

WHO MAKE BETTER STOCK PICKS: THE SELL-SIDE OR THE BUY-SIDE?

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Abstract:

We examined the performance of buy-side analysts' stock recommendations relative to those of the sell-side. Our tests show that buy-side analysts at a large investment firm made less optimistic stock recommendations than sell-side analysts, consistent with their facing fewer conflicts of interest. However, returns to their buy recommendations underperformed sell-side recommendations. Large sample tests that compared the performance of sell-side analyst recommendations and portfolio managers who relied exclusively on buy-side research confirmed the sell-side's superiority.

JEL classification: M41, G14, G29

Keywords: buy-side analysts, sell-side analysts, stock recommendations, recommendation optimism, recommendation performance

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INTRODUCTION

Prior researchers have argued that buy-side research is likely to be superior to that of the sell-side since buy-side analysts are not subject to the investment banking and brokerage conflicts faced by sell-side analysts (see for example, Cheng, Liu and Qian, 2004). A recent study by Groysberg, Healy and Chapman (2008), however, finds that sell-side analysts at a leading buy-side firm actually issued significantly more optimistic and less accurate earnings forecasts than their sell-side peers. They argued that the sell-side superiority was attributable to the higher transparency of analyst performance and competitiveness on the sell-side, and to the buy-side firm's encouraging its analysts to identify stocks to buy that are out of favor with the sell-side.

While forecast accuracy is likely to be a reasonable proxy for the quality of an analyst's research, it is not used directly by either buy- or sell-side firms to evaluate analyst performance or determine analyst compensation. Not surprisingly, buy-side analysts' performance and compensation is typically driven by the profitability of their buy recommendations. Groysberg, Healy, and Maber (2008) find that sell-side analysts' compensation is related to *Institutional Investor* ratings, the trading volume of stocks covered, and investment banking deals (at least prior to the Global Settlement).

In this study we re-examine the performance of the buy-side analysts studied by Groysberg, Healy and Chapman (2008) using buy recommendation returns as our metric of analyst performance. Because bonus awards for analysts at the sample buy-side firm were directly linked to the performance of their buy recommendations, they had a strong incentive to devote time and effort to make profitable recommendations. Further, given findings reported by Groysberg, Healy and Maber (2008) that sell-side analysts' rewards

are not directly linked to recommendation performance, buy-side analysts may even outperform the sell-side using this metric.

Consistent with buy-side analysts facing fewer conflicts of interest, we found that the buy-side firm's stock recommendations were less optimistic than those issued by sell-side firms listed on IBES and Reuters which also had recommendations available for the full sample period (mid-1997 to 2004). Forty-four percent of the recommendations issued by the buy-side firm were Strong Buy or Buy ratings, versus 56% for IBES firms and 58% for Reuters firms. Fourteen percent of the buy-side firm recommendations were rated Underperform or Sell, compared to 7% for IBES firms and 6% for Reuters firms.

To examine the performance of buy- and sell-side recommendations, we computed market-adjusted and four-factor model abnormal returns from investing in the buy- and sell-side firms' Strong Buy/Buy recommendations and All Recommendations (including shorting stocks rated as Underperform and Sell). Returns from investing in the buy-side firm ratings, particularly their Strong Buy and Buy recommendations, were consistently lower than those for the average sample sell-side firm. During the sample period, the annual market-adjusted and abnormal returns from investing in the buy-side firm's Strong Buy/Buy recommendations were 2.3%. Investing in comparable ratings by sell-side firms generated annualized market-adjusted (abnormal) returns of 8.1% (5.9%) for the average IBES firm, and 8.1% (6.2%) for the average Reuters firm. The sample buy-side firm's recommendations predict market-adjusted (abnormal) returns ranked at the 88th (76th to 79th) percentile relative to sell-side firms. Finally, we found that the sell-side firms' out-performance held for six of the eight sample years.

It is also noteworthy that the buy-side firm recommendation portfolios had significantly lower daily volatility than those for the average sell-side firm. Daily standard deviations of market-adjusted returns for the buy-side firm were roughly half those for the average sell-side firm. This difference was partially due to a difference in investment strategy for the buy-side and sell-side firms. The average sell-side firm's recommendations were tilted towards smaller firms, whereas stocks recommended by the buy-side firm were size neutral. However, after controlling for this effect, the buy-side firm continued to have significantly lower daily stock return volatility than the average sell-side firm. One explanation for this difference is that buy-side firm analysts were particularly cognizant of the importance of managing daily portfolio return volatility to manage investor perceptions of investment risk.

An important limitation of our study is that it explores performance for only one buy-side firm, raising the question whether the findings can be generalized to other firms. To provide some evidence on the generalizability of our sample firm findings, we examined the investment performance of portfolio managers at a sample of buy-side firms that reported relying exclusively on buy-side research relative to the performance of sell-side buy recommendations. The buy-side sample comprised an average of 31 investment firms and 340 funds per year for the period 1997 to 2005. Consistent with findings of prior studies of portfolio manager performance, we found that the sample funds generated small negative abnormal returns of -1.3% per year. In contrast, the sell-side analysts' buy recommendations generated annualized abnormal returns of 5.4% even after allowing for transactions costs. The difference of -6.7% was both economically and statistically significant and are broadly consistent with our single sample firm findings.

SAMPLE, DATA, AND TESTS

Sample and Data

Our tests compared the returns generated by following stock recommendations issued by the buy-side firm analysts to returns for comparable sell-side firms produced by following their analyst recommendations. The sample buy-side firm is a top ten-rated money management firm for which fundamental research is an essential part of its stock selection process. From analyst reports provided by the firm for the period July 1997 to December 2004, we collected stock recommendations issued for each stock covered. As reported in table 1, after eliminating recommendations with missing company name or date information, our sample comprises 2,013 recommendations issued by 46 analysts for 567 different stocks.

We collected sell-side recommendations from two sources, Thomson's IBES and Reuters, for the July 1997 to December 2004 time period. We used both IBES and Reuters data in response to concerns about IBES data raised by Ljungqvist, Malloy and Marston (2008), who found that changes were made to recommendations on the historical IBES database between 2002 and 2004. These included additions of new recommendations, deletions of prior recommendations, removal of the analyst identifier codes for some recommendations, and changes in some actual recommendations. As a result, abnormal returns to sell-side buy recommendations made in 2002 increased from 5.9% using the 2002 database to 8.1% using the modified 2004 version. Some of the changes were corrections of data errors but others appeared to be changes made by analysts (who self-report their recommendations) to conceal poor performing

recommendations, a potential cause for concern in interpreting our findings. To the best of our knowledge, the Reuters database was not subject to analyst updates.

The buy-side firm recommendations covered the full sample time period, whereas many of the sell-side firms covered by Reuters and IBES reported recommendations for only limited sub-periods. As a result, many sell-side firms did not have sufficient recommendation data to enable us to compute meaningful return performance. To be included in our sample, we therefore required that a sell-side firm consistently issued recommendations for the full the sample period. This ensured that there is comparability between the buy- and sell-side firms in terms of periods covered. It also imposed the same survivorship bias on the buy- and sell-side firms, again increasing the comparability of their recommendation performances.

For both the IBES and Reuters databases, we collected sell-side recommendations issued by analysts working at firms that had recommendations available for the full sample period. As reported in table 1, our final sample comprised 84 firms covered by IBES and 56 firms on Reuters. The 84 IBES firms issued 173,414 recommendations during the sample period, compared to 214,863 recommendations made by the 56 firms covered by Reuters. The average IBES sample firm employed 79 senior analysts who issued 2,064 recommendations for 671 stocks. In contrast, the average Reuters sample firm hired 94 senior analysts who issued 3,837 recommendations for 833 stocks. The average sell-side firm therefore employed 70-100% more analysts than the sample buy-side firm. The difference in scale, however, did not translate one-for-one into more recommendations or companies covered.

Recommendation Strategies and Stock Return Performance

We used two strategies to assess the performance of analysts' recommendations at buy- and sell-side firms, the Strong Buy/Buy strategy and the All Recommendation strategy. Under the Strong Buy/Buy strategy we bought and held stocks rated as a Strong Buy or Buy from the day after they initially received a Strong Buy/Buy rating until the day after they were downgraded to a Hold or lower rating (if they continued to be covered), or for 250 days (if they ceased to be covered).¹

Under the All Recommendation strategy, we (i) bought and held stocks rated as a Strong Buy, Buy, or Hold from the day after they initially received such a rating until the day after they were downgraded to lower rating lower than Hold (if they continued to be covered), or for 250 days (if they ceased to be covered), and (ii) shorted stocks rated as Underperform or Sell, from the day after they received either of these ratings until the day after they were upgraded to a Hold or better (if they continued to be covered), or for 250 days (if they ceased to be covered).

The return performance under each strategy was estimated using two return metrics, market-adjusted and abnormal returns. Market-adjusted returns, the metric used by the buy-side firm to evaluate analyst performance, were computed as the difference between the holding period return for a particular stock less the return on the value-weighted S&P 500 market index. This metric indicated whether through market timing or use of value or momentum strategies, analysts were able to select stocks that beat the market.

¹ Prior research (e.g. Womack, 1996) indicates that sell-side analysts' recommendation updates impact returns when they are announced. Such is not likely to be the case for private buy-side recommendations. By excluding the returns on the day the recommendation report date, our tests will therefore likely understate the relative profitability of sell-side recommendations.

The second return metric, abnormal returns, controlled for risk and other factors known to be associated with stock performance using a four-factor model using a similar approach to Barber, Lehavy and Trueman (2005). We first created a daily portfolio return for each analyst-firm based on following either the Strong Buy/Buy or All Recommendation strategy. An equal initial investment was made in each stock that entered the portfolio. Calendar time abnormal returns were computed for each firm-strategy portfolio by estimating the following four-factor model using daily portfolio returns:

$$R_{jt} - R_{ft} = \alpha_j + \beta_j(R_{mt} - R_{ft}) + s_jSMB_t + h_jHML_t + w_jWML_t + v_{jt}$$

R_{jt} was the daily return for portfolio j , R_{ft} was the daily risk-free return, R_{mt} was the daily return on the value-weighted market index, SMB_t was the daily difference in return for a value-weighted portfolio of small stocks over a similar portfolio of large stocks, HML_t was the daily difference in return for a value-weighted portfolio of high book to market stocks and a similar portfolio of low book-to-market stocks. WML_t was the daily return on a value-weighted portfolio of stocks with high recent returns and a similar portfolio with low recent returns. The slope coefficients from this model represented risk factors for each firm-strategy portfolio, and the intercept was the average daily abnormal return.

To compare the performance of buy- and sell-side firms, we estimated the following models:

$$R_{ma,j} \text{ or } \alpha_j = \lambda + \gamma D_j + v_j$$

$R_{ma,j}$ and α_j were the analyst-firm market-adjusted and abnormal portfolio returns under either the Strong Buy/Buy or All Recommendation strategy, and D_j was a dummy variable that took the value one for the buy-side firm and zero otherwise. The dummy

coefficient (λ) therefore indicated whether the portfolio abnormal return for the buy-side firm was different from those for sell-side firms. In addition, we reported the percentile rank of the buy-side firm's portfolio market-adjusted or abnormal returns for each strategy relative to those for sell-side firms.

RESULTS

Recommendation Optimism

The frequencies of stock recommendations issued by buy- and sell-side analysts are reported in table 2.² Analysts at the buy-side firm issued fewer Strong Buy/Buy recommendations and more Hold and Under-perform/Sell recommendations than their sell-side counterparts covered by either IBES or Reuters. Forty-four percent of the recommendations issued by the buy-side analysts were Strong Buy or Buy, compared to 56% for the sell-side analysts on IBES and 58% for those on Reuters. In contrast, 13.6% of the buy-side analyst recommendations were Underperform or Sell, versus 6.8% for sell-side analysts on IBES and 5.5% for those on Reuters. A Chi-Squared test indicated that these differences were highly statistically reliable.

The higher sell-side recommendation optimism is not surprising given widespread concern about investment banking pressures on sell-side analysts to be optimistic about companies they covered prior to the Global Settlement (Cowen, Groysberg and Healy, 2006). However it is worth noting that the findings are somewhat puzzling when juxtaposed with the relative pessimism of sell-side earnings estimates versus the same

² For several years of the sample period, the sample firm provided only three types of recommendation (versus the usual five for sell-side firms). We, therefore, used this classification throughout the sample period, combining Strong Buys with Buys, and Sells with Strong Sells. We also replicated the tests using all five classifications for the sub-period they are available. The results are not materially different from those reported in the paper.

buy-side firm analysts. Together, the findings imply that buy-side analysts were more optimistic than their sell-side counterparts about firms' fundamentals (represented by earnings) but were less confident about their stock market prospects. Bradshaw (2004) also found evidence of conflicts between analysts' earnings forecasts and recommendations. One explanation for these findings is that sell-side analysts used earnings forecasts and recommendations to communicate with two very different audiences, institutional and retail investors (see Malmendier and Shanthikumar (2005)).

Recommendation Returns

Strong Buy/Buy Strategy

Panel A of table 3 shows returns from following the Strong Buy/Buy strategy for the buy-side firm and its sell-side counterparts during the sample period. Analysts at the buy-side firm generated an annualized market-adjusted return of 2.3%, suggesting that on average their Strong Buy/Buy recommendations out-performed the overall market index.

However, the buy-side firm's performance looked less impressive when it was benchmarked against that of sell-side firms. The Strong Buy/Buy strategy generated statistically reliable market-adjusted returns of 8.1% per year for both the average IBES and Reuters firm. These mean returns were reliably higher than the buy-side firm return by 5.8%. These findings were not attributable to a few high-performing sell-side firms. The median sell-side market-adjusted return was 7.5% for the IBES sample and 7.4% for Reuters firms, more than three times the buy-side firm return. The buy-side firm's Strong Buy/Buy strategy return was ranked at the 88th percentile relative to its IBES and Reuters peers.

Abnormal returns estimated using the four-factor model showed a more modest, but nonetheless significant, out-performance by the sell-side firms. The annualized abnormal return from investing in the buy-side firm analysts' Strong Buy/Buy recommendations was 2.3%, versus 5.9% for the average IBES sell-side firm and 6.2% for the average Reuters firm. The buy-side firm return was again significantly different from those of the average IBES and Reuters sell-side firms. Median IBES and Reuters firm abnormal returns, 5.3% and 6.1% respectively, were also high relative to the buy-side return. The buy-side firm was ranked at the 76th percentile relative to the IBES sell-side firms and the 79th percentile versus the Reuters sample.

The daily return volatility of the buy- and sell-side firm portfolios indicated that there were also important differences in investment strategies of analysts at the two types of firms. The average daily standard deviation of market-adjusted returns for the buy-side firm was 0.52%, roughly half that for the IBES (1.14%) and Reuters (0.97%) sell-side firms. These differences were highly statistically reliable and implied that although investors who followed the buy-side firm analysts' Strong Buy/Buy recommendations earned a lower return than those who followed comparable sell-side firm recommendations, they also faced lower daily return volatility.

The loadings on the four-factor model for the buy- and sell-side firms provide a partial insight into the differences in market-adjusted return volatility for the buy-side firm and its sell-side counterparts. The loading on the size factor for the buy-side firm portfolio was only 0.12, compared to average loadings of 0.64 for both the IBES and Reuter firm portfolios. These differences imply that sell-side firms' Strong Buy and Buy recommendations were tilted towards small firms whereas the buy-side firm

recommendations were size neutral. In addition, the buy-side firm portfolio loading on the book-to-market factor (0.37) was twice the average loading for the Reuters portfolio (0.18), implying that the buy-side firm was more likely to recommend value stocks than the Reuters sell side firms.

However, differences in factor loadings did not fully explain the higher daily market-adjusted return volatility for the buy-side portfolio. The mean daily abnormal return standard deviation for the buy-side firm (0.42%) was significantly lower than averages for IBES (0.65%) and Reuters (0.78%) sell-side firms. Therefore, although investing in the buy-side firm's Strong Buy and Buy recommendations generated a lower abnormal return than that generated from investing in comparable recommendations for the average sell-side firm, it also was accompanied by lower daily volatility.

All Recommendation Strategy

Panel B of table 3 reports returns from following the All Recommendation strategy for the buy-side firm and its sell-side peers. The All Recommendation strategy generated lower returns than the Strong Buy/Buy strategy for both the buy-side firm and its sell-side benchmarks. This reflected lower returns for Hold recommendations than for Strong Buy and Buy, and inconsistent performance of the modest number of Underperform/Sell recommendations issued.

Analysts at the buy-side firm generated an annualized market-adjusted return of 0.6%. The All Recommendation strategy generated statistically reliable market-adjusted returns of 4.9% per year for the average IBES firm and 5.2% for the average Reuters firm. These mean returns were reliably higher than the buy-side firm return by 4.3% and 4.5% respectively. The median sell-side market-adjusted return was 5.1% for the IBES

sample and 5.2% for Reuters firms, roughly eight times the buy-side firm return. The buy-side firm All Recommendation return was ranked at the 80th (82nd) percentile relative to its IBES (Reuters) peers.

Abnormal return tests reinforced the market-adjusted return findings that the buy-side firm underperformed sell-side firms using the All Recommendation strategy. The buy-side firm annualized abnormal return was 1.8%, compared to 4.0% for the average IBES sell-side firm and 4.1% for the average Reuters firm. The differences in abnormal returns for the buy-side firm and the average IBES/Reuters sell-side firm were between 2.3% and 2.4%, and were highly statistically reliable. The median sell-side firm abnormal return was 3.5% for the IBES sample and 4.2% for Reuters firms. Finally, the buy-side firm's annualized abnormal return ranked at the 69th percentile relative to IBES firms and at the 70th percentile versus Reuters firms.

Once again, there was a marked difference in daily return volatility for the buy- and sell-side firm portfolios. The average daily standard deviation of market-adjusted returns for the buy-side firm was 0.48%, roughly half that of the IBES (1.04%) and Reuters (0.88%) sell-side firms. These differences were highly statistically reliable and indicated that investors who followed the buy-side firm's analyst recommendations earned a lower portfolio return but faced lower daily return volatility.

The loadings on the four-factor model for the buy- and sell-side firms again provide a partial explanation of the differences in market-adjusted return volatility for the buy-side firm and its sell-side counterparts. The loading on the size factor for the buy-side firm was 0.02, versus 0.56 and 0.55 for the average IBES and Reuters sell-side firms, implying that on average sell-side firms' recommendations were tilted towards small

firms, whereas the buy-side firm's recommendations were size neutral. However, increased exposure to the size factor only partially explained the higher average daily market-adjusted return volatilities for the sell-side firms. Mean daily abnormal return standard deviations for IBES and Reuters firms were 0.83% and 0.69% respectively, which continued to exceed the 0.43% daily abnormal return standard deviation for the buy-side firm.

Stability of Return Performance Over Time

The sample period covers a wide range of market conditions, including the bull technology market of the late 1990s and the crash in tech stocks in 2000 and 2001. To examine the sensitivity of our buy-side firm findings to differing market conditions, we replicated our tests for each sample year (1997 to 2004). The results are reported in table 4.

The findings for the Strong Buy/Buy strategy, shown in panel A, indicate that the underperformance of the buy-side firm's Strong Buy/Buy recommendations relative to the sell-side was relatively stable throughout the sample period. The buy-side firm's annual market-adjusted returns were lower than mean returns for IBES and Reuters firms in six of the eight sample years. The only exceptions were 1998 and 2000. In 1998, the buy-side firm market-adjusted return was -9.1% versus means of -14.8% and -10.3% for IBES and Reuters firms respectively, and in 2000 the buy-side firm return was 18.6%, the IBES firm mean was 15.6%, and the Reuters mean was 15.7%.

Calendar time abnormal return results tell a similar story. Annual abnormal returns for the buy-side firm exceeded the mean for IBES firms in only two of the eight years (1997 and 2002), and for Reuters firms in only one year (2002). In 1997, the buy-

side firm abnormal return was -2.1% compared to -4.3% for the IBES average. In 2002, abnormal returns for the buy-side firm, the average IBES firm, and the average Reuters firm were 10.7%, 5.5%, and 5.3% respectively.

Panel B reports findings over time from implementing the All Recommendation strategy. Here, the sell-side firms' superior recommendation performance declined somewhat. Using annual market-adjusted returns, the buy-side firm out-performed the average IBES and Reuters firm in three of eight years (1997, 1998 and 2000 for the IBES average, and 1998, 2000 and 2002 for the Reuters average). Buy-side calendar-time abnormal returns also exceeded IBES and Reuters averages in three years, 1997, 2000, and 2002.

In summary, the overall outperformance of average sell-side firms' analyst recommendations persisted throughout the sample period, particularly for the Strong Buy/Buy recommendation strategy.

GENERALIZABILITY

One limitation of our study is that we examine the performance of analysts at a single buy-side firm, raising questions about whether our findings can be generalized to other investment firms. Ideally, we would have performed our tests using buy-side analyst data from a large, randomly-selected sample of firms. Unfortunately, we do not have access to such data. However, we were able to obtain data on the performance of buy-side firm portfolio managers who reported that they relied exclusively on buy-side research for making investment decisions. By examining fund-level performance at these sample firms we can indirectly evaluate the performance of buy-side research using a larger sample of firms.

The sample firms and funds were identified from a search of Nelson's Directory of Investment Research from 1997 to 2005, where each investment firm reported the intensity of use of buy-and sell-side research. During the period 1997 to 2005 an average of 205 firms per year reported that they relied 100% on buy-side research for investment advice. For these investment firms, we collected monthly returns from 1997 to 2005 for all their funds covered by CRSP Morningstar. Our usable sample averaged 31 firms and 340 funds per year.

Since we did not have a good understanding of factors that led firms to rely exclusively on buy-side research, we also examined a benchmark sample of investment firms that used a mix of buy-side research. This sample comprised an identical number of investment firms each year randomly selected from all firms listed on CRSP Morningstar that reported in Nelson's Directory that they did not rely exclusively on buy-side research. The sample averages 31 investment firms (by construction) and 636 funds per year. Interestingly, many of these firms also reported that they relied heavily on buy-side research.³ Finally, we used data from I/B/E/S to identify strong buy and buy recommendations made by all sell-side analysts from 1997 to 2005.⁴

We estimated mean annualized market-adjusted and abnormal returns (estimated using the calendar-time approach and four-factor model discussed above) for buy-side portfolio managers who relied/did not rely exclusively on buy-side research, and for sell-side firms' Strong Buy/Buy recommendations.⁵ Sell-side firm recommendation

³ Cheng, Liu, and Qian (2004) show that in 2001 and 2002 the median firm in Nelson's Directory reports that 80% of its research is based on in-house buy-side analysis and only 20% on sell-side analysis.

⁴ Since the results reported above indicate little difference between IBES and Reuters analyst recommendation performance, we limit our sell-side tests to the IBES database.

⁵ The tests use monthly returns for investment firm funds and monthly returns (generated by cumulating daily returns) for sell-side analyst strong buy/buy recommendations from day +1 to 250 relative to the recommendation issue date or until the recommendation is downgraded below buy. Returns for mutual

performance was computed after adjusting for transactions costs of 0.15% on stock purchases that occurred with a recommendation upgrade and sales that occurred when a stock was downgraded or a recommendation is not reiterated for twelve months.⁶

The findings, reported in table 5, show that mean annualized market-adjusted returns were -1.9% for buy-side portfolio managers who relied exclusively on buy-side research and -2.5% for the random subsample of buy-side portfolio managers who did not rely exclusively on buy-side research.⁷ Both estimates were insignificant. In contrast, sell-side firms' Strong Buy/Buy recommendations generated average market-adjusted returns of 6.1% per year. This return was significantly different from zero and significantly higher than returns for either sample of buy-side portfolio managers at the 10% level.

These performance differences were not explained by risk, size, book-to market or momentum factors. After controlling for these effects, mean annualized abnormal returns for funds of investment firms that relied exclusively on buy-side research were -1.3% (significant at the 6% level) versus -0.8% (insignificant) for the funds of firms that used both buy- and sell-side research. In contrast, sell-side firms' Strong Buy/Buy recommendations generated a 5.4% abnormal annualized return, significant at the 1%

funds are computed before adding back expenses, which averaged 1.3% per year for firms that report they rely exclusively on buy-side research, and 1.4% for the random sample.

⁶ This estimate of transaction costs was obtained from industry experts who reported that costs for trades of 100,000 shares, which would be a typical size trade for most investment funds, range from 0.1% to 0.3% and depend on factors such as the stock's liquidity, the order size, the order urgency and arrival time, market condition, and whether there is a news event. To assess the sensitivity of our findings to the magnitude of transactions costs we also estimate sell-side recommendation performance using 0.3% transactions costs, the upper end of the range quoted by industry experts. The findings are similar to those reported.

⁷ As reported above, the mean fund return for the sample investment firm during the period 1997 to 2004 was 2.7%. During the same period, the mean market-adjusted return for funds of firms relying exclusively on buy-side research was -2.1% and for funds at firms using a combination of buy- and sell-side research was -2.8%, confirming our conclusion that the sample firm is not a poor performer.

level. The mean abnormal return for the sell-side firms was significantly higher than for either buy-side subsamples at the 1% level; there was no significant difference between the performance of funds at buy-side firms that relied exclusively on buy-side research and those who did not.

The large sample results for portfolio managers are broadly consistent with prior research which also showed that fund managers find it difficult to earn positive abnormal returns (see Grinblatt and Titman (1989, 1993), Brown and Goetzmann (1995), Daniel, Grinblatt, Titman and Wermers, (1997), Malkiel (1995), Carhart (1997) and Wermers (2000)) and with prior studies on the performance of sell-side analysts' Strong Buy/Buy recommendations (see Elton, Gruber and Grossman (1986), Stickel (1995), Barber, Lehavy, McNichols and Trueman (2001), and Jagadeesh, Kim, Krische and Lee (2004)). More importantly, these large-sample results were consistent with our findings that sell-side firm recommendations out-performed those for the sample buy-side firm.

CONCLUSIONS

We examine recommendation optimism and performance for analysts at a large, reputable buy-side firm relative to analysts at sell-side firms listed on IBES and Reuters and which had recommendations available for the full sample period (mid-1997 to 2004). The buy-side firm analysts' stock recommendations were less optimistic than their sell-side counterparts, consistent with buy-side analysts facing few conflicts of interest. Forty-four percent of the recommendations issued by the buy-side firm were Strong Buy or Buy ratings, versus 56% for analysts at IBES firms and 58% for analysts at Reuters firms. The higher frequency of sell-side Strong Buy/Buy recommendations was offset by a lower

frequency of Underperform and Sell ratings (14% for the buy-side firm analysts versus 7% for analysts at IBES firms and 6% for analysts at Reuters firms).

To examine the performance of buy- and sell-side recommendations, we computed market-adjusted and four-factor model abnormal returns from investing in analyst firms' Strong Buy/Buy recommendations and All Recommendations (including shorting stocks rated as Underperform and Sell). Returns from investing in the buy-side firm ratings, particularly Strong Buy and Buy, were consistently lower than those for the average sample sell-side firm. For example, annualized market-adjusted and abnormal returns from investing in the buy-side firm's Strong Buy and Buy recommendations during the sample period were 2.3%. Investing in comparable ratings by sell-side firms generated annualized market-adjusted (abnormal) returns of 8.1% (5.9%) for the average IBES firm, and 8.1% (6.2%) for the average Reuters firm. The sample buy-side firm market-adjusted (abnormal) returns ranked at the 88th (76th to 79th) percentile relative to sell-side firms. Finally, we find that the sell-side firms' outperformance holds for six of the eight sample years.

We also found that portfolio daily return volatility was significantly higher for the average sell-side firm than for the buy-side firm. The average daily standard deviation of market-adjusted returns for sell-side firms was twice that for the buy-side firm. This difference was partially explained by differences in investment strategy, as the average sell-side firm recommendations were tilted towards small cap stocks. However, even after controlling for this difference, the buy-side firm portfolio had significantly lower daily excess return volatility. One potential explanation for this finding is that the buy-side firm analysts were conscious of the importance of managing investor perceptions of

the daily volatility of the firm's funds, influencing the types of stocks they recommended to their portfolio managers.

An important limitation of our study is that we examined the performance of analysts at a single buy-side firm, raising questions about whether the findings can be generalized. To address this question we analyzed the performance of fund managers at investment firms that reported they relied exclusively on buy-side research for investment decision-making. The sample comprises an average of 340 funds at 31 investment firms per year during the period 1997 to 2005. Mean abnormal returns for the fund managers were -1.3% per year compared to 5.4% for sell-side analysts' buy recommendations. This performance difference was highly economically and statistically significant. It was also remarkably similar to the difference in abnormal returns observed for sell-side and analysts at the sample buy-side firm, indicating that findings for that firm may well apply to a broader sample.

Our study raises several questions for researchers and practitioners. First, the findings raise questions about why investment firms continue to fund buy-side research and do not simply rely on the sell-side. Second, given prior research on the investment performance of mutual funds, our evidence on the stock performance of buy-side recommendations is less surprising than the remarkably strong performance of the sell-side. Follow-up research is called for on whether this performance holds for longer periods, and why it has persisted during the sample period. Finally, it will be interesting to assess how services such as StarMine affect the performance of buy-side analysts as management at investment firms become better informed about the performance of their analysts relative to other buy-side firms and to the sell-side.

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Table 1
Buy- and sell-side stock recommendation samples. The sample period is July 1997 to December 2004.

	Buy-side firm	IBES sell- side firms	Reuters sell-side firms
Number of analyst firms	1	84	56
Number of U.S. company recommendations issued by sample firms from July 1997 to December 2004	2,013	173,414	214,863
Average per analyst firm			
Number of recommendations issued per firm	2,013	2,064	3,837
Number of analysts per firm	46	79	94
Number of stocks recommended per firm	567	671	833

Table 2
 Recommendation frequency for buy-side firm and sell-side analysts. The sample period is
 July 1997 to December 2004.

	Buy-side firm		Sell-side firms (IBES)		Sell-side firms (Reuters)	
	Number	Percent	Number	Percent	Number	Percent
Strong Buy/Buy	888	44.1%	97,355	56.1%	125,160	58.3%
Hold	851	42.3%	64,379	37.1%	77,887	36.2%
Underperform/ Sell	274	13.6%	11,680	6.8%	11,816	5.5%
Total	2,013	100.0%	173,414	100.0%	214,863	100.0%

Table 3

Mean annualized equal weighted market-adjusted and calendar-time abnormal returns from investing in buy-side firm and sell-side analyst firms' stock recommendations. The sample comprises one buy-side firm and multiple sell-side firms with consistent recommendations made in the period July 1997 to December 2004.^a

Panel A; Strong buy /Buy strategy

	Buy-side firm	IBES sell-side firms (N=84)	Reuters sell-side firms (N=56)
<u>Market-adjusted returns</u>			
Mean	2.34%	8.10%**	8.11%**
Mean difference vs buy-side firm		5.76%**	5.77%**
Sell-side firm distribution			
Q1		4.28%	4.96%
Median		7.47%	7.43%
Q3		11.22%	10.58%
Buy-side % rank vs sell-side firms		88%	88%
Mean daily return standard deviation	0.52%	1.14%	0.97%
<u>Calendar-time abnormal returns</u>			
Mean	2.27%	5.86%**	6.23%**
Mean difference vs buy-side firm		3.59%**	3.96%**
Sell-side firm distribution			
Q1		2.33%	2.75%
Median		5.30%	6.08%
Q3		9.13%	9.08%
Buy-side % rank vs sell-side firms		76%	79%
Mean daily return standard deviation	0.42%	0.65%	0.78%

Panel B; All recommendation strategy

	Buy-side firm	IBES sell-side firms (N=84)	Reuters sell-side firms (N=56)
<u>Market-adjusted returns</u>			
Mean	0.63%	4.90%**	5.16%**
Mean difference vs buy-side firm		4.27%**	4.53%**
Firm return distribution			
Q1		1.41%	2.08%
Median		5.09%	5.21%
Q3		8.72%	8.96%
Buy-side % rank vs sell-side firms		80%	82%
Mean daily return standard deviation	0.48%	1.04%	0.88%
<u>Calendar-time abnormal returns</u>			
Mean	1.77%	4.02%**	4.13%**
Mean difference vs buy-side firm		2.25%**	2.36%**
Sell-side firm distribution			
Q1		0.85%	1.02%
Median		3.54%	4.19%
Q3		7.76%	7.30%
Buy-side % rank vs sell-side firms		69%	70%
Mean daily return standard deviation	0.43%	0.83%	0.69%

** Significant at the 1% level using a two-tailed test.

^a To implement the Strong Buy/Buy strategy we bought and held stocks rated as a Strong Buy or Buy from the day after they initially received a Strong Buy/Buy rating until the day after they were downgraded to a Hold or lower rating (if they continued to be covered), or for 250 days (if they ceased to be covered). To implement the All Recommendation strategy, we (i) bought and held stocks rated as a Strong Buy, Buy, or Hold from the day after they initially received such a rating until the day after they were downgraded to lower rating lower than Hold (if they continued to be covered), or for 250 days (if they ceased to be covered), and (ii) shorted stocks rated as Underperform or Sell, from the day after they received either of these ratings until the day after they were upgraded to a Hold or better (if they continued to be covered), or for 250 days (if they ceased to be covered). Market-adjusted returns were the difference between the holding period return for a buy- or sell-side firm's recommendation portfolio and the return on the value-weighted S&P 500 market index. Calendar time abnormal returns were computed for each firm's recommendation portfolio by regressing its portfolio returns on the market excess return, a zero-investment size portfolio return, a zero investment book-to-market portfolio return and a zero investment price momentum portfolio return.