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Analyst recommendations and internet IPOs

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Abstract

This paper investigates whether analyst recommendations are independent of their employer's investment banking activities. Our sample consists of internet firms that went public during 1997-2000. The contribution of the paper to the literature is threefold. First, to account for missing recommendations in individual databases we have merged two databases with analyst recommendations. Second, we have exploited the short lives of internet IPOs by examining recommendations shortly before a firm's delisting. Third, we have looked at stock returns after strong-buy recommendations.

Based on regression analysis, significant differences are found between recommendations made by affiliated and unaffiliated analysts. Different results are obtained for initiations and reiterations. Furthermore, the recommendations from affiliated analysts appear to be more favorable than those from unaffiliated analysts before an IPO firm's delisting.

These findings support the conflicts of interest, but not the superior-information hypothesis for investment banks that have an underwriting mandate for the IPO firm.

Keywords: analyst recommendations, internet firms, initial public offerings

JEL codes: G14, M40

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Look Who is Talking Now

Analyst Recommendations and Internet IPOs

1. Introduction

There is an increasing attention by academics as well as non-academics for the credibility and independence of financial analysts. They are alleged to be subject to conflicting interests: providing objective recommendations on stocks for their clients, on the one hand, and pursuing future investment banking business, on the other. First, the so-called Chinese Wall between financial analysts and other employees of a financial institution was subject to fierce discussions. Then came the burst of the internet bubble in the summer of 2000 and the alleged overly optimistic recommendations that played a role. As a consequence, the New York Stock Exchange (NYSE) has changed Rule 472, and in a similar way NASDAQ Rule 2711 has been changed. In addition, the New York Attorney General reached a Global Settlement in April 2003 between ten of the most prestigious investment banks¹ and regulators in the

¹ These investment banks are Bear Stearns & Co., Credit Suisse First Boston, Deutsche Bank, Goldman Sachs, J.P. Morgan Chase & Co., Lehman Brothers, Merrill Lynch & Co., Morgan Stanley, Salomon Smith Barney, and UBS Warburg.

amount of \$ 1.4 billion. Among other things, parties involved agreed to separate research from investment banking to ensure that their research will be independent. This study examines analyst recommendations during the years 1997-2001 with respect to internet IPOs. After a firm's IPO, investment analysts distribute their reports providing recommendations on the IPO firm. These investment analysts can be categorized in two classes: the underwriter or affiliated analysts and non-underwriter or unaffiliated analysts. The former are analysts from the lead manager and co-lead managers of the IPO; the latter are not involved in the IPO. In particular, we examine recommendations from the affiliated analysts compared to those from unaffiliated investment analysts and whether these recommendations are supported by a firm's fundamental economic situation.

We observe that affiliated analysts have more favorable recommendations than unaffiliated analysts. There are two alternative explanations. First, because affiliated analysts might have an informational advantage and superior information on firms that they have underwritten, they can make better and more accurate recommendations than unaffiliated analysts. Another explanation for overly optimistic analysts is that regardless the IPO firm's quality, affiliated analysts have a strong incentive because of their business relationships to recommend firms that their investment bank has recently taken public. Consistent with this conflict-of-interests hypothesis, Michaely and Womack (1999) and Chen (2004) report that the market discounts recommendations from affiliated underwriters. Furthermore, Michaely and Womack (1999) document that abnormal returns of IPO firms with buy recommendations from unaffiliated investment banks outperform significantly those of affiliated investment banks. However, neither of the last two studies controls for the so-called quiet period, which begins on or before a firm files its preliminary registration with the SEC, and ends 25

calendar days after the IPO, which in July 2002 the SEC changed to 40 calendar days. In contrast to the papers of Michaely and Womack (1999) and Chen (2004), Bradley, Jordan, and Ritter (2008) do control for the quiet period because it appears that recommendations at the end of the quiet period are fundamentally different from those during the subsequent eleven months from the standpoint of market price and volume reactions. As a consequence, Bradley *et al.* (2008) find no evidence that the market discounts recommendations from affiliated analysts. In addition, the latter authors report that unaffiliated analysts recommend larger IPO firms. Therefore, differences in recommendations can be the result of the timing of the recommendations and of covering different firms by affiliated and unaffiliated investment analysts, respectively. However, neither Michaely and Womack (1999), Chen (2004), nor Bradley *et al.* (2008) control for differences of the characteristics of IPO firms covered by investment analysts.

The contribution to the literature is that this paper addresses the question whether the bias in recommendations is caused by the conflict-of-interest hypothesis or the superior-information hypothesis in a number of new ways. First, internet firms are generally going public at an earlier stage of business than typical IPOs. Therefore, our sample of early stage IPOs is attractive for analyzing analyst independence because it increases the benefits of superior information and might also increase the likelihood that the issuer will need to raise additional capital in the near future which concerns the conflict-of-interest hypothesis. Second, in line with Bradley *et al.* (2008), we distinguish recommendations at the end of the quiet period from the recommendations during the eleven months thereafter. Furthermore, our analysis shows that it is important to distinguish between initiated and reiterated recommendations.

Third, it appears that the database from Briefing.com does not capture all recommendations (Bradley *et al.* 2008). Hence, we have combined the recommendations from the databases of Briefing.com and I/B/E/S of Thomson Financial.

In addition, we have also looked at the relation between analyst recommendations, on the one hand, and firm-specific characteristics and market sentiment around the recommendation date, on the other hand. As control variables in our regressions, we have included IPO-specific variables, such as retained ownership of the single largest shareholder and the number of shares offered in the IPO.

The superior-information hypothesis is tested in two different ways. First, internet firms have a high likelihood of being delisted due to bankruptcy or low stock prices. Hence, our sample includes sufficient IPOs that were delisted to examine analyst recommendations from affiliated and unaffiliated investment analysts during the last months before the delisting of these internet firms. If affiliated banks have superior information, analysts from these institutions are in a better position to predict the internet firm's delisting than those from unaffiliated banks. Second, we have looked at the relation between recommendations from affiliated and unaffiliated investment banks and the abnormal returns of internet stock for different periods after the date of a strong-buy recommendation. This section is comparable to the analysis carried out by Michaely and Womack (1999).

The remainder of the paper is organized as follows. Section two presents prior literature on financial analyst recommendations. Section three describes our data sample and includes descriptive statistics. The fourth section presents comparisons of means of analyst recommendations. Section 5 contains regression estimates of recommendations accounting for a number of control variables and an analysis of recommendations from

affiliated and unaffiliated investment banks before a firm's delisting. In section 6 we present the empirical results of the abnormal returns from one week until six months after the strong-buy recommendation date. The final section summarizes and concludes the paper.

2. Prior Literature

Intuitively, one would expect that investment analysts affiliated with an IPO firm are subject to conflicts of interests. A number of studies on analyst recommendations have examined this research question and compared the ratings of affiliated analysts to those of unaffiliated analysts. Michaely and Womack (1999) and Chen (2004) present empirical results that stock returns following affiliated analyst *Buy* recommendations are significantly lower than those following unaffiliated analyst *Buy* recommendations. Michaely and Womack investigate two categories of affiliation, lead underwriters and non-lead underwriters. For a sample of 391 IPO firms gone public in 1990 and 1991, the authors examine 241 *Buy* recommendations. However, both studies do not control for the timing of the recommendations. Bradley, Jordan, and Ritter (2003) provide evidence that after controlling for the timing and number of analysts initiating, the presence or absence of the lead underwriter makes no difference. It is one of the first papers that investigates the stock market reaction to analyst initiations at the end of the quiet period. Bradley *et al.* (2003) find that the abnormal returns experienced by firms with coverage initiated are concentrated in the days before the quiet period expires. The pre-event run-up is more pronounced for firms that ultimately receive multiple initiations. The empirical results of Bradley *et al.* (2003) are consistent with both affiliated and unaffiliated analysts competing for future investment banking business. Bradley *et al.* (2008) report that recommendations at the end of the quiet period are fundamentally different from those during the subsequent eleven months from the standpoint of market price and volume reactions. Second, affiliated underwriter upgrades and downgrades are associated with a greater market reaction than those from

unaffiliated analysts, which is inconsistent with the market discounting recommendations from affiliated underwriters.

McNichols, O'Brien, and Pamukcu (2007) provide empirical results that investors tend to discount *Buy* recommendations of affiliated analysts. Their findings are consistent with Michaely and Womack (1999), but inconsistent with several other studies aforementioned. In contrast to Michaely and Womack, McNichols *et al.* (2007) do not see affiliated analyst recommendations earning lower abnormal buy-and-hold returns than unaffiliated at intervals of three, six or twelve months after the recommendations. The last three authors find that co-underwriters are similar to lead underwriters and different from unaffiliated analysts. McNichols *et al.* (2007) provide evidence that unaffiliated analysts initiate coverage later, and issue less optimistic recommendations, than either underwriters or analysts employed at non-investment-bank firms. Furthermore, their year-on-year breakdown reveals no time trend in the results, and most years show no statistically significant difference between affiliated and unaffiliated analysts' abnormal returns. By comparing internet stocks with other IPO firm stocks prior to 1998, O'Brien and Tan (2007) find little evidence of differential analyst optimism by sector, and no evidence of internet stocks earning superior returns. Beginning in 1998, O'Brien and Tan (2007) show that analysts made higher recommendations for internet stocks than for other new issues. Bradley, Clarke, and Cooney (2007) show that in the early years of the 1990s affiliated underwriters provided more optimistic recommendations than unaffiliated analysts and their recommendations were discounted by the market. However, in the late 1990s, as research coverage became increasingly more important to issuing firms, both affiliated and unaffiliated analysts were equally optimistic and market reactions to recommendations were the same for these two groups. Bradley *et al.* (2007) also find

that the number of unaffiliated analysts following a stock is positively related to subsequent equity deals. Finally, the latter authors provide evidence that affiliated analysts reduce their coverage when they lose their underwriting mandate, or are otherwise demoted to a lower position in a follow-on offering. The empirical results are consistent with analysts, affiliated or unaffiliated, using their research services for investment banking purposes. Ljungqvist, Marston, Yan, Starks, and Wei, (2007) find that analysts' recommendations relative to consensus are positively associated with investment banking relationships and brokerage pressure, but negatively associated with the presence of institutional investors in the firm being followed. This is especially true when there are more institutions holding larger blocks in the firm, and for firms whose institutional holdings are concentrated in the hands of the largest institutional investors.

Firm-specific characteristics are related to a firm's probability to survive. Survivorship plays an important role for internet firms. Hence, analyst recommendations should account for those characteristics. For instance, Demers and Joos (2007) develop an IPO failure prediction model that includes accounting and non-accounting information. The latter refers to variables, such as underwriter prestige, IPO proceeds, and IPO offer price. The authors report significant differences in failure models for non-tech and high-tech IPO firms. Botman, Van der Goot, and Van Giersbergen (2009) have looked at the survival of internet IPOs by including not only offering and IPO market characteristics, but also firm specific characteristics from the firm's financial statements. Their empirical results provide evidence for the effects of the number of risk factors and retained ownership on the survival rate of internet IPOs.

Thus, given the findings of the papers in this section empirical evidence on the independence of financial analysts is mixed. The extent of the differences between affiliated and non-affiliated analysts varies between samples and across time as well.

3. Sample Selection and Descriptive Statistics

Our data of internet IPOs comes from different sources: first, a sample of 527 internet-related offerings used by Loughran and Ritter (2003) who obtained their data by merging and amending internet identifications of *Thomson Financial Securities Data*, *Dealogic* and *IPOmonitor.com*. We have matched our initial sample against the firms marked as internet-related by our second source, www.edgar-online.com. IPOs documented by both sources are included in our initial sample, which contains 382 firms.

In order to be included in the final sample, firms had to meet two additional criteria. First, firms had to be listed at the NASDAQ stock exchange. Second, the final prospectus had to be available at www.sec.gov, including annual accounts covering a full fiscal year. Furthermore, unit offerings and financial institutions are excluded from the sample as the characteristics of these IPOs differ significantly from other offerings. From our initial sample 13 firms have been dropped because these were issued at an exchange other than NASDAQ. Two firms are left out, as their final prospectuses were not available. For 31 firms the annual accounts accompanying the prospectus do not cover a full year. Finally, eight firms that were financial institutions are omitted. After the exclusion of those 54 firms, our final sample consists of 328 internet offerings. One remarkable feature of internet firms is their short lives: our sample of 328 internet IPOs contains 122 non-surviving firms. Most firms are delisted because of two reasons: i) a stock price that is lower than the minimum bid price, and ii) bankruptcy. The average lifetime of a delisted internet IPO is around 2½ years (Botman *et al.*, 2009)

As reported by Bradley *et al.* (2008), the different databases of analyst recommendations do not capture all recommendations issued for a specific firm. Therefore, our analyst recommendations of internet IPOs come from both Briefing.com and I/B/E/S of Thomson Financial. By using two databases of analyst recommendations our sample of recommendations is as complete as possible. We have controlled for overlap by removing the recommendations of the same investment bank that around the same date appeared more than once in our final sample.

Various variables used in our analysis (for instance the number of risk factors, the names of the lead and co-lead manager to determine their reputation and some financial ratios) have been hand-collected from the final offering prospectuses of the issuing firms. The date of the first trading day has been obtained from www.edgar-online.com.

First, we investigate the timings of the recommendations with respect to the three types of investment bankers for initiations and reiterations separately. As can be seen from Figure 1, unaffiliated analysts are lagging behind affiliated analysts. The average number of days after IPO of the recommendations for the affiliated analysts is 40 percent smaller than the average days after IPO for the unaffiliated analysts. Comparing the graph of initiated with the reiterated recommendations, we see that (i) the majority of initiations by affiliated analysts occur in the first month after the IPO, while the initiations by unaffiliated analysts are more evenly spread over the year peaking in the seventh month after the IPO (ii) as expected, there are almost no reiterations in the first month (only eight reiterations occur in the first month versus 1,889 in the eleven months thereafter) (iii) already in the second month there is a substantial amount of reiterations by the affiliated analysts and (iv) after six months, there are more reiterations from unaffiliated brokers than from lead or co-lead managers. Overall, almost all recommendation within one month after IPO are initiations by affiliated

managers, while the recommendations after one month are a mixture of initiations and reiterations by affiliated and unaffiliated analysts.

<Insert Figure 1 about here>

Table 1 presents descriptive statistics of the five types of recommendations. In line with other papers (for instance Bradley *et al.* 2003 and 2008) we use five categories (in parentheses the corresponding recommendation number) *Strong-Buy (1)*, *Sub-Buy (2)*, *Attractive (3)*, *Hold-Neutral (4)* and *Sell (5)*. The lower the value of the category, the more favorable is the recommendation or rating. As can be seen in Table 1, a majority of the recommendations, approximately 90 percent, consists of *Strong-Buy* and *Sub-Buy* ratings. On a total of 3,954 recommendations during the first year after IPO there are only eight *Sell* recommendations. The number of ratings is not evenly distributed among the different types of investment banks. Co-lead managers with 1,299 ratings issue about twice as many recommendations as lead managers with 670 ratings. This is a consequence of the fact that most IPOs only have one lead manager and several co-lead managers. However, most recommendations (1,985 out of a total of 3,954) come from unaffiliated brokerage firms. On average, the number of recommendations per lead manager, co-lead manager and unaffiliated broker are 12, 16 and 11, respectively. The longer the period after IPO, the smaller the percentage of recommendations from lead managers (see also Figure 1). Comparing initiations to reiterations in Table 1, we see that the number of strong-buy recommendations is significantly higher for reiterations than initiations. In fact, a strong-buy recommendation is the most observed reiteration in our sample. Furthermore, the proportions of initiations and reiterations over the different types of analysts appears to be quit stable although the proportion of

reiterations by lead managers is slightly larger than the proportion of initiations, while the opposite can be seen for the proportions for unaffiliated analysts.

<Insert Table 1 about here>

Table 2 investigates whether there is a relationship between the analyst recommendations (which is an ordinal variable) and the type of investment bank (which is a nominal variable) using chi-square tests of independence. Since the p -values of these tests are only accurate if the expected frequencies are large enough (usually a lower bound of 5 for the expected frequency in a particular cell is taken), we have combined the *Attractive*, *Hold-Neutral* and *Sell* (hereafter referred to as AHS) ratings indicated by “3+4+5” in panels A (initiations) and B (reiterations), respectively. As can be seen in Table 2, both values of the chi-square tests are significant at the five percent level. However, the statistical evidence for a relationship between the initiations and the type of analyst is much stronger than for the reiterations. The largest deviations between what is expected (under the independence hypothesis) and observed for initiations are summarized as follows: co-lead managers issue significantly less than the expected number of AHS initiations (viz. only $18/65=28\%$), while unaffiliated analysts issue significantly more than the expected number of AHS initiations (viz. $154/113=137\%$). For reiterations, we observe that lead managers issue significantly less than the expected number AHS initiations (viz. 70%). Overall, the largest deviations occur for AHS recommendations, which indicate that the type of recommendation is related to the type of analyst.

<Insert Table 2 about here>

Table 3 provides a year-on-year breakdown of analyst recommendations. To have sufficient recommendations per year, the initiations and reiterations are pooled together. As can be seen in Table 3, the number of the recommendations is not evenly distributed across the years of IPO. The number of recommendations peaked in 2000 and declined rapidly in 2001. Because of the small number of observations we have omitted year 1998. Only in 1999 the number of *Strong-Buy* and *Sub-Buy* recommendations from unaffiliated investment banks is less than from the other two types of investment banks. The number of recommendations from unaffiliated brokers in 2000 is more than twice the number of recommendations from the two other years. As can be seen in Table 3, only for 2001 the chi-square independence test is not significant. The latter indicates that for 2001 the recommendations can be considered largely similar across the different types of investment banks. For 1999 and 2000, the analyst recommendations do appear dependent on the type of investment bank.

<Insert Table 3 about here>

Panel A of Table 4 shows descriptive statistics for the IPO characteristics. As can be seen from this table, the IPO prospectuses mention 31 (31) risk factors on average (median). The average number of risk factors is much higher than the 14 reported in Beatty and Welch (1996) reflecting the high risks associated with internet IPOs. The mean (median) number of shares offered without the green shoe is 19.2 (18.0) percent of the shares outstanding without the green shoe. The average (median) number of shares offered without the green shoe is 5.984 million (4.500 million). The largest single shareholder holds on average (median) 28.5 (21.9) percent of the shares

outstanding after IPO. The non-logged average (median) net sales is \$18.311 (\$6.901) million. The average (median) underwriter fee paid by the internet firms is \$5.75 (\$4.480) million. The sum of the underwriter fees paid by the internet firms of our sample is \$1.9 billion (compared with the amount of \$ 1.4 billion of the Global Settlement in April 2003).

To see whether affiliated (lead and co-lead) brokers select other IPOs for their recommendation than unaffiliated brokers, we have carried out a chi-squared independence test with respect to broker type and two of the IPO characteristics namely number of risk factors and the firm value. The IPOs are separated into two groups: group one consists of all IPOs with a particular characteristic smaller or equal than the median value of that characteristic, while all other IPOs belong to group two. If affiliated brokers follow the same IPOs as the unaffiliated brokers, we expect the proportions between the two groups to be the same. The chi-squared tests are significant at the 5% level (number of risk factors) and 1% level (firm value).

Comparing the observed frequencies with the expected frequencies, it appears that affiliated brokers are more focused on IPOs with smaller number of risk factors and smaller firm value than unaffiliated brokers. Michaely and Womack (1999) and Bradley *et al.* (2007) also find that unaffiliated brokers tend to recommend larger firms. These tests provide significant evidence that the IPO characteristics for recommendations from affiliated brokers are different from those given by unaffiliated brokers, so that we have to control for these differences in IPO characteristics when comparing recommendations between these types of brokers.

<Insert Table 4 about here>

4. Comparison of Means of Recommendations

For the first year after IPO Table 5 presents a comparison of means of analyst recommendations. The means of the ratings from two types of investment banks at a time are compared. All *t*-test are conducted for the initiations and reiterations separately. As can be seen in Table 5, initiations issued by co-lead manager are significantly more favorable (1.615) than those issued by lead managers (1.790) and unaffiliated brokers (1.828), respectively. In other words, lead managers and unaffiliated analysts issue significantly less favorable ratings than co-lead managers, on average. For the reiterations the situation with respect to the affiliated analysts is the opposite. Now, the lead managers (1.578) issue significantly more favorable recommendations than the co-lead manager (1.728) and unaffiliated analysts (1.682). In fact, there is even some statistical evidence (at the 10% level) that co-lead managers are less favorable than unaffiliated analysts. Apparently, co-lead managers seem to correct themselves for their overly optimistic initial recommendations when issuing reiterations. Apart from the direction of the relation, the magnitude of the average differences between the lead and co-lead managers seems remarkably similar (+0.175 for the initiations versus -0.150 for the reiterations).

<Insert Table 5 about here>

To investigate whether the differences between the types of brokers change through time, Table 6 presents a year-on-year analysis. As can be seen in Table 6, the differences of ratings between lead and co-lead managers are never significant. This can partly be explained by the fact that now initiations are pooled with reiterations and

the observation that co-lead managers correct their overoptimistic initial recommendations. Significant differences between affiliated and unaffiliated analysts can be seen in 1999 and 2000: only before the burst of the internet bubble there were differences in recommendations between the affiliated and unaffiliated of investment banks.

<Insert Table 6 about here>

In 2000 on the top of the internet bubble, the average rating from all types of investment banks compared to both other years is more favorable. The opposite holds for 2001 when not only the ratings from all types of investment banks are less favorable than from both other years examined, but also 2001 is the only year for which the differences in means of the recommendations are never significantly different across the types of the investment banks examined. Except for 2001, the empirical results in this section provide evidence that different types of investment banks issue different recommendations.

5. Further Analysis using control variables

To further examine analyst recommendations we have run a number of regressions. These are presented by panels A, B and C of Table 7; the dependent variable in each regression is analyst recommendation. The methodology used is ordinary least squares (OLS) regression. Again, the recommendations are numbered one (highest rating) to five (lowest rating); the lower the value, the better the recommendation. Because the dependent variable is ordinal and discrete we have also run ordered multi-logit regressions (not reported). The results of both types of regressions are qualitatively similar, so we focus on the OLS estimates for simplicity.

The analyst recommendations are regressed against the type of analysts represented by two dummy variables: one for the co-lead manager and another for the unaffiliated investment bank. Because we use dummies for both the co-lead manager and the unaffiliated investment bank, the coefficient of each dummy indicates the direction of the relation with the third type of investment bank, the lead manager.

First, we focus on the regression results for the initiations reported in Panel A of Table 7. For initiations, the recommendations are also divided with respect to their time after IPO, namely one month, the quiet period, versus 2-12 months to distinguish between the recommendations from the quiet period and those from the eleven months thereafter. For the first month after IPO, the initiations from the co-lead manager are significantly more favorable (thus, having lower values) than those from the lead manager and unaffiliated brokers. This phenomenon remains the same for the eleven months thereafter. Although there are some minor differences in the control variables, we shall only discuss the results for the pooled regression (1-12 months) since this is based on the most available information. The variable Largest Single Shareholder is a

measure for the concentration of ownership. As can be seen in panel A of table 7, we find significant evidence that the higher the retained ownership of the largest single shareholder, the more favorable the recommendation. The Number of Risk Factors controls for *ex ante* firm-specific risk. This variable is never significant, which suggests that a firm's risk is not taken into account by investment analysts. The firm's IPO value captures a possible size effect. The larger the IPO's size, the worse the initiated recommendation (although this effect does not appear to be significant for initiations issued in the first month). Another control variable is the number of offered shares as percentage of the number of shares placed and outstanding. As can be seen in panel A of Table 7, the analyst recommendation is a highly significant and decreasing function of the number of shares offered as a percentage of total shares after IPO: the higher this percentage, the better the recommendation. The return of the NASDAQ index averaged over 15 days before to 15 days after the recommendation date is a proxy for the influence of the stock market sentiment on the analyst recommendation. As can be observed from panel A of table 7, there is a negative relation between analyst recommendations and stock market sentiment: more favorable recommendations are significantly related to positive market changes for each of the three periods examined at the 1% level of significance. This finding is consistent with investment analysts who follow stock market sentiment rather than predicting it. To control for the burst of the internet bubble in the summer of 2000, we include a dummy in our model, called Dummy Burst. This dummy has a value of one after September 1, 2000, and zero otherwise. It appears that this dummy is not significant, which is probably due to the fact that only 14.3% of the initiations were issued after September 1, 2000.

Next, we look at the results of the reiterations shown in Panel B of Table 7. Since almost all reiterations (99.6%) occur after the first month, these recommendations are

effectively from 2-12 months after IPO. Similar to the analysis in Table 5, we now see that the average reiterations from lead managers are more favorable (thus, having lower values) than those from the co-lead manager and unaffiliated brokers. So, after the quiet period, co-lead managers seem to adjust their overoptimistic initiations by issuing less favorable reiterations. Looking at the control variables, only the Dummy Burst and the NASDAQ index are significant at the 1% level. As can be seen from the direction of the coefficient of Dummy Burst, recommendations after the burst of the internet bubble are significantly less favorable than before. Since reiterations occur later in time than initiations, the information in the other control variables, which is related to characteristics observed before the date of IPO, does not seem to play an important role anymore. Only the number of risk factors is marginally significant at the 10% level. Overall, the empirical results presented in panels A and B of table 7 provide further evidence that there are conflicts of interest for different types of financial analysts.

<Insert Table 7 about here>

As mentioned earlier, many internet IPOs are short lived. We have used this phenomenon by examining analyst recommendations from affiliated and unaffiliated investment banks, respectively, during the last months before the date an internet firm was delisted. If affiliated analysts have superior information, they are in a better position to predict the internet firm's delisting than unaffiliated analysts. Because it is not difficult to predict a firm's delisting a short time before it will occur, we expect that during the last six months before a firm's delisting the recommendations from the three types of financial analysts do not differ.

Furthermore, under the superior-information hypothesis we expect that during the two other periods examined before a firm's delisting the recommendations from affiliated analysts are less favorable than those from unaffiliated analysts. Note that the timing of these recommendations is now with respect to the delisting date in stead of the IPO date. Since these recommendations are usually long after the IPO date, most of the recommendations are reiterations and therefore initiations are pooled with reiterations. As can be seen in panel C of Table 7, diametrically opposite to implication of the superior-information hypothesis, the recommendations from unaffiliated analysts are less favorable than those from affiliated analysts (at the 10% level) for the period of 12 to 18 months before delisting. For the period between 6 and 12 months before delisting, however, the recommendations are not significantly different anymore. Both findings do not support the superior-information hypothesis. In line with our expectation, the recommendations from the three types of financial analysts do not differ during the last six months before a firm's delisting. Moreover, this is the only period that there is no significant relationship between analyst recommendations and market sentiment measured by the percentage change of the NASDAQ index around the day of the recommendation. As can be seen in Figure 2, the closer the delisting date, the less favorable the recommendations.

<Insert Figure 2 about here>

6. Stock performance after Strong-Buy recommendations

Another look at the conflict-of-interest and superior-information hypothesis is provided by investigating the relation between strong-buy recommendations from affiliated and

unaffiliated investment banks and the abnormal returns of the internet stock for different periods thereafter. We have computed a firm's stock return for a buy-and-hold strategy. Price data for most of the internet IPOs were collected from Datastream. To adjust the returns for the systematic risk, a CAPM model was estimated for every IPO. As market index we took the NASDAQ composite index, since all IPOs belong to the internet sector and are listed on the NASDAQ stock exchange. The IPO's beta was determined by the first year of available price information (excluding the first week to avoid any first-trading effects). If \tilde{r}_t^i denotes the abnormal return for IPO i after adjusting for the market, then $AR_{t_1 \text{ to } t_2}^i$ is defined as the cumulative abnormal return for IPO i from time t_1 to time t_2 :

$$AR_{t_1 \text{ to } t_2}^i = \left[\prod_{t=t_1}^{t_2} (1 + \tilde{r}_t^i) \right] - 1.$$

The average (cumulative) abnormal return for the portfolio (p) of firms with a buy recommendation in any period is the mean of the abnormal returns for that period averaged over the number of firms, i.e.

$$\overline{AR}_{t_1 \text{ to } t_2} = \frac{1}{N} \left(\sum_{i=1}^n AR_{t_1 \text{ to } t_2}^i \right),$$

where N equals the number of selected firms.

We have examined abnormal returns during one, three and six months after a strong-buy recommendation issued in the first year after IPO. Figure 3 illustrates the average abnormal returns for different periods after a strong-buy recommendation from affiliated and unaffiliated investment banks for initiations and reiterations separately. Note the negative abnormal returns for all strong-buy recommendations, which is due to the fact that the sample period includes the rise of stock prices during the internet bubble and the subsequent fall after the burst of the bubble.

<Insert Figure 3 about here>

As aforementioned, Michaely and Womack (1999) document that IPO stocks perform significantly better after buy recommendations from unaffiliated investment banks than from affiliated investment banks. However, controlling for recommendation characteristics and timing, Bradley *et al.* (2008) find opposite empirical results. The last authors provide evidence that the market discounts recommendations from affiliated analysts, but the authors only look at market adjusted returns of 10 days before until ten days after the recommendation date. Our analysis is similar to that of Michaely and Womack (1999), while at the same time we control for recommendation characteristics and timing as conducted by Bradley *et al.* (2008). The superior-information hypothesis is confirmed when the recommendations from affiliated investment banks (lead and co-lead managers) lead to better abnormal returns than those of unaffiliated investment banks.

<Insert Table 8 about here>

Table 8 shows the market-adjusted cumulative average abnormal returns for three periods after a strong-buy recommendation. Panel A of Table 8 shows that there are no significant differences in the average abnormal cumulative returns for initiations across the different types of analysts considered. The results for the reiterations are shown in Panel B of Table 8. A striking feature, which is also clear from Figure 3 (Reiterated Recommendations), is that the abnormal returns of the unaffiliated are always above the abnormal returns of the affiliated analysts. From the test results, however, we infer that

only the abnormal returns of three and six months after a strong-buy recommendation are significantly more favorable for unaffiliated than for affiliated analysts. This is especially so for a time horizon of three months, although the difference seems to disappear at a longer time horizon. Again, the findings of this section are more consistent with the conflict-of-interest than the superior-information hypothesis.

7. Conclusions

This study examines analyst recommendations for internet firms that went public during 1997-2000. Since these internet firms are generally going public at an earlier stage of business than typical IPOs, they are an interesting sample to examine. The likelihood for additional capital in the future and the paucity of information are fertile grounds to test the conflict-of-interest and the superior-information hypotheses, respectively.

We look at the recommendations of investment banks that have an underwriting mandate of the IPO firm, its lead and co-lead managers (the affiliated investment banks), and of unaffiliated investment brokers. Despite accounting for the quiet period and including controls in our model, our findings are more in line with Michaely and Womack (1999) and Chen (2004) than with Bradley *et al.* (2008). The empirical results appear to support the conflict-of-interest hypothesis and not the superior-information hypothesis.

We find that a great majority of recommendations are *Strong-Buy* and *Sub-Buy* recommendations. By comparing the average recommendations across the types of analysts, significant differences are found between the affiliated and unaffiliated analysts. In addition, the empirical results provide evidence that analyst recommendations are dependent on the year that these are published. Except for the period after the burst of the internet bubble in 2001, the recommendations from unaffiliated brokerage firms are year-on-year less favorable compared to those of the lead and co-lead managers, respectively.

To control for IPO-specific variables and general market conditions, we have used OLS regression analysis to investigate the recommendations. With respect to the type of

broker, the following results were obtained. For initiations, co-lead managers issue significantly more favorable initiations than lead managers and unaffiliated analysts. For reiterations, lead managers issue more favorable recommendations than both other types of investment bankers. Apparently, co-lead managers seem to correct themselves for their overly optimistic initial recommendations when issuing reiterations. With respect to the other control variables, the regression estimates show that analyst initial recommendations are more favorable when the number of shares offered as a percentage of total shares after IPO is higher. Also, stock market sentiment plays a strong role. Except for the last six months before an internet firm's delisting, market sentiment (the percentage change of the NASDAQ index around the date of the recommendation) is significantly related to analyst recommendations: favorable recommendations go hand in hand with positive NASDAQ index changes. This outcome is consistent with analyst recommendations following market movements rather than anticipating these. The latter is not consistent with analysts having superior knowledge or issuing more accurate recommendations. Overall, the empirical results provide evidence that for initiations the ratings are more favorable when the percentage retained ownership of the largest single shareholder is higher, the IPO value is smaller, the number of shares in the offering as percentage of the shares outstanding is greater, the NASDAQ stock market is surging, and the analyst affiliation is from a co-lead manager. For reiterations, in addition to the NASDAQ index and a dummy controlling for the internet burst, only the number of risk factors appears to have a significant effect (negative) on the recommendations.

Since many internet IPOs are short lived, we have examined the recommendations for different periods before the delisting date of the internet IPOs. During twelve months before the delisting, no significant results were found. In the period 12-18 months

before delisting, however, the recommendations from unaffiliated investment banks were less favorable than those from lead managers. This outcome is more in line with the conflict-of-interest hypothesis than the superior-information hypothesis.

Finally, we have looked at the cumulative abnormal returns after strong-buy recommendations from affiliated and unaffiliated investment banks. No significant differences were found between the cumulative abnormal returns after strong-buy initiations issued by the three analyst types. However, for reiterations from unaffiliated analysts the cumulative abnormal returns were significantly higher than from affiliated analysts. These findings provide further evidence for the conflict-of-interest hypothesis. Finally, a caveat should be made. Not only is this study on a single branch of industry during the years 1997-2000, but also the regulations on research from investment banks have changed since those years. Therefore, further research should be conducted to examine if there is any effect from these changes.

References

- Botman, M., L.R.T. van der Goot and N.P.A. van Giersbergen (2009), "What determines the Survival of Internet IPOs?", *Applied Economics* 41, 547-561.
- Bradley, D.J., J. Clarke, and J. Cooney (2007), "The Changing Incentives of Financial Analysts from the Early 1990s into the Bubble", working paper, Clemson University.
- Bradley, D.J., B.D. Jordan, and J.R. Ritter (2003), "The Quiet Period Goes out with a Bang", *Journal of Finance* 58, 1-36.
- Bradley, D.J., B.D. Jordan, and J.R. Ritter (2008), "Analyst Behavior Following IPOs: The "Bubble Period Evidence", *Review of Financial Studies* 21, 101-133.
- Chen, X., 2004, "Analysts' Affiliation, Ranking, and the Market Reaction to Stock Recommendations for IPOs," working paper, University of British Columbia.
- Demers, E.A., and P. Joos (2007), "IPO Failure Risk", *Journal of Accounting Research* 45, 333-371.
- Ljungqvist, A., Marston, F.C., Yan, H., Starks, L.T. and Wei, K.D. (2007), "Conflicts of Interest in Sell-side Research and the Moderating Role of Institutional Investors", *Journal of Financial Economics* 85, pp. 420-456.
- Loughran, T. and J.R. Ritter (2004), "Why has IPO underpricing changed over time?", *Financial Management* 33, 5-37.
- McNichols, M.F., P.C. O'Brien, and O.M. Pamukcu (2007), "That Ship Has Sailed: Unaffiliated Analysts' Recommendation Performance for IPO Firms", working paper, Stanford University.
- Michaely, R. and K.L. Womack (1999), "Conflicts of Interest and the Credibility of Underwriter Analyst Recommendations", *Review of Financial Studies* 12, no. 4, pp. 653-686.
- O'Brien, P.C. and Y. Tan (2007), "Financial Analysts' Role in the 1996-2000 Internet Bubble", working paper, University of Waterloo.

Table 1. Descriptive Statistics of Analyst Recommendations and Type of Investment Banks within one year after IPO.

Recommendation	All		Initiations		Reiterations	
	Frequency	%	Frequency	%	Frequency	%
Strong-buy = 1	1,605	40.6	739	35.9	866	45.7
Sub-buy = 2	1,936	49.0	1,110	54.0	826	43.5
Attractive = 3	342	8.6	183	8.9	159	8.4
Hold-neutral = 4	63	1.6	21	1.0	42	2.2
Sell = 5	8	0.2	4	0.2	4	0.2
	3,954	100.0	2,057	100.0	1,897	100.0

Type of Investment Bank	All		Initiations		Reiterations	
	Frequency	%	Frequency	%	Frequency	%
# by Lead Manager	670	16.9	300	14.6	370	19.5
# by Co-lead Manager	1,299	32.9	644	31.3	655	34.5
# by Unaffiliated Brokers	1,985	50.2	1,113	54.1	872	46.0
	3,954	100.0	2,057	100.0	1,897	100.0

by **Lead Managers** = number of recommendations from a lead manager;
by **Co-lead Managers** = number of recommendations from a co-lead manager;
by **Unaffiliated Brokers** = number of recommendations from an unaffiliated brokers.

Table 2. Descriptive Statistics of Analyst Recommendations by Type of Investment Bank and Number of Days after IPO.

Panel A	Initiated Recommendations in 1st year			
	1	2	3+4+5	Total
Lead manager	100	164	36	300
	<i>108</i>	<i>162</i>	<i>30</i>	
Co-lead manager	267	359	18	644
	<i>231</i>	<i>348</i>	<i>65</i>	
Unaffiliated	372	587	154	1,113
	<i>400</i>	<i>601</i>	<i>113</i>	
Total	739	1110	208	2,057
Pearson Chi ² =	59.129		<i>p-value = 0.000</i>	

Panel B	Reiterated Recommendations in 1st year			
	1	2	3+4+5	Total
Lead manager	187	155	28	370
	<i>169</i>	<i>161</i>	<i>40</i>	
Co-lead manager	271	311	73	655
	<i>299</i>	<i>285</i>	<i>71</i>	
Unaffiliated	408	360	104	872
	<i>398</i>	<i>380</i>	<i>94</i>	
Total	866	826	205	1,897
Pearson Chi ² =	13.069		<i>p-value = 0.011</i>	

Lead Manager = recommendations from a lead manager;

Co-lead Manager = recommendations from a co-lead manager;

Unaffiliated = recommendations from an unaffiliated broker;

Recommendations: 1 = “Strong-Buy”, 2 = “Sub-buy”, 3 = “Attractive”, 4 = “Hold-neutral”, 5 = “Sell”

3+4+5 is the sum of *Attractive*, *Hold-neutral* and *Sell* (AHS) recommendations;

Expected frequencies assuming independence are shown in italics.

Table 3. Descriptive Statistics of Analyst Recommendations within one year from IPO and Year of IPO.

Recommendations in year 1999					
	1	2	3	4+5	Total
Lead manager	69	96	25	1	191
	<i>62</i>	<i>107</i>	<i>18</i>	<i>4</i>	
Co-lead manager	140	230	19	3	392
	<i>127</i>	<i>220</i>	<i>37</i>	<i>8</i>	
Unaffiliated	112	227	50	15	404
	<i>131</i>	<i>226</i>	<i>38</i>	<i>8</i>	
Total	321	553	94	19	987
Pearson Chi ² =	32.876			<i>p</i> -value = 0.000	

Recommendations in year 2000					
	1	2	3	4+5	Total
Lead manager	201	197	27	1	426
	<i>192</i>	<i>196</i>	<i>31</i>	<i>7</i>	
Co-lead manager	350	382	35	14	781
	<i>352</i>	<i>360</i>	<i>57</i>	<i>13</i>	
Unaffiliated	598	595	123	27	1,343
	<i>605</i>	<i>618</i>	<i>97</i>	<i>22</i>	
Total	1,149	1,174	185	42	2,550
Pearson Chi ² =	24.622			<i>p</i> -value = 0.000	

Recommendations in year 2001					
	1	2	3	4+5	Total
Lead manager	15	22	8	2	47
	<i>15</i>	<i>24</i>	<i>8</i>	<i>1</i>	
Co-lead manager	40	50	16	4	110
	<i>34</i>	<i>55</i>	<i>18</i>	<i>3</i>	
Unaffiliated	56	107	34	4	201
	<i>62</i>	<i>101</i>	<i>33</i>	<i>6</i>	
Total	111	179	58	10	358
Pearson Chi ² =	4.016			<i>p</i> -value = 0.675	

Lead Manager = recommendations from a lead manager;

Co-lead Manager = recommendations from a co-lead manager;

Unaffiliated = recommendations from an unaffiliated broker;

Recommendations: 1 = “Strong-Buy”, 2 = “Sub-buy”, 3 = “Attractive”, 4 = “Hold-neutral”, 5 = “Sell”
Expected frequencies assuming independence are shown in italics.

Table 4. Descriptive Statistics of the Variables in the Study.

of Risk Factors = Number of Risk Factors mentioned in IPO prospectus; # of Shares Offered without Green Shoe (units) = Number of Shares Offered not including the number of shares for the green shoe; # of Total Shares after Offering without Green Shoe (units) = Number of Shares placed and paid for after offering not including the number of shares for the green shoe; # Shares Offered without Green Shoe (percentage) = Number of Shares Offered not including the number of shares for the green shoe as percentage of the number of shares after offering; Largest Single Shareholder (percentage) = Number of shares held by other people than owners as percentage of the total number of shares outstanding after the offering; Net Sales (million\$) = Net sales reported in the IPO prospectus in million USD; IPO value = number of shares offered times the share offer price; Firm Value = offer price times shared outstanding and paid for upon IPO. Underwriter Fee (\$) = Underwriter Fee in USD mentioned in the offering prospectus.

Panel A: Descriptive Statistics

	Mean	Median	Minimum	Maximum	Standard Deviation	Number
# of Risk Factors (units)	31.442	31.000	11.000	50.000	6.433	328
Shares Offered without Green Shoe (percentage)	0.192	0.180	0.054	0.488	0.073	328
# of Shares offered without Green Shoe (units)	5,984,212	4,500,000	2,000,000	173,913,000	10,412,713	328
# of Total Shares after Offering without Green Shoe (units)	37,860,636	25,239,726	5,452,858	973,913,000	66,822,244	328
Largest single Shareholder (percentage)	0.285	0.219	0.060	0.902	0.180	328
Net Sales (million\$)	18.311	6.901	0.000	706.466	56.877	318
IPO Value (million\$)	86.393	64.000	15.000	1,913.043	118.823	328
Firm Value (million\$)	558.840	363.891	46.35	10,713.040	802.0455	328
Underwriter Fee (\$)	5,750,433	4,480,000	1,050,000	75,478,242	5,468,048	328

Panel B: Chi-squared independence tests (using median as threshold for the number of risk factors and the firm value)

	Affiliated	Unaffiliated	Total
# Risk Factors ≤ 31	944	879	1,823
	<i>908</i>	<i>915</i>	
# Risk Factors > 31	1,025	1,106	2,131
	<i>1,061</i>	<i>1,070</i>	
Total	1,969	1,985	3,954
Pearson Chi ² =	5.332	<i>p-value = 0.021</i>	

	Affiliated	Unaffiliated	Total
Firm Value (million) ≤ 363.891	830	690	1,520
	<i>757</i>	<i>763</i>	
Firm Value (million) > 363.891	1,139	1,295	2,434
	<i>1,212</i>	<i>1,222</i>	
Total	1,969	1,985	3,954
Pearson Chi ² =	22.829	<i>p-value = 0.000</i>	

Expected frequencies assuming independence are shown in italics.

Table 5. Comparison in means of Recommendations by one Type of Investment Bank during the first year after IPO

	Initiations			Reiterations				
	mean	# difference	t-value	mean	# difference	t-value		
Lead manager	1.790	300	0.175 ***	4.309	1.578	370	-0.150 ***	-3.251
Co-lead manager	1.615	644			1.728	655		
Lead manager	1.790	300	-0.038	-0.833	1.578	370	-0.104 **	-2.277
Unaffiliated	1.828	1113			1.682	872		
Co-lead manager	1.615	644	-0.213 ***	-6.490	1.728	655	0.046 *	1.176
Unaffiliated	1.828	1113			1.682	872		

* significant at 10%; ** significant at 5%; *** significant at 1%

Lead Manager = recommendations from lead managers; **Co-lead Manager** = recommendations from co-lead managers; **Unaffiliated** = recommendations from unaffiliated brokers. This table presents analyst recommendations within twelve months after IPO.

Recommendations: 1 = “Strong-Buy”, 2 = “Sub-buy”, 3 = “Attractive”, 4 = “Hold-neutral”, 5 = “Sell”

Table 6. Comparison in means of Recommendations by one Type of Investment Bank compared with another Type of Investment Bank from year-to-year.

	Recommendations in 1999				Recommendations in 2000				Recommendations in 2001			
	mean	#	diff.	t-value	mean	#	diff.	t-value	mean	#	diff.	t-value
Lead manager	1.780	191	0.073	1.335	1.596	426	-0.036	-0.937	1.936	47	0.082	0.582
Co-lead manager	1.707	392			1.633	781			1.855	110		
Lead manager	1.780	191	0.073	1.335	1.596	426	-0.095**	-2.396	1.936	47	0.006	0.048
Unaffiliated	1.926	404			1.691	1,343			1.930	201		
Co-lead manager	1.707	392	-0.219***	-4.546	1.633	781	-0.058*	-1.833	1.855	110	-0.076	-0.850
Unaffiliated	1.926	404			1.691	1,343			1.930	201		

* significant at 10%; ** significant at 5%; *** significant at 1%

Lead Manager = recommendations from lead managers; **Co-lead Manager** = recommendations from co-lead managers; **Unaffiliated** = recommendations from unaffiliated brokers. This table presents analyst recommendations within twelve months after IPO for three subsequent years.

Recommendations: 1 = “Strong-Buy”, 2 = “Sub-buy”, 3 = “Attractive”, 4 = “Hold-neutral”, 5 = “Sell”

Table 7. OLS Regressions with Analyst Recommendations as Dependent Variable.

Panel A (Initiations):

All Observations during the first year after IPO, Quiet Period and Eleven Months thereafter.

	1-12 months		1 month		2-12 months	
	Coefficient	<i>t-ratio</i>	Coefficient	<i>t-ratio</i>	Coefficient	<i>t-ratio</i>
Largest Single Shareholder	-0.270***	-2.68	-0.338**	-2.17	-0.224*	-1.73
Ln Number of Risk Factors	-0.099	-1.25	-0.073	-0.61	-0.097	-0.92
Ln IPO value	0.083***	2.91	0.005	0.11	0.117***	3.27
Offered Shares / Total Shares	-0.991***	-4.50	-1.556***	-4.61	-0.716**	-2.52
NASDAQ index	-0.115***	-5.66	-0.087***	-2.74	-0.126***	-4.69
Dummy Burst	-0.052	-1.21	-0.071	-0.53	-0.063	-1.26
Dummy Co-lead Manager	-0.179***	-3.93	-0.167***	-3.37	-0.214**	-2.55
Dummy Unaffiliated Analyst	0.041	0.94	0.094	0.97	0.006	0.08
Constant	1.278**	2.31	2.602***	2.90	0.663	0.95
# of Observations	2,057		662		1,395	
F-statistic	15.4***		6.2***		9.05***	
Adjusted R-squared	0.053		0.0592		0.0441	

t-ratios after the coefficients in italics

* significant at 10%; ** significant at 5%; *** significant at 1%

Panel B (Reiterations):

All Observations during the first year after IPO

	1-12 months	
	Coefficient	<i>t-ratio</i>
Largest Single Shareholder	0.190	1.59
Ln Number of Risk Factors	0.159*	1.71
Ln IPO value	0.025	0.75
Offered Shares / Total Shares	-0.311	-1.15
NASDAQ index	-0.119***	-4.08
Dummy Burst	0.194***	4.28
Dummy Co-lead Manager	0.121**	2.57
Dummy Unaffiliated Analyst	0.094**	2.10
Constant	0.966	1.46
# of Observations	1897	
F-statistic	13.48***	
Adjusted R-squared	0.054	

t-ratios after the coefficients in italics

* significant at 10%; ** significant at 5%; *** significant at 1%

Panel C: Recommendations before a firm's Delisting

	Months before Delisting		
	12 < months < 18	6 < months < 12	months < 6
Largest Single Shareholder	0.067 <i>0.280</i>	0.679 ** <i>2.340</i>	0.285 <i>0.780</i>
Ln Number of Risk Factors	-0.231 <i>-0.940</i>	0.033 <i>0.120</i>	0.335 <i>0.900</i>
Ln IPO value	-0.042 <i>-0.560</i>	0.032 <i>0.410</i>	0.023 <i>0.210</i>
Offered Shares / Total Shares	-2.725 *** <i>-3.630</i>	-1.561 * <i>-1.840</i>	-3.395 *** <i>-2.780</i>
NASDAQ index	-0.263 *** <i>-3.340</i>	-0.296 *** <i>-4.310</i>	-0.153 <i>-1.460</i>
Dummy Burst	-0.206 <i>-1.430</i>	-0.118 <i>-0.790</i>	-0.317 <i>-0.800</i>
Dummy Co-lead Manager	0.109 <i>0.850</i>	0.189 <i>1.190</i>	-0.020 <i>-0.090</i>
Dummy Unaffiliated Investment Bank	0.181 * <i>1.660</i>	0.184 <i>1.330</i>	-0.071 <i>-0.370</i>
Constant	4.732 *** <i>2.920</i>	2.272 *** <i>1.290</i>	2.072 <i>0.850</i>
# of Observations	457	371	267
F-statistic	5.190 ***	5.230 ***	2.470 **
Adjusted R-squared	0.069	0.084	0.042

T- values below the coefficients in italics

* significant at 10%; ** significant at 5%; *** significant at 1%

Panels A-C of table 7 show OLS (ordinary least square) regressions with analyst recommendations as dependent variable (1 = "Strong-Buy", 2 = "Sub-buy", 3 = "Attractive", 4 = "Hold-neutral", 5 = "Sell").

Because we use dummies for both the co-lead and the unaffiliated analysts, the coefficients of both types of analysts indicate the direction of the relation with the third type, the lead manager. The control variables are Largest Single Shareholder, Number of Risk Factors, IPO value, Shares Offered / Total Shares (excl. Green Shoe), NASDAQ index, and a dummy referring to the burst of the internet bubble.

Panel A of table 7 shows OLS regressions for three periods after IPO: 1 to 12 months after IPO, the Quiet Period (the first month after IPO) and 2 to 12 months after IPO, respectively. Panel B only considers recommendations issued in the first year after IPO.

Panel C of table 7 shows OLS regressions for recommendations regarding delisted firms only and for three periods before their delisting: 12 to 18 months, 6 to 12 months, and less than 6 months before a firm's delisting, respectively.

Largest Single Shareholder = Number of shares held by other people than owners as percentage of the total number of shares outstanding after the offering; **ln Number of Risk Factors** = log of Number of risk factors mentioned in IPO prospectus; **ln IPO value (million\$)** = log of the Number of Shares Offered times the Offer Share Price in million USD; **Shares Offered / Total Shares** = Number of Shares Offered as percentage of the Shares Outstanding after the offering both without Green Shoe; **NASDAQ index** = return of the NASDAQ index averaged over 15 days before to 15 days after the date that the recommendation is published; **Dummy Burst** = dummy with a value of 1 for recommendations after September 1, 2000, otherwise 0; **Dummy Co-lead Manager** = dummy with a value of 1 for a Co-lead manager, otherwise 0; **Dummy Unaffiliated Investment Bank** = dummy with a value of 1 for an unaffiliated broker, otherwise 0.

Table 8. Cumulative Abnormal Returns after a “Strong-Buy” Recommendation.

Panel A: Initiations

	Months after the day of a strong-buy Recommendation						
	# of obs.	1 month		3 months		6 months	
		mean	t-value	mean	t-value	mean	t-value
Lead manager	96	-3.30%	0.798	-4.07%	0.618	-24.31%	-0.255
Co-lead manager	253	-6.55%		-8.42%		-21.43%	
Lead manager	96	-3.30%	0.247	-4.07%	1.432	-24.31%	-0.956
Unaffiliated	332	-5.76%		-13.32%		-14.75%	
Co-lead manager	253	-6.55%	-0.312	-8.42%	1.085	-21.43%	-0.849
Unaffiliated	332	-5.76%		-13.32%		-14.75%	

* significant at 10%; *** significant at 1%

Panel B: Reiterations

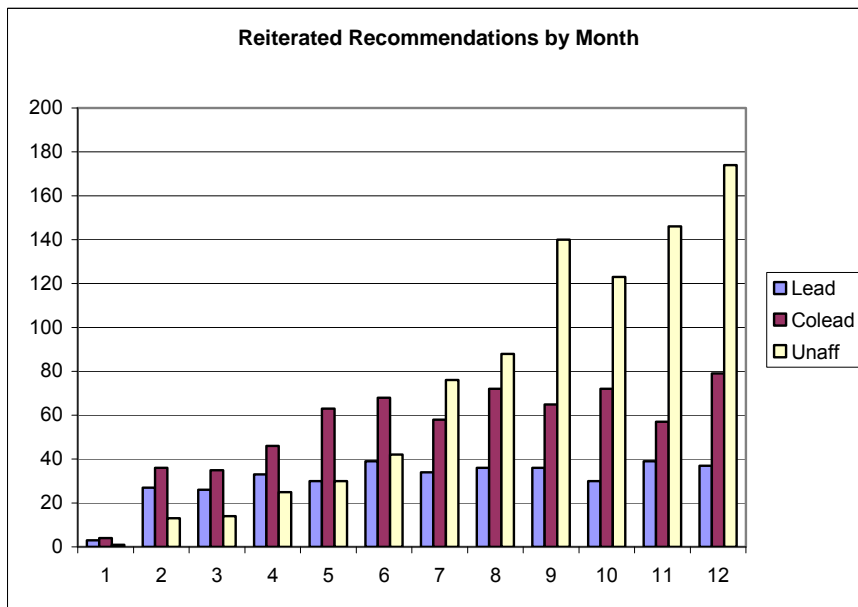
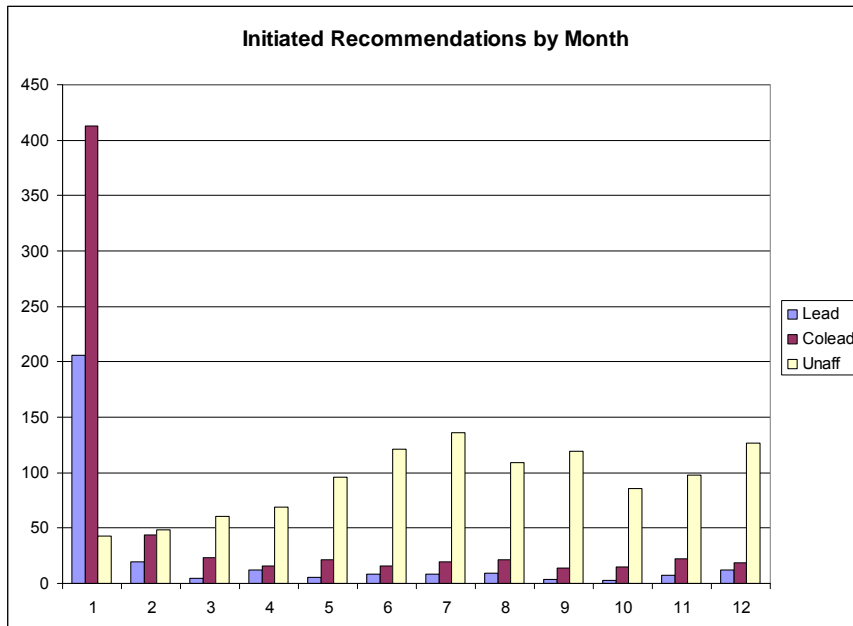
	Months after the day of a strong-buy Recommendation						
	# of obs.	1 month		3 months		6 months	
		mean	t-value	mean	t-value	mean	t-value
Lead manager	171	-6.74%	0.606	-19.57%	-0.018	-28.29%	-0.486
Co-lead manager	251	-8.36%		-19.50%		-25.61%	
Lead manager	171	-6.74%	-0.729	-19.57%	-3.051 ***	-28.29%	-2.045 **
Unaffiliated	357	-5.02%		-8.36%		-18.31%	
Co-lead manager	251	-8.36%	-1.573	-19.50%	-3.432 ***	-25.61%	-1.642
Unaffiliated	357	-5.02%		-8.36%		-18.31%	

* significant at 10%; *** significant at 1%

The table shows comparisons of means for three types of analyst recommendations for internet IPOs. The strong-buy recommendations considered are from the first year after IPO. “1 month”, “3 months” and “6 months” indicate abnormal returns during a period of 1, 3 and 6 months, respectively, after a strong-buy recommendation.

Abnormal Return = a firm’s cumulative abnormal return market adjusted using the NASDAQ composite index. **Lead Manager** = strong-buy recommendations from lead Managers; **Co-lead Manager** = strong-buy recommendations from co-lead managers; **Unaffiliated** = strong-buy recommendations from unaffiliated brokers.

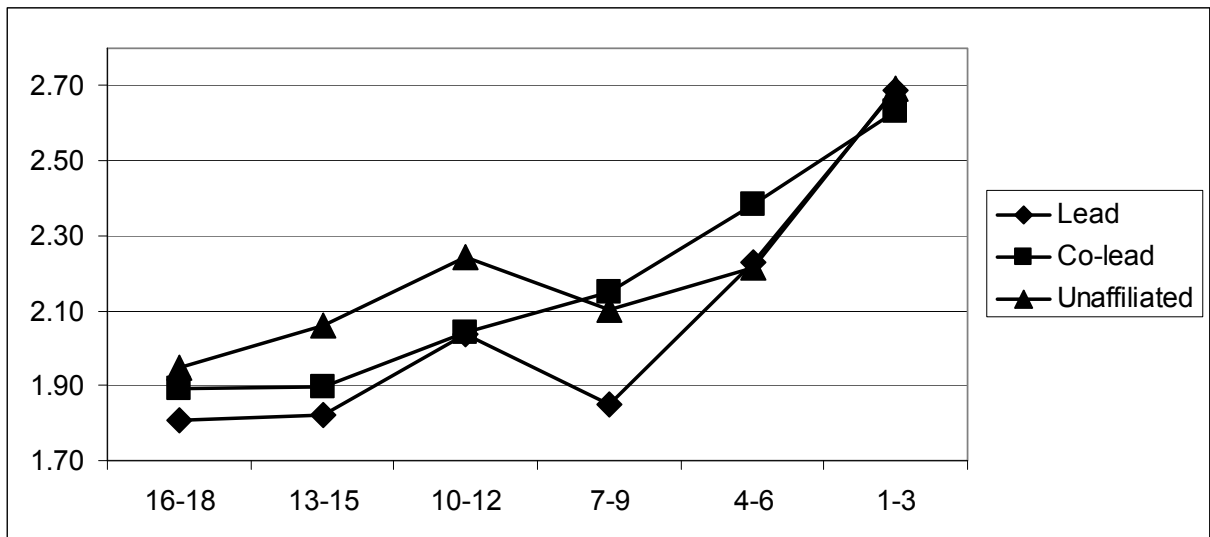
Figure 1. Number of Recommendations by Month after IPO and Type of Investment Bank.



Number of Recommendations during the first year after IPO

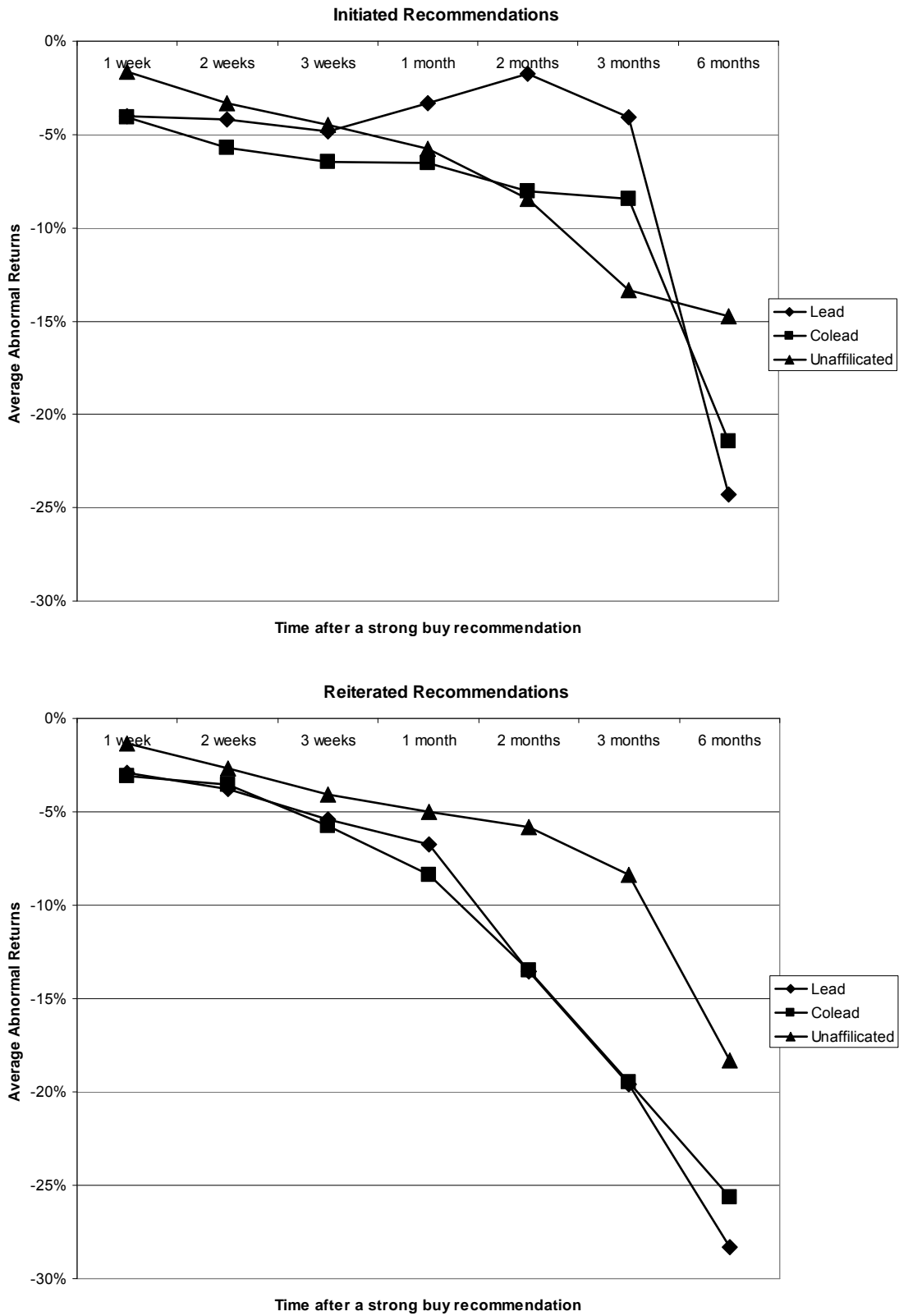
Type of Investment Bank	Number of Recommendations		Mean (Std. Error)	Median
Lead Manager	670	16.9%	146.5 (4.43)	125.5
Co-lead Manager	1,299	32.9%	148.8 (3.21)	133.0
Unaffiliated Broker	1,985	50.2%	233.5 (2.04)	246.0
Sum	3,954	100.0%		

Figure 2. Recommendations for three types of financial analysts during the last 18 months before delisting.



Lead = recommendations from lead managers; **Co-lead** = recommendations from co-lead managers; **Unaffiliated** = recommendations from unaffiliated brokers. The number of months before a firm's delisting date is on the horizontal axis.

Figure 3. Abnormal Returns for different periods after a strong-buy recommendation by type of investment bank.



The figure shows market-adjusted cumulative average abnormal returns for various periods after a strong-buy recommendation of internet IPOs during their first year after IPO. **Abnormal Return** = a firm's cumulative abnormal return market adjusted using the NASDAQ composite index.