ARE ALL BROKERAGE HOUSES CREATED EQUAL? TESTING FOR SYSTEMATIC DIFFERENCES IN THE PERFORMANCE OF BROKERAGE HOUSE STOCK RECOMMENDATIONS

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This draft: March 2000

This paper was previously titled "Brokerage Houses and Their Stock Recommendations: Does Superior Performance Exist? We are grateful to Trevor Harris, Terry Odean, Ramu Thiagarajan, Sheridan Titman, participants at the 1999 Stanford summer camp, and, especially, Maureen McNichols for their valuable comments.

Abstract

This paper compares the performance of analyst stock recommendations across brokerage houses. We document that the buy recommendations of the largest brokerage houses outperform those of the smallest, as one might expect. Somewhat surprisingly, though, the sell recommendations of the smaller brokers earn more than those of the larger ones. Ranking brokerage houses on the basis of prior-year performance, we find no reliable evidence that the abnormal return on the current recommendations of the top-ranked brokerage houses exceeds that of the bottom-ranked houses. Despite the performance rankings of brokers published in the popular press and the brokerage advertisements that tout prior performance, empirical evidence of performance persistence for brokerage house stock recommendations is weak at best.

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INTRODUCTION

In this paper we compare the performance of analyst stock recommendations across brokerage houses in order to address two primary questions. First, do the recommendations of larger houses systematically outperform those of smaller ones? Second, do the recommendations of brokers with superior prior returns outperform those whose past returns are lower? Answers to these questions will not only shed light on the extent to which specific brokerage house characteristics are associated with stock recommendation returns, but will also provide insights into whether investors can systematically enhance their returns by following the recommendations of certain types of brokers while downplaying, or ignoring, those of others.

It is reasonable to expect large brokerage houses to generate greater investment returns than small brokers, as they have closer ties to corporate management, provide more resources to support research, and have more analysts following the same industry, who can share information. Recent studies by Clement (1999) and Jacob, Lys, and Neale (1999) provide support for this conjecture by showing that analyst *forecast accuracy* is increasing in the size of the brokerage house to which an analyst belongs. While there is no empirical evidence to-date documenting a link between current and past brokerage house performance, the popular press, by periodically ranking brokers, implicitly suggests that a positive relation should exist. The *Wall Street Journal*, for example, publishes a quarterly listing of the largest brokerage houses, ranked by the prior performance of their stock recommendations, while *Institutional Investor*

ranks brokers each year according to the number of *All Star* analysts they employ. Although no claim is made that these rankings are indicative of future performance, it is likely that many investors interpret them in this manner. Individual brokerage houses encourage such behavior, at least indirectly, when they display their past performance or number of *All Star* analysts in advertisements designed to attract new clients.[1]

If the market were to react immediately and fully to the release of brokerage house stock recommendations, then we would be able to compare performance across brokers simply by measuring announcement date price reactions. However, as Stickel (1995), Womack (1996), and Barber, Lehavy, McNichols, and Trueman (2000) show, the market reaction is not complete at the announcement date; a price drift is apparent, lasting for up to a month for buy recommendations and up to six months for sell recommendations. Consequently, in order to measure a broker's performance, we cumulate the return to each of the broker's recommendations over the entire period that it is in effect, beginning with the recommendation announcement date.

Doing so, we find that the large brokers have the superior buy recommendations (outperforming the small houses by about 3 percent annually on a market-adjusted basis); however, it is the *small* brokers that have the better sell recommendations (beating the large houses by around 5 percent per year). This latter result is somewhat surprising, and suggests the possibility that the sell recommendations of the large houses are issued in a less timely manner than are those of the small brokers (perhaps due to a greater fear of harming existing or potential

[1]As a recent example, Lehman Brothers took out a full page ad in the June 29, 1999 edition of the *Wall Street Journal* (the issue which announces the results of the *Journal*'s 1999 survey of all-star analysts) to document the strong past returns to the stocks on their 10 Uncommon Values list.

client relationships).[2]

With respect to the link between past and current performance, we find that the buy recommendations of the top-ranked brokerage houses (where rank is determined by past buy recommendation performance) earn a market-adjusted return that is about 4 percent more per year than is earned by the buys of the bottom-ranked houses. Although this difference is economically large, it is only marginally significant. Furthermore, the sell recommendations of the top brokerage houses (now ranked according to the performance of their past sell recommendations) actually earn around 6 percent *less* on a market-adjusted basis than is earned by the sells of the bottom-ranked houses (again, the difference is not reliably greater than zero). Despite the published rankings and the advertisements that tout prior performance, empirical evidence of performance persistence for brokerage house recommendations is weak at best.

We included the recommendation announcement date returns in these calculations in order to capture the total performance of each broker's recommendations. This means, however, that the results presented thus far cannot be directly used to draw inferences about the value to *investors* of following the recommendations of one set of brokers over another. This is because the vast majority of investors are unable to trade on stock recommendations before they are made public, and so cannot capture the immediate market reaction to their announcement.[3] In

[2]The effect of investment banking relationships on analysts' stock recommendations has been studied by Michaely and Womack (1999) in the context of initial public offerings. Lin and McNichols (1998) examined the impact of these relationships on recommendations made prior to seasoned equity offerings.

[3]Recommendations are normally announced by sell-side analysts after the market close and prior to the next day's open. Usually the recommendations are transmitted electronically to the retail and institutional brokers of the analysts' firm. There are also morning calls with these brokers, prior to the opening of markets, where the recommendations are discussed. The content of these calls is generally also reported in the *First Call* notes. (See Womack (1996, p.140) for a further discussion of these points.) The timing of these announcements implies that most investors will be unable to act on any given recommendation until the market opening, at which time the recommended firm's stock price will immediately react to the announcement. As a result, most investors will be

order to calculate the profits that they can earn, we exclude from each recommendation's return the announcement date price reaction. Doing so, we find that the average annual market-adjusted return to the buy recommendations of the large houses still exceeds that for the small houses; however, the difference narrows to 2½ percent. In contrast, the return advantage of the small brokers' sell recommendations actually *widens*, to 6½ percent. These results suggest that investors will do well to follow the large brokers' buy recommendations and the small brokers' sell recommendations. With respect to prior performance, we again find no significant difference between the recommendation returns of the top- and bottom-ranked brokerage houses. Apparently, investors cannot do reliably better by following the recommendations of brokers who have performed well in the past.

The plan of this paper is as follows. In Section I we describe the data and sample selection criteria. The research design for our analysis is laid out in Section II. In Section III we partition our brokers by size and prior performance and compare the current returns on their stock recommendations. A summary and conclusions section ends the paper.

I. THE DATA AND SAMPLE SELECTION CRITERIA

The analyst recommendations used in this study were provided by *Zacks Investment Research,* which obtains its data from the written and electronic reports of brokerage houses. The recommendations cover the period 1985 (the year that Zacks began collecting this data) through 1998. Each database record includes, among other items, the recommendation date, identifiers for the brokerage house issuing the recommendation and the analyst writing the report

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unable to capture most, if not all, of the first-day price response.

(if the analyst's identity is known), 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, Zacks converts the analyst's rating to its five-point scale.[4]

Another characteristic of the database is that the data made available to academics does not constitute Zacks' complete set of recommendations. According to an official at Zacks, some individual brokerage houses have entered into agreements that preclude their recommendations from being distributed by Zacks to anyone other than the brokerage houses' clients. Consequently, the recommendations of several large brokerage houses, including Merrill Lynch, Goldman Sachs, and Donaldson, Lufkin, and Jenrette, are not part of the database used in our study, or in any other academic study employing Zacks data. However, the database does include the recommendations of many large and well-known brokerage houses, such as Salomon Smith Barney, Lehman Brothers, Morgan Stanley, Bear Stearns, CS First Boston, and Paine Webber.

For our tests examining the relation between current performance and brokerage house size we include in our year *y* sample (where *y* runs from 1986 through 1997)[5] all brokers with at least one analyst issuing a recommendation during the year. For our tests linking the prior and current performance of brokerage house buy (sell) recommendations, we include in our year *y* sample only those brokers that (1) have at least five buy (sell) recommendations outstanding on

[4]Ratings of 6 also appear in the Zacks database and signify termination of coverage.

[5]We exclude the year 1985 from our analysis since the Zacks database provides coverage of only a relatively small number of analysts, brokerage houses, and recommendations that year.

each day of the year (where buys are defined as ratings of either 1 or 2 and sells are ratings of either 4 or 5) and (2) have at least ten different analysts issuing recommendations (of any type) at some point during the year. These two requirements are imposed so as to exclude very small brokerage houses from our tests for performance persistence.[6]

II. RESEARCH DESIGN

A. Portfolio Construction and Return Measurement

We begin our analysis by classifying each brokerage house *j* in our year *y* sample according to size. We also rank each broker according to its average monthly return for the year (separately for its buy and sell recommendations). To determine the broker's size, we add up the number of analysts issuing recommendations at some point during the year, and classify the broker as large if it has more than 25 analysts, as medium-sized if it has between 10 and 25 analysts, and as small if it has fewer than 10 analysts.[7] To determine the brokerage house's performance rank for year *y* we first calculate the date τ value-weighted return of the securities recommended (again, separately for buys and sells) as of date τ. Denoted by $R_{j\tau}$, this return is given by:

$$R_{j\tau} = \sum_{i=1}^{n_{j\tau}} x_{i\tau-1} R_{i\tau},$$

[6] If included, very small brokerage houses would likely dominate our extreme portfolios. (With fewer recommendations, their performance is expected to be more volatile.) To the extent that any significant results are driven by the smallest houses, the phenomenon becomes less economically meaningful.

[7] Defining size based on the number of analysts with outstanding recommendations during the year is similar to the classification criterion used by Clement (1999) and Jacob, Lys, and Neale (1999) in their studies of analysts' earnings forecast accuracy.

where:

$x_{i\tau-1}$ = the date τ-1 market value of equity for firm *i* recommended as of date τ divided by the aggregate market capitalization of all the stocks recommended by brokerage house *j* as of date τ,

$R_{i\tau}$ = the return on the common stock of firm *i* on date τ, and

$n_{j\tau}$ = the number of stocks recommended by brokerage house *j* as of date τ.

It is important to recognize that $R_{j\tau}$ includes the return on those securities whose recommendations are *issued* on date τ. This means that, for each recommendation, the first day market reaction is part of our calculated return.[8] We include this initial return since it is part of the total performance of each broker's recommendations. The majority of investors, however, are not able to act on recommendations until after they are issued, and so are unable to capture most, if not all, of this immediate price response. In order to measure the return that they could earn, we will modify the calculation of $R_{j\tau}$ later in this analysis by excluding each recommendation's first day return.

We choose to value-weight rather than equally-weight the recommended securities of each brokerage house for two reasons. First, an equal weighting of daily returns (and the implicit assumption of daily rebalancing) leads to portfolio returns that are severely overstated.[9] Second, a value weighting better reflects the economic significance of our results, as the

[8]This statement implicitly assumes that the date τ recommendations are made before the opening of trading. For recommendations that are announced after the market close, this means that our calculations will include the return on the trading day prior to recommendation announcement. There is no reason to believe, though, that this will occur more for the recommendations in one brokerage house portfolio than for those in another; consequently, it is not expected to bias our brokerage house performance comparisons.

[9]This problem arises due to the cycling over time of a firm's closing price between its bid and ask (commonly referred to as the bid-ask bounce). For a more detailed discussion see Barber and Lyon (1997), Canina, Michaely, Thaler, and Womack (1998), and Lyon, Barber, and Tsai (1998).

individual returns of the larger and more important firms will be more heavily represented in the aggregate return than will those of the smaller firms.

After calculating the daily returns for each brokerage house *j*, we compound them to yield a monthly return for each month *t*, denoted by R_{jt}, from which an average monthly return for year *y* is computed. We then rank-order our brokerage houses based on their average monthly returns for the year (separately for the buy and the sell recommendations). Five portfolios are formed, with portfolio 1 comprised of an equal weighting of those brokerage houses with the highest average monthly returns, on down to portfolio 5, comprised of an equal weighting of the houses with the lowest average monthly returns.

The monthly return series for year *y*+1 (where *y*+1 runs from 1987 through 1998) for each of the three brokerage house size-related portfolios and for each of our five performance-ranked portfolios is calculated next. The return on portfolio *p* during month *t* of year *y*+1, denoted by R_{pt}, is given by:

$$R_{pt} = \frac{\sum_{j=1}^{b_{pt}} R_{jt}}{b_{pt}}$$

where the summation is over the b_{pt} brokerage houses in portfolio *p* which have at least one outstanding recommendation during month *t* of year *y*+1.[10] The series of monthly returns for each of the twelve years 1987-1998 are then combined to yield a 144-month return sequence for

[10]In a few cases a brokerage house begins a month with at least one outstanding recommendation, but has none outstanding later in the month. In this case we separately compute a return for the first and last parts of the month, based on the number of brokerage houses with outstanding recommendations during each period of time. These returns are then compounded to arrive at the total monthly return for the portfolio.

each of the portfolios.

It is important to recognize that there is no survivorship bias in our calculated returns. This is because our size and performance classifications are made in year *y*, not in the year of return measurement, year *y*+1. The year *y*+1 returns are computed for as long during the year as a brokerage house continues to have outstanding recommendations. Any investment strategy involving one or more of the constructed portfolios is, therefore, fully implementable.

We employ several alternative models to estimate portfolio abnormal returns. The first is the Capital Asset Pricing Model (CAPM), for which we estimate the following monthly time-series regression for each portfolio *p*:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p(R_{mt} - R_{ft}) + \epsilon_{pt},$$

where:

R_{mt} = the month *t* return on the CRSP NYSE/ASE/NASDAQ value-weighted market index,

R_{ft} = the month *t* return on treasury bills having one month until maturity, [11]

α_p = the estimated CAPM intercept (Jensen's alpha),

β_p = the estimated market beta, and

ϵ_{pt} = the regression error term.

This test yields parameter estimates of α_p and β_p.

The second regression employs the three-factor model developed by Fama and French (1993), as follows:

[11]This return is taken from Stocks, Bonds, Bills, and Inflation, 1999 Yearbook, Ibbotson Associates, Chicago, IL.

$$R_{pt} - R_{ft} = \alpha_p + \beta_p(R_{mt} - R_{ft}) + s_pSMB_t + h_pHML_t + \epsilon_{pt},$$

where:

SMB_t = the difference between the month t returns of a value-weighted portfolio of small stocks and one of large stocks, and

HML_t = the difference between the month t returns of a value-weighted portfolio of high book-to-market stocks and one of low book-to-market stocks. [12]

The regression yields parameter estimates of α_p, β_p, s_p, and h_p.

A third regression includes a zero investment portfolio related to price momentum, as follows:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p(R_{mt} - R_{ft}) + s_pSMB_t + h_pHML_t + m_pPMOM_t + \epsilon_{pt}.$$

$PMOM_t$ is the equally-weighted month t average return of the firms with the highest 30 percent return over the eleven months through month t-2, less the equally-weighted month t average return of the firms with the lowest 30 percent return over the eleven months through month t-2.[13] In addition to estimates of α_p, β_p, s_p, and h_p, this regression yields a parameter estimate of m_p. This specification will be referred to as the four-characteristic model.

In the analysis below we use the estimates of β_p, s_p, h_p, and m_p to provide insights into

[12]The construction of these portfolios is discussed in detail in Fama and French (1993). We thank Ken French for providing us with this data.

[13]The rationale for using price momentum as a factor stems from the work of Jegadeesh and Titman (1993) who show that the strategy of buying stocks that have performed well in the recent past and selling those that have performed poorly generates significant positive returns over three to twelve month holding periods. This measure of price momentum was first used by Carhart (1997).

the nature of the firms in each of the portfolios. A value of β_p greater (less) than one indicates that the firms in portfolio *p* are, on average, riskier (less risky) than the market. A value of s_p greater (less) than zero signifies a portfolio tilted toward smaller (larger) firms. A value of h_p greater (less) than zero indicates a tilt toward stocks with a high (low) book-to-market ratio. Finally, a value of m_p greater (less) than zero signifies a portfolio with stocks that have, on average, performed well (poorly) in the recent past.

It is important to note that our use of the Fama-French and four-characteristic models does not imply a belief that the small firm, book-to-market, and price momentum effects represent risk factors. Rather, we use these models to assess whether any superior returns that we document are due to analysts' stock-picking ability or to their choosing stocks with characteristics known to produce positive returns.

III. RESULTS

i. Size Partition

We begin by presenting in Table 1 descriptive statistics on our brokerage house size partitions. Of the 144 brokerage houses in our sample, on average, each year, 19 are classified as large, 44 as medium-sized, and 80 as small. Not surprisingly, the large brokerage houses cover by far the greatest number of firms and issue many more recommendations than do the other brokers. The small brokers give less favorable ratings, on average, than do the larger houses (the mean rating issued by the small brokers is 2.40, as compared to 2.29 and 2.22 for the large and medium-sized brokers, respectively). They also give a much higher percentage of sell and strong sell recommendations (14.1 percent, as compared to less than 7 percent for the

larger houses). The low percentages of sell and strong sell recommendations overall is consistent with the conventional wisdom that brokers are reluctant to issue such recommendations for fear of harming existing or potential client relationships. That the small brokers issue a greater percentage of sell recommendations suggests that such considerations play a lesser role in their recommendation decisions than it does for the larger brokers.[14]

Table 2 presents the estimated coefficients from the four-characteristic model for each of the three size-related portfolios. Turning first to the buy recommendations (panel A), the coefficient on the market risk premium indicates that the large and medium-sized brokerage houses are recommending stocks with average market risk, while the small brokers' recommendations are somewhat riskier. The negative coefficient on SMB for the large brokers suggests a tilt toward issuing buy recommendations on larger firms (perhaps because they tend to generate more business from their clients), while the positive coefficient for the small brokers indicates that they are recommending smaller firms, on average. The negative coefficients on HML for all size portfolios suggests a tendency for the brokers to recommend firms with a low book-to-market ratio (growth stocks). This tilt is stronger for the large houses than for the small ones. The coefficient on PMOM is insignificantly different from zero for all but the large brokerage houses. The negative coefficient for those houses is somewhat surprising, as we find in auxiliary analyses that the stocks for which the large brokers issue upgrades outperform the market over the prior year by 10 percent, while the downgrades underperform the market by 10

[14]In supplementary analyses we find that sell recommendations have become scarcer over time. While 8.8 percent of all recommendations reported in the Zacks database for 1987 were sells or strong sells, only 1.5 percent of the 1998 recommendations fell into one of these categories. As well, the gap between the percentage of sell and strong sell recommendations issued by the small and large firms has narrowed from 13.8 percent in 1987 to 2.4 percent in 1998.

percent.[15]

Panel B presents the estimated coefficients for the sell recommendations. In contrast to the buy recommendations, the signs of these coefficients are homogeneous across portfolios. All brokerage houses tend to issue sell recommendations on small, value stocks with average market risk, which have performed poorly in the past. The firms receiving sell recommendations from the small brokers, though, are of significantly smaller size than the sells of the large brokers.

We next calculate, for each of our three size-related portfolios, the average market-adjusted return for the three days surrounding stock recommendation announcements, in order to determine whether the initial price reaction differs by brokerage house size. Table 3 presents these returns, both for upgrades to buy and strong buy and for downgrades to sell and strong sell.[16] As the numbers indicate, both the upgrades and downgrades of the large brokers elicit significantly greater initial market responses than do those of the small houses. This is consistent with investors following the recommendations of the large houses more closely (so that news of their recommendations is more quickly impounded in stock prices) and/or with investors perceiving that their recommendations are more informative about underlying firm value.

The returns to each portfolio's buy and sell recommendations are reported in Table 4. (Recall that these numbers include the announcement date price reaction for each

[15]Prior versions of our paper included the characteristic benchmark approach of Daniel, Grinblatt, Titman, and Wermers (1997) as an additional way to measure abnormal returns and as an alternative control for price momentum. Tests using this approach produced generally similar results to those obtained from the use of the four-characteristic model. This gives us increased confidence that are findings are not sensitive to the measurement of price momentum.

[16]We exclude reiterations of buys and sells as the market reaction is expected to be more muted for them.

recommendation.) As shown in panel A, the mean monthly raw and market-adjusted buy recommendation returns for the larger brokers exceed the corresponding returns for the smaller houses. The same is true for the abnormal returns derived from each of our three pricing models. On an annual basis, the difference in the abnormal returns generated by the large and small brokers ranges from a low of 2.3 percent (using the Fama-French three-factor model) to a high of 3.8 percent (under the CAPM), and is significant in two of the three pricing models. Furthermore, only the large brokerage house portfolio earns an average abnormal return that is significantly greater than zero.

To determine whether we can reject the hypothesis that the abnormal returns are equal across all *three* portfolios, we use the test statistic specified in Gibbons, Ross, and Shanken (1989). Under the null hypothesis of equality among intercepts generated from regressing T periods of returns to each of N portfolios on L factors, the test statistic they specify has a noncentral F distribution with N and T-N-L degrees of freedom.[17] Calculating this statistic for each of our abnormal return models, we find the null to be rejected for both the CAPM and the four-characteristic model. Overall, our results suggest a positive association between brokerage house size and buy recommendation returns.

The sell recommendation results in panel B present a very different picture. In all cases it is the recommendations of the *small* brokers that perform best. They generate annual abnormal returns that are between 4.4 and 6.3 percent more negative than those of the large brokers. This difference is economically large; however, it is significantly different from zero only for the CAPM. The GRS test statistic, as well, rejects the null that the returns are equal

[17]The exact form of this test statistic can be found in Gibbons, Ross, and Shanken (1989, p. 1146).

across all three portfolios only for the CAPM. To the extent that these return differences are significant, they suggest the possibility that the large brokers issue their sell recommendations in a less timely manner than do the small brokers (perhaps out of a greater concern for preserving their client relationships), and so provide less new information to the marketplace.

As previously discussed, in order to assess whether the returns available to *investors* differ across brokerage house size, it is necessary to exclude the initial price reaction from our return calculations. Table 5 presents these adjusted returns. As shown in panel A, the buy recommendation returns that investors could earn are similar in nature to, but somewhat weaker than, those previously reported. Excluding the first day return, the large brokers generate abnormal returns that are between 1.8 and 3.4 percent higher than those of the small houses. This difference is now significant in only one of the three pricing models. In contrast, the sell recommendation results become stronger when the first day reaction is excluded, with the average annual abnormal return for the small houses exceeding that of the large houses by between 6.2 and 8.3 percent. These economically large differences are now significant across *all* of our pricing models, as is the GRS test statistic, which rejects the null of equal returns across the three portfolios. These findings constitute the strongest of our results.

It is not surprising that the difference in the returns to the sell recommendations of the small and large brokers becomes larger once the initial price reaction is excluded, since the immediate market response is greater for the large houses (refer back to Table 3). What is surprising is that investors continue to display a stronger initial reaction to the large brokers' sell recommendations at the same time as the small brokers' recommendations generate higher returns. This suggests the possibility that investors do not fully recognize the superiority of the

small brokerage houses' sell recommendations.

Taking these results as a whole, we conclude that investors can marginally improve upon their returns by focusing on the buy recommendations of the large brokerage houses rather than those of the small ones, while they can earn substantially greater returns by following the sell recommendations of the small brokers rather than those of the large ones. It is clear from these results that the conventional wisdom which suggests that large brokers' recommendations are superior to those of smaller brokers is not fully supported by the data.

ii. Partition on Prior Performance

Table 6 presents the estimated coefficients from the four-characteristic model for each of the five brokerage house portfolios formed on the basis of prior performance. All buy recommendation portfolios (panel A) reflect a tilt toward growth stocks. Little evidence of other significant tilts is apparent. For the sell recommendation portfolios (panel B), there appears to be a tendency on the part of the top-ranked brokers to recommend the sale of small stocks with poor prior performance, while the bottom-ranked brokers show a tilt toward small, value stocks with somewhat higher than average market risk.

The market-adjusted return for the three days surrounding upgrades and downgrades is reported in Table 7. In all cases but one there is little evidence of significant differences across our five portfolios, in contrast to our size partition results. (The one exception are the upgrades to strong buy, where the top-ranked brokers elicit a significantly greater initial market response than do the bottom-ranked brokers.) Apparently, for most types of recommendation changes investors do not respond more strongly when they come from brokers who have performed well

in the past. As we will see shortly, their reactions are consistent with the (lack of) return differences across these portfolios.

Table 8 presents the returns on each portfolio's buy and sell recommendations (panels A and B, respectively). The average monthly raw and market-adjusted buy recommendation returns show a nearly uniformly decreasing pattern as we move from the top-ranked to the bottom-ranked brokers. A similar pattern is evident for the abnormal returns, with the recommendations of the top brokers outperforming those of the bottom-ranked brokers by between 3.6 and 4.3 percent annually. These differences, however, are only marginally significant. The GRS test statistic also does not reject the null of no return differences across portfolios.

For the sell recommendations, while the GRS test statistic does reject the null of equal returns across portfolios (owing to the very small negative returns on portfolios 2 and 3), there are no apparent patterns as we move from the top-ranked to the bottom-ranked brokers. The worst brokers, in fact, earn a return on their current sell recommendations that is *greater* in magnitude than that of the best brokers. This likely reflects the fact that the bottom-ranked brokers are also smaller in size, on average, than the brokers in the other portfolios – the median number of analysts in the bottom-ranked brokerage houses averages less than 25, compared to medians of between 31 and 40 for the remaining brokerage house portfolios. (Recall that the smaller brokers' sell recommendations beat those of the larger brokers.) While the difference in returns between the top- and bottom-ranked brokers, which varies between 6.5 and 10.2 percent on an annual basis, is economically large, it is not significant in any of our pricing models. Despite the numerous rankings of brokerage houses based on past performance, which appear in

the popular press, and the ads from brokers touting their prior returns, there is little evidence that the current returns to the recommendations of the top-ranked brokers are reliably greater than those of the bottom-ranked ones.

Finally, Table 9 presents the returns investors can earn by investing in each of these five brokerage house portfolios. (As before, these returns exclude the announcement day price reactions.)[18] For the buy recommendations (panel A) there is again a nearly uniform decline in returns as we move from the top-ranked to the bottom-ranked brokers. The abnormal return difference between portfolios 1 and 5, though, shrinks in magnitude, to between 2.6 and 3.1 percent annually, numbers that are not even marginally significant.

For the sell recommendations the abnormal returns are, once more, stronger for the bottom-ranked houses than for the top-ranked ones, although the difference diminishes to between 3.0 and 7.3 percent. This difference is insignificant across all return models, as is the GRS test statistic. Overall we find no reliable evidence that investors can profit from a strategy of following the recommendations of the brokers that have performed best in the past, and downplaying, or ignoring, those of others.

VI. SUMMARY AND CONCLUSIONS

Conventional wisdom suggests that the stock recommendations of large brokerage houses should outperform those of small ones, given the greater resources available to the analysts at the large houses and the presumably better access they have to corporate management. Consistent with this notion, we show that the buy recommendations of the large

[18]In generating these returns we rank brokerage houses on the basis of prior-year returns *exclusive* of the initial price reaction.

brokerage houses do, indeed, outperform those of the small brokers. Surprisingly, though, it is the small brokers who have the superior sell recommendations. The latter result raises the possibility that the sell recommendations of the large brokers are less timely (owing, perhaps, to an increased concern for preserving existing or potential client relationships), and, thus, provide less information to investors. When we exclude the initial price reaction to recommendation announcements (in order to measure the return available to investors), the same pattern is evident, suggesting that buy recommendations have the most value to investors when they come from large brokers, while sells are most valuable when issued by small brokers.

In contrast to these significant differences, when we rank brokerage houses on the basis of prior-year performance, we find that the average abnormal returns to the current buy and sell recommendations of the top brokerage houses are not reliably different from those of the bottom houses. In spite of the performance rankings of brokers published in the popular press and the brokerage ads prominently displaying past performance, it appears that investors are not likely to improve their investment results by focusing on the recommendations of the brokerage houses with the strongest prior-year returns.

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Table 1

Descriptive Statistics on Brokerage House Portfolios Formed on the Basis of the Annual Number of Analysts Issuing Recommendations, 1986-1998

This table provides descriptive statistics on portfolios formed on the basis of the annual number of analysts issuing recommendations. Large brokerage houses (BHs) have more than 25 analysts issuing recommendations in the current year, medium-sized between 10 and 25, and small less than 10. Column (2) reports the average annual number of BHs in each size category. Column (3) gives the average number of analysts issuing recommendations per BH and year for each partition. Columns (4) and (5) provide the average number of firms for which recommendations were issued and the average number of recommendations issued per BH and year, respectively, for each category. Column (6) presents the average rating for all recommendations, calculated over all BHs and years in each size partition. Columns (7)-(11) report the percentage of each type of recommendation, for each size partition, over all the sample years. The last row reports these statistics for all of our sample BHs, regardless of size.

Brokerage House Portfolio	Mean Annual No. of Brokerage House	Mean Annual No. of Analysts	Mean Annual No. of Covered Firms	Mean Annual No. of Ratings	Average Rating	Percentage of Recommendations Issued As:				
						Strong Buy	Buy	Hold	Sell	Strong Sell
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1 (Large BHs)	19	50	547	900	2.29	26.7	25.6	41.3	4.6	1.8
2 (Medium-sized BHs)	44	15	164	276	2.22	30.6	25.5	37.5	3.7	2.6
3 (Small BHs)	80	4	47	82	2.40	27.0	25.2	33.8	9.1	5.0
All BHs	144	14	150	251	2.29	28.1	25.5	38.6	5.1	2.6

Table 2

Descriptive Characteristics for Portfolios Formed on the Basis of Prior-Year Brokerage House Size, for Buy (Panel A) and Sell (Panel B) Recommendations: 1987-1998

This table presents descriptive characteristics for three portfolios of brokerage houses (BHs), formed according to prior-year BH size, and for a portfolio long (short) in the large (small) BHs' recommendations. Large BHs have more than 25 analysts issuing recommendations in the prior year, medium-sized between 10 and 25, and small less than 10. The coefficient estimates are those from a time series regression of the portfolio excess returns (R_p-R_f) on the market excess return (R_m-R_f), a zero-investment size portfolio (SMB), a zero-investment book-to-market portfolio (HML) and a zero-investment price momentum portfolio (PMOM). t-statistics appear below the coefficient estimates. Each t-statistic pertains to the null hypothesis that the associated coefficient is zero, except for the t-statistics on the coefficient estimate of (R_m-R_f) for which the null hypothesis is that the coefficient is one. The t-statistics for coefficients that are significant at a level of 5% or better are shown in bold.

	Coefficient Estimates for the Four-Characteristic Model			
Portfolio	**R_m - R_f**	**SMB**	**HML**	**PMOM**
(1)	(2)	(3)	(4)	(5)
Panel A: Buy Recommendations:				
1 (Large BHs)	0.983	-0.169	-0.239	-0.054
	1.208	**-7.806**	**-9.343**	**-3.266**
2 (Medium-sized BHs)	0.992	0.025	-0.187	-0.004
	0.424	**0.901**	**-5.727**	-0.177
3 (Small BHs)	1.048	0.285	-0.125	-0.014
	2.263	**8.517**	**-3.185**	-0.560
Large - Small	-0.065	-0.454	-0.113	-0.040
	-2.643	**-11.788**	**-2.495**	-1.352
Panel B: Sell Recommendations:				
1 (Large BHs)	1.032	0.230	0.313	-0.137
	0.775	**3.655**	**4.219**	**-2.852**
2 (Medium-sized BHs)	1.022	0.380	0.121	-0.223
	0.520	**5.856**	1.578	**-4.514**
3 (Small BHs)	1.102	0.527	0.240	-0.168
	1.978	**6.567**	**2.532**	**-2.742**
Large - Small	-0.070	-0.297	0.073	0.031
	-1.199	**-3.284**	0.687	0.450

Table 3

Three-Day Market-Adjusted Percentage Returns around Announcement of Recommendation Changes for Portfolios Based on Brokerage House Size: 1987-1998

For each brokerage house (BH) size partition, and for a portfolio long (short) in the large (small) BHs' recommendations, market-adjusted percentage returns are calculated as the three-day (day -1 to +1) compound percentage return on upgrades to buy/strong buy and downgrades to sell/strong sell, less the three-day compound percentage return on a value-weighted NYSE/ASE/Nasdaq index. Day 0 is the recommendation announcement date. Large BHs have more than 25 analysts issuing recommendations during the prior year, medium-sized between 10 and 25, and small less than 10. Each t-statistic pertains to the alternative hypothesis that the associated return is different from zero. The t-statistics for returns that are significant at a level of 5% or better are shown in bold.

Portfolio (1)	Upgrade to Strong Buy (2)	Upgrade to Buy (3)	Downgrade to Sell (4)	Downgrade to Strong Sell (5)
1 (Large BHs)				
Market-adjusted Return	1.67	0.95	-0.81	-1.21
t-Statistic	45.28	23.67	-3.81	-6.28
2 (Medium-sized BHs)				
Market-adjusted Return	1.14	0.49	-0.74	-0.98
t-Statistic	31.47	10.22	-5.06	-5.12
3 (Small BHs)				
Market-adjusted Return	0.83	0.31	-0.22	-0.64
t-Statistic	17.67	6.06	-2.88	-5.76
Large - Small				
Market-adjusted Return	0.84	0.64	-0.59	-0.57
t-Statistic	14.03	9.83	-2.62	-2.56

Table 4

Percentage Monthly Returns (Including Announcement Day) Earned by Portfolios Formed on the Basis of Prior-Year Brokerage House Size, for Buy (Panel A) and Sell (Panel B) Recommendations : 1987-1998

This table presents current-year percentage monthly returns (including the recommendation announcement day return) earned by portfolios formed according to prior-year brokerage house (BH) size, and for a portfolio long (short) in the large (small) BHs' recommendations. Large BHs have more than 25 analysts issuing recommendations in the prior year, medium-sized between 10 and 25, and small less than 10. Raw returns are the mean percentage monthly returns earned by the portfolios. Market-adjusted returns are the mean raw returns less the return on a value-weighted NYSE/ASE/NASDAQ index. The CAPM intercept is the estimated intercept from a time-series regression of the portfolio return (R_p-R_f) on the market excess return (R_m-R_f). The intercept for the Fama-French three-factor model is the estimated intercept from a time-series regression of the portfolio excess return (R_p-R_f) on the market excess return (R_m-R_f), a zero-investment size portfolio (SMB), and a zero-investment book-to-market portfolio (HML). The four-characteristic intercept is estimated by adding a zero-investment momentum portfolio (PMOM) as an independent variable. Each t-statistic pertains to the alternative hypothesis that the associated return is greater than zero. The t-statistics for returns that are significant at a level of 5% or better are shown in bold. The p-value for the GRS F-statistic is the p-value for the Gibbons, Ross, and Shanken (1989) statistic which tests the null hypothesis of equality among the five portfolios' intercepts.

Portfolio	Mean Raw Return	Mean Market-Adjusted Return	Intercept from CAPM	Intercept from Fama-French	Intercept from Four-Characteristic
(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Buy Recommendations:					
1 (Large BHs)	1.661	0.296	0.214	0.227	0.269
		3.901	**2.996**	**4.089**	**4.881**
2 (Medium-sized BHs)	1.545	0.181	0.080	0.146	0.149
		2.338	1.057	**2.132**	**2.106**
3 (Small BHs)	1.427	0.062	-0.106	0.038	0.049
		0.549	-0.977	0.464	0.582
p-value for GRS F-statistic	.	0.198	0.061	0.146	0.069
Large - Small	0.234	0.234	0.320	0.188	0.220
		1.746	**2.384**	1.973	**2.243**
Panel B: Sell Recommendations:					
1 (Large BHs)	0.739	-0.626	-0.640	-0.640	-0.532
		-3.641	**-3.581**	**-4.014**	-3.322
2 (Medium-sized BHs)	0.555	-0.810	-0.885	-0.766	-0.589
		-4.192	**-4.396**	**-4.475**	**-3.571**
3 (Small BHs)	0.336	-1.029	-1.166	-1.032	-0.899
		-4.389	**-4.793**	**-5.081**	**-4.401**
p-value for GRS F-statistic	.	0.198	0.066	0.214	0.284
Large - Small	0.403	0.403	0.526	0.392	0.367
		1.764	**2.287**	1.755	1.594

Table 5

Percentage Monthly Returns (Excluding Announcement Day) Earned by Buy (Panel A) and Sell (Panel B) Recommendation Portfolios Formed on the Basis of Prior-Year Brokerage House Size: 1987-1998

This table presents current-year percentage monthly returns (excluding the recommendation announcement day return) earned by portfolios formed according to prior-year brokerage house (BH) size and for a portfolio long (short) in the large (small) BHs' recommendations. Large BHs have more than 25 analysts issuing recommendations in the prior year, medium-sized between 10 and 25, and small less than 10. Raw returns are the mean percentage monthly returns earned by the portfolios. Market-adjusted returns are the mean raw returns less the return on a value-weighted NYSE/ASE/NASDAQ index. The CAPM intercept is the estimated intercept from a time-series regression of the portfolio return (R_p-R_f) on the market excess return (R_m-R_f). The intercept for the Fama-French three-factor model is the estimated intercept from a time-series regression of the portfolio excess return (R_p-R_f) on the market excess return (R_m-R_f), a zero-investment size portfolio (SMB), and a zero-investment book-to-market portfolio (HML). The four-characteristic intercept is estimated by adding a zero-investment momentum portfolio (PMOM) as an independent variable. Each t-statistic pertains to the alternative hypothesis that the associated return is greater than zero. The t-statistics for returns that are significant at a level of 5% or better are shown in bold. The p-value for the GRS F-statistic is the p-value for the Gibbons, Ross, and Shanken (1989) statistic which tests the null hypothesis of equality among the five portfolios' intercepts.

Portfolio	Mean Raw Return	Mean Market-Adjusted Return	Intercept from CAPM	Intercept from Fama-French	Intercept from Four-Characteristic
(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Buy Recommendations:					
1 (Large BHs)	1.616	0.251	0.167	0.181	0.221
		3.277	**2.322**	**3.257**	**3.978**
2 (Medium-sized BHs)	1.509	0.144	0.038	0.107	0.107
		1.815	0.497	1.535	1.494
3 (Small BHs)	1.416	0.051	-0.120	0.029	0.035
		0.446	-1.099	0.356	0.409
p-value for GRS F-statistic	.	0.282	0.098	0.265	0.121
Large - Small	0.200	0.200	0.287	0.152	0.187
		1.502	**2.158**	1.617	1.938
Panel B: Sell Recommendations:					
1 (Large BHs)	0.985	-0.380	-0.378	-0.386	-0.294
		-2.363	**-2.270**	**-2.582**	-1.947
2 (Medium-sized BHs)	0.769	-0.596	-0.698	-0.594	-0.393
		-3.271	**-3.689**	**-3.598**	**-2.540**
3 (Small BHs)	0.436	-0.929	-1.072	-0.930	-0.809
		-4.059	**-4.517**	**-4.709**	**-4.059**
p-value for GRS F-statistic	.	0.059	0.010	0.047	0.075
Large - Small	0.549	0.549	0.694	0.544	0.515
		2.407	**3.045**	**2.495**	**2.290**

Table 6

Descriptive Characteristics for Portfolios Formed on the Basis of Prior-Year Brokerage House Buy (Panel A) and Sell (Panel B) Recommendation Performance Ranking: 1987-1998

This table presents descriptive characteristics for five portfolios of brokerage houses (BHs), formed according to the rankings of the BHs' prior-year buy (Panel A) and sell (Panel B) recommendation returns, as well as for a long (short) position in the recommendations of portfolio 1 (5). In Panel A, portfolio 1 (5) is comprised of the brokerage houses with the best (worst) prior-year return to their buy recommendations. In Panel B, portfolio 1 (5) is comprised of the brokerage houses with the worst/most positive (best/most negative) prior-year return to their sell recommendations. For each portfolio, the mean return in the year of ranking is shown. The coefficient estimates are those from a time series regression of the portfolio excess returns (R_p-R_f) on the market excess return (R_m-R_f), a zero-investment size portfolio (SMB), a zero-investment book-to-market portfolio (HML) and a zero-investment price momentum portfolio (PMOM). t-statistics appear below the coefficient estimates. Each t-statistic pertains to the null hypothesis that the associated coefficient is zero, except for the t-statistics on the coefficient estimates of (R_m-R_f), for which the null hypothesis is that the coefficient is one. The t-statistics for coefficients that are significant at a level of 5% or better are shown in bold.

Portfolio	Mean Return in Year of Ranking (%)	Coefficient Estimates for the Four-Characteristic Model			
		$R_m - R_f$	SMB	HML	PMOM
(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Buy Recommendations					
1 (Best BHs)	2.55	0.988	0.052	-0.310	-0.042
		0.316	0.976	**-4.953**	-1.044
2	1.82	0.971	-0.109	-0.197	-0.004
		1.729	**-4.182**	**-6.398**	-0.204
3	1.57	1.011	-0.135	-0.171	-0.017
		0.707	**-5.815**	**-6.257**	-0.955
4	1.28	0.968	-0.032	-0.256	-0.019
		1.378	-0.887	**-5.984**	-0.694
5 (Worst BHs)	0.63	0.997	0.037	-0.146	-0.032
		0.100	0.756	**-2.542**	-0.856
Best - Worst	NA	-0.008	0.015	-0.164	-0.011
		-0.181	0.208	-1.930	-0.191
Panel B: Sell Recommendations					
1 (Worst BHs)	2.51	1.114	0.167	0.421	-0.089
		1.612	1.514	**3.238**	-1.061
2	1.49	0.905	0.171	0.414	-0.021
		2.133	**2.445**	**5.026**	-0.400
3	0.89	1.013	0.018	0.394	-0.128
		0.283	0.258	**4.892**	**-2.443**
4	0.47	1.154	0.222	-0.178	-0.047
		1.667	1.539	-1.048	-0.430
5 (Best BHs)	-0.30	1.022	0.351	0.212	-0.291
		0.632	**2.116**	1.085	**-2.299**
Worst - Best	NA	0.092	-0.184	0.209	0.201
		0.745	-0.948	0.917	1.364

Table 7

Three-Day Market-Adjusted Percentage Returns around Announcement of Recommendation Changes for Portfolios Formed on the Basis of Prior-Year Brokerage House Performance Ranking: 1987-1998

For each brokerage house (BH) performance partition, and for a portfolio long (short) in the Best (Worst) BHs' recommendations, market-adjusted percentage returns are calculated as the three-day (day -1 to +1) compound percentage return for recommendation upgrades to buy/strong buy and downgrades to sell/strong sell, less the three-day compound percentage return on a value-weighted NYSE/ASE/Nasdaq index. Day 0 is the recommendation announcement date. The Best (Worst) BHs for the "Strong Buy" and "Buy" columns are those with the highest (lowest) prior-year returns on a portfolio of their buy/strong buy recommendations. The Best (Worst) brokerage houses for the "Sell" and "Strong Sell" columns are those with the lowest/most negative (highest/most positive) prior-year returns on a portfolio of their sell/strong sell recommendations. Each t-statistic pertains to the alternative hypothesis that the associated return is different from zero. The t-statistics for returns that are significant at a level of 5% or better are shown in bold.

Portfolio (1)	Upgrade to Strong Buy (2)	Upgrade to Buy (3)	Downgrade to Sell (4)	Downgrade to Strong Sell (5)
1 (Best BHs)				
Return	1.480	0.783	-1.030	-0.883
t-Statistic	19.78	8.90	-3.83	-2.45
2				
Return	1.496	0.906	-0.855	-0.415
t-Statistic	24.39	11.75	-5.45	-1.23
3				
Return	1.582	0.859	-1.370	-0.890
t-Statistic	31.43	17.14	-5.60	-2.34
4				
Return	1.434	0.565	-0.485	-0.880
t-Statistic	26.29	8.29	-3.30	-3.21
5 (Worst BHs)				
Return	1.204	0.885	0.124	-1.099
t-Statistic	17.47	8.76	0.130	-3.64
Best - Worst				
Return	0.276	-0.102	-1.154	0.216
t-Statistic	2.71	-0.76	-1.19	-0.46

Table 8

Percentage Monthly Returns (Including Announcement Day) Earned by Portfolios Formed on the Basis of Prior-Year Brokerage House Buy (Panel A) and Sell (Panel B) Recommendation Performance Ranking: 1987-1998

This table presents percentage monthly returns (including the announcement day return) for the current year earned by portfolios formed according to the rankings of the brokerage houses' (BHs') prior-year buy (Panel A) and sell (Panel B) recommendation returns, as well as the percentage monthly return on a long (short) position in portfolio 1 (5). Raw returns are the mean percentage monthly returns earned by the portfolios. Market-adjusted returns are the mean raw returns less the return on a value-weighted NYSE/ASE/NASDAQ index. The CAPM intercept is the estimated intercept from a time-series regression of the portfolio return (R_p-R_f) on the market excess return (R_m-R_f). The intercept for the Fama-French three-factor model is the estimated intercept from a time-series regression of the portfolio excess return (R_p-R_f) on the market excess return (R_m-R_f), a zero-investment size portfolio (SMB), and a zero-investment book-to-market portfolio (HML). The four-characteristic intercept is estimated by adding a zero-investment momentum portfolio (PMOM) as an independent variable. Each t-statistic pertains to the alternative hypothesis that the associated return is greater than zero. The t-statistics for returns that are significant at a level of 5% or better are shown in bold. The p-value for the GRS F-statistic is the p-value for the Gibbons, Ross, and Shanken (1989) statistic which tests the null hypothesis of equality among the five portfolios' intercepts.

Portfolio	Mean Raw Return	Mean Market-Adjusted Return	Intercept from		
			CAPM	Fama-French	Four-Characteristic
(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Buy Recommendations					
1 (Best BHs)	1.690	0.325	0.190	0.306	0.339
		2.291	1.349	**2.325**	**2.507**
2	1.642	0.277	0.210	0.229	0.232
		3.645	**2.824**	**3.560**	**3.495**
3	1.657	0.292	0.197	0.200	0.213
		4.074	**2.915**	**3.482**	**3.608**
4	1.584	0.219	0.130	0.196	0.211
		2.208	1.319	**2.188**	**2.286**
5 (Worst BHs)	1.353	-0.012	-0.105	-0.046	-0.020
		-0.099	-0.869	-0.378	-0.164
p-value for GRS F-statistic	.	0.211	0.241	0.300	0.354
Best - Worst	0.337	0.337	0.296	0.351	0.360
	1.954	1.954	1.676	1.975	1.957
Panel B: Sell Recommendations					
1 (Worst BHs)	0.351	-1.014	-1.071	-1.130	-1.060
		-3.719	**-3.808**	**-4.140**	**-3.773**
2	1.162	-0.203	-0.060	-0.119	-0.103
		-1.041	-0.319	-0.694	-0.577
3	1.242	-0.123	-0.070	-0.174	-0.073
		-0.664	-0.375	-1.009	-0.419
4	0.925	-0.440	-0.718	-0.579	-0.542
		-1.244	**-2.032**	-1.631	-1.478
5 (Best BHs)	0.882	-0.483	-0.527	-0.441	-0.212
		-1.175	-1.243	-1.061	-0.502
p-value for GRS F-statistic	.	0.079	0.013	0.025	0.042
Worst - Best	-0.531	-0.531	-0.545	-0.689	-0.848
	-1.151	-1.151	-1.148	-1.435	-1.722

Table 9

Percentage Monthly Returns (Excluding Announcement Day) Earned by Portfolios Formed on the Basis of Prior-Year Brokerage House Buy (Panel A) and Sell (Panel B) Recommendation Performance Ranking: 1987-1998

This table presents percentage monthly returns (excluding the recommendation announcement day return) for the current year earned by portfolios formed according to a ranking of the brokerage houses' (BHs') prior-year buy (Panel A) and sell (Panel B) recommendation returns, as well as the percentage monthly return on a long (short) position in portfolio 1 (5). Raw returns are the mean percentage monthly returns earned by the portfolios. Market-adjusted returns are the mean raw returns less the return on a value-weighted NYSE/ASE/NASDAQ index. The CAPM intercept is the estimated intercept from a time-series regression of the portfolio return (R_p-R_f) on the market excess return (R_m-R_f). The intercept for the Fama-French three-factor model is the estimated intercept from a time-series regression of the portfolio excess return (R_p-R_f) on the market excess return (R_m-R_f), a zero-investment size portfolio (SMB), and a zero-investment book-to-market portfolio (HML). The four-characteristic intercept is estimated by adding a zero-investment momentum portfolio (PMOM) as an independent variable. Each t-statistic pertains to the alternative hypothesis that the associated return is greater than zero. The t-statistics for returns that are significant at a level of 5% or better are shown in bold. The p-value for the GRS F-statistic is the p-value for the Gibbons, Ross, and Shanken (1989) statistic which tests the null hypothesis of equality among the five portfolios' intercepts.

Portfolio	Mean Raw Return	Mean Market-Adjusted Return	Intercept from		
			CAPM	Fama-French	Four-Characteristic
(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Buy Recommendations					
1 (Best BHs)	1.653	0.288	0.156	0.261	0.294
		2.109	1.147	**2.048**	**2.241**
2	1.619	0.254	0.171	0.199	0.207
		3.082	**2.123**	**2.844**	**2.856**
3	1.570	0.205	0.126	0.151	0.173
		2.771	1.759	**2.476**	**2.774**
4	1.495	0.130	0.029	0.080	0.075
		1.416	0.329	0.972	0.878
5 (Worst BHs)	1.396	0.031	-0.061	0.005	0.030
		0.281	-0.537	0.041	0.264
p-value for GRS F-statistic	.	0.491	0.503	0.586	0.561
Best - Worst	0.256	0.256	0.216	0.257	0.264
	1.612	1.612	1.328	1.552	1.546
Panel B: Sell Recommendations					
1 (Worst BHs)	0.667	-0.698	-0.763	-0.841	-0.821
		-2.657	**-2.808**	**-3.263**	**-3.088**
2	1.207	-0.158	-0.030	-0.099	-0.066
		-0.810	-0.156	-0.567	-0.366
3	1.262	-0.103	-0.078	-0.145	-0.075
		-0.590	-0.439	-0.838	-0.424
4	1.155	-0.210	-0.498	-0.350	-0.313
		-0.523	-1.237	-0.862	-0.747
5 (Best BHs)	0.914	-0.451	-0.509	-0.420	-0.215
		-1.124	-1.231	-1.038	-0.522
p-value for GRS F-statistic	.	0.361	0.102	0.139	0.140
Worst - Best	-0.247	-0.247	-0.254	-0.421	-0.606
	-0.557	-0.557	-0.556	-0.915	-1.290