Industry Recommendations: Characteristics, Investment Value, and Relation to Firm Recommendations*

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September 2009

Abstract

We study analysts' industry recommendations. We find that the distribution of industry recommendations is quite balanced. Analysts show more optimism towards industries with high levels of R&D, past profitability and past returns, as well as industries in which they are active as underwriters. Industry recommendations possess investment value as portfolios based on these recommendations generate abnormal returns. Finally, industry recommendations contain information which is orthogonal to that included in firm recommendations. Analysts benchmark their firm recommendations to industry peers regardless of their disclosures. Consequently, the investment value of analysts' recommendations is enhanced when both industry and firm recommendations are used.

* An earlier version of this paper was circulated under the title "Do Industry Recommendations Have Investment Value."

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1 Introduction

Analysts' industry knowledge is highly valued by investors. For example, *Institutional Investor Magazine* has been surveying institutional investors on the importance of various attributes in sell-side research analysts. For the past 11 years (1998-2008), industry knowledge was deemed the most important research attribute of equity analysts.[1] Indeed, sell-side analysts are industry specialists. They are typically hired to and work in industry groups, each group covering a set of firms that are similar to each other in their industry characteristics. Analysts then publish information both at the industry and firm levels. At the industry level, they write periodic industry reports, provide forecasts for the industry and offer industry recommendations. At the firm level, they analyze specific firms in their assigned industry, providing earnings estimates, recommendations, price targets, etc. The extant literature has explored analysts' stock recommendations extensively.[2] Despite their prominence, the literature has not studied industry recommendations, probably due to the lack of large scale data. In this paper we attempt to fill this gap.

To motivate the analysis, consider the following example. During the second half of 2007, the median stock recommendation issued for both GM and Chevron was a 'hold.' However, at that time, analysts issued bearish recommendations for the Automobiles industry as a whole, while they typically issued bullish recommendations for the Oil industry. This scenario raises several interesting questions.

First, what are the industry attributes that determine industry coverage and the level of industry recommendations? In the example above, one might ask whether analysts favored the energy industry because it had shown high past returns, high profitability, or perhaps high equity issuance volume. Second, do recommendations for industries have any value to investors? After all, these recommendations are likely based on public and often stale information. Indeed, during the time period of the example above, it was common knowledge that oil prices were sky-rocketing, benefiting the oil

[1] See: http://www.iimagazine.com/Rankings/RankingsEqtyTeamAmerica08.aspx?src=http://www.iimagazinerankings.com/rankingsEqtyTeamAmerica08/whatInvestorsWant.asp .

[2] For a recent review of the literature see Ramnath, Rock, and Shane (2008).

producers while hurting automobile manufacturers. Third, to the extent that industry recommendations do convey information, is this information incremental to that already included in firm recommendations? In the example above, investors ought to know whether to interpret the 'hold' recommendation associated with GM and with Chevron identically or whether they should take into account the different industry recommendations. More generally, industry recommendations may be just aggregations of firm specific recommendations. Alternatively, they may include information that is orthogonal to firm recommendations – and thus can be used to enhance the performance of investment strategies based on firm recommendations. Finally, what can we learn about firm recommendations from comparing them with industry recommendations? In particular, do analysts benchmark their firm recommendations to the market or to industry peers? In the example above, when analysts issued a 'hold' recommendation to GM it is important to understand whether this signal was relative to the entire market or, instead, relative to peers such as Ford, Chrysler, and Toyota.

To answer these questions we use the IBES database to collect industry recommendations. When an analyst produces a report with a recommendation on a firm's stock, she often includes in the report her current outlook on that firm's industry. In September 2002, IBES started recording the textual information on the industry outlook for those brokers reporting the industry recommendation in their firm reports. This information is recorded in the detailed stock recommendation file. Similar to firm recommendations, the text of the industry recommendations is either optimistic (such as 'overweight'), neutral (such as 'equal weight'), or pessimistic (such as 'underweight').

Since industry recommendations are attached in IBES to specific firms, we have to adopt a particular mapping between firms and the industries to which they belong. We follow Boni and Womack (2006) and Bhojraj, Lee, and Oler (2003), and use the Global Industry Classification Standard (GICS), which is widely used by brokerage houses. This enables our research design to closely mirror the intentions of the broker when issuing the industry recommendation.

Our sample uses six major financial institutions for which textual information on industry outlooks is available. It includes a total of 29,184 industry recommendations in

the period from September 2002 through December 2007. We find that industry coverage is pretty comprehensive with little variation in coverage across brokers and time. Thus, unlike in the case of firm recommendations, selection bias [McNichols and O'Brien (1997)] does not seem to be a major issue with industry recommendations. Unconditionally, 30% of the industry recommendations are optimistic, 55% are neutral, and 15% are pessimistic. We study the factors associated with the level of optimism in industry recommendations. We find that past profitability, past returns, and the extent of R&D activity are positively associated with the probability of issuing an optimistic industry recommendation. Furthermore, we find some evidence that brokers are inclined to issue an optimistic recommendation for industries in which they are active in providing equity underwriting services. This is similar to findings related to firm recommendations [e.g. Lin and McNichols (1998); Michaely and Womack (1999)].

We next turn to examine whether industry recommendations have value to investors. On one hand, analysts, being industry experts, are located in a junction of information related to the industry that they cover. They follow several companies in the industry, talk to their executives and other analysts, and are attentive to all relevant pieces of news. As such, they are good candidates to be the first to identify "hot" and "cold" industries. On the other hand, several reasons conspire to make it difficult for investors to earn abnormal returns based on industry recommendations. Some of the reasons relate to analysts' role in collecting and using information. The literature has covered extensively how analysts' expertise, special access, and relationships with the firm affect the way analysts perform.[3] Because industry analysis uses widely available information, the only source of predictability can be a unique expertise in analyzing publicly available data. Another issue that may limit our ability to find any predictive power in industry recommendations is that they are likely to be quite stale when they become available on IBES. Brokers issue industry recommendations within industry reports that they publish on a monthly/quarterly basis. The industry recommendations that we observe are

[3] For example, the presence of an underwriting relationship allows a broker to issue better earnings forecasts [Malloy (2005)] or to be a better market maker [Ellis, Michaely and O'Hara (2000); Madureira and Underwood (2008)], while the presence of a lending relationship affects the ability of a broker to secure future underwriting business [Drucker and Puri (2005); Ljungqvist, Marston, and Wilhelm (2006)], get better terms for new security offerings [Puri (1996)], or provide better earnings forecasts [Ergungor, Madureira, Nayar, and Sing (2008)].

recorded only when a new stock recommendation is issued. Thus, we cannot identify the exact date in which the industry recommendation was originally issued. This and the fact that industry recommendations are issued infrequently suggest that any trading strategy relying on industry recommendations will be based on stale information.

We study the investment value of industry recommendations by computing risk-adjusted returns of industry portfolios formed based on monthly consensus industry recommendations.[4] We find that a portfolio of industries about which analysts are most optimistic carries a significant out-of-sample alpha of 0.46% per month, while a pessimistic portfolio carries a significantly negative alpha of 1.25% per month. A hedged portfolio long in the optimistic portfolio and short in the pessimistic portfolio yields a significantly positive alpha of 1.3% per month.[5] These are surprising results, especially considering the admittedly simple portfolio formation methodology. Buying, and even short-selling industry portfolios is simple and incurs low transaction costs using industry Exchange Traded Funds (ETFs). In addition, we find that while analysts do chase industry momentum [Moskowitz and Grinblatt (1999)], the abnormal returns from industry recommendations is not driven by it.

We then turn to studying the relation between industry and firm recommendations. In particular, we attempt to identify whether firm recommendations contain information regarding industry outlooks, or whether firm recommendations just rank firms within industries. Our first step is to examine what brokers disclose on how their recommendations should be interpreted. By examining these disclosures for the 20 largest brokers (in terms of numbers of recommendations), we find that 10 of these brokers (including the six in our industry recommendation sample) benchmark their firm recommendations to industry peers, while the other ten rely on a market benchmark. Different benchmarks imply different ways by which firm recommendations reflect industry information.

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[4] Our main measure of risk-adjustment is the out-of-sample alpha obtained relative to the Fama-French four factors. This approach is similar to Brennan, Chordia, and Subrahmanyam (1998) and Chordia, Subrahmanyam, and Anshuman (2001).

[5] We also compute the traditional in-sample alphas from simply running the Fama-French four factor model over the whole time series of excess returns on each portfolio. For all examinations in this paper, in-sample alphas are comparable – and even larger in terms of magnitude and significance – to the ones obtained with out-of-sample alphas.

If brokers use an industry benchmark for their firm recommendations then their firm recommendations will contain no industry-wide information. Essentially such brokers limit their firm recommendations to ranking firms within industries. By contrast, if brokers use a market benchmark, then their firm recommendations are expected to incorporate industry outlooks. To help us distinguish between these alternatives we construct "pseudo industry consensus recommendations" – similar to those used in Boni and Womack (2006) – by value weighting all firm recommendations that belong to a specific GICS industry. Interestingly, we find that the correlation between the pseudo industry recommendations and the true industry recommendations is low (around 0.12), suggesting that the two are based on different information. We then repeat the abnormal return analysis using the pseudo industry recommendations. In stark contrast to the results with true industry recommendations, the analysis using pseudo industry recommendations shows no abnormal returns. These results hold for the entire sample as well as for both subgroups of brokers: those who disclose the use of industry benchmarks and those who disclose the use of market benchmarks. Hence, it appears that true industry recommendations contain information regarding industry outlooks which is not already reflected in firm recommendations or in aggregations thereof. This suggests that analysts benchmark their firm recommendations to industry peers regardless of the stated benchmark which appears in their disclosures. This extends the findings of Boni and Womack (2006) who concluded that analysts' strength is in ranking firms within industries. Furthermore, this result shows that industry recommendations contain information which is orthogonal to that included in firm recommendations.

Prior research demonstrates that firm recommendations carry investment value.[6] If indeed firm recommendations are largely aimed at ranking firms within industries, then conditioning firm recommendations on the prospects of the relevant industry should increase their investment value. Our next tests pursue this line of thought by combining the information in both industry and firm recommendations in forming monthly portfolios. At the industry level, we classify industries into three portfolios based on true industry recommendations as before. At the firm level, we follow Boni and Womack

[6] See for example Stickel (1995); Womack (1996); Barber, Lehavy, McNichols, and Trueman (2001, 2006); Jegadeesh, Kim, Krische and Lee (2004); and Barber, Lehavy, and Trueman (2008).

(2006) and classify firms into net upgraded and net downgraded firms. A firm can be allocated to one of six portfolios depending on its own recommendation (upgraded/downgraded) and the consensus recommendation for its industry (one of three tiers).

The results support the idea that industry and firm recommendations are complementary and that combining them adds investment value. For example, net upgraded stocks have abnormal returns only if they are part of the industries with the best (optimistic) outlook, but not when they are part of the industries with the worst (pessimistic) outlook. In a similar fashion, net downgraded stocks have significantly negative alphas only when part of a pessimistic industry. A portfolio that is long in upgraded firms in the most optimistic industries and short in downgraded firms in the most pessimistic industries generates a striking out-of-sample abnormal return of 2.2% per month. Thus, investment strategies that exploit both industry and firm recommendations appear to outperform strategies that use just one of the two.

Our paper contributes to the extant literature in several ways. To our knowledge, this is the first paper to analyze industry recommendations, highlighting a new dimension of information provided by financial analysts. The ability to extract abnormal returns from a simple trading strategy based on industry recommendations shows the relevance of these recommendations from an investment perspective and reinforces the findings of *Institutional Investor Magazine*. The paper also sheds new light on the information contained in firm recommendations. This information appears to be mostly about ranking stocks within industries, even among brokers who proclaim not to be using industry benchmarks. Thus, industry recommendations are very different from just an aggregation of firm recommendations. As we show, firm recommendations are best interpreted in conjunction with industry recommendations, jointly yielding higher investment value. This aspect of the paper directly extends the evidence in Boni and Womack (2006) who analyze aggregations of firm recommendations but not “true” industry recommendations.

Our paper also relates to the literature exploring the relative importance of industry selection in the investment process. Busse and Tong (2008) report that the industry selection component of a typical actively managed mutual fund accounts for

about half of that fund's risk-adjusted return. Kacperczyk, Sialm and Zheng (2005) show that funds that concentrate holdings in fewer industries – the ones in which they have some informational advantages – tend to outperform the more diversified funds. Avramov and Wermers (2006) show that optimally-chosen portfolios based on predictable variation in mutual funds' characteristics outperform their benchmarks, and one important source of this outperformance is the portfolios' strategic allocation to specific industries over the business cycle. Our results add to this literature by directly showing that industry specialists are capable in providing useful industry outlooks.

The rest of the paper proceeds as follows. In section 2 we describe the data. In Section 3 we explore the characteristics of industry recommendations. In Section 4 we study the investment value of firm recommendations. Section 5 discusses the relation between industry and firm recommendations. Section 6 concludes.

2 Data

2.1 Brokers and Industry Recommendations

Starting in September of 2002 IBES began to record industry recommendations made by analysts alongside firm recommendations. This information is recorded in the 'btext' field in the IBES recommendation file. This field always contains the text of the firm recommendation (e.g. 'buy', 'hold', 'underperform'). For investment banks which include an industry recommendation in their firm reports, the field also records the industry recommendations. See Appendix for details.

By analyzing the IBES database we find that six out of the top 20 (in terms of number of recommendations published per year) investment banks consistently provide industry recommendations in their firm reports during our sample period: September 2002 through December 2007.[7] Table 1 lists those investment banks along with some information regarding their coverage. As listed, the investment banks in our sample are Bear Stearns, Credit Swiss, Goldman Sachs, Morgan Stanley, CIBC, and Lehman Bros. It

[7] The IBES tapes we used were downloaded in 2008. These are free from the data problems identified in Ljungqvist, Malloy, and Marston (2009). These problems are related to IBES tapes from 2002-2004.

is important to note that other large investment banks (such as Merrill Lynch, JP Morgan and others) also issue industry recommendations. However, these banks do not include their industry recommendations in firm reports, and hence their industry recommendations are not recorded by IBES. The six brokers in our sample account for 17% of all recommendations in IBES during our sample period. As such, they represent a large fraction of the IBES universe.

<Insert Table 1 here>

Table 1 shows that the brokerage houses in our sample cover between 1,100 and 1,700 firms during the sample period. These brokers are active in issuing firm recommendation: the average number of firm recommendations per month ranges from 48 to 99. They seem similar to each other along these two dimensions.

2.2 Industry Classification

IBES reports the industry recommendation issued by a broker for the industry to which a firm belongs. However, IBES does not explicitly report the industry to which the firm belongs, as defined by the broker. We infer this industry from the identity of the firm and its industry classification as defined by the General Industry Classification Standard (GICS) obtained from Compustat. This classification is maintained by Standard & Poor's and MSCI Barra, and is widely adopted by investment banks as an industry classification system (as opposed to the SIC classification that is popular among academics). The GICS system has four classification levels: 10 sectors, 24 industry groups, 69 industries, and 154 sub-industries.[8] These classifications are highly intuitive, and have been shown to better explain stock comovements compared to other popular industry classifications [Bhojraj, Lee, and Oler (2003)]. In the context of this research, Boni and Womack (2006) show that the GICS classification is a good proxy for how sell-side analysts specialize by industry.[9]

<Insert Table 2 here>

[8] Standard and Poors and MSCI Barra change their GICS industry definitions from time to time. The numbers listed here are as of the end of 2007.

[9] We extend the analysis offered in Boni and Womack (2006), by comparing the analyst coverage choice in our sample relative to different industry classifications: besides GICS, we also look at SIC (2 digit), IBES internal classification and the Fama-French 48 industries. The comparison (available upon request) shows that the GICS partition most closely resembles how brokers define their industries.

Similar to Boni and Womack (2006) and Bhojraj, Lee, and Oler (2003), we focus on the industry level (6 digits). Table 2 presents the complete list of industries using the GICS classification, as well as some basic statistics of industry coverage by the six brokers in our sample. By casually examining industry classifications in the relevant investment banks, we find our classification to be broadly as fine as or finer than the one used by them. This ensures that our industry classification captures variations in industry recommendations within each broker.

2.3 Industry Recommendations

Similar to firm recommendations, brokerage houses use a variety of terms to express optimism, neutrality, or pessimism toward industries. In the case of firm recommendations, IBES transforms the textual recommendation into a five-point rating system (recorded in the IRECCD item). By contrast, the text of the industry recommendation is not recorded numerically. Hence, we convert the text using a key presented in the Appendix. We code recommendations with an optimistic tone as '1', recommendations with a neutral tone as '2', and recommendations with a pessimistic tone as '3'. Thus, for each IBES entry that also includes the textual description of the industry outlook, we have both the recommendation for the firm itself (optimistic, neutral, or pessimistic) and the recommendation for the industry to which the firm belongs (again, optimistic, neutral, or pessimistic).

3 Basic Characteristics of Industry Recommendations

Table 3 presents summary statistics to describe coverage and distributional properties of industry recommendations. Panel A shows that coverage is quite comprehensive across the universe of industries for five out of the six brokers.[10] Note that the number of GICS industries (bottom row) has increased from 59 to 69 over the years, which seems to explain the increasing trend in coverage across brokers. We have

[10] Note that during the year 2002 coverage is lower. This is because our sample period only starts in September of that year.

specifically examined the industries which are not covered by each broker during the sample period. Relatively neglected industries are Water Utilities (not covered by three out of the six brokers; see Table 2) and Tobacco (not covered by two out of the six). Thus, it appears that unlike in stock recommendations, there is no real decision whether to initiate or drop coverage of an industry. Rather, pretty much all the large brokers cover almost all industries. This suggests that in contrast to firm recommendations, selection bias [McNichols and O'Brien (1997)] is not a major issue with industry recommendations.

<Insert Table 3 here>

Panel B presents the distribution of industry recommendations by year. The table shows that the frequency of optimistic recommendations hovers around 30%, with very little variation over the years. There is, however, an increase in the frequency of neutral recommendation (from 50% to 59%) accompanied by a decrease in the proportion of pessimistic recommendations (from 19% to 12%). Panel C presents the average industry recommendations by broker during our sample period. The results show that there is very little difference between the different brokers, as average recommendations hover somewhat below '2' (neutral to slightly optimistic) for all of them. These results suggest that brokers issue a pretty balanced distribution of industry recommendations, with just a small inclination toward optimism. In Section 5 we compare this distribution to that of the associated firm recommendations.

To better understand the determinants of industry recommendations we examine the probability of issuing an optimistic/pessimistic recommendation as a function of several factors. The main explanatory variables we investigate are industry size (aggregate market-value of all firms in the industry in the month before the recommendation), lagged industry and market returns, and industry value-weighted averages of market-to-book, profitability (return on assets), R&D (as a fraction of assets), and capital expenditures (as a fraction assets). All accounting variables are measured during the year of the recommendation. Additionally, it may be that analysts are more optimistic about industries that have a high IPO/SEO activity in an attempt to win underwriting business. To examine whether such conflicts of interest have an effect on

industry recommendations we include three variables related to equity underwriting activity. The first two are the total and average IPO/SEO proceeds in the industry during the year preceding the recommendation. These variables capture the volume of equity issuance in the industry. The last variable is the percentage of IPO/SEO proceeds in an industry underwritten by the issuing broker during the year preceding the recommendation. This variable is close in spirit to the "affiliation" variable used in prior research to proxy for conflicts of interest at the firm level [Lin and McNichols (1998); Michaely and Womack (1999)]. We also control for broker fixed effects to account for any broker-specific time invariant characteristics. We cluster the standard errors at the broker-industry level.

Table 4 presents the results of logit models based on the explanatory variables above. We use two specifications. In the first (second) specification the dependent variable is a dummy equal to one when the industry recommendation is optimistic (pessimistic) and zero otherwise.[11] Consider the first specification. The probability of issuing an optimistic recommendation is increasing in the average profitability and R&D intensity in the industry. For example, for the median industry, a one standard deviation increase in R&D intensity increases the probability of issuing an optimistic recommendation by 5 percentage points.[12] We also observe a momentum effect as the probability of issuing an optimistic recommendation is increasing in the industry returns during the three quarters preceding the recommendation. Interestingly, we also observe a contrarian tendency relative to market returns as the coefficient on lagged market return is negative. Finally, we observe a tendency of brokers to issue an optimistic recommendation to industries in which they are active as underwriters: the coefficient on the fraction of the industry's IPO/SEO proceeds underwritten by the broker is positive and significant.

<Insert Table 4 here>

[11] Note that the two specifications are not mutually independent. They reflect the same set of results viewed from two different angles. It would have been desirable to pool the two separate logistic models into a single ordered-logit model. However, this is not possible, since the Wald test rejects the parallel regression assumption, implying that an ordered-logit (and similarly an ordered-probit) is not valid in this case. See Long and Freese (2006: p. 197-200) for details.

[12] For the median firm, the marginal effect of R&D (from Table 4) is 1.16, and the standard deviation of R&D is 0.0428 (not tabulated).

Similar to the optimistic model, the pessimistic model shows that high R&D activity is less likely to be associated with a pessimistic industry recommendation. Unlike the optimistic model, we do not observe a strong momentum effect. Rather, it appears that analysts are sluggish in incorporating negative momentum into their recommendations as only the coefficients on the three-quarters lagged industry and market returns are significant. Furthermore, underwriting activity does not seem to affect the probability of issuing a pessimistic recommendation.

4 Investment Value of Industry Recommendations

There is an extensive literature showing that analysts add value with their firm recommendations [see for example Stickel (1995); Womack (1996); Barber, Lehavy, McNichols, and Trueman (2001, 2006); Jegadeesh, Kim, Krische and Lee (2004); and Barber, Lehavy, and Trueman (2008)]. A natural question concerning industry recommendations is whether they also have value from an investment perspective.

On one hand, analysts are industry experts. They are located in a cross-road of information related to the industry that they cover. As such, they may be able to be the first to identify "hot" and "cold" industries, and their industry recommendations may reflect that. On the other hand, some prominent features of industry recommendations make their investment value less obvious. First, industry recommendations are likely based on a synthesis of macroeconomic data and aggregated firm specific data. Generating such recommendations requires skill and experience, but it is likely that they are based on information that is available to all. Second, industry recommendations are issued infrequently. Typically, analysts update their industry reports on a monthly or quarterly basis. Moreover, unlike with firm recommendations, our data does not allow us to identify the exact date in which the industry recommendation is issued. Rather, we can only identify whether a broker changed its industry recommendation within a month.[13]

[13] Additionally, while the GICS system is likely to be a reasonable representation of the industry classification used by different analysts, it is not a perfect representation. Rather, different analysts use somewhat different industry classification. This introduces noise into our measurement of industry recommendations, and is likely to lower our ability to identify any value in industry recommendations.

Thus, any trading strategy relying on industry recommendations will necessarily involve trading based on stale information.

The analysis in this section explores whether industry recommendations have investment value. We analyze the returns of portfolios constructed based on the signals conveyed by these recommendations. That is, we ask whether an investor would have obtained abnormal returns, had she followed up on the recommendations by investing in these portfolios. This is the common approach used to test for information in firm recommendations [e.g., Barber, Lehavy, McNichols, and Trueman (2001, 2006), Boni and Womack (2006), and Barber, Lehavy, and Trueman (2008)].[14]

4.1 Recommendation Portfolios

We first aggregate the recommendations to create consensus industry recommendations. This is likely to average away idiosyncratic views of individual brokers. We compute a consensus recommendation for each one of the GICS industries and each month during our sample period by averaging all the industry recommendations issued during that month by all the brokers in our sample. For example, if brokers issued 10 recommendations for firms in the Media industry in month *t*, then the consensus recommendations for the Media industry would be the average of the industry recommendations recorded from the 'btext' field in those 10 recommendations.

This approach allows us to capture changes in industry recommendations during a month. For example, if a broker changed her recommendation for the Media industry from '1' to '2' during the month, then the consensus for month *t* will be affected by this change. This approach is also robust to cases in which brokers use an industry classification system which is somewhat different than GICS. For example, suppose that a broker covers the 'Utilities' industry, but does not distinguish between the GICS classification of 'Gas' and 'Electric Utilities'. Then, our averaging approach ensures that the industry recommendation we record will be identical for 'Gas' and 'Electric utilities'.

[14] Another common approach involves looking at investors' short-term reactions to newly issued recommendations. However, since this approach depends on knowing the exact recommendations' issuance day, it cannot be applied here.

Thus, while our classification may be finer than the one used by the broker, the industry recommendation we calculate does capture the broker recommendation as intended.

Next, in each month *t* of our sample period, we construct three industry portfolios based on the consensus recommendations in month *t*-1 as follows: Portfolio 1 in month *t* includes industries with consensus industry recommendation in month *t*-1 less than or equal 1.5; Portfolio 2 includes industries with consensus industry recommendation between 1.5 and 2.5; and Portfolio 3 includes industries with consensus recommendation greater than 2.5. Hence, Portfolio 1 in month *t* contains the industries about which analysts were most optimistic in month *t*-1, while Portfolio 3 contains the industries about which analysts were most pessimistic. In this aggregation, we omit industries that are not covered by at least three brokers in a given month. We do this to ensure that the consensus indeed aggregates information across brokers, and does not represent the idiosyncratic view of just one or two brokers.

<Insert Table 5 here>

Panel A of Table 5 presents summary statistics related to the three portfolios and the portfolio formation procedure. First, note that Portfolios 1 and 2 are well defined in all 64 months of our sample period. By contrast, Portfolio 3 (the pessimistic portfolio) is only defined in 46 months. Thus, there are 18 months in which there aren't at least 3 analysts who collectively are pessimistic about even one industry. The average number of industries falling in Portfolios 1 through 3 in a given month is 6.3, 20.1, and 2.2, respectively.

Note that an alternative approach would be to assign industries to portfolios based on a certain percentile (such as deciles). This approach is common in the momentum and over-reaction literature. However, the literature on analysts has typically avoided this type of arbitrary sorting, which ignores the literal meaning of the recommendations. For example, Panel A of Table 5 shows that if we were to always allocate the lowest decile of consensus recommendations into a pessimistic portfolio we would occasionally treat industries as having a negative outlook despite the fact that analysts assign these industries a neutral outlook. An investment strategy based on such an arbitrary sort would miss the correct interpretation of the analysts' recommendation.

Panel A of Table 5 reveals two additional important facts. First, the turnover in the industry portfolios is quite high. An industry resides in any of the portfolios for an average period of about 1-2 months. Thus, while brokers seem to change their views on industries relatively infrequently,[15] the consensus and the structure of the portfolios change often. Second, the different industries are quite evenly distributed among the three portfolios. Over our sample period 50 out of the 69 industries belonged to Portfolio 1 at some point. Portfolio 3 is the least represented, but still around half of the industries belonged to this portfolio at some point. Both these results suggest that the classification to the three portfolios is not degenerate, and can potentially contain information.

4.2 Raw Returns

Using CRSP data we calculate a monthly return for each one of the three portfolios in two steps. First, we calculate a month *t* industry return for each one of the GICS industries. This is the value-weighted return across all CRSP firms in the relevant industry, where the weights are based on market values at the end of month *t*-1.[16,17] Second, we calculate the monthly return for portfolios 1-3 as the equal weighted return of all industries in the relevant portfolio.

Panel B of Table 5 reports raw monthly returns related to different time periods for each one of the three portfolios. To interpret the results, recall that portfolios in month *t* are formed based on consensus industry recommendations in month *t*-1. Consider first the average returns in month *t*-1. It is monotonically decreasing as we move from Portfolio 1 (1.7%) to Portfolio 3 (0.9%, insignificant). A similar trend is observed also in

[15] We can proxy for the frequency of issuance of industry recommendations by looking at the number of days between changes in the industry recommendations. Using the series of recommendations issued by an analyst to a firm we find all instances when the newly reported industry recommendation differs from the previously reported recommendation; for each such instance we define age as the number of days since the previous level of industry recommendation was first reported. The mean (median) age of those instances, across all pairs of analysts and stocks, is about 320 (217) days in our sample.

[16] The most obvious and least costly way to "buy" or "sell" an industry is to buy or sell the appropriate industry ETF. By calculating the industry return as a weighted average of all CRSP firms in this industry we essentially replicate the return on the corresponding industry ETF.

[17] If a firm is delisted at time *t*, its monthly return plus its delisting return from CRSP are used in the computation of its industry return. If a firm has a missing return at time *t*, we exclude it from the computation of the industry return. In a robustness test we replace the return of a firm with a missing return in month *t* by the market return during that month; results are not sensitive to this change.

month *t*-2. Consistent with the logit results, these trends suggest that analysts chase industry momentum. Consider now the returns in month *t*. These reflect the returns to portfolios constructed based on the industry recommendations issued in the previous month. The monthly return on Portfolio 1 is 1.6% which is significantly different from Portfolio 3's return of -0.2%. Moreover, a hedged portfolio long in Portfolio 1 and short in Portfolio 3, during the 46 months in which Portfolio 3 exists, yields a significant 1.5% per month.

When examining the returns of the different portfolios starting from month *t*+1, we do not find a significant difference between the three portfolios. This is consistent with the high turnover of industries in our portfolios. Recall from Panel A that industries reside in the pessimistic portfolio for a period of about one month, indicating that the pessimistic outlook implied by the industry recommendations in month *t*-1 does not persist beyond month *t*. These preliminary examinations suggest that if there is any kind of predictive power in the industry recommendation, it is concentrated in a relatively short time horizon of one month.

4.3 Risk-Adjusted Returns

We next turn to evaluating whether portfolios based on industry recommendations can generate *abnormal* returns. We estimate out-of-sample alphas of the four industry portfolios relative to the Fama-French four factors (excess market return, HML, SMB, and UMD). Our approach is similar to Brennan, Chordia, and Subrahmanyam (1998) and Chordia, Subrahmanyam, and Anshuman (2001). For each month *t* in our sample period, we regress the monthly excess returns of the three industry portfolios on the returns of the Fama-French four factors during the preceding 60 months: *t*–60 to *t*–1. Thus, for each month *t* in our sample period we obtain an estimate of the four-factor loadings as of that month. Denote these factor loadings by $\beta_{MKT,p,t}$, $\beta_{SMB,p,t}$, $\beta_{HML,p,t}$, and $\beta_{UMD,p,t}$, where, for example, $\beta_{MKT,p,t}$ stands for the loading on the market factor related to month *t* and portfolio *p* (where *p*=1,..,3 is one of the three industry portfolios).

Now, for each month t we calculate the out-of-sample four-factor alpha of portfolio p (denoted $Alpha_{p,t}$) as the realized excess return of the portfolio less the expected excess return calculated from the realized returns on the factors and the estimated factor loadings:

$$Alpha_{p,t} = \left(RET_{p,t} - Rf_t\right) - \beta_{MKT,p,t}\left(RET_{MKT,t} - Rf_t\right) - \beta_{SMB,p,t}SMB_t - \beta_{HML,p,t}HML_m - \beta_{UMD,p,t}UMD_t,$$

where $RET_{p,t}$, $RET_{MKT,t}$, and Rf_t are the realized returns on industry portfolio p, the CRSP value-weighted index, and the risk-free rate, respectively, during month t; and $RET_{MKT,t}$-Rf_t, SMB_t, HML_t, and UMD_t are the appropriate realized returns on the factor portfolios in month t.

For each of the three portfolios we thus obtain a time series of 64 (46 for p=3) out-of-sample alpha estimates as well as a time series of factor loadings. Panel A of Table 6 reports the averages of these estimates. The average out-of-sample alpha of portfolio 1 is 0.46% per month (5.5% per year), significant at the 5% level. Portfolio 2 does not show an abnormal return. By contrast, portfolio 3 generates a negative alpha of 1.25% per month. Finally, a hedged portfolio long in portfolio 1 and short in portfolio 3 yields a significant average out-of-sample alpha of 1.3% per month. To annualize this number note that the hedged portfolio can only be held about 8 months in each year because portfolio 3 only exists about 70% of the time. Hence an estimate of the annualized abnormal return of the hedged portfolio is 1.3%*8=10.4% (assuming that whenever portfolio 3 does not exist, the investment strategy has zero alpha).[18]

<Insert Table 6 here>

For completeness and to facilitate comparison with other studies we also conducted an *in-sample* analysis in which we regress the excess return of the different portfolios on the four Fama-French factors as in Barber, Lehavy, McNichols, and Truman (2001, 2006). The intercept from this regression is an estimate of the in-sample alpha.

[18] In practice trading in industries can be done using industry/or sector ETFs. The trading costs associated with such instruments are very low. The bid-ask spreads are about 0.05%, the annual management fees are around 0.5%, and the price impact is negligible. Overall, our calculations suggest that transaction costs knock-off around 1% of value per year, which is about 10% of the alpha of these trading strategies.

The results from this analysis are reported in Panel B of Table 6. They are comparable (and even larger) in magnitude and statistical significance to the out-of-sample results. For example, the in-sample alpha of the hedged portfolio is a significant 1.7% per month (13.6% annually based on eight trading months in a year).[19]

Table 6 also reports the factor loadings of the portfolios. It is interesting to note that the hedged portfolio has a small yet positive and significant (p-value of 5.7%) market exposure in the out-of-sample analysis (beta of 0.12 in Panel A). The beta is not different from zero in the in-sample regression (Panel B). Both the in-sample and out-of-sample results show that the hedged portfolio loads negatively on the HML factor and positively on the UMD factor – with the loadings on the individual industry portfolios showing that this is mostly due to pessimistic industries relying more on growth stocks and less on momentum.

The predictive value of industry recommendations may seem surprising, particularly given that our portfolios are formed based on industry recommendations that are potentially stale. Indeed, the portfolios are formed only at the end of each month, and, second, they are based on industry consensus recommendations rather than on *changes* in the industry consensus. In the context of firm recommendations, for example, Jegadeesh, Kim, Krische and Lee (2004) show that their value is more robustly extracted from changes in the consensus. Notice, however, that the results in Table 5 show that the turnover of industries in our portfolios is quite high. For example, the average number of months an industry with pessimistic outlook remains in Portfolio 3 is only 1.19 months after its inclusion in the portfolio. That is, while our methodology of portfolio formation formally relies on consensus industry recommendations, it creates portfolios that, in practice, are very close to being based on changes in such consensus.[20,21]

[19] In-sample alphas are also computed for the examinations in the next sections, and they confirm and even magnify the results obtained with out-of-sample alphas. For brevity, we do not report these in-sample alphas. They are available upon request.

[20] In fact, if we update the portfolio formation procedure to force the turnover to be exactly 1 month – that is, each industry remains exactly one month after inclusion in the portfolio, the results (available upon request) become even stronger. For example, forcing away staleness brings the out-of-sample alpha of Portfolio 1 from 0.4% to 0.9% (p-value from 0.048 to 0.0006), and the out-of-sample alpha of Portfolio 3 from -1.2% to -1.5% (p-value from 0.02 to 0.008). We prefer to keep our more simplified procedure as a more conservative method to test the profitability of the industry recommendations.

Another effect of our methodology of portfolio formation is to mix together views from different analysts. Given that our industry classification does not match exactly the one used by the analyst, the averaging of individual views has the potential benefit of reducing the noise in our classification scheme. In fact, the risk-adjusted returns, for the most part, vanish when we define portfolios based on the recommendations of a single broker. That is, our results suggest that sell-side analysts collectively are able to identify winners and losers among industries. It is important to note, however, that much of the predictability that we indentify comes from short selling a small group of industries that are in Portfolio 3 (see Panel A of Table 5). The difference between the abnormal returns in Portfolios 1 and 2 (which together account for more than 90% of the industries) is not statistically significant.

As we have noted before, analysts chase industry momentum in their industry recommendations. Industry momentum is also known to generate abnormal returns [Moskowitz and Grinblatt (1999)]. Thus, it is interesting to ask whether the abnormal returns related to industry recommendations are attributed to industry momentum. To answer this question we constructed industry momentum portfolios and compared their returns to the industry recommendations portfolios. The results of this analysis (unreported for brevity) indicate that there is no significant industry momentum in our sample. Furthermore, the abnormal returns related to industry recommendations are significantly higher (both statistically and economically) than those related to industry momentum.[22]

[21] We can also relax the rule of forming portfolio at the end of the month by allowing industries to enter or exit a portfolio at any day. For example, we can use the consensus from the last 30 days to decide what to do with an industry – e.g., if the consensus is below 1.5, the industry enters the optimistic industry portfolio at the end of the day, and is kept in the portfolio as long as the 30-days rolling consensus remains below 1.5. We can then create portfolio daily returns and run in-sample and out-of-sample procedures using daily data. The results (available upon request) are qualitatively similar to those we report throughout the paper.

[22] A remarkable aspect of our results is that analysts are able to provide abnormal returns by choosing assets among a very small set of candidates, even as each such asset is unlikely to provide abnormal performance on its own. According to Moskowitz and Grinblatt (1999), there is little evidence "that unconditional abnormal industry returns exist per se," and we confirm in our sample that less than 10% of the individual GICS carry significant out-of-sample alphas over our sample period.

5 Relation between Industry and Firm Recommendations

Typically, the same analysts in investment banks issue both industry and firm recommendations. In this section we explore to what extent the two types of recommendations are related, whether they reflect distinct pieces of information, and whether they can be jointly used to enhance the investment value of analysts' recommendations.

5.1 Preliminary Analysis

It seems reasonable that industry and firm recommendations are at least somewhat related. For example, an analyst can employ a top-down approach under which she collects and analyzes macroeconomic data, demand and supply information for the industry, etc. This analysis influences her understanding of the prospects of each firm in the industry. From a bottom-up perspective, an analyst can study many firms in the industry and then extract common aspects that help her understand the prospects of the industry as a whole. Both approaches suggest that the outlooks expressed at the industry and firm levels should be related. On the other hand, relatedness does not imply perfect alignment between recommendations at the industry and firm levels. In fact, one can view a firm's prospects as driven by two components, one linked to its industry's overall prospects and the other associated with the firm's idiosyncratic characteristics – allowing, for example, for existence of winners and losers in the same industry. Therefore, we expect the outlooks expressed at the industry and firm levels to be related, but only to a certain degree.

<Insert Table 7 here>

Table 7 provides a preliminary look at the interaction between industry and firm recommendations. The table reveals a significant variation in firm recommendations within each level of industry recommendation. For example, out of the firm recommendations issued with an optimistic industry recommendation, 39% are rated optimistic, 48% are rated neutral, and 13% are rated pessimistic. We also see a wide dispersion of firm recommendations issued with neutral and pessimistic industry recommendation. The average firm recommendation for firms in industries rated as optimistic is 2.73, in industries rated neutral is 2.79, and in industries rated pessimistic is

2.9 – and the differences between these numbers are significant. This shows that there is a positive correlation between industry and firm recommendations. That is, analysts are more likely to issue an optimistic recommendation for firms belonging to industries about which they are bullish.

Panel B of Table 7 provides a different perspective on the relation between firm and industry recommendations, by showing the distribution of industry recommendations within firm recommendation levels. First, note that the distribution of recommendations at the firm level is also quite balanced, with 35% optimistic, 50% neutral, and 15% pessimistic recommendation. This distribution is consistent with prior results regarding the period following the Global Settlement [Barber, Lehavy, McNichols, and Trueman (2006); Kadan, Madureira, Wang, and Zach (2009)]. Similar to Panel A, we observe a considerable variation in the industry recommendations within each level of firm recommendation. Again, this suggests that industry and firm recommendations may convey different information.

5.2 The Benchmark for Firm Recommendations

To better understand the relation between firm and industry recommendations, it is necessary to know whether firm recommendations reflect information about the industry. That is, does a 'buy' recommendation issued to a firm reflect a buying opportunity relative to the entire market, or relative to industry peers? If analysts benchmark their firm recommendations to industry peers then these recommendations must be interpreted in the context of their industry. For example, a 'hold' recommendation issued to GM (see Introduction) relative to the Automobiles industry peers has a completely different investment implication than a 'hold' recommendation relative to the market as a whole.

If firm recommendations are benchmarked to industry peers then firm and industry recommendations should contain orthogonal information. While industry recommendations forecast the outlook for the industry as a whole, firm recommendations forecast the deviations of specific firms from the industry outlook. In this case, industry recommendations have independent value to investors. Furthermore, firm specific

recommendations should not be interpreted outside of their industry context. Hence, combining industry and firm recommendations would add value to investors.

If, on the other hand, firm recommendations are benchmarked to the market, then they incorporate both systematic industry information as well as firm-specific information. Hence, we expect industry recommendations to reflect an aggregation of firm recommendations. In this case, industry recommendations are just a repackaging of multiple firm recommendations, and they do not carry incremental value to investors beyond firm recommendations. Under this scenario, firm recommendations could be interpreted independently from industry recommendations, and combining them would not add value to investors.

5.2.1 Analysis of Brokers' Disclosures

In order to understand how firm recommendations are benchmarked, we start by examining the disclosures of analysts regarding the meaning they assign to their firm recommendations. Under regulations NASD Rule 2711 and NYSE Rule 472 (which were adopted prior to the beginning of our sample period), analysts are required to disclose the meaning of their recommendations inside their reports. We examined these disclosures for the 20 largest brokers (in terms of numbers of recommendations). Table 8 summarizes our findings. Out of the 20 brokers, 10 brokers state that they benchmark their firm recommendations to industry peers, including the six brokers in our industry recommendations sample. We refer to these brokers as "industry benchmarkers." For example, in the case of CIBC World Markets, analysts rate individual stocks based on the "stock's expected performance vs. the sector." In contrast, the other ten brokers state that they benchmark their recommendations to the entire market or to a specific threshold return. We refer to such brokers as "market benchmarkers." For example, Wachovia's analysts rate a stock based on the stock's expected performance relative to the market over the next 12 months. Thus, the disclosures in Table 8 suggest that brokers differ, according to their statements, in their interpretation of firm recommendations.

<Insert Table 8 here>

5.2.2 Pseudo Industry Recommendations

The fact that brokers state that they use a specific benchmark is anecdotal only. We next examine empirically which benchmark is in fact being used. As explained above, if brokers use an industry benchmark for their firm recommendations then their firm recommendations will contain no industry-wide information. By contrast, if brokers use a market benchmark, then their firm recommendations will have information regarding industry outlook. This observation enables us to construct a simple test as follows. In each month *t* we construct a "pseudo industry consensus recommendation" by value weighting all recommendations issued during that month to firms belonging to the specific GICS industry.[23] That is, the pseudo industry recommendations mirror the "true" industry recommendations studied in the paper. Only that, instead of obtaining them directly from IBES, we construct them by aggregating firm recommendations on an industry level [similar to Boni and Womack (2006)].

<Insert Table 9 here>

Panel A of Table 9 presents summary statistics of the pseudo industry recommendations. First, the panel shows that the average pseudo industry recommendation for all brokers is 1.61, which is somewhat optimistic. We then focus on three sub-groups of interest. The first is the six brokers in our sample that provide explicit industry recommendations. Their average pseudo industry recommendation is 1.71. In comparison, their average true industry recommendation is 1.85. We then distinguish between two sets of brokers based on the analysis in Table 8. The average pseudo industry recommendation for industry benchmarkers is 1.70, while the average for market benchmarkers is a bit more optimistic at 1.61. Overall, there does not seem to be a large economic difference between the different sub-groups in the level of their recommendations.

Panel B of Table 9 presents the correlation matrix between the different types of pseudo industry recommendations and the true industry recommendations. The most interesting result in the panel is the low correlation between the pseudo industry recommendations and the true industry recommendations. These correlations range from

[23] We also tried a version of the pseudo industry recommendations based on equal weighting of the firm recommendations. The results are similar.

0.08 to 0.13, suggesting that true industry recommendations are very different in their informational content than just an aggregation of firm recommendations. For the six brokers in our industry recommendation sample, the correlation is 0.12. Such a low correlation is expected if we believe these brokers' claims that their firm recommendations are benchmarked to the industry – and thus are not expected to contain much industry information. A similar correlation is obtained for all industry benchmarkers as well. The surprising result is that the correlation between the true and pseudo industry recommendations among the market benchmarkers is just 0.09. Here we would expect pseudo industry recommendations to contain information about the industry, and thus be more correlated with industry outlooks. However, we find little such evidence. This raises the possibility that while market benchmarkers state that they use a market benchmark for their firm recommendations, in practice they still benchmark to industry peers.[24]

To more formally investigate this issue we repeat the out-of-sample analysis from Table 6 using the pseudo industry recommendations. Boni and Womack (2006) conduct a similar analysis.[25] The idea is that if pseudo industry recommendations possess predictive information regarding the industry, then portfolios based on pseudo industry recommendations will demonstrate abnormal returns. In particular, this analysis enables us to compare the performance of investment strategies based on true industry recommendations to pseudo industry recommendations.

Panel C of Table 9 presents the results. As in Table 6, in each month we sort industries by their consensus pseudo industry recommendation and construct three portfolios related to high (Portfolio 1), medium (Portfolio 2), and low (Portfolio 3) consensus levels. Then, we calculate the out-of-sample alphas of the three portfolios and of a portfolio that is long in Portfolio 1 and short in Portfolio 3. Consider first Column

[24] Note that the "true" industry recommendations in this case are *not* of the market benchmarkers. Therefore, another alternative, of course, is that market benchmarkers have strikingly different views about industry prospects when compared to the views expressed in the explicit industry recommendations by the six brokers in our sample.

[25] The focus of our paper is on true industry recommendations, which is different from Boni and Womack (2006) who did not have access to such recommendations. Howe, Unlu, and Yan (2009) conduct an analysis somewhat similar to that of Boni and Womack (2006), but they focus on excess returns relative to the market rather than risk-adjusted abnormal returns.

(1), which presents the results for all brokers. It shows that the alphas are not different from zero for the three portfolios as well as for the long-short portfolio. This is consistent with the findings of Boni and Womack (2006, page 106). Similar results obtain in Columns (2)-(4) which refer to the sub-groups of the six brokers in our sample, the industry benchmarkers, and the market benchmarkers. These results stand in stark contrast to the results in Table 6 showing a large abnormal return for portfolios based on true industry recommendations.

Our conclusion from this analysis is twofold. First, the results show that true industry recommendations are very different from just an aggregation of firm recommendations. While the former contain valuable information to investors regarding industry outlooks, the latter do not seem to have investment value. This is in line with the low correlation between the two, documented in Panel B. Secondly, the results show that even among the market benchmarkers, where we do expect pseudo industry recommendations to have investment value, we do not find any significant predictive power. One possibility is that they also benchmark firm recommendations to industry peers. In fact, this makes sense to us. As analysts work in industry teams, their main expertise is specialized within an industry. It is likely relatively easy for analysts to rank firms within their own industry. However, analysts seem to lack the expertise to compare the outlooks of firms in their industry to firms in other industries.

5.3 The Investment Value of Combining Industry and Firm Recommendations

The results so far show that true industry recommendations have investment value that is unrelated to information in firm recommendations. Prior research demonstrates that firm recommendations also have investment value. [see for example Stickel (1995); Womack (1996); Barber, Lehavy, McNichols, and Trueman (2001, 2006); Jegadeesh, Kim, Krische and Lee (2004); and Barber, Lehavy, and Trueman (2008)]. Jointly, these two observations suggest that combining firm and industry recommendations will enhance their investment value. In this section we explore this idea.

Our trading strategy consists of first choosing industries using industry recommendations. Then, one can use firm recommendations to choose firms within the

selected industries. The combined strategy extracts the full power of analysts' knowledge as it incorporates their signals both within and across industries. For example, we can form portfolios that are long in firms with optimistic recommendations that belong to industries with optimistic recommendations, and short in firms with pessimistic recommendations in industries with pessimistic recommendations.

As a start, we follow Boni and Womack (2006) in constructing portfolios based on firm recommendations. For each firm covered by IBES and each month during our sample period, we count the number of upgrades and downgrades that the firm received. An upgrade or downgrade is defined at a firm-broker level. For example, an upgrade on firm *i* by broker *B* in month *t* means that *B* issued a recommendation for *i* in month *t* that was more optimistic than the most recent recommendation issued by B to *i*. (Therefore we ignore reiterations of recommendations, or initiations of coverage.) We then compute the difference between the number of upgrades and the number of downgrades for each month and firm across all brokers. If the difference is positive, then the firm is a "net upgrade." Conversely, if the difference is negative, then the firm is a "net downgrade." In each month *t* we form two portfolios based on firm recommendations, one for the net upgraded firms in month *t*-1 (Portfolio *U*) and one for net downgraded firms in month *t*-1 (Portfolio *D*). Returns on each portfolio are obtained from equal-weighting the returns on their stocks.[26]

<Insert Table 10 here>

We next combine firm and industry recommendations. In each month we perform a double-sort of the universe of firms based on the firm classification (whether "net upgraded" or "net downgraded") and on its industry classification (belonging to either one of the industry portfolios described in the previous sections). This generates six portfolios of firms whose out-of-sample four-factor alphas are reported in Table 10. For example, the top left entry represents firms that belong to the industries that have consensus recommendations below 1.5 and are "net upgrades" individually, while the

[26] Notice that a third "portfolio" is implied here, the one with firms that were neither "net upgraded" nor "net downgraded." In fact, about half of the firms receiving recommendations in the month would be in this third "portfolio", either because they only receive reiteration/ initiations of recommendations, or because the number of upgrades is equal to the number of downgrades.

bottom right entry represents firms that belong to industries with the lowest consensus recommendations and "net downgrades" individually.

The results support the idea that combining industry and firm recommendations enhances investment value. For example, whether a "net upgraded" firm shows abnormal returns depends on its industry outlook: such net upgraded stocks have significantly positive alphas if they are part of the industries with optimistic outlook (1,*U*) or neutral outlook (2,*U*), but not when they are part of the industries with the worst outlook (3,*U*). In a similar fashion, "net downgraded" stocks have significantly negative alphas when part of a pessimistic industry (3,*D*), but not when they are part of an optimistic industry (1,*D*) or a neutral industry (2,*D*). A trading strategy long in the top-left portfolio (1,*U*) and short in the bottom-right portfolio (3,*D*) yields a monthly out-of-sample alpha of 2.2%. Since this strategy is available roughly during 8 month of each year, we estimate its annual alpha as 17.6% (assuming investment in a zero alpha portfolio when the strategy is not available). This annual alpha is larger than the one obtained in Table 6 using industry recommendations only. It is also larger than the alpha estimates of portfolios based on firm recommendations in prior research [e.g. an alpha of about 4% in Barber, Lehavy, McNichols, and Trueman (2001)].

We also repeated the analysis in Table 10 separately for the 20 brokers listed in Table 8. Unreported results show that the alphas obtained are similar in magnitude to those presented in Table 10. In addition, we analyzed separately the results for market- vs. industry-benchmarkers. Both groups yielded significant alphas of similar magnitude. This again supports the idea that market-benchmarkers in fact benchmark their firm recommendations to industry peers.

Overall, the results in this section suggest that industry recommendations contain information that is not already incorporated in firm recommendations. While firm recommendations focus on ranking stocks within industries, industry recommendations enable investors to rank industries. Thus, combining the two types of recommendations generates investment portfolios that outperform portfolios based on just one type of recommendation (firm or industry).

6 Conclusion

Using new data that became available on IBES in 2002, we study analysts' industry recommendations. This is a major output of analysts' research that has not been explored so far. Analysts provide such recommendations on a monthly/quarterly basis, and, for a subsample of the IBES' brokers, such recommendations are appended to the usual firm recommendations files.

Institutional investors assign a high level of importance to analysts' industry expertise – as reflected in the *Institutional Investor Magazine* survey cited in the Introduction. Our results suggest that analysts do indeed possess an ability to analyze industries as reflected in the investment value of their industry recommendations. Furthermore, the results highlight the importance of this new facet of analysts' research. As we show, not only do industry recommendations have investment value, but also they incorporate information that is distinct from that conveyed by firm recommendations.

Another important element of our study is that the analysis of industry recommendations enables us to better understand the meaning of firm recommendations. Analysts differ in their disclosures regarding the benchmark for their firm recommendations. However, our empirical findings suggest that these differences are not reflected in the information contained in firm recommendations. Rather, it appears that analysts tend to benchmark their firm recommendations to industry peers regardless of their disclosures. Given the industry focus of the sell-side analyst profession, this result seems plausible to us. Even if analysts attempt to provide recommendations using a market benchmark, they may lack the knowledge or incentives to do so.

Being the first paper to study industry recommendations, several interesting questions remain. First, what is the source of investment value in firm recommendations? In particular, is there a link between industry recommendations and the subsequent investment decisions of either retail or institutional investors? Second, given the importance of industry knowledge, what is its role in analysts' compensation and reputation? Third, what are the relative weights that should be assigned to industry vs. firm recommendations to maximize their investment value? Finally, what can be learned from the fact that firm recommendations typically use an industry benchmark, regarding

their investment value as well as their relation to other analysts' outputs such as earnings forecasts and price targets? These are questions to be addressed in future research.

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Appendix

To illustrate how IBES records industry recommendations we present a specific example. In January 2006, Bear Stearn published an analyst report on Apple (AAPL). We obtained this report from the Investext Plus database. The front page of the report shows that the analyst issued an 'outperform' recommendation for Apple. Additionally, the front page cites a 'market weight' recommendation for the IT hardware industry. This recommendation is taken from a periodic industry report prepared by a group of analysts at Bear Stearns.

IBES recorded these recommendations as follows:

Ticker	RECDATS	BROKER	BTEXT	IRECCD
AAPL	20060112	BEAR	OUTPERFORM/MKTWT	2

Note that the 'btext' item includes two words separated by a 'slash'. The text before the slash is the firm recommendation, whereas the text after the slash is the industry recommendation. Industry recommendations only appear in this item for brokers that include them in the front page of their firm reports.

Below, we present how we assign numeric values to the text depicting industry recommendations. We code optimistic industry recommendations as '1', neutral industry recommendations as '2', and pessimistic industry recommendations as '3'.

Optimistic (1)	**Neutral (2)**	**Pessimistic (3)**
ACCUMULATE	CORE HOLD	AVOID
ABOVE AVERAGE	IN-LINE	CAUTIOUS
ACC	MARKET PERFORM	NEGATIVE
ACCUM	MARKETPERFORMER	REDUCE
ACCUMULATE	MARKETPERFRM	SELL
ADD	MKTWT	UNDERPERF.
ATTRACTIVE	MP	UNDERPERFORM
BUY	NEUTRAL	UNDERWT
OUTPERFORM		
OVERWT		
POSITIVE		
STRONGBUY		

Table 1 - Summary Statistics on Brokerage Houses

This table presents summary statistics on the six brokerage houses whose industry recommendations are available in IBES during our sample period (9/2002 – 12/2007). We report the name of each brokerage house, IBES internal code for the brokerage house (BMASKCD) under the Broker Code column, the number of firms receiving recommendations from the brokerage house, the average number of firm stock recommendations issued per month by each brokerage house, the average of such firm recommendations, and the number of industries covered by each brokerage house. When calculating the average firm recommendation, we assign firm recommendations a numeric value as follows: "strong buy" and "buy"=2, "hold"=3, "underperform" and "sell"=4. Industries are classified by the Global Industry Classification Standard (GICS).

Broker Name	Broker Code	# of firms covered	Avg. # of firm recommendations issued per month	Avg. firm recommendation	# of industries covered (GICS)
Bear Sterns	251	1353	68.5	2.74	65
Credit Suisse First Boston	846	1731	91.7	2.73	68
Goldman Sachs	1020	1618	98.8	2.88	68
Morgan Stanley	1595	1557	82.6	2.87	69
CIBC World Markets Corp.	1750	1118	48.7	2.79	55
Lehman Brothers	2108	1735	80.2	2.76	64

Table 2 - Summary Statistics on the Global Industry Classification Standard (GICS)

This table presents summary statistics on each industry defined by GICS during our sample period (9/2002 – 12/2007). For each GICS, the table shows its corresponding industry name, the number of firms in the industry, the average market capitalization and the average market to book ratio across firms in the industry, the number of brokerage houses (out of the six brokers in Table 1) that issue recommendations to this industry at any point during our sample period, the average number of brokerage houses which issue recommendations to this industry per month, the average number of recommendations issued to this industry per month, and the average of these monthly industry recommendation. The number of firms in each industry is based on the number of firms in CRSP in 2007. The market capitalization and the market to book ratio are calculated based on 2007 data. We assign industry recommendations a numeric value as follows: "optimistic"=1, "neutral"=2, "pessimistic"=3. The monthly industry recommendation is calculated as the average industry recommendation issued to the industry within the month.

GICS	Industry Name	# of firms	Avg. market cap	Avg. M/B	# of brokers covering	Avg. # of brokers issuing rec. per month	Avg. # of rec. per month	Avg. monthly industry rec.
101010	Energy Equipment & Services	80	5214.59	2.40	6	2.83	10.27	1.20
101020	Oil, Gas & Consumable Fuels	271	6951.12	3.49	6	4.81	30.64	1.82
151010	Chemicals	87	5027.19	1.51	6	2.69	7.03	1.58
151020	Construction Materials	11	1649.85	0.75	4	0.39	0.52	1.69
151030	Containers & Packaging	25	1879.04	0.67	6	1.31	3.16	1.69
151040	Metals & Mining	100	5134.07	3.40	6	3.58	9.86	1.66
151050	Paper & Forest Products	19	2515.62	0.50	6	1.63	3.42	2.02
201010	Aerospace & Defense	68	6234.74	1.59	6	2.36	5.31	1.61
201020	Building Products	26	1336.23	0.95	6	0.48	0.59	1.65
201030	Construction & Engineering	26	2744.28	1.16	5	0.73	1.45	1.54
201040	Electrical Equipment	88	1862.56	1.99	6	1.50	2.77	1.57
201050	Industrial Conglomerates	14	35841.21	1.18	6	1.06	1.48	1.56
201060	Machinery	114	3345.71	1.40	6	2.88	6.66	1.67
201070	Trading Companies & Distributors	30	1195.79	1.00	6	1.08	1.52	1.63
202010	Commercial Services & Supplies	158	1118.42	1.37	6	3.81	9.72	1.74
203010	Air Freight & Logistics	16	6340.31	1.62	5	1.34	2.64	1.74
203020	Airlines	21	1933.82	0.36	5	2.20	6.25	1.89
203030	Marine	24	961.57	0.85	4	0.44	0.67	2.24
203040	Road & Rail	35	3738.49	0.80	5	2.03	5.83	2.03
203050	Transportation Infrastructure	6	1122.90	1.16	4	0.30	0.48	1.50
251010	Auto Components	44	1610.15	1.99	5	1.66	4.78	2.38
251020	Automobiles	11	13906.34	0.72	6	1.13	1.66	2.42

Table 2 – Cont.

GICS	Industry Name	# of Firms	Ave. Market Cap	Ave. M/B	# of Brokers covering	Ave. # of Brokers Issuing Rec. Per Month	Ave. # of Rec. Per Month	Ave. Monthly Industry Rec.
252010	Household Durables	87	1479.71	0.79	6	2.02	5.00	2.06
252020	Leisure Equipment & Products	30	866.90	0.80	5	0.80	1.02	1.75
252030	Textiles, Apparel & Luxury Goods	67	1354.35	1.53	6	1.42	3.08	1.92
253010	Hotels, Restaurants & Leisure	128	2693.52	1.31	6	4.05	14.84	1.81
253020	Diversified Consumer Services	31	1700.52	2.18	6	1.09	1.63	1.73
254010	Media	133	4052.29	1.08	6	4.75	19.44	1.95
255010	Distributors	16	764.40	0.83	5	0.33	0.33	2.22
255020	Internet & Catalog Retail	32	2292.78	2.02	6	1.92	3.28	1.69
255030	Multiline Retail	18	6219.64	0.75	6	1.84	3.73	2.24
255040	Specialty Retail	122	2405.74	0.99	6	4.30	16.78	2.17
301010	Food & Staples Retailing	32	12585.49	1.07	6	2.05	4.22	1.90
302010	Beverages	28	13133.49	1.53	5	1.77	3.88	1.89
302020	Food Products	73	4584.61	1.40	6	2.22	5.17	2.28
302030	Tobacco	10	20618.57	2.01	4	0.53	0.94	1.62
303010	Household Products	15	21169.45	1.42	6	1.02	1.64	2.05
303020	Personal Products	30	1264.09	2.43	6	1.03	1.55	1.87
351010	Health Care Equipment & Supplies	173	2329.75	2.59	6	3.47	8.84	1.57
351020	Health Care Providers & Services	124	3220.29	1.34	6	4.69	18.56	1.67
351030	Health Care Technology	27	682.26	1.81	5	0.30	0.52	1.49
352010	Biotechnology	213	1461.17	3.22	6	4.31	11.92	1.47
352020	Pharmaceuticals	119	8144.82	2.48	6	3.83	9.56	1.52
352030	Life Sciences Tools & Services	59	1596.07	2.29	6	0.50	1.00	1.60
401010	Commercial Banks	417	1396.67	0.11	6	2.84	10.23	2.06
401020	Thrifts & Mortgage Finance	172	846.21	0.13	6	1.58	3.84	1.88
402010	Diversified Financial Services	36	16910.30	1.38	6	2.59	4.53	1.91
402020	Consumer Finance	26	4233.64	0.69	6	1.23	2.02	1.92
402030	Capital Markets	95	7705.09	1.18	6	2.59	7.06	1.89

Table 2 – Cont.

GICS	Industry Name	# of Firms	Ave. Market Cap	Ave. M/B	# of Brokers covering	Ave. # of Brokers Issuing Rec. Per Month	Ave. # of Rec. Per Month	Ave. Monthly Industry Rec.
403010	Insurance	158	5815.30	0.45	6	4.02	15.59	1.84
404010	Real Estate -- Discontinued effective 04/28/2006				6	2.23	6	2.28
404020	Real Estate Investment Trusts (REITs)	154	2037.65	0.56	5	1.30	7.14	2.13
404030	Real Estate Management & Development	35	1414.93	0.59	5	0.31	0.42	2.09
451010	Internet Software & Services	122	2625.16	2.79	6	3.41	7.19	1.59
451020	IT Services	89	2548.84	1.39	6	3.22	8.44	1.67
451030	Software	180	3894.79	2.34	6	4.52	14.73	1.68
452010	Communications Equipment	134	3853.17	1.62	6	4.03	11.83	1.74
452020	Computers & Peripherals	70	9138.13	1.54	6	3.19	8.98	1.89
452030	Electronic Equipment, Instruments & Components	148	961.65	1.66	6	3.67	8.55	1.82
452040	Office Electronics	3	6871.41	0.98	4	0.25	0.27	1.90
452050	Semiconductor Equipment & Products -- Discontinued effective 04/30/2003.				6	0.55	4.61	6
453010	Semiconductors & Semiconductor Equipment	172	2796.67	1.63	6	4.23	22.80	1.72
501010	Diversified Telecommunication Services	64	7398.96	0.84	6	4.02	11.59	1.95
501020	Wireless Telecommunication Services	36	6636.66	0.86	6	3.11	7.59	1.94
551010	Electric Utilities	38	8264.76	0.54	6	2.80	9.31	2.47
551020	Gas Utilities	29	2039.47	0.72	5	1.14	1.98	2.13
551030	Multi-Utilities	31	6296.50	0.46	6	1.67	3.63	2.39
551040	Water Utilities	14	572.59	1.12	3	0.25	0.27	2.16
551050	Independent Power Producers & Energy Traders	13	4701.73	0.68	6	0.73	1.06	2.25

Table 3 – Coverage and Distribution of Industry Recommendations

This table presents coverage information for the GICS industries. Panel A shows the number of such industries covered by each of the brokers for which we have industry recommendations. An industry is considered to be covered by a broker in a specific year if there is at least one industry recommendation being issued for that industry by the broker. Panel B reports the distribution of the industry recommendations levels over the years. We assign industry recommendations a numeric value as follows: "optimistic"=1, "neutral"=2, "pessimistic"=3. Panel C shows the average industry recommendation for each broker and each year of our sample.

Panel A – Industry Coverage by Broker and by Year

Broker Name	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Bear Sterns	43	54	49	53	57	56
Credit Suisse First Boston	47	57	57	58	61	65
Goldman Sachs	42	54	53	57	65	66
Morgan Stanley	49	59	55	56	61	61
CIBC World Markets Corp.	36	43	40	40	41	41
Lehman Brothers	44	56	53	56	60	58
Number of GICS Industries	59	62	62	64	67	69

Panel B – Distribution of Industry Recommendations by Year

Industry Recommendation	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**Overall**
1	30.21%	29.38%	32.12%	30.57%	30.64%	28.23%	30.13%
2	50.72%	52.70%	53.56%	54.17%	55.34%	59.40%	54.77%
3	19.08%	17.92%	14.32%	15.26%	14.02%	12.36%	15.10%

Panel C – Average Industry Recommendations by Broker and Year

Broker Name	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**Overall**
Bear Sterns	1.88	1.93	1.78	1.91	1.84	1.96	1.89
Credit Suisse First Boston	1.86	1.91	1.79	1.71	1.88	1.86	1.84
Goldman Sachs	2.11	1.94	1.93	2.02	1.87	1.89	1.91
Morgan Stanley	1.95	2.02	1.90	1.99	1.88	1.77	1.92
CIBC World Markets Corp.	1.79	1.72	1.71	1.77	1.74	1.78	1.75
Lehman Brothers	1.85	1.75	1.78	1.67	1.72	1.70	1.74

Table 4 – Determinants of Industry Recommendations

This table reports the results of estimating to logistic models of the probabilities of issuing an optimistic or pessimistic industry recommendations. The models are estimated for all industry recommendations issued during our sample period (9/2002-12/2007). The independent variables are as follows: **Industry_Size** is the natural logarithm of the aggregate market capitalization of the industry, **MB** is the industry weighted average of the market-to-book ratio, **Profit** is the industry weighted average of net income margin, **R&D** is the industry weighted average of the R&D divided by sales, **Capex** is the industry weighted average of the capital expenditures divided by sales. All weighted averages are by the firm market-capitalization at the beginning of the year in which a recommendation is issued. **IND_RET** is the return to an industry index in the previous quarters (up to three quarters back). **MKT_RET** is the market return in the previous quarters (up to three quarters back). **TOTAL_IPOSEO** is the total IPO/SEO proceeds in the industry during the year preceding the recommendation. **AVG_IPOSEO** is the average IPO/SEO proceeds in the industry during the year preceding the recommendation. **IPOSEO_PCT** is the percentage of IPO/SEO proceeds in an industry underwritten by the issuing broker during the year preceding the recommendation. In both specifications we control for broker fixed-effects. Robust standard errors (in parentheses) are calculated after clustering at the broker-industry level. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Table appears in the next page.

Table 4 – Cont.

	Prob(Ind Rec=Optimistic)		Prob(Ind Rec=Pessimistic)	
	Coefficient	Marginal Effects at Medians	Coefficient	Marginal Effects at Medians
Industry_ Size	-0.0622 (0.884)	-0.0111	-0.1176 (1.012)	-0.0046
MB	-0.0039 (0.356)	-0.0007	-0.0229 (1.143)	-0.0009
Profit	2.1955 (2.160)**	0.3931	-1.4718 (1.130)	-0.0579
R&D	6.482 (3.602)***	1.1606	-13.7949 (5.212)***	-0.5429
Capex	-0.481 (0.228)	-0.0861	-2.0074 (0.684)	-0.0790
IND_RET_{t-1}	1.5002 (2.470)**	0.2686	-1.3004 (1.506)	-0.0512
IND_RET_{t-2}	1.6502 (2.833)***	0.2955	-1.0669 (1.475)	-0.0420
IND_RET_{t-3}	0.8458 (1.777)*	0.1514	-2.4718 (3.455)***	-0.0973
MKT_RET_{t-1}	-1.4866 (1.972)**	-0.2662	0.4738 (0.575)	0.0186
MKT_RET_{t-2}	0.2387 (0.439)	0.0427	-0.9889 (1.124)	-0.0389
MKT_RET_{t-3}	0.5832 (1.056)	0.1044	-1.8915 (2.037)**	-0.0744
TOTAL_IPOSEO	-0.0125 (0.175)	-0.0022	0.0498 (0.476)	0.0020
AVG_IPOSEO	-0.0512 (0.421)	-0.0092	-0.119 (0.692)	-0.0047
IPOSEO_PCT	3.3992 (2.212)**	0.6087	-0.3153 (0.118)	-0.0124
Observations	25,144		25,144	

Table 5 – Summary Statistics on the Industry Recommendation Portfolios

This table reports summary statistics on the industry recommendation portfolios during our sample period (9/2002-12/2007). We construct 3 industry portfolios for each month *t* based on the consensus recommendations in month *t*-1 as follows: Portfolio 1 includes industries with consensus industry recommendation in month *t*-1 less than or equal 1.5. Portfolio 2 includes industries with consensus industry recommendation between 1.5 and 2.5. Portfolio 3 includes industries with consensus recommendation greater than 2.5. The consensus recommendation is defined as the average industry recommendation within the month. Only industries receiving recommendations from 3 or more brokers in the month are considered in the portfolio formation in that month. Panel A describes basic characteristics about the portfolio formation: the number of months each portfolio is defined over; the average monthly consensus recommendation for all the industries that are part of the portfolio; the average number of industries included in each portfolio per month; the average number of firms (across all industries) in each portfolio; the average number of months an industry stays in a portfolio after it is included in the portfolio; and the total number of different industries which ever enter into the portfolio. Panel B shows various portfolio returns. Industry return is defined as the value-weighted return across all CRSP firms in the relevant month. The monthly return for portfolios 1-3 is the equal weighted return of all industries in the relevant portfolio. "Rec Port 1 minus Rec Port 3" is the self financing investment strategy of buying the industry recommendation portfolio 1 and shorting the industry recommendation portfolio 3.

Panel A – Portfolio Formation Characteristics

Industry Recommendation Portfolio	# of Months	Ave. Monthly Consensus Rec.	Ave. # of Industries per month	Ave. # of Firms	Ave. # of months an industry staying in the portfolio	# of industries
1	64	1.31	6.33	896.67	1.52	50
2	64	1.92	20.08	2831.88	2.25	60
3	46	2.72	2.22	282.52	1.19	34

Panel B – Industry Recommendation Portfolio Returns

Industry Recommendation Portfolio	Raw Monthly Return					Cumulative Returns		
	t-2	t-1	t	t+1	t+2	3 months (t, t+2)	6 months (t,t+5)	12 months (t,t+11)
1	0.0183	0.0168	0.0160	0.0113	0.0100	0.0372	0.0802	0.1340
p-value	0.0001	0.0013	0.0016	0.0064	0.0533	0.0000	0.0000	0.0000
2	0.0123	0.0121	0.0147	0.0117	0.0104	0.0374	0.0748	0.1254
p-value	0.0095	0.0140	0.0010	0.0119	0.0127	0.0000	0.0000	0.0000
3	0.0089	0.0087	-0.0018	0.0151	0.0074	0.0219	0.0684	0.1354
p-value	0.2042	0.3025	0.8078	0.0459	0.2944	0.1506	0.0037	0.0004
Rec Port 1 minus Rec Port 3	0.0094	0.0077	0.0151	-0.0063	0.0060	0.0138	0.0158	0.0095
p-value	0.1124	0.2747	0.0090	0.3251	0.2976	0.1228	0.3740	0.6928

Table 6 - In-Sample/Out-of-Sample Tests of Industry Recommendation Portfolios

This table reports the out-of-sample regression results (Panel A) and the in-sample regression results (Panel B) on the industry recommendation portfolios during our sample period (9/2002-12/2007). The in-sample/out-of-sample tests are performed on the portfolio return in month *t* by using Fama-French four-factor model. Our industry portfolios are constructed for each month *t* based on the consensus recommendations in month *t*-1 as follows: Portfolio 1 includes industries with consensus industry recommendation in month *t*-1 less than or equal 1.5. Portfolio 2 includes industries with consensus industry recommendation between 1.5 and 2.5. Portfolio 3 includes industries with consensus recommendation greater than 2.5. The consensus recommendation is defined as the average industry recommendation within the month. Only industries receiving recommendations from 3 or more brokers in the month are considered in the portfolio formation in that month. Industry return is defined as the value-weighted return across all CRSP firms in the relevant month. The monthly return for portfolios 1-3 is the equal weighted return of all industries in the relevant portfolio. "Rec Port 1 minus Rec Port 3" is the self financing investment strategy of buying the industry recommendation portfolio 1 and shorting the industry recommendation portfolio 3.

Panel A – Out-of-Sample Tests on Industry Recommendation Portfolios

Industry Recommendation Portfolio	Out-of-Sample Alpha	Ret_mkt-Rf	SMB	HML	UMD
1	0.0046	1.0862	0.1599	0.0094	-0.0199
p-value	0.0336	0.0000	0.0000	0.8331	0.0628
2	0.0010	1.0542	0.1139	0.0715	-0.0539
p-value	0.2648	0.0000	0.0000	0.0001	0.0000
3	-0.0125	0.9618	0.1399	0.4078	-0.0955
p-value	0.0150	0.0000	0.0027	0.0000	0.0012
Rec Port 1 minus Rec Port 3	0.0134	0.1230	0.0378	-0.4354	0.0773
p-value	0.0202	0.0571	0.4396	0.0000	0.0312

Panel B – In-Sample Tests on Industry Recommendation Portfolios

Industry Recommendation Portfolio	In-Sample Alpha	Ret_mkt-Rf	SMB	HML	UMD
1	0.0035	1.0372	0.3292	-0.0157	0.1485
p-value	0.1439	0.0000	0.0048	0.8972	0.0128
2	0.0029	0.9899	0.1839	-0.1069	-0.0744
p-value	0.0011	0.0000	0.0000	0.0181	0.0008
3	-0.0161	0.9006	0.5842	0.5684	-0.1203
p-value	0.0060	0.0001	0.0614	0.0836	0.3362
Rec Port 1 minus Rec Port 3	0.0175	0.0828	-0.1853	-0.6480	0.1981
p-value	0.0069	0.7139	0.5842	0.0748	0.1548

Table 7 - Distribution of Industry Recommendations and Firm Recommendations

This table reports the frequency of industry recommendations and firm recommendations issued by the six brokers identified in Table 1 during our sample period (9/2002 – 12/2007). Industry recommendations are coded as follows: "optimistic"=1, "neutral"=2, "pessimistic"=3. Firm recommendations are coded as follows: "strong buy" and "buy"=2, "hold"=3, "underperform" and "sell"=4. Panel A reports the distribution of firm recommendations within each level of industry recommendation, while Panel B reports the distribution of industry recommendations within each level of firm recommendation.

Panel A - Distribution of Firm Recommendations Within Industry Recommendation Levels

Industry Recommendation	Firm Recommendation	Frequencies	% of total (Unconditional)	% of industry (Conditional)
1	2	3439	11.78%	39.11%
1	3	4185	14.34%	47.59%
1	4	1170	4.01%	13.30%
Ave. (1)	2.73		30.13%	100.00%
2	2	5504	18.86%	34.43%
2	3	8197	28.08%	51.28%
2	4	2285	7.83%	14.29%
Ave. (2)	2.79		54.77%	100.00%
3	2	1230	4.21%	27.91%
3	3	2300	7.88%	52.19%
3	4	877	3.00%	19.90%
Ave. (3)	2.9		15.10%	100.00%
p-values				
Ave (1) = Ave (2)	<.0001			
Ave (2) = Ave (3)	<.0001			

Panel B - Distribution of Industry Recommendations Within Firm Recommendation Levels

Firm Recommendation	Industry Recommendation	Frequencies	% of total (Unconditional)	% of Firm (Conditional)
2	1	3439	11.78%	33.81%
2	2	5504	18.86%	54.10%
2	3	1230	4.21%	12.09%
Ave. (1)	1.78		34.85%	100.00%
3	1	4185	14.34%	28.50%
3	2	8197	28.08%	55.83%
3	3	2300	7.88%	15.67%
Ave. (2)	1.87		50.30%	100.00%
4	1	1170	4.01%	27.01%
4	2	2285	7.83%	52.75%
4	3	877	3.00%	20.24%
Ave. (3)	1.93		14.84%	100.00%
p-values				
Ave (1) = Ave (2)	<.0001			
Ave (2) = Ave (3)	<.0001			

Table 8 – Analysts' disclosure about the meaning of firm recommendations

This table reports information regarding the nature of firm recommendations, as it is disclosed by the brokerage houses. We include the 20 largest brokers in terms of the number of recommendations they issued between 2003 and 2007. In addition to the brokerage name and the percentage of recommendations, we indicate whether the recommendations are benchmarked to the industry. We also include an example of the original remark about the adopted benchmark by the brokerage house.

#	Brokerage House	% of recs. 2003-2007	Benchmark is Industry?	Remarks about the benchmark
1	Argus Research	1.5%	No	"We will generally rate a stock a buy if, in our view, the forecast risk-adjusted return on the stock is greater than the forecast return on the market."
2	Bear	2.5%	Yes	"Stock's expected performance vs analyst's industry coverage for the next 12 months."
3	RBC	1.4%	Yes	"The rating assigned to a particular stock represents solely the analyst's view of how that stock will perform over the next 12 months relative to the analyst's sector"
4	UBS	4.2%	No	"The UBS rating system begins with the analyst determining the forecast stock return over the next 12 months. The forecast stock return relative to a predefined hurdle rate determines the Recommendation (Buy, Neutral, or Sell). This hurdle rate is set on either side of an unbiased estimate of the market's return over the next 12 months."
5	Credit Suisse First Boston	3.4%	Yes	"Stock's expected total return vs. the industry for the next 12 months."
6	Goldman Sachs	3.7%	Yes	"Our ratings reflect expected stock price performance relative to each analyst's coverage universe."
7	JP Morgan	3.0%	Yes	"Overweight: Over the next six to twelve months, we expect this stock will outperform the average total return of the stocks in the analyst's (or the analyst's team's) coverage universe."
8	Jefferies and Co.	1.5%	No	"Buy: describes stocks that we expect to provide a total return of 15% or more within a 12-month period."
9	Deutsche Bank	1.9%	No	"Buy: total return expected to appreciate 10% or more over a 12-month period."
10	Merrill Lynch	3.7%	No	"Based on stock's expected total return within a 12 month period."
11	Morgan Stanley	2.7%	Yes	"Stock's total return vs. analyst's coverage on a risk-adjusted basis, for the next 12-18 months."
12	CIBC	1.7%	Yes	"Stock's expected performance vs the sector for the next 12-18 months."
13	US Bancorp Piper Jaffray	2.0%	No	Performance "relative to the market index over the next 12 months."
14	Raymond James	1.8%	No	Performance "relative to the market index over the next 12 months."
15	Lehman Brothers	2.8%	Yes	"Stock's performance vs. the industry for a 12 month investment horizon"
16	Smith Barney	3.4%	Yes	"Stock's performance vs. the analyst's industry coverage for the coming 12-18 months."
17	Stifel Nicolaus	1.4%	No	"Performance "relative to S&P 500 over the next 12 months."
18	Wachovia	1.9%	No	Performance "relative to the market over the next 12 months."
19	Friedman Billing	1.5%	Yes	Performance "relative to similar companies within its industry over the next 12-18 months."
20	Banc of America	1.8%	No	"The rating system is based on a stock's forward -12-month expected total return (price appreciation plus dividend yield)."

Table 9 – Pseudo-Industry Recommendations

This table reports tests on the monthly pseudo-industry recommendations during our sample period (9/2002-12/2007). We use four different ways to define pseudo-industry recommendations. ***All Brokers*** defines monthly pseudo-industry recommendations as the value-weighted firm recommendations issued by all brokers in IBES within a month and an industry. ***Six Brokers*** defines monthly pseudo-industry recommendations as the value-weighted firm recommendations issued by the six brokers (table 1) within a month and an industry. ***Industry Benchmarkers*** defines monthly pseudo-industry recommendations as the value-weighted firm recommendations issued by 10 brokers out of 20 largest brokers in the IBES which use the sector benchmark for firm recommendations. ***Market Benchmarkers*** defines monthly pseudo-industry recommendations as the value-weighted firm recommendations issued by 10 brokers out of 20 largest brokers in the IBES which use the market benchmark for firm recommendations. Panel A presents the distributions of each type of pseudo-industry recommendations. Panel B presents the correlation among four pseudo-industry recommendations and the true industry recommendation. Panel C shows the out-of-sample alphas of portfolios constructed based on each type of pseudo-industry recommendations. The portfolios are constructed similar to those in table 5.

Panel A – Summary Statistics

	Pseudo-industry recommendation			Real-industry recommendation		
	N	Average	STD	N	Average	STD
All brokers	3984	1.6095	0.3223	3,332	1.8569	0.4884
Six Brokers in our industry recommendation sample	3346	1.7128	0.4633			
10 industry benchmarkers	3606	1.7009	0.4210			
10 industry market benchmarkers	3523	1.6127	0.4404			

Panel B – Correlation Matrix

	Pseudo Ind. Rec. (All brokers)	Pseudo Ind. Rec. (Six brokers)	Pseudo Ind. Rec. (Industry Benchmarkers)	Pseudo Ind. Rec. (Market Benchmarkers)	True Industry Recs
Pseudo Ind. Rec. (All brokers)	1				
Pseudo Ind. Rec. (Six brokers)	0.43064	1			
Pseudo Ind. Rec. (Industry Benchmarkers)	0.52487	0.79681	1		
Pseudo Ind. Rec. (Market Benchmarkers)	0.48701	0.10925	0.10789	1	
Real Industry Recs	0.12719	0.12178	0.13040	0.08681	1

Table 9 – Cont.

Panel C – Out-of-Sample Alphas

Portfolio	Pseudo Ind. Rec. (All brokers)	Pseudo Ind. Rec. (Six brokers)	Pseudo Ind. Rec. (Industry Benchmarkers)	Pseudo Ind. Rec. (Market Benchmarkers)
	(1)	(2)	(3)	(4)
1	0.0017	0.0008	0.0007	0.0011
p-value	0.2201	0.6461	0.6781	0.4007
2	-0.0001	0.0014	0.0009	0.0004
p-value	0.9317	0.2476	0.3165	0.6848
3	0.0091	0.0011	0.0025	0.0028
p-value	0.1313	0.8328	0.6603	0.6729
Port 1 minus Port 3	-0.0074	-0.0065	-0.0028	-0.0061
p-value	0.2977	0.2530	0.6435	0.3738

Table 10 – Out-of-Sample Alphas of Portfolios Sorted by Firm Recommendations and Industry Recommendations

This table presents the performance of portfolios sorted by both firm recommendations and industry consensus recommendations during our sample period (9/2002-12/2007). For each month *t*, firms are first sorted based on the consensus industry recommendation in month *t*-1, and then are sorted based on the stock recommendation (upgrades and downgrades). Industry portfolios are constructed as follows: Portfolio 1 in month *t* includes stocks in the industries with consensus industry recommendation in month *t*-1 less than or equal 1.5. Portfolio 2 includes stocks in the industries with consensus industry recommendation between 1.5 and 2.5. Portfolio 3 includes stocks in the industries with consensus recommendation greater than 2.5. The industry consensus recommendation is defined as the average industry recommendation within a month. Only industries receiving recommendations from 2 or more brokers in the month are considered in the portfolio formation in that month. Stock recommendations portfolios are constructed as follows: For each stock, we count the number of upgrades and number of downgrades that the stock received in month *t-1*. Portfolio U includes stocks with a larger number of upgrades than downgrades, while portfolio D includes stocks with more downgrades. (1, U) refers to the portfolio which belongs to both industry recommendation portfolio 1 and firm recommendation portfolio U. (3,D) refers to the portfolio which belongs to both industry recommendation portfolio 3 and firm recommendation portfolio D. "(1,U) minus (3,D)" refers to the investment strategy of buying the portfolio (1,U) and shorting the portfolio (3,D). Out-of-sample tests are performed on the portfolio return in month *t* by using Fama-French four-factor model.

	Firm Recommendation Portfolios	
Industry Recommendation Portfolios	U (net upgraded)	D (net downgraded)
1	0.0094	0.0029
p-value	0.0031	0.3509
2	0.0047	0.0026
p-value	0.0201	0.4563
3	-0.0139	-0.0158
p-value	0.1009	0.0814
Ind. Rec. Port 1 minus Ind. Rec. Port 3	0.0198	0.0138
p-value	0.0295	0.148
(1,U) minus (3,D)	0.0218	
p-value	0.0320	