Analyzing the Analysts after the Global Settlement

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On April 28, 2003, U.S. regulators held a press conference to announce the completion of a Global Settlement Agreement with ten of the largest investment banking firms. It settled enforcement actions that involved conflicts of interest between the firms' brokerage research and investment banking operations. The enforcement actions alleged that these firms "engaged in acts and practices that created or maintained inappropriate influence by investment banking over research analysts, thereby imposing conflicts of interest on research analysts." The firms agreed to make organizational changes, to increase disclosure, and to make payments totaling $1.3875 billion for penalties, independent research, and investor education. New York Attorney General Elliot Spitzer stated at the press conference that these "wide-ranging structural reforms to firms' research operations will empower investors to use securities research in a practical and meaningful way when making investment decisions."[1] Now that several years have passed since the settlement, it seems appropriate to analyze the extent to which progress has been made toward this objective.

Typically, investment banks provide brokerage services for investors as well as investment banking services, such as securities underwriting, commercial loans, and merger and acquisition advice, to corporations. The securities research referred to by the Global Settlement is the work product of analysts employed by the brokerage arm within each investment bank. This securities research, provided to the firm's brokerage clients, takes the form of detailed research reports about companies and industries as well as earnings forecasts and investment recommendation ratings, such as buy, sell, or hold.

Within each investment bank's brokerage research operation, individual analysts are assigned to cover one or several industries. They are expected to be experts on the factors that drive profits for companies in the industry, such as technological and competitive

[1] The settlement was reached with the U.S. Securities and Exchange Commission, the State of New York, the North American Securities Administrators Association, the NASD and NYSE, and state securities regulators. For more information, see http://www.sec.gov/news/press/2003-54.htm [August 17, 2005].

developments, regulatory environment and changes, and the impact of economic factors such as interest rates, energy prices, and world supply and demand. The analysts are expected to gather and synthesize information from a variety of sources, including company management, financial statements and other filings, suppliers and customers, industry and trade publications, and regulators. These brokerage firm research analysts also are referred to as "sell-side" analysts to distinguish them from "buy-side" analysts employed by mutual funds and other investment management firms to perform similar securities analyses.

Research is provided to the firm's brokerage clients with the expectation that valuable research will increase brokerage revenue in the form of commissions. Typically, brokerage clients are categorized as either institutional investors or retail investors. Institutional investors are professional money managers, such as the managers of mutual funds, pension funds, hedge funds, and insurance company portfolios. Retail, or "individual", investors usually generate less trading volume and lower total brokerage commissions per account.

In the summer of 2001, Congress held the "Analyzing the Analysts" hearings during which market participants and regulators voiced concerns that sell-side analysts faced conflicts of interest that resulted in their sometimes being overly optimistic about stock investment values.[2] Conflicts might result from pressures from the company management of the stock being covered, from institutional clients to protect their holdings, from the investment banking operation within the analyst's own firm, from the firm's proprietary trading operation, or even from the analyst's own trading positions.[3]

Polls of institutional investors, conducted prior to the Global Settlement, indicated that they were largely savvy to the conflicts of interest faced by sell-side analysts. As a result, many said they read the analysts' detailed research reports, which are analysts' lengthy and

[2] Testimony from the hearings can be found at http://financialservices.house.gov/Hearings.asp?formmode=detail&hearing=54 [August 17, 2005].
[3] See Boni and Womack (2002a).

infrequently-issued assessments of a company's future profits as well as the factors and assumptions behind their forecasts. Most institutional investors polled said they largely ignore analysts' investment recommendation ratings (e.g., buy, sell, or hold), however.[4]

Thus, the Global Settlement was aimed primarily at addressing the concerns and protecting the generally less experienced retail investor. Eighty million dollars of the settlement was earmarked for investor education. The settlement also required firms to disclose their research analysts' historical recommendation ratings to "enable investors to evaluate and compare the performance of analysts." [5] In light of this, to analyze whether the research provided by these firms, after the settlement, offers individual investors "a practical and meaningful way" to make decisions, this paper will examine the recommendations made by the analysts at the ten firms before and after the Global Settlement to answer the following questions:

1. Does the nature of analysts' recommendation ratings (e.g., distribution across best to worst ratings categories and frequency of change in recommendation ratings) differ before and after the settlement?

2. Do investors differ in how they react to analysts' recommendation announcements before and after the settlement?

3. What are the gains and losses to be made from trading on analysts' recommendations before and after the settlement?

4. What can we conclude about the settlement's effectiveness toward the objective of educating and protecting investors?

In summary, the major findings and conclusions presented in this paper are:

[4] Boni and Womack (2002b).

[5] See Global Settlement press release at http://www.sec.gov/news/press/2003-54.htm [August 17, 2005].

1. Whether the result of reduced trading commissions or the disentanglement of investment banking and research, the 10 firms on average appear to have reduced their research coverage. The number of stocks that receive research coverage by the 10 firms has dropped an average of 14% relative to 2000 and 20% relative to 2001. Ironically, academic research has shown that stocks covered by fewer analysts may present greater investment opportunities for investors.[6]

2. Both before and after the Global Settlement, 99% of the 10 firms' recommendations can be partitioned into 3 simple categories, which we define as "High" (strongest recommendation), "Medium" (middle), and "Low" (least strongly recommended stocks). As measured by their recommendations, analysts are *more* optimistic after the Global Settlement: "Low" recommendations decrease as a percentage of recommendations while "High" recommendations remain about constant.

3. Conflicts of interest arguments suggest that analysts at the large investment banks will tend to congregate at recommendation levels. For example, if positive recommendations are attempts to favorably impress the management of companies considering secondary offerings, we should observe the strongest recommendations for these companies from all 10 firms. Interestingly, analysts at the 10 settlement firms do not tend to cluster on the various 3 recommendation categories "High", "Medium", and "Low", either pre-settlement or post-settlement. On average, only 2-3 firms share a given recommendation level for stocks pre- and post-settlement.

[6] See Hong, Lim, and Stein (2000), Jegadeesh, Kim, Krische, and Lee (2004), and Boni and Womack (2005).

4. Both before and after the Global Settlement, analysts issue changes in recommendation levels infrequently for most firms on average. Recommendation changes occur once every few years per firm per company covered on average. As a result, any new information that led to the change is usually quite stale for most of the "life" of the recommendation.

5. After the Global Settlement, the market shows less short-term reaction to analysts' recommendation changes. In the 3-day window around recommendation changes, stock prices increase less on upgrades and decrease less on downgrades than they did prior to the settlement.

6. Stocks that receive analysts' strongest investment recommendations outperformed the market index (Standard and Poor's 500 Index) both before and after the Global Settlement. But so did stocks that received analysts' worst ratings. In fact, more often than not, stocks that received analysts' worst ratings outperformed those that received analysts' strongest investment recommendations both before and after the Global Settlement.

7. Both before and after the Global Settlement, recommended stocks that outperformed the Standard and Poor's 500 Index did so at least in part because they are riskier are average.

The finding that stock prices react less in the 3-day window around recommendation changes post-settlement is consistent with investors' becoming savvier about recommendations. In summary, however, we conclude the Global Settlement has done little if anything to change the recommendations made by the settlement firms or their long-term investment value for investors. The Global Settlement, as well as new analyst rules effective 2002, require that along with the current recommendation rating of the stock, the sell-side analyst publish the historical price performance of recommendations he or she has made for

that stock. But as highlighted in this paper, these disclosures do not provide investors with the complete picture. We show that the stocks that analyst recommend outperform the S&P 500 index on average because they take more risk. And analysts' low ranked stocks outperformed their high ranked stocks more often than not on average.

A far better tool for educating retail investors to the relative value (or lack thereof) of analyst recommendations would be the disclosure on an ongoing basis of each firm's aggregate analyst recommendation performance, as provided in this paper. Specifically, for each firm, a historical chart would be provided that compared the performance of the portfolio of stocks that carried the firm's strongest investment recommendations to the performance of those that carried the firm's lowest recommendations. In addition, various measures of the risk that the recommendation portfolios carried would be reported. Given the empirical findings reported here, it is unlikely that these aggregate comparative reports will be provided voluntarily by the firms. It is likely that recommendation data could be easily obtained by regulators who could automate the monthly calculation of aggregate statistics. As such, regulatory web sites might be the appropriate means of getting this information to investors.

The paper proceeds as follows. It first provides additional information about the Global Settlement. Next, the data used to examine recommendations pre- and post-settlement are described. Then, analysts' recommendations, investor reactions, and investment value are examined. The paper concludes with suggestions for regulators in light of the findings presented here.

The Global Settlement

The Global Settlement was jointly announced by the Securities and Exchange Commission, the State of New York, the North American Securities Administrators Association, the National Association of Securities Dealers, the New York Stock Exchange,

and state securities regulators. The ten investment banking firms agreed to pay penalties, disgorgement, and funds for independent research and investor research as follows.

Firm	Penalty ($ millions)	Disgorgement ($ millions)	Independent Research ($ millions)	Investors Education ($ millions)	Total ($ millions)
Bear Stearns	25	25	25	5	80
Credit Suisse First Boston	75	75	50	0	200
Goldman Sachs	25	25	50	10	110
J.P Morgan	25	25	25	5	80
Lehman Brothers	25	25	25	5	80
Merrill Lynch	100	0	75	25	200
Morgan Stanley	25	25	75	0	125
U.S. Bancorp Piper Jaffray	12.5	12.5	7.5	0	32.5
Citigroup/Salomon Smith Barney	150	150	75	25	400
UBS Warburg	25	25	25	5	80
Total	**487.5**	**387.5**	**432.5**	**80**	**1,387.5**

The above ten firms were named as part of the Global Settlement announced on April 28, 2003. On August 26, 2004, two additional firms, Deutsche Bank and Thomas Weisel Partners, settled similar enforcement actions. Deutsche Bank agreed to pay $87.5 million total ($25 million for disgorgement, $25 million for conflicts of interest penalties, $25 million to fund independent research, $5 million for investor education, and $7.5 million for "failing to promptly produce all email and thereby delaying over a year the investigation"). Thomas Weisel Partners agreed to pay $12.5 million total ($5 million for disgorgement, $5

million for conflicts of interest penalties, and $2.5 million to fund independent research).[7] Because the Deutsche Bank and Thomas Weisel Partners settlements were agreed to more than a year after the other ten, we exclude them from our analysis.

Data

Data on the analyst recommendations of the Global Settlement firms were obtained from I/B/E/S© International ("IBES") through September 2004.[8] Recommendations are for ordinary shares and American Depository Receipts ("ADRs") listed on NYSE, AMEX, and the Nasdaq Market System. To supplement the data, stock prices, investment returns, and shares outstanding were obtained from the Center for Research in Securities Prices ("CRSP").

The IBES data indicate for each recommendation the date the recommendation was issued and the name of the analyst and the analyst's firm. Typically, each brokerage firm (or the brokerage arm of the investment bank) chooses its own recommendation nomenclature and number of different recommendation categories it will choose from when issuing recommendations. Historically, naming conventions and number of levels have varied from the simplest 3-level "buy", "sell", and "hold", to more finely-partitioned designs, such as one firm's 9-level "outperform/overweight", "outperform/market weight", "outperform/underweight", "peer perform/overweight", "peer perform/market weight", "peer perform/underweight", "under perform/overweight", "under perform/market weight", and "under perform/underweight". IBES data indicate for each recommendation observation the nomenclature assigned by the firm. Because these naming conventions sometimes make the hierarchy of recommendation levels confusing to those who are not clients of the brokerage firm, IBES maps each firm's naming convention to IBES's own 5-level naming system:

[7] See www.sec.gov/news/press/2004-120.htm [August 17, 2005].

[8] I/B/E/S© International began providing data on brokerage analyst earnings forecasts in the 1970's. Many institutional investors purchase their data services for real-time analyses. They also make historical data available (with a delay) to academic researchers. The IBES data include recommendations made by sell-side research analysts employed by stand-alone brokerage firms as well as investment banks with brokerage arms.

"Strong Buy" (IBES code = 1), "Buy" (IBES code = 2), "Hold" (IBES code = 3), "Under perform" (IBES code = 4), and "Sell" (IBES code = 5). Typically, when performing empirical studies of analyst recommendations with the IBES data, academic researchers partition recommendation data simply by using these IBES 5-level assignments, not the brokerage firms' naming systems. In the next section of this paper, we discuss the complications created when a firm's 3-level system is mapped to IBES's 5-level system.

Although each recommendation observation in the IBES dataset indicates the date of the recommendation and the level of that recommendation, the observation does not indicate the analyst's prior recommendation for that stock. We, however, are interested in determining that prior recommendation so we can examine whether analysts change their approach to making recommendations (e.g., frequency and ratio of upgrades and downgrades) and how investors react to upgrades and downgrades. To determine the prior level, we simply search the dataset for the most recent observation by the analyst for that stock.

For some observations, there is an absence of a prior recommendation. This can result if the brokerage firm is initiating its coverage of the stock. It also results if the brokerage firm has issued recommendations for the stock before but had not yet contributed any recommendation information to IBES. Brokerage firms self-select whether to contribute their recommendation data to IBES.[9] Although many firms provided IBES with data as early as 1993, at least one of the Global Settlement firms did not contribute data to IBES until 1998. We choose 1999 as the starting point of our study so that we can analyze not only the recommendations made by all the Global Settlement firms but also allow time to determine prior recommendations.

[9] It is our understanding that once a brokerage firm begins contributing recommendation data to IBES, all recommendation changes it issues are provided to IBES, not just a self-selected subset of the recommendations it issues.

As a final step in the dataset creation, we construct, for each of the Global Settlement firms, a dataset that shows for any day during January 1, 1999, through September 30, 2004, the recommendation outstanding for each stock. For example, suppose Brokerage Firm X initiates coverage on Amazon on May 2, 2000, with a "Strong Buy" recommendation, and downgrades Amazon to a "Buy" on January 15, 2001. For any day from May 2, 2000, to January 14, 2001, in our dataset, we would show Brokerage Firm X with a "Strong Buy" for Amazon. We will refer to this as the "standing recommendation dataset".[10]

We are interested in examining the 10 settlement firms individually as firms are not necessarily uniform in how they have reacted to the settlement terms. Nor have their clients necessarily responded uniformly to their recommendations after the settlement. Unfortunately, IBES data are available to academic researchers with the proviso that individual brokerage firm identities will be masked in studies. Therefore, for this study, each of the 10 settlement firms has been assigned a number of 1 to 10 in a random fashion.

The Nature of Analysts' Recommendations

First, we examine the stock recommendations that firms make to their investor clients. We will compare recommendations made before and after the settlement to determine whether the firms changed:

- The number of companies for which they issue research coverage in the form of recommendations to buy, sell, or hold.
- The percentage of these covered companies that receive the highest versus lowest recommendations.

[10] IBES provides a "stop file" that indicates if an analyst discontinues his or her recommendation without issuing a new recommendation for that stock. We incorporate the data from this file to adjust the standing recommendation dataset as appropriate.

- The frequency of changes in recommendations.

- The extent to which, for each company covered, the analysts at each of the 10 firms maintain the same recommendation level as the analysts at the other 9 firms.

Recommendation statistics are provided in Table 1. Statistics are reported by year. Eight of the ten firms changed the naming systems they used for recommendations in the year 2002. To be able to address the impact of these names changes, Table 1 reports data pre-name change as for year "2002A" and after name change as for year "2002B". Name changes are discussed in further detail below.

[Insert Table 1 about here.]

The Global Settlement requires that "firms' senior management will determine the research department's budget without input from investment banking and without regard to specific revenues derived from investment banking". Furthermore, "analysts' compensation may not be based, directly or indirectly, on investment banking revenues" and research management, not investment bankers, "will make all company-specific decisions to terminate coverage."[11] In sum, these could result in lower brokerage research budgets post-settlement and fewer companies covered. In fact, as shown in Table 1, the average number of companies covered ("standing recommendations") drops from a high pre-settlement in 2001 of 996 a year to lows of just 800 companies covered in 2003 and 799 companies covered in 2004.[12] While this pattern is true for most firms, 3 of the firms (Firms 7, 8, and 9) show little change or even an increase in the number of companies they covered pre- and post-settlement.

[11] See Global Settlement press release at http://www.sec.gov/news/press/2003-54.htm [August 17, 2005].

[12] "Standing recommendations" are calculated from the standing recommendation dataset described in the "Data" section of this paper. Standing recommendations are calculated for each of the 10 settlement firms at the end of each month, and then average each year.

It is worth noting that in 2002, the self-regulatory organizations of the NYSE and NASD made effective new rules for all sell-side analysts, not .just those at the 10 settlement firms. Among their provisions, the rules required firms to disclose the meanings of their recommendations; the breakdown of all their recommendations into simple buy, sell, and hold categories; and report the performance of past recommendations using price charts.[13] As noted by Madureira, 8 of the 10 Global Settlement firms changed their recommendation ranking systems in 2002, as these new rules became effective and when settlement negotiations were already well underway.[14] For example, pre-settlement, some of the settlement firms used a 4-category system as measured per the IBES 5-possible categories. During 2002, these firms changed to 3-category systems. Perhaps more interestingly, some firms that used a 3-category system (per IBES) pre-settlement continued to use a 3-category system after the settlement, but used different categories. For example, some firms that used categories IBES mapped to 1 ("Strong Buy"), 2 ("Buy"), and 3 ("Hold") prior to the settlement changed naming conventions so that recommendations were mapped to IBES categories 2 ("Buy"), 3 ("Hold"), and 4 ("Under perform") after the settlement.

For each of the 10 firms, most if not all of the recommendations fall within one of 3 IBES categories, even prior to the name changes when some firms allowed their analysts to use more than 3 categories. As we will show, we can simplify our discussion by re-defining recommendation categories as "High", "Medium", and "Low". For each firm, the 3 categories within which most of the firm's recommendations fall are determined pre- and post-name change. For each period, the category with the lowest IBES number (i.e., best rating) is defined for that firm as "High". Similarly, the category with the worst rating of the 3 most commonly used (per IBES) is defined for the firm as "Low" and remaining often-used category is "Medium". Table 1 shows for each of the 10 firms, as well as the "Average of

[13] These rules are NYSE Rule 472 and NASD Rule 2711. See Boni and Womack (2002b) for additional background on the development of these rules.

[14] Madureira (2004).

All Ten Firms", the percentage of standing recommendations that fall into these "High", "Medium", and "Low" categories. For example, in 1999, 40.8% of Firm 1's recommendations fell into its highest ("High") category. Table 1 also shows the recommendations that fall outside these 3 categories as "Other". For the average across the 10 firms, our redefinition successfully partitions, at worst, all but 1.3% of recommendations ("2002A"). The worst the redefinition does is for Firm 7 in 2003, when 5.2% of recommendations fall outside 3 categories.

During the "Analyzing the Analysts" Congressional Hearings held in 2001, market participants and regulators voiced concerns that sell-side analysts, as a result of conflicts of interest, issued too many positive recommendations and too few negative recommendations.[15] Table 1 shows that before name changes (i.e., "2002A" and earlier), the stocks with the best recommendations ("High") made up from 28.4% (in "2002A") to 39.8% (in 2000) on average across the 10 firms. After the Global Settlement, the percentage of "High" recommendations did not decrease. Top recommendations made up 31.8% (in 2003) to 39.0% (in 2004) of all recommendations on average across the 10 firms.

Perhaps even more interestingly, the percentage of recommendations in the most negative category ("Low") actually decreased. On average for the 10 firms, the percentage of most negative recommendations went from a range of 24.1% (in 2000) to 32.4% (in "2002A") pre-settlement to 18.8% (in 2003) and just 12.8% (in 2004) post-settlement. It is worth noting that all but 2 of the firms decreased the percentage of negative recommendations post-settlement. The exceptions were Firm 7, which decreased the percentage radically in 2004 (to just 4.4% of its recommendations) but not in 2003; and Firm 10, which increased the percentage from less than 2% pre-settlement to a still remarkably low 6-8% post-settlement.

[15] See http://financialservices.house.gov/Hearings.asp?formmode=detail&hearing=54 [August 17, 2005].

These results are disappointing as one might have hoped that if analysts issued too many positive and too few negative recommendations pre-settlement as a result of various conflicts of interest, post-settlement ratios of positive to negative recommendations would decrease. It is possible, however, that rather than reflecting an optimism bias as a result of various potential conflicts of interest, the smaller percentage of recommendations in the most negative category reflects analysts' accurate and unbiased expectation of investment value of stocks for the period post-settlement. For example, the analysts cover only a fraction of all U.S.-listed stocks and perhaps they intentionally skewed their coverage, post-settlement, to stocks they expected to outperform the market. Perhaps the more important question when analyzing the impact of the Global Settlement for retail investors is whether analysts' relative rankings reflect an accurate assessment of future investment value. We will examine this question in a later section of this paper.

The Global Settlement requires firms to disclose analysts' historical rankings so that investors can measure their track records as stock pickers. As a result, post-settlement, analysts might issue changes in recommendation rankings more frequently. Table 1 reports the frequency of upgrades and downgrades as a percentage of standing recommendations each year. Both pre- and post-settlement, recommendation changes are fairly infrequent. On average, pre-settlement, a company's stock would be upgraded by each firm only once every 4-5 years and downgraded only once every 3-4 years. Post-settlement, although recommendation changes have been more frequent on average, only 32.2% to 38.6% of stocks have been upgraded per firm on average per year. The rate of downgrades also has been relatively infrequent.[16]

[16] For 2004, we observe recommendations issued only for the first 3 quarters. Therefore, to calculate upgrades and downgrades as a function of outstanding recommendations in 2004, we extrapolate the rate of upgrades and downgrades and average number of standing recommendations from the first three quarters of 2004 to arrive at estimates for fourth quarter 2004.

Finally, we are interested in examining the extent to which, for each company covered, the analysts at each of the 10 firms maintain the same recommendation level as the analysts at the other 9 firms. If analysts pre-settlement were driven by investment banking operations to be more optimistic for companies that were expected to generate more banking revenues for the firm, analysts across firms might be more likely to cluster recommendations with the other analysts. For example, if AT&T were about to pick an investment bank to lead a $30 billion bond offering, all 10 firms might be expected to maintain the highest possible recommendation for AT&T's stock. With the Global Settlement's disentanglement of investment banking and brokerage operations, post-settlement, analysts across firms might be more diffuse or varied in their recommendations for each stock.

To examine this, we calculate a "cluster measure average" for each recommendation level for each firm as well as the average of all the firms, as reported in Table 1. This cluster measure indicates the number of the 10 firms that share the same recommendation level for the stocks in that recommendation category. For example, suppose Firm 1 has a "High" recommendation for Intel at the end of January 1999 and only one of the other 9 settlement firms also ranks Intel as a "High" recommendation. The cluster measure for Intel for January 1999 for Firm 1 for Intel would be 2. Similarly, the cluster measure for all the stocks Firm 1 has a "High" for January 1999 is calculated. Firm 1's average cluster for all the stocks it ranked "High" in January 1999 is calculated. This procedure is repeated for all months in 1999, and the average cluster measure for "High" for 1999 is reported for Firm 1. Similarly, cluster measures are calculated for "Medium" and "Low", firm by firm, year by year.

If all firms covered the same stocks, the highest possible value the cluster measure could take on would be 10. In any event, 1 is the lowest possible value and observed if the firm is alone in its recommendation for all the stocks it has assigned that particular recommendation level. Table 1 shows that on average, analysts at the 10 settlement firms, both pre- and post-settlement, did not tend to cluster on the various 3 recommendation

categories "High", "Medium", and "Low", either pre-settlement or post-settlement. On average, only 2-3 firms share a given recommendation level for stocks pre- and post-settlement.

Investors' Reactions to Analyst Recommendation Announcements

Next, we will look at whether investors react differently to analysts' recommendation announcements before and after the Global Settlement. Typically, clients of the brokerage firm are alerted to the analyst's change in recommendation prior to the beginning of the U.S. trading day. Within the day, the recommendation change becomes public information as word leaks from these clients to non-clients and as the recommendation is announced through the news media. Green reports that about 75% of the recommendation changes in his 1999-2002 data sample are reported by the Bloomberg news service after the market close on the day the recommendation is made to the brokerage firm's clients.[17]

Previous research documents that investors react very quickly to recommendation changes. Using data from the year 2000, Busse and Green show that traders respond to televised analysts' recommendations within a minute of their broadcast.[18] Green finds that for his 1999-2002 data sample of Nasdaq stocks, prices fully incorporated the information contained in the recommendation change announcement (i.e. price increased for upgrades and decreased for downgrades) within 2 days of the announcement.[19]

We will compare investors' reactions to analysts' recommendation announcements before and after the Global Settlement by comparing the price reactions to analysts' upgrades and downgrades. We will examine a 3-day window around the recommendation change "event" to allow for the reaction of the public plus the possibility that clients learn of the

[17] See Green (2004).
[18] Busse and Green (2002).
[19] Green (2004).

recommendation a day before the recommendation is reported to the public. Specifically, we will examine the 3-day event excess return from the day before to the day after the recommendation change "event", which is calculated using close of trading day stock prices (and stock's dividend if paid within the 3-day window) as:

3-Day Event Excess Return = 3-Day Event Return - 3-Day Market Return, where

$$\textit{3-Day Event Return} = \frac{\textit{(Stock Price Day After + Dividend - Stock Price Day Before)}}{\textit{Stock Price Day Before}}$$

and the *3-Day Market Return* is the return from investing in an equal-weighted index of all same-market cap decile stocks listed on NYSE, AMEX, and Nasdaq. The adjustment for the market return helps us differentiate the price response due to reaction to analyst announcement versus price changes due to movements in the stock market as a whole, such as in response to interest rate changes, etc.

Of course, large single day price changes can result from information from sources other than analyst recommendation changes, the most common being company announcements of quarterly earnings. Perhaps not surprisingly, sell-side analysts quickly incorporate this information and many of their recommendation changes occur within a day or 2 of these earnings announcements. Ivkovic and Jegadeesh show that about 15% of the recommendation changes in their 1990-2002 data sample occur on the same date as the company's earnings announcement or following day.[20] For these recommendation changes, it is impossible to differentiate from our data the amount of price reaction that is in response to analyst recommendation changes versus the company's earnings announcement. Therefore, we will partition recommendation changes into those made within a day of the earnings announcement from those that are not.

[20] See Ivkovic and Jegadeesh (2004), page 444, Figure 3.

Three-day event excess returns for the possible upgrade and downgrade categories are reported in Table 2. Table 2 reports for each category the average across the recommendation changes in the category made by all 10 settlement firms. Returns for recommendation changes that are not made within a day of the company's earnings announcement are shown in Panel A. Recommendation changes that were upgrades to "High" from a prior recommendation of "Medium" were associated with an average 3-day excess event excess return of 3.51% for the pre-Global Settlement period and 2.81% for the post-Global Settlement period. Both are significantly different from zero at the 5% level. And a *t*-test of these averages indicates that they are different before and after the settlement. In other words, investors reacted less to settlement analysts' upgrades from "Medium" rating to "High" rating after the Global Settlement. In fact, for each category of recommendation change in Panel A, investors showed less inclination on average to buy on upgrades and sell on downgrades, after the settlement. The exception is for upgrades from "Low" to "High" which is 3.95% before and 4.48% after. However, there are relatively few of these observations of analysts skipping a ratings level; and a *t*-test of these averages indicates that the averages are not significantly different from each other at the 5% level.

[Insert Table 2 about here.]

As shown in Panel B of Table 2, three-day event excess returns are of even greater magnitude up for upgrades and down for downgrades when the recommendation change coincides with the company's earnings announcement. For each category, investors again showed less inclination on average to buy on upgrades and sell on downgrades, after the settlement. (It is worth noting that although the market's reaction for upgrades from "Low" to "High" (6.01% before and 3.42% after) and downgrades from "High" to "Low" (-15.34% before and -13.24% after) are smaller post-settlement, there are relatively few of these observations and the averages are not statistically different from each other pre- versus post-settlement at a 5% significance level).

Unfortunately, although our results indicate that market participants on average respond less to recommendation changes made by the 10 settlement firms after the Global Settlement, it is possible that retail investors react as they did before but institutional investors respond less. As noted in the previous section, perhaps the more important question for the retail investors is whether analysts' relative rankings reflect an accurate assessment of future investment value for a longer term investment window than the 3-day event examined here. We will examine this question next.

Gains and Losses from Trading on Analysts' Recommendations

Prior studies have documented predictable and economically significant returns can be earned from trading on analysts' recommendation changes. These trading strategies generally require relatively frequent trading, however, as most of the profits to be made from buying upgrades and selling downgrades occurs in the first days to several months at most following recommendation changes.[21] As reported earlier in Table 1, each of the 10 settlement firms changes the recommendation for each stock it covers only once every 3-5 years per stock on average. Thus, although there may be gains available from trading short-term on recommendation changes, most of the ranking levels that investors observe at any point in time were issued much earlier and may be too "stale" to offer investment gains.

To measure what retail investors observe, we construct for each firm at the beginning of each month the portfolio of all the stocks ranked "High" by the firm as of that point in time. Stocks are included whether the "High" recommendation was announced just the day before or several years before and not changed since that time. This approach is consistent with what a retail investor would observe if asking his or her broker what the firm

[21] Stickel (1995), Womack (1996), Jegadeesh, Kim, Krische, and Lee (2004), Jegadeesh and Kim (2004), and Boni and Womack (2005), document that returns for stocks upgraded continue to increase (after appropriate market and risk adjustments) and stocks downgraded continue to decrease for a month or more after an analyst recommendation change. Green (2004) reports most gains are to be earned for Nasdaq stocks within the first few days following changes.

recommended most highly each month. We assume portfolios are "equal-weighted" (i.e., dollars each month are invested equally across all the stocks in the portfolio). At the end of the month, the investor earns the average return of the all the stocks in the portfolio, and then rebalances the portfolio as necessary for the next month. Similarly, portfolios are also formed each month of each firm's "Medium" ranked stocks and "Low" ranked stocks.

It is worth noting that the market capitalizations of stocks covered by firms vary widely. For example, in 2004, there were about 5,800 companies listed on U.S. stock exchanges; but the largest 20 companies accounted for more than 40% of the total market capitalization of the 5,800 companies. Thus, it may be more reasonable to assume that investors will "value-weight" the portfolios. In other words, they might invest more dollars in stocks with greater market capitalizations. Therefore, we construct another set of portfolios, which are identical to the "equal-weighted" portfolios described above, except that dollars are invested in each stock according to its relative market capitalization.

The average monthly returns for the equal-weighted portfolios are show in Table 3. For the average across all 10 firms, the "High" portfolio had an average return of 1.8% per month in 1999, or about 21.6% annualized. In 2002, it lost 2.0%, or about -24% annualized. Table 3 also reports average monthly return for each individual firm's portfolios. No firm averaged positive monthly returns every year. Almost every firm averaged positive monthly returns post-Global Settlement (2003 and 2004), however.

[Insert Table 3 about here.]

Of course, investors could have ignored analysts' recommendations and instead invested every month in stocks through a broadly diversified mutual fund, such as one that replicates the Standard and Poor's ("S&P") 500 index. Therefore, it is worthwhile to examine how the analyst portfolios compare with this index. Table 3 shows that the "High" recommendation portfolios of most of the firms averaged higher monthly returns than did the

index most years. And 3 firms did so very year. On average, the 10 firms' "High" recommendation portfolios outperformed the index by 0.1% (2002) to 1.2% (2003) per month.

Perhaps it is even more interesting to examine the returns of the "Medium" and "Low" recommendation portfolios. Just to emphasize, savvy institutional investors indicated in polls that they understood even pre-settlement that "Medium" recommendations from analysts, regardless of the actual naming convention, meant "Hold", not "Buy" more, of the stocks. And "Low" recommendations were advice from analysts to "Sell" the stocks. And regardless of how many categories firms use pre- or post-settlement, analysts are indicating their *relative* ratings of expected investment value through their usage of "High", "Medium", and "Low" categories. Interestingly, as shown in Table 3, for the 10-firm average, the "Medium" and "Low" recommendation portfolios also outperform the S&P 500 index every year. And disturbingly, they also outperform the "High" recommendation portfolio more often than not. For most of the firms individually, their "Low" recommendation portfolios outperform their "High" recommendation portfolios. These findings are generally the same for the value-weighted portfolios, as shown in Table 4. Remarkably, nothing in Tables 3 or 4 suggests that the "High" recommendation portfolios on average do a better job of outperforming the S&P 500 index after the Global Settlement than before. And perhaps more disturbingly, nothing suggests that on average, stocks ranked "High" outperform those ranked "Medium" or "Low", either before or after the Global Settlement.

[Insert Table 4 about here.]

Of course, one might ask why most the recommendation portfolios, "High", "Medium", or "Low", outperform the S&P 500 index. Jegadeesh, Kim, Krische, and Lee document that part of the explanation as to the value from analyst recommendations is that analysts tend to issue positive recommendations for stocks that prior research shows had

higher returns historically but which are riskier.[22] For example, over long periods of time, all else equal, stocks of small market cap companies have outperformed stocks of large market cap companies. But the returns of these small stocks are often considered riskier because historically they have also been more volatile. To examine to what extent increased risk explains the excess returns in Tables 3 and 4, we estimate monthly time-series regressions for each portfolio using the Fama-French 4-factor model, as in Barber, Lehavy, McNichols, and Trueman.[23] Specifically, the portfolio one-month return is regressed on the three factors in the Fama and French model[24]: 1) the excess market return $(R_m - R_f)$; 2) the return from a value-weighted, self-financing portfolio, which is long small cap stocks and short large cap stocks *(SMB)*; and 3) the return from a value-weighted, self-financing portfolio, which is long value stocks and short growth stocks *(HML)*.[25] The fourth factor in the regression is an equally-weighted momentum portfolio return *(MOM)*. This momentum portfolio is a Jegadeesh and Titman type portfolio, with *J=11* and a one month skip. It is long the best 30% and short the worst 30% of stocks.[26] We perform the regressions for the time-series of portfolio returns from each firm for each category of stock recommendation levels for the equal-weighted as well as the value-weighted portfolios. A positive loading on any of these 4 factors means the portfolio takes on more of that type of risk. A negative loading in the regression indicates less risk.

Results from the regressions (not shown here for brevity but available upon request) indicate that many portfolios outperformed the S&P index because they did load positively (i.e., carried more risk) for the three Fama and French risk factors. Interestingly, the "Medium" and "Low" portfolios outperform the "High" portfolio more often than not

[22] Jegadeesh, Kim, Krische, and Lee (2004).
[23] Barber, Lehavy, McNichols, and Trueman (2001), page 543.
[24] Fama and French (1993).
[25] Fama and French (1993).
[26] See Jegadeesh and Titman (1993). We are grateful to Ken French for providing us with this data via his web site at http://mba.tuck.dartmouth.edu. Further details on these factors are also available at that site.

because they load less heavily (and sometime negatively) on the momentum risk factor during periods when momentum portfolio returns were negative or low relative to historic performance.

Conclusions

At the Global Settlement press conference on April 28, 2003, U.S. Securities and Exchange Commission Chairman William H. Donaldson stated:

> "To provide the public with the tools necessary to assess the usefulness of an analyst's research, each firm must disclose quarterly the price targets, ratings, and earnings per share forecasted in its research reports. I expect that these disclosures will fuel development of private services to transform such raw data into investor-friendly report cards on the accuracy of the firms' research."

In addition, NYSE and NASD analyst rules, effective 2002 and applicable to all brokerage analysts, require that along with the current recommendation rating of the stock, the sell-side analyst publish the historical price performance of recommendations he or she has made for that stock. It is unclear why individual investors should have to purchase private services to make sell-side research user friendly. The empirical findings presented here suggest determining the investment value to be gained from standing (often "stale") recommendations of the 10 Global Settlement firms is complicated in the sense that data need to be drawn across the aggregate of the firm's recommendations and compared against meaningful benchmarks, such as all the stocks for which the firm has issued its other rankings. In addition, as higher returns are expected if investors take on higher risks, reports of higher returns without disclosure of the risks those investments carry are misleading at best.

In the introduction to this paper, we recommend disclosure on an ongoing basis of each firm's aggregate analyst recommendation performance, as provided in this paper. We recommend the statistics be calculated and provided by regulators on their web sites for the

Global Settlement firms as it is unlikely that these aggregate comparative reports will be provided voluntarily by the firms. Furthermore, it is unclear why regulators could not also provide these aggregate statistics for those brokerage firms that were not part of the Global Settlement as those firms are now also required to disclose historical price performance for each individual recommendation per the 2002 analyst rules.

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Table 1
Recommendations of the Ten Global Settlement Firms Pre- and Post-Settlement

This table reports the standing recommendations of the ten "Global Settlement" firms. Individual firm identities are masked, with firms randomly assigned a number 1 thru 10. Standing recommendations are calculated at the end of each month and then averaged for the year. Most of the firms renamed recommendation categories *during* the year 2002. Thus, statistics are provided for 2002 separately before ("2002A") and after ("2002B") the firm's change in naming system. Each firm's 3 most frequently used recommendation levels are partitioned into "High" (most favorable recommendation), "Medium" (next most favorable), and "Low" (least favorable). Recommendation levels are then reported as a percent of standing recommendations that year. As some firms used more than 3 recommendation categories, the percentage of recommendations that do not fall into the 3 most frequently used categories is also reported ("Other"). Table 1 also reports the changes in recomendation levels ("upgrades" and "downgrades") each year, as a percent of standing recommendations. "Cluster measure" is the number of Global Settlement firms that have the same standing recommendation level for the company covered, averaged across the companies that firm covers with that recommendation level. Percentage of upgrades and downgrades and cluster measures are not shown for 2002 because firms changed category names during different months of the year.

Average of All Ten Firms							
	1999	**2000**	**2001**	**2002A**	**2002B**	**2003**	**2004**
Standing recommendations	845	930	996	971	881	800	799
Recommendation level (%)							
High	36.6%	39.8%	32.2%	28.4%	34.5%	31.8%	39.0%
Medium	36.8%	35.8%	38.3%	38.0%	45.6%	48.8%	48.2%
Low	26.2%	24.1%	29.0%	32.4%	19.6%	18.8%	12.8%
Other	0.4%	0.4%	0.5%	1.3%	0.3%	0.6%	0.1%
Upgrades (%)	24.5%	18.2%	19.3%			32.2%	38.6%
Downgrades (%)	22.6%	28.5%	34.8%			33.0%	27.6%
Cluster measure average							
High	2.6	2.9	2.9			3.1	3.4
Medium	2.3	2.4	2.6			3.1	3.2
Low	2.2	2.4	2.7			2.1	2.1
Firm 1							
Standing recommendations	1,140	1,130	1,195	1,165	1,075	848	838
Recommendation level (%)							
High	40.8%	44.9%	35.6%	30.5%	31.4%	32.8%	36.5%
Medium	29.1%	28.1%	33.2%	34.1%	40.9%	43.6%	49.2%
Low	29.6%	26.6%	30.4%	34.3%	27.6%	23.5%	14.1%
Other	0.5%	0.4%	0.8%	1.1%	0.1%	0.1%	0.2%
Upgrades (%)	28.9%	19.8%	22.3%			42.1%	42.5%
Downgrades (%)	23.6%	27.3%	37.7%			39.4%	33.7%
Cluster measure average							
High	2.5	2.9	2.9			3.1	3.4
Medium	2.4	2.5	2.7			3.1	3.2
Low	2.2	2.5	2.7			2.1	2.1

Table 1 (continued)
Recommendations of the Ten Global Settlement Firms Pre- and Post-Settlement

	1999	2000	2001	2002A	2002B	2003	2004
Firm 2							
Standing recommendations	949	1,169	1,283	1,202	1,009	875	820
Recommendation level (%)							
High	12.7%	17.0%	11.6%	9.0%	40.2%	37.4%	41.2%
Medium	54.3%	52.3%	51.0%	52.6%	40.3%	46.6%	46.6%
Low	32.6%	30.1%	36.7%	37.9%	19.5%	16.0%	12.2%
Other	0.4%	0.6%	0.7%	0.5%	0.0%	0.0%	0.0%
Upgrades (%)	22.4%	20.9%	18.2%			30.6%	28.0%
Downgrades (%)	23.8%	29.5%	33.2%			30.3%	23.7%
Cluster measure average							
High	2.8	3.2	3.2			3.0	3.4
Medium	2.2	2.3	2.4			3.1	3.3
Low	2.3	2.3	2.5			2.1	2.1
Firm 3							
Standing recommendations	1,366	1,496	1,503	1,373	1,161	1,066	1,107
Recommendation level (%)							
High	21.0%	26.6%	22.7%	24.4%	43.0%	40.3%	44.2%
Medium	49.3%	46.7%	41.0%	32.5%	49.7%	53.8%	51.5%
Low	29.2%	26.3%	35.1%	39.0%	6.6%	5.6%	4.3%
Other	0.5%	0.4%	1.2%	4.1%	0.7%	0.3%	0.0%
Upgrades (%)	37.7%	27.2%	26.6%			37.3%	28.5%
Downgrades (%)	24.8%	34.7%	40.8%			31.5%	34.0%
Cluster measure average							
High	2.7	3.0	2.9			2.8	3.0
Medium	2.2	2.2	2.5			2.9	2.9
Low	2.1	2.3	2.4			2.5	2.4
Firm 4							
Standing recommendations	912	940	925	900	910	794	698
Recommendation level (%)							
High	21.2%	21.3%	14.8%	13.6%	31.7%	28.1%	31.0%
Medium	43.5%	45.3%	43.0%	39.6%	48.0%	50.8%	48.1%
Low	35.1%	33.1%	41.8%	45.9%	20.2%	21.1%	20.9%
Other	0.2%	0.3%	0.4%	0.9%	0.1%	0.0%	0.0%
Upgrades (%)	28.3%	19.0%	21.7%			25.1%	23.5%
Downgrades (%)	28.6%	30.2%	40.3%			30.2%	26.2%
Cluster measure average							
High	3.0	3.5	3.5			3.4	3.7
Medium	2.5	2.6	2.9			3.2	3.4
Low	2.3	2.4	2.7			2.1	2.0

Table 1 (continued)
Recommendations of the Ten Global Settlement Firms Pre- and Post-Settlement

	1999	2000	2001	2002A	2002B	2003	2004
Firm 5							
Standing recommendations	1,011	1,119	1,004	979	856	738	739
Recommendation level (%)							
High	30.4%	32.8%	27.7%	24.0%	23.2%	22.9%	23.8%
Medium	40.4%	40.1%	41.0%	40.5%	56.4%	57.6%	58.2%
Low	28.1%	26.3%	30.7%	34.1%	20.3%	19.3%	17.8%
Other	1.1%	0.8%	0.6%	1.4%	0.1%	0.2%	0.2%
Upgrades (%)	22.7%	16.6%	13.3%			26.7%	21.7%
Downgrades (%)	19.7%	25.0%	21.5%			26.7%	22.6%
Cluster measure average							
High	2.8	3.2	3.2			3.7	4.2
Medium	2.3	2.4	2.9			3.3	3.4
Low	2.3	2.5	2.5			2.3	2.1
Firm 6							
Standing recommendations	826	922	856	812	733	684	720
Recommendation level (%)							
High	41.7%	44.7%	39.3%	35.6%	38.3%	37.3%	38.3%
Medium	30.7%	29.2%	32.1%	33.4%	44.8%	48.7%	49.5%
Low	27.0%	25.5%	27.9%	30.0%	16.9%	13.9%	12.0%
Other	0.6%	0.6%	0.7%	1.0%	0.0%	0.1%	0.2%
Upgrades (%)	18.8%	14.0%	11.2%			23.1%	22.8%
Downgrades (%)	18.9%	23.8%	19.3%			24.7%	18.5%
Cluster measure average							
High	2.4	2.7	2.6			3.1	3.4
Medium	2.3	2.3	2.7			3.1	3.0
Low	2.2	2.3	2.6			2.3	2.2
Firm 7	***(Firm 7 did not change ratings systems in 2002, so "2002A" = "2002B".)***						
Standing recommendations	335	428	455	495	495	448	465
Recommendation level (%)							
High	38.7%	40.0%	24.7%	19.8%	19.8%	14.0%	56.8%
Medium	43.0%	44.3%	47.9%	44.4%	44.4%	41.3%	38.7%
Low	18.2%	15.8%	27.3%	33.6%	33.6%	39.5%	4.4%
Other	0.1%	0.0%	0.1%	2.2%	2.2%	5.2%	0.1%
Upgrades (%)	34.6%	18.2%	23.1%			36.8%	133.0%
Downgrades (%)	37.6%	47.2%	56.5%			35.0%	30.7%
Cluster measure average							
High	2.0	2.1	2.3			2.8	2.7
Medium	1.8	2.0	2.3			2.5	2.6
Low	1.7	1.7	2.1			1.5	1.5

Table 1 (continued)
Recommendations of the Ten Global Settlement Firms Pre- and Post-Settlement

	1999	2000	2001	2002A	2002B	2003	2004
Firm 8							
Standing recommendations	564	607	935	945	766	868	976
Recommendation level (%)							
High	51.5%	53.6%	45.0%	40.0%	30.2%	31.5%	34.1%
Medium	14.0%	12.2%	24.3%	26.1%	46.1%	46.0%	46.3%
Low	33.8%	33.9%	30.4%	32.9%	23.5%	22.4%	19.6%
Other	0.7%	0.3%	0.3%	1.0%	0.2%	0.1%	0.0%
Upgrades (%)	16.1%	13.7%	23.3%			35.1%	29.6%
Downgrades (%)	18.8%	26.5%	38.5%			36.3%	32.0%
Cluster measure average							
High	2.8	3.1	2.6			3.2	3.4
Medium	2.7	2.9	2.7			3.2	3.1
Low	2.4	2.6	2.7			2.0	1.9
Firm 9							
Standing recommendations	731	820	883	936	900	944	922
Recommendation level (%)							
High	43.4%	47.6%	38.8%	30.9%	31.2%	34.4%	40.6%
Medium	29.5%	29.9%	31.6%	33.9%	42.7%	45.1%	44.4%
Low	26.9%	21.9%	29.0%	34.3%	26.1%	20.5%	14.8%
Other	0.2%	0.6%	0.6%	0.9%	0.0%	0.0%	0.2%
Upgrades (%)	20.8%	19.8%	15.2%			27.4%	21.5%
Downgrades (%)	15.6%	22.0%	32.0%			17.2%	20.0%
Cluster measure average							
High	2.6	2.9	2.9			3.2	3.4
Medium	2.5	2.5	2.7			3.1	3.1
Low	2.4	2.5	2.8			2.0	1.9
Firm 10	***(Firm 10 did not change ratings systems in 2002, so "2002A" = "2002B".)***						
Standing recommendations	620	671	917	901	901	739	709
Recommendation level (%)							
High	64.6%	69.1%	62.1%	56.0%	56.0%	39.2%	43.3%
Medium	34.3%	29.8%	37.4%	42.5%	42.5%	54.3%	49.0%
Low	1.1%	1.0%	0.5%	1.5%	1.5%	6.5%	7.7%
Other	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Upgrades (%)	15.0%	13.1%	17.8%			37.8%	34.4%
Downgrades (%)	14.7%	18.6%	28.5%			58.3%	35.0%
Cluster measure average							
High	2.4	2.7	2.4			3.1	3.5
Medium	2.2	2.2	2.6			3.3	3.5
Low	2.5	2.8	3.5			2.4	2.5

Table 2

Initial Market Reaction around Recommendation Upgrades and Downgrades by the Ten Global Settlement Firms Pre- and Post-Settlement

This table reports the initial market reaction around recommendation changes made by the ten "Global Settlement" firms. Data are reported separately for "Pre-Settlement" and "Post-Settlement" periods, using data from 1999 through third quarter 2004. Panel A reports market reaction for recommendation changes, excluding those made within a day of the recommended company reporting quarterly earnings. Panel B reports market reaction when recommendation changes are made within a day of that company reporting quarterly earnings. Each firm's 3 most frequently used recommendation levels are partitioned into "High" (most favorable recommendation), "Medium" (next most favorable), and "Low" (least favorable). Columns indicate the recommendation level that the firm gives the company's stock when it issues a change in recommendation, and rows indicate the recommendation level immediately prior to the change in recommendation. Initial market reaction is defined as the 3-day event excess return. The three-day event return is the geometrically cumulated return for the day before, day of, and day after the recommendation. The excess return is the stock return less the appropriate size-decile return of the equal-weighted CRSP NYSE/AMEX/Nasdaq index. Table 2 reports the mean of the excess return for each change category. All excess return means are significantly different from zero at the 5% level.

Panel A: Three-day event excess returns, excluding recommendation changes made within a day the company's earnings announcements

Pre-Global Settlement

From Recommendation: \ To Recommendation:	"High"	"Medium"	"Low"
"High"	--	**-5.98%**	**-10.18%**
"Medium"	**3.51%**	--	**-7.86%**
"Low"	**3.95%**	**3.33%**	--

Post-Global Settlement

From Recommendation: \ To Recommendation:	"High"	"Medium"	"Low"
"High"	--	**-2.93%**	**-4.79%**
"Medium"	**2.81%**	--	**-3.77%**
"Low"	**4.48%**	**1.80%**	--

Panel B: Three-day event excess returns for recommendation changes made within a day of the company's earnings announcements

Pre-Global Settlement

From Recommendation: \ To Recommendation:	"High"	"Medium"	"Low"
"High"	--	**-8.64%**	**-15.34%**
"Medium"	**6.50%**	--	**-11.09%**
"Low"	**6.01%**	**6.82%**	--

Post-Global Settlement

From Recommendation: \ To Recommendation:	"High"	"Medium"	"Low"
"High"	--	**-5.53%**	**-13.24%**
"Medium"	**5.21%**	--	**-8.97%**
"Low"	**3.42%**	**5.06%**	--

Table 3

Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Equal-Weighted Portfolios)

This table reports the investment value of recommendations of the ten "Global Settlement" firms. Individual firm identities are masked, with firms randomly assigned a number 1 thru 10. Each firm's 3 most frequently used recommendation levels are partitioned into "High" (most favorable recommendation), "Medium" (next most favorable), and "Low" (least favorable). Standing recommendations are calculated at the end of each month and then portolios formed as shown below. Stocks are equal-dollar weighted ("equal weighted") within portfolios. Portfolios are rebalanced monthly. This table reports the mean monthly return each year (in percent) from these investment portfolio strategies. Results are shown separately for each firm's recommendations along with the results equally averaged across all 10 firms. Portfolio performance versus the Standard and Poor's ("S&P) 500 index provides a measure of the recommendations' relative investment value versus investing in a mutual fund that replicates the S&P 500 index. The last line ("High" minus "Low") provides a measure of how well analysts' "High" ranked stocks performed versus their "Low" ranked stocks.

Average of All Ten Firms

	1999	**2000**	**2001**	**2002**	**2003**	**2004**
"High" recommendations (equal weighted)	1.8%	0.8%	-1.1%	-2.0%	3.6%	0.4%
"High" recommendations (equal weighted) minus S&P 500 index	1.0%	0.9%	0.3%	0.1%	1.2%	0.4%
"Medium" recommendations (equal weighted)	1.6%	1.2%	-0.4%	-1.7%	4.0%	0.4%
"Medium" recommendations (equal weighted) minus S&P 500 index	0.8%	1.3%	1.0%	0.4%	1.6%	0.4%
"Low" recommendations (equal weighted)	1.6%	1.8%	-0.3%	-1.5%	5.1%	-0.1%
"Low" recommendations (equal weighted) minus S&P 500 index	0.8%	1.9%	1.2%	0.7%	2.8%	-0.1%
"High" minus "Low" recommendations (equal weighted)	0.2%	-1.0%	-0.8%	-0.6%	-1.5%	0.5%

Table 3 (continued)
Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Equal-Weighted Portfolios)

Firm 1

	1999	2000	2001	2002	2003	2004
"High" recommendations (equal weighted)	1.5%	0.9%	-1.1%	-1.9%	3.8%	0.5%
"High" recommendations (equal weighted) minus S&P 500 index	0.7%	0.9%	0.3%	0.2%	1.4%	0.5%
"Medium" recommendations (equal weighted)	1.3%	1.7%	-0.1%	-1.2%	3.8%	0.8%
"Medium" recommendations (equal weighted) minus S&P 500 index	0.5%	1.7%	1.3%	0.9%	1.4%	0.8%
"Low" recommendations (equal weighted)	0.8%	1.9%	0.1%	-1.5%	4.7%	0.3%
"Low" recommendations (equal weighted) minus S&P 500 index	0.0%	1.9%	1.6%	0.6%	2.3%	0.3%
"High" minus "Low" recommendations (equal weighted)	0.7%	-1.0%	-1.3%	-0.4%	-0.9%	0.2%

Firm 2

	1999	2000	2001	2002	2003	2004
"High" recommendations (equal weighted)	2.6%	1.3%	-2.3%	-2.0%	3.4%	0.0%
"High" recommendations (equal weighted) minus S&P 500 index	1.8%	1.3%	-0.9%	0.2%	1.0%	0.0%
"Medium" recommendations (equal weighted)	2.3%	0.9%	-0.7%	-1.5%	3.9%	0.6%
"Medium" recommendations (equal weighted) minus S&P 500 index	1.5%	0.9%	0.8%	0.6%	1.6%	0.5%
"Low" recommendations (equal weighted)	0.5%	2.2%	0.7%	-1.4%	4.8%	0.1%
"Low" recommendations (equal weighted) minus S&P 500 index	-0.3%	2.3%	2.1%	0.7%	2.4%	0.1%
"High" minus "Low" recommendations (equal weighted)	2.1%	-0.9%	-3.0%	-0.6%	-1.4%	-0.1%

Table 3 (continued)
Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Equal-Weighted Portfolios)

Firm 3

	1999	2000	2001	2002	2003	2004
"High" recommendations (equal weighted)	1.1%	0.9%	-0.6%	-1.9%	3.4%	0.4%
"High" recommendations (equal weighted) minus S&P 500 index	0.3%	0.9%	0.8%	0.2%	1.0%	0.4%
"Medium" recommendations (equal weighted)	1.5%	1.5%	-0.6%	-0.7%	4.3%	0.4%
"Medium" recommendations (equal weighted) minus S&P 500 index	0.7%	1.5%	0.9%	1.5%	1.9%	0.4%
"Low" recommendations (equal weighted)	1.2%	1.8%	0.0%	-1.2%	5.1%	-0.6%
"Low" recommendations (equal weighted) minus S&P 500 index	0.4%	1.8%	1.4%	1.0%	2.7%	-0.6%
"High" minus "Low" recommendations (equal weighted)	-0.1%	-0.9%	-0.6%	-0.8%	-1.7%	1.0%

Firm 4

	1999	2000	2001	2002	2003	2004
"High" recommendations (equal weighted)	1.6%	1.4%	-1.0%	-1.8%	3.5%	1.0%
"High" recommendations (equal weighted) minus S&P 500 index	0.8%	1.5%	0.4%	0.3%	1.1%	1.0%
"Medium" recommendations (equal weighted)	1.6%	1.4%	-0.6%	-1.8%	4.0%	0.1%
"Medium" recommendations (equal weighted) minus S&P 500 index	0.8%	1.5%	0.8%	0.3%	1.6%	0.1%
"Low" recommendations (equal weighted)	2.0%	2.0%	0.1%	-2.0%	4.3%	0.7%
"Low" recommendations (equal weighted) minus S&P 500 index	1.2%	2.1%	1.5%	0.1%	1.9%	0.7%
"High" minus "Low" recommendations (equal weighted)	-0.4%	-0.6%	-1.1%	0.2%	-0.7%	0.3%

Table 3 (continued)
Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Equal-Weighted Portfolios)

Firm 5

	1999	2000	2001	2002	2003	2004
"High" recommendations (equal weighted)	1.7%	0.8%	-1.6%	-2.0%	3.2%	0.7%
"High" recommendations (equal weighted) minus S&P 500 index	0.9%	0.8%	-0.2%	0.2%	0.8%	0.7%
"Medium" recommendations (equal weighted)	1.4%	0.7%	-0.5%	-1.8%	3.9%	0.4%
"Medium" recommendations (equal weighted) minus S&P 500 index	0.6%	0.8%	1.0%	0.3%	1.5%	0.4%
"Low" recommendations (equal weighted)	1.2%	2.5%	0.9%	-1.7%	5.0%	-0.1%
"Low" recommendations (equal weighted) minus S&P 500 index	0.4%	2.6%	2.3%	0.5%	2.6%	-0.1%
"High" minus "Low" recommendations (equal weighted)	0.5%	-1.8%	-2.5%	-0.3%	-1.8%	0.8%

Firm 6

	1999	2000	2001	2002	2003	2004
"High" recommendations (equal weighted)	1.8%	0.2%	-0.7%	-2.4%	3.6%	0.7%
"High" recommendations (equal weighted) minus S&P 500 index	1.0%	0.2%	0.7%	-0.2%	1.2%	0.7%
"Medium" recommendations (equal weighted)	2.1%	1.2%	0.0%	-1.7%	3.8%	0.5%
"Medium" recommendations (equal weighted) minus S&P 500 index	1.3%	1.3%	1.4%	0.4%	1.4%	0.5%
"Low" recommendations (equal weighted)	0.9%	1.9%	-0.1%	-0.9%	5.7%	0.0%
"Low" recommendations (equal weighted) minus S&P 500 index	0.1%	1.9%	1.3%	1.3%	3.3%	0.0%
"High" minus "Low" recommendations (equal weighted)	0.9%	-1.7%	-0.6%	-1.5%	-2.1%	0.7%

Table 3 (continued)
Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Equal-Weighted Portfolios)

Firm 7

	1999	2000	2001	2002	2003	2004
"High" recommendations (equal weighted)	2.6%	-0.7%	-0.9%	-2.5%	4.2%	-0.1%
"High" recommendations (equal weighted) minus S&P 500 index	1.8%	-0.7%	0.6%	-0.4%	1.8%	-0.1%
"Medium" recommendations (equal weighted)	2.6%	0.6%	-1.2%	-3.2%	4.3%	-0.6%
"Medium" recommendations (equal weighted) minus S&P 500 index	1.8%	0.7%	0.2%	-1.1%	1.9%	-0.6%
"Low" recommendations (equal weighted)	3.2%	1.6%	0.4%	-2.3%	6.2%	-2.0%
"Low" recommendations (equal weighted) minus S&P 500 index	2.4%	1.7%	1.8%	-0.2%	3.8%	-2.0%
"High" minus "Low" recommendations (equal weighted)	-0.6%	-2.3%	-1.3%	-0.2%	-2.0%	1.9%

Firm 8

	1999	2000	2001	2002	2003	2004
"High" recommendations (equal weighted)	1.1%	0.5%	-1.5%	-2.2%	3.9%	0.5%
"High" recommendations (equal weighted) minus S&P 500 index	0.3%	0.6%	-0.1%	-0.1%	1.5%	0.5%
"Medium" recommendations (equal weighted)	1.0%	0.0%	-0.3%	-2.5%	3.9%	0.6%
"Medium" recommendations (equal weighted) minus S&P 500 index	0.3%	0.1%	1.2%	-0.4%	1.5%	0.6%
"Low" recommendations (equal weighted)	1.0%	1.9%	0.6%	-1.2%	5.3%	0.5%
"Low" recommendations (equal weighted) minus S&P 500 index	0.2%	2.0%	2.1%	0.9%	2.9%	0.5%
"High" minus "Low" recommendations (equal weighted)	0.1%	-1.4%	-2.1%	-1.0%	-1.4%	0.0%

Table 3 (continued)
Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Equal-Weighted Portfolios)

Firm 9

	1999	2000	2001	2002	2003	2004
"High" recommendations (equal weighted)	2.4%	1.1%	-1.0%	-1.7%	3.4%	0.3%
"High" recommendations (equal weighted) minus S&P 500 index	1.6%	1.2%	0.5%	0.4%	1.0%	0.3%
"Medium" recommendations (equal weighted)	1.5%	1.3%	-0.6%	-1.7%	4.3%	0.2%
"Medium" recommendations (equal weighted) minus S&P 500 index	0.7%	1.4%	0.8%	0.5%	1.9%	0.2%
"Low" recommendations (equal weighted)	2.3%	2.2%	-0.1%	-1.5%	5.0%	0.7%
"Low" recommendations (equal weighted) minus S&P 500 index	1.5%	2.3%	1.3%	0.7%	2.6%	0.7%
"High" minus "Low" recommendations (equal weighted)	0.1%	-1.1%	-0.9%	-0.3%	-1.6%	-0.4%

Firm 10

	1999	2000	2001	2002	2003	2004
"High" recommendations (equal weighted)	1.8%	1.9%	-0.1%	-1.9%	3.9%	0.2%
"High" recommendations (equal weighted) minus S&P 500 index	1.0%	1.9%	1.3%	0.2%	1.5%	0.2%
"Medium" recommendations (equal weighted)	0.8%	2.9%	0.1%	-1.3%	3.8%	0.7%
"Medium" recommendations (equal weighted) minus S&P 500 index	0.0%	2.9%	1.5%	0.8%	1.4%	0.7%
"Low" recommendations (equal weighted)	2.8%	0.3%	-5.2%	-1.1%	5.5%	-0.1%
"Low" recommendations (equal weighted) minus S&P 500 index	2.0%	0.4%	-3.8%	1.0%	3.1%	-0.1%
"High" minus "Low" recommendations (equal weighted)	-1.0%	1.5%	5.1%	-0.8%	-1.6%	0.3%

Table 4

Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Value-Weighted Portfolios)

This table reports the investment value of recommendations of the ten "Global Settlement" firms. Individual firm identities are masked, with firms randomly assigned a number 1 thru 10. Each firm's 3 most frequently used recommendation levels are partitioned into "High" (most favorable recommendation), "Medium" (next most favorable), and "Low" (least favorable). Standing recommendations are calculated at the end of each month and then portolios formed as shown below. Stocks are "value weighted" within portfolios (i.e., stocks are weighted according to their market capitalizations). Portfolios are rebalanced monthly. This table reports the mean monthly return each year (in percent) from these investment portfolio strategies. Results are shown separately for each firm's recommendations along with the results equally averaged across all 10 firms. Portfolio performance versus the Standard and Poor's ("S&P) 500 index provides a measure of the recommendations' relative investment value versus investing in a mutual fund that replicates the S&P 500 index. The last line ("High" minus "Low") provides a measure of how well analysts' "High" ranked stocks performed versus their "Low" ranked stocks.

Average of All Ten Firms

	1999	**2000**	**2001**	**2002**	**2003**	**2004**
"High" recommendations (value weighted)	3.3%	1.7%	-0.7%	-1.3%	2.8%	0.4%
"High" recommendations (value weighted) minus S&P 500 index	2.5%	1.7%	0.7%	0.8%	0.4%	0.4%
"Medium" recommendations (value weighted)	2.5%	2.3%	0.0%	-0.9%	3.2%	0.7%
"Medium" recommendations (value weighted) minus S&P 500 index	1.7%	2.4%	1.5%	1.2%	0.8%	0.7%
"Low" recommendations (value weighted)	1.4%	2.8%	0.1%	-0.8%	4.0%	0.4%
"Low" recommendations (value weighted) minus S&P 500 index	0.6%	2.9%	1.5%	1.3%	1.6%	0.4%
"High" minus "Low" recommendations (value weighted)	1.9%	-1.2%	-0.8%	-0.5%	-1.1%	0.0%

Table 4 (continued)
Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Value-Weighted Portfolios)

Firm 1

	1999	2000	2001	2002	2003	2004
"High" recommendations (value weighted)	3.0%	1.5%	-0.7%	-1.5%	3.0%	0.3%
"High" recommendations (value weighted) minus S&P 500 index	2.2%	1.5%	0.8%	0.6%	0.6%	0.3%
"Medium" recommendations (value weighted)	2.2%	2.2%	0.0%	-0.4%	3.5%	0.7%
"Medium" recommendations (value weighted) minus S&P 500 index	1.4%	2.3%	1.4%	1.7%	1.1%	0.7%
"Low" recommendations (value weighted)	1.4%	2.5%	0.3%	-0.9%	3.4%	1.4%
"Low" recommendations (value weighted) minus S&P 500 index	0.6%	2.5%	1.7%	1.3%	1.0%	1.4%
"High" minus "Low" recommendations (value weighted)	1.6%	-1.0%	-0.9%	-0.6%	-0.5%	-1.1%

Firm 2

	1999	2000	2001	2002	2003	2004
"High" recommendations (value weighted)	4.1%	1.1%	-1.6%	-1.2%	2.9%	0.1%
"High" recommendations (value weighted) minus S&P 500 index	3.3%	1.1%	-0.2%	1.0%	0.5%	0.1%
"Medium" recommendations (value weighted)	3.2%	2.1%	-0.3%	-1.1%	3.0%	0.9%
"Medium" recommendations (value weighted) minus S&P 500 index	2.4%	2.2%	1.1%	1.1%	0.6%	0.9%
"Low" recommendations (value weighted)	1.0%	2.9%	0.6%	-0.7%	4.0%	0.2%
"Low" recommendations (value weighted) minus S&P 500 index	0.2%	3.0%	2.1%	1.4%	1.6%	0.1%
"High" minus "Low" recommendations (value weighted)	3.2%	-1.9%	-2.3%	-0.5%	-1.0%	0.0%

Table 4 (continued)
Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Value-Weighted Portfolios)

Firm 3

	1999	2000	2001	2002	2003	2004
"High" recommendations (value weighted)	3.4%	2.0%	-0.6%	-1.5%	2.7%	0.4%
"High" recommendations (value weighted) minus S&P 500 index	2.6%	2.0%	0.8%	0.6%	0.3%	0.4%
"Medium" recommendations (value weighted)	2.3%	2.1%	0.2%	-0.3%	3.3%	0.5%
"Medium" recommendations (value weighted) minus S&P 500 index	1.5%	2.1%	1.6%	1.9%	0.9%	0.5%
"Low" recommendations (value weighted)	1.2%	2.8%	0.3%	-0.4%	5.0%	0.6%
"Low" recommendations (value weighted) minus S&P 500 index	0.4%	2.9%	1.8%	1.8%	2.6%	0.6%
"High" minus "Low" recommendations (value weighted)	2.2%	-0.8%	-0.9%	-1.2%	-2.3%	-0.2%

Firm 4

	1999	2000	2001	2002	2003	2004
"High" recommendations (value weighted)	2.5%	1.3%	-0.7%	-1.5%	2.8%	0.9%
"High" recommendations (value weighted) minus S&P 500 index	1.7%	1.4%	0.8%	0.6%	0.4%	0.9%
"Medium" recommendations (value weighted)	2.4%	2.2%	0.2%	-1.0%	3.0%	0.1%
"Medium" recommendations (value weighted) minus S&P 500 index	1.6%	2.2%	1.7%	1.1%	0.6%	0.1%
"Low" recommendations (value weighted)	2.4%	3.0%	-0.4%	-0.8%	3.9%	0.8%
"Low" recommendations (value weighted) minus S&P 500 index	1.6%	3.0%	1.1%	1.3%	1.5%	0.8%
"High" minus "Low" recommendations (value weighted)	0.1%	-1.7%	-0.3%	-0.7%	-1.0%	0.1%

Table 4 (continued)
Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Value-Weighted Portfolios)

Firm 5

	1999	2000	2001	2002	2003	2004
"High" recommendations (value weighted)	2.9%	1.6%	-1.0%	-1.5%	2.7%	0.4%
"High" recommendations (value weighted) minus S&P 500 index	2.1%	1.7%	0.4%	0.7%	0.3%	0.4%
"Medium" recommendations (value weighted)	2.6%	2.5%	0.3%	-0.6%	3.0%	0.6%
"Medium" recommendations (value weighted) minus S&P 500 index	1.8%	2.6%	1.7%	1.5%	0.6%	0.6%
"Low" recommendations (value weighted)	1.6%	3.3%	0.5%	-1.0%	3.8%	0.5%
"Low" recommendations (value weighted) minus S&P 500 index	0.8%	3.3%	2.0%	1.1%	1.4%	0.4%
"High" minus "Low" recommendations (value weighted)	1.3%	-1.6%	-1.5%	-0.5%	-1.1%	0.0%

Firm 6

	1999	2000	2001	2002	2003	2004
"High" recommendations (value weighted)	3.0%	2.0%	-0.2%	-1.6%	2.7%	0.5%
"High" recommendations (value weighted) minus S&P 500 index	2.2%	2.1%	1.2%	0.5%	0.3%	0.5%
"Medium" recommendations (value weighted)	2.5%	2.3%	-0.5%	-1.0%	3.1%	0.7%
"Medium" recommendations (value weighted) minus S&P 500 index	1.7%	2.4%	0.9%	1.1%	0.7%	0.7%
"Low" recommendations (value weighted)	1.7%	2.3%	-0.4%	-0.1%	2.9%	0.4%
"Low" recommendations (value weighted) minus S&P 500 index	0.9%	2.4%	1.0%	2.0%	0.5%	0.4%
"High" minus "Low" recommendations (value weighted)	1.3%	-0.3%	0.2%	-1.5%	-0.2%	0.2%

Table 4 (continued)
Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Value-Weighted Portfolios)

Firm 7

	1999	2000	2001	2002	2003	2004
"High" recommendations (value weighted)	5.7%	1.3%	-0.4%	-0.8%	3.0%	0.4%
"High" recommendations (value weighted) minus S&P 500 index	4.9%	1.4%	1.0%	1.3%	0.6%	0.4%
"Medium" recommendations (value weighted)	3.7%	3.4%	0.3%	-1.6%	3.1%	0.8%
"Medium" recommendations (value weighted) minus S&P 500 index	2.9%	3.5%	1.7%	0.5%	0.7%	0.8%
"Low" recommendations (value weighted)	3.2%	2.1%	0.8%	-1.1%	4.5%	-1.4%
"Low" recommendations (value weighted) minus S&P 500 index	2.4%	2.2%	2.2%	1.0%	2.1%	-1.4%
"High" minus "Low" recommendations (value weighted)	2.5%	-0.8%	-1.2%	0.3%	-1.5%	1.8%

Firm 8

	1999	2000	2001	2002	2003	2004
"High" recommendations (value weighted)	2.5%	2.0%	-0.7%	-1.2%	2.8%	0.5%
"High" recommendations (value weighted) minus S&P 500 index	1.7%	2.0%	0.7%	0.9%	0.4%	0.5%
"Medium" recommendations (value weighted)	2.3%	1.2%	0.3%	-1.7%	3.2%	0.8%
"Medium" recommendations (value weighted) minus S&P 500 index	1.5%	1.3%	1.7%	0.5%	0.8%	0.8%
"Low" recommendations (value weighted)	1.2%	3.1%	0.6%	-0.4%	4.3%	1.2%
"Low" recommendations (value weighted) minus S&P 500 index	0.4%	3.1%	2.1%	1.7%	1.9%	1.2%
"High" minus "Low" recommendations (value weighted)	1.2%	-1.1%	-1.3%	-0.8%	-1.5%	-0.7%

Table 4 (continued)
Investment Value of Recommendations by the Ten Global Settlement Firms Pre- and Post-Settlement (Value-Weighted Portfolios)

Firm 9

	1999	2000	2001	2002	2003	2004
"High" recommendations (value weighted)	3.2%	1.9%	-0.6%	-1.3%	2.8%	0.2%
"High" recommendations (value weighted) minus S&P 500 index	2.4%	1.9%	0.8%	0.8%	0.4%	0.2%
"Medium" recommendations (value weighted)	2.5%	2.7%	-0.2%	-1.0%	3.4%	0.9%
"Medium" recommendations (value weighted) minus S&P 500 index	1.8%	2.8%	1.3%	1.1%	1.0%	0.9%
"Low" recommendations (value weighted)	1.5%	1.7%	0.2%	-1.2%	3.6%	1.2%
"Low" recommendations (value weighted) minus S&P 500 index	0.7%	1.8%	1.7%	0.9%	1.2%	1.2%
"High" minus "Low" recommendations (value weighted)	1.7%	0.2%	-0.8%	-0.1%	-0.8%	-1.0%

Firm 10

	1999	2000	2001	2002	2003	2004
"High" recommendations (value weighted)	2.5%	1.9%	-0.4%	-1.1%	2.9%	0.2%
"High" recommendations (value weighted) minus S&P 500 index	1.7%	1.9%	1.0%	1.0%	0.5%	0.2%
"Medium" recommendations (value weighted)	1.2%	2.2%	0.2%	-0.7%	3.0%	1.0%
"Medium" recommendations (value weighted) minus S&P 500 index	0.4%	2.2%	1.7%	1.4%	0.6%	1.0%
"Low" recommendations (value weighted)	-1.5%	4.7%	-1.6%	-1.5%	4.3%	-0.5%
"Low" recommendations (value weighted) minus S&P 500 index	-2.3%	4.7%	-0.2%	0.6%	1.9%	-0.5%
"High" minus "Low" recommendations (value weighted)	3.9%	-2.8%	1.2%	0.4%	-1.4%	0.7%