Performance of Stocks Recommended by Brokerages

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In 1940 Fred Schwed chronicled the investment business in a highly entertaining book, entitled *Where are the Customers' Yachts?* As you might guess from the title, Schwed's experience on Wall Street led him to question the value of brokers' advice. To quote him: "Wall Street is a street with a river at one end and a graveyard at the other. This is striking, but incomplete. It omits the kindergarten in the middle" (p. 1).

Since Schwed wrote over 60 years ago, the stock market has produced double-digit annual returns, and investment banking and brokerage businesses have thrived. And over that same time, many others have questioned the ability of Wall Street analysts to pick stock market winners. Of particular note are Malkiel's *A Random Walk Down Wall Street* [1973] and Fama's writings [1970, 1991] on efficient capital markets. Nonetheless, we open a financial publication, or go to an investing website, or turn on CNBC today, and some Wall Street analyst is giving advice on what stocks to buy.

The primary premise of Schwed's book remains a major question mark—is there value in stock recommendations? This study evaluates the performance of the stock recommendations of major brokerage firms over the ten-year period 1993–2002. The examination is unique in that it 1) uses a very public source to track the performance of the stock recommendations of brokerage firms, 2) studies the raw and risk-adjusted performance of brokerage firm stock recommendations over a ten-year time period, and 3) evaluates the stock recommendation performance of individual brokerage firms to assess which firms have provided the best advice.

WHAT'S THE EVIDENCE?

Today Wall Street analysts and their stock recommendations are under fire as never before, in the wake of the many investigations following the Enron debacle and the bubble in technology stocks. A primary issue relates to the incentive conflicts of security analysts in stock recommendations and a firm's investment banking activities. While analysts may strive to achieve "All-American" status by making good stock picks, they are pressured at the same time to be positive on the stock of companies that employ (or may employ) an analyst's firm for capital raising or merger and acquisition advising services.

And Wall Street is now paying dearly for not addressing the conflicts between stock recommendations and investment banking. It is fighting to win back the confidence of the investing public. Under the proposed Global Regulatory Settlement, Wall Street firms will pay a tab of $1.5 billion. The settlement also mandates an end to incentive conflicts by barring analysts from involvement in investment banking activities.

Notwithstanding the negative press on Wall Street analysts, some academic studies suggest there is value in their stock recom-

mendations. Several researchers have examined the prices of stocks around changes in investment ratings (upgrades and downgrades) by analysts at major brokerage firms. They find that trading volume doubles, and prices advance in the 3% range (on a risk-adjusted basis), on the day that analysts upgrade a stock from, for example, hold to buy. On downgrades, especially from hold to sell, the volumes and price decline are greater. In both cases, prices continue to increase for upgrades and decline for downgrades for a month or so.[1]

Kim, Lin, and Slovin [1997] examine the intraday market reaction to announcement of the initiation of analyst coverage with a buy recommendation. They find an instant and significantly positive return in the 3.5% range on the opening trade of the market. As most of the stock price reaction to an analyst buy recommendation occurs on the opening trade, they conclude that the value goes to the clients of the analysts' brokerage firm.

Barber et al. [2001] study the relationship between consensus rating levels and stock performance. Over the 1986-1996 period, they find that stocks with a more favorable consensus (average) recommendations by analysts earned a compounded annual return of 18.8%, while stocks with the least favorable consensus ratings earned only a 5.8% annual return. On a risk-adjusted basis, the most highly recommended stocks provided an average annual return of 3.97%, while the least favorable stock yielded an average annual return of −9.06%. Over the same time period, the market earned a 14.5% return.

Michaely and Womack [1999] investigage analyst conflicts of interest by comparing the buy recommendations of analysts from firms that serve as underwriters and from unaffiliated brokers. At the time of recommendation and for the subsequent six months, the buy recommendations of unaffiliated analysts perform more than twice as well as the buy recommendations of underwriter analysts. They conclude that this result supports the notion that underwriter analysts are biased in their stock recommendations.

Overall, despite criticism leveled toward analysts and their stock picks, many studies support the idea that, at least in the short term, there is value in brokerage firm stock recommendations.[2]

DATA

Quarterly since the late 1980s, Zacks Investment Research has produced a study of the stock recommendations of major U.S. brokerage firms for the *Wall Street Journal*. Over the last decade, 26 brokerage firms have been involved in the survey at one time or another. They are listed in Exhibit 1. The many mergers in the industry have whittled the number down, so that as of the fourth quarter of 2002 there were only 15 brokerage firms in the survey.

The individual firms are arbitrarily classified as either top-tier, mid-tier, or regional. This classification scheme is used to assess whether recommended stock performance differs by type of brokerage.

The objective of the quarterly analysis is to assess the stock-picking abilities of major brokerage firms. The approach is summarized by Craig [2003, p. C1]:

> The *Journal* survey is intended to give investors an idea of how their portfolio would look if they let Wall Street professionals do all the picking. Calculations done for the *Journal* by Zacks Investment Research in Chicago take into account capital gains or losses, dividends and theoretical commissions of 1% on each trade.
>
> The recommendations are culled from the companies these firms cover and, in general, represent their top stock picks. Some, such as Bear Stearns, developed stock lists specifically for the *Journal* survey. Others, like Lehman Brothers Holdings Inc., use existing lists given to clients.

Zacks calculates the performance of the recommended stocks on an equal-weighted basis. Monthly returns are computed using the price changes and dividends of the stocks, and these returns are compounded to produce the quarterly return performance figures. Zacks has been using the same methodology since it began to track the recommended stocks of brokerage firms for the *Wall Street Journal* some 13 years ago.

The data provided in the quarterly *WSJ* survey provide a unique opportunity to evaluate brokerage firm recommendations. Brokerage firms' stock-picking capabilities are very public here. Investment firms that have led in the survey at different times have used this to draw attention to their expertise. The history of the survey and the consistent methodology allows for a good long-term evaluation of the performance of stock recommendations of individual brokerage firms.

EXHIBIT 1

Brokerage Firm Recommended Stocks—(1993-2002)

Firm	Type*
A.G. Edwards	R
Bank of America	MT
Bear Stearns	MT
Credit Suisse First Boston	TT
Edward Jones	R
Everen Securities	R
First Union Securities	R
Wheat Securities	R
Goldman Sachs	TT
J. P. Morgan	MT
Kemper	R
Kidder Peabody	MT
Lehman Brothers	TT
Shearson Lehman	TT
Merrill Lynch	TT
Morgan Stanley	TT
Dean Witter	MT
Prudential Securities	MT
Raymond James	R
RBC Dain Rauscher	R
Salomon Brothers	TT
Salomon Smith Barney	TT
U.S. Bancorp Piper Jaffray	R
Piper Jaffray	R
UBS Warburg	MT
PaineWebber	MT

*TT– Top Tier. MT–Mid-Tier. R—Regional.

OVERALL RESULTS

Quarterly and cumulative performance numbers for recommended stocks and the S&P 500 are provided in Exhibit 2. The number of firms reporting to Zacks varies from 15 to 17 per quarter over the ten years. The average return in the second column represents the mean return on the recommended stocks for all the brokerage firms covered in the Zacks report for the quarter. The standard deviation measures the variability around this mean.

The arithmetic mean quarterly return for the recommended stocks over the entire period is 2.63%. The average quarterly standard deviation around this mean is 4.33%. The average quarterly S&P 500 return is 2.61%.

Exhibit 3 summarizes the quarterly and cumulative performance figures provided in Exhibit 2 and adds summary statistics and risk-adjusted results. The mean quarterly geometric returns are 2.17% for the recommended stocks and 2.26%, for the S&P 500. The variability of returns, as measured by the standard deviation of the quarterly returns, is 9.7% for the recommended stocks and 8.5% for the S&P 500.

The cumulative wealth index (CWI) measures the outcome of investing $1,000 in the recommended stocks and in the S&P 500 as of January 1, 1993, presuming the reinvestment of dividends. The CWIs for the recommended stocks and the S&P 500 over the ten years are $2,358.85 and $2,443.46.

Overall, these quarterly and cumulative figures indicate that the recommended stocks of brokerage firms produced returns slightly below returns of the S&P 500, and were a little more volatile.

Also provided in Exhibit 3 are the beta, alpha, and R^2. These are the summary statistics from regressing the average returns of the brokerage firm-recommended stocks on the S&P 500 return. The market model, which is the traditional method to risk-adjust performance, is specified as:

$$r_{pt} = a + b(r_{mt}) + e_{pt}$$

where:

- r_{pt} is the mean quarterly return on the portfolio of the recommended stocks of the brokerage firms;
- a is alpha, the constant in the regression, which measures the risk-adjusted or excess returns generated by the recommendations;
- b is the regression coefficient, which measures the systematic risk or the volatility of the return on the recommended stocks relative to the market;
- r_{mt} is the return on the market as measured by the S&P 500; and
- e_{pt} is the error term.

The high R^2 of 0.92 shows there is a very high correlation between the average recommended stock returns and the S&P 500 returns. The beta of 1.10 indicates that the recommended stocks have a systematic risk level that is slightly higher than the S&P 500. And the alpha of –0.24 suggests that risk-adjusted performance of the recommended stocks is 24 basis points per quarter below that of the overall market as measured by the S&P 500.

Exhibit 3 also graphs the quarterly returns for the recommended stocks and the S&P 500 over the ten years.

EXHIBIT 2

Quarterly and Cumulative Performance: Brokerage Firm Recommended Stocks and S&P 500 (1993-2002)

Quarter	No of Brokerage Firms	Average Return Recommended Stocks	Standard Deviation of Average Returns	S&P 500 Return	Cumulative Wealth Index (Recommended Stocks)	Cumulative Wealth Index (S&P 500)
					$1,000	$1,000
Q11993	15	5.43	3.64	4.4	$1,054	$1,044
Q21993	15	0.61	2.31	0.5	$1,061	$1,049
Q31993	15	8.33	4.91	2.6	$1,149	$1,076
Q41993	16	4.90	2.60	2.3	$1,205	$1,101
Q11994	16	(2.31)	3.00	(3.8)	$1,177	$1,059
Q21994	16	(1.88)	2.90	0.4	$1,155	$1,064
Q31994	16	5.88	2.33	4.9	$1,223	$1,116
Q41994	15	(2.20)	2.96	(0.0)	$1,196	$1,115
Q11995	15	7.47	3.25	9.7	$1,286	$1,224
Q21995	15	9.93	4.54	9.5	$1,413	$1,341
Q31995	15	9.00	2.75	7.9	$1,541	$1,447
Q41995	16	4.50	2.45	6.0	$1,610	$1,534
Q11996	16	6.69	2.89	5.4	$1,718	$1,617
Q21996	16	5.54	3.62	4.5	$1,813	$1,689
Q31996	16	5.23	2.04	3.1	$1,908	$1,742
Q41996	17	5.82	2.70	8.3	$2,019	$1,887
Q11997	17	(0.76)	2.75	2.7	$2,003	$1,937
Q21997	16	16.49	2.30	17.5	$2,333	$2,276
Q31997	16	13.64	4.80	7.5	$2,652	$2,446
Q41997	15	(0.40)	4.17	2.9	$2,641	$2,516
Q11998	15	15.24	3.29	13.9	$3,044	$2,867
Q21998	15	(0.53)	2.89	3.3	$3,027	$2,962
Q31998	15	(16.95)	5.82	(9.9)	$2,514	$2,667
Q41998	15	25.83	8.71	21.3	$3,163	$3,235
Q11999	15	4.86	5.43	5.0	$3,317	$3,397
Q21999	15	8.16	4.63	7.0	$3,588	$3,636
Q31999	15	(6.18)	4.18	(6.2)	$3,366	$3,409
Q41999	15	16.41	8.42	14.9	$3,918	$3,916
Q12000	15	9.17	6.53	2.3	$4,278	$4,006
Q22000	15	(4.47)	5.32	(2.7)	$4,087	$3,900
Q32000	15	(0.29)	4.79	(1.0)	$4,075	$3,862
Q42000	15	(9.47)	11.04	(7.8)	$3,689	$3,560
Q12001	15	(13.07)	6.34	(11.9)	$3,207	$3,138
Q22001	15	1.97	5.27	5.9	$3,270	$3,321
Q32001	15	(16.73)	5.42	(14.7)	$2,723	$2,834
Q42001	15	14.00	3.59	10.7	$3,104	$3,137
Q12002	15	0.93	4.71	0.3	$3,133	$3,145
Q22002	15	(13.30)	6.48	(13.4)	$2,716	$2,724
Q32002	15	(17.46)	3.29	(17.3)	$2,242	$2,253
Q42002	15	5.21	4.32	8.4	**$2,359**	**$2,443**
Average		**2.63**	**4.33**	**2.61**		

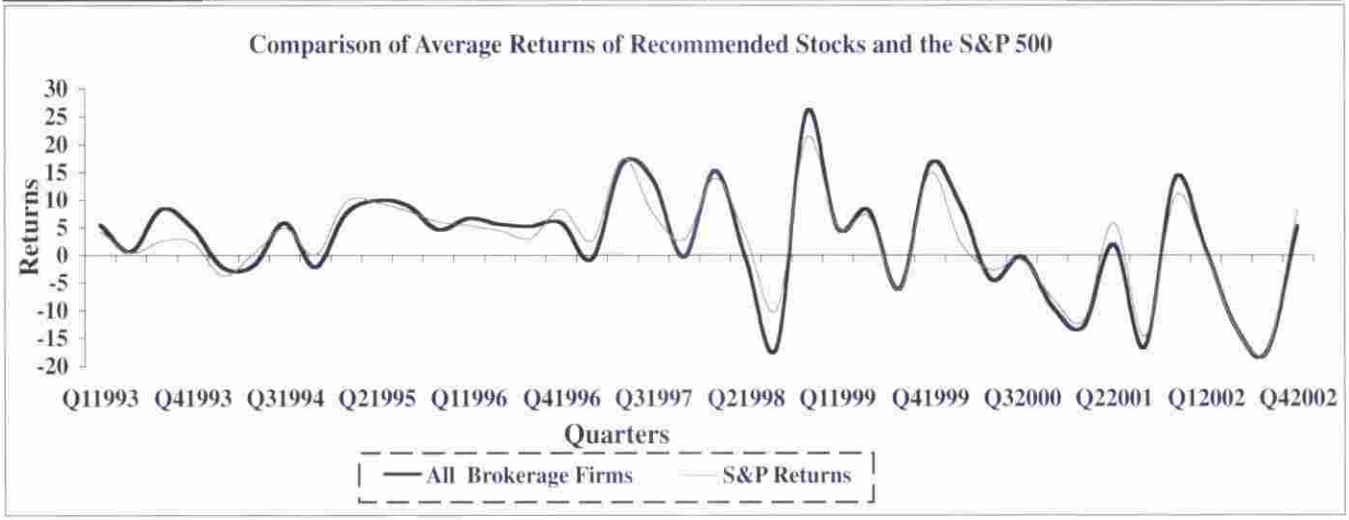
The plots show that the recommended stock returns generally mirrored the S&P 500 returns over the decade, but are a little lower and tended to be a little more volatile. This second observation is especially noticeable during quarters of relative large movements, such as the fourth quarter of 1998 and the second quarter of 1999.

The percentage of the brokerage firms whose stock recommendations beat the S&P 500 is provided in Exhibit 4. Specifically, this shows the percentage of firms whose average return on the recommended stocks beat the S&P

EXHIBIT 3

Summary Quarterly and Cumulative Performance: Brokerage Firm Recommended Stocks and S&P 500 (1993-2002)

	Average Quarterly Return (%) (Arithmetic)	Average Quarterly Return (%) (Geometric)	Standard Deviation	Highest Average Return	Lowest Average Return	Cumulative Wealth Index	Beta	Alpha	R-Square
Brokerage Firms Recommended Stocks	2.63	2.17	9.72	25.8	(17.5)	$ 2,358.85	1.10	(0.24)	0.92
S&P	2.61	2.26	8.49	21.3	(17.3)	$ 2,443.46			



500 return on a quarterly basis over the decade.

While the average returns of all brokerage firm recommendations have moved with the S&P 500, Exhibit 4 suggests there is considerable quarter-to-quarter variability in the average recommended stock return of firms relative to the S&P 500 return. For the brokerage firms, the high points were the third quarters of 1993 and 1997, when the average returns of the recommended stocks of 100% of the firms beat the S&P 500 return. The low point was the third quarter of 1998, when none of the firms beat the S&P 500.

Overall, on a quarterly basis, the mean percentage of brokerage firms that beat the S&P 500 is 50%. This result is consistent with the findings in Exhibits 2 and 3 that suggest that the average performance of the recommended stocks of brokerage firms is similar to the S&P 500. The figures in Exhibit 4, however, highlight the variability in the quarter-to-quarter performance results.

Exhibit 5 provides quarterly and cumulative return performance figures, where firms are classified as either top-tier (Panel A) or mid-tier or regional (Panel B). Actually, one can make a case that either group is in the better position to pick stock market winners.

Top-tier firms have significant investment banking operations that allow them to attract the best and the brightest staff because they can reward star analysts with attractive compensation packages. They have more resources to back equity research, and in most cases top-tier status gives analysts better access to management. On the negative side for top-tier firms, their stock recommendations are more likely to be tainted due to conflicts with investment banking interests. In addition, most stock recommendations made by top-tier firms are in large-capitalization, well-known companies whose stock is widely held and is more likely to be fairly priced.

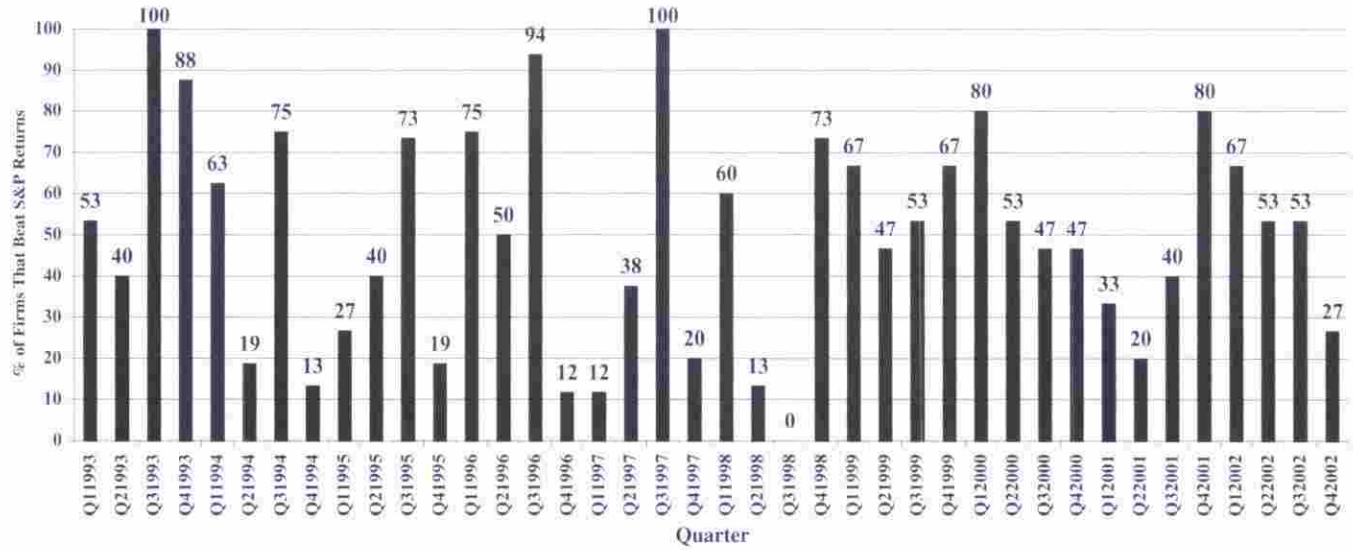
The stock recommendations of mid-tier or regional brokerage firms 1) are probably less likely to be tainted by investment banking relationships, and 2) more significantly, will consist of more mid-cap and small-cap companies that are not well known or widely held and whose stock therefore is more likely to be mispriced.

The summary return and regression statistics in Exhibit 5 are the same as those in Exhibit 3. The average quarterly return and CWI performance of the top-tier investment firms was 2.04% and $2,240.96. The stock recommendations of the mid-tier or regional investment banks provided an average compounded quarterly return and CWI of 2.26% and $2,442.65. These are identical or virtually identical to the S&P 500 (2.26% and $2,443.46), and higher than the top-tier numbers.

The recommendations of both groups produced negative alphas, but the mid-tier or regional firms (alpha

EXHIBIT 4

Brokerage Firm Recommended Stocks and S&P 500: Percent of Brokerage Firm Recommended Stocks that Beat S&P 500 (1993-2002)



= –0.10) fared better than the top-tier firms (alpha = –0.43). The average returns from the stock recommendations of the mid-tier or regional firms also have a slightly lower beta (1.07 versus 1.14) and R^2 (0.90 versus 0.93).

WHO PICKS THE BEST STOCKS?

There are ten brokerage firms whose quarterly results were reported for the entire ten-year period. The performance of the stock recommendations of the top-tier and the mid-tier or regional firms is provided in Panels A and B of Exhibit 6. The individual firm returns relative to the S&P 500 are graphed in Exhibit 7.

As Exhibit 6, Panel A, indicates, the performance of the recommended stocks varies significantly for the top-tier firms. The mean quarterly recommended stock returns range from a low of 1.00% for Lehman Brothers to a high of 3.07% for Merrill Lynch, with an average of 1.99% for all six firms.[3] The corresponding return for the S&P 500 is 2.26%. The standard deviations of the quarterly returns of the recommended stocks range from a low of 8.45% for Morgan Stanley to a high of 13.23% for Lehman Brothers. The average standard deviations for the top-tier firms and the S&P 500 are 10.6% and 8.49%, respectively. In terms of high and low quarterly returns, the recommended stocks had on average higher high returns and lower low returns than the S&P 500.

Panel A of Exhibit 6 also shows the ten-year CWI for the top-tier firms. The average for the group is $2,203.49, compared to $2,443.46 for the S&P 500. Merrill Lynch's CWI of $3,345.92 is the highest. The CWI for the recommendations of only two of the six top-tier firms beat the S&P 500 CWI.

The average beta for all firms is 1.13. Merrill Lynch's beta is lowest (0.92), while Lehman Brothers' is highest (1.40). The mean alpha of –0.48 indicates that, on average, the risk-adjusted abnormal performance of the recommended stocks of the top-tier brokerage firms is 48 basis points per quarter below the S&P 500. The alphas range from a low of –1.81% for Lehman Brothers to a high of 1.05% for Merrill Lynch. The average R^2 for the group's recommendations is 0.82.

The average return and alpha for the recommendations of the mid-tier or regional firms in Panel B are 2.52% and 0.27. This suggests that these four firms performed better as a group than the top-tier firms, but, given the small number of firms, no significant conclusions can be drawn. Raymond James's recommendations performed the best, with an average compounded quarterly return of 3.33% and an alpha of 1.60. One very interesting result here is that the R^2 for Raymond James's recommendations is only 0.43. This is far below the R^2s of all other firms (about half the size), and highlights that the firm is recommending stocks in a much different asset class from the other firms.

EXHIBIT 5

Summary Quarterly and Cumulative Performance—1993–2002
A. Top-Tier Brokerage Firms and S&P 500

	Average Quarterly Return (%) (Arithmetic)	Average Quarterly Return (%) (Geometric)	Standard Deviation	Highest Average Return	Lowest Average Return	Cumulative Wealth Index	Beta	Alpha	R-Square
Recommended Stocks	2.53	2.04	10.0	26.4	(19.6)	$ 2,240.96	1.14	(0.43)	0.93
S&P	2.61	2.26	8.5	21.3	(17.3)	$ 2,443.46			

ASSESSING RISK-ADJUSTED PERFORMANCE

The summary performance results suggest considerable variation in the performance of the recommended stocks of brokerage firms. To further assess risk-adjusted performance, we apply the Fama and French model [1993] to the returns associated with the recommended stocks. The model includes market, size, and book-to-market factors, and takes the form:

$$r_{pt} - r_{ft} = a + b(r_{mt} - r_{ft}) + sSMB_t + hHML_t + e_{pt}$$

where:

- $(r_{pt} - r_{ft})$ is the excess return (portfolio returns minus the risk-free return) on the portfolio of stock returns associated with the brokerage firm recommendations;
- $(r_{mt} - r_{ft})$ is the excess return on the market (market return minus the risk-free return), which is known as the market factor. The market return represents a market-value weighting of all NYSE, AMEX, and Nasdaq stocks on the CRSP tape;
- SMB_t is the size factor, constructed by taking the returns on a portfolio of small-cap stocks minus the returns on a portfolio of large-cap stocks;
- HML_t is the book-to-market factor, produced by taking the return on a portfolio of value stocks (high B/M) minus the return on a portfolio of growth stocks (low B/M);
- a is alpha, the constant in the regression, which measures the risk-adjusted or excess returns generated by the recommendations;
- b, s, and h are the regression coefficients on the market, size, and book-to-market factors, respectively; and
- e_{pt} is the error term.

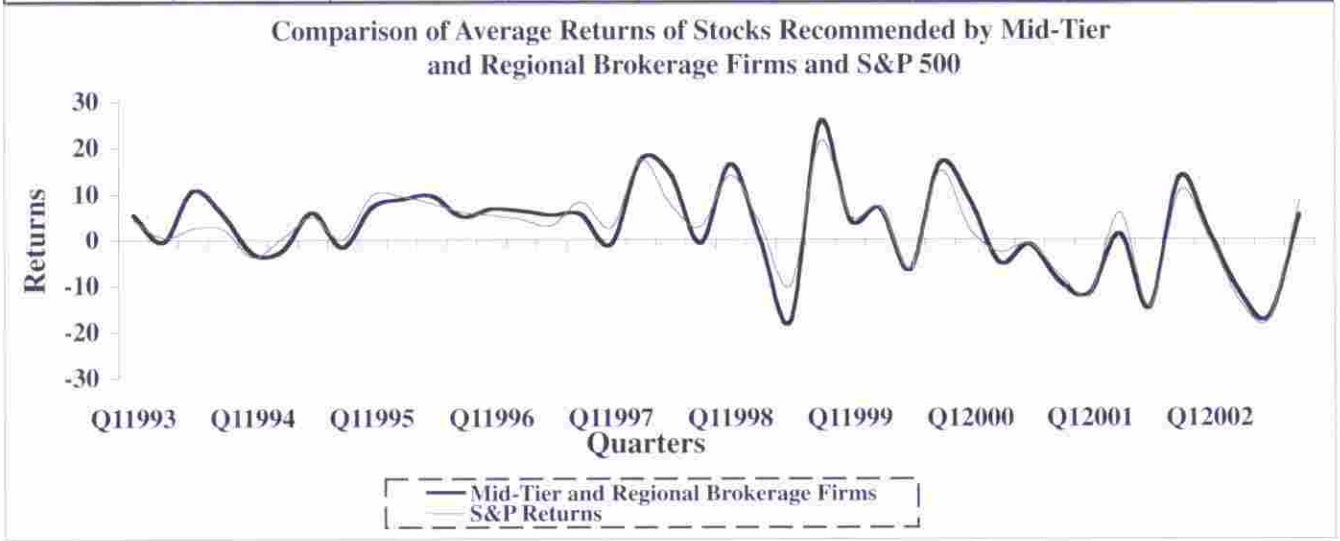
The Fama-French results are provided in Exhibit 8. Panel A shows the findings for the recommendations by all firms, as well as by tier. Panels B and C provide the results for the individual top-tier (Panel B) and mid-tier or regional firms (Panel C).

In Panel A, the R^2s are in the 0.93–0.95 range, indicating a better fit than observed in Exhibit 5 using the

EXHIBIT 5 (Continued)

B. Mid-Tier and Regional Brokerage Firms and S&P 500

	Average Quarterly Return (%) (Arithmetic)	Average Quarterly Return (%) (Geometric)	Standard Deviation	Highest Average Return	Lowest Average Return	Cumulative Wealth Index	Beta	Alpha	R-Square
Recommended Stocks	2.71	2.26	9.6	25.4	(17.8)	$ 2,442.65	1.07	(0.10)	0.90
S&P	2.61	2.26	8.5	21.3	(17.3)	$ 2,443.46			



market model. The alpha (*a*) for the entire sample of recommendations is 0.01, signifying performance in line with expectations. The alphas for the top-tier and mid-tier or regional firms are –0.13 and 0.11. While this indicates slightly better performance by the mid-tier or regional firms, the figures are not statistically significant.

Of the three factors, the market factor dominates, with highly significant regression coefficients (*b*). The other factors are insignificant.

Panel B reports the regression results for the top-tier firms. As in Exhibit 6, the firms are ranked by alpha; once again, Merrill Lynch emerges as the winner. Its recommendations produce an alpha of 0.87, and the associated t-statistic signifies statistical significance at the 6% level. The beta of Merrill's recommended stocks is 0.84, the lowest among the brokerage firms, and it is the most significant factor in explaining the returns. The size factor is also significant in explaining the returns of Merrill's stock recommendations.

The stock recommendations of only one other top-tier firm have a positive alpha (CS First Boston), but it is not statistically significant. The average alpha for the six top-tier firms is –0.19. The dominant factor in explaining the returns of the stock recommendations for all firms is the market. The size factor is significant in one case (CS First Boston), and the book-to-market factor is significant in one case (Salomon Smith Barney).

The results for the recommendations of mid-tier or regional brokerage firms are in Panel C. The average alpha is 0.40 (compared to –0.19 for the top-tier firms), and two of the four firms have positive alphas. Raymond James has the highest alpha, but it is not statistically significant. Actually, the results here for Raymond James reinforce our earlier observation on the firm's recommended stocks —they come from a much different asset class. The R^2 again is low (0.51), and in terms of explaining returns, the market factor is much less important ($t = 4.99$), and size and book-to-market factors are much more important. For the other firms, the market factor is clearly dominant, and the size and book-to-market factors are statistically significant in only one case each.

SUMMARY OF RESULTS

This study evaluates the recommended stocks of major brokerage firms over the past ten years, using quarterly data compiled by Zacks Investment Research and published in the *Wall Street Journal*. This survey is a highly visible way for brokerage firms to highlight their stock-picking capabilities.

EXHIBIT 6

Quarterly and Cumulative Performance of Brokerage Firm Recommendations (1993–2002)

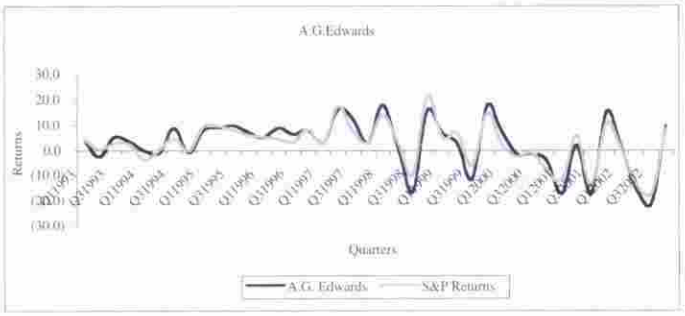
Firm	Average Quarterly Return (Geometric)	Standard Deviation	Highest Return	Lowest Return	Cumulative Wealth Index	Beta	Alpha	Coefficient of Determination
Panel A. Top-Tier Brokerage Firms (Ranked by Alpha)								
Merrill Lynch	3.07%	8.83	20.50	(16.10)	$ 3,345.92	0.92	1.05	0.78
CS First Boston	2.41%	12.41	28.60	(30.10)	$ 2,595.29	1.31	(0.22)	0.80
Morgan Stanley	1.86%	8.45	17.30	(19.30)	$ 2,087.58	0.95	(0.26)	0.90
Goldman Sachs	1.93%	10.46	31.40	(23.20)	$ 2,151.08	1.11	(0.44)	0.82
Salomon Smith Barney	1.11%	10.23	26.50	(26.50)	$ 1,554.15	1.09	(1.22)	0.82
Lehman Brothers	1.00%	13.23	45.80	(27.60)	$ 1,486.91	1.40	(1.81)	0.80
Average	**1.99%**	**10.60**	**28.35**	**(23.80)**	**$ 2,203.49**	**1.13**	**(0.48)**	**0.82**
Panel B. Mid-Tier Brokerage Firms (Ranked by Alpha)								
Raymond James	3.33%	12.16	33.10	(31.10)	$ 3,700.45	0.94	1.60	0.43
Bear Stearns	2.80%	9.86	31.30	(18.20)	$ 3,017.71	1.03	0.56	0.79
A.G. Edwards	2.06%	9.96	18.00	(21.50)	$ 2,258.82	1.12	(0.35)	0.90
Prudential Securities	1.55%	10.83	31.80	(22.10)	$ 1,848.94	1.09	(0.74)	0.73
Average	**2.52%**	**10.70**	**28.55**	**(23.23)**	**$ 2,706.48**	**1.05**	**0.27**	**0.71**
S&P 500								
S&P 500 Returns	**2.26%**	**8.49**	**21.30**	**(17.28)**	**$ 2,443.46**			

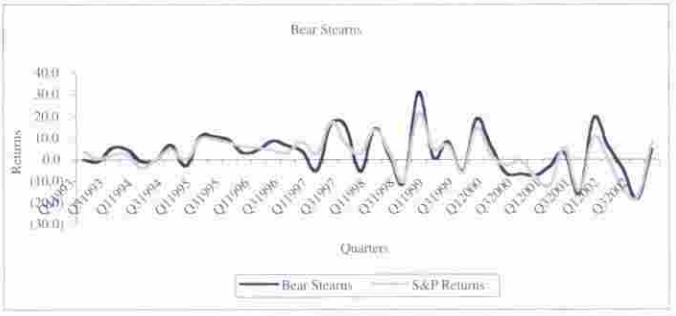
The primary conclusions of the study are:

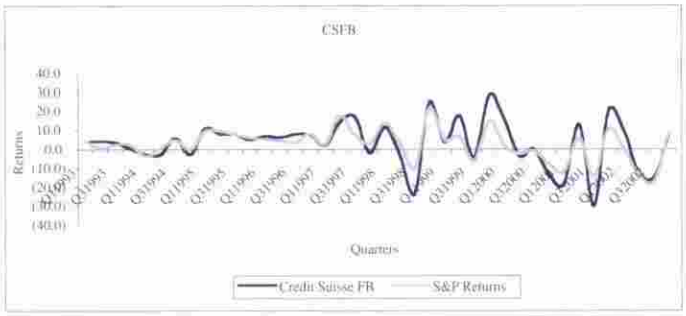
1. Quarterly and cumulative performance numbers for stocks recommended by the brokerage firms are slightly below numbers for the S&P 500. The recommended stocks also have a little more variable returns and are riskier than the S&P 500. The average compounded quarterly returns for the recommended stocks and the S&P 500 are 2.17% and 2.26%. The associated ten-year cumulative wealth indexes for the recommended stocks of brokerage firm and the S&P 500 are $2,358.85 and $2,443.46. On a quarterly basis, 50% of brokerage firm recommended stocks beat the S&P 500. In terms of variability, the standard deviation of the quarterly returns is 9.8% for the recommended stocks and 8.5% for the S&P 500. The average beta of the recommended stocks is 1.10.
2. The recommended stocks of mid-tier and regional brokerage firms performed slightly better than recommended stocks of top-tier brokerage firms with a little less risk. The average quarterly returns for the mid-tier or regional and the top-tier firms are 2.26% and 2.04%, respectively. There is a little less risk in the recommendations of the mid-tier or regional firms, with slightly lower betas.
3. The risk-adjusted performance of recommended stocks is equal to, or slightly below, the market. On a risk-adjusted basis, the recommended stocks produce an alpha of –0.24 by the market model

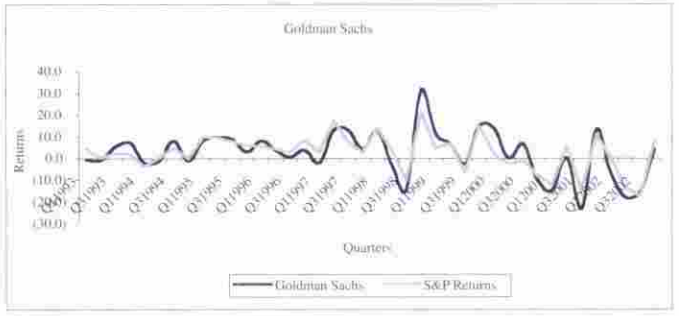
EXHIBIT 7

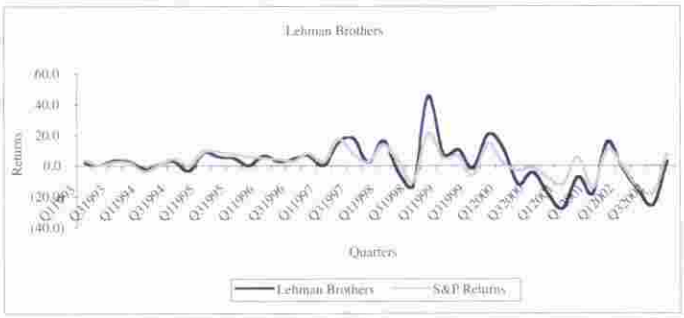
Individual Brokerage Firm Recommendations and S&P 500—Quarterly Returns (1993–2002)

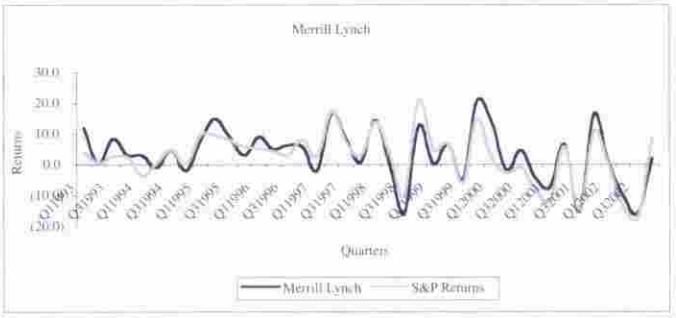


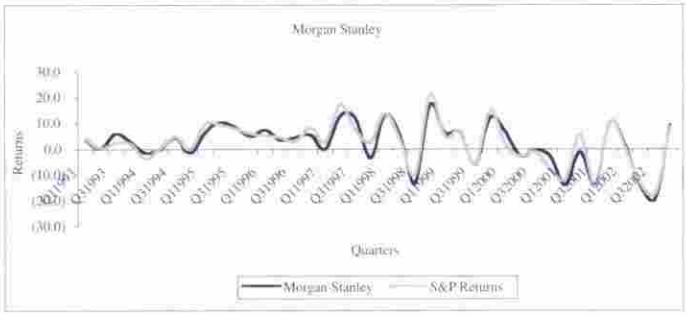


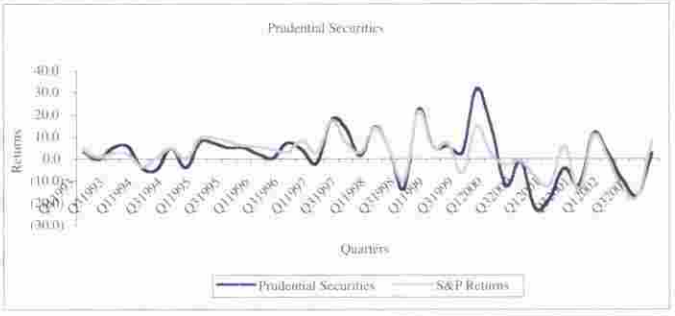


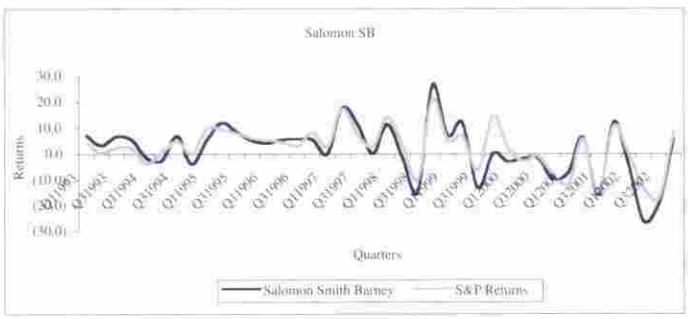












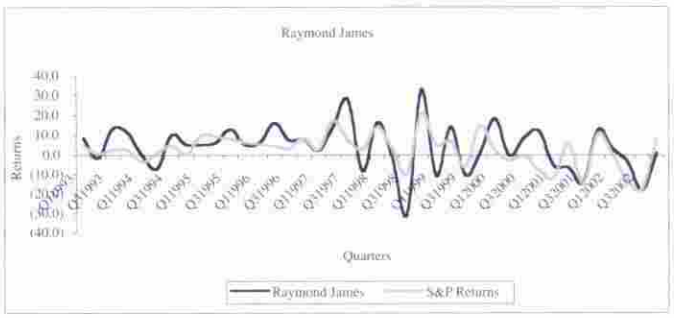


EXHIBIT 8

Recommended Stocks of Brokerage Firms (1993-2002)—Fama-French Regression Results

Panel A. Recommended Stocks of Brokerage Firms					
	a	b	s	h	R-Square
All Firms	**0.01**	**1.03**	**0.06**	**(0.00)**	**0.95**
t-statistic	0.02	21.33	0.93	(0.07)	
Top-Tier Brokerage Firms	**(0.13)**	**1.08**	**0.04**	**0.01**	**0.95**
t-statistic	(0.36)	22.06	0.62	0.28	
Mid-Tier-Regional Brokerage Firms	**0.11**	**1.00**	**0.08**	**(0.01)**	**0.93**
t-statistic	0.26	17.84	1.02	(0.27)	
Panel B. Recommended Stocks of Individual Top-Tier Brokerage Firms					
Firms	**a**	**b**	**s**	**h**	**R-Square**
Merrill Lynch	**0.87**	**0.84**	**0.27**	**0.04**	**0.86**
t-statistic	1.59	11.48	2.74	0.58	
CS First Boston	**0.28**	**1.13**	**0.44**	**(0.10)**	**0.92**
t-statistic	0.47	14.08	4.13	(1.31)	
Goldman Sachs	**(0.04)**	**1.04**	**(0.08)**	**(0.08)**	**0.84**
t-statistic	(0.06)	11.17	(0.62)	(0.90)	
Morgan Stanley	**(0.26)**	**0.94**	**(0.10)**	**0.07**	**0.91**
t-statistic	(0.60)	16.50	(1.27)	1.27	
Lehman Brothers	**(0.79)**	**1.28**	**(0.18)**	**(0.23)**	**0.85**
t-statistic	(0.91)	11.03	(1.14)	(2.01)	
Salomon Smith Barney	**(1.22)**	**1.19**	**(0.08)**	**0.35**	**0.86**
t-statistic	(1.94)	14.09	(0.71)	4.28	
Average	**(0.19)**	**1.07**	**0.05**	**0.01**	**0.87**
Panel C. Recommended Stocks of Individual Mid-Tier and Regional Brokerage Firms					
Firms	**a**	**b**	**s**	**h**	**R-Square**
Raymond James	**1.18**	**0.94**	**0.39**	**0.31**	**0.51**
t-statistic	0.84	4.99	1.55	1.69	
Bear Stearns	**0.64**	**0.90**	**0.32**	**(0.05)**	**0.87**
t-statistic	1.06	11.14	2.97	(0.67)	
A.G. Edwards	**(0.06)**	**1.09**	**(0.09)**	**0.05**	**0.90**
t-statistic	(0.11)	15.72	(0.99)	0.78	
Prudential Securities	**(0.16)**	**0.90**	**0.01**	**(0.39)**	**0.87**
t-statistic	(0.26)	10.47	0.10	(4.66)	
Average	**0.40**	**0.96**	**0.16**	**(0.02)**	**0.79**

and 0.01 by the Fama-French model. The recommendations of mid-tier or regional firms fare better than top-tier firm recommendations. The recommendations of only three of ten firms produce a positive alpha by the market model (four of ten firms by the Fama-French model).

4. While there is considerable variability in the performance of the recommendations of individual firms, Merrill Lynch is the clear-cut winner in terms of the performance of recommended stocks for top-tier brokerage firms over the ten-year period. Merrill's recommended stocks provided a compounded quarterly return (3.07%), had the lowest risk (beta = 0.94), and produced the highest ten-year CWI ($3,345.92). Of all the brokerage firms, on a risk-adjusted basis, only Merrill Lynch's stock recommendations provided significantly positive alphas (alpha = 1.05 by the market model and 0.87 by the Fama-French model). Raymond James picked the best stocks among the mid-tier and regional brokerage firms, but its alphas are not statistically significant.

ENDNOTES

[1]See Stickel [1995], Womack [1996], and Barber et al. [2001].

[2]For a review of the research on analysts' recommendations, see Michaely and Womack [2002].

[3]Note that the averages discussed in this section for the six top-tier and four mid-tier or regional firms are for these firms only, not the entire sample of top-tier and mid-tier or regional firms.

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