Conflicts of Interest and Research Quality of Affiliated Analysts: Evidence from IPO Underwriting

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Abstract

The quality of financial analysts' equity research is pivotal for an efficient capital market. This study investigates the quality of earnings forecasts and stock recommendations for initial public offerings (IPOs) in Germany. The empirical study includes 12,605 earnings forecasts and 6,209 stock recommendations of individual analysts for the time period from 1997 to 2004. The focus of this study is on analyzing the potential conflicts of interest and agency problems that arise when the analyst is affiliated with the underwriter of an IPO. In a universal banking system these conflicts of interest are usually more pronounced and therefore interesting to investigate. The empirical findings for the German financial market suggest that the earnings forecasts and stock recommendations of the analysts belonging to the lead-underwriter are on average inaccurate and biased, indicating some conflicts of interest. Moreover, the stock recommendations of the analysts that are affiliated with the lead-underwriter are often too optimistic resulting in a significant long-run underperformance. In contrast, analysts of the co-underwriter as well as unaffiliated analysts provide superior earnings forecasts and stock recommendations.

Keywords: conflicts of interest, research quality, analyst behavior, earnings forecasts, stock recommendations, initial public offerings, underwriting.

JEL-Codes: G14, G24

1. INTRODUCTION

Financial markets are usually characterized by conflicts of interest and agency problems between the various parties involved. These conflicts may be particularly pronounced when the same institution fulfills a range of functions within a financial system. In a universal banking system, where financial institutions offer commercial banking as well as investment banking services, such as loans and deposits, underwriting and stock recommendations as well as mutual funds services, these problems should be even more prominent. In the primary market, there exist evidently a variety of agency problems between the activities of the investment bank and the firms' management as well as between the investment bank and the investors. In the secondary market, the most important conflicts occur between surplus and deficit spending units, i.e., investors and firms issuing securities. Although financial analysts are a pivotal element of capital markets, their role is characterized by a vast number of principal agent relations and conflicts of interest. This is due to the fact that rational behaving analysts often act in their own interest and strive for maximizing their own objectives rather than that of the investor or their employer, which is typically an investment bank or a broker. The investor usually employs analysts' earnings forecasts and stock recommendations in his investment decision making. Moreover, the management of the covered company has often different ideas about the research outcome, the earnings forecast, and the stock recommendations than the analyst, who should ideally act as an independent intermediary. A more detailed analysis reveals that generally every single relationship between these groups, every conflict of interest within the financial market, and especially the outcome of the equity research, can lead to a very complex system of agency problems. The objective of this study is to investigate how these potential conflicts of interest affect the quality of equity research and the stock recommendations of financial analysts, especially when the investment bank of the analysts also underwrites initial public offerings.

Financial analysts typically perform important functions as an intermediary for information. An environment of intense competition between numerous alert analysts usually helps to increase the informational efficiency of the capital market. In such a market, capital is efficiently allocated to the best investment opportunities (Caccese, 1997; Tinic and West, 1979). Furthermore, the research activities of experienced

analysts should minimize the agency costs between investors and firms, because the publication of research reports discloses information and even restricts negative management behavior (Chung and Jo, 1996; Jensen, 1976). As a matter of fact, the monitoring and control functions of financial analysts serve as an important capital market instrument for implementing good corporate governance, which should lead to lower cost of capital and higher returns for investors. A functioning market for information, however, is a prerequisite, and analysts play an important role in this information market. Nevertheless, if the equity research shows systematic biases due to insufficient skills, inadequate regulations or conflicts of interest, the stock prices will not fully reflect all relevant information. In this case the capital market does not fulfill its role as an institution for fair valuation and efficient allocation of financial resources. However, the recent hot and cold issue markets as well as accounting problems and illegal activities with respect to IPO allocations and stock recommendations on both the U.S. and German capital markets have resulted in criticism of analyst behavior and doubts about the quality and independence of equity research in general. Thus, it is interesting and important to investigate the specific agency problems and conflicts of interest of financial analysts and the impact these conflicts have on the quality of equity research.

The objective of this study is to analyze the impact on the quality of earnings forecasts and stock recommendations of initial public offerings, when the analyst is affiliated with the underwriter of the IPO. For this, we investigate firms that went public at the “Neuer Markt” in Germany during the period from March 1997 to December 2004. This market segment and time period is especially interesting for analyzing the effect an underwriter affiliation has on the research quality of a financial analyst, because it contains a complete stock market cycle, an extreme hot and cold issue market with substantial stock price increases and decreases (Figure 1).

Insert Figure 1 about here

The rest of the paper is organized as follows. Section 2 provides a review of the literature with respect to the conflicts of interest of financial analysts and the quality of earnings forecasts and stock recommendations. The data and the statistical methods are described in sections 3 and 4, respectively. In section 5 we

report our results for the research quality of affiliated and unaffiliated analysts. Finally, the robustness of our results is checked with various regressions. A summary of the results concludes this study.

2. LITERATURE REVIEW

Agency problems in equity research exist due to numerous reasons. Usually, investors utilize earnings forecasts and stock recommendations of financial analysts to make informed investment decisions. Accordingly, investors expect that analysts provide to the best of their knowledge objective, unbiased and accurate equity research. The management of the covered firm, however, is not always interested in an objective and accurate research report, but most likely in a positive research outcome. After the analyst starts his coverage of a firm, he may develop a number of wide-ranging behavioral patterns. These are due to the fact that he is interested in maximizing his own utility function. The utility functions of the investment bank and the investors are usually quite different.

In addition, financial analysts are always confronted with a fundamental dilemma. On the one hand, they have an incentive to establish a good relationship with the firm's management in order to gain privileged access to important information (Lim, 2001; Francis et al., 1993). This information advantage could result in superior earnings forecasts and stock recommendations, which should improve his reputation from the perspective of the investor. On the other hand, a precise and objective research report can create problems if the company does not agree with the report, or the outcome of the research is not in the interest of the firm. Consequently, the management of the company can deny the analyst access to further information. Hodgkinson (2001), for example, suggests that these conflicts of interest do not result in superior but rather in more inaccurate and positively biased earnings forecasts and recommendations. This is based on the fact that the analyst often prefers privileged access to information rather than an increase in his reputation that may be the consequence of more independent and unbiased research reports.

A particular problem arises when the employer of the analyst is an investment bank or a broker that also offers corporate finance services. These affiliated financial analysts have a strong incentive to come up with positive research reports that are distributed to the existing and potential customers in order to gener-

ate additional business for the investment banking division. Dechow et al. (2000) and Lin and McNichols (1998) find empirical evidence for this "conflict-of-interest-hypothesis". Their research let them to conclude that affiliated analysts publish more optimistic forecasts and stock recommendations than unaffiliated analysts. O´Brian et al. (2005) confirm the unwillingness of affiliated analysts to distribute negative research reports in order to secure investment banking mandates and to minimize potential conflicts between the commercial and investment banking divisions and the management of the client firm. They also observe that affiliated analysts have the tendency to publish buy recommendations sooner and more often than unaffiliated analysts after a company has issued securities. In addition, these analysts upgrade the stock recommendations of the covered firms faster, whereas downgrades are more delayed compared to those of unaffiliated analysts. Moreover, the research by Michaely and Womack (1999) reveals that recommendations of underwriter affiliated analysts are not only more optimistic but they are also set apart by an inferior long-run performance. Besides that, Mola (2005) finds empirical evidences that analysts of the lead-underwriter have a tendency to downgrade companies that are competitors of their own underwritten IPOs, in order to support their own new issues.

In addition to these agency problems in investment banking there are also potential conflicts of interest in the brokerage business. For example, affiliated analysts are tempted to use stock recommendations and too optimistic earnings forecasts to increase the trading volume in these stocks. This should result in additional fee income in the brokerage business of their institution (Jackson, 2005; Irvine, 2001). Obviously, optimistic earnings forecasts and buy recommendations have a much more positive impact on increasing trading volume compared to rather conservative earnings forecasts and sell recommendations. Moreover, analysts have a high incentive to influence prices in a desired direction through positive earnings forecasts and stock recommendations for those stocks that are held either in the securities accounts of their own bank, in the portfolios of affiliated investment funds or in their own private investment account (Irvine et al., 1998).

However, the optimism of the affiliated analysts is restricted by the well-known insights from the earnings management and earnings game. Very often company outsiders and investors employ various benchmarks

from the income statements and measure the performance of the management on certain boundaries (”threshold mentality“). In addition to the reporting of positive earnings and the increase over last year’s earnings, this is in particular the meeting or slightly exceeding of the consensus earnings forecasts of the analysts (Burgstahler and Dichev, 1997; Dechow et al., 2000; Degeorge et al., 1999; Das and Zhang, 2003). Based on these observations, Chan et al. (2003) proclaim that earnings forecasts follow a strategic adjustment process, the so-called earnings game. The too optimistic forecasts of the analysts at the beginning of the period are revised downwards towards the end of the forecast horizon in order to offer the management the opportunity to slightly exceed and to beat the forecasts (Chopra, 1998; Richardson et al., 1999). Bartov et al. (2002), for example, provide evidence that companies which meet or slightly exceed the consensus forecasts of the analysts are traded at a premium. In fact, in Germany out of 27 DAX companies 11 beat and 11 met their earnings forecasts in the third quarter of 2005.

Nevertheless, the special relationship of the analysts to the investment banking or corporate finance divisions of their employer, which is the reason for these conflicts of interest, may also produce certain advantages. The analysts of the underwriter, for example, may possibly have superior information about the company which were obtained during an IPO or an SEO for which the investment banking division acted as an underwriter (Michaely and Womack, 1999). This information advantage should usually result in a higher research quality of the affiliated analysts compared to the unaffiliated analysts (“information-advantage-hypothesis”). In addition, Clarke et al. (2004) can not confirm the “conflicts-of-interest-hypothesis” mentioned above. They find less optimistic and more accurate forecasts for the analysts of large investment banks compared to independent analysts. Thus, it is possible that larger institutions offer analysts better resources (Clement, 1999), which then result in a higher research quality. It is also mentioned that larger banks are more attractive for better analysts than smaller independent research institutions, because the analysts may easier increase their reputation and receive a higher compensation (Hong and Kubik, 2003).

Overall, the empirical findings of potential investment banking and brokerage conflicts are not that unambiguous, although the majority of the empirical studies support the “conflicts-of-interest-hypothesis”.

Most likely, the analyst has an incentive to maximize his individual utility function. In doing so, he must decide between possible gains in reputation resulting from superior forecasts and recommendations and the benefits he achieves when he acts upon these conflicts of interest (Jackson, 2005).

During the more recent years, the conflicts of interest of financial analysts have been at the center of public debate and investigation. The pressure that the investment banking division or the CEO exerted on analysts, the publication of misleading research, the consulting services of analysts to the management of covered firms, and finally the discover of several illegal analyst and investment banking activities especially by the New York public prosecutor lead to massive critique regarding the quality and objectivity of the financial analysts' profession. The result is a vast number of new legal rules and regulations.[1] In how far these rules have lead to a better quality of stock research, in the sense of more accurate and less biased forecasts and recommendations, is at this point in time still an open question. Nevertheless, preliminary results suggest a decline in optimism of affiliated analysts (Kadan et al., 2005). However, further research is necessary in order to provide empirical evidence for a positive impact of these new rules.

In the empirical study we analyze for the German universal banking system the impact that potential conflicts of interest have on the quality of equity research for initial public offerings when the analyst is affiliated with the underwriter of the IPO. Thus, the focus of this research is on the question, whether affiliated analysts use their possible information advantages to offer qualitatively better research reports, or whether – as reported in most of the studies for the U.S. capital market – the conflicts of interest dominate. In this case the affiliated analysts would provide more positively biased forecasts and qualitatively inferior stock recommendations than unaffiliated analysts.

3. DATA

This empirical study on the research quality of financial analysts is based on individual earnings forecasts and stock recommendations for IPOs at the Neuer Markt. The analysis covers the period from March 1997

[1] For the USA see e.g. NASD Rule 2711, NYSE Rule 472 as well as the AIMR Research Objectivity Standards. Moreover, on December 12, 2002, the investment banks paid 1.4 billion dollar within the scope of a settlement

to December 2004.[2] Companies that were delisted during that period are included in the sample in order to avoid any survivorship bias. Because outliers can distort the empirical results, we follow the usual approach used in the literature and eliminate earnings forecasts with mean relative forecast errors of more than 100% from the sample.[3] Hence, the dataset for the empirical study consists of 12,605 individual analysts' earnings per share forecasts as well as 6,209 stock recommendations. In Table 1 the data of the sample with respect to earnings forecasts, stock recommendations, analysts, brokers, and companies is summarized.[4]

Insert Table 1 about here

The forecast errors in empirical studies are usually calculated by comparing the earnings forecast to the corresponding earnings per share published by the firm. Unlike other studies that investigate the quality of earnings forecasts, our analysis uses an alternative definition for the published earnings per share. As earnings per share we employ the so-called "convergence consensus" instead of the published earnings. The data is provided by Factset/JCF. The convergence consensus is the consensus forecast that is calculated after the firm had published its realized earnings. At that time the analysts adjust their final earnings forecasts by using their own methodology before the coverage for the specific fiscal year is closed. The use of this variable offers a few important advantages. First of all, it is not compulsory in Germany to publish a standardized "earnings per share" figure. As a result, possible differences that are due to the different methodologies used by analysts and the company to calculate EPS are avoided.[5] Therefore, employing the

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between the banks and the attorney general of New York. In Germany, the newly introduced §34b WpHG is the result of an intensive discussion about the conflicts of interest in equity research.

[2] All analysts' forecasts, analysts' recommendations, equity prices as well as all the other data are from Factset/JCF. We thank Factset/JCF for the excellent support of our research. For more information see http://www.factset.com. Because all analyst and company data are from the same database, possible errors due to inconsistency of the data should be minimized.

[3] With this approach, we follow one of the current methods in the treatment of outliers within the research on earnings forecasts (see Brown et al., 1993; Capstaff et al., 1998). Although, outliers are obviously not data errors in a narrow sense, they may cause effects which influence the conclusions about the quality of earnings forecasts.

[4] The very small number of forecasts, analysts, brokers and firms in the calendar year 2004 and the decreasing number in the years 2001 to 2003 are due to the fact, that only forecasts for the fiscal year 2003 are included in the sample.

[5] The forecasted and the realized earnings per share ratio can only be compared without any problems when an identical earnings definition is used by all market participants. In Germany, an identical definition of earnings per share as well as a commitment to publish consistent earnings per share ratios does not exist. Different accounting standards as well as a choice with regard to items included in the financial statement leaves room for interpreta-

convergence consensus is a good approach for measuring the quality of earnings forecasts, because the forecasted and the realized variables depend on the same factors.

The stock recommendations of the analysts are assigned a numerical value in analogy to the method used by Factset/JCF. We use the following five categories: 1=buy, 1.5=overweight, 2=hold, 2.5=underweight and 3=sell. The average recommendation (Recommendation Mark) corresponds to a consensus recommendation and results, according to equation (1), from the arithmetic mean of all recommendations:

$$(1) \qquad \mathrm{Re}\,commendationMark = \frac{1}{N}\sum_{i=1}^{N} \mathrm{Re}\,commendation_i$$

The closer the rating is to the value of 1, the more analysts suggest buying this stock. In contrast, the closer the rating is to the value of 3, the more analysts suggest selling the stock.

4. METHODOLOGY

For the analysis of the quantitative forecast accuracy and forecast bias of earnings forecasts we use the "mean relative absolute forecast error" (MRAFE) and the "mean relative forecast error" (MRFE) as measures for the forecast error. Both measures are employed in a variety of studies on earnings forecasts of financial analysts. In both cases, a division by the actual earning per share is necessary, because the numbers can be distorted due to the differences in the absolute size of the forecasted and the realized variables.[6] A comparison of forecasts for different calendar years can also result in problems, because year specific effects or company specific influences[7] can complicate a non-standardized comparison of forecast errors. The accuracy of earnings forecasts can be determined by using the "mean relative absolute forecast

tion. In addition, the DVFA/SG standard is characterized also by a high standard of subjectivity and offers a wide scope of discretion. Furthermore, it is not the basis for the audit of financial statements (Hüfner and Möller, 2002, 1997; Löffler, 1998). All this leads the analysts and the companies´ management to different earnings per share ratios, which are based on discretion rather than on standardized methods of calculating and publishing. The use of the convergence consensus decreases the problems of different methodologies and subjective exertion of influence between analysts and management.

[6] To make earnings forecasts of different firms, years etc. comparable, forecast errors are standardized. However, which method should be used is not generally accepted in the academic literature. In addition to the use of the equity price, the use of the published earnings per share is currently the most commonly used method in calculating forecast errors of analysts´ earnings forecasts.

error" (MRAFE). This forecast error is defined according to equation (2) as the absolute value of the difference between the forecasted earnings per share $\hat{x}_t$ and the convergence consensus x_t as the realized earning per share of the company for the fiscal year t, standardized by the convergence consensus. The problem of possible zero values for the convergence consensus is solved by eliminating these values.[8] The bias of earnings forecasts is calculated as the mean relative forecast error (MRFE). According to equation (3) it is defined as the difference between the forecasted earnings per share $\hat{x}_t$ and the convergence consensus x_t as the realized earnings per share of the company for the fiscal year t, standardized by the absolute value of the convergence consensus.

(2) $$MRAFE = \frac{1}{T}\sum_{t=1}^{T}\left|\frac{(\hat{x}_t - x_t)}{x_t}\right|$$

(3) $$MRFE = \frac{1}{T}\sum_{t=1}^{T}\frac{(\hat{x}_t - x_t)}{|x_t|}$$

The sign of the MRFE provides a first indication for the direction of the forecast bias. The significance of the differences of the forecast errors from zero is analyzed by using a simple t-test.

We employ the standard event study methodology in order to take a closer look at the informational effects of stock recommendations by financial analysts and the subsequent valuation effects that buy and sell recommendations have on the value of the company. For the analysis of the short-term valuation effects of stock recommendations we use cumulated abnormal returns (CAR) and for the analysis of the long-run performance we employ buy-and-hold-abnormal-returns (BHAR). The CAR for a portfolio of N assets results from the arithmetic mean of the cumulative abnormal returns of every single stock i, whereas the abnormal return (AR) results from the difference of the return of the stock i at the time t and the return of the market index M at the time t (Equation (4)). In this study, the NEMAX All Share-Index is used as the market index or benchmark.

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7 Year specific effects are differences in market phases, differences in the availability of information, external shocks like oil-crisis or strikes. Differences in company size or absolute earnings are firm specific effects.

8 Some authors use the equity price. We take the position that the equity price is inferior in relation to firms´ earnings because its use creates new problems, which reduces the explanatory power of the forecast errors in a statistical sense. Thus, the issue of which equity price should be used is not straightforward. Also earnings forecasts for growth companies or volatile markets – like in our analysis – suggest using the realized variable, the published earnings per share, and not the equity prices.

(4) $$CAR_{P,t} = \frac{1}{N}\sum_{t=1}^{T} AR_{i,t} \qquad \text{with } AR_{i,t} = R_{i,t} - R_{M,t}$$

The time index t defines the chronological relation to the examined result, i.e., t=0 is the event date. In most of the cases in this study, t=0 is defined as the date of the stock recommendation, as it is published by Factset/JCF.

Because not only the short-term but especially the long-term effects are important for the investor, the long-run performance is investigated by employing standard buy-and-hold-abnormal-returns (BHAR). A multiplicative calculation of returns is useful especially for the analysis of stock recommendations, because these are the returns that the investor receives at the end of the period from an investment that is based on these stock recommendations. Thus, the BHAR allows for the comparison of both strategies, the investment based on recommendations of a group of analysts and the investment in the benchmark. According to equation (5), the BHAR for a portfolio is calculated as the arithmetic mean of the differences of the return of a company i at time t and the return of the market M at time t. Thus, the return of the market portfolio over period T is subtracted from the return of the stock portfolio over the same period:

(5) $$BHAR = \frac{1}{N}\sum_{i=1}^{N}\left[\left(\prod_{t=1}^{T}\left(1+R_{i,t}\right)\right)-\left(\prod_{t=1}^{T}\left(1+R_{M,t}\right)\right)\right]$$

Finally, the abnormal returns, the forecast errors as well as the recommendation marks are checked for the equality of means and medians. For the test of two samples we employ a t-test for equality of means and a Wilcoxon/Mann-Whitney-test for the equality of medians. If the mean and median values of the three samples are compared, we perform an ANOVA-F-test on equality of means as well as a Kruskal-Wallis-test on equality of medians of the three groups.

5. EMPIRICAL RESULTS

In our empirical analysis of initial public offerings at the Neuer Markt in Germany we investigate the impact that an affiliation of the analyst with the underwriter has on the quality of his research. Thus, the

question is whether affiliated analysts exploit possible information advantages or whether their behavior is influenced by the interest of the underwriter or the companies. This should result in a lower research quality. The rest of this section is organized as follows. In section 5.1 we analyze the quality of the earnings forecasts of the analysts. The impact of analyst and underwriter affiliation on average stock recommendations is investigated in section 5.2. The short- and long-run performance of stock recommendations of unaffiliated and affiliated analysts is examined in section 5.3. Finally, we check for the robustness of our results from section 5.1 and 5.3 with various regressions.

(i) Forecast accuracy and forecast bias

In order to analyze the influence that an affiliation between the analyst and the underwriter has on the forecast quality, the sample is divided into three sub-samples according to the analyst and underwriter association. The first group consists of those analysts that are employed by a broker, where the broker is not involved in an IPO (unaffiliated analysts). The second group includes analysts of those brokers that acted as lead-underwriter for the company at the IPO (lead-underwriter). The third group includes the analysts of a broker that acted as a co-underwriter (co-underwriter).[9] Table 2 provides an overview of the number of earnings forecasts and stock recommendations which were published during the research period by unaffiliated analysts as well as by analysts of the lead-underwriter and the co-underwriter.

Insert Table 2 about here

When we consider the general forecast accuracy of these three groups for the entire period between 1997 and 2004, it becomes evident (Table 3) that the group of analysts belonging to the lead-underwriter provides the most inaccurate earnings forecasts with a MRAFE of 41.7%, compared to the unaffiliated analysts and the analysts of the co-underwriter with a MRAFE of 37.1% and 37.7%, respectively.

Insert Table 3 about here

[9] Information about lead- and co-underwriter of IPOs is from Deutschen Börse: http://www.deutsche-boerse.com.

The forecast accuracy of the lead-underwriter is of significantly lower quality (1%-level) compared to the accuracy of unaffiliated brokers, or even of the co-underwriter. The MRAFE of unaffiliated analysts and analysts of the co-underwriter are not significantly different with respect to the forecast accuracy. This finding does suggest that analysts of the lead-underwriter hardly have any unique information advantage that could be exploited for qualitatively superior forecasts in the sense of the "information-advantage-hypothesis". It appears that the analysts do not employ their information advantage in the research process in order to produce more accurate forecasts. This finding supports the "conflict-of-interest-hypothesis". Interestingly, the analysts of the co-underwriter do not provide better or worse forecasts than the unaffiliated analysts. It seems likely that they do not possess any advantage in the acquisition of information, nor do we find any evidence of conflicts of interest, which would influence the quality of their equity research.

These insights are supported by the results from the forecast biases of the three groups as presented in Table 4. For the whole period, the forecasts of the lead-underwriter reveal a significantly (1%-level) higher optimism with a MRFE of 22.8%, compared to the forecasts of the unaffiliated analysts and the forecasts of the co-underwriter with a MRFE of 15.5% and 13.9%, respectively.

Insert Table 4 about here

These empirical findings for the forecast bias are supporting evidence of the "conflict-of-interest-hypothesis" for the analysts of those underwriters with the strongest engagement in IPO underwriting. Analysts of the lead-underwriter publish more optimistic forecasts than unaffiliated analysts and analysts of the co-underwriter. There is hardly any difference in the forecast bias and accordingly in the optimism between analysts of the co-underwriter and unaffiliated analysts. However, the differences in the optimism during the hot issue period, the period of increasing stock prices and many initial public offerings, relative to the cold issue period, are quite distinct. When the NEMAX Allshare-Index reached an all-time high on March 10, 2000, the analysts of the lead-underwriter were quite optimistic (MRFE of 20.7%), while the unaffiliated analysts (MRFE of 1.4%) and the analysts of the co-underwriter (MRFE of 2.3%) published less optimistic earnings forecasts.

Especially in the first year after the IPO it seems likely that the potential conflicts of interest of the affiliated analysts are more pronounced. However, the possible price support activities of the underwriter during the post IPO period can lead to more optimistic analysts' forecasts and recommendations exactly during that period. However, the empirical findings of the forecast accuracy do not allow for any strong conclusions (Table 5).

Insert Table 5 about here

The forecasts of the lead-underwriter have the highest forecast errors for all periods. However, the differences between these forecasts and those of the unaffiliated analysts are significant only for the periods of 0 to 6 months and >36 months after the IPO. Overall, it seems fair to conclude that the forecast quality of all analysts improves with a longer time period after going public.[10] This is not surprising given that the available information increases as well. Table 6 provides more precise information of the forecast bias. The MRFE of the earnings forecasts of the analyst belonging to the lead-underwriter are significantly different from the MRFE of the unaffiliated analysts. In fact, this holds for the period of up to 3 years after the IPO.

Insert Table 6 about here

Most notably is the extremely high optimism in the forecasts which have been issued between 7 and 12 months after the IPO. It appears that the analysts of the lead-underwriter have a specific interest to publish positive earnings forecasts just before the end of the first year after going public. This observation can be explained with the expiration of the mandatory or the tax lock up-periods (Bessler and Kurth, 2006a, 2006b, 2006c). After the expiration of the lock-up periods, the magnitude of the forecast bias decreases gradually. After three years there are no observable differences in the optimism between the analysts of the lead-underwriter and the unaffiliated analysts. However, the results have to be interpreted with caution because the interaction of the level of stock prices and the number of initial public offerings at the Neuer Markt (hot issue period) plays a fundamental role that should not be ignored. Many firms decided to go

[10] For a sample of all German firms see Bessler and Stanzel (2005).

public in a very good stock market environment, which also lead to more positive forecasts in the first year after going public. The forecasts for the period of more than 36 months after the IPO, however, occur for the majority of the firms in a period of decreasing stock prices. Not surprisingly, there is more negative sentiment among the market participants.

Our empirical findings with respect to the accuracy and the bias of earnings forecasts lead to the conclusion that the analysts who are employed by a broker that is associated with the lead underwriter of an IPO provide on average forecasts of lower quality. For the entire period from 1997 to 2004, these forecasts are significantly more inaccurate and more positively biased than the forecasts of the unaffiliated analysts and the analysts of brokers that acted as co-underwriter. These findings are not in accordance with the hypothesis that the lead-underwriter provides better forecasts due to their superior access to information. In contrast, these findings support the hypothesis that this group of analysts is exposed to special conflicts of interest which lead to inaccurate and more positively biased forecasts. It is interesting to note that these results cannot be confirmed for analysts of the co-underwriter. The earnings forecasts of the co-underwriter do not differ in their quality from forecasts of unaffiliated analysts. In the next section, we will analyze whether these empirical findings are supported by investigating the stock recommendations of the three different groups of analysts.

(ii) Quality of the average stock recommendations of analysts

In this section, we first consider the descriptive statistics of the distribution for all published recommendations of the analysts for the three different groups. It becomes immediately evident that there exists an imbalance between positive (buy and overweight), neutral (hold), and negative recommendations (underweight and sell). Figure 2 and Table 7 provide an overview of the recommendations grouped by the analysts of the lead-underwriter, the unaffiliated analysts, and the analysts of the co-underwriter.

Insert Figure 2 and Table 7 about here

In accordance with the recent empirical evidence for the U.S. capital market (Stickel, 1995) analysts in Germany issue generally more positive recommendations (Bessler and Stanzel, 2005). This is especially true for IPOs at the German Neuer Markt. This empirical result is independent of the circumstance whether the analysts are unaffiliated or affiliated with the underwriter. Nevertheless, we find differences between the three groups of analysts with respect to the optimism as expressed in the average recommendation (Recommendation Mark). The results in Table 8 reveal that analysts belonging to the lead-underwriter generally issue more optimistic stock recommendations. The closer the figure is to 1, the stronger is the buy recommendation. The analysts of the lead-underwriter have a recommendation mark of 1.693 over the entire observation period, followed by the analysts of the co-underwriter (1.766) and the unaffiliated analysts (1.849).

Insert Table 8 about here

Over the entire time period, the average values of the recommendation marks for the three groups differ significantly at the 1%-level. A comparison of the medians also reveals significant differences between the unaffiliated analysts and analysts of the lead-underwriter (1%-level), between unaffiliated analysts and analysts of the co-underwriter (1%-level) as well as between analysts of the co- and lead-underwriter (5%-level). These differences in recommendations between these three groups of analysts are quite robust. On average, analysts of the lead-underwriter usually provide more positive stock recommendations than any other group of analysts. The optimism in the future performance, as expressed in the recommendation mark of the analysts belonging to the lead-underwriter, is especially pronounced in the periods of increasing stock prices.

An analysis of how the time frame influences stock recommendation should provide further insights. The interesting question is, whether and in which way the quality of the recommendation is affected by the proximity to the going public date. There are several IPO-specific factors that may determine the stock recommendations of an affiliated analyst. On the one hand, the underwriter usually is committed to support the stock price of an IPO for a specific period of time. On the other hand, it is possible that the stocks

have been allocated to the retail customers of the bank (Puri and Rocholl, 2005). It is important for the long-term reputation of the underwriter that both groups are satisfied with the stock price performance. However, with positive recommendations from its own analysts, it should be possible to lower the generally high cost of price support. When analyzing the development of the recommendation mark for the time period after the IPO, it becomes evident that the analysts of the lead-underwriter relative to the unaffiliated analysts issue extremely optimistic recommendations during the first 12 months after the IPO. After 12 months, a constantly increasing pessimism of the analysts of the lead-underwriter can be observed. The differences in mean and median values of the recommendation mark between unaffiliated analysts and analysts of the lead-underwriter are statistically significant at the 1%-level for both, the first 6 and first 12 months after the IPO (Table 9).

Insert Table 9 about here

It is interesting to note that these differences diminish and disappear, the longer the new issues are listed on the market. Therefore, the results for the buy and sell recommendations indicate that the analysts of the lead-underwriter issue too optimistic recommendations especially during the first year after going public. This behavior obviously implies some conflicts of interest. One could take the position that this behavior is suitable for substituting or at least for decreasing the need for the costly price support for an IPO. On the other hand, too positive recommendations are also helpful for providing the founders of the firm and the venture capitalists with profitable exit opportunities especially at the end of the mandatory lock-up period. In addition, the new shareholders that were allocated shares by the lead-underwriter at the issuing date also benefit from positive recommendations as long as they continue up to the end of the tax lock-up period. Especially the end of the mandatory lock-up period (6 months) and the expiration of the tax lock-up period (12 months) are relevant dates. Bessler and Kurth (2006b, 2006c) find empirical evidence for initial public offerings at the Neuer Markt that the stock price increases before and decreases after these events. At the time of the lock-up expiration the trading volume also increases significantly. Moreover, the empirical findings of Bessler and Kurth (2006a) highlight the potential conflicts of interest as expressed by a negative long-run performance, if the underwriter has been associated with the venture capitalist, this ven-

ture capitalist has sold shares at the time of the IPO, and the analysts of the underwriter have published buy recommendations.

Overall, our analysis of the stock recommendations supports the hypothesis that the analysts of those banks which have accompanied a firm as lead-underwriter for an IPO, issue more positive recommendations. Obviously, this more optimistic point of view is especially observable during the first year after going public. However, it needs to be recognized that more optimistic stock recommendations by the analysts of the lead-underwriter do not provide any information about the quality of these recommendations. It is possible that these recommendations are justified ex post and may result in positive abnormal returns when trading on these recommendations. These aspects are investigated in the next section by analyzing the short-term valuation effects (CAR) as well as the long-run performance (BHAR) that investors could have realized by following the recommendations of the three groups of analysts.

(iii) Performance of analysts´ stock recommendations

The economic value and the valuation effects of analyst recommendations should become especially evident when the two extremes of the five recommendation categories are investigated. Thus, we focus in our analysis on the buy and sell recommendations. First, we concentrate on the short-term valuation effects, i.e., the time period around the recommendation. We find evidence of different stock market reactions depending on the type of recommendation as well as on the group of analysts that issued this recommendation, which means that there are differences in the reactions to the recommendations of unaffiliated analysts and the analysts of the co-underwriter and the lead-underwriter.

(a) Short-run signaling effects of stock recommendations

The cumulative abnormal returns (CAR) of the buy recommendations (Figure 3) clearly reveal that the upward trend begins even several days before the announcement date. This result is quite similar for the recommendations of all three groups of analysts. Over the 30 day event period the CARs for all three

groups are almost identical. It appears that the market does not differentiate between affiliated and unaffiliated analysts in the valuation of these buy recommendations.

Insert Figure 3 about here

There are a number of explanations that can be given for the observed upward trend in the days before the recommendations became publicly available. First, there is the possibility that the analyst recommendations were accessible for the broker's institutional clients even before the actual dissemination date. On the other hand, it is very common that new stock recommendations are provided either after new company information became available or subsequent to certain events such as earnings announcements, dividend changes, or shareholder meetings. Thus, the actual information dissemination process begins with the availability of this information and not with the subsequent recommendation. In this case, the analyst recommendation only confirms what the market already knows and what is already priced in the market.

These empirical findings and interpretations are confirmed by analyzing the short-term valuation effects of sell recommendations. Negative abnormal returns are already observed several days before the publication of the sell recommendations (Figure 4). However, this time a noticeable difference is evident in the magnitude of the abnormal returns (CARs). The results depend on the group the analyst belongs to.

Insert Figure 4 about here

It is evident that the sell recommendations by analysts of the lead-underwriter are interpreted by the market as a more negative signal and consequently lead to larger negative valuation effects than the sell recommendation of unaffiliated analysts. It is amazing but not surprising to observe, however, that for all three groups most of the stock price decreases have occurred before the public distribution of sell recommendations. The differences in the price reactions suggest that at least an early dissemination of the research reports to institutional clients seems very likely. Moreover, it needs to be emphasized again that stock recommendations result in abnormal returns even before the announcement date. For that reason, it is difficult to reach a final conclusion whether analyst recommendations contain relevant information for

the capital market or whether the previous company information is the reason for the price reaction which subsequently is the basis for the analysts' recommendations. The sell recommendation of an affiliated analyst contains an additional negative signal, which is also processed by the capital market.

(b) Long-Run performance of stock recommendations

In order to determine the importance of buy and sell recommendations, we investigate the long-run performance based on these recommendations. For this, buy-and-hold-abnormal-returns (BHAR) are calculated for different investment strategies. First, we construct three portfolios of stocks with buy recommendations by unaffiliated analysts, analysts of the lead-underwriter, and analysts of the co-underwriter. The stocks are bought on the day before the buy recommendation[11] became publicly available. These stocks are held in the portfolio for 246 trading days, which corresponds approximately to one calendar year. If the recommendations of the two affiliated analysts groups (analysts of the lead- and the co-underwriter) contain superior information, then we should find that these two portfolios also have a superior long-run performance. However, if these analysts are too optimistic, the buy recommendations of the two affiliated analyst groups should reveal an inferior performance compared to the recommendations of the unaffiliated analysts. Such a finding would support the "conflict-of-interest-hypothesis".

The BHAR for the three portfolios with buy recommendations are represented in Figure 5 and Table 10. The performance of the three groups differs significantly. After 246 trading days the BHAR of the buy recommendations of the unaffiliated analysts and the analysts of the lead-underwriter are 12.3% and -2.0%, respectively. This difference is substantial and amounts to 14.3 percentage points. The performance of the analysts of the co-underwriter is 2.1%, which is compared to the unaffiliated analysts an inferior performance of 10.2 percentage points.

Insert Figure 5 and Table 10 about here

[11] The authors have decided not to use day 0 within the scope of the long-run performance of stock recommendations, which is described as the publishing date of the recommendation by Factset/JCF, because we can not rule out that the real publishing day is one day before day 0.

At a first glance, it appears that the “information-advantage-hypothesis” can be clearly rejected. Instead, the results of the long-run performance support the “conflicts-of-interest-hypothesis”, which emphasizes that earnings forecasts and stock recommendations are positively biased as already explained in sections 3.1 and 3.2. Taking a look at the BHAR of the 3-day-interval around the event date, the BHAR after 123 trading days as well as the BHAR after 246 trading days, it is remarkable that only the BHAR for the stock recommendations of the unaffiliated analysts differ significantly from zero. For the recommendations of the lead-underwriter-analysts at least the median differs significantly from zero after 246 trading days. The BHAR of the three groups are not significantly different from each other at any point in time.

Overall, the results for the unaffiliated analysts are not as good as they appeared at a first glance. It seems likely that the long-run performance is driven by the performance of some single stocks. After 246 trading days we find positive BHAR for only 42.3% of the buy recommendations of unaffiliated analysts, for 45.2% of the buy recommendations of co-underwriter-analysts, and for 36.8% of the lead-underwriter-analysts. This finding is also reflected in the medians of the BHAR after 246 trading days (Table 10). However, there is evidence that the buy recommendations of the analysts belonging to the lead-underwriter are qualitatively inferior. This does not support the access to or rather the use of “superior” information hypothesis. In fact, it supports the “conflict-of-interest-hypothesis”. Whether the analysts have in fact access to superior information is an open question. However, if this is the case, this information advantage is hardly used or useful to generate superior forecasts and recommendations. At least, it seems fair to conclude that the “conflicts-of-interest-hypothesis” dominates the “information-advantage-hypothesis”.

The empirical findings for the long-run performance of sell recommendations support the hypothesis that sell recommendations of affiliated analysts represent significantly more negative signals than sell recommendations of unaffiliated analysts. It is important to point out that the distribution of sell recommendations among the three groups clearly reveals that the issuing of a sell recommendation by an affiliated analyst is an extremely rare event. In fact, of all 558 sell recommendations, 85.9% are associated with the unaffiliated analysts and 10.2% were issued by the analysts of the co-underwriter. In contrast, only 3.9%

of the sell recommendations are issued by the analysts of the lead-underwriter. Consequently, it is not surprising at all that the stocks that affiliated analysts recommended for selling generate a more negative performance (Figure 6 and Table 11). These results can be interpreted in analogy to the empirical findings for dividend cuts and omissions of banks and IPOs (Bessler and Nohel, 1995; Ellermann, 2003). Because it can be expected that a reduction or omission of dividends by banks as well as by IPOs should result in severe negative stock price reactions due to the usually higher information asymmetries for these two groups, banks and IPOs tend to avoid and delay a dividend cut or omission as long as possible. However, if the dividend reduction cannot be avoided any longer, then the capital market becomes quite aware of the long-term financial problems of these companies. Because a strong negative reaction can be expected especially for sell recommendations of affiliated analysts, they delay publishing sell recommendations as long as possible. However, in order to minimize the potentially negative reputation effect for the analyst, the sell recommendation has to be issued sooner or later. When the sell recommendation finally happens, the negative stock price reaction will be especially severe.

Insert Figure 6 and Table 11 about here

In general, sell recommendations lead to more distinct and significant reactions compared to buy recommendations. Except for sell recommendations of the lead-underwriter, all median and almost all mean BHAR are significantly different from zero after one year (at time t=246). In addition, the BHAR of the three groups are significantly different from each other. When we use a non-parametric test for comparison, it is revealed that at least for sell recommendations all the analysts publish better results relative to buy recommendations. After all, 61.8% of sell recommendations of unaffiliated analysts have negative BHAR. Quite surprisingly, the BHAR for analysts of the co-underwriter and the lead-underwriter are 78.95% and 63.6%, respectively. Although the results have to be interpreted with care, due to the low number of observations for the sell recommendations of the co- and lead-underwriter-analysts, the results clearly indicate that affiliated analysts recommend selling shares of firms, which they have accompanied during the IPO process, only in extreme cases.

(c) Post-IPO performance of equities with buy recommendations

An analysis of the first year after going public should offer additional insights, because of the fact that price support by the underwriter is very common during this period. At this point we will not analyze the long-run performance of stock recommendations. Instead, the focus is on the performance of those firms one year after the IPO, which had at least one buy recommendation during the first 12 months. Again, we distinguish between the three groups of analysts. If the "conflict-of-interest-hypothesis" is valid, then we would expect that companies that were recommended by the analysts of the lead-underwriter should have the worst performance. Especially in those cases of low performing companies, the price support in the form of too optimistic stock recommendations would be useful and necessary. In Figure 7 and Table 12 we present the BHAR for three sub-samples. These three groups consist of companies that have received buy recommendations a) from unaffiliated analysts, b) from affiliated analysts, and finally c) companies that have not been recommended at all within the first year after their IPO.[12]

Insert Figure 7 and Table 12 about here

The empirical evidence is very convincing. Those IPOs that have received buy recommendations only from unaffiliated analysts during the first year after going public have a positive performance of 72.64% (BHAR), whereas the IPOs that received buy recommendations only from affiliated analysts (lead- und co-underwriter) have an underperformance of –16.53%. This result suggests that affiliated analysts on average recommended companies that eventually underperformed. This finding supports the hypothesis that affiliated analysts employ buy recommendations as an instrument to potentially influence stock prices. This empirical evidence may suggest, however, that the recommendation strategy of affiliated analysts during the first year did not have the expected positive impact on the stock price performance. For correctly answering this question it would be necessary to compare the performance of the IPOs with and without buy recommendations. Obviously, this analysis is not possible. The question whether the per-

[12] In Table 7 we also included the group of affiliated and unaffiliated analysts.

formance of these IPOs would have been even more negative without the buy recommendations of affiliated analysts cannot be answered. We can only speculate on the outcome.

(iv) Robustness checks

(a) Forecast accuracy and forecast bias

We check for the robustness of our results that an underwriter affiliation of the financial analyst has an impact on his forecast quality, by regressing the forecast accuracy (MRAFE) and the forecast bias (MRFE) on a set of 17 variables. A description of these variables is provided in Table 13.

Insert Table 13 about here

The regression equations are:

$$MRAFE_{i,t} = \beta_0 + \beta_1 MCAP_{i,t} + \beta_2 COV_{i,t} + \beta_3 UP_i + \beta_4 HZ_{i,t} + \beta_5 MAIPO_{i,t} + \beta_6 D\_LEAD_i + \beta_7 D\_CO_i + \beta_8 D\_VCB_i + \beta_9 D\_VC_i + \beta_{10} D\_NVC_i + \beta_{11} D\_BSC_i + \beta_{12} D\_CYC_i + \beta_{13} D\_FIN_i + \beta_{14} D\_HCR_i + \beta_{15} D\_IDU_i + \beta_{16} D\_NCY_i + \beta_{17} D\_TLS_i + \varepsilon_{i,t}$$

$$MRFE_{i,t} = \beta_0 + \beta_1 MCAP_{i,t} + \beta_2 COV_{i,t} + \beta_3 UP_i + \beta_4 HZ_{i,t} + \beta_5 MAIPO_{i,t} + \beta_6 D\_LEAD_i + \beta_7 D\_CO_i + \beta_8 D\_VCB_i + \beta_9 D\_VC_i + \beta_{10} D\_NVC_i + \beta_{11} D\_BSC_i + \beta_{12} D\_CYC_i + \beta_{13} D\_FIN_i + \beta_{14} D\_HCR_i + \beta_{15} D\_IDU_i + \beta_{16} D\_NCY_i + \beta_{17} D\_TLS_i + \varepsilon_{i,t}$$

The results of the OLS-regressions confirm our previous findings that the lead-underwriter affiliation has an impact on the accuracy and the bias of the analysts' forecasts. The lead-underwriter relation (D_LEAD) has a significant influence on the forecast accuracy and the forecast bias at the 10%- and 1%-level, respectively (Table 14). However, the affiliation of an analyst with the co-underwriter (D_CO) does not lead to superior or inferior forecasts compared to that of unaffiliated analysts.

Insert Table 14 about here

Furthermore, our previous findings that the forecast horizon (HZ) has an impact on the forecast accuracy, is also supported by the OLS-regression results. Somewhat surprising is that the forecast horizon has no

significant influence on the forecast bias. Once again it becomes evident that the time of the forecast relative to the IPO date (MAIPO) has a highly significant effect on the forecast accuracy and bias. On the one hand, this highlights the positive influence that an increasing firm history has on research quality. On the other hand, this illustrates the specific information problems during the first months after the IPO.

The firm size, which is approximated by the market capitalization, also has a highly significant influence on the forecast quality. This is also true for the number of analysts that cover a company (coverage) and for the underpricing. However, the directions of these influences differ. For example, market capitalization (MCAP) has a significantly positive impact on the forecast quality, because the MRAFE as well as the MRFE decrease with an increase in firm size. Given the fact that there should be more information available for larger firms this result was expected. However, it is interesting to observe that the influence of the analyst coverage (COV) and the underpricing (UP) on the forecast accuracy and the forecast bias is negative. Both variables result in higher MRAFE and MRFE. In contrast to the usually positive effect of a higher coverage (Chang et al., 2000; Bushan, 1989), it appears that higher analyst coverage of young growth companies on the Neuer Markt does not lead to a better forecast quality. In fact, the results show a negative correlation. If the "conflict-of-interest-hypothesis" is correct, then these results suggest a strong competition among financial analysts for these companies on this special market segment. This finally leads to more inaccurate and stronger biased forecasts. In contrast, it appears that a higher underpricing creates an optimistic outlook for analysts which in turn lead to high growth expectations. This leads to a lower forecast accuracy and a higher forecast bias.

Of particular interest are these cases in which the underwriter has provided venture capital to a company before the IPO. However, if a bank was already a shareholder of the firm before the IPO, it is obliged to hold these stocks for some time period due to the mandatory lock-up agreements on the Neuer Markt. The empirical results reveal that this has a significantly positive influence on the forecast inaccuracy and the forecast bias at the 5%-level. Without further examining the relation at this point, it could be an indication for specific agency problems (see Bessler and Kurth, 2006b, 2006c). As already mentioned, an underwriter can influence the analysts directly or indirectly to issue positive earnings forecasts. This could be

beneficial in the sense that the bank creates an environment to sell their venture capital stake at the end of the lock-up period at favorable stock prices. We also find highly significant effects on the forecast bias for those cases in which individual investors, e.g., bank customers, instead of venture capital companies, are the relevant shareholders. Moreover, we find an industry effect in that substantial differences are observable in the forecast accuracy and in the optimism of the analysts (Bessler and Stanzel, 2005).

(b) Performance of analysts´ stock recommendations

In addition to our previous investigation of the quality of buy and sell recommendations of unaffiliated and affiliated analysts, we also analyze these relationships in a cross-sectional regression framework. For this, the BHAR for the 3-day-event, for 123 trading days as well as for 246 trading days are regressed on the previous set of independent variables. This time the factors underpricing (UP) and forecast horizon (HZ) are excluded. The regression equation is:

$$BHAR_{i,t} = \beta_0 + \beta_1 MCAP_{i,t} + \beta_2 COV_{i,t} + \beta_3 MAIPO_{i,t} + \beta_4 D\_LEAD_i + \beta_5 D\_CO_i + \beta_6 D\_VCB_i + \beta_7 D\_NVC_i + \beta_8 D\_NVC_i + \beta_9 D\_BSC_i + \beta_{10} D\_CYC_i + \beta_{11} D\_FIN_i + \beta_{12} D\_HCR_i + \beta_{13} D\_IDU_i + \beta_{14} D\_NCY_i + \beta_{15} D\_TLS_i + \varepsilon_{i,t}$$

The additional findings for buy recommendations of the analysts confirm our previous results. A buy recommendation of an analyst who is affiliated with the underwriter does not have any significant impact on the price reaction within a 3-day-interval (Table 15).

Insert Table 15 about here

Furthermore, we do not find any significant impact of the variables that represent the underwriter relation, the dummy variables for the venture capital-relation, and the industry sector. Only the market capitalization and the number of analysts that cover a company have a marginally significant influence. From these findings it seems fair to conclude that buy recommendations, independent of the analyst group, do not have any significant impact on the capital market valuation. However, the empirical evidence of the long-run performance analysis (246 days) suggests that buy recommendations from analysts of the lead-

underwriter usually result in an inferior performance (5%-level) relative to those of the unaffiliated analysts. It is also evident that the investor should be extremely cautious when acting on buy recommendations that are made publicly available shortly after an IPO. However, the number of months that have passed since the IPO is significantly correlated with the abnormal return. In contrast, the circumstance whether the underwriter was invested as a venture capitalist before the IPO does not have any significant impact on the short- and long-run performance for the period investigated in this study.

However, sell recommendations of analysts that are affiliated with the lead-underwriter have a significantly negative influence at the 5%-level during the event period. Thus, sell recommendations of a lead-underwriter symbolize an extremely negative signal for the capital market (Table 16).

Insert Table 16 about here

In contrast, this is not the case for the sell recommendations of analysts of the co-underwriter, because they do not have a significantly effect on the performance during the event period. Moreover, sell recommendations for larger companies result in a still negative but relatively better short-term performance. This highlights the fact that sell recommendations represent especially for small companies an important negative signal. Sector specific effects are neither observed for buy nor for sell recommendations around the event date. Not surprisingly, the number of months that have passed between the IPO and the time of the sell recommendation plays a crucial role. Sell recommendations that were issued shortly after the IPO are interpreted by the market as a much more negative signal than sell recommendations that were published later on. They also result in an inferior long run-performance. This finding suggests that the capital market correctly interprets the negative signal that is associated with an earlier sell recommendation following the IPO. This conclusion is also valid for the sell recommendations of the lead-underwriter. After 246 trading days, they have a significantly – although weaker – negative influence on the abnormal returns.

Overall, the results of the cross sectional regressions confirm the previous results in this study with respect to the earnings forecast quality and the short- and long-run-performance of stock recommendations. If an

analyst is affiliated with the lead-underwriter of an IPO, this relation will not have a positive but a negative impact on the quality of his forecasts. These forecasts are characterized by a higher inaccuracy and a higher positive bias compared to those of unaffiliated analysts. In contrast, this conclusion cannot be confirmed for the analysts of the co-underwriter. While the short-run-performance of buy recommendations of lead- and co-underwriter-analysts is not different from that of the unaffiliated analysts, the sell recommendations of an analyst belonging to a lead-underwriter result in significantly negative stock price reactions. Also in the long-run, the analysts that are affiliated with the lead-underwriter do poorly. The performance of their recommendations is, compared to the unaffiliated analysts, significantly inferior. Overall, the "conflict-of-interest-hypothesis" cannot be rejected for the group of analysts that is affiliated with the lead-underwriter. There is one major conclusion for the private investor. For the private investor it is preferable to follow the equity research, earnings forecasts, and stock recommendations of unaffiliated analysts rather than the forecast and advice of analysts belonging to the lead-underwriter of an IPO.

6. SUMMARY AND CONCLUSIONS

Analysts that are affiliated with the underwriter should have advantages in their equity research resulting from their relation to the investment or corporate finance division of the bank and the potential access to superior information. Nevertheless, it seems fair to conclude that especially analysts of the lead-underwriter are exposed to certain agency problems and conflicts of interest. Thus, the findings in our empirical analysis support the "conflict-of-interest-hypothesis". In particular, the analysts that are affiliated with the lead-underwriter generate more inaccurate and more positively biased earnings forecasts than unaffiliated analysts and analysts of the co-underwriter. Moreover, the stock recommendations of the analysts of the lead-underwriter are often too optimistic. Acting on their investment advice leads consequently to a long-run underperformance. In fact, the performance differences between unaffiliated analysts, lead-underwriter-analysts and analysts of co-underwriter are particularly pronounced during the first 12 months after the IPO as well as during the hot issue period of the Neuer Markt. Interestingly, the "conflict-of-interest-hypothesis" cannot be confirmed for analysts of the co-underwriter. Thus, it seems necessary in the empirical research to distinguish between these two groups of underwriters, because a differen-

tiation only between unaffiliated and affiliated analysts may possibly lead to incorrect conclusions with respect to the quality of financial analysts, but also with respect to the potential conflicts of interest. This aspect has been neglected in the previous studies for Germany. Although there is quite some room for improving the forecast quality of financial analysts in general, the earnings forecasts and stock recommendations of unaffiliated analysts contain useful information for investors to reach superior investment decisions. The different short-term price volatility that may be induced by the buy and sell recommendations of the three groups of analysts, however, indicates that the capital market is quite aware of the potential conflicts of interest. On the basis of the empirical findings in this study it seems important that the capital market regulators carry on their effort to minimize the potential conflicts of interest in equity research. Self-binding restriction within the securities industry could be valuable as well. Nevertheless, future studies need to provide additional evidence whether the recently adopted measures have been successful.

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Table 1: Descriptive Statistics I: Number of Observations

Year	Earnings Forecasts	Recommen-dations	Analysts	Brokers	Firms
1997	27	8	5	5	3
1998	281	77	32	19	20
1999	887	426	116	29	95
2000	2024	1214	282	45	165
2001	4250	1908	441	62	202
2002	3463	1287	381	60	173
2003	1479	717	235	50	125
2004	194	572	98	30	62
1997-2004	12605	6209	672	83	238

Table 2: Descriptive Statistics II: Number of Earnings Forecasts and Recommendations

Year	Unaffiliated Analysts		Lead-UW Analysts		Co-UW Analysts	
	Forecasts	Recom.	Forecasts	Recom.	Forecasts	Recom.
1997	18	5	0	0	9	3
1998	232	59	8	6	41	12
1999	601	263	147	80	139	83
2000	1289	809	408	193	327	212
2001	3260	1503	468	175	522	230
2002	2790	1102	312	92	361	93
2003	1196	596	131	53	152	68
2004	150	479	15	36	29	57
1997-2004	9536	4816	1489	635	1580	758

Table 3: Forecast Accuracy of Unaffiliated and Affiliated Analysts

	MRAFE			***t-Test for Equality of Means***		
Year	unaffiliated	Lead-UW	Co-UW	unaffiliated/ Lead-UW	unaffiliated/ Co-UW	Lead-UW/ Co-UW
1997	0,509	NA	0,450	NA	0,407	NA
1998	0,364	0,244	0,235	1,192	2,764***	0,102
1999	0,339	0,412	0,314	2,881***	0,982	2,752***
2000	0,409	0,454	0,420	2,552**	0,539	1,461
2001	0,422	0,461	0,419	2,563**	0,260	2,145**
2002	0,353	0,363	0,369	0,559	0,965	0,259
2003	0,266	0,310	0,268	1,743*	0,103	1,311
2004	0,197	0,253	0,278	0,855	1,591	0,265
7/1997-3/2000	0,358	0,401	0,321	1,947*	1,875*	2,750***
3/2000-12/2004	0,372	0,420	0,388	5,219***	1,751*	2,642***
1997-2004	0,371	0,417	0,377	5,521***	0,742	3,650***

***, **, * Significance at the 1%- , 5%-, 10%-level

Table 4: Forecast Bias of Unaffiliated and Affiliated Analysts

		MRFE		***t-Test for Equality of Means***		
Year	unaffiliated	Lead-UW	Co-UW	unaffiliated/ Lead-UW	unaffiliated/ Co-UW	Lead-UW/ Co-UW
1997	-0,503	NA	-0,450	NA	0,360	NA
1998	-0,182	-0,053	-0,132	0,854	0,723	0,659
1999	0,070	0,233	0,040	4,081***	0,766	3,673***
2000	0,213	0,244	0,206	1,151	0,234	1,034
2001	0,245	0,317	0,261	3,185***	0,744	1,943*
2002	0,128	0,132	0,065	0,158	2,530**	1,890*
2003	0,044	0,109	-0,046	1,845*	2,750***	3,368***
2004	0,051	0,144	0,101	1,119	0,763	0,358
7/1997-3/2000	0,014	0,207	0,023	5,452***	0,298	4,331***
3/2000-12/2004	0,172	0,231	0,162	4,368***	0,757	3,774***
1997-2004	0,155	0,228	0,139	5,748***	1,344	5,309***

***, **, * Significance at the 1%- , 5%-, 10%-level

Table 5: Forecast Accuracy of Unaffiliated and Affiliated Analysts Depending on Months after IPO

		MRAFE		***t-Test for Equality of Means***		
Months after IPO	unaffiliated	Lead-UW	Co-UW	unaffiliated/ Lead-UW	unaffiliated/ Co-UW	Lead-UW/ Co-UW
0 to 6	0,393	0,444	0,423	2,151**	1,138	0,741
7 to 12	0,426	0,438	0,343	0,523	3,548***	3,238***
13 to 24	0,425	0,450	0,402	1,532	1,525	2,248**
25 to 36	0,371	0,381	0,358	0,565	0,742	0,968
>36	0,306	0,375	0,352	3,759***	2,762***	0,971
Total	0,371	0,417	0,377	5,521***	0,742	3,650***

***, **, * Significance at the 1%- , 5%-, 10%-level

Table 6: Forecast Bias of Unaffiliated and Affiliated Analysts Depending on Months after IPO

		MRFE		***t-Test for Equality of Means***		
Months after IPO	unaffiliated	Lead-UW	Co-UW	unaffiliated/ Lead-UW	unaffiliated/ Co-UW	Lead-UW/ Co-UW
0 to 6	0,103	0,188	0,165	2,199**	1,470	0,470
7 to 12	0,208	0,348	0,142	4,012***	1,806*	5,095***
13 to 24	0,205	0,281	0,217	2,941***	0,513	2,008**
25 to 36	0,124	0,184	0,101	2,245**	0,868	2,367**
>36	0,133	0,147	0,061	0,555	3,141***	2,348**
Total	0,155	0,228	0,139	5,748***	1,344	5,309***

***, **, * Significance at the 1%- , 5%-, 10%-level

Table 7: Descriptive Statistics of Analysts´ Recommendations

Broker	N	Buy	Overweight	Hold	Underweight	Sell
unaffiliated	4816 (100,00%)	970 (20,14%)	1216 (25,25%)	1454 (30,19%)	646 (13,41%)	530 (11,00%)
Lead-UW	635 (100,00%)	169 (26,61%)	199 (31,34%)	149 (23,46%)	89 (14,02%)	29 (4,57%)
Co-UW	758 (100,00%)	180 (23,75%)	212 (27,97%)	209 (27,57%)	96 (12,66%)	61 (8,05%)

Table 8: Recommendation Marks of Unaffiliated and Affiliated Analysts

	Recommendation Mark			***t-Test forEquality of Means***			***Wilcoxon/Mann-Whitney-Test for Equality of Medians***		
Year	Unaffil.	Lead-UW	Co-UW	Unaff./ Lead-UW	Unaff./ Co-UW	Co-UW/ Lead-UW	Unaff./ Lead-UW	Unaff./ Co-UW	Co-UW/ Lead-UW
1997	2,000	NA	1,333	NA	1,035	NA	NA	0,745	NA
1998	1,695	1,000	1,917	2,074**	0,882	3,307***	1,892*	1,020	2,481**
1999	1,641	1,494	1,663	1,818*	0,271	1,968*	1,306	0,709	1,915*
2000	1,676	1,562	1,651	2,591***	0,579	1,599	2,502**	0,970	1,234
2001	1,956	1,820	1,907	2,948***	1,205	1,464	2,712***	1,069	1,342
2002	1,897	1,783	1,731	1,694*	2,481**	0,627	1,603	2,279**	0,484
2003	1,926	1,792	1,838	1,444	1,055	0,385	1,243	0,943	0,251
2004	1,735	1,958	1,746	2,006**	0,120	1,605	1,908*	0,324	1,407
7/1997-3/2000	1,633	1,440	1,669	2,941***	0,571	3,418***	2,149**	1,132	3,138***
3/2000-12/2004	1,869	1,750	1,788	4,214***	3,082***	1,080	3,931***	2,975***	0,886
1995-2004	1,849	1,693	1,766	6,021***	3,431***	2,311**	5,751***	3,315***	2,101**

***, **, * Significance at the 1%- , 5%-, 10%-level

Table 9: Recommendation Marks for Unaffiliated and Affiliated Analysts Depending on Months after IPO

	Recommendation Mark			***t-Test forEquality of Means***			***Wilcoxon/Mann-Whitney-Test for Equality of Medians***		
Months after IPO	Unaffil.	Lead-UW	Co-UW	Unaff./ Lead-UW	Unaff./ Co-UW	Co-UW/ Lead-UW	Unaff./ Lead-UW	Unaff./ Co-UW	Co-UW/ Lead-UW
0 to 6	1,623	1,336	1,597	4,395***	0,373	3,913***	3,733***	0,002	3,390***
7 to 12	1,733	1,552	1,554	2,923***	2,816***	0,035	2,875***	2,719***	0,042
13 to 24	1,852	1,764	1,887	1,944**	0,811	2,209**	1,710*	0,792	1,975**
25 to 36	1,921	1,855	1,777	1,122	2,491**	1,015	0,891	2,442**	1,156
>36	1,875	1,885	1,813	0,166	1,260	0,948	0,216	1,089	0,881
Total	1,849	1,693	1,766	6,021***	3,431***	2,311**	5,751***	3,315***	2,101**

***, **, * Significance at the 1%- , 5%-, 10%-level

Table 10: Buy-and-Hold-Abnormal-Returns (BHAR) for Buy Recommendations

	unaffiliated (N=829)	Co-UW (N=166)	Lead-UW (N=163)	ANOVA F-Stat.	Kruskal-Wallis-Test
BHAR, 3 day event					
mean	0,0119***	0,0104	0,0088	0,0717	
median	0,0035	0,0031	0,0023		0,6068
Std.dev.	0,0998	0,0896	0,1208		
BHAR, event + 123 days					
mean	0,0828***	0,0640	0,0657	0,0711	
median	-0,0194*	-0,0304	-0,0254		0,0404
Std.dev.	0,7340	0,7824	0,6518		
BHAR, event + 246 days					
mean	0,1230***	0,0211	-0,0200	1,6392	
median	-0,0531***	-0,0353	-0,0623***		1,6145
Std.dev.	1,1950	0,5486	0,5912		

***, **, * Significance at the 1%- , 5%-, 10%-level

Table 11: Buy-and-Hold-Abnormal-Returns (BHAR) for Sell Recommendations

	unabhängige (N=479)	Co-UW (N=57)	Lead-UW (N=22)	ANOVA F-Stat.	Kruskal-Wallis-Test
BHAR, 3 day event					
mean	-0,0371***	-0,0826***	-0,1342**	5,1691***	
median	-0,0270***	-0,0402***	-0,0377		5,0865*
Std.dev.	0,1581	0,1968	0,2392		
BHAR, event + 123 days					
mean	-0,0425*	-0,2049***	-0,1569*	2,6967*	
median	-0,0919***	-0,2672***	-0,1557**		8,7565** (0,013)
Std.dev.	0,5429	0,5196	0,3603		
BHAR, event + 246 days					
mean	-0,0160	-0,1765***	-0,1013	1,2722	
median	-0,1077***	-0,1735***	-0,1834		4,8479*
Std.dev.	0,7799	0,4299	0,5492		

***, **, * Significance at the 1%- , 5%-, 10%-level

Table 12: Buy-and-Hold-Abnormal-Returns (BHAR) of Stocks with Buy Recommendations within the First Year after IPO

	none (N=99)	only unaffiliated (N=57)	only affiliated (N=49)	unaffiliated & affiliated (N=53)	ANOVA F-Statistik	Kruskal-Wallis-Test
BHAR, event + 123 days						
mean	-0,0111	0,5462*	-0,0121	0,5729***	3,6080**	
median	-0,1206	0,0504	-0,1346	0,0902**		9,9942**
Std.dev.	0,6488	2,3959	0,5862	1,4083		
BHAR, event + 246 days						
mean	0,0925	0,7264*	-0,1653	0,3206**	2,0352	
median	-0,1174***	-0,0778	-0,0657	0,0548		0,0177**
Std.dev.	2,1515	2,8467	0,7720	1,0991		

***, **, * Significance at the 1%- , 5%-, 10%-level

Table 13: Description of the Independent Variables

Independent Variable	Description
MCAP	Logarithm of the market cap of the firm
COV	Number of analysts covering a firm
UP	Underpricing
HZ	Forecast Horizon in months
MAIPO	Date of the forecast/recommendation in months after IPO date
D_LEAD	Dummy lead-underwriter analyst
D_CO	Dummy co-underwriter analyst
D_VCB	Dummy venture capital backed by a bank
D_VC	Dummy venture capital backed by a vc-firm
D_NVC	Dummy venture capital backed by a private investor
D_BSC	Dummy industrie sector Basic Materials
D_CYC	Dummy industrie sector Consumer Cyclical
D_FIN	Dummy industrie sector Financial
D_HCR	Dummy industrie sector Healthcare
D_IDU	Dummy industrie sector Industrial
D_NCY	Dummy industrie sector Consumer Non-Cyclical
D_TLS	Dummy industrie sector Telecommunications

Table 14: OLS-Regression Results on Forecast Accuracy and Forecast Bias

	Forecast Accuracy (Dependent Variable=MRAFE)		*Forecast Bias (Dependent Variable=MRFE)*	
	Coefficient	t-Statistic	Coefficient	t-Statistic
MCAP	-0,036	-12,824***	-0,037	-7,953***
COV	0,002	4,879***	0,006	7,862***
UP	0,000	6,607***	0,000	4,752***
HZ	0,006	16,190***	0,000	-0,184
MAIPO	-0,003	-12,678***	-0,003	-8,684***
D_LEAD	0,019	1,787*	0,078	4,252***
D_CO	-0,014	-1,215	-0,012	-0,624
D_VCB	0,024	2,592**	0,025	1,839**
D_VC	0,003	0,314	-0,001	-0,032
D_NVC	0,008	0,994	0,057	4,609***
D_BSC	-0,237	-7,364***	-0,207	-4,320***
D_CYC	0,050	3,517***	0,042	1,774**
D_FIN	0,251	17,331***	0,241	8,816***
D_HCR	0,005	0,341	0,039	1,705**
D_IDU	-0,066	-7,885***	-0,077	-5,757***
D_NCY	-0,057	-1,468	-0,253	-3,170***
D_TLS	0,155	9,580***	0,110	3,402***
C	0,558	32,304***	0,344	12,852***
R-squared	0,142		0,047	

***, **, * Significance at the 1%- , 5%-, 10%-level

Table 15: OLS-Regressions Results on Excess Returns of Analysts´ Buy Recommendations

	BHAR 3 day event		BHAR event +123		BHAR event +246	
	coefficient	t-Statistic	coefficient	t-Statistic	coefficient	t-Statistic
MCAP	0,005	1,945*	-0,002	-0,092	0,008	0,309
COV	-0,001	-1,704*	-0,007	-2,136**	-0,011	-2,872***
MAIPO	0,000	-0,212	0,004	2,034**	0,008	3,921***
D_LEAD	-0,007	-0,556	-0,063	-1,078	-0,161	-2,467**
D_CO	-0,009	-1,076	-0,005	-0,066	-0,083	-1,537
D_VCB	-0,002	-0,166	-0,054	-0,868	0,013	0,202
D_VC	0,003	0,302	0,031	0,476	-0,081	-1,208
D_NVC	-0,001	-0,143	0,115	2,181**	0,126	1,942*
D_BSC	-0,002	-0,164	0,036	0,402	0,291	2,506 **
D_CYC	-0,003	-0,227	-0,100	-1,461	-0,206	-2,969***
D_FIN	-0,002	-0,172	0,111	1,558	0,025	0,318
D_HCR	0,005	0,324	0,136	0,862	0,159	1,270
D_IDU	0,006	0,715	-0,037	-0,804	-0,069	-0,892
D_NCY	0,004	0,150	0,012	0,076	0,509	0,999
D_TLS	-0,019	-1,106	0,016	0,114	0,019	0,116
C	-0,007	-0,426	0,072	0,619	0,033	0,220
R-squared	0,008		0,022		0,044	

***, **, * Significance at the 1%- , 5%-, 10%-level

Table 16: OLS-Regressions Results on Excess Returns of Analysts´ Sell Recommendations

	BHAR 3 day event		BHAR event +123		BHAR event +246	
	coefficient	t-Statistic	coefficient	t-Statistic	coefficient	t-Statistic
MCAP	0,028	3,724***	0,036	1,751*	-0,010	-0,343
COV	-0,003	-2,746***	-0,004	-1,268	0,005	1,054
MAIPO	0,002	3,183***	0,004	2,378**	0,007	2,857***
D_LEAD	-0,115	-2,157**	-0,139	-1,617	-0,202	-1,686*
D_CO	-0,023	-0,797	-0,128	-1,424	-0,090	-1,017
D_VCB	-0,004	-0,291	0,070	1,053	0,056	0,737
D_VC	-0,017	-0,634	0,109	1,284	0,190	1,769*
D_NVC	0,037	2,048**	0,064	0,960	-0,040	-0,496
D_CYC	-0,030	-1,273	-0,146	-2,319**	-0,062	-0,804
D_FIN	0,026	1,117	0,303	3,041***	0,403	2,829***
D_HCR	0,036	1,184	-0,058	-0,674	-0,033	-0,251
D_IDU	0,016	0,888	0,016	0,287	-0,066	-1,027
D_TLS	0,064	1,430	0,029	0,202	0,298	1,368
C	-0,204	-4,763***	-0,353	-3,183***	-0,288	-2,725***
R-squared	0,099		0,076		0,090	

***, **, * Significance at the 1%- , 5%-, 10%-level

Figure 1: Number of IPOs per Month and Nemax Allshare-Index

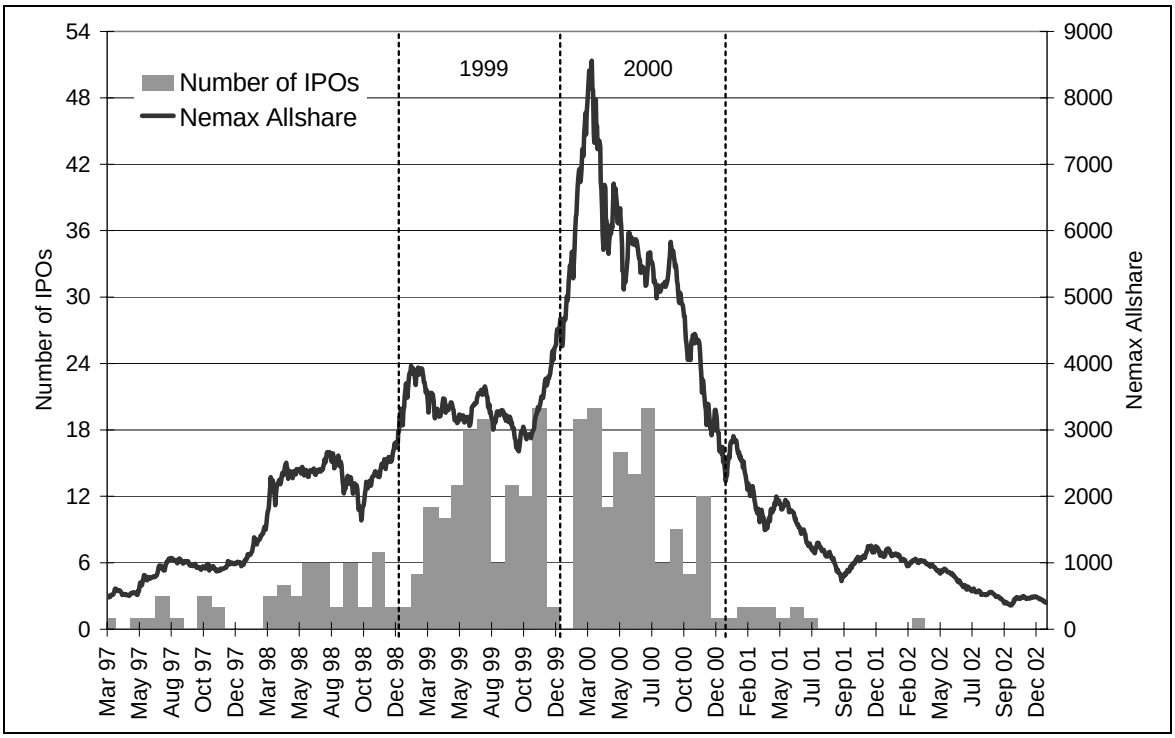

Figure 2: Distribution of Analysts´ Recommendations

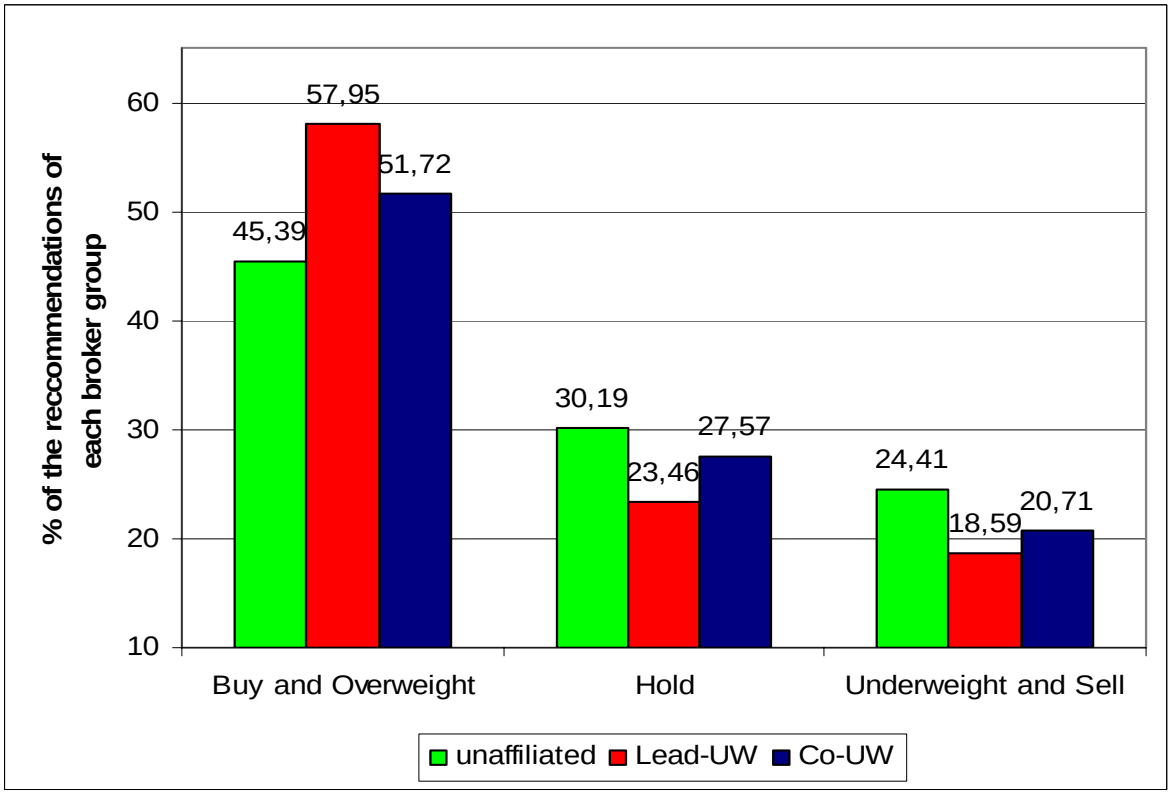

Figure 3: Cumulative Abnormal Returns (CAR) for Buy Recommendations

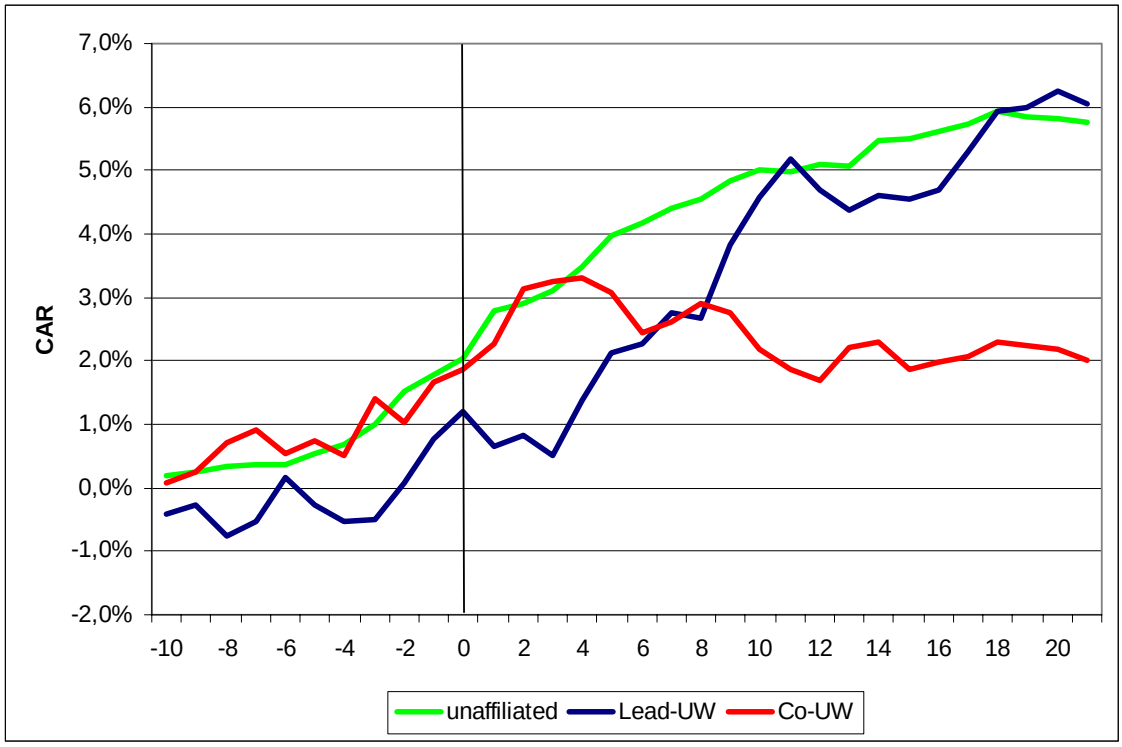

Figure 4: Cumulative Abnormal Returns (CAR) for Sell Recommendations

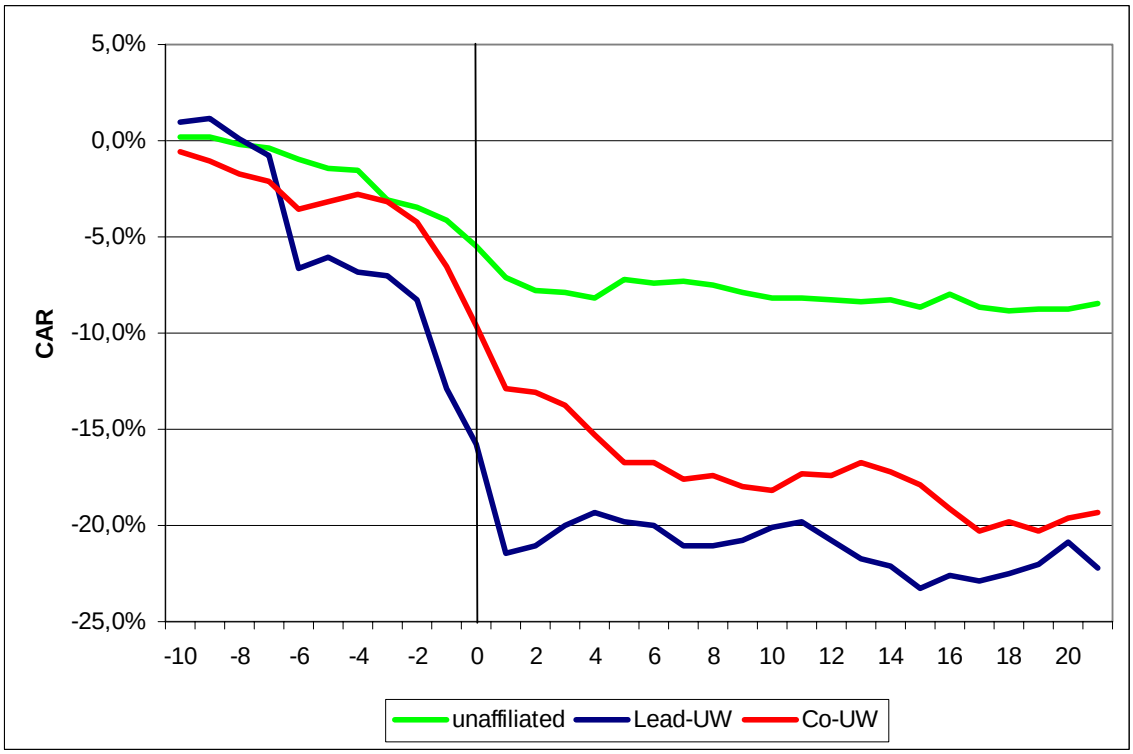

Figure 5: **Buy-and-Hold-Abnormal-Returns (BHAR) of Buy Recommendations**

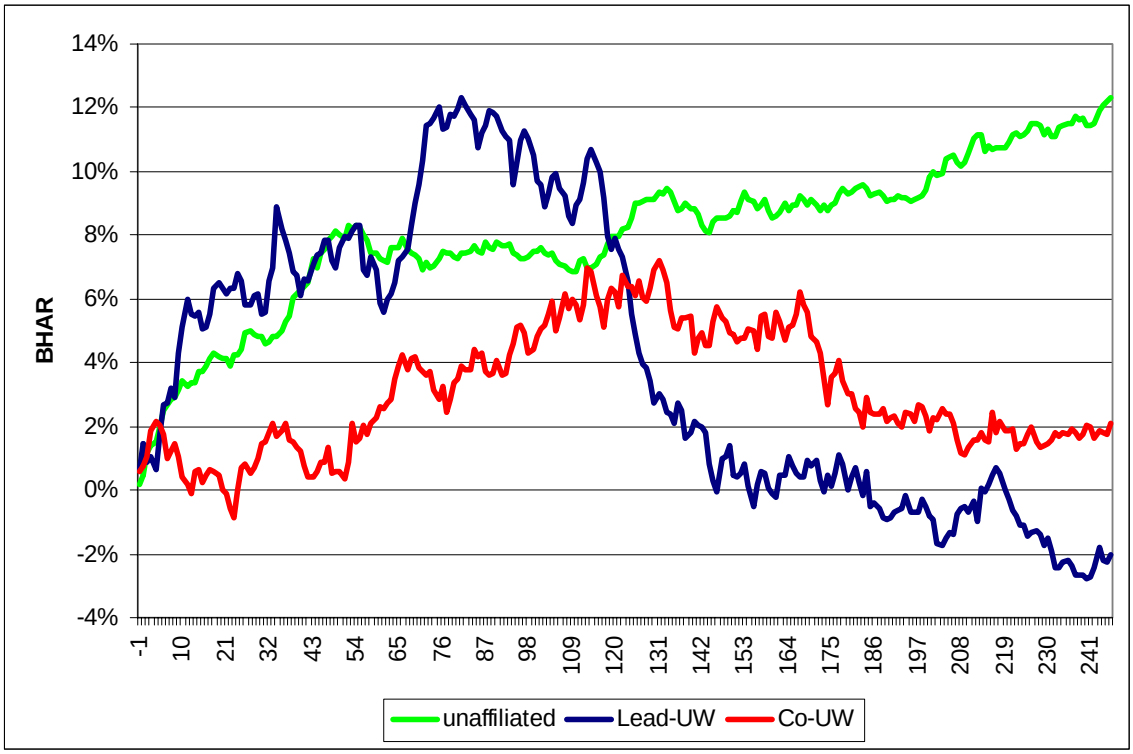

Figure 6: **Buy-and-Hold-Abnormal-Returns (BHAR) for Sell Recommendations**

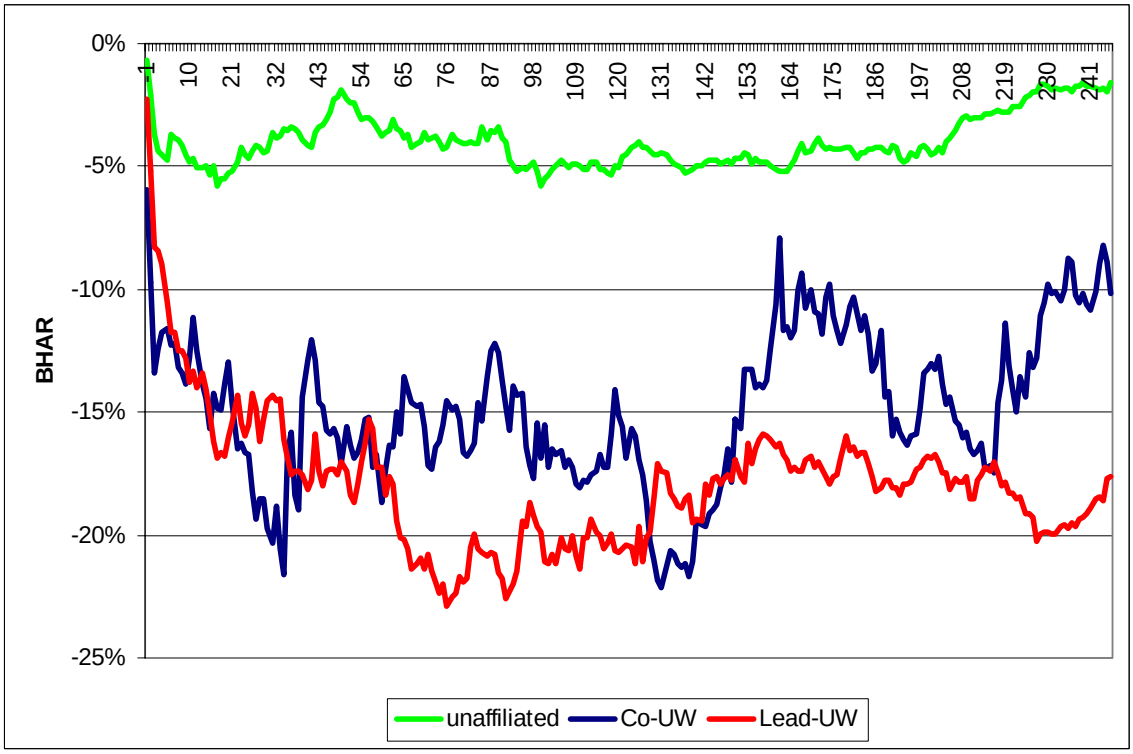

Figure 7: **Buy-and-Hold-Abnormal-Returns (BHAR) for stocks with Buy Recommendations within the First Year after IPO**