What drives sell-side recommendation announcement returns?

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Abstract

Before an individual investor follows a professional stock analyst's investment recommendation, the Securities and Exchange Commission (2005) urges the investor to consider carefully the potential conflicts of interest facing the analyst. Our study examines this issue in the context of Griffin and Tversky's (1992) model that explores how individuals weigh evidence and form beliefs. We find that although investors focus primarily on recommendation strength following upgrades, investors consider both recommendation strength and credence following downgrades. However, we find no evidence that stock price performance is affected by any underwriting relationship between the firm employing the analyst and the firm being recommended. © 2006 Academy of Financial Services. All rights reserved.

1. Introduction

The information content hypothesis enjoys wide support in the finance literature: analysts' recommendations affect stock prices because they impart new information to investors. Recent studies find that shareholders earn average excess returns of approximately 3% and −4% following buy and sell recommendations, respectively.[1] However, researchers do not have a comprehensive understanding of how recommendations coexist with other financial

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information released by the company. We also do not know how (if at all) the stock price response to recommendations changed following the stock market bubble collapse beginning in 2000.

We build an empirical model to test the determinants of stock price performance when professional stock analysts announce investment recommendations over the Internet. Following Griffin and Tversky (1992), we hypothesize that announcement period returns are related not only to the strength of a recommendation, but also to the credence that investors place on it. "Strength" refers to information availability (how much firm-specific information is available from other sources?), and consistency (does the recommendation coincide with, or deviate from, the consensus opinion?). "Credence" refers to the analyst's reputation (is the analyst an all-star?), and credibility (does the analyst face a conflict of interest?).

Our results indicate that when analysts announce upgrades, investors place more emphasis on the strength of the recommendation than on its credence. Consistent with the information content hypothesis, shareholders earn larger returns when the recommendation tends to deviate from, rather than confirm, the consensus forecast. Consistent with the neglected firm hypothesis, returns are related negatively to firm size. However, the coefficients of variables that we use to control for analyst reputation and credibility generally are not statistically significant.

On the other hand, when analysts announce downgrades, investors assess both the strength and the credence of the information. The coefficients of the variables that reflect recommendation strength remain statistically significant, but shareholders earn lower returns when the recommending analyst is either an all-star analyst or an employee of a national brokerage firm. The latter results are consistent with the reputation capital hypothesis. However, we find no evidence that stock price performance is affected by any underwriting relationship between the firm employing the analyst and the firm being recommended.

The results of our study have important implications for individual investors. In a speech to the Securities Industry Association on April 13, 1999, Securities and Exchange Commission (SEC) Chairman Arthur Levitt (1999) expressed concern that there might be a conflict of interest between the analysts making recommendations and the companies being recommended. He also indicated his interest in studying whether investors were aware of these relationships. More recently, the SEC published guidelines to help individual investors evaluate analysts' recommendations (SEC, 2005). Our study addresses the SEC's concerns by examining the determinants of sell-side recommendation announcement returns.

2. Sample recommendations

Our sample contains investment recommendations for United States stocks that are reported on the Briefing.com Website.[2] A Briefing.com representative indicated that analysts generally disclose recommendations to their institutional clients, and then disseminate them to companies like Briefing.com. The Briefing.com Website is updated continuously throughout the day.

We check the robustness of our results by examining two non-consecutive four-month periods: February 12, 1999 to June 11, 1999 (Period 1), and August 12, 2002 to December

Table 1   Sample recommendations

	Number of companies			
Panel A. Frequency distribution Number of recommendations per company (different calendar days)	February 12 to June 11, 1999		August 12 to December 6, 2002	
	Upgrades	Downgrades	Upgrades	Downgrades
1	729	623	498	738
2	231	146	123	249
3	76	42	22	122
4	20	16	3	34
5	7	1	3	20
6	3	0	0	4
7	1	0	0	3
8	1	0	0	1
Total number of companies	1,068	828	649	1,171
Total number of recommendations (different calendar days)	1,567	1,110	837	1,891
Total number of recommendations (includes multiple recommendations on the same calendar day)	1,670	1,349	868	2,194

Panel B. Stock returns		Dow Jones Industrial Average	S&P 500 Index	Nasdaq Composite Index
Oct 9, 1998–Feb 11, 1999		18.5%	27.4%	61.2%
Feb 12, 1999–Jun 11, 1999	(Period 1)	12.0	3.2	1.8
Jun 12, 1999–Oct 8, 1999		1.5	3.3	17.9
Apr 8, 2002–Aug 9, 2002		−14.7	−19.3	−26.9
Aug 12, 2002–Dec 6, 2002	(Period 2)	−1.1	0.4	8.9
Dec 9, 2002–Apr 11, 2003		−5.1	−5.1	−4.5

The sample recommendations are collected by using the Briefing.com Website. We examine two study periods: February 12, 1999 to June 11, 1999, and August 12, 2002 to December 6, 2002. The final sample contains only those recommendations for which analyst following and CRSP data are available.

6, 2002 (Period 2). There is no selection bias. We began collecting the data for Period 1 on February 12, 1999, and we began collecting the data for Period 2 on August 12, 2002. We exclude recommendations for which analyst following and Center for Research in Security Prices (CRSP) data are not available.

Our study examines two different stock market environments. Period 1 is near the end of the stock market bubble (the NASDAQ peaked in March 2000). Period 2 occurs after allegations of tainted investment advice led the SEC to approve rules in May 2002 restricting analyst behavior (Labaton, 2002). Because the event study and regression results for the two time periods are qualitatively the same, we report the results only for the pooled sample.

Analysts were bullish during Period 1 and bearish during Period 2. Table 1 (Panel A) shows the recommendations for each period. Panel A also shows the frequency distribution

of companies that receive recommendations on different calendar days. Panel B shows the performance of selected stock market indices before, during, and after Periods 1 and 2.[3]

We divide the sample recommendations into three upgrade and three downgrade categories. If an analyst upgrades a stock with an unfavorable rating (e.g., underperform or avoid), then we classify the change as sell to hold (240 recommendations). If an analyst upgrades a stock with a neutral rating (e.g., market perform), then we classify the change as hold to buy (1,315). If an analyst upgrades a stock with a favorable rating (e.g., accumulate or long-term attractive), then we classify the change as buy to strong buy (849). We classify downgrades in a similar manner: strong buy to buy (578), buy to hold (1,947), and hold to sell (476).

If a recommendation skips a category, then we use the more pessimistic view. A stock that receives multiple recommendations on the same calendar day enters the sample once. We classify split recommendations according to the majority view, and we resolve ties by choosing the more conservative recommendation. Our sample contains few split recommendations.

3. Evaluating recommendation strength

We hypothesize that a recommendation's strength should be related inversely to the amount of information that is available from other sources. Factors that imply ready access to information include the presence of corporate disclosures, a large analyst following, high institutional ownership, and high analyst agreement or consensus. Under these conditions, we expect a recommendation's information content to be relatively low. Analyst consensus (or the lack thereof) refers to the distribution of analysts' recommendations for a particular stock.

3.1. Corporate disclosures

We examine the types and timing of corporate disclosures that precede recommendation announcements. Ignoring corporate disclosures can lead to incorrect inferences if a researcher attributes the stock price reaction for a press release to the rating change announcement. For example, a spokesman for Pep Boys, Incorporated (symbol PBY) issued a press release at 6:11 p.m. on Thursday, February 11, 1999 (i.e., after the regular trading hours). The press release indicated that although the company would not issue its earnings report until March 18, 1999, it anticipated larger-than-expected sales. At 12:12 p.m. on Friday, February 12, 1999 an analyst at Dain Rauscher upgraded PBY to strong buy. PBYs daily closing stock prices on February 11 and 12 were $17.50 per share and $18.5625 per share, respectively. However, a study that uses daily closing prices cannot identify the portion of the firm's stock return (6.07% for PBY) that is attributable only to the recommendation announcement.

Previous studies indicate that 15% of analysts' recommendations do coincide with earnings reports (e.g., Womack, 1996; Stickel, 1995; Francis & Soffer, 1997; Ho & Harris, 2000). Stickel (1995) and Ho and Harris (2000) find that approximately 35% of analysts' recommendations coincide with a revision of the analyst's earnings forecast. However, the latter

two studies do not control for other types of corporate disclosures (besides earnings reports) that might prompt analysts to revise their outlook.

The expected juxtaposition of analysts' recommendations and corporate disclosures is ambiguous. On the one hand, we might expect analysts to change their recommendations primarily in response to publicly available information. The New York Stock Exchange and the National Association of Securities Dealers require listed companies to disclose material information by issuing a press release, and the SEC clearly opposes selective disclosure (Levitt, 1998).[4] On the other hand, analysts' recommendations might precede corporate disclosures. Many observers subscribe to the mosaic theory: analysts use non-material information gathered during site visits and discussions with management to construct better estimates of intrinsic value. Some managers appear to provide guidance that is more direct to analysts. A survey conducted by the National Investor Relations Institute (NIRI) shows that 86% of investor relations officers review drafts of analysts' reports before distribution (National Investor Relations Institute, 1998), and 77% of officers say they challenge analysts' estimates that are "out of line."

We identify corporate disclosures by using the Yahoo Website and by searching the *Wall Street Journal* (the alphabetical index, and the "Earnings Digest" and "Market Activity" sections).[5] We identify firm-specific news, but we do not control for general business news. For example, on May 7, 1999, the *Wall Street Journal* reported that analysts downgraded the stocks of ten mining companies following a report that the United Kingdom planned to sell more than half of its gold reserves. None of the sample firms issued a press release pertaining to this industry-specific event. Admittedly, other disclosures can affect stock prices (Ramnath, 2002).

If an investment recommendation precedes a press release, then we include the recommendation in the subsample with no corporate disclosures. For example, an analyst from NB Montgomery upgraded Chelsea GCA Realty from hold to buy on May 4, 1999. The company released its earnings report on May 4, 1999 after the market closed.

Table 2 reports the incidence of corporate disclosures for the two time periods over the trading days t = −2, t = −1, and t = 0 relative to the recommendation announcement date (t = 0).[6] The results for Period 1 show that firm-specific events are more likely to trigger downgrades than upgrades. Although corporate disclosures on day t = 0 precede 14.9% of the upgrades during Period 1, the corresponding percentage for downgrades is 26%. We can reject the null hypothesis that these two proportions are equal at the 0.01 level (z-statistic of −7.14). Press releases on day t = −1 precede 13.4% and 16.6% of the sample upgrades and downgrades, respectively. Press releases on day t = −2 precede about 4% of the sample recommendations.

Table 2 also reports the types of press releases that precede the sample recommendations. One hundred and seventy companies (10.8% of upgrades) issue an earnings report or forecast at day t = 0 during Period 1 (Panel A). An additional 64 companies (4.1%) issue a non-earnings press release. In contrast, actual earnings reports or forecasts precede 220 downgrades (19.8%). Non-earnings press releases precede 69 downgrades (6.2%).

Panel B shows the results for Period 2. Corporate disclosures precede upgrades and downgrades with the same frequency following the adoption of Regulation FD. Press releases on day t = 0 precede 19.8% and 22.6% of the sample upgrades and downgrades,

Table 2   Types and timing of corporate disclosures

Panel A. Period 1 (February 12, 1999 to June 11, 1999)						
	Upgrades			Downgrades		
Type of disclosure	t = −2	t = −1	t = 0	t = −2	t = −1	t = 0
Earnings release	38	151	150	21	109	127
Revenue or earnings forecast	5	8	20	4	22	93
Subtotal	43	159	170	25	131	220
Firm announces takeover bid	5	16	18	3	7	17
Firm receives takeover bid	1	9	10	5	28	17
Organizational	4	7	3	0	5	13
Financial	8	14	17	5	8	9
Strategic alliances	3	3	9	0	3	7
Legal	4	2	7	2	2	6
Total	68	210	234	40	184	289
% of total recommendations	4.3%	13.4%	14.9%	3.6%	16.6%	26.0%
Panel B. Period 2 (August 12, 2002 to December 6, 2002)						
Earnings release	15	94	94	34	161	190
Revenue or earnings forecast	11	32	19	16	76	165
Subtotal	26	126	113	50	237	355
Firm announces takeover bid	0	1	0	3	6	2
Firm receives takeover bid	0	0	1	0	8	6
Organizational	37	37	26	14	23	24
Financial	3	6	8	7	13	9
Strategic alliances	10	17	12	0	4	4
Legal	7	13	6	14	12	28
Total	83	200	166	88	303	428
% of total recommendations	9.9%	23.9%	19.8%	4.6%	16.0%	22.6%

Organizational disclosures include corporate restructurings, restatements of prior results, business spin-offs, and changes in the CEO. Financial disclosures include stock repurchases, stock splits, stock dividends, cash dividend changes, the issuance of debt or equity securities, and debt rating changes. The strategic alliances category includes distribution agreements, marketing alliances, and joint ventures. The legal category includes court rulings, lawsuits, and agency or commission rulings.

respectively. The z-statistic is −1.63, which is not statistically significant at conventional levels.

Our results suggest that investors benefited from Regulation FD. Regulation FD requires firms to disclose material information publicly and not give selective disclosure to stock analysts. When we compare the results for Periods 1 and 2, we find that upgrades were more likely to be preceded by corporate disclosures in Period 2. The percentages for Periods 1 and 2 are 14.9% and 19.8%, respectively (the z-statistic is 3.07). This result suggests that analysts might have used their private information from companies to upgrade stocks during Period 1.

3.2. Neglected firms

Arbel (1985) finds that neglected stocks (i.e., firms with a low analyst following) tend to outperform "brand-name" stocks. Rather than representing a market anomaly, Arbel (1985) believes that the neglected-stock effect compensates investors for information deficiency.

Table 3   Characteristics of sample recommendations

Panel A. Firm size, analyst following, and institutional ownership

	Upgrades				Downgrades			
	Mean	Maximum	Median	Minimum	Mean	Maximum	Median	Minimum
Firm size ($ billion)	8.7	281.2	1.5	0.01	8.5	419.6	1.3	0.01
Analyst following	12.7	40.0	11.0	1.0	12.2	39.0	11.0	1.0
Institutional ownership (%)	55.5	99.8	56.7	0.9	60.2	99.9	62.8	0.3
Number of institutional investors	395.6	7,345.0	159.0	0.0	573.7	7,345.0	231.0	2.0

Panel B. Analyst consensus, and analyst and broker reputation

	Total sample	Buy to strong buy	Hold to buy	Sell to hold	Total sample	Strong buy to buy	Buy to hold	Hold to sell
Number of recommendations	2,404	849	1,315	240	3,001	578	1,947	476
Analyst opinion (mean)	2.08	1.82	2.14	2.67	2.30	1.99	2.29	2.74
σ_{Rec} (mean)	0.754	0.690	0.759	0.956	0.846	0.718	0.840	1.027
Mean deviation from consensus	0.436	0.815	0.254	0.089	0.724	0.188	0.739	1.315
All-star analyst								
Yes	562	79	325	158	592	92	386	114
No	1,516	144	841	531	2,121	436	1,364	321
National broker	2,112	213	1,159	740	2,626	494	1,700	432
Regional broker	284	26	150	108	357	83	231	43
Memo: rating changes by sub-period								
Period 1	1,567	707	821	39	1,110	344	714	52
Period 2	837	142	494	201	1,891	234	1,233	424

The consensus opinion and the average dispersion (or σ_{rec}) of the analysts' recommendations are calculated by using strong buy = 1, buy = 2, hold = 3, under-perform = 4, and sell = 5. The deviation of each recommendation from the consensus opinion is calculated as follows: the maximum (consensus opinion–category, 0) for upgrades; maximum (category–consensus opinion, 0) for downgrades, where a change to strong buy = 1, buy = 2, hold = 3, and sell = 4. All-star status is uncertain for 326 upgrades and 288 downgrades. Period 1 and Period 2 refer to February 12 through June 11, 1999, and August 12 through December 6, 2002, respectively.

When analyst following and institutional holdings are low, investors are exposed to greater risk because the quantity of information is also low. Atiase (1985) believes that analysts' recommendations can reduce the information deficiency.[7]

Table 3 (Panel A) reports summary statistics for firm size, analyst following, and institutional ownership. For example, the mean firm size for upgrades is $8.7 billion, and the median number of analysts is eleven. We identify institutional ownership by using the 1999 and 2002 editions of *Nelson's Directory of Investment Research* (*Nelson's Directory*). Institutional ownership is not available for 182 upgrades and 237 downgrades.

3.3. Analyst consensus

We hypothesize that the stock market reaction depends on whether a recommendation alters or confirms investors' prior expectations. In general, we expect recommendations that deviate from the consensus forecast to have a greater impact. We also hypothesize that the stock price reaction depends on investors' perceptions on its veracity. If few analysts follow the stock, then a departure from the consensus forecast should have a greater impact on the firm's stock price than if many analysts follow the stock.

We calculate the consensus recommendation for each stock by assigning a numerical value to each category: strong buy = 1, buy = 2, hold = 3, underperform = 4, and sell = 5. We also calculate the standard deviation (or dispersion) of the analysts' recommendations (σ_{rec}). If σ_{rec} is equal to zero, then all of the analysts have the same recommendation (e.g., buy).

The results in Table 3 (Panel B) indicate that analyst consensus does vary across the categories. We can reject the null hypothesis that the mean σ_{rec} for each category are equal (the F-statistics for upgrades and downgrades are 6.93 and 27.6, respectively). Analyst consensus is lower (σ_{rec} is higher) for recommendations involving the sell category.

We also calculate each recommendation's deviation from the consensus opinion. The deviation for upgrades is equal to (consensus opinion–category) or zero, whichever is greater. Upgrades from buy to strong buy (the mean deviation is 0.815) and downgrades from hold to sell (1.315) represent relatively large departures from the consensus opinion. Upgrades from sell to hold, and downgrades from strong buy to buy, tend to confirm the consensus. The deviation for downgrades is equal to (category–consensus opinion) or zero, whichever is greater.

4. Evaluating analyst reputation and credibility

The stock price reaction to a recommendation also should depend on the analyst's reputation and credibility. Although all-star status can enhance an analyst's reputation, the presence of an underwriting relationship could reduce the analyst's credibility.

4.1. Upgrades versus downgrades

Hirst, Koonce and Simko (1995) investigate the way investors process the information contained in analysts' reports. Based on psychological theory, they hypothesize (and their

simulation results confirm) that an investor's reaction to an analyst's report depends on whether the report confirms the investor's prior expectations. Investors expect to receive favorable reports because positive opinions by analysts can generate trading profits and brokerage commissions, result in underwriting activities, and maintain access to management and company information (Dugar & Nathan, 1996). On the other hand, investors do not expect negative opinions (particularly if the analyst works at an investment bank). Therefore, we hypothesize that the stock price reaction will be larger (in absolute value) for downgrades than for upgrades.

4.2. Securities underwriting

Dugar and Nathan (1995) find that analysts issue more optimistic recommendations when the brokerage firm employing him (or her) also provides investment banking services to the firm that he or she is recommending (investment banker analysts). However, the stock market reaction to recommendations made by investment banker and non-investment banker analysts is the same. Lin and McNichols (1998) conclude that shareholders earn lower returns when affiliated, as opposed to unaffiliated, analysts issue hold recommendations following seasoned equity offerings. However, the stock price reaction to other recommendation changes does not vary with analyst affiliation. Michaely and Womack (1999) conclude that shareholders earn lower returns when affiliated analysts announce buy recommendations following initial public offerings (IPOs). Therefore, we control for the analyst's potential conflict of interest.

Although anecdotal evidence suggests that analysts avoid downgrades to preserve underwriting relationships (Dugar & Nathan, 1996), previous empirical research has not examined the relation between changes in analysts' recommendations and future underwriting activities. We use the Securities Data Corporation (SDC) database to determine whether a sample firm issues debt or equity securities within 12 months of the recommendation announcement date (or the earliest announcement date if a firm appears in the sample more than once). If a firm does issue securities, then we record all of the underwriting managers listed in the SDC database. We identify those recommendations in which the analyst's firm also serves as an underwriting manager. We differentiate by the type of security because Lee, Lochhead, Ritter and Zhao (1996) find that underwriting spreads do vary: approximately 1.5% to 3% for bonds, 5.4% for seasoned equity offerings, and 7.3% for initial public offerings.

Table 4 shows the amount of debt and equity securities issued by the recommended firms during Period 1. For example, 148 firms issue $41.2 billion of common stock over the 12-month period preceding the sample upgrades. In 89 transactions (60.1%), the recommending firm also serves as an underwriting manager. These underwriting managers participate in approximately $21.4 billion of equity issuance (or 51.9% of the total dollar amount issued).

The number of firms issuing securities declines over the 12-month period following upgrades, but participation by the recommending brokers is relatively constant. For example, the recommending firm serves as an underwriting manager in 53 of the 107 stock transactions (49.5%). These underwriting managers participate in 50.6% of the dollar amount issued.

Participation in securities underwriting declines significantly following downgrades. In the 12 months preceding a downgrade, the recommending brokers participate in 66 of the 105

Table 4   Investment recommendations and securities underwriting: Period 1

	Total Underwriting		Recommending broker listed as a manager			
	N	Principal amount ($ bil)	N	% of total issuers	Principal amount ($ bil)	% of total underwriting
Panel A. Upgrades						
Twelve months before						
Debt	241	$134.89	53	22.0%	$22.58	16.7%
Preferred stock	18	3.20	9	50.0	1.41	44.1
Common stock	148	41.16	89	60.1	21.36	51.9
Twelve months after						
Debt	203	$147.20	48	23.7%	$24.67	16.8%
Preferred stock	20	6.67	5	25.0	1.54	23.1
Common stock	107	29.32	53	49.5	14.84	50.6
Panel B. Downgrades						
Twelve months before						
Debt	166	$ 93.96	38	22.9%	$21.54	22.9%
Preferred stock	19	1.91	3	15.8	0.17	8.7
Common stock	105	23.72	66	62.9	13.71	57.8
Twelve months after						
Debt	122	$ 90.81	21	17.2%	$12.54	13.8%
Preferred stock	16	4.68	4	25.0	0.68	14.5
Common stock	51	14.45	19	37.3	3.62	25.0

Note: The results exclude the underwriting activities of firms that do their own underwriting (for example, Chase Manhattan, and JP Morgan). We also exclude securities issued by the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation. The latter firms appear in both the upgrade and downgrade samples.

Entries are the number of firms issuing securities before and after recommendation announcements, the total principal amount issued, and the participation of the firms employing the analysts in the underwriting activities of the firms being recommended.

stock transactions (62.9%). After the downgrades, the recommending brokers participate in only 19 of the 51 deals (37.3%). We can reject the null hypothesis that these two proportions are equal at the 0.01 level (z = 3.01). Moreover, the recommending firms help underwrite 57.8% of the stock issued 12 months before the recommendation announcements, but the percentage drops to 25% after. On the other hand, we find that neither upgrades nor downgrades announced during Period 2 had a significant impact on underwriting activities.

4.3. All-star status

Desai, Liang and Singh (2000) find that being listed as an all-star analyst can enhance an analyst's reputation. We identify all-star analysts by using *Nelson's Directory*. Table 3 (Panel A) shows the sample recommendations made by all-star analysts. All-star status is uncertain, or the company is not listed in *Nelson's Directory*, for 326 upgrades and 288 downgrades.

4.4. Firm reputation

Carleton, Chen and Steiner (1998) find support for the reputation capital hypothesis: recommendations made by national firms outperform those made by regional firms. Table 3

(Panel B) shows the sample recommendations made by analysts at national and regional brokerage firms. The national category includes eight upgrades made by analysts at non-brokerage firms. The source of our data are *Nelson's Directory*.

5. Method

We use a multivariate regression model (MVRM) to evaluate stock price performance (Binder, 1985; Thompson, 1985). Following Ho and Harris (2000), we estimate a time series regression for each sample firm over the period t $= -120$ to t $= 120$ days relative to the announcement date.

$$R_{it} = \beta_0 + \beta_1 R_{mt} + \beta_2 D_{prepub} + \beta_3 D_{announce} + \beta_4 D_{postpub} + \varepsilon_{it}, \qquad (1)$$

where

R_{it} = the daily return for stock *i* on day *t*
R_{mt} = the daily return on the CRSP value-weighted stock index
D_{prepub} = 1 for t = -1, -2, . . , -5; 0 otherwise
$D_{announce}$ = 1 for t = 0 or 1; 0 otherwise
$D_{postpub}$ = 1 for t = 2, 3, 4, . . 10; 0 otherwise
ε_{it} = a random disturbance term.

The coefficient β_3 measures the average daily abnormal stock price performance for the two-day announcement period. We multiply this coefficient by two to obtain the cumulative abnormal return over this period ($AR_{i(0,1)}$). We follow the same procedure to evaluate performance over the five-day prepublication period.

6. Event study results

The average abnormal return for upgrades is 5.03% (z-statistic of 22.68) during the announcement period. Shareholders earn 7.59% if corporate disclosures are present at t = 0, and 4.22% if no disclosures are present. The average abnormal return for downgrades is -5.72% (z-statistic of -16.5). Shareholders earn -12.49% if corporate disclosures are present at day t = 0, and -3.59% if no disclosures are present. The results in Table 2 indicate that corporate disclosures often trigger downgrades by analysts. The results in Table 5 indicate that shareholders also perceive these disclosures in a negative light.

Our results differ from the findings of Hirst et al. (1995). After we control for corporate disclosures at the announcement date, we cannot reject the null hypothesis that upgrades and downgrades have a similar effect (in absolute value terms). We conduct the test by multiplying the downgrade returns by minus one, and by using a two-sample *t* test. The absolute difference between the average returns for upgrades and downgrades is 0.63%, which is not statistically significant at conventional levels.

Table 5 Announcement period abnormal returns

| | Upgrades | | | | | Downgrades | | |
	N	Abnormal return	z	Anova F-stat	N	Abnormal return	z	Anova F-stat
Anova F-stat								
Total sample	2,404	5.03%	22.68***		3,001	−5.72%	−16.50***	
Disclosures at t = 0	400	7.59	12.12***		717	−12.49	−20.39***	
No disclosures	2,004	4.22	21.34***		2,284	−3.59	−22.86***	
No disclosures at t = 0								
Categories: upgrades are to (downgrades are from):								
Strong buy	721	4.66%	15.83***	1.67	450	−3.28%	−10.20***	1.53
Buy	1,088	4.05	16.92***		1,458	−3.53	−17.36***	
Hold	195	3.53	3.29***		376	−4.17	−11.25***	
Firm size (market value of common equity):								
Large capitalization	370	2.14%	10.34***	21.54***	411	−2.22%	−10.43***	11.66***
Mid cap	943	3.56	16.02***		1,062	−3.25	−16.62***	
Small cap	297	5.71	11.09***		321	−4.76	−10.24***	
Micro cap	394	6.60	9.26***		490	−4.71	−9.94***	
Institutional ownership (%)								
High (>67%)	593	3.89%	11.03***	1.39	879	−3.36%	−14.92***	3.04**
Medium	920	4.49	14.43***		864	−3.45	−13.27***	
Low (<33%)	309	3.66	7.79***		304	−4.56	−8.39***	
All-star analyst								
Yes	477	4.05%	12.31***	0.21	464	−3.97%	−13.15***	0.94
No	1,248	4.27	15.56***		1,594	−3.59	−18.22***	
Total securities issuance								
Affiliated	516	4.15%	7.12***	1.63	320	−3.79%	−9.04***	0.54
Non-affiliated	234	3.63	11.22***		575	−3.06	−9.77***	
No issuance	1,254	4.47	16.89***		1,389	−3.76	−18.70***	
Type of brokerage								
National	1,766	4.16%	22.51***	0.37	2,010	−3.61	−21.30***	0.19
Regional	234	4.54	4.77***		270	−3.40	−8.36***	

*** Significant at the 0.01 level; ** Significant at the 0.05 level.

Entries are the average announcement period abnormal returns (Day t = 0 and t = 1) for the sample recommendations. We classify firm size as large cap (> \$9 billion), mid-cap (between \$750 million and \$9 billion), small cap (between \$350 million and \$750 million), and micro-cap (< \$350 million). High, medium, and low institutional ownership refer to ownership that is greater than 67%, between 33% and 67%, and less than 33%, respectively. We classify securities issuance as affiliated if the analyst's firm participates in the underwriting during the 12-month period preceding the recommendation, non-affiliated if the analyst's firm does not participate in the underwriting, and no issuance if the firm being recommended does not issue securities.

Table 5 also shows the announcement period results for various subsamples after excluding the recommendations with corporate disclosures at Day 0. For example, the stock price response does not vary by the type of recommendation. Shareholders earn average abnormal returns of 4.66%, 4.05%, and 3.53% following upgrades to strong buy, buy, and hold, respectively. We cannot reject the null hypothesis that these average abnormal returns are equal (the ANOVA F-statistic is 1.67). The results are the same for downgrades.

The event study results support the neglected firm hypothesis, because shareholders earn larger returns following upgrades when firm size is small. For example, the announcement-period average abnormal return is 2.14% for large capitalization stocks (the market value of equity is greater than $9 billion) and 6.60% for micro cap stocks (the size is less than $350 million). We can reject at the 0.01 level the null hypothesis that the average abnormal returns for large cap, mid cap, small cap, and micro cap stocks are equal (F-statistic of 21.54).

Stocks that receive downgrades also show the neglected firm effect. We can reject at the 0.01 level the null hypothesis that the average abnormal returns for large-cap, midcap, small-cap, and microcap firms are equal (F-statistic of 11.66). Shareholders earn a mean abnormal return of −4.71% when the firm is a microcap stock and −2.22% when the firm is a large-cap stock. We also can reject at the 0.05 level the null hypothesis that the average abnormal returns for stocks with high, medium, and low institutional ownership are equal (F-statistic of 3.04).

Table 5 also shows the event study results for the recommendations classified by all-star status, security issuance, and type of brokerage. The event study results suggest that the stock price response to analysts' recommendations does not depend on analyst credibility or reputation. None of the ANOVA tests is statistically significant at conventional levels.

7. Determinants of stock price performance

We use the following regression model to test for recommendation strength and credence. The dependent variable is the cumulative two-day announcement period abnormal return for the ith recommendation ($AR_{i(0,1)}$).

$$AR_{i(0,1)} = \beta_0 + \beta_1 \text{(To Buy)}_i + \beta_2 \text{(To Hold)}_i + \beta_3 \text{(Log Market Cap)}_i + \beta_4$$

$$\text{(Info}_{t=0})_i + \beta_5 \text{(Info}_{t=-1})_i + \beta_6 \text{(National Broker)}_i + \beta_7 \text{(All-Star)}_i + \beta_8 \text{(Affiliated)}_i +$$

$$\beta_9 \text{(Non-affiliated)}_i + \beta_{10} \text{(Institutional Own)}_i + \beta_{11} \text{(CAR}_{\text{prepub}})_i + \beta_{12} \text{(Period 2002)}_i + e_i$$

$$(2)$$

where

To buy = 1 if the recommendation is a change from hold to buy (or strong buy to buy if the recommendation is a downgrade), zero otherwise;
To hold = 1 if the recommendation is a change from sell to hold (or buy to hold if the recommendation is a downgrade), zero otherwise;

Log Market Cap = the logarithm of the recommended firm's equity market value at Day t = 0 (entered as $000);

Info $_{t = 0}$ = 1 if there is a corporate disclosure at Day t = 0, zero otherwise;

Info $_{t = -1}$ = 1 if there is a corporate disclosure at Day t = -1, zero otherwise;

National Broker = 1 if the firm employing the analyst is a national brokerage firm, zero otherwise;

All-star = 1 if the analyst is an all-star analyst, zero otherwise;

Affiliated = 1 if the firm being recommended issues securities during the 12-month period preceding the recommendation announcement date and the firm employing the analyst serves as an underwriter, zero otherwise;

Non-affiliated = 1 if the firm being recommended issues securities during the 12-month period preceding the recommendation announcement date but the firm employing the analyst does not serve as an underwriter, zero otherwise;

Institutional own = the amount of stock held by institutional owners (entered as a decimal);

CAR$_{prepub}$ = the cumulative abnormal return over the period t = -5 to t = -1 (entered as a decimal); Period 2002 = 1 if the recommendation is announced between august 12, 2002 and December 6, 2002, zero otherwise; and

e_{it} = a random disturbance term.

Our choice of independent variables is guided by the information content, neglected firm, conflict of interest, and reputation capital hypotheses. Variables that test recommendation strength include the type of recommendation (e.g., to buy), firm size, institutional ownership, and the presence of corporate disclosures. Variables that test credence include dummy variables that control for security issuance, all-star status, and the type of brokerage. The intercept (β_0) reflects a change from buy to strong buy for upgrades (hold to sell for downgrades), no disclosures on Day 0 or -1, a regional brokerage firm, an analyst who is not an all-star, and a firm that does not issue securities during the 12-month period preceding the recommendation.

The results are robust to several model specifications. We include analyst following or the number of institutional investors rather than institutional ownership or firm size. We include dummy variables to control for firm size rather than the logarithm of market capitalization. We include the deviation from the analysts' consensus forecast rather than recommendation type. Finally, we control for industry effects by adding dummy variables using the recommended firms' primary two-digit SIC codes. None of these changes affect the conclusions of our study.

7.1. Upgrades

Table 6 reports the determinants of stock price performance for upgrades. The intercept indicates that changes from buy to strong buy have a significant price impact. Rating changes from hold to buy (and sell to hold) have a similar impact as changes from buy to strong buy. In general, the strength of a recommendation does matter. The stock price response to upgrades is larger for smaller firms, and firms with low institutional ownership. The coefficient of the information variable for t = 0 is positive, which indicates that the corporate disclosures have a positive impact on shareholder wealth that is separate from the price effect attributed solely to the recommendation. In contrast, none of the variables that measure

Table 6   Regression results for upgrades and downgrades

Variable	Upgrades		Downgrades	
	Total sample	No disclosures	Total sample	No disclosures
Intercept	0.2083	0.1993	−0.1409	−0.1535
	(9.69)***	(10.68)***	(−7.78)***	(−7.84)***
To buy	−0.0049	−0.0056	0.0115	0.0153
	(−1.08)	(−1.22)	(1.59)	(2.42)**
To hold	−0.0101	−0.0190	0.0054	0.0062
	(−0.85)	(−2.07)**	(0.92)	(1.25)
Log market cap ($000)	−0.0109	−0.0101	0.0073	0.0076
	(−8.89)***	(−8.68)***	(7.01)***	(6.78)***
$Info_{t = 0}$	0.0291		−0.0738	
	(4.12)***		(−11.19)***	
$Info_{t = -1}$	0.0012		0.0179	
	(0.18)		(3.74)***	
National broker	0.0027	0.0049	−0.0097	−0.0106
	(0.24)	(0.58)	(−1.72)*	(−1.93)*
All-star	0.0041	0.0043	−0.017	−0.0098
	(1.00)	(0.99)	(−3.35)***	(−2.33)**
Affiliated	−0.0046	0.0022	−0.0111	−0.0107
	(−0.64)	(0.31)	(−1.25)	(−1.49)
Non-affiliated	0.0033	0.0081	0.0051	−0.0006
	(0.49)	(1.27)	(1.20)	(−0.15)
Institutional own	−0.0196	−0.0206	−0.0119	0.0026
	(−1.64)*	(−1.77)*	(−1.12)	(0.27)
$CAR_{pre-pub}$	−0.0001	−0.0003	−0.0268	−0.0639
	(−0.21)	(−2.01)**	(−1.10)	(−2.30)**
Period 2	0.0091	0.0016	0.0150	0.0138
	(1.49)	(0.32)	(2.67)***	(2.84)***
F-statistic	9.67***	11.21***	30.56***	9.26***
Adjusted R^2	5.04 %	7.07 %	12.64 %	5.30 %
N	1,962	1,343	2,453	1,478

***, **, * Indicate significance at the 0.01, 0.05, and 0.1 levels, respectively.

The dependent variable is the cumulative abnormal return (CAR) over the two-day period that begins on the announcement date. Entries are estimated coefficients (t-values in parentheses). The *t* values are based on White's (1980) estimator to correct for heteroskedasticity. The intercept reflects a change from buy to strong buy for upgrades (hold to sell for downgrades), no disclosures on Day 0 or −1 ($Info_t = 0$), a regional brokerage firm (National broker = 0), an analyst who is not an all-star (All-star = 0), and a firm that does not issue securities during the 12-month period preceding the recommendation. Affiliated = 1 if the firm employing the recommending analyst participates in the underwriting. Non-affiliated = 1 if the firm employing the analyst does not participate in the underwriting. $CAR_{pre-pub}$ = CAR for Days t = −5 to t = −1. Period 2 = 1 if the recommendation is between August 12, 2002 and December 6, 2002; 0 otherwise.

analyst reputation and credibility are statistically significant. The results are similar for the no-disclosure subsample, but changes from sell to hold have a smaller price impact than changes from buy to strong buy.

7.2. Downgrades

Table 6 also shows the results for downgrades. The coefficients of variables that measure recommendation strength remain statistically significant, but the coefficients of several

variables that measure credence are also significant. For example, shareholders of firms that receive a downgrade earn 1.70% lower returns when an all-star analyst makes the recommendation. Shareholders also earn lower returns if the firm employing the analyst is a national brokerage firm (*t*-statistic of −1.72). Finally, we find that downgrades announced during Period 2 did not have as severe an impact on stock prices. The coefficient of the time dummy variable is 1.50%.

In three separate regressions classified by institutional ownership (not reported in Table 6) we examine the importance of investor sophistication. Following Hand (1990), we use institutional ownership as a proxy for investor sophistication.[8] The importance of our strength and credence variables generally does not vary with investor sophistication. However, we find that recommendations made by all-star analysts do have a greater price impact (positive for upgrades and negative for downgrades) when institutional ownership is high (greater than 67%). Further analysis shows that the result for upgrades is driven by the Period 1 recommendations.

8. Conclusions

The stock market bubble of the late 1990s and the Enron scandal have brought on renewed interest in analysts' investment recommendations. Specifically, critics have questioned whether individual investors recognize the potential conflicts of interest that analysts face. According to the conventional view, individual investors do recognize the potential conflicts of interest. As proof, researchers note that downgrades generally have a greater price impact than upgrades (i.e., the information content is larger for downgrades than for upgrades).

Our study examines the determinants of sell-side investment recommendations disclosed over the Internet. When we exclude firms with corporate disclosures at the announcement date, shareholders earn average abnormal returns of 4.22% over the two-day announcement period following upgrades. Shareholders earn −3.59% following downgrades. However, analysts' recommendations are not isolated events. Corporate disclosures within two days of the recommendation announcement date precede approximately 40% of the sample upgrades and 44% of the sample downgrades. Earnings reports and company forecasts are the most common types of corporate disclosures.

We also find that although recommendation strength is an important determinant of shareholder wealth following upgrades, analyst reputation and credibility are not. Consistent with the neglected firm effect, stock price performance is related inversely to institutional ownership and firm size. Firm size remains a significant determinant following downgrades, but stock price performance also is related to variables that proxy for the reputation of the analyst. However, we find no evidence that stock price performance is affected by any underwriting relationship between the firm employing the analyst and the firm being recommended. Underwriting relationships were not disclosed when the recommendations were collected from the Briefing.com Website.

A primary concern of officials at the SEC is that investors have access to reliable information, so that investors can make informed investment decisions. However, the results of our study indicate that investors are not very discriminating when they evaluate profes-

sional stock analysts' recommendations announced over the internet (particularly for upgrades). This statement is true both before, and after, the tech-stock bubble.

The SEC continues to warn investors to be wary of pump-and-dump schemes and other investment scams, particularly those that target microcap companies (SEC, 2004). Given the results of our study, perhaps we should not be surprised to learn that investors often fail to scrutinize non-broker investment recommendations carefully.

Notes

1. The studies include Womack (1996) (recommendations announced by *First Call*), Barber and Loeffler (1993) (the "Dartboard" column in the *Wall Street Journal*), Desai and Jain (1995) (*Barron's*), Walker and Hatfield (1996) (*U.S.A. Today*), and Barber, Lehavy, McNichols and Trueman (2001) (*Zacks*). In general, the announcement effect for primary sources, such as *First Call*, is greater than for secondary sources, such as the *Wall Street Journal*.

2. Readers can retrieve current recommendations by clicking "Investor Index" on www.briefing.com, and then following the "Upgrades/Downgrades" link under the "Calendars" heading.

3. The analysts' recommendations exhibit a representativeness bias (see Baker & Nofsinger, 2002): the favorable recommendations in Period 1 follow a period of positive stock market performance, and the unfavorable recommendations in Period 2 follow a period of poor performance. Related studies that examine the success of market timing strategies include Prather and Bertin (1997), Chung and Kryzanowski (2000), and Anderson and Loviscek (2005).

4. SEC legal actions involving the use of material, non-public information by analysts and registered broker-dealers include *Dirks v. SEC* (1983), *SEC v. Stevens* (1991), *SEC v. Rosenberg* (1991), and *In the Matter of Fox-Pitt, Kelton, Inc.* (1996). SEC regulations promoting fair disclosure (Regulation FD) became effective on October 23, 2000.

5. We collected the company disclosures daily from the Yahoo Website (http://finance.yahoo.com). We are not aware of any archive that contains company press releases. Relying on newspaper articles, such as the *Wall Street Journal*, can introduce a selection bias because newspapers often print articles pertaining only to larger companies.

6. We search for corporate disclosures that are known to affect security prices. Although a particular disclosure might not have an impact (e.g., an earnings announcement that is consistent with investors' expectations), the focus of our study is to isolate the impact of recommendations on stock prices when corporate announcements are absent.

7. Bhardwaj and Brooks (1992) find that a stock's price level, analyst following, and equity market value are correlated positively. Although they find a neglected firm effect for January returns, the number of analysts does not have explanatory power

after controlling for the price level. Elfakhani and Zaher (1998) also find evidence of a neglected firm effect.

8. Dennis and Strickland (2002) find that institutional investors "herd together" and trade with the momentum of the market on days when there are large moves in the stock market. Similarly, Walther (1997) finds that market participants place more weight on analysts' earnings forecasts when institutional ownership is high.

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