PROPHETS AND LOSSES: REASSESSING THE RETURNS TO ANALYSTS' STOCK RECOMMENDATIONS

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Abstract

After a string of years in which security analysts' top stock picks significantly outperformed their pans, the year 2000 was a disaster. During that year the stocks *least* favorably recommended by analysts earned an annualized market-adjusted return of 48.66 percent while the stocks *most* highly recommended *fell* 31.20 percent, a return difference of almost 80 percentage points. This pattern prevailed during most months of 2000, regardless of whether the market was rising or falling, and was observed for both tech and non-tech stocks. While we cannot conclude that the 2000 results are necessarily driven by an increased emphasis on investment banking by analysts, our findings should add to the debate over the usefulness of analysts' stock recommendations to investors. They should also serve to alert researchers to the possibility that excluding the year 2000 from their sample period could have a significant impact on any conclusions they draw concerning analysts' stock recommendations.

PROPHETS AND LOSSES: REASSESSING THE RETURNS TO ANALYSTS' STOCK RECOMMENDATIONS

Many segments of the investment community have grown increasingly dubious of the value of sell-side analysts' stock recommendations in recent years. With investment banking business booming during the late '90's and early 2000, the belief spread that these analysts were focused on attracting and retaining clients, rather than on writing research reports which accurately reflected their opinions of the firms they were following.[1] As a consequence, 'buy' or 'strong buy' recommendations became less meaningful to many investors, while 'sell' and 'strong sell' recommendations became more and more scarce. To shed light on the extent to which analysts' stock recommendations continue to have value, this paper analyzes the returns to their buy and sell recommendations during the 1996-2000 period.

For the 1986-96 period, a time during which the impact of investment banking on analysts' research reports was arguably less of a concern, Barber, Lehavy, McNichols, and Trueman (2001) (BLMT) found sell-side analysts' stock recommendations to have significant value. Specifically, they documented that stocks with more favorable consensus (average) recommendations outperformed those with less favorable recommendations. A portfolio comprised of the most highly recommended stocks, for example, generated an average annual market-adjusted return of 3.97 percent while a portfolio of the least favorably recommended

[1]See "'Incredible Buys': Many Companies Press Analysts to Steer Clear of Negative Ratings," (*Wall Street Journal*, July 19, 1995), "The Fall of the Net Analyst," (*Business Week*, December 11, 2000), and "Tech's Cheerleader Won't Say Die," (*Business Week*, April 30, 2001). The effect of investment banking relationships on analysts' stock recommendations has been studied empirically by Dugar and Nathan (1995), Lin and McNichols (1998), and Michaely and Womack (1999).

ones yielded an average annual market-adjusted return of -9.06 percent, a difference of over 13 percentage points.[2]

For the years 1996-99 we find market-adjusted returns that are similar in nature to those for the earlier period, albeit smaller in magnitude. The year 2000 returns, though, are strikingly different. This is illustrated by Figure 1, in which the annual market-adjusted returns to the most highly and least favorably recommended stocks for the 1986-2000 period are plotted.[3] In every year *but* 2000, the most highly rated stocks outperformed the least favorably recommended ones; in 2000 the reverse was true. The market-adjusted return on the most favorably rated stocks in 2000 was quite negative, at -31.20 percent. This is over *five* standard deviations lower than the average annual market-adjusted return on the most highly recommended stocks during the prior 14 years. In contrast, the market-adjusted return for the least favorably recommended stocks was a remarkably large 48.66 percent, which is almost *five* standard deviations higher than the average over the remaining years. The difference between these returns, almost -80 percent, reflects a very poor year for analysts' recommendations. Additional analyses find that these poor results were present for most of 2000, during months when the market was rising as well as months when it was falling. They were more pronounced for technology firms (the strongest segment of the market leading into 2000) than for non-technology companies. Perhaps most surprisingly, the least favorably recommended tech stocks

[2]Other papers examining the investment performance of security analysts' stock recommendations are Barber and Loeffler (1993), Bidwell (1977), Diefenbach (1972), Dimson and Marsh (1984), Groth, Lewellen, Schlarbaum, and Lease (1979), Stickel (1995), and Womack (1996). Copeland and Mayers (1982) studied the investment performance of the *Value Line Investment Survey* while Desai and Jain (1995) analyzed the return from following *Barron's* annual roundtable recommendations.

[3]The 1986-95 annual market-adjusted returns are untabulated findings of BLMT.

actually rose in 2000, at a time when the sector as a whole suffered sharp declines. This last finding should be viewed with some caution, however, given the relative sparcity of sell recommendations for technology companies in our sample.

Even with the very poor performance in 2000, over the entire 1986-2000 period the most highly recommended stocks still generated significantly greater average annual market-adjusted returns than did the least favorably recommended stocks (0.73 percent as compared to -8.97 percent). These relative returns reflect favorably on the long-term value of analysts' recommendations *as long as* the year 2000 results are simply an extreme aberration that are unlikely to be repeated. However, if they represent a permanent change in the value of analysts recommendations (such as might be the case if the decline in value is due to an increased emphasis by analysts on investment banking), then the 1986-2000 performance is likely to be less predictive of future returns. Only time will tell which is the case. Regardless of whether the year 2000 results are permanent in nature, though, our findings should alert researchers to the possibility that excluding that year from their sample period could have a significant impact on any conclusions drawn regarding analysts' stock recommendations.

The plan of this paper is as follows. In Section I we describe our data. This is followed in Section II by a discussion of our research design. In Section III we present the returns to portfolios of stocks formed according to their consensus analyst recommendations. A conclusions section ends the paper.

I. THE DATA

The source of the analyst recommendations used in this study is *First Call*, who obtains

its data from scores of brokerage houses. There are two types of recommendations that are recorded in the *First Call* database – real-time and batch. Real-time recommendations come from live feeds, and provide the date and time when the report was published. (The large majority of recommendations received by *First Call* are now real-time.) Batch reports are generated from a weekly batch file sent by the brokerage houses. For these recommendations the precise date of publication is unknown. To ensure the accuracy of the dates used to measure investment returns, we include only real-time recommendations in our analysis.[4]

Each database record contains the name of the firm covered, the brokerage house issuing the report, and a rating between 1 and 5. A rating of 1 reflects a strong buy recommendation, 2 a buy, 3 a hold, 4 a sell, and 5 a strong sell. This five-point scale is commonly used by analysts. If an analyst uses a different scale, *First Call* converts the analyst's rating to its five-point scale. The recommendations used in this study encompass the period from January 1996 (the *First Call* database has few real-time recommendations before that time) through December 2000.

Table I provides descriptive statistics for the *First Call* database. For the entire 1996-2000 period the database has recorded over 160,000 real-time recommendations made by 299 different brokerage houses, covering 9,621 distinct firms (see columns 2 through 4).[5] The annual number of real-time recommendations has increased from 20,000 in 1996 to slightly less than 40,000 in 2000. The number of covered firms each year increased from 5,279 to almost 6,800, while the annual number of brokerage firms contributing recommendations increased

[4]The nature of our results does not change when we include the batch recommendations in our analysis.

[5]These totals exclude recommendations for firms without CUSIP numbers on the *First Call* database (a necessary input in order to obtain return data).

from 154 to 213. That analysts have become more positive over time is reflected in the average analyst rating (column 5) which, after remaining fairly stable for each of the years 1996 through 1998, decreased in both 1999 and 2000. Consistent with this, we find that the number of buy or strong buy recommendations has increased from 65.3 percent of the total in 1996 to 70.8 percent in 2000, while the percentage of sell or strong sell recommendations has decreased from 3.4 percent to just 1.8 percent (columns 7 and 11, respectively). As reflected in the data, analysts have become very reluctant to issue sell recommendations in recent years.

II. RESEARCH DESIGN

The research design for our analysis closely follows that of BLMT and is described in brief here. (See BLMT for further details.) To determine whether more highly recommended stocks earn greater returns than less favorably recommended ones, we construct calendar-time portfolios based on the consensus rating of each covered firm. The consensus rating, $\bar{A}_{i\tau-1}$, for firm *i* on date τ-1 is found by taking the simple average of the individual outstanding recommendations on that day (prior to the 4:00 pm market close). Using these average ratings, each covered firm is placed into one of five portfolios as of the close of trading on date τ-1. The first portfolio consists of the most highly recommended stocks, those for which $1 \leq \bar{A}_{i\tau-1} \leq 1.5$; the second comprises firms for which $1.5 < \bar{A}_{i\tau-1} \leq 2$; the third contains firms for which $2 < \bar{A}_{i\tau-1} \leq 2.5$; the fourth is comprised of firms for which $2.5 < \bar{A}_{i\tau-1} \leq 3$; and the fifth portfolio consists of the least favorably recommended stocks, those for which $\bar{A}_{i\tau-1} > 3$.

After determining the composition of each portfolio *p* as of the close of trading on date

τ-1, the portfolio's value-weighted return on date τ, denoted by $R_{p\tau}$, is calculated.[6] For each month in our sample period, the daily return is compounded to yield a monthly return, R_{pt}. We then calculate market-adjusted returns for each of our constructed portfolios. This return is given by R_{pt} - R_{mt} for portfolio p in month t, where R_{mt} is the month t return on the CRSP NYSE/AMEX/Nasdaq value-weighted market index.

By rebalancing the five portfolios only at the *close* of trading each day, we explicitly exclude from our monthly market-adjusted return calculations the first-day return to analysts' recommendations. Since investors are generally unable to act on analysts' recommendations before they are made public, this procedure better captures the return they would actually be able to earn on these recommendations. Later in the next section we examine the effect on our results of including these first-day returns.

III. PORTFOLIO RETURNS

The market-adjusted returns to each of our five portfolios are presented in Table II. Taking the 1996-2000 sample period as a whole (column 3) there is no discernable pattern as we move from the most highly rated stocks (portfolio 1) to those that are least favorably recommended (portfolio 5). Moreover, while the average return on portfolio 1 exceeded that of portfolio 5, the difference is not significant. These results stand in contrast to those of BLMT for the 1986-96 period, who found a monotonic decrease in mean market-adjusted returns

[6]The value-weighted return for portfolio p on date τ is calculated by multiplying the date τ return of each component stock i by the stock's share of the total portfolio market value as of the close of trading on date τ-1. The daily security returns are value-weighted rather than equally-weighted because an equal weighting (and the implicit assumption of daily rebalancing) leads to portfolio returns that are severely overstated. (For more details see Barber and Lyon (1997), Blume and Stambaugh (1983), Canina, Michaely, Thaler, and Womack (1998), and Lyon, Barber, and Tsai (1998).) A value weighting also better captures the economic significance of our results, as the returns of the larger firms will be more heavily represented in the aggregate return than will those of the smaller firms.

moving from the more highly to the less highly recommended stocks, as well as a significant difference (of 1.018 percent per month) between the average returns of portfolios 1 and 5.

Excluding the year 2000 (column 4), the market-adjusted returns more closely resemble those of BLMT. For the 1996-99 period there is a near-monotonic decrease in market-adjusted returns as we move from portfolio 1 to portfolio 5. Furthermore, in each of the individual years either portfolio 1 or portfolio 2 had the highest market-adjusted return, while portfolio 5 had the lowest (although most returns were generally insignificantly different from zero). Additionally, the difference between the extreme portfolios was a significant 2.167 percent per month.

In contrast, the market-adjusted returns for the year 2000 are monotonically *increasing* as we move from portfolio 1 to portfolio 5. Moreover, the difference between the returns of the most highly rated and least favorably recommended stocks was a significant -6.969 percent per month.[7] Sell-side analysts' stock recommendations clearly performed very poorly in 2000. Just how poorly can be seen by comparing the year 2000 returns of the top and bottom portfolios with the corresponding returns for the prior 14 years. Such a comparison reveals the market-adjusted return on portfolio 1 for 2000 to be *5.36* standard deviations lower than the mean over those remaining years, while the market-adjusted return on portfolio 5 was *4.78* standard deviations higher than the mean over those years.[8]

The poor performance of analysts' stock recommendations in 2000 was not restricted to

[7]Qualitatively similar results were obtained when we alternatively estimated abnormal returns as in BLMT, using either the Fama-French (1993) three-factor model (which controls for market risk, size and the book-to-market ratio) or the 4-characteristic model employed by Carhart (1997) (which adds a control for price momentum). See BLMT for further details.

[8]For these calculations we used the market-adjusted returns from BLMT for the years 1986-95, along with the market-adjusted returns calculated here for 1996-99.

just a few months during the year, or to just periods in which the market was declining; it was quite widespread. As reported in Table III, panel A, for nine of the twelve months of the year the least favorably rated stocks had higher market-adjusted returns than the most highly recommended ones. These included three months in which the market as measured by the CRSP value-weighted market index rose. The largest monthly difference was 26.12 percentage points, in December, during a rising market.

That the poor returns are scattered throughout the year greatly diminishes the possibility that they can be attributed to the imposition of Regulation FD (Fair Disclosure), which prohibits firms from revealing material non-public information to analysts. This regulation was imposed in October 2000, whereas the returns on the least favorably recommended stocks exceeded those of the most highly rated ones as early as February. In any case, even if Reg FD were to reduce the value of analysts' recommendations overall, there is no reason to expect that the buy recommendations would do *worse* than the sell recommendations.

The poor showing was more pronounced in the technology sector, which had the largest price runup in 1999 and early 2000, and a steep decline over the remainder of the year. We demonstrated this by dividing our sample into technology and non-technology firms and then separately calculating market-adjusted returns for each subsample.[9] The results are presented in Table III, panel B. Similar to the sample as a whole, the most highly rated tech stocks underperformed the least favorably rated ones; the same holds for the non-tech stocks. The magnitude of the return difference is larger for the tech stocks, though (-13.798 percent per month), than for the non-tech stocks (-3.656 percent per month), and is significantly different

[9]We used the industry classifications provided by *I/B/E/S* to divide our sample.

from zero. These findings must be interpreted with some caution, however, given the small number of stocks in portfolio 5 for each set of firms (a daily average of eight for the technology stocks and 49 for the non-technology companies).[10]

As previously mentioned, the results presented thus far exclude the first-day returns to analysts' stock recommendations, under the presumption that investors generally cannot act on them before they are made public. It could be argued, though, that the return on the first day is part of the overall return to these recommendations, and should be included when analysts are judged. As well, some larger clients might receive advance knowledge of analysts' recommendations and be able to earn the first-day return that they generate.

The results of repeating our analysis to include the first-day return are presented in Table IV. For the full 1996-2000 period there is now an almost monotonic decline in market-adjusted returns as we move from the most highly recommended to the least favorably rated stocks. The difference between the returns on portfolios 1 and 5, 1.402 percent per month, though, is still not significantly different from zero. For the years 1996-99 the returns are now strictly monotonically decreasing as we go from portfolio 1 to portfolio 5. The most highly recommended stocks earned a significant 0.733 percent average market-adjusted return per month, while the average market-adjusted return on the least favorably rated stocks was a significant -2.431 percent per month. The difference between these two returns, 3.164 percent per month, is also significantly different from zero. These returns are somewhat stronger than those discussed earlier, and are similar in nature to those reported by BLMT for the 1986-96

[10]Further analysis of the composition of portfolio 5 revealed that the subsample results are not driven by just a few firms with large positive returns.

period.

The poor year 2000 returns remain intact to a large extent when the first-day returns are included. The market-adjusted returns increase almost uniformly as we move from the most highly rated to the least favorably recommended stocks. For the most favorably rated stocks the monthly market-adjusted return averaged -2.477 percent, while for the least favorably recommended ones it averaged 3.168 percent per month. The difference, -5.646 percent per month, though, is no longer significantly different from zero.

IV. CONCLUSIONS

This study analyzed the returns to analysts' stock recommendations over the 1996-2000 period. This was a time of increasing doubt as to the value of these recommendations, as analysts became increasingly involved in the investment banking side of their business. We showed that the more highly recommended stocks earned greater market-adjusted returns during the 1996-99 period than did those that were less highly recommended. The opposite was true for 2000, as the least favorably rated stocks earned the highest returns. These poor returns prevailed during most of 2000, while the market was rising and as it was falling, and was observed for both tech and non-tech stocks. While we cannot conclude that these results are necessarily driven by increased analyst involvement in investment banking, they should add to the debate over the usefulness to investors of analysts' stock recommendations. Additionally, they should alert researchers to the possibility that excluding the year 2000 from their sample period could have a significant impact on any conclusions they draw regarding analysts' stock recommendations.

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Figure 1
Annualized Percentage Market-Adjusted Return Earned by Portfolios Formed on the Basis of Consensus Analyst Recommendations, 1986 to 2000

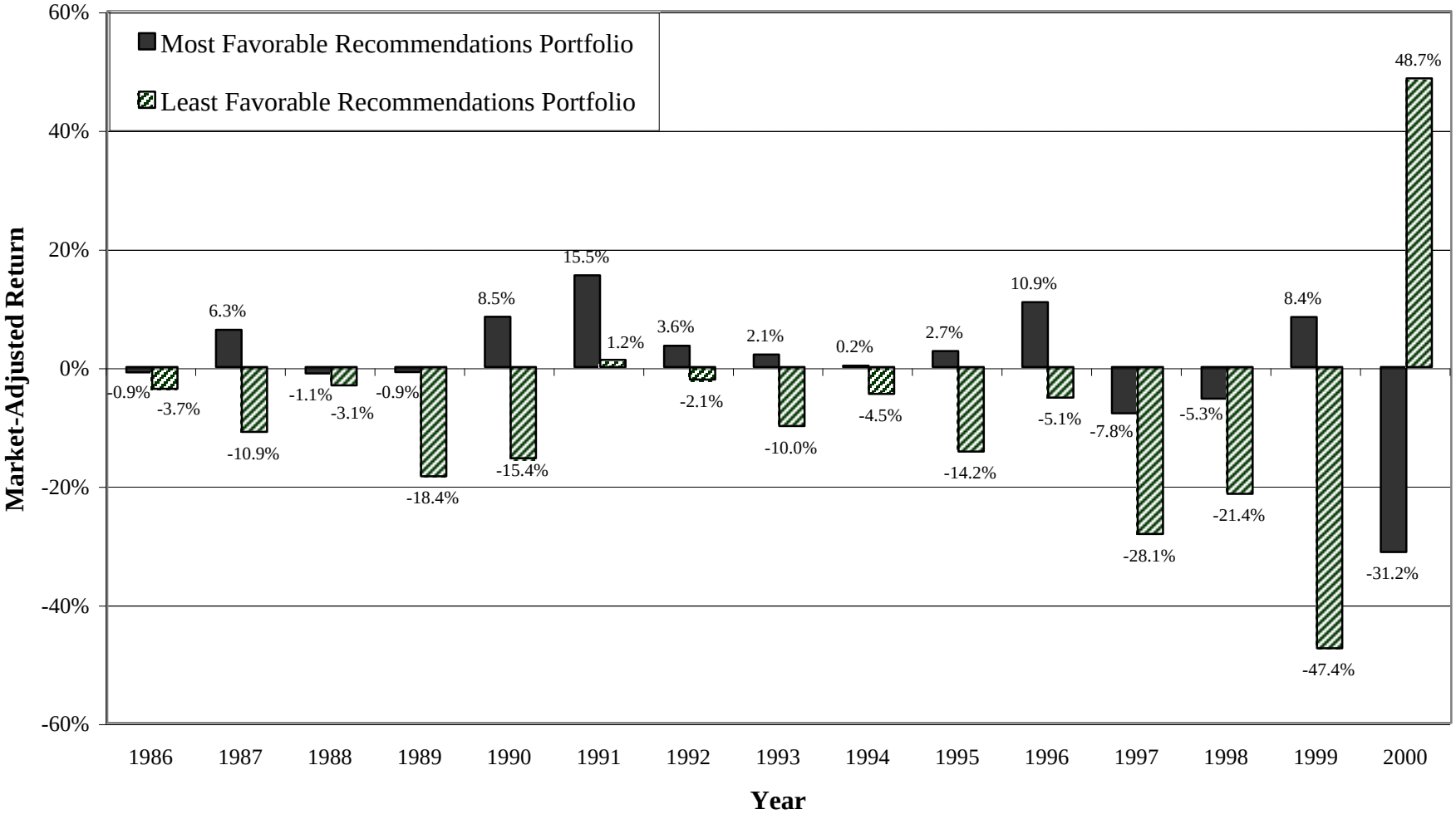

Table I: Descriptive Statistics on Analyst Stock Recommendations from the First Call Database, 1996-2000

This table provides statistics on the First Call stock recommendation database. The panels present, by year, the number of observations, the number of firms with at least one report in the First Call database, the number of brokerage houses issuing reports , the average rating (where Strong Buy, Buy, Hold, Sell, and Strong Sell recommendations are coded from 1 to 5, respectively), and the number and percentage of total recommendations for each recommendation category, by year. To ensure accurate dating of analysts' reports, we include only observations coded by First Call as “real-time” (reports received from live feeds, carrying the date and time that the report was published).

Year	Number of Recommendations	Number of Firms	Number of Brokerage Houses	Average Rating	Recommendation Frequency					
					Strong Buy/Buy		Hold		Sell/Strong Sell	
					N	% of Total	N	% of Total	N	% of Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1996	19,999	5,279	154	2.04	13,050	65.3%	6,272	31.4%	677	3.4%
1997	27,781	6,292	182	2.03	18,376	66.1%	8,454	30.4%	951	3.4%
1998	40,807	6,798	210	2.07	26,918	66.0%	12,426	30.5%	1,463	3.6%
1999	39,972	6,886	195	2.02	27,654	69.2%	11,145	27.9%	1,173	2.9%
2000	39,722	6,797	213	1.99	28,298	70.8%	10,703	26.8%	721	1.8%
Overall	168,281	9,621	299	2.03	114,296	67.9%	49,000	29.1%	4,985	3.0%

Table II

Percentage Monthly Average Market-Adjusted Returns Earned by Portfolios Formed on the Basis of Analyst Recommendations, 1996 to 2000

This table presents percentage monthly market-adjusted returns earned by portfolios formed according to average analyst recommendation. Portfolios 1-5 include stocks with consensus recommendations of [1-1.5], (1.5-2], (2-2.5], (2.5-3] and greater than 3, respectively. The difference between returns for portfolios 1 and 5 is shown next. Market-adjusted returns are the mean raw returns less the return on a value-weighted NYSE/AMEX/Nasdaq index. Each t-statistic pertains to the null hypothesis that the associated return is zero. The t-statistics for returns that are significant at a level of 10 percent or better are shown in bold. The average daily number of firms in each portfolio is reported in column (2).

Portfolio	**Daily Average No. of Firms**	**Percentage Monthly Average Market-Adjusted Return**						
		1996-2000	**1996-1999**	**1996**	**1997**	**1998**	**1999**	**2000**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 (Most Favorable)	989	-0.491	0.168	0.776	-0.476	-0.214	0.584	-3.126
		-1.04	0.58	1.62	-0.93	-0.29	1.13	-1.61
2	1,177	-0.251	0.196	0.218	0.250	0.282	0.031	-2.039
		-0.58	1.67	0.97	1.28	1.26	0.10	-0.96
3	697	-0.243	-0.335	-0.298	-0.048	0.219	-1.213	0.128
		-0.77	-1.80	-1.10	-0.18	0.82	**-2.31**	0.09
4	567	0.102	-0.567	-0.081	-0.164	-1.189	-0.835	2.779
		0.20	-1.50	-0.23	-0.41	-1.67	-0.67	1.43
5 (Least Favorable)	56	-0.831	-1.999	-0.343	-2.086	-1.611	-3.956	3.843
		-1.19	**-3.77**	-0.53	**-2.90**	-1.66	**-2.60**	1.59
P1-P5	1,045	0.340	2.167	1.119	1.611	1.397	4.541	-6.969
		0.36	**3.42**	1.14	1.57	1.00	**3.04**	**-2.08**

Table III

Percentage Monthly Market-Adjusted Returns Earned by Portfolios Formed on the Basis of Analyst Recommendations in 2000

This table presents percentage monthly market-adjusted returns earned by portfolios formed according to average analyst recommendation in 2000. Portfolios 1-5 include stocks with consensus recommendations of [1-1.5], (1.5-2], (2-2.5], (2.5-3] and greater than 3, respectively. Panel A presents monthly market-adjusted returns for the portfolios of the most favorably recommended and the least favorably recommended stocks. Panel B reports monthly average market-adjusted returns in 2000 for firms in the technology sector and the non-technology sectors. The difference between returns for portfolios 1 and 5 is shown next. Market-adjusted returns are the mean raw returns less the return on a value-weighted NYSE/AMEX/Nasdaq index. Each t-statistic pertains to the null hypothesis that the associated return is zero. The t-statistics for returns that are significant at a level of 10 percent or better are shown in bold.

Panel A: Monthly Market-Adjusted Return in 2000

	1 (Most Favorable)	5 (Least Favorable)
January	1.23	-1.28
February	6.00	16.45
March	-7.41	-2.98
April	-3.48	2.17
May	-5.57	8.56
June	3.40	-13.71
July	-1.42	12.25
August	4.65	-2.07
September	-0.76	9.63
October	-5.23	1.35
November	-14.17	4.38
December	-14.74	11.38

Panel B: Monthly Average Market-Adjusted Return in 2000

Portfolio	Non-Tech	Tech
1 (Most Favorable)	-0.805 -0.89	-6.115 -1.11
2	0.407 0.26	-6.360 -1.24
3	1.565 1.15	-6.190 -0.93
4	2.987 1.38	-3.171 -0.81
5 (Least Favorable)	2.851 1.13	7.683 1.28
P1-P5	-3.656 -1.35	-13.798 **-1.96**

Table IV

Percentage Monthly Average Market-Adjusted Returns (Including Announcement Day) Earned by Portfolios Formed on the Basis of Analyst Recommendations, 1996 to 2000

This table presents percentage monthly market-adjusted returns earned by portfolios formed according to average analyst recommendation. Portfolios 1-5 include stocks with consensus recommendations of [1-1.5], (1.5-2], (2-2.5], (2.5-3] and greater than 3, respectively. The difference between returns for portfolios 1 and 5 is shown next. Market-adjusted returns are the mean raw returns less the return on a value-weighted NYSE/AMEX/Nasdaq index. Each t-statistic pertains to the null hypothesis that the associated return is zero. The t-statistics for returns that are significant at a level of 10 percent or better are shown in bold. The average daily number of firms in each portfolio is reported in column (2).

Portfolio	**Daily Average No. of Firms**	**Percentage Monthly Average Market-Adjusted Return (Including Announcement Day)**						
		1996-2000	**1996-1999**	**1996**	**1997**	**1998**	**1999**	**2000**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1 (Most Favorable)	989	0.091	0.733	1.370	0.014	0.319	1.228	-2.477
		0.18	**2.46**	**2.66**	0.03	0.43	**2.22**	-1.18
2	1,177	0.040	0.275	0.075	0.355	0.475	0.197	-0.903
		0.16	**2.32**	0.37	1.83	**1.97**	0.63	-0.77
3	697	-0.420	-0.603	-0.749	-0.215	0.001	-1.447	0.309
		-1.55	**-2.66**	-1.41	-0.77	0.00	**-2.64**	0.30
4	567	-0.230	-1.089	-0.509	-0.614	-1.668	-1.566	3.208
		-0.38	**-3.12**	-1.37	-1.55	**-2.39**	-1.43	1.27
5 (Least Favorable)	56	-1.311	-2.431	-1.221	-2.391	-1.903	-4.210	3.168
		-1.81	**-4.36**	-1.60	**-3.10**	-1.90	**-2.56**	1.24
P1-P5	1,045	1.402	3.164	2.591	2.405	2.223	5.438	-5.646
		1.42	**4.67**	**2.25**	**2.20**	1.51	**3.42**	-1.59