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HOW DO IPO ISSUERS PAY FOR ANALYST COVERAGE?[1]

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This article reports evidence consistent with the view that initial public offering (IPO) issuers purchase high-quality analyst coverage with greater underpricing of the IPO. Specifically, we report that underpricing is positively related to analyst coverage by the lead underwriter and to the presence of an all-star analyst on the research staff of the lead underwriter. Moreover, if underwriters do not deliver the expected analyst coverage (conditional on the level of underpricing) IPO issuers are more likely to switch underwriters when they conduct a subsequent seasoned equity offer.

1 Introduction

In recent years, stock research has become increasingly important in the eyes of many corporate executives.[2] Analyst recommendations might be valuable to firms for several reasons. First, analyst coverage can generate publicity for the issuing company, thereby potentially increasing firm value by generating more customers. Second, Chen and Ritter (2000) and Aggarwal *et al.* (2002) note that post-initial public offering (IPO) analyst recommendations that boost share price can be especially important for insiders wishing to sell their shares in the open market following expiration of the lock-up period. Third, greater analyst coverage might lead to greater investor recognition of the IPO company. According to Merton's (1987) model, this greater investor recognition can reduce a firm's cost of captial and lead to a higher company value.

Although issuing firms want coverage from analysts, providing these recommendations is costly to the investment bank. In addition to the direct costs of producing the reports, not the least of which is the analyst's salary, there are also reputation costs associated with incorrect recommendations. Presumably these reputation costs are larger for more reputable banks or analysts.

If it is the case that companies value research coverage and that this coverage is costly to the bank, then it makes sense that firms would be willing to allocate resources to the bank in exchange for this coverage. Yet it is unclear how firms might make

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such payments. Although Weiss (2003) discusses a recent trend on Wall Street toward "paid research," whereby the company literally pays cash directly to the organization producing the research report, such direct payments are not widespread and tend to be concentrated among micro-cap firms.

In a recently published study, we examined the IPO process as one setting in which there is a conceivable payment mechanism.[3] In an IPO, the underwriting syndicate, headed by the lead underwriter, provides a variety of services, including pricing the offer, marketing and distributing the shares, and providing price stabilization in the secondary market. Another service is research coverage. Indeed, Krigman *et al.* (2001) provide evidence from a survey of issuing firms that research coverage is among the most important factors in determining whether to switch underwriters for a seasoned equity offer (SEO). Despite this wide variety of services provided, there is very little variation in underwriting fees—the vast majority of IPOs have a standard 7% spread. Therefore, we examined the possibility that the issuer compensates the underwriter in part through underpricing. On average, underpricing costs are several times as large as the underwriter spread. In fact, during the late 1990s, average underpricing was more than ten times as large as the average underwriting fees. But how does this benefit the underwriter?

First, underwriters can allocate more underpriced IPOs to favored clients, perhaps in return for future investment banking business. Some anecdotal evidence in support of such a *quid pro quo* arrangement for research coverage is offered in Smith (2002), who reports that Frank Quattrone, former head of technology banking at CSFB, asked a colleague "what have we extracted from [Agile Software] on the banking side to get this coverage?" This practice, known as spinning, has been the subject of recent congressional investigations of CSFB, Goldman Sachs, and Salomon-Smith Barney. The recently proposed NASD Rule 2712 clarifies and strengthens the prior Rule 2710, which prohibits spinning.[4] Second, underwriters can allocate shares to hedge funds and other large investors who then do more of their trading with the investment bank. There are reports that these investors returned the favor by paying higher than normal commissions.[5] At CSFB, the arrangement was allegedly "You get $3, we get $1" (see Pulliam and Smith, 2001a). Third, because underpricing is positively correlated with subsequent trading volume (Krigman *et al.*, 2001) and lead underwriters are the primary market makers (Ellis *et al.*, 2000), underwriting firms can benefit from underpricing.

Thus, we hypothesized that issuers purchase analyst coverage by giving up greater underpricing at the time of the IPO. A corollary of this hypothesis is that if the lead underwriter does not deliver the expected research coverage, the issuing company is more likely to switch to a new underwriter for subsequent SEOs. Our study sought to provide more systematic evidence to such anecdotes. We considered three empirical predictions related to these hypotheses. First, analyst coverage by the lead underwriter should be positively related to initial underpricing. Second, underpricing should be greater in IPOs underwritten by more prestigious investment banks or those with higher rated analysts. Third, the likelihood of switching underwriters between the company's IPO and its SEO should be associated with the unexpected amount of analyst coverage. That is, if analysts do not deliver the expected coverage (conditional on underpricing), companies should be more likely to switch to a different underwriter for their SEO.

Our findings were broadly consistent with the above hypotheses. There is a strong correlation between IPO underpricing and both the frequency and the perceived quality of subsequent recommendations. For companies in the lowest quintile of IPO underpricing, the lead underwriter makes a

recommendation (possibly including unfavorable ones) only 75% of the time. This rate increases to 86% for the highest quintile of underpricing. Similarly, the lead underwriter has an all-star analyst (as defined by *Institutional Investor*) following the industry of the IPO firm in 16% of the firms in the lowest quintile of underpricing. This rises to 35% for the firms in the highest quintile of underpricing. Finally, we show that the likelihood of switching underwriters is negatively related to "excess" coverage; that is, issuers getting more coverage than anticipated are less likely to switch.

2 Sample selection and data description

Our analysis focused on a sample of 1050 firms that conducted an IPO between 1993 and 2000 and also completed an SEO by 2001. We required firms in our sample to conduct an SEO because we were interested in examining the relation between IPO underpricing, subsequent analyst coverage, and the issuer's satisfaction with its IPO lead underwriter. By examining issuers who subsequently conducted an SEO, we were able to focus on a group of firms that the investment banks may have viewed as a likely candidate for repeat banking business.

The sample was constructed from a variety of sources, including the New Issues database from Securities Data Corporation (SDC) for IPO and SEO data, I/B/E/S for analyst recommendations, and the Center for Research in Stock Prices (CRSP) for stock prices, returns, and volumes. For each IPO, we used SDC to identify the lead underwriter(s).[6] We then checked I/B/E/S for a stock recommendation on this issuer by the lead underwriter. If there was a recommendation outstanding as of the 1-year anniversary of the IPO, we identified that issuer as having received coverage.[7] We did not consider co-leads (SDC code "CM") as lead underwriters because they have much less discretion in the allocation of the IPO shares (see Chen and Ritter, 2000, Table V). We measured underpricing as the percentage return from the SDC offer price to the first closing price on CRSP.

Two other important variables in our analysis measured the reputation of the investment bank. First, we used a measure of bank reputation where the most reputable banks are rated a "9" and the least reputable banks are rated a "1."[8] To give a flavor of the rankings, Goldman Sachs, CSFB, and Merill Lynch are some of the banks rated "9," Bear Stearns, Alex. Brown, and Montgomery Securities are rated "8," and A.G. Edwards, BB&T, and Legg Mason are rated "7." The second reputation variable is whether the bank has an *Institutional Investor* all-star analyst in the issuer's industry in the IPO year or the year prior. Twenty-two percent of the IPOs were done by banks with a all-star analyst and the average reputation ranking is 7.5. As one might expect, these two reputation variables are related. Forty-seven percent of the deals with a reputation 9 underwriter have all-stars, while only 12% of those done by reputation 8 banks have all-stars. For all other deals, only 3% have all-stars.

Table 1 shows a few of the key variables over time. The number of IPOs ranges from a high of 210 in 1996 to a low of 38 in 2000.[9] Underpricing averages 28% in our sample, but varies considerably over time. In particular, the late 1990s was indeed a "hot" IPO market, with average underpricing reaching 91% in 1999. On the other hand, average underpricing was below 20% for the other years in our sample, and was under 10% in 1994. These time series patterns in IPO frequency and underpricing mirror those of the entire IPO market. The third column of Table 1 shows that there has been a general increase over time in the coverage of lead underwriters. At the start of the sample roughly one-third of the issuers did not receive coverage by their lead underwriter. In 1999, just 5% did not receive coverage. However, the trend reversed in 2000, possibly due to the collapse in the stock

Table 1 Time profile of key variables.

Year	# of IPOs	Average underpricing (%)	Percent with lead coverage	Percent that switch lead underwriter at SEO
1993	191	13.0	68.1	40.3
1994	163	9.5	65.6	48.5
1995	155	18.2	82.6	31.0
1996	210	17.8	88.6	33.8
1997	108	16.7	87.0	33.3
1998	63	48.0	77.8	20.6
1999	122	91.2	94.3	18.0
2000	38	61.0	79.0	15.8
All	1050	27.5	79.9	33.5

Notes: Time profile and selected characteristics of a sample of 1050 IPOs completed between 1993 and 2000. Underpricing is measured as the percentage return from the offer price to the closing price on the first day of trading. The IPOs in the sample all completed a subsequent SEO between 1993 and 2001.

market. In untabulated results, we also found that the coverage that was provided by the lead underwriter was almost always favorable. Approximately 95% of the recommendations were either a "Strong Buy" or a "Buy."

The final column of Table 1 provides information on the choice of underwriter for the SEO. We view the issuer as having switched lead underwriters if the lead underwriter (or a subsequent affiliate through merger or acquisition) is demoted to either co-manager or general syndicate member, or if they are not part of the syndicate at all. By this measure, there is a downward trend over time in the frequency of underwriter switches.[10] Overall, our data indicate that 34% of issuing firms switch the lead underwriter for their first SEO. Of the firms that switch lead underwriters, approximately half employ the IPO lead underwriter as a co-manager in the SEO and half do not employ the underwriter in the SEO at all (not reported in the table). It is very rare that the lead underwriter from the IPO is demoted to the position of a general syndicate member in the SEO.

3 Underpricing and analyst coverage

To provide some preliminary evidence on the relations among underpricing, coverage, and underwriter switching, Figure 1 provides a graphical depiction of some of these variables.[11] Specifically, Panels A and B reveal that underpricing is positively related to coverage. For example, Panel A reveals that average underpricing for the issuers receiving coverage is 30.5%, which is economically much larger than the 15.7% average underpricing for those issuers not receiving coverage. Similarly, the data in Panel B show that the percentage of firms receiving analyst coverage increases from 73% in the lowest quintile of underpricing to 86% in the highest quintile of underpricing.

In Panel C, we show that research quality, as measured by the presence of an all-star, is positively associated with underpricing. Approximately 16% of the firms in the lowest quintile of underpricing are covered by an all-star analyst, while 35% of the firms in the highest underpricing quintile have all-star coverage.

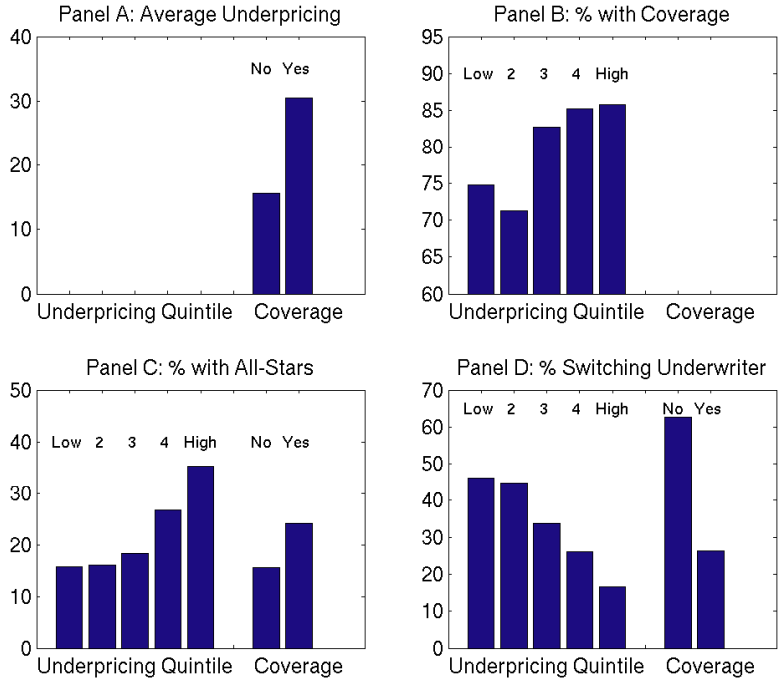

Figure 1 Summary statistics of sample partitioned based on underpricing or coverage. *Notes:* The sample is partitioned into quintiles based on underpricing, and into two groups on the basis of whether or not the company receives analyst coverage. The figure then depicts average underpricing, the percentage of companies with analyst coverage, the percentage of companies in which the lead underwriter has an all-star analyst covering the company's industry, and the percentage of companies switching underwriters between their IPO and their SEO within each group. The full sample includes 1050 IPOs completed between 1993 and 2000 for which a subsequent SEO is made between 1993 and 2001.

Finally, the data in Panel D show that the likelihood of firms switching underwriters for their SEO issue is negatively associated with underpricing and with coverage. Issuers whose IPOs were the most underpriced switched underwriters for their SEO about one-sixth of the time, as compared to about half of the issuers with the lowest underpricing. Similarly, 63% of the issuers that did not receive analyst coverage following their IPO elected to switch underwriters for their SEO. By contrast, only 26% of the firms that received post-IPO analyst coverage switched underwriters for their SEO.

Although these data offered broad support of our hypotheses, we were still concerned with two issues. First, it is possible that there are alternative explanations for the findings in Figure 1. For example, though we hypothesize that the demand for coverage leads to greater underpricing, it is possible that the direction of causation is reversed. That is, perhaps greater underpricing leads to greater analyst coverage.[12] Similarly, Loughran and Ritter (2002) hypothesize that issuers with the greatest underpricing are happy because they ended up with greater prices (and wealth) than they originally anticipated. Perhaps this satisfaction makes them less likely to switch underwriters for their SEO. In order to rule out these and other alternative explanations, it was necessary for us to undertake a multivariate analysis in which we included a rather extensive list of control variables.

The second problem we confronted was that there might be an *endogenous* relation between coverage and underpricing. That is, we hypothesize that the underwriter will agree to provide coverage conditional on lowering the offer price somewhat from what it would be in the absence of coverage. But at the same time, analysts tend to cover the "hot" IPOs (large underpricing), perhaps because that is what captures the interest of investors. The statistical tool we use to address this problem is known as two-stage least squares. In simple terms, we estimate two econometric models; the first estimates the likelihood of analyst coverage, while the second estimates the magnitude of underpricing. This pair of models is estimated in two stages. The first stage of the procedure includes in each model a set of explanatory variables (described below), but *not* the coverage or underpricing variables. The second stage then includes as explanatory variables proxies (or *instruments*) for underpricing and coverage.

Our choice of control variables was motivated by the large academic literature on the determinants of underpricing, as well as the determinants of analyst coverage. Specifically, we included variables for the log of real proceeds, the lead underwriter's reputation, the relative size of the industry, average trading volume for the 30 trading days following the IPO scaled by the number of shares offered, the number of co-lead managers, the number of IPOs by any firm in the month of the issue and the prior month, the average underpricing during this period, the gross underwriting spread, the offer price revision, the average and standard deviation of returns on the value-weighted CRSP index during the 3 weeks prior to the issuance, the log of one plus firm age, and dummy variables for technology firms, all-star coverage by the lead underwriter, and whether the firm is not listed on a major exchange. We then used the fitted values from these first-stage models as instruments in the second-stage estimation. The second-stage models also include as independent variables a set of other variables that have a strong theoretical justification.[13]

Table 2 summarizes the results from this analysis. For ease of exposition, only the key variables of interest are reported in the table. The results in the first column of Table 2 identify two main determinants of coverage, the reputation of the lead underwriter and the presence of an all-star analyst. To interpret the economic magnitude, we compare

Table 2 Two-stage regression results.

	Second-stage estimate	
Variable	Coverage	Underpricing
Underwriter rank	0.38	−1.52
	(6.03)	(−1.05)
All-star analyst	−0.54	13.92
	(−2.17)	(3.64)
Underpricing instrument	0.00	
	(0.54)	
Coverage Instrument		9.76
		(3.23)
Pseudo or adjusted R^2	0.1728	0.4450

Notes: Selected results of two-stage estimation of coverage and underpricing equations to control for endogeneity. The likelihood of coverage is estimated using a logit model while the underpricing model is estimated using ordinary least squares. In the coverage equations, the dependent variable is equal to one if the lead underwriter makes a recommendation as of the 1-year anniversary of the IPO and zero otherwise. Coefficients are reported with *t*-statistics in parentheses below. The sample includes 1050 IPOs completed between 1993 and 2000 for which a subsequent SEO is made between 1993 and 2001. The coverage regression also includes the following unreported variables: a constant, the log of proceeds, a technology dummy variable, a dummy for issues listed on minor exchanges, a measure of industry size, share turnover, and the number of co-lead managers. The underpricing regression also includes the following unreported variables: a constant, the log of proceeds, a technology dummy variable, the number of IPOs around the issuer's offering, the average IPO underpricing around the issuer's offering, underwriter spread, the revision of the offer price between the initial filing and the offering, average market returns and standard deviation of returns in the 3-weeks prior to the offering, and the log of firm age.

the estimated probability of coverage at the sample mean, where the underwriter reputation is 7.5, to the probability when the reputation rank increases to the maximum of 9. Our estimates indicate that moving from an average underwriter to the most reputable underwriter increases the likelihood of coverage by 6.5%. The all-star variable is negative and significant. When we combine the effects of underwriter reputation and all-star analysts, they largely offset. In comparing an issuer using an average reputation underwriter with no all-star to an otherwise identical issuer using a highly reputable underwriter with an all-star, the likelihood of coverage drops by 0.4%.

The last column of Table 2 shows the results for the underpricing regression. We find that the presence of an all-star analyst increases underpricing by an economically large 13.9 percentage points (t-statistic of 3.6). However, partially offsetting this effect, a one-point increase in the underwriter's rank lowers underpricing by 1.52 percentage points. In comparing an issuer with an underwriter of average reputation (7.5) and no all-star analyst to an identical issuer with a highly reputable underwriter (9) and an all-star analyst, we find that underpricing is increased in the second case by 11.6 percentage points.

Of primary interest is the coefficient on the instrument for analyst coverage. Consistent with our hypothesis, we find a strong positive relation between the coverage instrument and underpricing ($t = 3.2$). That is, underpricing is significantly greater in firms for which there is an expectation of greater analyst coverage. Overall, therefore, our findings provided support for a causal link between analyst coverage and IPO underpricing even after we controlled for other determinants of underpricing and after we controlled for the simultaneity of the amount of analyst coverage and the degree of underpricing. Our interpretation of these findings is that issuing companies pay for expected analyst coverage by discounting the price at which they sell new shares.

4 Switching of underwriters

Our final hypothesis predicts that issuing companies will switch underwriters between their IPO and their subsequent SEO if they believe they have received less analyst coverage than expected. To test this hypothesis, we examined how coverage and underpricing jointly affect an issuer's decision to switch underwriters at the SEO.

Recall from Figure 1 that there is an inverse relationship between underpricing and the likelihood of switching underwriters. To further address why the issuers leaving the most money on the table are the least likely to switch underwriters, Figure 2 compares the switching rates in underpricing

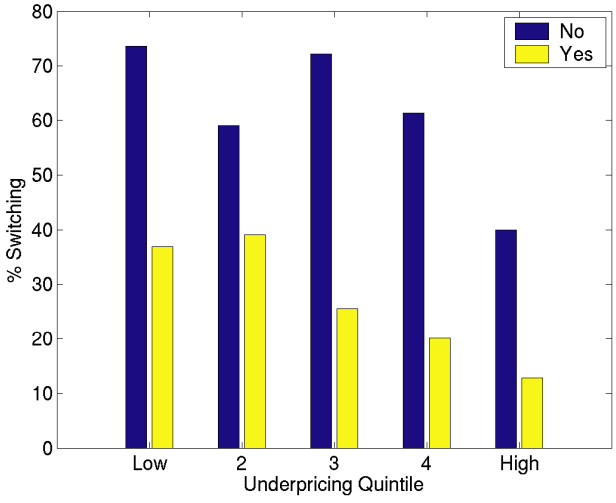

Figure 2 Switching propensity. *Notes:* The sample is partitioned into ten groups based on underpricing quintile and research coverage. "No" and "yes" indicate whether the the lead IPO underwriter has a recommendation outstanding as of the 1-year anniversary of the IPO. The sample includes 1050 IPOs completed between 1993 and 2000 for which a subsequent SEO is made between 1993 and 2001.

quintiles of firms with and without lead analyst recommendations. It is clear from the figure that within a given underpricing quintile, firms that get lead coverage are much less likely to switch underwriters for their SEO. For example, in the low underpricing quintile, where issuers are very likely to switch underwriters, 74% of the issuers who do not get coverage switch, as compared to a 37% switching rate among the issuers who receive lead coverage. The other quintiles exhibit a similar pattern, with the switching rate of firms with lead analyst coverage being roughly 30 percentage points below that of firms without analyst coverage. For all five quintiles, the difference in the percentage of firms switching underwriters between those with a lead analyst recommendation and those without such a recommendation is statistically significant at the 1% level.

On the other hand, splitting issuers into coverage categories does not remove the spread across underpricing quintiles. For firms with recommendations from the lead underwriter, the 37% switch rate for the low-underpricing quintile is three times that of the high-underpricing quintile. Similarly, among firms without recommendations from the lead underwriter, the 74% switching rate in the low-underpricing quintile is nearly double the rate for the high-underpricing quintile. These findings imply that analyst coverage is only part of the explanation for why issuing firms switch underwriters.

To provide further evidence on the determinants of underwriter switching, we estimated logit models to predict switching behavior. Our analysis is similar to that in Krigman *et al.* (2001), with one important addition. We included in our model the unexpected analyst coverage (actual coverage minus the predicted probability) from our second-stage estimates in Table 2. Selected results for our key variables are reported in Table 3.[14]

Table 3 Probability of switching lead underwriters.

	Coefficient	*t*-stat	Magnitude
Offer price revision	−0.0158	−2.45	−0.0701
IPO lead all-star	−0.0875	−0.24	−0.0185
SEO lead all-star	0.2878	1.16	0.0632
IPO underwriter rank	−0.6945	−6.15	−0.2060
SEO underwriter rank	0.5490	5.47	0.1975
Days from IPO to SEO	0.0019	8.96	0.2010
Underpricing	−0.0033	−1.03	−0.0351
Unexpected coverage	−1.0154	−4.75	
Pseudo R^2	0.2816		

Notes: Results of a logit model predicting whether an issuer switches lead underwriters from IPO to the first SEO. The table reports the estimated coefficient, *t*-statistics, and the predicted magnitude of the impact of each variable on the probability of switching. Each magnitude is calculated by comparing the predicted change in probability of switching from perturbing the variable of interest while holding all other values at their sample means. For IPO or SEO lead all-star, the perturbation is changing from zero to one. For all other variables, the perturbation is a change from the mean to the mean plus one standard deviation. Unexpected coverage is the residual (actual coverage dummy minus predicted probability of coverage) from the second-stage coverage model in Table 2, where coverage is defined as having an analyst recommendation at the 1-year anniversary of the IPO. The sample includes 1050 IPOs completed between 1993 and 2000 for which a subsequent SEO is made between 1993 and 2001. Control variables that are included in the model but not shown in the table include a constant, the log(proceeds), share turnover, underwriter spread, and the log(1+firm age).

Among the control variables, we find that switching is more likely for firms that have a small offer price revision, firms whose IPO underwriter has a lower reputation, firms whose SEO underwriter has a high reputation, and firms for which there is a long time between IPO and SEO. The economic impact of changes in the explanatory variables is shown in the third column. From this analysis, it is clear that the reputation of the underwriter is a primary determinant of the likelihood of switching. A one standard deviation increase in the rank of the IPO underwriter reduces the probability of switching by 20%. Similarly, a one standard deviation increase in the reputation of the SEO underwriter increases the likelihood of switching by 19%. These findings are consistent with the graduation story in Krigman *et al.* (2001). Firms appear to gravitate toward the more reputable underwriters for their SEO if they used a less prestigious underwriter for their IPO. The chance of switching is also reduced by the offer price revision, perhaps because these issuers tend to be pleased that they raised more funds than they originally anticipated. Increasing the offer price revision by one standard deviation reduces the chances of switching by 7%. Finally, a one standard deviation change in the number of days between IPO and SEO increases the likelihood of switching by 20%. It seems plausible that the strength of the relationship between underwriters and issuers would decay over time.

Our third hypothesis predicts that if a firm receives less coverage than expected, they will be more likely to use a different underwriter for their SEO. We find that this is indeed the case. The unexpected coverage variable has a t-statistic of -4.8. Unfortunately, the two-stage econometric procedure that we use does not allow us to determine the economic magnitude of the coefficient estimate.

One possible explanation for our finding is that analysts simply choose not to cover some firms because they view these issuers as unimportant. Our hypothesis maintains that the lack of a recommendation is driven more by strategic decisions on the part of the bank. Specifically, the bank will want to avoid offending its clients by making negative recommendations, and it will also want to avoid ruining its reputation by providing favorable coveage to issuers with poor prospects. Although many of our control variables in the regressions address this issue, we provide a more direct check on this explanation by examining those firms in our sample that have an earnings forecast from the lead underwriter. The presence of an earnings forecast suggests that the underwriter does not view the issuer as unimportant. We then split these firms into groups depending on whether the lead underwriter also has a stock recommendation.

Table 4 provides simple univariate comparisons for these two groups of issuers. Of the 928 firms with earnings forecasts (from our full sample of 1050), 830 also have a stock recommendation and 98 do not. Those issuers receiving recommendations have average underpricing of 30%, significantly greater than the 19% average for those who do not have recommendations. Perhaps this difference in underpricing reflects characteristics of the firms that underwriters choose to cover. Using the average recommendation from non-lead underwriters as a proxy for firm quality, we find both groups have average recommendations of 4.37. Those that do get coverage tend to be larger and older, yet this would suggest *lower* underpricing. Investment bank characteristics also do not appear to explain the likelihood of recommendations. Neither lead underwriter rank nor all-star status differs significantly across the two groups. Thus, it does not appear to be the case that prestigious underwriters are systematically more (or less) likely to make recommendations. The final row in Table 4 shows that once again there is a substantial difference in the likelihood of switching for those receiving recommendations (26%) versus those who do not (55%). We thus concluded that our primary findings could

Table 4 Probability of switching lead underwriters.

	Lead recommendation?		
	No	Yes	*P*-Value
Number	98	830	
Underpricing	18.88	30.44	0.0417
Average non-lead recommendation	4.37	4.37	0.9903
Proceeds	42.20	67.27	0.0034
Firm age	8.83	12.42	0.0441
Lead underwriter rank	7.67	7.91	0.1153
Percentage with all-star	25.51	24.22	0.7781
Offer price revision	−0.98	4.34	0.0310
Percentage that switch underwriter for SEO	55.10	26.27	0.0000

Notes: We form a subsample by eliminating those firms for which the lead underwriter does not make an earnings forecast. We then split the sample into groups based on whether the lead underwriter has a stock recommendation as of the 1-year anniversary of the IPO. The full sample consists of 1050 IPOs completed between 1993 and 2000 for which a subsequent SEO is made between 1993 and 2001.

not be explained by analysts choosing not to cover issuers that they deem unimportant.

5 Discussion and concluding remarks

This article examines the links among IPO underpricing, post-IPO analyst coverage, and the likelihood of switching underwriters. We find a significant positive relation between underpricing and analyst coverage by the lead underwriter. In addition, we find that the probability of switching underwriters between IPO and SEO is negatively related to the unexpected amount of post-IPO analyst coverage. We interpret these findings as consistent with the hypothesis that underpricing is, in part, compensation for expected post-IPO analyst coverage. If underwriters do not deliver the expected analyst coverage (conditional on underpricing), the IPO firm is more likely to switch underwriters when it issues shares in its subsequent SEO.

An alternative explanation for the positive correlation between underpricing and analyst coverage is that issuers deliberately underprice IPOs in order to attract analyst attention and build price momentum for open market sales following the expiration of the lockup period (Aggarwal *et al.*, 2002). Although this strategic underpricing explanation and our hypothesis are not mutually exclusive, some of our findings are difficult to reconcile with strategic underpricing. In particular, it is not clear why there would be any connection between analyst coverage and the likelihood of switching underwriters or why underpricing should be higher in deals underwritten by investment banks with an all-star analyst.

Our results also shed light on a few other puzzling IPO patterns. First, recent studies (e.g., Beatty and Welch, 1996) report that the correlation between underpricing and underwriter reputation has changed signs from negative in the 1970s and 1980s (Carter and Manaster, 1990) to positive in the 1990s. To the extent that analyst coverage has become more important in the past decade, as argued in Loughran and Ritter (2004), our hypothesis predicts that more prestigious underwriters will be compensated for expected analyst coverage with greater underpricing.

Second, the increased importance of analyst coverage in recent years can help explain the corresponding increases in average underpricing and the salaries of sell-side analysts during the late 1990s. As more and more issuers elect to purchase analyst coverage, average underpricing rises. Presumably, a portion of this compensation is passed on to the analysts providing such coverage. As underwriting business and merger/acquisition activity has declined over the past couple of years, so too has average underpricing and analyst compensation. This has led to some high-profile departures of analysts and to large cutbacks in the research staff at Wall Street firms.[15]

Finally, our findings suggest a possible reason why issuing companies do not appear to be upset by the underpricing of their IPOs. If underpricing is, in part, compensation for subsequent research coverage, issuers might be getting exactly what they pay for, on average. Of course, as Loughran and Ritter (2004) argue, underpricing may still be too large, thereby leading to excessive underwriter compensation. Our findings are silent on this issue.

Notes

[1] This article is a shorter, less technical version of our prior study "Do Initial Public Offering Firms Purchase Analyst Coverage With Underpricing?" *Journal of Finance* **59** (December 2004), 2871–2901. We gratefully acknowledge the contribution of Thomson Financial for providing earnings per share forecast data, available through the Institutional Brokers Estimate System. These data have been provided as a part of a broad academic program to encourage earnings expectations research.

[2] For example Das *et al.* (2002) report the following quote from Todd Wagner, former CEO of Broadcast.com, on the company's decision to hire Morgan Stanley as the lead underwriter in its 1998 IPO. "Our rationale was, if we went with Morgan Stanley, we'd get Mary Meeker (star analyst), and we'd get a lot of attention."

[3] See Cliff and Denis (2004).

[4] The proposed Rule 2712 can be found at www.nasdr.com/pdf-text/0255ntm.pdf.

[5] Pulliam and Smith (2001b) report that CSFB is alleged to have allocated an additional 15,450 shares of VA Linux Systems' IPO to Ascent Capital based on Ascent's recent and expected future trading activity. Based on the record 698% increase in VA Linux's shares on the first day of trading, Ascent's total allocation of shares produced paper profits of $3.8 million. That same day, Ascent traded large blocks of shares in several stocks through CSFB at commissions far higher than normal. For example, Ascent is alleged to have paid $2.70 per share to trade 50,000 shares of Citgroup, a trade that would normally be done for fees of a few cents per share.

[6] If the IPO has multiple lead managers, as indicated by SDC codes "BM," "JB," or "LM" then we consider each to be a lead underwiter.

[7] Our results are not sensitve to measuring coverage at alternative times such as 6-months or 2-years.

[8] These data, available on Professor Jay Ritter's website (http//bear.cba.ufl.edu/ritter/), updates the Carter and Manaster (1990) rankings, which are based on a bank's status in tombstone announcements. The updating process first uses each bank's role in the Goldman Sachs IPO in 1999. Banks not participating in the Goldman IPO, but who were subjects of SEC enforcement actions, were assigned rankings of 1 or 2. Any remaining banks were then ranked manually by an industry expert.

[9] The low value in 2000 is due in part to our requirement that these issues also complete an SEO by 2001. However, our results hold up when excluding these IPOs from our sample.

[10] This trend is due in part to the fact that the likelihood of switching increases with the time between IPO and SEO. IPOs from the later part of the sample necessarily have done the SEO relatively quickly after the IPO. We later control for the the time between IPO and SEO in our multivariate analysis.

[11] For each of the variables in Figure 1, tests for equality across groups (either underpricing or coverage) are significant at the 1% level.

[12] See, for example, Rajan and Servaes (1997) and Krigman *et al.* (2001) for studies that hypothesize that more underpriced offerings will lead to greater subsequent analyst coverage.

[13] Specifically, the coverage regression includes a constant, the log of proceeds, a technology dummy variable, underwriter rank, an all-star analyst dummy, a dummy for issues listed on minor exchanges, a measure of industry size, share turnover, and the number of co-lead managers. The underpricing regression includes a constant, the log of proceeds, a technology dummy variable, underwriter rank, an

all-star analyst dummy, the number of IPOs around the issuer's offering, the average IPO underpricing around the issuer's offering, underwriter spread, the revision of the offer price between the initial filing and the offering, average market returns and standard deviation of returns in the 3 weeks prior to the offering, and the log of firm age.

[14] The model includes as explanatory variables a constant, log of proceeds, the offer price revision, share turnover, the underwriter spread, dummy variables for IPO and SEO all-stars, the underwriter rank of IPO and SEO lead underwriter, days from IPO to SEO, log of one plus firm age, underpricing, and unexpected coverage. We correct for estimation error induced by the generated regressor using Equation (34) in Murphy and Topel (1985).

[15] See, for example, "Some Analysts Leave Industry in Search of 'New Adventure' ", *Wall Street Journal Online*, February 28, 2003, and "Miffed, Four CSFB Analysts Depart: Angered by Skimpy Bonus Payments, Healthcare Quartet Signs on at B of A," *Investment Dealers Digest*, March 3, 2003.

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