0.851	-0.569	0.052
	(-5.619)***	(-0.121)	(-0.274)	(-1.306)	(-0.721)	
Underwriter 1 (most favorable)	0.905	0.572	-0.299	-1.095	-0.123	0.708
	(1.007)	(3.650)***	(-1.529)	(-4.527)***	(-0.419)	
Underwriter 2	1.118	0.657	-0.217	-0.818	-0.615	0.614
	(0.887)	(2.985)***	(-0.792)	(-2.409)**	(-1.495)	
Underwriter 3 (least favorable)	0.915	0.651	-0.527	-1.340	-0.533	0.668
	(0.740)	(3.419)***	(-2.219)**	(-4.566)***	(-1.499)	
Underwriter 1 - Underwriter 3	-0.010	-0.078	0.228	0.245	0.410	0.044
	(-6.946)***	(-0.326)	(0.758)	(0.661)	(0.912)	
All covered	1.067	0.350	-0.440	-1.369	-0.605	0.761
	(0.719)	(2.266)**	(-2.281)**	(-5.745)***	(-2.097)**	
Neglected	0.499	0.006	0.0004	0.239	-0.977	0.200
	(-3.720)***	(0.026)	(0.001)	(0.695)	(-2.350)**	
All covered - Neglected	0.568	0.344	-0.440	-1.608	0.372	0.428
	(-3.081)***	(1.483)	(-1.519)	(-4.491)***	(0.859)	
All sample stocks	0.553	0.195	-0.219	-1.016	-0.742	0.632
	(-5.731)***	(1.513)	(-1.363)	(-5.110)***	(-3.084)***	

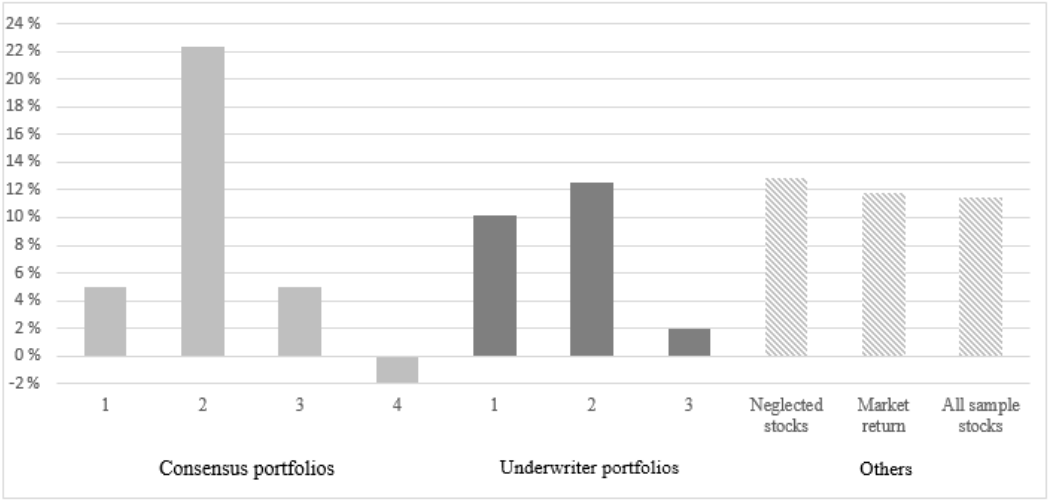

Figure 1. Annualized geometric mean gross returns for portfolios formed based on consensus and underwriter analyst recommendations, 2010 to 2018.

exposed to factors indicating that covered stocks are mostly small stocks with low book-to-market ratio. Again, both portfolios have a holding period of the three years following the IPO.

Figure 1 provides a visualization of annual portfolio returns which are gross of any transaction costs. Annualized return of a value-weighted market portfolio, comprising of stocks traded in NASDAQ, NYSE and AMEX, is 11.8 percent. The portfolio consisting of most favorable consensus recommendations [1.00-1.50] yields annual gross return of 5.0 percent whereas *Consensus 2* [recommendations of 1.50-2.00] produces surprisingly as much as 22.4 percent of raw return. In turn, the raw return of *Consensus 3* [recommendations of 2.00-2.50] equals to the return of most favorable consensus recommendations, 5.0 percent. Thus, at least in terms of positive annual raw returns there is considerable variation between portfolio groups. Moreover, when it comes to raw returns, even neglected stocks seems to outperform most favorably recommended stocks. However, the least favorably ranked stocks yield annual gross return of -1.9 percent and *Consensus 2* seems to outperform market significantly in terms of raw returns. The outperformance of *Consensus 2* compared with *Consensus 1* may be partially explained by monthly updates of consensus data, especially if *Consensus 1* does not capture the returns "belonging to it" due to the delay in updating. 6.4 percent of *Consensus 1* recommendations are upgrades from *Consensus 2* and a maximum delay is one month. Therefore, returns for combined portfolio of *Consensus 1* and *Consensus 2* are presented below in order to address a potential bias arising from the less frequent updating. In turn,

underwriter portfolios produce annual gross returns of 10.2 percent, 12.6 percent and 2.0 percent, denoting first most favorable recommendations, and least favorable ones last. Returns of neglected stocks and all sample stocks are 12.9 percent and 11.5 percent, respectively, when holding period is corresponding to analyst portfolios.

As mentioned in the previous section, to examine whether analyst recommendations possess investment value, I employ intercept tests using both the CAPM and the Fama-French five-factor models. By doing that, I adjust returns for multiple risk factors. Also, long-short portfolios, which purchase (sell short) most (least) favorable stocks, are included in order to examine the investment value. Table VII presents the results of these intercept tests. Still, neither one of the long-short portfolios does not provide statistically significant abnormal returns. Long-short portfolio based on consensus recommendations yield monthly excess return of 1.1 percent from Fama-French five-factor model and an equivalent portfolio based on underwriter recommendations, in turn, produces 0.6 percent of monthly abnormal return. This is an indication of predictive power of analyst recommendations but due to its statistical insignificance, the null hypothesis that analysts do not possess an ability to predict post-IPO stock performance cannot be rejected. It is also remarkable that, portfolio of neglected stocks yields monthly excess return of 0.6. This suggests that analysts' selection to not cover certain firms is not explained by their performance.

However, *Consensus 2* yields monthly excess return of 0.9 percent (significant at the level of 10%) and *Underwriter 2* earns (insignificant) excess return of 0.2 percent, which both are higher than excess returns of most highly ranked portfolios. This finding suggests that purchasing stocks accompanied with a recommendation of lower than or equal to 2 ('Strong Buy' and 'Buy') and selling short stocks having a recommendation of higher than 2.50 ('Hold', 'Sell' and 'Strong Sell') could be a profitable investment strategy**.** I examined that by combining two most favorable portfolios for both consensus and underwriter recommendations. Note that when it comes to consensus recommendations the outperformance of *Consensus* 2 compared with *Consensus 1* may also be partially a result of delayed updates of consensus data and thus this approach is also rationalized by addressing potential bias.

Table VII

Returns on Original Portfolios, Holding Period of 3 Years

This table exhibits returns and intercepts for multiple portfolios. *Annual Raw Return* is annualized gross return of portfolio without any adjustments. *Intercept from* is an estimate of $\propto_p$ for given portfolio from given regression model (with t-values underneath in parentheses). *, ** and *** indicate significance at the 10%, 5% and 1% levels, responsibly. *Annualized excess return from* is annualized alpha of given portfolio and regression model.

		Intercept from		Annualized excess return from	
Portfolio	Annual Raw Return	CAPM	Fama-French	CAPM	Fama-French
Consensus 1 (most favorable)	5.0 %	-0.330	0.369	-3,9 %	4,5 %
		(-0.436)	(0.580)		
Consensus 2	22.4 %	0.238	0.875	2,9 %	11,0 %
		(0.377)	(1.756) *		
Consensus 3	5.0 %	-0.657	-0.472	-7,6 %	-5,5 %
		(-1.619)	(-1.274)		
Consensus 4 (least favorable)	-1.9 %	-1.251	-0.748	-14,0 %	-8,6 %
		(-1.885) *	(-1.221)		
Consensus 1 - Consensus 4	6.1 %	0.920	1.117	11,6 %	14,3 %
		(1.045)	(1.232)		
Underwriter 1 (most favorable)	10.2 %	-0.197	0.173	-2,3 %	2,1 %
		(-0.495)	(0.514)		
Underwriter 2	12.6 %	-0.128	0.224	-1,5 %	2,7 %
		(-0.251)	(0.474)		
Underwriter 3 (least favorable)	2.0 %	-0.128	-0.438	-1,5 %	-5,1 %
		(-0.251)	(-1.074)		
Underwriter 1 - Underwriter 3	9.2 %	0.652	0.611	8,1 %	7,6 %
		(1.293)	(1.184)		
All covered	9.6 %	-0.340	0.026	-4,0 %	0,3 %
		(-0.810)	(0.079)		
Neglected	12.9 %	0.625	0.591	7,8 %	7,3 %
		(1.307)	(1.237)		
All covered - Neglected	3.2 %	-0.964	-0.5647	-11,0 %	-6,6 %
		(-1.776) *	(-1.135)		

Returns for these combined portfolios, and long-short portfolios constructed based on them, are presented in the Table VIII. The table exhibits statistically significant (at a significance level of 5%) positive monthly abnormal return of 1.6 percent for consensus long-short portfolio. This result is robust after a 90% winsorization, setting returns above the 95th percentile to the 95th percentile and

Table VIII

Returns on Combined Portfolios, Holding Period of 3 Years

This table provides returns for several portfolios. *Consensus 1 + 2* is a combined portfolio of consensus portfolios *Consensus 1* and *Consensus 2*. *(Consensus 1+2) – Consensus 4* is a zero-investment long-short portfolio purchasing *Consensus 1 + 2* and selling short *Consensus 4*. In turn, *Underwriter 1 + 2* is a combined portfolio of underwriter portfolios *Underwriter 1* and *Underwriter 2*. *(Underwriter 1+2) – Underwriter 3* is a zero-investment long-short portfolio purchasing *Underwriter 1 + 2* and selling short *Underwriter 3*.

Annual Raw Return is annualized gross return of portfolio without any adjustments. *Intercept from* is an estimate of $\propto_p$ for given portfolio from given regression model (with t-values underneath in parentheses). *, ** and *** indicate significance at the 10%, 5% and 1% levels, responsibly. *Annualized excess return from* is annualized alpha of given portfolio and regression model.

		Intercept from		Annualized excess return from	
Portfolio	Annual Raw Return	CAPM	Fama-French	CAPM	Fama-French
Consensus 1 + 2 (two most favorable)	20.5 %	0.170 (0.277)	0.808 (1.699)*	2,1 %	10,1 %
Consensus 4 (least favorable)	-1.9 %	-1.251 (-1.885)*	-0.748 (-1.221)	-14,0 %	-8,6 %
(Consensus 1 + 2) - Consensus 4	20.9 %	1.421 (2.022)**	1.556 (2.155)**	18,4 %	20,4 %
Underwriter 1 + 2 (two most favorable)	13.1 %	-0.110 (-0.254)	0.237 (0.626)	-1,3 %	2,9 %
Underwriter 3 (least favorable)	2.0 %	-0.128 (-0.251)	-0.438 (-1.074)	-1,5 %	-5,1 %
(Underwriter 1 + 2) - Underwriter 3	12.3 %	0.739 (1.442)	0.676 (1.280)	9,2 %	8,4 %

returns below 5th percentile to the 5th percentile.[10] This indicates that consensus recommendations predict post-IPO stock returns in the three years following the IPO when recommendations in a range of 1.00 – 2.00 are considered as '(Strong) Buy's and recommendations greater than 2.50 as 'Hold's, 'Sell's or 'Strong Sell's. That finding suggests to reject the null hypothesis that analyst recommendations do not possess predictive power on post-IPO stock returns. However, the excess return of combined long-short portfolio formed based on underwriter recommendations, is statistically insignificant 0.7 percent.

[10] The monthly abnormal return and t-value from the Fama-French five-factor model are 2.1% and 2.936, respectively.

Long-short portfolio based on consensus recommendations outperform underwriter long-short portfolio in both combined and non-combined forms of portfolios after adjusting for risk factors. Therefore, higher raw return of original underwriter long-short portfolio indicates that the returns of underwriter portfolios are attributed to widely-acknowledged anomalies which are captured by five factors developed by Fama and French (1993). The coefficient estimates, presented in the Table VI, illustrate this, as underwriters issue more negative recommendations to firms with aggressive investment policies and to firms obtaining low book-to-market ratio. By doing the latter, they recommend according to the well-acknowledged value anomaly. Correspondingly, favorable consensus recommendations are tilted towards firms undertaking aggressive investments which, on average, earn inferior returns to the returns of firms obtaining conservative investment policies.

Therefore, after controlling for these factors, consensus recommendations appear to outperform underwriter analysts' recommendations in the ability to predict post-IPO stock performance. That is to say, consensus recommendations possess more investment value than underwriter recommendations. Moreover, after combining two most favorable portfolios, consensus recommendations are able to produce positive and significant abnormal returns whereas the excess return of affiliated analysts is positive but far off significant. Thus, I cannot reject the hypothesis that the predictive power of underwriter analysts' recommendations is inferior to consensus recommendations. However, both abnormal returns are gross of transaction costs, and may not result in positive abnormal returns after subtracting transaction costs resulting from frequent rebalancing.

Moreover, different holding periods are tested. All the results of the intercept tests for multiple different holding periods are presented in the Appendix II. In addition to the original holding period of three years, the holding periods are: the first year following the IPO, the three years after conducting IPO excluding the first year and the five subsequent years of the IPO. Only most favorable and least favorable portfolios are presented in addition to the long-short portfolios. This totals for 18 different additional portfolios.

These different holding periods reveals a remarkable finding. The predictive power of analyst recommendations is most pronounced for analyst recommendations during the first subsequent year of the IPO. During the first year after the IPO, the long-short portfolio, obtaining long and short

positions respectively in *Consensus 1* and *Consensus 4* portfolios, earns abnormal monthly return of 2.5 percent with a significance level of 5%.[11] For long-short portfolio formed based on underwriter recommendations respectively, monthly abnormal return is 0.7 percent, and this is not statistically significant. However, all these portfolios consist of very limited amount of stocks at time and thus this effect should be examined by e.g. expanding the sample to cover also other geographic areas in order to make robust conclusions.[12] Furthermore, the returns of portfolios with a holding period of the three subsequent years excluding the first year, are inferior to the returns of original portfolios.

Furthermore, as updating frequencies of consensus and underwriter data differs from each other and the sample of underwriter portfolio is more restricted, I construct portfolios which match by sample and timing. These portfolios are also presented in Appendix II. This robust check does not change findings when comparing consensus performance with underwriter performance. Still, the performance of consensus recommendations is better while the abnormal returns of underwriter recommendations nearly get wiped out after matching to the updating frequency of consensus recommendations on IBES.

5. Conclusions

The aim of this paper has been to examine whether analysts can forecast post-IPO stock performance. Moreover, the effect of underwriter analysts' conflict of interest on the predictive power of their recommendations is of my interest.

The predictive power is examined by constructing portfolios on stocks grouped on the base of ratings provided by both consensus recommendations and affiliated analysts. The performance of these post-IPO recommendations is studied by constructing long-short portfolios which buy most highly rated stocks (a recommendation of 2.00 or lower) and sells short least favorably recommended ones. Then,

[11] This result remains significant after a 90% winsorization setting returns above the 95th percentile to the 95th percentile and returns below the 5th percentile to the 5th percentile. The monthly abnormal return and t-value from the Fama-French five-factor are 2.9% and 2.704, respectively.
[12] E.g. *Consensus 4* portfolio used in this robustness check includes two short periods of 5 to 10 trading days when there are no stocks at all in the portfolio. Maximum number of stocks in these portfolios at time is 70.

the performance of these long-short portfolios is measured by employing the five-factor model provided by Fama and French (1993). The investment strategy which groups stocks by the rate of consensus recommendation has been profitable, gross of transaction costs, over the 2010 to 2018 period, and it has produced positive and significant abnormal monthly returns of 1.6 percent. Correspondingly, investing in accordance with underwriter recommendations has not generated significant excess returns from the Fama-French five-factor model.

This study has three main findings. First, analysts can forecast post-IPO stock performance. Second, the investment value of underwriter analysts' recommendations is inferior to consensus recommendations. Third, this predictive power of analyst recommendations on post-IPO stock performance appears to be most pronounced in the first subsequent year of the IPO.

Although the relation between analyst recommendations and post-IPO stock performance is not covered in the existing research, Barber et al. (2001) find annual abnormal gross return greater than 4 percent for long-short consensus portfolio similar to this research while the sample is not restricted to the IPO aftermarket. Their result requires daily rebalancing and timely response. This study does not assume daily rebalancing or timely response, but it finds annual abnormal gross return greater than 20 percent for stocks which have been listed in the three preceding years. The results are consistent with the findings of Barber et al. (2001) but suggests that the predictive power of consensus recommendations is more pronounced for newly public companies.

Iskoz (2004) and furthermore Michaely and Womack (1999) documents the performance of 'strong buy' and 'buy' -recommendations issued by underwriter analysts inferior to the unaffiliated 'strong buy' and 'buy' –recommendations. This is consistent with my results. However, as an explanation for the inferior performance of affiliated analysts', the existing research suggests overly favorable recommendations, especially 'hold' recommendations when 'sell' is warranted.[13] This is not a reliable explanation in the light of this study, as underwriter analysts are, on average, less favorable in their recommendations than consensus.

[13] E.g. Lin and McNichols (1998) find underwriter analysts' recommendations to be too favourable with respect to their earnings estimates.

Instead, the finding of O'Brien et al. (2005) may explain the inferior performance of underwriter analysts. They find that affiliated analysts are slower to downgrade from 'buy'- and 'hold'-recommendations and significantly faster to upgrade from hold-recommendations. This may lead to lower return on their 'buy'-recommendations compared with consensus recommendations. However, the quickness of recommendation changes of underwriters and non-underwriters should be examined further in this context. Also, underwriters in this study appear to base their recommendations on well-acknowledged anomalies such as the value and size anomalies. Moreover, it is worth of notion that one of the limitations of this study, is rather restricted sample of lead-underwriter recommendations, resulting in the over-representation of large investment banks.

Furthermore, the results are subject to certain limitations. As discussed above, the sample of the first subsequent year of the IPO is rather restricted. Thus, I suggest the future research to expand the geographic scope in order to examine reliably whether analysts possess superior predictive power on stock returns of the first subsequent year of the IPO. Moreover, if my finding that analyst recommendations' predictive power is most pronounced for the returns in the first subsequent year of the IPO, the predictive power on long-term post-IPO stock performance (three years following the IPO) studied in this paper, may be affected by over-representation of the first year returns and recommendations. That is, 30.9 percent of the sample companies have undertaken the IPO during years 2016 to 2018, meaning that the holding period of the three subsequent years of the IPO used in this study, does not become covered for these stocks. Moreover, it is worth of notion that this study does not account for transaction costs and rather focuses on the predictive power of analyst recommendations. If the profitability of investment strategy following post-IPO analyst recommendations is examined, transaction costs should be included.

References

Barber, B., Lehavy, R., McNichols, M. and Trueman, B. (2001), Can Investors Profit from the Prophets? Security Analyst Recommendations and Stock Returns. *The Journal of Finance*, 56: 531-563.

Bradley, J., Jordan, B. and Ritter, J. (2008), Analyst Behavior Following IPOs: The "Bubble Period" Evidence, *The Review of Financial Studies*, 21(1): 101-133.

Conrad, J., Cornell, B., Landsman, W., and Rountree, B. (2006). How Do Analyst Recommendations Respond to Major News? *Journal of Financial and Quantitative Analysis*, 41(1), 25-49.

Das, S., Guo, R. and Zhang, H. (2006), Analysts' Selective Coverage and Subsequent Performance of Newly Public Firms. *The Journal of Finance*, 61: 1159-1185.

Dechow, P., Hutton, A. and Sloan, R. (2000), The Relation between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings*. *Contemporary Accounting Research,* 17: 1-32.

Dunbar, C., Hwang, C. and Shastri, K. (1997), Underwriter Analyst Recommendations: Conflict of Interest or Rush to Judgement. Available at SSRN: https://ssrn.com/abstract=8226

Fama, E. and French, K. (1993), Common risk factors in the return on bonds and stocks. *Journal of Financial Economics*, 33: 3-53.

Financial Times. (2017), Final call for the research analyst? Referred on November 22, 2019. Retrieved from: https://www.ft.com/content/85ee225a-ec4e-11e6-930f-061b01e23655

Jegadeesh, N. and Kim, W. (2006), Value of analyst recommendations: International evidence. *Journal of Financial Markets,* 9(3): 274-309.

Green, T. (2006). The Value of Client Access to Analyst Recommendations. *Journal of Financial and Quantitative Analysis*, 41(1), 1-24.

Hong, H. and Kubik, J. D. (2003), Analyzing the Analysts: Career Concerns and Biased Earnings Forecasts. *The Journal of Finance,* 58: 313-351.

Iskoz, S. (2003), Bias in Underwriter Analyst Recommendations: Does it Matter?. Available at SSRN: https://ssrn.com/abstract=481442

Jain, B. and Kini, O. (1994), The Post-Issue Operating Performance of IPO Firms. *The Journal of Finance*, 49: 1699-1726.

James, C. and Karceski, J. (2006), Strength of analyst coverage following IPOs. *Journal of Financial Economics.* 82(1): 1-34.

Lin, H. and McNichols, M. (1998), Underwriting relationships, analysts' earnings forecasts and investment recommendations. *Journal of Accounting and Economics.* 25(1): 101-127.

Loh, R. and Stulz, R. (2011), When Are Analyst Recommendation Changes Influential?, *The Review of Financial Studies*, 24(2): 593–627.

Ljunqvist, A. , Marston, F. and Wilhelm, W. (2006), Competing for Securities Underwriting Mandates: Banking Relationships and Analyst Recommendations. *The Journal of Finance,* 61: 301-340.

Michaely, R. and Womack, K. (1999), Conflict of Interest and the Credibility of Underwriter Analyst Recommendations. *The Review of Financial Studies.* 12(4): 653-686.

Monk, J. (2018), Global Third-Party Research: An Industry in Crisis? (July 27, 2018), *Website of CFA Institute.* Referred on November 22, 2019. Retrieved from: https://blogs.cfainstitute.org/investor/2018/07/27/global-third-party-research-an-industry-in-crisis/

O'Brien, P., McNichols, M. and Hsiou-Wei, L. (2005), Analyst Impartiality and Investment Banking Relationships. *Journal of Accounting Research*, 43: 623-650.

Stickel, S. (1995), The anatomy of the performance of buy and sell recommendations, *Financial Analysts Journal,* 51: 25-39

Rajan, R. and Servaes, H. (1997), Analyst Following of Initial Public Offerings. *The Journal of Finance*, 52: 507-529.

Ritter, J. (1991), The Long-Run Performance of initial Public Offerings. *The Journal of Finance*, 46: 3-27.

Womack, K. (1996), Do brokerage analysts' recommendations have investment value? *Journal of Finance,* 51: 137-167.

WRDS. (2019), Overview of I/B/E/S Historical Earnings Estimate Data. Referred on November 25, 2019. Retrieved from: https://wrds-www.wharton.upenn.edu/pages/support/data-overview/wrds-overview-ibes-historical-earnings-estimate-database

Appendix

Appendix I

Description of the method for matching analysts to underwriters

Appendix I introduces the method I use in order to match anonymous analyst recommendations to known lead-underwriters. Underlying assumptions for this method are the findings of the prior research, that underwriters nearly exclusively initiate the analyst coverage and are more likely to continue the coverage over time in order to boost the performance of their clients. This may result to three conditions I examine. First, the large portion of lead-underwriter's equity research is concentrating on firms they have taken public. Second, the recommendations issued on the firm that the underwriter Y has taken public are concentrated on the equity department of lead-underwriter. Third, the largest portion of coverage initiations of the firm that the underwriter Y has taken public, is initiated by the equity department of lead-underwriter. As a prerequisite for a match, is used that all these conditions become realized. I construct three 13x14 matrixes and examine the relations between research houses X and underwriters Y in order to find analyst-underwriter matches. 10 underwriter-analyst pairs that are matched in this research, are underlined and bolded.

Panels A to C examines conditions 1 to 3, respectively.

Panel A: Research house X's recommendations issued to firms taken public by underwriter Y as a percentage of all recommendations issued by X

	Underwriter (Y)													
Research house (X)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	8 %	4 %	17 %	11 %	12 %	3 %	11 %	4 %	1 %	5 %	1 %	3 %	**5 %**	1 %
B	9 %	6 %	17 %	17 %	14 %	1 %	8 %	5 %	1 %	6 %	1 %	2 %	1 %	0 %
C	10 %	6 %	15 %	15 %	15 %	1 %	8 %	6 %	1 %	4 %	2 %	0 %	0 %	0 %
D	11 %	**18 %**	19 %	12 %	14 %	3 %	8 %	2 %	1 %	6 %	1 %	1 %	0 %	0 %
E	11 %	10 %	20 %	12 %	17 %	3 %	**16 %**	1 %	0 %	6 %	1 %	0 %	0 %	0 %
F	10 %	6 %	**39 %**	11 %	14 %	2 %	8 %	0 %	0 %	6 %	1 %	0 %	0 %	0 %
G	9 %	9 %	14 %	15 %	19 %	2 %	3 %	3 %	**4 %**	7 %	3 %	0 %	1 %	0 %
H	9 %	7 %	17 %	12 %	16 %	2 %	7 %	**13 %**	1 %	5 %	3 %	0 %	1 %	0 %
I	9 %	6 %	19 %	**29 %**	16 %	3 %	6 %	1 %	0 %	6 %	1 %	1 %	0 %	0 %
J	10 %	7 %	22 %	14 %	17 %	**10 %**	7 %	1 %	1 %	6 %	1 %	1 %	0 %	0 %
K	**22 %**	7 %	20 %	13 %	17 %	4 %	7 %	0 %	0 %	5 %	1 %	1 %	0 %	0 %
L	8 %	7 %	21 %	12 %	**38 %**	2 %	4 %	1 %	1 %	4 %	1 %	0 %	0 %	0 %
M	10 %	11 %	18 %	11 %	18 %	3 %	8 %	1 %	1 %	6 %	1 %	1 %	0 %	0 %

Panel B: Research house X's recommendations issued to firms taken public by underwriter Y as a percentage of all recommendations issued to firms taken public by Y

	Underwriter (Y)													
Research house (X)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
A	1 %	1 %	1 %	1 %	1 %	2 %	3 %	3 %	1 %	2 %	73 %	19 %	**11 %**	9 %
B	2 %	2 %	2 %	3 %	2 %	0 %	3 %	5 %	5 %	4 %	82 %	16 %	1 %	6 %
C	1 %	1 %	1 %	1 %	1 %	0 %	1 %	3 %	3 %	2 %	73 %	2 %	0 %	2 %
D	4 %	**8 %**	3 %	3 %	3 %	4 %	4 %	3 %	5 %	6 %	91 %	10 %	1 %	0 %
E	3 %	3 %	3 %	2 %	2 %	3 %	**6 %**	1 %	0 %	5 %	73 %	3 %	0 %	2 %
F	4 %	4 %	**9 %**	4 %	3 %	3 %	5 %	1 %	3 %	8 %	109 %	4 %	0 %	0 %
G	2 %	2 %	1 %	2 %	2 %	1 %	1 %	2 %	**10 %**	3 %	127 %	1 %	1 %	0 %
H	2 %	2 %	2 %	2 %	2 %	1 %	2 %	**12 %**	2 %	4 %	173 %	2 %	2 %	0 %
I	3 %	3 %	3 %	**7 %**	3 %	3 %	3 %	1 %	2 %	6 %	100 %	13 %	1 %	0 %
J	3 %	2 %	3 %	3 %	2 %	**8 %**	2 %	1 %	2 %	4 %	91 %	6 %	1 %	0 %
K	**11 %**	4 %	5 %	5 %	4 %	5 %	4 %	1 %	0 %	7 %	100 %	24 %	3 %	0 %
L	3 %	4 %	5 %	4 %	**9 %**	3 %	3 %	2 %	3 %	5 %	145 %	1 %	0 %	0 %
M	2 %	3 %	2 %	2 %	2 %	2 %	2 %	1 %	2 %	4 %	45 %	7 %	0 %	0 %

Panel C: The number of initations of coverage provided by research house X to firms taken public by underwriter Y

	Underwriter (Y)													
Research house (X)	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	7	4	9	9	11	2	9	6	1	2	0	1	**10**	0
B	6	0	7	9	5	0	4	10	5	4	0	0	0	1
C	10	4	12	9	10	0	4	6	3	2	1	0	0	0
D	14	**41**	16	5	8	2	7	2	0	2	1	0	0	0
E	9	6	5	5	8	3	**16**	0	0	1	0	0	0	0
F	9	2	**86**	16	21	7	6	0	0	4	0	0	0	0
G	8	9	14	19	17	5	3	6	**8**	2	0	0	0	0
H	10	6	16	3	8	2	5	**38**	0	5	0	0	0	0
I	10	9	19	**71**	17	1	7	2	0	5	0	1	0	0
J	4	5	7	2	12	**18**	6	0	0	3	0	0	0	0
K	**36**	7	10	8	24	1	6	0	0	2	0	0	0	0
L	4	6	16	8	**60**	2	3	2	0	3	0	0	0	0
M	12	8	18	12	19	5	9	5	1	3	0	0	1	0

Appendix II

Returns for Combined Portfolios, Holding Period of 3 Years

This table provides returns for several portfolios with different holding periods. Moreover, Panel D exhibits returns on both consensus and underwriter portfolios matched by timing and sample.

Annual Raw Return is annualized gross return of portfolio without any adjustments. *Intercept from* is an estimate of $\propto_p$ for given portfolio from given regression model (with t-values underneath in parentheses). *, ** and *** indicate significance at the 10%, 5% and 1% levels, responsibly. *Annualized excess return from* is annualized alpha of given portfolio and regression model.

Panel A: Returns for a holding period of 1 year after the IPO

		Intercept from		Annualized excess return from	
Portfolio	Annual Raw Return	CAPM	Fama-French	CAPM	Fama-French
Consensus 1 (most favorable)	5.6 %	-0.265	0.330	-3,1 %	4,0 %
		(-0.327)	(0.461)		
Consensus 4 (least favorable)	-17.5 %	-2.440	-2.212	-25,7 %	-23,5 %
		(-2.868)***	(-2.606)***		
Consensus 1 - Consensus 4	23.1 %	2.176	2.542	29,5 %	35,2 %
		(1.971)**	(2.284)**		
Underwriter 1 (most favorable)	6.9 %	-0.399	0.003	-4,7 %	0,0 %
		(-0.765)	(0.006)		
Underwriter 3 (least favorable)	-2.4 %	-1.107	-0.743	-12,5 %	-8,6 %
		(-1.699)	(-1.248)		
Underwriter 1 - Underwriter 3	9.3 %	0.709	0.746	8,8 %	9,3 %
		(0.970)	(0.993)		

Panel B: Returns for a holding period of 3 years after the IPO excluding the first year

		Intercept from		Annualized excess return from	
Portfolio	Annual Raw Return	CAPM	Fama-French	CAPM	Fama-French
Consensus 1 (most favorable)	6.6 %	-0.005	0.802	-0,1 %	10,1 %
		(-0.050)	(0.903)		
Consensus 4 (least favorable)	8.0 %	-0.315	0.153	-3,7 %	1,9 %
		(-0.545)	(0.300)		
Consensus 1 - Consensus 4	1.4 %	0.310	0.650	3,8 %	8,1 %
		(0.291)	(0.598)		
Underwriter 1 (most favorable)	11.8 %	0.024	0.445	0,3 %	5,5 %
		(0.057)	(1.251)		
Underwriter 3 (least favorable)	7.9 %	-0.461	0.064	-5,4 %	0,8 %
		(-0.918)	(0.164)		
Underwriter 1 - Underwriter 3	3.8 %	0.484	0.381	6,0 %	4,7 %
		(0.969)	(0.758)		

Panel C: Returns for a holding period of 5 years after the IPO

		Intercept from		Annualized excess return from	
	Annual Raw Return	CAPM	Fama-French	CAPM	Fama-French
Consensus 1 (most favorable)	4.7 %	-0.437	0.167	-5,1 %	2,0 %
		(-0.652)	(0.297)		
Consensus 4 (least favorable)	1.6 %	-0.962	-0.435	-11,0 %	-5,1 %
		(-1.480)	(-0.719)		
Consensus 1 - Consensus 4	3.1 %	0.525	0.602	6,5 %	7,5 %
		(0.646)	(0.718)		
Underwriter 1 (most favorable)	7.6 %	-0.361	-0.117	-4,2 %	-1,4 %
		(-0.913)	(-0.309)		
Underwriter 3 (least favorable)	1.9 %	-0.893	-0.557	-10,2 %	-6,5 %
		(-1.902)*	(-1.386)		
Underwriter 1 - Underwriter 3	5.7 %	0.5324	0.441	6,6 %	5,4 %
		(0.991)	0.807		

Panel D: Returns for portfolios matched by timing and sample

		Intercept from		Annualized excess return from	
Portfolio	Annual Raw Return	CAPM	Fama-French	CAPM	Fama-French
Consensus 1 (most favorable)	0.0 %	-0.817	-0.081	-9,4 %	-1,0 %
		(-1.042)	(-0.122)		
Consensus 4 (least favorable)	-2.9%	-1.279	-0.761	-14,3 %	-8,8 %
		(-1.899)*	(-1.206)		
Consensus 1 - Consensus 4	2.9 %	0.460	0.680	5,7 %	8,5 %
		(0.527)	(0.760)		
Underwriter 1 (most favorable)	7.8 %	-0.368	0.016	-4,3 %	0,2 %
		(-0.818)	(0.042)		
Underwriter 3 (least favorable)	5.4 %	-0.572	-0.177	-6,7 %	-2,1 %
		(-1.099)	(-0.404)		
Underwriter 1 - Underwriter 3	2.4 %	0.205	0.193	2,5 %	2,3 %
		(0.372)	(0.340)		