Do Retail Investors need Analysts' Recommendations?

Abstract

This study investigates the relevance of analysts' recommendations for retail investors. We draw on established behavioral economics theories such as the Equity Premium Puzzle and the Disposition Effect and acknowledge the decision-making challenges retail investors face due to cognitive biases and limited capacity to process complex market information. To ascertain whether analysts' recommendations can serve as a potential source of excess returns/profit, we implement a unique trading strategy involving monthly portfolio-sorted long-short strategies based on consensus recommendations from brokers and investment banks. Using a decile-sort test, our analysis finds that the zero-investment equal-weighted and value-weighted portfolios contain significant excess returns. However, the value-weighted excess returns are largely driven by the predictive power of the lowest decile ("sell" recommendations). The High-Minus-Low (HML) strategy implemented in relation to the value-weighted portfolios leads to a significant monthly excess return between 1.36% and 1.57%, which translates to annualized returns between 17.57% and 20.45% above the risk-free rate. Our results further provide certain nuances regarding the effectiveness of analysts' recommendations across industries, investment banks and economic cycles. For example, we find that during crisis periods, the value of a zero-investment portfolio based on analyst recommendation is mixed. "Sell" signals, on the one hand, remain important in driving portfolio performance. On the other hand, we find that "buy" signals show diminishing effectiveness. Overall, the study shows that while "buy" signals may not be effective to capture alpha, "sell" signals are particularly potential predictors for retail investors seeking to enhance their investment strategies and achieve higher returns.

Keywords: Retail investors, analysts' recommendations, asset pricing, stock returns.

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Glossary

- **Alpha**: This refers to excess returns of an investment relative to an established benchmark.

- **Analysts' Recommendations**: This refers to professional advice/opinion from financial experts (in the case of this study, analysts) on whether to buy, hold, or sell stocks.

- **Bear Market**: This term describes a market where prices are falling as well as when pessimism surrounds the performance of financial securities.

- **Behavioural Bias**: This refers to any form irrational behavior that confounds investment decisions.

- **Broker**: This is a professional (usually trained) who is licensed to buy and sell stocks on behalf of retail investors.

- **Brokerage House**: This is a firm/company where broker engage with one another to facilitate transactions that they carry out on behalf of retail investors.

- **Bull Market**: This is the opposite of a bear market. The term captures a market condition where prices are rising as well as when optimism surrounds the performance of financial securities.

- **Buy Signal**: This is a sign that indicates that it is a good time to purchase a particular stock.

- **Capital Asset Pricing Model (CAPM)**: This is a mathematical expression that describes expected investment returns based on some level of risk.

- **Consensus Recommendation**: The average/median opinion of analysts' recommendation regrading a particular stock.

- **Deciles**: This is a term that describes classification into ten different baskets based on the average recommendation for the purpose of analysis carried out in this study.

- **Disposition Effect**: This describes a situation where investors sell winning stocks too early and hold onto losing stocks for too long.

- **Equal Weighted**: This is a term that describes the strategy where each stock in a portfolio has the level of importance.

- **Equity**: Signifies the aspect of a company that is owned, and it typically takes the form of stocks.

- **Equity Premium Puzzle**: This describes a phenomenon where stocks consistently yield higher returns when compared to bonds.

- **Excess Returns**: These are returns that are higher than some established level of threshold or risk-free rate in this study.

- **Fama-French Three-Factor Model**: This is theoretical model that expands the CAPM to include size and value factors in predicting stock returns.

- **High-Minus-Low (HML)**: This is a measure of the extra returns from value stocks relative to growth stocks in finance.

- **Long-Short Strategy**: This describes a strategy where investors tend to undervalue stocks thereby selling stocks that are overvalued.

- **Market Capitalization**: This is the total market value of a company's outstanding shares.

- **Portfolio**: A portfolio is a combination of investments or stocks held by an investor.

- **Pricing Model**: This is a model that is used to estimate the fair price of an asset.

- **Prospect Theory**: This theory holds that people value gains and losses differently, which therefore affects the decisions that they make regarding their investment.

- **Risk-Free Rate**: This describes the return of an investment with zero risk. It usually has to do with government bonds.

- **Sell Signal**: This is a sign that highlights a good time to sell or dispose of a particular stock.

- **Skewness**: This is a statistical term that describes the unevenness in the distribution of returns around the mean (or in this study, the consensus recommendation).

- **Stock**: stocks are the unit of investment, typically expressed as shares and they represent ownership in a company.

- **Transaction Costs**: These are costs that associated with buying or selling stocks.

- **Value Weighted**: Unlike equal weighted stocks, this describes the strategy where stocks in the portfolio are weighted based on their market value.

- **Zero-Investment Portfolio**: This is a strategy that involves no initial investment by striking a balance between buying and selling stocks.

1.0 Introduction

There is a popular assumption in finance and behavioral economics that the investment decisions of retail investors are susceptible to significant losses due to behavioral biases as well as a limited capacity to process large historical and real-time complex, technical market information. Established theories such as the Equity Premium Puzzle (EPP) (Mehra & Prescott, 1985; Benartzi & Thaler, 1995) and the Disposition Effect (Odean 1998; Barberis & Xiong, 2009), which are based on the seminal paper on Prospect Theory by Kahneman & Tversky in 1979 and further extended by Barberis, Mukherjee, & Wang (2016), suggest that the decision-making process of retail investors is prone to cognitive errors. For example, the EPP holds that retail investors, on the one hand, demand excessively high returns for investing in stocks or equities as opposed to safer assets like bonds. This eventually leads to under-investment in equities as retail investors perceive equities to be riskier than they actually are, despite equities' historically higher returns over time. On the other hand, the Disposition Effect refers to the counterproductive behavior exhibited by retail investors when they sell favorable stocks too early while they maintain unfavorable stocks for too long. Both phenomena—the EPP and the Disposition Effect—are grounded in the Prospect Theory, which holds that retail investors are more sensitive to losses than to equivalent gains. Additionally, retail investors tend to evaluate their portfolios too frequently (e.g., on a yearly basis rather than over the long term). As a result, a combination of the EPP and Disposition Effect leads retail investors to make sub-optimal decisions that culminate in missed opportunities (when they sell winners too early and hold losers too long), high transactions costs (due to frequent trading of winning stocks, which leads to increased costs, taxes and fees) and overall underperformance of trading options when compared to seasoned investors and analysts.

Due to the limited capacity to analyze vast market information and the behavioral biases inherent in their decision-making processes, most retail investors rely on professional services provided by "experts" in the financial industry (Malmendier & Shanthikumar, 2007). Therefore, there is a large body of research on the usefulness of analysts' recommendations for stock picking. For example, Barber *et al.* (2001) showed that, ignoring transaction cost, a long-short portfolio that is rebalanced daily based on consensus analysts' recommendations leads to positive abnormal gross returns. Loh & Stulz (2011) expanded on previous literature by using a two-day event window for cumulative buy-and-hold abnormal return (CAR) to demonstrate that about 12% of analysts'

recommendations changes are influential to stock price changes. Stickler (1995) also had similar findings that star analyst recommendation changes have more impact and are more profitable (Fan and Yasuda 2008). To further highlight the positive bias problem associated with analysts' recommendation, Panel A of Figure 1 below shows the number of yearly analyst recommendations from the Institutional Brokers' Estimate System (I/B/E/S) database as well as the average consensus recommendation across all firms between 1993 and 2023. From the figure, we find that there is a positive bias in recommendation (where 1 represents "strong sell" recommendation and 5 represents "strong buy" recommendation). The positive bias is evident from "consensus" recommendation (the red line), which consistently remain above 3.5, suggesting a tendency toward "buy" or "hold" ratings rather than "sell" ratings. The positive bias problem in analysts' recommendation has also been extensively discussed in previous literature (Diefenbach, 1972; Stickel, 1995; Barber *et al.*, 2001; Cowen, Groysberg & Healy, 2006; Moshirian *et al.*, 2009; Lötter & Smit, 2018).

Contemporary literature has come to challenge the results of these earlier studies with respect to the usefulness of analysts' recommendations. A case in point is Azevedo and Müller (2024), which argues that analysts' recommendations in the United States (U.S.) markets do not yield abnormal returns, while those in international markets do. This conclusion is consistent with Altınkılıç & Hansen (2009), which find that analyst recommendation changes generally have economically insignificant mean price reactions in the U.S. Similarly, Guo *et al.* (2020) show that analysts tend to give favourable consensus recommendations to overvalued stocks, indicating bias. Firth *et al.* (2013) also supports the presence of bias in sell-side analysts' recommendations, particularly where the firm has a relationship with mutual funds holding the stock. The mixed findings in literature serve as a motivation for this study. Therefore, this study examines the relevance of analysts' recommendations in the context of retail investors.

Figure 1

Panel A: Number of Recommendations and Average Consensus Recommendation (1993-2023)
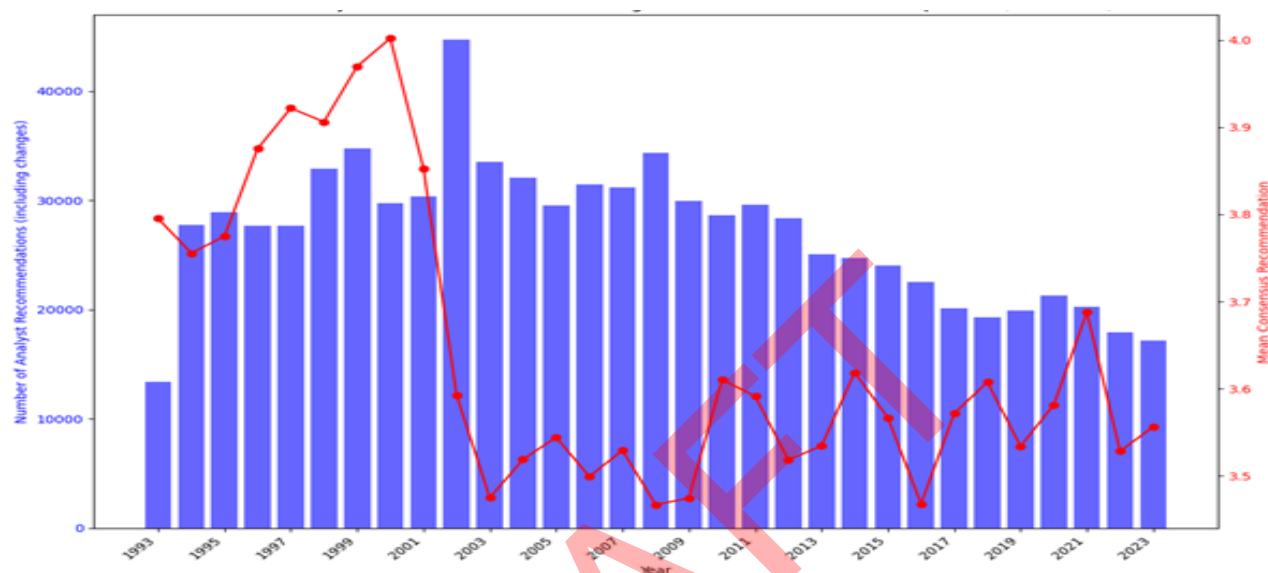
Panel B: Average Consensus Recommendation and Crisis Periods (1993-2023)
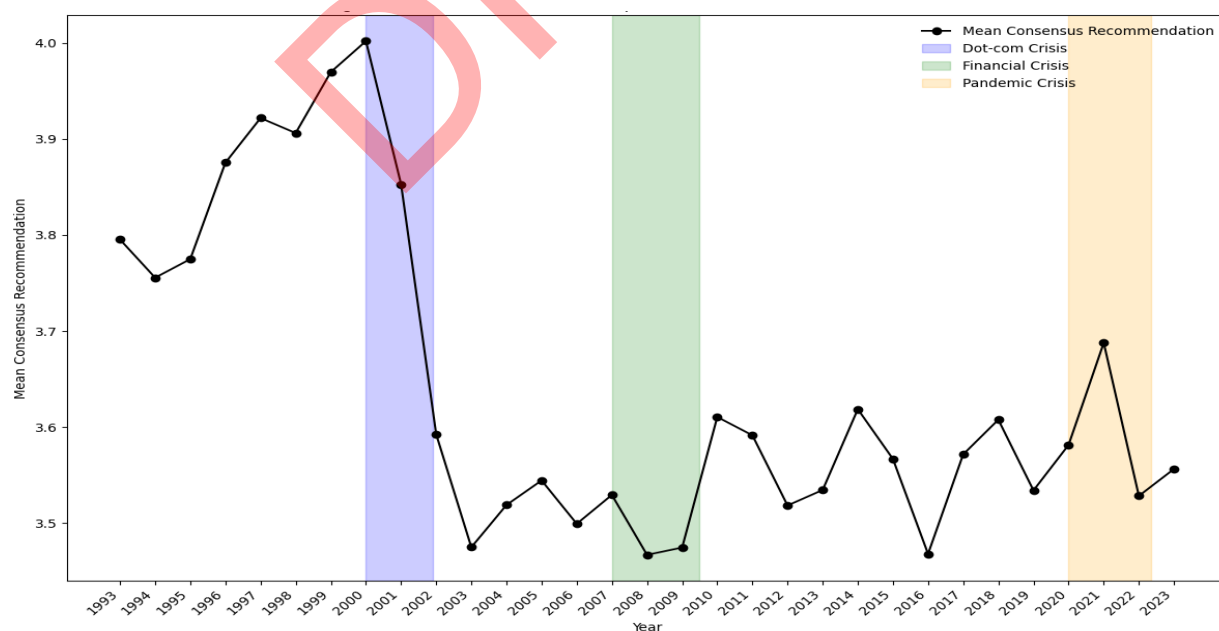
In revisiting this issue, we propose a trading strategy, which retail investors can implement to ascertain whether analysts' recommendations can still be a potential source of excess returns or profits (also known as "alpha" in the finance and behavioral economics literature). This strategy involves a monthly portfolio-sorted long-short strategy based on the "consensus recommendation", a term that describes the mean of the most recent recommendations from each broker/investment bank within the prior three months. This is different from the approach by Barber *et al.* (2001), which focuses on rebalancing portfolios on a daily basis as analyst recommendation changes, resulting in significant trading costs that negate the strategy's positive abnormal returns. This approach is relevant to retail investors because they can not implement a daily or weekly rebalance portfolio given the heavy data analysis requirements and significant trading implementation needs. Hence, we have developed a monthly approach that these investors can implement.

In analyzing excess return in the context of analyst recommendations, we examine the average equal-weighted and value-weighted excess returns of our portfolio sorted consensus recommendation in the context of the Capital Asset Pricing Model (Sharpe, 1964), Fama-French-three factor (Fama & French, 1993), Carhart four-factor (Carhart, 1997), Fama-French five-factor (Fama & French, 2015), Hou-Xue-Zhang q-factor (Hou *et al.*, 2021) and Hou-Mo-Xue-Zhang augmented q-factor (Hou *et al.*, 2021) asset pricing models, hereafter referred to as CAPM, FF3, FFC4, FF5, HXZQ, and the HMXZAQ respectively. The trading strategy we propose helps contextualize a trading strategy that retail and small investors can apply if they consistently have access to analyst recommendations and only use this information set to make investment decisions.

Our findings reveal that a trading strategy based on a monthly portfolio-sorted long-short approach, utilizing the most recent consensus analyst recommendations, generates significant alphas and excess returns. The, value-weighted returns show substantial alphas in high-minus-low (HML) portfolios, with returns ranging from 1.36% to 1.57% per month, translating to an annualized gain of 17.57% to 20.45% above the risk-free rate. Notably, over 80% of the alpha in value-weighted returns comes from short positions, highlighting the strong predictive power of sell recommendations and underscoring inefficiencies in buy signals, especially in value-weighted portfolios.

This study addresses this gap compared to previous literature as it takes a retail investor's perspective. In analyzing the usefulness of analysts' recommendations to retail investors, we further examine a couple of questions that have not been addressed in the literature: Do excess returns differ across investment banks? To address this question, we analyze if retail investors can earn excess returns when they employ research from recommendations associated with specific investment banks. Additionally, are excess returns similar if portfolios are allocated in specific industries based on consensus analyst recommendations? Addressing these questions can further help us understand not only the usefulness of analyst recommendations but also shed light on other nuances regarding the potential value of analyst research for "naïve" investors.

We also investigate whether these recommendations remain valuable in Bear versus Bull economic cycles. The need to investigate the recommendation outcomes during economic crisis is further highlighted in Panel B of figure 1, which is an adaptation of Panel A of figure 1 highlighting the means "consensus" recommendation in turbulent times for stocks from 1993 to 2023. Specifically, the graph highlights key economic crises caused by the Dot-com bubble, the Financial Crisis, and the COVID-19 Pandemic. The graph demonstrates that average yearly consensus recommendations peaked around 2000. This period is followed by a sharp decline during the Dot-com crash. The recommendations further maintained relatively low levels in the years leading up to the Financial Crisis, during which it dips further, demonstrating that analysts were pessimistic during the Financial Crisis. After the financial crisis, recommendations stabilized but remained lower than pre-2000 levels. During the COVID-19 pandemic, we see a brief spike in recommendations followed by a dip, thereby suggesting mixed outlooks among analysts amid market volatility at the time. The variability in recommendation during these turbulent times motivates the need to investigate the importance of recommendations across different economic cycles.

We find that during crisis periods, the value of analyst recommendations is reduced in the value-weighted portfolios, with statistically significant alphas in simpler models such as CAPM and HXZQ. This indicates that while some excess returns are achievable during crises, their reliability diminishes under heightened market instability. Additionally, in our industry cross-section analysis, larger firms in sectors like Consumer Products and Chemicals drive portfolio performance, with value-weighted returns reaching up to 4.05% per month in top-performing

industries. At the investment bank level, recommendations from firms such as JP Morgan, Merrill Lynch, and Goldman Sachs provide statistically significant alphas, with value-weighted returns of 0.899%, 1.268%, and 1.744% per month, respectively, underscoring the potential value for retail investors. Together, these findings emphasize the strong role of sell recommendations and highlight opportunities for retail investors to leverage top-tier investment bank research, although concentration risks should be managed.

The goal of this paper is to examine the usefulness of analysts' recommendations to retail investors. Within this context, the paper seeks to investigate analysts' recommendations through a unique trading strategy that exploits a potential source of alpha: a monthly portfolio-sorted long-short strategy based on the prior three months' latest consensus analyst recommendations from each broker or investment entity. Additionally, the paper analyzes whether retail investors can earn excess returns by utilizing research from recommendations associated with specific investment banks. It further explores whether excess returns vary when portfolios are allocated across specific industries according to consensus analysts' recommendations and assesses whether analysts' recommendations maintain their value across Bear versus Bull economic cycles.

This paper contributes to existing literature on finance and behavioral economics surrounding stock market investments as follows. First, it addresses the challenges in the literature by providing a critical re-evaluation of analysts' recommendations, especially in the context of a unique trading strategy that involves less rebalancing. The relevance of the re-evaluation lies in analyzing the value of the recommendations in the face of complex markets and the historical importance of these recommendations as a source of guidance for "naïve" investors who struggle with processing data from stock markets. Second, this paper fills an exigency gap in the literature by focusing on the different impacts of analysts' recommendations across investment banks, industries, and economic cycles (e.g., bull vs. bear markets). By focusing on these different levels and states of the financial ecosystems, the paper adds depth to previous literature, which has not been explored. This targeted approach has great potential for how retail investors might tailor their strategies as an offshoot of the recommendations they adopt, thereby providing more actionable insights as opposed to the broader results of previous research. Future extensions of this paper include investigating how other information sources, such as SeekingAlpha, which retail investors pay attention to, could help them capture excess returns.

In practice, the findings of this paper can help retail investors make more informed investment decisions based on analysts' recommendations. For example, the findings of this paper confirm that analysts' recommendations can still generate "alphas" and that recommendations associated with certain investment banks/ brokers can provide relatively better guidance. This leads us to conclude that retail investors can self-select based on our findings. In fact, a potential real-life application of our result includes developing investment tools or platforms tailored for retail investors that dynamically adjust portfolios based on analyst recommendations from top-performing investment banks or high-impact industries. Such platforms could integrate machine learning to refine the timing and selection of recommendations, potentially helping "naïve" investors make more informed decisions and capture more of the available excess returns in the market.

2.0 Theoretical Framework

Due to the limited capacity to analyze vast market information and the behavioral biases inherent in their decision-making processes, most retail investors rely on professional services provided by "experts" in the financial industry (Malmendier & Shanthikumar, 2007). Security analysts' reports are often considered to decrease market uncertainty and information asymmetry among informed and uninformed traders (Asquith *et al.*, 2005; Healy and Palepu, 2001; Premti *et al.*, 2017; Yezegel, 2015). Therefore, there is a large body of research on the usefulness of analysts' recommendations for stock picking.

At the turn of the century, Barber et al. (2001) showed that, ignoring transaction cost, a long-short portfolio that is rebalanced daily based on consensus analysts' recommendations leads to positive abnormal gross returns. This paper extended results from the prior century, where some showed positive value (Groth *et al.*, 1979; Copeland & Mayers, 1982; Dimson & Marsh, 1984; Barber & Loeffler, 1993) and others insignificant value (Diefenbach, 1972; Desai & Jain, 1995) with regards to the value of such analyst recommendations. Stickler (1995) found that such recommendations, especially those of star analysts, had more impact. Similarly, Fan and Yasuda (2014) concluded that they were more profitable. More recently, Loh & Stulz (2011) used a two-day event window for cumulative buy-and-hold abnormal return (CAR) to demonstrate that only about 12% of analysts' recommendations changes can be considered significant to price changes.

Contemporary literature has come to challenge the results of these earlier studies with respect to the usefulness of analysts' recommendations. A case in point is Azevedo and Müller (2024), who argue that analysts' recommendations in the United States (U.S.) markets do not yield abnormal returns, while those in international markets do. Baker & Dumont (2014) also conclude that the advice offered by investment analysts has no predictive validity and may even be potentially misleading because, in their sample, equities with hold recommendations consistently outperform those with buy recommendations. These conclusions are consistent with Altınkılıç & Hansen (2009), who find that analyst recommendation changes generally have economically insignificant mean price reactions in the U.S. Similarly, Guo *et al.* (2020) show that analysts tend to give favorable consensus recommendations to overvalued stocks, indicating bias. Firth *et al.* (2013) also supports the presence of bias in sell-side analysts' recommendations, particularly where the

firm has a relationship with mutual funds holding the stock. Most recently, Hirshleifer *et al.* (2024) provided evidence that analysts may reduce the accuracy of their public recommendations, thereby maintaining the value of their private advice to funds.

A significant portion of the literature has explored cross-sectional differences in the profitability of analysts' recommendations, shedding light on the factors contributing to their varying levels of success. Research consistently shows that some analysts outperform others due to their superior skills or access to private information. For instance, Ertimur *et al.* (2007) and Loh and Mian (2006) demonstrate that analysts who issue more accurate forecasts tend to make more profitable stock recommendations. Similarly, Li (2005) and Mikhail *et al.* (2004) document the persistence of past performance in analysts' recommendations, implying that analysts with a track record of accuracy continue to offer valuable insights. Fang and Yasuda (2014) find that top-ranked analysts, such as those labeled as All-American, tend to provide better investment advice, as reflected in their subsequent risk-adjusted returns. This aligns with Jegadeesh and Kim's (2006) finding that bold recommendations generate a greater price impact, while Loh and Stulz (2011) highlight that star analysts issue more influential recommendations. However, not all analysts' status guarantees profitability; Emery and Li (2009) argue that even star analysts can sometimes yield negative returns, challenging the notion that popularity equates to superior performance. Additionally, factors like analysts' affiliations with investment banks (Barber et al., 2007) and the timing of corporate events, such as earnings announcements (Bradley *et al.*, 2008), also influence the profitability of their recommendations.

The one thing that these contending papers on the value of analyst recommendations seem to agree on is that there is a positive bias in the recommendation. (Diefenbach, 1972; Stickel, 1995; Barber *et al.*, 2001; Cowen, Groysberg & Healy, 2006; Moshirian *et al.*, 2009; Lötter & Smit, 2018). It is also important to note that most of these papers do not consider transaction costs in forming portfolios based on analyst recommendations. Detzel *et al.* (2023) have shown the importance of considering transaction costs in portfolio allocation, especially for trading strategies that involve significant turnover.

Outside the value of analyst recommendations, another branch of literature has examined the effect of analyst recommendation changes. Hobbs *et al.* (2012) find that analysts who frequently revise their stock recommendations outperform those who do not, implying an ability to generate private

information using their superior skills. Sorescu & Subrahmanyam (2006) examine analyst attributes and show that revisions by high-ability analysts (proxied by years of experience and the reputation of the analysts' brokerage houses) result in short-term cumulative abnormal returns. Kim *et al.* (2021) find that analyst recommendation changes have more pronounced effects when they are downgrades than upgrades, and domestic investors react less to upgrades. This is similar to Welagedara *et al.* (2017), which demonstrate that individual investors underreact to analyst upgrades and overreact to downgrades, with investor attention and sophistication playing a crucial role in market price discovery. McLean *et al.*, (2024) show a retail investor perspective where recommendation revisions in EPS create more retail trading, suggesting retail investors are a price-transmission channel.

The literature on analyst recommendation underscores the mixed evidence of outcomes and highlights that individual analyst characteristics and external conditions play a role. Most of the earlier research finds that analysts help mitigate information asymmetry and that portfolios trading on the consensus recommendation result in significant positive abnormal returns. Recent studies have cast doubt on the value of equity analysts in U.S. markets, concluding that recommendations frequently do not yield abnormal returns and may favor overvalued stocks. However, the literature does seem to agree that analyst recommendation changes impact stock prices and that retail investors are a potential channel for transmission. Most authors also argue the strong presence of bias and heterogeneity in terms of analyst skill, experience, and issuer affiliations. Cross-sectional variation also suggests the returns to recommendations differ by the amount of private information, analyst reputation, and timing relative to corporate events. In conclusion, most papers assert that recommendations can provide benefits in the case of some specific samples; they are subject to partiality costs and differ from investors by their behavior due to individual or institutional.

It is this conclusion that informs the gap we propose to fill. Our study focuses on the relevance of analysts' recommendations to retail investors. But to address the gaps in previous literature, we propose a strategy which allows for monthly portfolio-sorted long-short trades, which are based on the latest consensus recommendations. This strategy does not only have the potential for reducing transaction costs (due to less frequent trades compared to the approach by Barber *et al.* (2001), which focuses on rebalancing portfolios on a daily basis), but also offers a more practical approach in real life application. Additionally, we also plan to address certain nuances such as firm

and industry-specific trends, and the nature of influence posed by economic cycles on the analysts' recommendations. Previous studies have overlooked some of these nuances.

3.0 Data & Methodology

The details about the data and methodology are discussed in the sections below.

3.1   Data

We employ two sources of data for the study. The first source is the data from the Institutional Brokers' Estimate System (I/B/E/S), which contains the text of analysts' recommendations from various sell-side firms in the U.S., between 1993 and 2024. The second source is the Center for Research in Security Prices (CRSP) database to compute stock returns, which maintains a collection of security price, return, and volume data for the NYSE, AMEX and NASDAQ stock markets. For the purpose of this study, we only employ data associated with U.S. firms from the CRSP data. The I/B/E/S dataset normalizes the analyst recommendation by providing a rating between 1 and 5. We rescale the ratings such that a rating of one reflects a strong sell recommendation, two a sell, three a hold, four a buy, and five a strong buy. Analysts commonly use this five-point scale. We use the entire database for this analysis but must note that this database may not represent the entire universe of all sell-side analyst recommendations.

The descriptive statistics in Table 1 provide an overview of analyst recommendations. The number of firms varied significantly throughout our sample period, peaking at 5,853 in 1998 before dropping to 4,118 in 2023. The number of analysts providing recommendations also increased, reaching a high of 3,633 in 1999 but gradually declining. On average, analysts cover between 3 and 5 firms, while brokers and investment banks employ a median of 6 to 7 analysts per year. The mean recommendation is biased toward positive recommendations (Diefenbach, 1972; Stickel, 1995; Barber *et al.,* 2001; Cowen, Groysberg & Healy, 2006; Moshirian *et al.,* 2009; Lötter & Smit, 2018), ranging from 3.46 to 4.00, indicating that most recommendations leaned towards buys rather than sells.

Table 2 breaks down the mean recommendation by industry using the Fama-French 17 industry classification. Across industries, the mean recommendation remains positively skewed. Industries associated with chemical production (3.69), construction services (3.68), and consumer durables (3.72) received slightly higher mean recommendations, while industries associated with financial services (3.59) and mining (3.51) were at the lower end. The skewness in each industry is negative,

indicating a slight bias towards higher ratings (buys), though this skew is minimal across industries, suggesting a relatively consistent application of the five-point scale.

Table 1

Descriptive Statistics on Analyst Recommendation from I/B/E/S Database, 1993 – 2024

Year	No. of Firms	No. of Brokers/ Investment Banks	No. of Recommendations (incl. changes)	Analysts per Firm		Analysts per Broker/ Investment Bank		Firms per Analyst		No. of Analysts	Mean Recommendation (5 = Strong Buy; 1 = Strong Sell)
				Mean	Median	Mean	Median	Mean	Median		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1993	3,557	118	13,369	3.56	2	11.65	7	9.99	7	1,267	3.80
1994	4,615	168	27,753	3.99	3	13.05	8	9.51	7	1,934	3.76
1995	4,941	173	28,890	3.83	3	13.99	8	8.76	7	2,159	3.77
1996	5,394	217	27,668	3.58	2	12.93	7	7.87	6	2,454	3.88
1997	5,668	260	27,647	3.57	3	12.40	6	7.17	6	2,823	3.92
1998	5,853	294	32,866	4.02	3	13.21	6	6.89	5	3,413	3.91
1999	5,744	284	34,722	4.37	3	15.16	6	6.91	5	3,633	3.97
2000	5,217	282	29,722	4.18	3	14.70	5	6.22	5	3,510	4.00
2001	4,566	244	30,345	4.59	3	15.81	6	6.29	5	3,335	3.85
2002	4,699	250	44,728	5.83	4	16.00	5	7.62	6	3,594	3.59
2003	4,622	312	33,488	4.94	3	12.19	4	6.72	5	3,395	3.47
2004	4,659	348	32,075	4.98	3	10.93	3	6.73	5	3,452	3.52
2005	4,813	347	29,541	4.48	3	11.16	3	6.07	5	3,548	3.54
2006	4,866	320	31,436	4.64	4	11.78	4	6.45	5	3,502	3.50
2007	4,948	299	31,148	4.43	3	12.59	4	6.29	5	3,490	3.53
2008	4,725	303	34,342	4.79	3	12.38	4	6.63	5	3,412	3.47
2009	4,157	319	29,932	5.11	4	10.95	4	6.52	5	3,256	3.47
2010	4,216	348	28,619	5.12	4	11.01	3	6.20	5	3,483	3.61
2011	4,263	315	29,579	5.12	4	12.62	5	6.02	4	3,622	3.59
2012	4,195	317	28,346	5.02	4	11.78	3	6.01	4	3,502	3.52
2013	4,199	306	25,095	4.70	3	11.72	3	5.92	4	3,335	3.53
2014	4,303	313	24,693	4.63	3	11.70	3	5.87	4	3,393	3.62
2015	4,291	311	24,005	4.56	3	11.37	3	5.98	4	3,274	3.57
2016	4,070	305	22,504	4.50	3	11.03	4	5.82	4	3,147	3.47
2017	4,001	286	20,089	4.21	3	10.94	3	5.82	4	2,895	3.57
2018	3,947	299	19,290	4.12	3	10.36	3	5.61	4	2,898	3.61
2019	4,016	286	19,926	4.16	3	10.99	3	5.81	4	2,880	3.53
2020	4,174	314	21,272	4.13	3	10.08	3	5.88	4	2,934	3.58
2021	4,475	318	20,250	3.95	3	10.36	3	5.85	4	3,019	3.69
2022	4,460	293	17,894	3.47	2	11.08	3	5.13	3	3,018	3.53

| 2023 | 4,118 | 282 | 17,176 | 3.60 | 2 | 11.09 | 3 | 5.08 | 3 | 2,921 | 3.56 |
| 2024 | 1,595 | 171 | 2,626 | 1.63 | 1 | 6.81 | 2 | 2.27 | 1 | 1,146 | 3.46 |

The standard deviation across industries varied between 0.88 and 1.02, indicating moderate variability in the ratings across industries. Some industries, like Mining and Steel, show higher variability, with standard deviations exceeding 1.00. The overall distribution of recommendations shows negative skewness and kurtosis, suggesting that extreme ratings (strong buys or sells) are rare, and most recommendations are centered around the middle of the scale, typically leaning toward "buy" recommendations.

Table 2

Descriptive Statistics Mean Analyst Recommendation by Fama-French 17 Industry Classification

Industry	Mean	Median	Standard Deviation	Skewness	Kurtosis
Cars	3.62	4.00	0.96	-0.14	-0.35
Chem	3.69	4.00	0.96	-0.29	-0.19
Clths	3.70	4.00	0.93	-0.17	-0.37
Cnstr	3.68	4.00	0.95	-0.19	-0.35
Cnsum	3.74	4.00	0.94	-0.20	-0.49
Durabl	3.72	4.00	0.94	-0.22	-0.29
FabPr	3.71	4.00	0.88	-0.07	-0.41
Finan	3.59	3.00	0.93	-0.08	-0.27
Food	3.59	3.00	0.94	-0.10	-0.26
Machn	3.66	4.00	0.94	-0.22	-0.23
Mines	3.51	3.00	1.02	-0.30	-0.21
Oil	3.66	4.00	0.93	-0.23	-0.24
Other	3.71	4.00	0.93	-0.25	-0.25
Rtail	3.67	4.00	0.96	-0.17	-0.37
Steel	3.57	3.00	0.98	-0.26	-0.16
Trans	3.61	4.00	0.97	-0.22	-0.28
Utils	3.51	3.00	0.91	0.06	-0.17
Overall	3.66	4.00	0.94	-0.20	-0.26

3.2 Methodology

In terms of methodology, we follow the approach by Barber *et al.* (2001), which adopts a "consensus rating" approach (another term for "consensus recommendation") that is calculated based on all outstanding recommendations. In this paper, our approach differs from Barber *et al.* (2001) in the manner that we define "consensus recommendation". We define the term as the mean of the most recent recommendations from each broker/investment bank issued within the past three months. Therefore, in calculating the "consensus recommendation" for each firm, we take the mean of all recommendations issued within the past three months on the first trading day of each month. We employ this approach because it allows us to capture the most recent sentiment in our analysis, as some sell-side firms may not promptly change their recommendation over time in reaction to changing market fundamentals for each firm. This approach also prevents us from using recommendations issued in the distant past to calculate the consensus recommendation.

Mathematically, we define the "consensus recommendation" as follows:

$$CONS_{i,t} = \frac{1}{n_{i,t}} \sum_{j=1}^{n_{i,t}} REC_{i,j,t-90}$$

where $CONS_{i,t}$ is the consensus recommendation for firm i at time t (the first trading day of the month), $n_{i,t}$ is the number of sell-side firms that issued a recommendation for firm i within the prior 90 days, $REC_{i,j,t-90}$ is the most recent recommendation from sell-side firm j for firm i within the 90 days leading up to time t. On the first trading day, we allocate each firm to one of 10 deciles (which is denoted by p_i where i ranges from 1 to 10) based on their calculated "consensus recommendation". In implementing our approach, we do not account for transaction costs. This is because our trading strategy is characterized by significantly less turnover compared to a daily rebalanced strategy (Barber *et al.* 2001), and therefore, we assume that transaction costs are negligible in our analysis. We, however, plan to introduce transaction costs when conducting robustness checks for our analysis to ensure that our results are not significantly influenced by transaction costs.

Based on the 10 deciles (p_i) that we created, the per month equal-weighted (EW) and value-weighted (VW) return for each portfolio is calculated at the end of the month's last trading day. Denoted by $R_{p,t}$ for portfolio p_i, the return is calculated as:

$$R_{p,t}^{EW} = \frac{1}{n_{p,t}} \sum_{i=1}^{n_{p,t}} R_{i,t} \quad ; \quad R_{p,t}^{VW} = \frac{\sum_{i=1}^{n_{p,t}} (M_{i,t-1} \cdot R_{i,t})}{\sum_{i=1}^{n_{p,t}} M_{i,t-1}}$$

where $R_{p,t}^{EW}$ is the equal-weighted return for portfolio p in month t; $n_{p,t}$ is the number of firms in portfolio p at the start of month t; $R_{i,t}$ is the return of firm i in portfolio p during month t. Similarly, $R_{p,t}^{VW}$ is the value-weighted return for portfolio p in month t; $M_{i,t-1}$ is the average market capitalization of firm i in the prior month $t-1$. While we present both the EW and VW returns, we focus on the interpretation of the VW returns. This is because VW allows researchers to better capture the economic significance of results (Barber *et al.* 2001). We also focus on VW because other papers argue that EW returns are overstated due to the cycling over time of a firm's closing price between its bid and ask (commonly referred to as the bid-ask bounce) (Blume & Stambaugh, 1983; Barber & Lyon, 1997; Canina *et al*., 1998; Lyon, Barber & Tsai, 1999).

To determine whether profitable investment strategies exist, we use the computed consensus analyst recommendations to calculate the EW and VW excess return for deciles 1 through 10. Excess return refers to the $R_{p,t} - R_f$ for portfolio p_i in month t, where R_f is the risk-free rate (the interest rate on a three-month U.S. Treasury bill). We also present returns in a zero-investment portfolio, otherwise known as High minus Low (HML), which is the difference between decile 10 returns and decile 1 returns. We further calculate six other measures of abnormal performance. We report the EW and VW intercept (alpha) based on the popular Capital Asset Pricing Model (Sharpe, 1964), Fama-French-three factor (Fama & French, 1993), Carhart four-factor (Carhart, 1997), Fama-French five-factor (Fama & French, 2015), Hou-Xue-Zhang q-factor (Hou et al., 2021) and Hou-Mo-Xue-Zhang augmented q-factor (Hou et al., 2021) asset pricing models, hereafter referred to as CAPM, FF3, FFC4, FF5, HXZQ, and the HMXZAQ respectively.

4.0 Results and Discussion

In this section, we conduct the asset pricing tests for the "consensus recommendation." In Section 4.1, we test using decile portfolio sorts. In Section 4.2, we examine sub-periods representing crisis periods. In Section 4.3, we present results at the industry cross-section. In Section 4.4, we present results at the Investment bank/broker cross section. In Section 4.5, we present robustness tests and discussions.

4.1 Time-series tests

We implement our decile sort test, which involves a monthly portfolio-sorted long-short strategy based on the mean of the most recent recommendations from each broker/investment bank within the prior three months. We limit our period to the previous three months before portfolio formation to lay more emphasis on the most recent analyst recommendations and exclude those that may be considered "stale". In Table 3, we report the average return of each decile above the risk-free rate, the FF3 alpha, the FFC4 alpha, the FF5 alpha, the HXZQ and the HMXZAQ alpha. In the rightmost column, High-minus-low (HML), we report the difference between the returns of the two extreme decile portfolios. HML is a zero-investment portfolio that buys the stocks in the highest consensus recommendation decile and shorts the stocks in the lowest consensus recommendation decile. The excess returns, alphas and statistical significance of the equal-weighted returns are larger than those of the value-weighted returns. However, given the literature on overestimation bias in equal-weighted returns, we focus our interpretation on the value-weighted returns.

The results in the HML column show that stocks with high analyst consensus outperform stocks with low analysts' consensus in terms of value-weighted returns. In all cases, factor adjustments increase the magnitude of the alphas. The economic magnitudes of value-weighted excess returns and alphas of the HML portfolios are large and range from 1.36 – 1.57% per month. This implies that, on average, retail investors following a monthly rebalanced strategy dependent on analyst consensus recommendation for a zero-investment portfolio earn an annualized return between 17.57 - 20.45% above the risk-free rate.

Table 3

Time Series Test

This table reports average monthly excess returns and alphas (in percentage) on both an equal-weighted (EW) and value-weighted (VW) basis of stock portfolios sorted by consensus analyst recommendation. On the first trading day of each month, all stocks are sorted into deciles based on the consensus recommendation calculated from the latest analyst recommendation for each firm from each investment bank/ broker within the prior three months. For each of the decile portfolios, Low 1 through High 10, we report the average excess return, CAPM alpha, FF3 alpha, FF5 alpha, FFC4 alpha, HXZQ alpha, and the HMXZAQ alpha. The right-most column reports the excess returns and alphas of the High-minus-low portfolios. Monthly stock returns are winstorized at the 1% level for both tails to remove the impact of outliers.

Model	Type	1 (Low)	2	3	4	5	6	7	8	9	10 (High)	High-minus-Low
Excess returns	EW	-0.657	0.051	-0.734	0.070	0.630	1.029	2.113	1.173	1.743	2.216	2.189
		(-1.978)	(0.077)	(-1.350)	(0.203)	(1.757)	(2.627)	(4.048)	(2.470)	(5.320)	(4.311)	(9.285)
	VW	-0.521	-0.179	-1.112	-0.157	0.121	0.523	0.992	0.153	0.723	1.272	1.362
		(-2.116)	(-0.340)	(-2.815)	(-0.574)	(0.418)	(1.735)	(2.606)	(0.383)	(2.759)	(3.226)	(6.655)
CAPM	EW	-1.498	-1.318	-1.420	-0.808	-0.247	0.062	0.708	0.569	0.927	0.910	2.370
		(-8.587)	(-3.795)	(-4.821)	(-5.364)	(-1.513)	(0.344)	(2.801)	(2.358)	(5.423)	(3.350)	(10.057)
	VW	-1.175	-1.280	-1.618	-0.862	-0.608	-0.257	-0.070	-0.347	0.051	0.244	1.485
		(-9.433)	(-4.353)	(-7.789)	(-6.603)	(-4.975)	(-2.330)	(-0.392)	(-1.669)	(0.420)	(1.181)	(6.434)
FF3	EW	-1.535	-1.443	-1.357	-0.743	-0.289	0.040	0.729	0.634	0.931	0.889	2.355
		(-10.902)	(-4.533)	(-4.897)	(-5.835)	(-2.280)	(0.298)	(3.260)	(3.530)	(7.643)	(4.483)	(10.795)
	VW	-1.232	-1.253	-1.613	-0.880	-0.610	-0.259	-0.038	-0.272	0.070	0.235	1.463
		(-11.096)	(-4.708)	(-7.908)	(-6.338)	(-5.048)	(-2.332)	(-0.212)	(-1.384)	(0.583)	(1.214)	(7.538)
FFC4	EW	-1.288	-1.456	-0.879	-0.523	-0.185	0.082	0.803	0.698	0.979	0.911	2.299
		(-9.933)	(-5.024)	(-4.066)	(-4.038)	(-1.429)	(0.610)	(3.498)	(3.653)	(7.343)	(4.517)	(10.968)
	VW	-1.143	-1.258	-1.459	-0.802	-0.562	-0.242	-0.037	-0.331	0.060	0.231	1.426
		(-10.057)	(-4.843)	(-7.326)	(-5.360)	(-4.238)	(-2.110)	(-0.197)	(-1.622)	(0.465)	(1.174)	(7.293)
FF5	EW	-1.455	-1.343	-1.174	-0.658	-0.165	0.095	0.882	0.700	0.986	1.044	2.414
		(-9.010)	(-3.917)	(-3.540)	(-4.718)	(-1.201)	(0.708)	(3.615)	(3.677)	(7.520)	(5.134)	(10.630)
	VW	-1.298	-1.327	-1.664	-0.900	-0.561	-0.310	0.046	-0.303	0.079	0.279	1.512
		(-11.945)	(-4.484)	(-8.154)	(-6.065)	(-4.342)	(-2.691)	(0.235)	(-1.402)	(0.646)	(1.433)	(7.921)
HXZQ	EW	-1.281	-1.374	-0.981	-0.522	-0.071	0.131	0.880	0.732	1.071	1.107	2.375
		(-7.451)	(-4.342)	(-2.649)	(-3.410)	(-0.493)	(1.008)	(3.554)	(3.608)	(7.519)	(5.613)	(9.874)
	VW	-1.263	-1.339	-1.591	-0.896	-0.589	-0.285	0.004	-0.366	0.060	0.307	1.566
		(-9.730)	(-4.536)	(-7.804)	(-5.648)	(-4.051)	(-2.492)	(0.021)	(-1.670)	(0.468)	(1.562)	(6.583)
HMXZQ	EW	-1.117	-1.017	-0.717	-0.418	0.021	0.254	1.255	0.974	1.169	1.124	2.270
		(-6.097)	(-3.198)	(-1.608)	(-2.560)	(0.137)	(1.896)	(3.633)	(4.119)	(7.734)	(5.493)	(9.777)
	VW	-1.235	-1.177	-1.590	-0.847	-0.517	-0.262	0.158	-0.153	0.163	0.353	1.501
		(-9.858)	(-3.857)	(-6.461)	(-5.207)	(-3.450)	(-2.232)	(0.778)	(-0.693)	(1.266)	(1.724)	(6.647)

Panels A and B of figure 2 illustrate the annual returns of HML strategies across various factor models for both equal-weighted (EW) and value-weighted (VW) returns. We also added the

average market return of the S&P 500 for our sample period, which is 11.7% for performance comparison. From the table, we observe that EW returns have a relatively balanced distribution of returns between the short and long portfolios. This suggests that both sides of the trade contribute meaningfully to overall performance. On the other hand, the VW returns reveal a stark contrast, with over 80% of the alpha coming from the short portfolio, while the long portfolio returns are often statistically insignificant. This significant asymmetry implies that analysts' strong sell/hold recommendations are more predictive when used to create short positions. It highlights a systematic underperformance of stocks that receive "sell" recommendations, whereas stocks with buy recommendations may not perform as well in the aggregate, especially on a value-weighted return basis.

This result underscores the potential inefficiency in analyst "buy" signals and the outsized impact of negative sentiment on stock returns in value-weighted portfolios, suggesting a strong short bias in these strategies. Additionally, there could be a timing problem where "buy" recommendations must be acted upon immediately to capture potential gains. Our monthly rebalanced trading strategy, designed to reduce turnover, may not fully capitalize on the immediate positive reaction of buy recommendations. We note that Barber *et al. (*2001) employed a daily rebalanced approach, allowing quicker response to analyst recommendations and potentially capturing the immediate price reaction returns to buy signals more effectively.

This observation aligns with findings from findings in literature from authors such as Stickel (1995), Womack (1996), and Jegadeesh & Kim (2006) that "sell" recommendations have a larger price impact and drift than buy recommendations. Barber *et al.* (2001) provides an interesting explanation for this phenomenon. Their paper suggests that analysts are generally reluctant to recommend "sell", especially for larger firms that might offer future investment banking opportunities. As a result, when "sell" recommendations are made, they carry strong negative signals about a firm's prospects.

Barber *et al.* (2001) also found that the underperformance of the least favorably recommended stocks persisted even after adjusting for traditional risk factors like market risk, size, book-to-market ratios, and momentum. They attributed this persistent underperformance to market inefficiencies and the specific characteristics of these firms—often small-cap, value stocks that have performed poorly in the past. These stocks' significant negative abnormal returns indicate

that the market may be slow to incorporate the adverse information embedded in sell recommendations fully. This delayed reaction could stem from limited investor attention or behavioral biases that cause underreaction to negative news.

The underperformance of the short side in our value-weighted portfolios suggests that negative analyst sentiment exerts a more substantial influence on stock returns than positive sentiment. This emphasizes the role of sell recommendations in driving portfolio returns in the context of our strategy, especially in value-weighted portfolios. This asymmetry also highlights the importance of considering market inefficiencies and behavioral factors when interpreting portfolio returns based on consensus analyst recommendations. Overall, the similarity between our results and those of Barber *et al.* (2001), especially in portfolios with lower turnover, reinforces the notion that when sorted based on consensus recommendations, the lowest decile which may consist of both sell and hold recommendations are particularly potent predictors of returns due to the strong negative signals they convey and the market's gradual adjustment to this information.

Figure 2

Panel A: Annualized geometric mean percentage gross return earned by equally weighted portfolios

Panel B: Annualized geometric mean percentage gross return earned by value-weighted portfolios
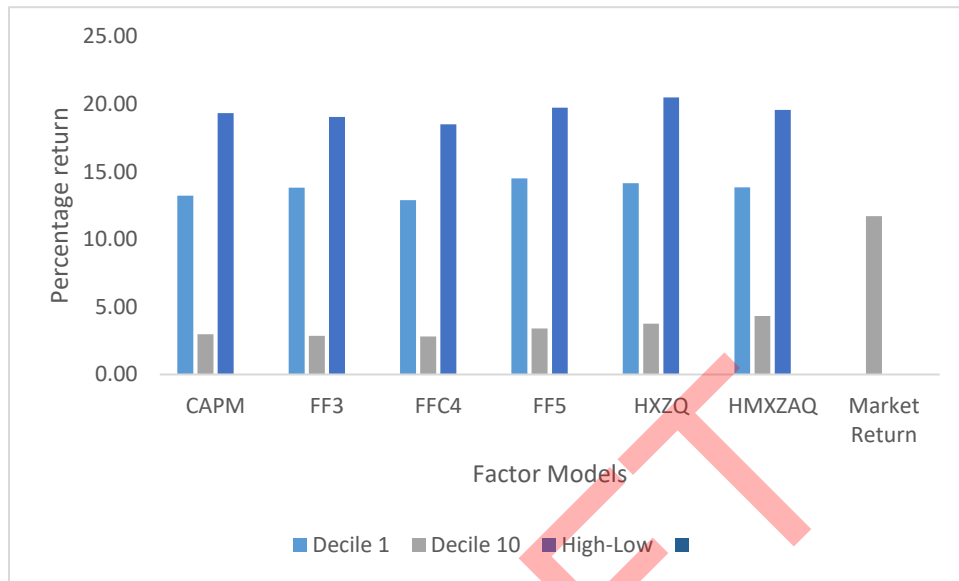
Panel C

Equal-Weighted and Value-Weighted Alpha
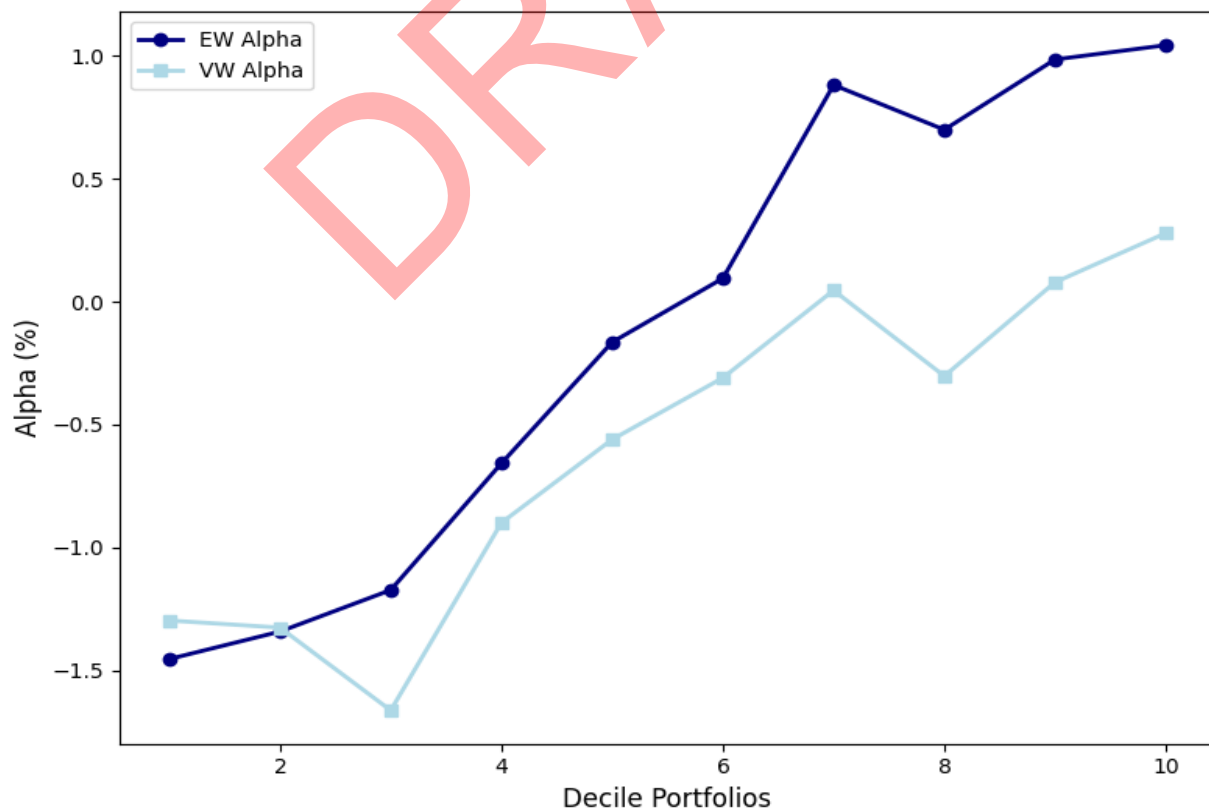
Performance of consensus analyst recommendation sorted by deciles. On the first trading day of each month, we sort all stocks into deciles by consensus analyst recommendation based on the latest recommendation report from each broker/ investment bank for each firm within the prior three months and record the average return of each decile on both an equal-weighted and value-weighted basis. Using the time series of excess returns, we plot the Fama-French five-factor alphas for the deciles. The vertical axis is the monthly alpha, in percentage. The horizontal axis marks the decile portfolio, from decile 1 (least favorable) to decile 10 (most favorable).

Panel C of Figure 2 presents a graphical view of the results in Table 3. It plots the equal-weighted and value-weighted FF5 factor alphas on the ten consensus recommendation decile portfolios. The figure shows that the alphas of the ten portfolios increase in a near monotonic fashion, moving from the lowest decile portfolio to the highest decile portfolio, consistent with the results of Barber *et al.* (2001).

Table 4 shows the results for the factor loadings for the HML portfolio across the six asset pricing models for both the EW and VW decile portfolio sorts. The results show the HML factor is consistently negative and statistically significant, particularly for VW portfolios. This suggests that the value effect is critical in explaining the performance of portfolios formed based on analyst recommendations. The SMB factors are positive and significant in most EW return regressions, indicating that smaller stocks drive the portfolio's returns. An unsurprising outcome. The UMD factor representing momentum is positive and significant, implying that stocks with upward momentum play a role in the portfolio's returns. The CAPM model shows lower explanatory power than more complex models like FFC4, HXZQ and HMXZAQ, which incorporate additional factors such as momentum, profitability and expected investment growth, further highlighting the importance of these elements in explaining the long-short portfolio performance.

Table 4

Factor Loadings

This table reports the factor loadings of a long-short portfolio that, each month, buys stocks whose consensus analyst recommendation is in the top decile and shorts stocks whose consensus analyst recommendation is in the bottom decile. Each month, all stocks are sorted into deciles based on the consensus recommendation calculated from the latest analyst recommendation from each investment bank/broker within the prior three months. We report results for six models (CAPM alpha, FF3 alpha, FF5 alpha, FFC4 alpha, HXZQ alpha, and the HMXZAQ alpha) on both an equal-weighted (EW) and value-weighted (VW) basis. MktRf is the market factor, SMB is the small minus big size factor, HML is the high minus low-value factor, UMD is the up minus down momentum factor, RMW is the robust profitability minus weak profitability factor, CMA is the conservative investment minus aggressive investment factor, I/A is the investment factor, ROE is the return on equity factor, and EG is the expected investment growth following the investment theory that firms with high investment growth should earn higher expected returns than firms with low expected investment growth. Monthly stock returns are winstorized at the 1% level for both tails to remove the impact of outliers.

Model	Type	MktRf	SMB	HML	UMD	RMW	CMA	I/A	ROE	EG	R^2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CAPM	EW	-0.164									0.066
		(-2.25)									
	VW	-0.111									0.041
		(-1.76)									
FF3	EW	-0.156	0.145	-0.200							0.129
		(-2.06)	(1.64)	(-2.68)							
	VW	-0.088	0.141	-0.300							0.209
		(-1.68)	(1.92)	(-3.55)							
FFC4	EW	-0.039	0.222	-0.156	0.239						0.245
		(-0.49)	(2.64)	(-2.13)	(2.93)						
	VW	-0.010	0.192	-0.271	0.161						0.278
		(-0.15)	(3.07)	(-2.95)	(2.93)						
FF5	EW	-0.171	0.103	-0.152		-0.039	-0.172				0.138
		(-2.07)	(1.00)	(-1.37)		(-0.24)	(-1.04)				
	VW	-0.102	0.094	-0.276		-0.086	-0.093				0.214
		(-1.88)	(1.10)	(-2.55)		(-0.72)	(-0.58)				
HXZQ	EW	-0.156	0.141					-0.305	0.160		0.144
		(-1.94)	(1.52)					(-2.90)	(1.33)		
	VW	-0.128	0.027					-0.329	0.009		0.128
		(-1.77)	(0.28)					(-2.76)	(0.08)		
HMXZAQ	EW	-0.136	0.207					-0.252	0.087	0.222	0.157
		(-1.72)	(1.90)					(-2.15)	(0.64)	(1.46)	
	VW	-0.116	0.067					-0.296	-0.036	0.136	0.134
		(-1.60)	(0.60)					(-2.35)	(-0.26)	(0.97)	

4.2 Crisis Periods

While the results discussed above are consistent with previous literature on the value of analyst recommendations (Groth *et al.*, 1979; Copeland & Mayers, 1982; Dimson & Marsh, 1984; Barber & Loeffler, 1993; Barber *et al*., 2001), we address an exigency gap in the literature by focusing on the value of analysts' recommendations in different economic cycles, specifically crisis periods,

industries and across different investment banks/brokers. Addressing this gap adds depth to our paper as we venture into areas that have not been unexplored in previous literature. This targeted approach has great potential for how retail investors might tailor their strategies as an offshoot of the recommendations they adopt, thereby providing more actionable insights as opposed to the broader results of previous research.

In Table 5, we present the result of our portfolio sorted strategy across different crisis periods: the Dot-com bubble crisis (March 2000 – October 2022), the Financial Crisis (December 2007 – June 2009), and the COVID-19 Pandemic (Feb 2020 – May 2023). Columns 3, 4 and 5 in the table show the excess EW and VW returns from the lowest decile portfolio, the highest decile portfolio and a zero-investment strategy (HML) and alpha across various asset pricing models, respectively. The results indicate that the long-short portfolio performance shows positive excess returns during crisis periods. Still, the significance of these returns is mixed across different models. Notably, value-weighted returns are statistically insignificant across most factor models, except for the CAPM and HXZQ models, which show statistically significant alphas at the 1% level. This suggests that during crises periods, while there is potential for profitable returns, the addition of factors that explain returns renders this strategy statistically insignificant. Overall, the evidence points to a reduction in the value of analyst recommendations during crises periods for VW strategies.

In addition to the alphas and excess returns, Table 5 provides insights into the various factor loadings across different models and crisis periods. Columns (6) for the MktRf show consistently negative values across models, particularly in value-weighted (VW) portfolios, reflecting the portfolio's underperformance relative to the market during crises periods. The SMB factor (column 7) is positive in many cases, suggesting a tilt towards smaller stocks in the portfolio, especially in equal-weighted (EW) returns, though its significance varies. Notably, the UMD factor (column 8) is largely insignificant across all models, suggesting that momentum effects were not a significant driver of portfolio performance during these crisis periods. This lack of significance implies that price trends, whether upward or downward, did not substantially impact the portfolio's returns. Additionally, profitability and investment factors like RMW and CMA show limited statistical significance, suggesting these factors were less influential during these specific crisis events.

Table 5

Crisis Periods Alpha

This table reports average monthly excess returns and alphas (in percentage) on both an equal-weighted (EW) and value-weighted (VW) basis of stock portfolios sorted by consensus analyst recommendation during periods of financial/ economic crisis. It also reports the factor loadings of a long-short portfolio that, each month, buys stocks whose consensus analyst recommendation is in the top decile and shorts stocks whose consensus analyst recommendation is in the bottom decile. We include the Dot-com bubble crisis (March 2000 – October 2022), the Financial Crisis (December 2007 – June 2009), and the COVID-19 Pandemic (Feb 2020 – May 2023) as periods of crisis. Monthly stock returns are winstorized at the 1% level for both tails to remove the impact of outliers.

Model	Type	Low 1	High 10	HML	MktRf	SMB	HML	UMD	RMW	CMA	I/A	ROE	EG	R^2
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Excess return	EW	-0.752	3.389	2.407										
		(-0.446)	(1.372)	(2.039)										
	VW	-1.077	1.337	2.202										
		(-0.855)	(0.739)	(2.077)										
CAPM	EW	-0.768	2.279	2.784	-0.453									0.425
		(-0.976)	(2.225)	(3.181)	(-3.460)									
	VW	-1.089	0.543	2.540	-0.406									0.423
		(-1.620)	(0.639)	(2.932)	(-3.730)									
FF3	EW	-0.686	3.091	3.121	-0.451	-0.321	0.080							0.454
		(-0.988)	(2.476)	(2.817)	(-3.030)	(-0.980)	(0.350)							
	VW	-1.055	1.019	1.184	-0.295	0.175	-0.381							0.516
		(-1.952)	(1.233)	(1.839)	(-3.130)	(0.610)	(-1.560)							
FFC4	EW	-0.871	3.056	3.151	-0.440	-0.308	0.081	0.015						0.454
		(-1.355)	(2.448)	(2.730)	(-2.010)	(-0.740)	(0.350)	(0.110)						
	VW	-1.145	1.070	1.315	-0.248	0.231	-0.374	0.067						0.528
		(-2.156)	(1.222)	(1.815)	(-1.980)	(0.760)	(-1.440)	(0.730)						
FF5	EW	-1.132	2.762	3.081	-0.459	-0.330	0.179		-0.058	-0.139				0.451
		(-1.489)	(2.221)	(2.301)	(-2.530)	(-0.720)	(0.430)		(-0.100)	(-0.300)				
	VW	-1.481	0.458	1.394	-0.279	0.389	-0.571		-0.052	0.510				0.562
		(-2.643)	(0.465)	(1.413)	(-2.740)	(1.210)	(-1.810)		(-0.120)	(1.040)				
HXZQ	EW	-0.920	2.440	2.558	-0.460	-0.105					-0.140	-0.084		0.434
		(-1.419)	(3.117)	(2.285)	(-2.290)	(-0.430)					(-0.410)	(-0.260)		
	VW	-1.465	0.699	2.475	-0.395	-0.058					-0.034	-0.003		0.425
		(-2.300)	(0.900)	(2.344)	(-2.310)	(-0.220)					(-0.100)	(-0.010)		
HMXZAQ	EW	-0.690	3.319	2.255	-0.440	-0.035					-0.170	-0.107	0.165	0.436
		(-1.043)	(2.305)	(1.591)	(-2.190)	(-0.080)					(-0.490)	(-0.330)	(0.270)	
	VW	-1.357	1.720	2.347	-0.386	-0.028					-0.047	-0.013	0.070	0.425
		(-2.140)	(1.361)	(1.513)	(-1.770)	(-0.060)					(-0.130)	(-0.050)	(0.110)	

4.3 Industry Cross-section

Next, we examine portfolio excess return in the industry cross-section. Table 6 shows the excess returns and alphas across various asset pricing factor models. We employ the Fama-French 17 (FF-17) industry disaggregation for this test but also attach results based on the Fama-French 5 (FF5) and Fama-French 10 (FF-10) industry disaggregation in Table I and Table II in the appendices. Based on the FF5 alphas, the results show that the Fabricated Products (FabPr), Drugs, Soap, Perfumes, Tobacco (Cnsum), Textiles, Apparel & Footwear (Clths) industries earn the highest

value-weighted returns at 4.05%, 3.63%, 2.38% monthly, respectively. On the other hand, the Utilities (Utils) industry ends with the lowest excess returns at 0.93% per month.

Table 6

Industry-level Alpha

This table reports alphas (in percentage) on both an equal-weighted (EW) and value-weighted (VW) basis of stock portfolios sorted by consensus analyst recommendation disaggregated by the Fama-French 17 Industry classification. Alpha is the return of the top decile minus the lowest decile. We report results for six asset pricing models, including the excess return above risk-free rate: CAPM alpha, FF3 alpha, FF5 alpha, FFC4 alpha, HXZQ alpha, and the HMXZAQ alpha. Monthly stock returns are winstorized at the 1% level for both tails to remove the impact of outliers.

Industry	Excess return		CAPM		FF3		FFC4		FF5		HXZQ		HMXZAQ	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Cars	1.563	1.158	1.525	1.112	1.579	1.124	1.478	1.029	1.555	1.399	1.721	1.047	1.565	1.218
	(2.963)	(1.924)	(2.936)	(1.855)	(3.115)	(1.885)	(2.721)	(1.734)	(2.879)	(2.400)	(2.903)	(1.843)	(2.765)	(2.067)
Chem	3.223	1.346	3.234	1.343	3.216	1.314	3.298	1.255	3.185	1.297	3.237	1.322	3.145	1.058
	(3.519)	(2.833)	(3.909)	(2.430)	(3.668)	(2.587)	(3.389)	(2.453)	(3.472)	(2.564)	(3.564)	(2.420)	(3.133)	(2.048)
Clthgs	2.016	2.719	2.067	2.510	2.095	2.480	2.100	2.492	1.831	2.383	2.037	2.691	1.702	2.333
	(2.398)	(3.541)	(2.455)	(3.375)	(2.477)	(3.381)	(2.462)	(3.429)	(2.217)	(3.305)	(2.279)	(3.324)	(1.948)	(3.059)
Con	0.906	1.375	1.192	1.634	1.093	1.513	1.146	1.512	1.091	1.578	0.716	1.620	0.721	1.568
	(1.327)	(2.205)	(1.857)	(2.636)	(1.684)	(2.431)	(1.834)	(2.442)	(1.639)	(2.489)	(1.068)	(2.467)	(1.104)	(2.376)
Cnsum	2.031	3.216	1.921	3.069	1.911	3.075	2.247	3.464	2.389	3.626	2.628	4.117	2.681	4.358
	(1.481)	(2.670)	(1.389)	(2.520)	(1.369)	(2.534)	(1.514)	(2.795)	(1.703)	(2.927)	(1.895)	(3.531)	(1.646)	(3.394)
Durbl	3.101	2.416	3.312	2.501	3.192	2.439	3.189	2.408	3.015	2.474	3.365	2.391	2.682	2.130
	(3.466)	(2.985)	(3.904)	(3.123)	(3.706)	(3.095)	(3.377)	(2.942)	(3.171)	(3.190)	(3.378)	(2.777)	(2.757)	(2.519)
FabPr	3.377	3.836	3.448	3.840	3.460	3.844	3.442	3.847	3.262	4.049	3.475	4.175	3.483	4.138
	(3.274)	(3.564)	(3.233)	(3.495)	(3.282)	(3.546)	(3.260)	(3.561)	(2.961)	(3.557)	(3.124)	(3.745)	(3.063)	(3.620)
Finan	1.718	0.933	1.845	1.028	1.894	1.105	1.818	0.983	1.697	1.033	1.839	0.976	1.919	1.064
	(6.546)	(2.701)	(6.912)	(3.020)	(7.157)	(3.444)	(6.854)	(3.055)	(6.206)	(3.192)	(6.159)	(2.524)	(6.752)	(3.028)
Food	2.659	1.407	2.637	1.467	2.670	1.500	2.568	1.473	2.699	1.573	2.671	1.576	2.723	1.744
	(5.895)	(3.055)	(5.590)	(3.020)	(5.633)	(3.067)	(5.554)	(3.053)	(5.587)	(3.244)	(5.385)	(3.198)	(5.146)	(3.356)
Machn	2.269	1.780	2.304	1.779	2.291	1.798	2.275	1.759	2.270	1.779	2.236	1.826	2.223	2.018
	(6.648)	(4.435)	(6.897)	(4.658)	(6.924)	(4.670)	(6.775)	(4.511)	(7.110)	(4.986)	(6.288)	(4.341)	(6.219)	(4.526)
Mines	1.715	0.594	1.698	0.650	1.734	0.723	1.611	0.612	1.566	0.238	1.259	0.236	1.052	-0.236
	(2.472)	(0.802)	(2.424)	(0.858)	(2.452)	(0.957)	(2.299)	(0.810)	(2.289)	(0.313)	(1.812)	(0.300)	(1.470)	(-0.288)
Oil	2.623	1.847	2.819	1.824	2.814	1.795	2.770	1.780	2.954	1.662	2.876	1.735	2.924	1.681
	(6.379)	(5.179)	(7.758)	(5.159)	(7.692)	(5.063)	(7.571)	(5.000)	(8.014)	(4.548)	(7.691)	(4.701)	(7.401)	(4.350)
Other	2.609	1.371	2.798	1.526	2.809	1.549	2.665	1.427	2.871	1.683	2.835	1.589	2.877	1.735
	(7.577)	(4.084)	(8.669)	(4.612)	(8.666)	(4.694)	(8.960)	(4.647)	(9.305)	(5.135)	(8.970)	(5.051)	(9.381)	(5.832)
Rtail	2.400	1.687	2.637	1.908	2.629	1.902	2.574	1.837	2.822	2.134	2.786	2.063	2.429	1.965
	(5.026)	(3.752)	(5.520)	(4.118)	(5.561)	(4.200)	(5.641)	(4.020)	(6.220)	(4.583)	(6.365)	(4.318)	(4.570)	(3.953)
Steel	1.666	1.137	1.680	1.138	1.523	1.080	1.483	1.093	1.539	1.504	1.451	1.282	1.161	1.194
	(2.123)	(1.544)	(2.055)	(1.483)	(1.887)	(1.429)	(1.822)	(1.425)	(1.677)	(1.736)	(1.750)	(1.621)	(1.321)	(1.421)
Trans	2.627	1.963	2.924	2.052	2.929	2.072	2.921	2.105	3.038	2.286	2.863	2.248	2.662	2.074
	(5.729)	(4.948)	(7.085)	(4.998)	(7.068)	(5.071)	(6.974)	(5.101)	(7.128)	(5.562)	(6.838)	(5.360)	(6.116)	(4.688)
Utils	0.706	0.763	0.699	0.535	0.771	0.645	0.735	0.661	1.060	0.936	0.944	0.919	0.962	1.043
	(2.499)	(0.763)	(2.420)	(1.424)	(2.731)	(1.829)	(2.549)	(1.822)	(3.495)	(2.574)	(3.086)	(2.418)	(3.103)	(2.922)

The results also reveal an interesting difference between equal-weighted (EW) and value-weighted (VW) returns in the top-performing industries. In contrast to typical patterns where EW returns often surpass VW returns, the FF5 model shows that, in many cases, EW returns are lower than their VW counterparts, indicating that larger firms drive much of the portfolio's performance. For example, industries such as Chemicals (Chems) and Consumer Products (Cnsum) exhibit significantly higher VW returns, suggesting that analyst recommendations for large-cap stocks in these sectors have a more substantial impact on returns. This difference suggests that firm size plays a crucial role in the effectiveness of analyst recommendations, particularly in sectors where large firms dominate. These findings underscore the heterogeneity in how excess returns in our strategy based on varies in the context of different industries and firm sizes. We also find that larger firms in capital and regulatory-intensive industries like Utilities (Utils) showing a comparatively smaller return, as reflected by theirs lower VW excess returns, when compared to other top performing industries.

4.4 Investment Bank/Broker Cross-section

At the investment bank/broker level (both defunct and active), we assess the value of recommendations from each firm, recognizing that retail investors are unlikely to access all analyst recommendations to implement this strategy. To ensure that our sample includes investment banks with a substantial number of recommendations, we selected firms that, for at least ten consecutive years, issued at least ten recommendations for ten different firms each year. This criterion ensures a more robust and reliable dataset for evaluating the effectiveness of sell-side recommendations. We sort our portfolios monthly for each investment bank/ broker into terciles. However, these results must be interpreted cautiously, as there is a potential inherent bias regarding when a firm begins issuing recommendations, continues issuing recommendations and stops issuing recommendations. There may also be an endogeneity concern for the type of companies which a sell-side firm chooses to cover. Furthermore, there is a concentration risk for investors who decide to only follow recommendations from a single sell-side issuer to create portfolios, as their exposure may be limited to a narrow market subset. Finally, it is important to interpret this firm's cross-sectional result in the context of the trading strategy that we have enumerated. Our strategy reduces outdated recommendations by removing stale recommendations by only considering recommendations 90 days prior to portfolio formation. Thus, if an investment bank issues

recommendations that remain the same for long periods of time (more than 90 days before portfolio formation), these recommendations are not included in portfolio formation.

To help address these limitations we highlight above, we have included additional tables (Tables IV-VIII) in the appendices, which provide yearly descriptive statistics for each investment bank/broker, such as the number of recommendations (including changes), the number of firms, the number of analysts per firm, the mean firm coverage per analyst, and the average coverage per analyst. These supplementary tables provides more details of each sell-side firm's breadth and depth of coverage, which is crucial when interpreting the alphas reported in Table 7. The table reveals substantial variation in performance across different sell-side firms, with some firms delivering consistently strong alphas in both EW and VW portfolios.

Table 7

Sell-Side Alpha

This table reports alphas (in percentage) on both an equal-weighted (EW) and value-weighted (VW) basis of HML stock portfolios sorted by each investment bank/broker. Alpha is the return of the top tercile minus the lowest tercile. We report alpha for only the FF5 asset pricing model. The criteria on which these investment banks/ brokers were selected were those that for every year for at least ten consecutive years issued at least 10 recommendations for 10 different firms. Monthly stock returns are winstorized at the 1% level for both tails to remove the impact of outliers.

Sell-side Firm	EW Return	VW Return	Sell-side Firm	EW Return	VW Return	Sell-side Firm	EW Return	VW Return	Sell-side Firm	EW Return	VW Return	Sell-side Firm	EW Return	VW Return
ADAMS	3.763	3.917	CRAIG	6.055	9.246	JOLSON	3.310	1.965	MKMPARTN	2.078	-1.536	STEPHENS	1.847	1.036
	(4.818)	(4.580)		(3.364)	(1.760)		(5.048)	(2.759)		(0.850)	(-0.625)		(1.230)	(0.904)
ARGUS	0.532	1.104	CRUTTEN	3.221	3.629	JPMORGAN	2.030	0.899	MONTSEC	2.078	0.244	STERNE	1.620	2.476
	(0.682)	(1.169)		(2.351)	(1.826)		(4.940)	(2.308)		(9.080)	(0.306)		(1.946)	(2.346)
ATLANEQU	0.855	1.780	DAVIDSON	1.522	1.524	KAUFBRO	4.657	3.295	MORGAN	1.448	1.241	STIFEL	1.722	0.261
	(1.206)	(2.325)		(1.787)	(2.293)		(1.824)	(1.231)		(7.976)	(4.753)		(2.839)	(0.253)
AVONDALE	4.771	5.441	EDWARDS	1.343	0.646	KEEFE	1.042	0.458	NEEDHAM	2.547	2.089	SUMMCAP	-3.278	-1.380
	(2.567)	(2.817)		(4.182)	(1.306)		(2.677)	(1.008)		(5.542)	(3.338)		(-1.491)	(-0.915)
BACHE	1.905	1.626	FAHN	1.488	0.066	LADENBUR	-4.662	-2.146	NORTHLAN	13.413	10.361	SUSQUEH	-0.076	-0.241
	(3.750)	(2.503)		(1.997)	(0.064)		(-1.349)	(-0.736)		(1.689)	(1.279)		(-0.071)	(-0.215)
BAKER	3.932	5.614	FBOSTON	1.321	0.986	LAWRENCE	3.544	1.254	OLMSTEAD	0.695	0.517	TDSI	1.065	0.743
	(2.254)	(3.182)		(3.020)	(2.171)		(5.350)	(1.267)		(0.774)	(0.472)		(1.459)	(0.819)
BARRING	2.979	2.323	FIRSTALB	2.341	1.985	LAZARD	7.575	2.486	OPPEN	3.225	1.061	THEBENCH	5.541	3.322
	(4.497)	(1.872)		(2.844)	(1.759)		(3.249)	(0.597)		(7.484)	(1.619)		(2.014)	(2.161)
BEAR	1.165	0.206	FRCLAYSC	0.777	1.304	LEERINK	0.268	2.125	PACCREST	3.319	2.864	UNTERBUR	3.893	0.881
	(2.104)	(0.374)		(0.828)	(1.700)		(0.104)	(0.898)		(3.016)	(1.745)		(2.795)	(0.563)
BERN	1.329	1.135	FRIEDMAN	2.442	2.375	LEGG	1.160	1.468	PACGROW	1.234	2.065	VANKASPR	-0.100	-0.932
	(2.016)	(1.664)		(2.658)	(2.213)		(2.042)	(1.492)		(0.201)	(0.547)		(-0.053)	(-0.370)
BLAIR	2.285	-0.382	GABELLCO	5.009	-0.613	LEHMAN	1.420	0.776	PICKERIN	1.215	1.086	VIRGINIA	0.244	0.489
	(1.401)	(-0.087)		(1.216)	(-0.348)		(2.360)	(1.009)		(1.666)	(1.326)		(0.359)	(0.671)
BREAN	4.191	1.736	GARTNER	1.847	5.742	LONGBOW	0.764	0.595	PIPER	3.685	2.591	WEISEL	1.287	-0.235
	(2.961)	(0.836)		(1.200)	(3.803)		(1.254)	(0.964)		(4.820)	(2.456)		(0.747)	(-0.189)
BRILEY	-0.431	1.603	GHUNTER	2.881	2.514	MACQUARI	3.675	3.660	POINT	4.154	1.686	WHEAT	1.343	0.858
	(-0.142)	(0.584)		(1.498)	(1.476)		(1.460)	(1.556)		(3.318)	(1.517)		(2.729)	(1.849)
BTIG	3.608	0.308	GKM	1.425	0.511	MAXIM	0.319	0.081	RAYMOND	1.663	1.000	WMJM	1.050	0.030
	(0.836)	(0.058)		(2.250)	(0.676)		(0.130)	(0.039)		(6.620)	(2.908)		(1.063)	(0.024)
BUCK	1.126	0.683	GOLDMAN	1.313	1.268	MCDONALD	2.418	1.348	RBCDOMIN	1.411	1.643	WOLFE	2.386	1.672
	(2.386)	(1.313)		(6.357)	(6.146)		(7.258)	(2.952)		(3.145)	(3.177)		(3.136)	(2.389)
BURNS	0.618	-0.208	HALLUM	-1.581	-1.910	MCLEOD	1.543	1.626	ROBINSON	2.275	-0.118	WOODGUND	1.540	1.136
	(0.996)	(-0.258)		(-0.473)	(-0.511)		(2.571)	(2.122)		(1.758)	(-0.100)		(2.228)	(1.312)
CANTORFZ	-1.613	0.363	HILLIARD	0.259	0.059	MERRILL	2.242	1.744	SANDLER	0.312	-1.434			
	(-0.659)	(0.149)		(0.666)	(0.121)		(3.789)	(2.336)		(0.466)	(-1.604)			
CAPELEUR	2.317	1.944	JANNEY	1.493	-1.008	MIDEST	1.286	1.986	SCOAST	0.830	-0.092			
	(2.609)	(2.043)		(1.558)	(-0.987)		(1.741)	(1.875)		(0.915)	(-0.126)			
CLKA	1.481	0.662	JEFFEREG	3.366	1.340	MIZUSEC	3.429	-9.973	SCOTT	2.512	2.313			
	(2.584)	(1.243)		(3.468)	(1.802)		(0.688)	(-1.990)		(3.092)	(1.823)			
CLUSA	-0.151	0.295	JOHNRICE	-0.034	-0.607	MKEEGAN	0.270	-1.968	SIDOTI	-1.778	-1.701			
	(-0.258)	(0.554)		(-0.027)	(-0.661)		(0.160)	(-1.549)		(-0.665)	(-0.689)			

In the context of our sample, we focus on the value-weighted (VW) returns of prominent sell-side firms that demonstrate statistically significant alphas at the 5% level, providing valuable insight of value for retail investors. Our results for JPMorgan show a statistically significant VW return of 0.899% per month, indicating that their consensus recommendations have contributed positively to portfolio performance. With a VW return of 1.268%, Goldman Sachs reinforces the value of stock recommendations from these prominent firms. Similarly, Merrill demonstrates a statistically significant VW return of 1.744%, highlighting the firm's ability to deliver positive alpha through its recommendations.

Complementing this result, Table III in the appendices provides detailed alphas for both the lowest and highest tercile portfolios across individual investment banks and brokers, calculated using the FF5 asset pricing model. Examining specific firms such as JP Morgan, Merrill Lynch, and Goldman Sachs in this table, we observe that the significant alphas primarily stem from the underperformance of stocks in the lowest tercile portfolios that are shorted. Low-tercile portfolios exhibit substantial negative alphas on these firms' equal-weighted and value-weighted bases. In contrast, the high tercile portfolios show smaller or less consistent positive alphas. This indicates that even at the sell-side firm level, the analyst recommendation value still exhibits outperformance primarily from the sell recommendations.

These results suggest that investment banks/broker recommendations are valuable for portfolio allocation and returns. For retail investors, this highlights the potential benefit of incorporating the recommendations of firms such as JPMorgan, Goldman Sachs, and Merrill Lynch into their investment decisions. The statistically significant returns generated by these firms demonstrate that their research and analysis can provide valuable guidance to retail investors, even though institutional players traditionally leverage these insights.

However, retail investors should be cautious about over-relying on a single firm's recommendations due to potential biases and timing factors that could affect stock performance following such advice. Diversifying across multiple sources and firms could help mitigate the risks associated with concentration. Overall, our findings emphasize the value retail investors could gain from incorporating the high-quality research of top-tier investment banks into their portfolios while balancing this with a diversified approach to reduce risk.

Despite these interesting results, the study has some limitations. The reliance on the I/B/E/S database may not capture all analyst recommendations, potentially introducing some bias. Additionally, while reducing turnover and transaction costs, our monthly rebalancing approach might miss some immediate market reactions to analyst recommendations, especially buy signals.

4.5 Robustness Tests

4.5.1 Fama–MacBeth tests

The Fama–MacBeth (1973) regression method is used in finance to to investigate over time the link between stock returns and several explanatory variables. First, we quantify the link between returns and explanatory variables—such as consensus recommendations, technical indicators or company characteristics—by fitting cross-sectional regressions for every time period—monthly in our example. Next, the test takes the average of the estimated coefficients across all periods is calculated, along with the corresponding standard errors.

This approach solves the problem of time-varying links between returns and explanatory factors while addressing any cross-sectional correlation in the error terms, therefore acting as a robustness test. The Fama-MacBeth method reduces overfitting to a single period by averaging the coefficients over several periods and offers more consistent conclusions on the relevance and economic influence of the variables on returns.

This paper validates the consistency of the predictive power of analyst recommendations on stock returns by means of the Fama-MacBeth test. This enables us to make sure that the observed excess returns in our portfolio-sorted approach are not only the result of random fluctuations or particular to some time frames. It increases the validity of our earlier findings by verifying that the link between analyst recommendations and returns is valid throughout several periods.

In Table 8 below, we provide the Fama-MacBeth regression results in which the coefficients on the independent variables are time-series averages. Different columns match different regression models with progressively more control variables. The predictive ability of consensus analyst recommendations (CONS) as a return predictor takes front stage. The coefficient on CONS stays positive and statistically significant throughout all four regression criteria, meaning analyst recommendations have strong predictive value for next stock returns. In the simplest model-Column 1-where CONS is the sole predictor-the coefficient is 1.105 with a t-value of 7.36,

implying a substantial and highly significant association between analyst recommendations and future returns.

Table 8

Fama-French Two Step Regression

This table reports the Fama–MacBeth regression results, showing the time-series averages of coefficients for predicting stock returns. Control variables included in the regressions are Beta, which measures a stock's sensitivity to market movements using monthly returns over the previous five years, and Size, defined as the log of the firm's market value in the previous month. The book-to-market ratio (BM) is calculated following Fama and French (2008), while R_{t-1} captures the stock's return in the prior month to control for short-term reversal. Momentum is controlled for using $R_{t-12,t-2}$, which is the cumulative return from month t-12 to t-2, and long-term reversals are accounted for by $R_{t-60,t-13}$, representing the cumulative return from month t-60 to t-13. Idiosyncratic volatility (IVOL) is measured as the standard deviation of daily returns, and Asset Growth is the percentage change in total assets year-over-year. Cash-based operating profitability (CBOP) and Accruals, calculated as in Sloan (1996), are included as additional predictors.

Variable	(1)	(2)	(3)	(4)
CONS	1.105	0.848	0.842	0.839
	(7.360)	(7.360)	(9.400)	(2.180)
Beta		0.306	0.158	0.504
		(0.780)	(0.350)	(1.010)
Size		-0.156	-0.148	-0.024
		(-2.450)	(-2.670)	(-0.150)
BM		0.062	0.021	0.098
		(0.520)	(0.210)	(0.550)
R_{t-1}			-0.003	0.056
			(-0.280)	(2.110)
$R_{t-12,t-2}$			-0.002	-0.009
			(-0.540)	(-1.040)
$R_{t-60, t-13}$			0.000	0.002
			(0.250)	(0.420)
IVOL			-0.083	-0.023
			(-1.540)	(-0.150)
Asset Growth				-0.869
				(-0.820)
CBOP				-0.859
				(-0.130)
Accurals				-3.814
				(-0.340)
Intercept	-3.403	-1.212	-0.992	-2.440
	(7.360)	(-1.530)	(-1.410)	(-0.880)
Average R^2	0.0068	0.1428	0.2169	0.4728

The magnitude of the CONS coefficient somewhat declines when more control variables are added, ranging from 0.839 to 0.848 in Columns 2 through 4; nonetheless, it remains statistically significant with t-values regularly over 2. This persistence suggests that analyst recommendations still show significant predictive ability even when considering other elements known to affect stock returns—such as beta, size, and recent performance. The consistency of these results across several criteria emphasizes the robustness of CONS as a relevant component in explaining return variances, therefore confirming the premise that retail investors can gain from including analyst consensus into their trading strategy.

The declining level of the CONS coefficient when more variables are included could be a reflection of part of the information gathered by the recommendations overlapping with other explanatory variables, such historical returns or company traits. Moreso, the retention of statistical significance implies that analyst recommendations offer special insights into future stock performance outside the domain of conventional asset price considerations.

After adjusting for the included variables, the negative intercept found throughout the models-between -0.992 and -3.403-suggests a baseline expectation of negative returns. This could mean that, on average the stocks in the sample are subject to downward pressure, maybe because of analyst coverage biases like a concentration on more erratic or riskier companies. On the other hand, the negative intercept could suggest unmeasured hazards or omitted variables influencing stock returns, which the included controls fail to completely represent. Still, the most important lesson is that CONS regularly exhibits excellent positive predictive ability for future returns, therefore supporting its usefulness as a return predictor in the framework of retail investing strategies.

4.5.2 Size Analysis

In our analysis, we performed robustness tests by examining the effect of consensus analyst recommendations (CONS) across different firm sizes, sorted into quintiles based on market capitalization. We performed this robustness test to look into possible size impact since smaller companies may show more information asymmetry and might be more sensitive to analyst recommendations.

For each size quintile, we further sorted stocks into quintiles based on CONS to understand how the predictive power of recommendations varies with firm size. Table 9 presents the results, reporting the Fama-French five-factor alphas for the 25 portfolios, with equal-weighted returns shown in Panel A and value-weighted returns in Panel B. We also present the alpha for the difference between the high- and low-CONS portfolios within each size quintile to capture the strength of the recommendation effect.

Table 9

Firm size and the Effect of Consensus Analyst Recommendations

This table presents the results on how the effect of analyst recommendations (CONS) varies with firm size. Each month, stocks are first sorted into quintiles based on market capitalization at the end of the previous month, using NYSE size breakpoints. Within each size quintile, stocks are further sorted into quintiles based on CONS. The table reports the Fama-French five-factor alphas for the resulting 25 portfolios. Additionally, for each size quintile, the alpha for the high-ANA_REC minus low-ANA_REC portfolio is reported. Panel A provides the results for equal-weighted portfolios, while Panel B presents the results for value-weighted portfolios.

Size	Small Firms	2	3	4	Large Firms
Panel A: Equal-weighted alphas					
1	-1.468	-1.668	-1.346	-1.168	-1.081
	(-5.11)	(-10.15)	(-10.36)	(-9.55)	(-9.98)
2	-0.663	-0.540	-0.918	-1.072	-0.849
	(-1.66)	(-1.69)	(-3.45)	(-5.43)	(-7.36)
3	1.107	0.379	-0.284	-0.303	-0.411
	(4.07)	(1.51)	(-1.59)	(-2.08)	(-3.82)
4	1.701	1.325	0.682	0.170	-0.185
	(5.60)	(4.75)	(3.58)	(0.97)	(-1.76)
5	2.268	1.122	0.826	0.171	0.053
	(7.41)	(6.74)	(5.80)	(1.37)	(0.48)
High - Low	3.437	2.484	2.107	1.303	1.137
	(11.33)	(14.57)	(16.08)	(12.52)	(10.11)
Panel B: Value-weighted alphas					
1	-1.720	-1.637	-1.333	-1.142	-1.231
	(-6.96)	(-9.92)	(-10.51)	(-9.35)	(-11.64)
2	-0.778	-0.449	-0.941	-1.071	-1.048
	(-1.93)	(-1.39)	(-3.63)	(-5.41)	(-8.17)
3	0.929	0.324	-0.325	-0.310	-0.579
	(3.84)	(1.34)	(-1.78)	(-2.06)	(-5.25)
4	1.766	1.317	0.619	0.168	-0.206
	(5.87)	(4.67)	(3.34)	(0.96)	(-1.83)

5	2.137	1.091	0.767	0.157	-0.106
	(8.39)	(6.52)	(5.52)	(1.25)	(-0.83)
High - Low	3.627	2.414	2.035	1.266	1.130
	(14.16)	(13.70)	(15.77)	(12.36)	(8.18)

Although our data show that the CONS impact exists across all business sizes, it is often stronger for smaller firms (quintiles 1 and 2) than for larger enterprises (quintiles 4 and 5). Particularly, the high-minus-low CONS portfolios demonstrate significant alphas for small businesses; the difference decreases with firm size. The high-minus-low gap in equal-weighted portfolios is 3.437% (t = 11.33) for the lowest quintile and decreasing to 1.137% (t = 10.11) for the highest quintile. Value-weighted alphas also exhibit a trend whereby the CONS impact is more noticeable among smaller enterprises, with the high-minus-low difference of 3.627% (t = 14.16) for the smallest quintile, compared to 1.130% (t = 8.1) for the biggest quintile.

Our findings support the view that analyst recommendations have greater predictive power for smaller firms, potentially due to the higher marginal value of information in these stocks. The weaker effect among larger firms suggests that market participants may already incorporate this information more efficiently, reducing the impact of recommendations.

5.0 Conclusion

The results of this study highlight the significant role that analysts' recommendations can play for retail investors within a monthly portfolio-sorted long-short strategy. Based on recent recommendations from brokers/investment banks, our docile-sort test reveals that the values weighted (VW) portfolios provide a more accurate measure of performance compared to equal-weighted (EW) portfolios due to overestimation biases in the latter. Furthermore, the High-Minus-Low (HML) portfolios show that the excess returns calculated in terms of VW portfolios generated monthly excess returns between 1.36% and 1.57%. This translates to an impressive annualized return of 17.57 - 20.45% above the risk-free rate for retail investors following a zero-investment strategy based on analyst recommendations. This result suggests that "sell" recommendations from analysts are particularly useful in identifying underperforming stocks, allowing investors to capture alpha. Reinforcing prior literature, "buy" recommendations in our sample did not perform significantly, suggesting that the market responds faster to pricing consensus "buys" than consensus "sells".

The analyses at industry-level show some level of heterogeneity in the effectiveness of analysts' recommendation across sectors. For example, the Chemicals and Consumer Products industry showed higher excess returns, while the returns for the Utilities industry were insignificant. This implies that larger firms predominantly drive portfolio performance and suggests that firm size plays a significant role in the relevance of analysts' recommendations to retail investors. At the investment bank and broker level, we find that prominent sell-side firms such as JPMorgan, Goldman Sachs, and Merrill Lynch demonstrated significant alphas, thereby contributing significantly to portfolio performance through shorting of stocks in the lowest terciles. This suggests that not all analyst recommendations are valuable, and the reputation and expertise of the issuing firm is associated with the reliability of their recommendations.

Crisis periods present certain nuances, with our analysis showing that in turbulent times (such as the Dotcom and financial crises of the 2000s as well as the COVID-19 pandemic), a trading strategy based on consensus analyst recommendation is statistically insignificant under the VW portfolio. This result suggests that the value of analyst recommendations may be called into question during crisis periods. However, the lowest decile portfolios were mostly statistically significant across various asset pricing factor models.

In conclusion, our results provide strong evidence that suggests that analysts' recommendations have significant value to retail investors, especially through the implementation of strategies that are focused on short positions in stocks with unfavorable ratings. Our findings do not only support previous literature but also address other nuances pertaining to analysts' recommendations across different economic cycles, industries and investment banks/brokers. One of the overriding findings of this study shows that while "buy" signals may not be efficient, "sell" signals are particularly potential predictors for retail investors seeking to enhance their investment strategies and achieve higher returns. In essence, this paper demonstrates that retail investors can better navigate market inefficiencies and improve their portfolio performance by selectively leveraging high-quality analyst recommendation.

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Appendix

Table I

This table reports alphas (in percentage) on both an equal-weighted (EW) and value-weighted (VW) basis of stock portfolios sorted by consensus analyst recommendation disaggregated by the Fama-French 10 Industry classification. Alpha is the return of the top decile minus the lowest decile. We report results for six asset pricing models, including the excess return above risk-free rate: CAPM alpha, FF3 alpha, FF5 alpha, FFC4 alpha, HXZQ alpha, and the HMXZAQ alpha. Monthly stock returns are winstorized at the 1% level for both tails to remove the impact of outliers.

Industry	Excess return		CAPM		FF3		FFC4		FF5		HXZQ		HMXZAQ	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Durbl	2.767	1.666	2.841	1.815	2.810	1.801	2.803	1.764	2.529	1.706	2.781	1.410	2.518	1.370
	(4.238)	(2.671)	(4.478)	(2.985)	(4.399)	(2.910)	(4.295)	(2.803)	(3.853)	(2.745)	(3.916)	(2.264)	(3.637)	(2.136)
Enrgy	2.631	1.766	2.879	1.761	2.873	1.752	2.802	1.717	3.067	1.656	2.933	1.631	2.984	1.583
	(6.646)	(5.226)	(8.227)	(5.141)	(8.170)	(5.098)	(8.031)	(5.013)	(8.714)	(4.706)	(8.238)	(4.697)	(7.912)	(4.424)
HiTec	2.125	1.820	2.135	1.876	2.136	1.869	2.118	1.803	2.001	1.723	1.997	1.785	1.962	1.784
	(7.074)	(4.870)	(6.821)	(5.043)	(6.752)	(5.085)	(6.614)	(5.033)	(6.503)	(5.280)	(5.997)	(4.821)	(6.001)	(4.493)
Hlth	2.181	1.349	2.127	1.216	2.216	1.296	2.212	1.312	2.193	1.272	2.183	1.273	2.182	1.259
	(2.941)	(2.232)	(2.719)	(1.959)	(2.843)	(2.171)	(2.714)	(2.076)	(2.830)	(2.107)	(2.821)	(2.129)	(2.856)	(2.081)
Manuf	2.034	1.001	2.146	1.009	2.105	1.018	2.073	0.945	2.115	0.944	2.150	1.023	1.820	0.989
	(6.594)	(2.853)	(7.206)	(2.864)	(7.821)	(3.175)	(7.817)	(2.877)	(7.917)	(2.864)	(7.596)	(2.853)	(6.513)	(2.908)
NoDur	1.966	1.106	1.971	1.046	2.015	1.045	1.923	1.014	1.886	1.382	2.000	1.160	1.890	1.180
	(4.192)	(2.934)	(4.085)	(2.786)	(4.159)	(2.769)	(4.002)	(2.632)	(3.885)	(3.590)	(3.906)	(2.873)	(3.550)	(2.791)
Other	2.285	1.331	2.475	1.511	2.438	1.480	2.379	1.466	2.358	1.474	2.381	1.571	2.364	1.548
	(8.958)	(5.320)	(9.402)	(5.533)	(10.222)	(5.992)	(10.377)	(5.828)	(8.897)	(5.824)	(8.283)	(5.364)	(8.539)	(5.589)
Shops	1.790	1.435	2.068	1.598	2.007	1.558	1.975	1.528	2.162	1.699	2.082	1.630	2.003	1.692
	(4.749)	(4.170)	(5.881)	(4.800)	(5.867)	(4.770)	(5.950)	(4.866)	(6.721)	(5.292)	(5.886)	(4.836)	(5.910)	(5.221)
Telcm	2.882	1.940	3.016	2.186	3.011	2.158	2.668	1.858	2.574	1.773	2.662	1.877	2.544	1.761
	(5.441)	(3.213)	(5.676)	(3.574)	(5.746)	(3.597)	(5.067)	(3.191)	(4.847)	(3.186)	(4.755)	(3.211)	(4.295)	(2.767)
Utils	0.706	0.763	0.699	0.535	0.771	0.645	0.735	0.661	1.060	0.936	0.944	0.919	0.962	1.043
	(2.499)	(2.321)	(2.420)	(1.424)	(2.731)	(1.829)	(2.549)	(1.822)	(3.495)	(2.574)	(3.086)	(2.418)	(3.103)	(2.922)

Table II

This table reports alphas (in percentage) on both an equal-weighted (EW) and value-weighted (VW) basis of stock portfolios sorted by consensus analyst recommendation disaggregated by the Fama-French 5 Industry classification. Alpha is the return of the top decile minus the lowest decile. We report results for six asset pricing models, including the excess return above risk-free rate: CAPM alpha, FF3 alpha, FF5 alpha, FFC4 alpha, HXZQ alpha, and the HMXZAQ alpha. Monthly stock returns are winstorized at the 1% level for both tails to remove the impact of outliers.

Industry	Excess return		CAPM		FF3		FFC4		FF5		HXZQ		HMXZAQ	
	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW	EW	VW
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Cnsmr	1.527	0.983	1.762	1.179	1.688	1.164	1.657	1.137	1.783	1.151	1.838	1.207	1.533	1.293
	(3.148)	(3.491)	(3.512)	(4.376)	(3.325)	(4.320)	(3.505)	(4.133)	(4.176)	(3.943)	(4.315)	(4.367)	(2.956)	(4.695)
HiTec	2.342	1.901	2.369	1.943	2.365	1.952	2.338	1.892	2.222	1.794	2.209	1.837	2.106	1.703
	(8.644)	(5.334)	(8.363)	(5.402)	(8.363)	(5.425)	(8.243)	(5.454)	(7.959)	(5.225)	(7.412)	(5.257)	(7.310)	(4.602)
Hlth	2.181	1.349	2.127	1.216	2.216	1.296	2.212	1.312	2.193	1.272	2.183	1.273	2.182	1.259
	(2.941)	(2.232)	(2.719)	(1.959)	(2.843)	(2.171)	(2.714)	(2.076)	(2.830)	(2.107)	(2.821)	(2.129)	(2.856)	(2.081)
Manuf	1.720	1.027	2.008	1.044	2.000	1.039	1.876	0.942	2.180	1.045	2.010	1.114	1.831	1.057
	(4.592)	(3.643)	(6.966)	(3.593)	(7.228)	(3.996)	(7.036)	(3.447)	(7.549)	(4.000)	(6.998)	(3.599)	(5.976)	(3.608)
Other	2.285	1.331	2.475	1.511	2.438	1.480	2.379	1.466	2.358	1.474	2.381	1.571	2.364	1.548
	(8.958)	(5.320)	(9.402)	(5.533)	(10.222)	(5.992)	(10.377)	(5.828)	(8.897)	(5.824)	(8.283)	(5.364)	(8.539)	(5.589)

Table III

This table reports alphas (in percentage) on both an equal-weighted (EW) and value-weighted (VW) basis of the lowest tercile and top tercile stock portfolio. This complements the HML portfolio results in Table 7. We report returns for both portfolios based on the FF5 asset pricing model. The criteria on which these investment banks/ brokers were selected were those that for every year for at least ten consecutive years issued at least 10 recommendations for 10 different firms. Monthly stock returns are winstorized at the 1% level for both tails to remove the impact of outliers.

Firm	EW Low 1	EW High 3	VW Low 1	VW High 3	Firm	EW Low 1	EW High 3	VW Low 1	VW High 3
ADAMS	-0.675	2.898	-1.449	2.244	LEGG	-1.327	0.132	-1.332	-0.414
	-1.245	3.833	-2.355	2.955		-4.824	0.240	-3.431	-0.587
ARGUS	-0.391	1.166	-1.026	0.112	LEHMAN	-0.857	0.887	-1.017	0.341
	-1.208	1.409	-3.348	0.139		-3.036	1.716	-4.521	0.603
ATLANEQU	-0.712	-0.183	-1.048	0.256	LONGBOW	-0.687	0.518	-0.835	-0.033
	-3.057	-0.382	-4.337	0.429		-2.296	1.036	-2.597	-0.070
AVONDALE	-0.888	3.369	-1.416	1.459	MACQUARI	-0.580	2.965	-0.833	3.227
	-2.265	2.185	-3.539	0.947		-1.266	1.159	-1.753	1.268
BACHE	-1.337	1.499	-1.178	0.350	MAXIM	-1.264	-3.361	-0.657	-1.544
	-3.960	1.673	-3.936	0.489		-3.073	-1.198	-1.298	-0.479
BAKER	-0.789	3.858	-1.239	3.581	MCDONALD	-1.276	0.795	-1.215	-0.249
	-2.109	2.385	-2.763	2.089		-6.719	2.397	-5.709	-0.621
BARRING	-0.925	2.180	-1.032	1.293	MCLEOD	-1.049	0.420	-1.136	0.342
	-2.653	3.228	-3.272	1.234		-3.097	0.689	-2.886	0.493
BEAR	-1.127	0.879	-1.197	0.105	MERRILL	-1.190	1.635	-1.426	0.325
	-3.810	1.388	-4.343	0.218		-6.433	2.909	-8.672	0.477
BERN	-0.857	0.153	-1.083	-0.188	MIDEST	-1.287	1.187	-1.323	1.087
	-4.885	0.275	-5.305	-0.391		-3.636	2.015	-3.287	1.385
BLAIR	-0.985	1.103	-0.809	-1.603	MIZUSEC	-1.305	-0.325	-1.121	-5.244
	-4.128	0.568	-3.258	-0.398		-4.237	-0.082	-3.473	-0.586
BREAN	-1.405	3.517	-1.189	2.429	MKEEGAN	-0.867	0.662	-0.395	-1.509
	-3.870	3.121	-2.130	1.954		-2.499	0.552	-0.737	-0.936
BRILEY	-0.408	-3.150	-0.684	-4.071	MKMPARTN	-0.261	2.439	0.096	1.156
	-0.857	-1.103	-1.430	-1.967		-0.670	1.195	0.248	0.578
BTIG	-0.702	5.094	-0.527	2.985	MONTSEC	-1.195	1.542	-1.078	0.075
	-1.594	1.097	-1.242	0.680		-4.199	2.940	-4.290	0.071
BUCK	-1.043	0.214	-0.828	-0.069	MORGAN	-0.913	0.484	-1.072	0.004
	-3.968	0.532	-2.631	-0.149		-5.713	1.969	-7.734	0.019
BURNS	-1.054	-0.263	-1.056	-1.162	NEEDHAM	-0.507	1.838	-0.798	1.244
	-3.657	-0.398	-3.547	-1.528		-1.922	3.996	-2.393	2.210
CANTORFZ	-0.354	-2.078	-1.277	-2.191	NORTHLAN	-0.903	10.665	-0.983	8.414
	-0.634	-0.784	-2.958	-0.833		-2.278	1.662	-2.030	1.560

CAPELEUR	-0.927	1.102	-0.737	1.285	OLMSTEAD	-0.858	0.819	-0.188	0.623
	-2.317	1.304	-1.862	1.523		-2.681	1.009	-0.555	0.725
CLKA	-1.018	0.372	-0.493	0.061	OPPEN	-1.353	2.024	-1.335	-0.184
	-3.186	0.737	-1.539	0.130		-4.861	4.275	-4.317	-0.381
CLUSA	-0.922	-0.621	-0.711	-0.509	PACCREST	-1.747	2.461	-2.807	1.412
	-2.102	-1.263	-1.474	-0.988		-4.060	2.048	-5.541	0.870
CRAIG	-1.064	3.732	-1.217	6.058	PACGROW	0.157	2.339	-0.580	1.968
	-3.297	2.642	-3.021	1.509		0.265	0.737	-0.870	0.757
CRUTTEN	-0.534	2.138	0.136	2.970	PICKERIN	-0.817	0.396	-1.124	-0.231
	-1.448	1.641	0.296	1.515		-1.317	0.478	-1.873	-0.278
DAVIDSON	-0.739	0.982	-0.817	0.851	PIPER	-1.225	3.011	-1.207	1.363
	-3.150	1.236	-2.923	1.434		-5.241	4.899	-5.494	1.982
EDWARDS	-0.836	0.238	-0.989	-0.528	POINT	-0.710	2.344	-0.247	1.195
	-2.890	0.694	-4.457	-1.087		-2.069	3.058	-0.613	1.100
FAHN	-1.604	0.138	-1.165	-0.955	RAYMOND	-1.123	0.963	-1.027	0.087
	-6.680	0.172	-4.264	-1.009		-5.511	4.812	-4.955	0.296
FBOSTON	-0.965	0.789	-1.187	-0.054	RBCDOMIN	-0.723	0.909	-1.104	0.532
	-5.839	1.835	-8.959	-0.127		-2.838	2.258	-4.450	1.158
FIRSTALB	-0.951	1.373	-1.194	0.479	ROBINSON	-0.961	2.849	-1.113	-0.604
	-2.092	1.644	-1.692	0.508		-4.374	3.099	-4.837	-0.517
FRCLAYSC	-0.567	1.966	-0.871	1.085	SANDLER	-0.557	-0.352	-0.649	-1.550
	-2.483	2.405	-4.024	1.091		-2.554	-0.693	-2.234	-2.497
FRIEDMAN	-1.235	2.664	-1.170	2.124	SCOAST	-1.020	-0.002	-1.093	-0.405
	-5.017	2.865	-4.552	2.408		-2.334	-0.003	-2.707	-0.507
GABELLCO	-0.856	4.235	-1.103	-2.039	SCOTT	-0.768	1.951	-1.245	0.422
	-1.788	0.930	-2.686	-2.569		-2.137	1.969	-4.337	0.286
GARTNER	-0.263	2.213	-2.170	2.346	SIDOTI	-0.118	-3.740	-0.310	-3.379
	-0.391	1.533	-3.052	1.299		-0.586	-2.343	-1.446	-2.443
GHUNTER	-0.870	1.077	-0.708	1.262	STEPHENS	-1.209	3.476	-1.038	0.822
	-1.861	0.603	-1.779	0.707		-3.839	4.017	-4.246	0.986
GKM	-0.886	1.009	-0.755	0.371	STERNE	-0.603	1.046	-0.516	1.733
	-2.762	1.364	-1.926	0.476		-1.677	1.063	-1.368	1.498
GOLDMAN	-1.016	0.471	-1.261	0.086	STIFEL	-1.032	0.378	-0.992	-1.005
	-5.990	2.925	-8.390	0.532		-5.126	0.617	-3.616	-1.273
HALLUM	-0.364	-0.058	-0.522	-1.370	SUMMCAP	-0.876	-4.179	-0.493	-3.932
	-0.485	-0.015	-0.891	-0.337		-2.233	-2.396	-1.095	-3.686
HILLIARD	-0.359	0.000	-0.630	-0.508	SUSQUEH	-0.954	0.622	-0.780	-1.065
	-1.305	0.001	-2.003	-1.294		-4.097	0.676	-3.251	-1.379
JANNEY	-0.943	1.356	-0.599	-0.599	TDSI	-0.781	0.446	-0.814	-0.006

	-4.092	1.610	-2.465	-0.982		-1.969	0.596	-1.987	-0.007
JEFFEREG	-1.025	2.280	-0.695	1.054	THEBENCH	-0.426	4.691	-0.575	1.846
	-4.722	1.693	-3.208	0.867		-1.207	2.056	-1.465	2.108
JOHNRICE	-1.282	0.740	-0.862	0.923	UNTERBUR	-1.110	4.503	-0.533	0.713
	-2.725	0.927	-1.586	0.972		-2.251	3.387	-0.945	0.470
JOLSON	-0.629	1.640	-0.116	0.614	VANKASPR	-0.660	0.588	-0.899	-1.339
	-2.054	3.336	-0.290	1.005		-1.285	0.312	-1.208	-0.607
JPMORGAN	-1.243	1.805	-1.258	0.428	VIRGINIA	-0.089	-0.116	-0.788	-0.473
	-5.708	3.884	-7.230	1.279		-0.288	-0.186	-2.202	-0.745
KAUFBRO	-0.464	5.617	-1.241	2.930	WEISEL	-0.570	1.932	-0.817	-0.439
	-0.771	2.181	-2.021	1.175		-1.083	1.765	-1.698	-0.279
KEEFE	-0.815	0.032	-0.701	-0.250	WHEAT	-1.205	1.481	-0.995	0.471
	-3.975	0.088	-3.214	-0.552		-6.571	2.951	-6.040	0.909
LADENBUR	-0.472	0.678	-0.693	1.023	WMJM	-1.036	0.390	-0.928	-0.760
	-0.860	0.260	-1.500	1.300		-2.293	0.423	-1.871	-0.741
LAWRENCE	-1.168	3.066	-1.266	-0.228	WOLFE	-0.735	0.864	-1.097	0.595
	-7.741	4.069	-8.400	-0.341		-2.283	1.421	-3.766	1.123
LAZARD	-0.954	7.248	-0.830	2.583	WOODGUND	-0.995	0.798	-1.251	0.517
	-1.780	2.856	-1.554	0.664		-2.706	1.083	-2.958	0.618
LEERINK	0.380	2.742	0.340	-1.950					
	0.782	0.630	0.763	-1.437					

Table IV

No. of Recommendations (incl. changes)

This table contains the number of recommendations (including instances of changes) for each investment bank/broker. The criteria on which these investment banks/ brokers were selected were those that for every year for at least ten consecutive years issued at least 10 recommendations for 10 different firms.

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
ADAMS	55	85	137	143	205	197	229	287	315	217	288	175	172	207																		
ARGUS					1	72	240	103	70	27	433	581	288	554	619	650	345	153	135	138	146	148	130	159	155	140	142	170	143	104	100	13
ATLANEQU												33	68	58	51	75	109	75	76	62	58	67	80	89	74	61	86	87	74	74	40	
AVONDALE									4	84	171	114	129	142	115	157	135	127	114	125	85	70	113	121	24							
BACHE	643	608	532	538	528	835	660	714	887	640	1008	436	438	433	176																	
BAKER			112	88	105	86	101	88	87	138	133	135	152	173	196	39																
BARRING	101	87	138	68	103	117	111	93	108	212	111	59	60	57	78	68	73	61	62	77	64	75	89	57	46	60	34	64	46	42	23	
BEAR	196	748	468	562	513	648	852	690	614	1634	956	727	835	775	856	282																
BERN	117	171	135	168	158	198	145	63	98	172	176	140	142	148	178	111	218	134	169	167	126	137	120	131	128	127	122	166	109	140	123	29
BLAIR	227	178	209	122	191	208	193	239	132	509	138	187	180	164	184	194	185	172	260	196	190	185	179	175	206	153	158	139	235	151	180	20
BREAN				7	104	97	46	37	60	118	101	139	188	348	179	156	197	143	162	155	112	107	106	76	11	4	2					
BRILEY						13	24	38	49	92	89	68	73	67	84	156	153	125	127	316	191	163	157	143	96							
BTIG																		25	22	25	38	95	155	202	132	172	170	267	245	208	214	28
BUCK			317	324	142	119	116	166	314	397	427	309	300	225	203	247	235	306	97	88	115	151	105	113	147	134	115	16				
BURNS	38	41	75	90	101	129	113	93	83	187	207	158	125	125	131	144	157	151	110	98	115	900	400	435	338	294	303	349	278	243	252	62
CANTORFZ												18	70	79	58	57	64	82	181	87	74	155	106	131	313	97	99	119	136	144	32	
CAPELEUR	7	35	38	26	35	124	175	70	78	106	84	27	189	197	176	93	110	76	71	74	111	82	209	86	113	88	123	136	106	86	239	36
CLKA	1	22	74	50	118	77	52	46	78	96	146	88	84	99	103	119	78	92	212	112	46	29	36	52	48	42	27	29	13	27	28	1
CLUSA						67	99	66	142	177	129	160	146	146	203	201	213	236	205	219	95											
CRAIG									35	73	74	68	127	97	144	114	160	288	149	176	137	137	129	132	112	146	160	139	117	148	17	
CRUTTEN	22	59	78	119	187	188	85	43	66	140	220	294	250	362	159	201	189	471	236	185	144	157	181	192	157	176	179	212	171	143	251	16
DAVIDSON	75	168	196	180	173	179	157	107	178	245	169	152	153	200	189	239	230	211	210	152	183	156	181	202	182	194	590	288	189	156	148	19
EDWARDS			1157	887	536	701	590	651	1006	1599	436	413	395	378	337																	
FAHN	31	358	156	112	145	190	77	98	94	176	188	220	253	261	325	1225	451	356	331	220	256	288	305	192	175	184	233	239	270	213	188	34
FBOSTON	5	1196	553	478	653	795	888	1147	1135	2121	1266	1022	932	1148	1155	1576	587	559	533	724	730	672	656	615	540	616	447	543	440	558	163	
FIRSTALB	77	108	88	157	182	127	282	161	155	207	316	315	295	218	235	79																
FRCLAYSC																1083	817	602	906	1567	462	503	549	503	449	517	466	500	491	363	382	83
FRIEDMAN						595	383	310	455	734	429	516	492	450	506	464	369	385	267	188	300	222	296	272	715	299	256	283	205	187	194	30
GABELLCO																320	229	182	151	121	87	114	148	137	102	116	71	35	22			
GARTNER	82	98	93	135	122	176	221	281	229	522	196	132																				

Do Retail Investors need Analysts' Recommendations?

Firm																																
GHUNTER															8	82	50	270	229	604	182	246	217	301	547	164	97	143	117	86	131	29
GKM	44	62	140	124	150	166	125	181	226	279	455	167	239	536	270	256	297	282	307	340	460	87										
GOLDMAN	322	1101	518	799	667	791	1114	806	662	2390	1030	725	761	1996	1647	1550	1533	1073	1277	1060	1152	1077	1133	984	730	921	1696	743	821	535	387	65
HALLUM	34	7					26	33	78	198	239	354	215	273	257	200	381	181	220	159							20	13	21	20	17	4
HILLIARD			77	21	161	177	91	74	78	113	137	63	73	83	78	86	135	80	80	93	85	68	95	97	79	32						
JANNEY	47	252	209	189	115	114	208	269	224	197	148	115	318	129	136	181	276	270	227	238	282	200	204	173	114	83	206	81	70	90	80	6
JEFFEREG		153	75	297	297	271	300	278	364	415	461	489	508	434	511	524	776	557	630	460	451	476	448	446	421	477	426	493	539	521	539	99
JOHNRICE	23	204	136	84	61	40	35	16	86	91	48	186	202	60	74	182	91	66	186	67	58	121	173	58	58	74	36	82	50	18	25	2
JOLSON								7	93	195	221	186	281	261	229	208	213	218	211	221	232	204	204	179	207	150	118	132	142	140	109	26
JPMORGAN		343	342	374	397	394	482	462	1425	1717	1066	1102	944	922	954	1177	728	714	614	674	649	591	756	603	633	758	706	804	849	683	640	89
KAUFBRO						53	132	141	135	126	116	116	108	137	94	95	118	70	76	10												
KEEFE		2	18	526	180	301	355	322	334	285	281	254	270	220	344	294	260	207	187	209	276	231	204	181	161	155	137	161	169	193	112	22
LADENBUR														31	31	235	130	116	108	79	112	139	110	123	92	108	74	86	65	63	70	11
LAWRENCE	254	266	214	329	362	356	1713	995	857	1382	648	629	626	607	556	503	596	522	549	558	509	503	472	491	521	462	377	339	301	282	277	88
LAZARD				13	11	14	139	96	144	138	117	87	111	103	132	186	206	208	559	212	127											
LEERINK								14	45	191	64	64	82	85	81	178	105	78	81	96	91	100	84	90	71	110	118	112	141	109	90	11
LEGG	214	246	276	304	366	336	277	350	325	811	370	297	311																			
LEHMAN	795	611	1211	611	739	677	641	747	804	1889	1017	1087	914	848	817	493																
LONGBOW												87	105	145	74	102	134	139	119	91	360	105	119	84	91	94	97	69	37	14	4	5
MACQUARI								1	2			6	8	11	32	238	679	401	337	294	296	344	336	280	236	204	158	45	74	64	42	16
MAXIM											49	67	57	61	76	67	85	70	94	130	141	119	111	128	107	120	103	86	100	99	110	18
MCDONALD		291	298	216	240	249	264	278	275	260	270	301	348	301	262	547	279	239	253	250	243	210	951	226	459	232	281	295	251	265	194	43
MCLEOD		35	100	134	207	215	242	55	101	134	164	180	120	109	180	135	141	164	114	181	142	112	115	90	49	61	213	149	121	95	185	19
MERRILL						1628	2024	1676	1647	2997	1305	1194	1155	1259	1302	2821	1613	1212	1228	1072	1148	1222	1196	1107	988	1086	1047	1422	1255	1234	1054	172
MIDEST					111	52	55	77	214	264	394	246	229	283	236	127	168	10														
MIZUSEC																		67	239	75	90	108	152	217	205	185	165	176	185	134	175	40
MKEEGAN	83	295	275	306	267	260	198	172	168	221	191	185	254	244	207	213	147	169	227	41												
MKMPARTN																41	69	71	112	99	99	62	60	63	68	46	57	63	91	73	78	3
MONTSEC	328	425	363	537	465	673	1132	739	751	751	1122	696	595	574	651	409																
MORGAN	572	475	1369	1001	1166	1069	938	826	1031	2531	1036	1016	1026	749	905	974	935	1507	724	699	743	952	780	912	649	870	587	1002	921	772	797	141
NEEDHAM	100	145	239	267	184	228	246	220	314	307	392	363	253	289	331	282	222	212	189	210	194	190	171	141	163	157	183	151	197	143	134	15
NORTHLAN											1	34	17	34	42	51	85	81	74	136	147	115	174	130	84	114	84	152	110	90	93	13
OLMSTEAD		61	59	46	48	87	86	118	140	162	130	102	168	313	154	168	679	261	212	156	167	173	157	191	169	183	144	165	180	158	168	15
OPPEN	268	658	690	560	493	587	578	540	625	1314	692	446	512	505	394	12																
PACCREST	43	50	50	81	106	39	286	102	117	108	122	239	101	104	129	119	85	104	113	94	98	110	274	108	57							
PACGROW			10	69	74	77	78	90	143	260	180	205	138	116	84	107	12															
PICKERIN														24	27	94	72	134	122	183	99	105	87	110	80	84	53	65	54	37	40	5
PIPER	253	490	317	248	266	332	499	542	600	535	485	1024	415	419	907	466	882	342	346	312	318	263	392	482	322	269	283	816	509	531	450	59

Do Retail Investors need Analysts' Recommendations?

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
POINT																		29	71	112	115	101	75	139	124	77	169	143	68	68	64	9
RAYMOND	102	208	368	223	309	256	375	446	426	757	586	546	470	592	602	595	598	625	647	798	709	564	601	573	464	495	490	563	530	409	437	56
RBCDOMIN				118	121	118	137	236	698	1268	536	512	427	499	439	442	505	519	494	472	450	498	485	400	351	322	337	1114	379	283	213	40
ROBINSON	246	294	292	381	337	292	433	315	385	654	274	263	241	201	211	164	212	209	267	557	242	698	298	935	304	298	272	353	278	239	182	35
SANDLER					64	29	59	148	179	388	410	321	270	203	156	214	199	161	193	152	134	156	155	169	131	141	121					
SCOAST	107	168	196	129	87	95	111	80	114	203	112	161	116	51	37	149	169	95	106	92	61	194	72	80	59	84	82	76	46	40	66	3
SCOTT			13	1	138	159	164	201	181	234	305	379	246	264	170	201	146	212	182	161	136	129	215	99								
SIDOTI							119	167	71	317	450	458	401	423	456	504	520	412	612	844	540	356	249	216	165	137	116	210	110	53	27	7
STEPHENS	46	45	138	144	296	184	196	141	193	378	182	155	192	154	150	208	226	192	195	285	242	226	296	286	227	209	252	277	181	167	136	21
STERNE		179	78	33	29	104	25	20	60	42	82	105	74	184	174	308	451	253	746	274	289	333	291									
STIFEL	151	135	125	130	90	89	153	288	256	199	236	265	619	414	655	597	561	883	564	609	514	547	459	500	395	442	314	407	362	326	256	41
SUMMCAP	1	7	40	40	21	15	19	34	103	77	76	53	41	36	40	84	74	92	76	91	68	82	66	55	66	51	60	60	62	32	11	2
SUSQUEH												312	190	179	168	137	105	290	208	164	150	130	178	157	155	117	118	126	66	78	70	17
TDSI		5	26	99	123	191	68	45	84	121	108	68	84	144	148	73	126	67	93	87	94	67	43	58	42	61	142	76	68	59	46	9
THEBENCH														104	65	51	118	127	106	81	64	49	57	52	102	59	65	190	176	469	135	23
UNTERBUR						93	145	221	167	238	162	216	113	102	86	251	184	307	120	14												
VANKASPR	2	87	113	95	80	121	138	344	354	343	141	190	92																			
VIRGINIA					54	154	183	145	144	228	220	147	152	198	179	189	215	157	91	62	59											
WEISEL							221	284	586	631	740	270	265	645	211	220	233	67														
WHEAT	154	515	403	422	393	609	744	555	424	617	894	564	541	505	589	418	466	492	429	532	460	544	421	440	482	371	1287	616	479	461	503	68
WMJM	106	51	106	89	102	92	80	114	92	137	152	101	98	81	185	138	197	136	177													
WOLFE																32	45	41	50	40	126	114	118	159	201	290	192	374	429	361	304	68
WOODGUND	47	91	84	107	130	115	128	103	232	222	133	130	131	96	83	74	54	44	61	42	44	48	53	155	36	29	37	39	29	28	42	5

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Table V

No. of Firms

This table contains the yearly number of unique firms covered by each investment bank/broker. The criteria on which these investment banks/ brokers were selected were those that for every year for at least ten consecutive years issued at least 10 recommendations for 10 different firms.

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
ADAMS	53	67	81	99	133	145	157	189	197	152	185	135	141	196																		
ARGUS					1	71	195	92	65	23	299	394	220	430	459	445	273	132	120	121	124	118	121	138	138	133	129	143	126	93	94	13
ATLANEQU												31	51	47	45	52	80	66	66	56	51	64	70	71	61	54	72	77	64	63	37	
AVONDALE									4	39	85	73	86	110	87	115	102	107	95	100	75	61	88	93	24							
BACHE	610	448	416	436	447	554	473	476	554	487	627	334	347	327	151																	
BAKER			91	56	67	61	74	55	68	87	87	99	106	120	138	36																
BARRING	91	64	83	50	67	73	69	57	67	88	68	44	48	45	58	57	58	53	49	63	55	66	68	48	39	47	33	49	38	35	20	
BEAR	190	529	390	427	435	520	691	546	492	915	574	488	538	546	568	230																
BERN	116	146	115	127	120	124	114	61	87	136	131	108	113	123	142	96	182	101	131	123	101	120	101	113	118	121	100	133	102	123	111	29
BLAIR	224	138	147	105	151	159	157	199	118	261	117	154	149	142	162	162	169	160	233	180	179	174	175	166	195	144	151	131	223	143	165	20
BREAN				7	65	46	34	29	41	74	72	96	119	172	111	122	150	116	137	122	87	90	95	65	10	3	2					
BRILEY						11	15	29	34	53	65	56	48	43	59	89	73	77	91	211	145	124	121	118	83							
BTIG																		22	20	22	31	71	133	177	114	149	153	238	228	192	196	28
BUCK			167	140	92	80	83	104	141	172	228	170	158	145	130	145	146	221	76	73	95	132	92	101	131	116	96	16				
BURNS	38	25	53	52	52	76	60	62	61	117	113	90	76	71	87	85	79	88	72	58	75	714	333	347	293	257	267	295	237	209	203	62
CANTORFZ													10	61	59	52	42	52	68	139	75	66	132	94	116	273	91	94	112	126	133	32
CAPELEUR	7	24	24	14	26	58	58	35	39	89	53	22	139	132	125	63	70	56	48	58	65	64	119	66	88	74	106	97	83	75	211	36
CLKA	1	21	60	44	74	55	41	37	59	62	91	59	59	68	69	74	54	61	140	78	43	25	34	48	45	38	24	27	12	27	27	1
CLUSA						58	74	56	96	93	76	109	90	91	116	96	154	166	141	164	80											
CRAIG										32	54	53	52	77	73	86	84	126	194	123	138	112	113	112	117	97	121	129	126	111	132	17
CRUTTEN	22	40	62	80	143	135	73	35	53	82	130	173	160	213	120	162	136	286	187	164	129	134	158	163	143	154	163	178	159	130	226	16
DAVIDSON	65	92	90	99	90	106	103	83	94	124	105	106	101	120	126	144	137	154	149	110	131	117	149	158	157	173	406	222	178	143	132	19
EDWARDS			543	547	378	403	409	417	560	759	323	347	320	306	279																	
FAHN	30	251	109	86	114	129	65	72	70	123	145	174	213	208	244	914	386	305	274	190	232	263	284	174	165	170	222	214	253	197	178	34
FBOSTON	5	857	420	391	514	637	702	905	865	1268	750	698	628	724	714	1043	463	459	432	517	545	533	524	500	443	487	379	438	380	505	158	
FIRSTALB	74	86	81	118	133	102	165	126	104	145	225	232	199	169	178	66																
FRCLAYSC																946	569	450	613	1102	425	447	480	434	401	467	406	432	443	322	338	83
FRIEDMAN						415	280	217	324	409	320	377	368	331	362	341	266	301	218	155	277	197	264	233	550	258	225	220	188	170	174	30

Do Retail Investors need Analysts' Recommendations?

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GABELLCO															278	188	160	136	111	81	97	127	114	80	102	60	25	14			
GARTNER	73	62	77	91	88	131	169	233	166	222	152	116																			
GHUNTER														8	65	41	148	136	194	135	159	159	226	352	147	89	128	105	74	113	29
GKM	43	41	91	89	111	143	105	144	157	197	239	145	200	370	228	196	224	239	237	255	323	84									
GOLDMAN	315	780	405	628	541	615	900	630	554	1160	665	527	587	1125	914	837	788	746	839	772	874	810	858	732	582	716	1211	628	724	492	360	65
HALLUM	34	7				25	28	60	118	135	221	158	195	179	149	199	154	173	140								19	13	20	19	17	4
HILLIARD			57	21	130	117	67	56	60	83	98	45	52	56	62	65	103	56	57	65	64	51	59	63	53	28						
JANNEY	47	195	133	121	89	85	162	159	121	102	92	80	207	99	100	119	214	210	181	203	240	174	181	145	97	71	185	69	63	81	73	6
JEFFEREG		121	60	204	195	182	215	183	226	287	324	375	383	352	410	391	585	474	535	376	401	424	395	387	373	409	394	430	511	471	494	94
JOHNRICE	23	127	85	67	58	36	29	16	69	61	33	122	129	48	57	136	74	53	141	53	46	92	144	50	48	51	33	72	32	16	23	2
JOLSON								6	54	108	139	142	206	190	172	165	174	188	169	182	208	187	187	155	182	138	112	113	137	125	104	25
JPMORGAN		259	267	277	318	334	410	367	979	1087	814	897	748	716	747	798	548	580	514	562	535	516	635	512	538	618	586	628	703	566	535	85
KAUFBRO						45	78	83	92	78	87	89	85	103	72	74	88	60	64	10												
KEEFE		2	16	209	122	184	207	213	201	193	206	187	209	175	270	210	195	174	164	179	224	195	172	158	141	141	123	128	149	162	98	22
LADENBUR														28	27	124	103	99	97	70	93	114	96	109	82	99	67	71	55	60	64	11
LAWRENCE	248	201	161	264	259	272	1346	720	610	819	484	498	509	487	442	387	463	412	443	449	435	427	405	412	453	406	339	265	260	264	242	87
LAZARD			13	11	14	112	78	96	95	82	61	79	87	121	142	170	175	402	184	115												
LEERINK								14	38	92	51	58	71	73	78	128	84	66	69	85	81	94	81	80	66	96	105	105	131	99	86	11
LEGG	207	182	202	194	207	248	197	239	217	440	276	227	239																			
LEHMAN	770	469	813	535	655	547	532	618	637	1107	705	748	625	647	623	402																
LONGBOW												43	58	104	56	86	100	113	99	79	235	90	93	73	74	71	78	60	30	13	4	5
MACQUARI							1	2			6	8	9		31	168	519	326	284	244	246	281	288	248	214	161	140	41	59	59	39	16
MAXIM											33	46	42	50	64	53	68	56	75	107	117	104	100	119	90	106	93	76	92	94	105	18
MCDONALD		207	177	163	171	180	199	221	206	196	181	218	235	235	202	370	210	212	218	211	217	186	792	202	400	206	249	267	237	239	182	43
MCLEOD		25	36	40	56	61	65	33	51	59	69	98	76	63	91	76	73	106	73	118	94	81	88	72	38	54	182	125	89	75	148	18
MERRILL						1397	1371	1185	1114	1639	951	892	870	911	923	1470	1083	869	904	795	852	888	896	846	772	829	813	967	948	967	835	172
MIDEST				79	39	43	65	153	194	286	185	172	223	203	105	132	10															
MIZUSEC																		57	124	61	85	95	125	162	167	156	145	153	171	121	153	39
MKEEGAN	79	166	172	186	172	174	159	134	133	152	129	134	181	184	166	169	130	145	177	38												
MKMPARTN																32	39	58	86	85	78	55	52	56	56	39	56	57	68	52	75	3
MONTSEC	312	329	292	427	409	551	785	546	592	578	827	576	494	464	565	345																
MORGAN	563	387	887	644	828	773	708	645	735	1271	691	561	609	528	578	638	617	827	575	557	592	692	601	655	530	668	506	720	732	624	610	137
NEEDHAM	100	104	152	167	130	145	164	146	209	241	265	253	203	222	263	209	187	172	151	172	167	166	149	127	146	136	166	142	190	141	128	15
NORTHLAN											1	20	15	28	33	41	65	66	65	109	124	103	143	112	74	94	75	124	93	81	78	12
OLMSTEAD		48	42	33	35	57	55	83	96	119	92	76	117	208	123	122	362	212	177	137	148	152	140	170	138	153	126	140	162	143	155	15
OPPEN	245	462	459	434	407	473	470	460	469	747	434	327	345	366	305	12																

Do Retail Investors need Analysts' Recommendations?

Firm	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
PACCREST	41	42	43	53	70	36	176	75	92	85	89	146	83	95	111	103	73	93	94	86	89	96	203	94	52							
PACGROW			9	59	54	57	63	71	90	133	116	132	106	94	74	91	12															
PICKERIN														18	20	53	43	82	81	102	70	88	68	81	61	67	43	53	45	33	32	5
PIPER	236	261	222	187	213	234	357	382	421	383	350	716	336	342	592	370	583	279	284	262	260	238	351	394	290	246	259	639	457	457	393	58
POINT																		26	55	83	84	81	65	97	91	64	122	106	57	56	52	9
RAYMOND	98	150	219	163	239	196	256	323	319	440	386	377	323	406	430	390	441	461	512	586	546	462	499	461	382	413	415	451	452	359	382	56
RBCDOMIN				68	66	72	78	140	616	784	375	405	321	371	364	342	428	436	403	394	390	429	431	347	321	296	304	863	341	248	195	39
ROBINSON	237	200	189	242	245	203	263	223	289	382	218	209	193	164	167	130	165	175	193	447	214	581	260	687	269	262	246	298	265	219	174	35
SANDLER				53	28	51	103	113	170	185	167	177	132	121	136	145	136	147	124	121	124	123	137	104	114	110						
SCOAST	101	116	114	94	70	53	68	56	63	99	80	98	66	37	28	75	69	59	53	58	49	145	65	64	55	67	72	65	39	39	57	3
SCOTT			13	1	134	115	109	130	120	145	178	251	175	192	138	152	120	170	149	138	119	106	189	92								
SIDOTI							107	137	59	232	310	326	282	296	329	335	377	331	480	668	456	298	200	168	132	100	95	133	82	47	18	7
STEPHENS	45	41	73	111	169	126	142	106	147	206	132	125	143	121	122	169	183	161	158	248	221	198	260	252	207	191	225	241	164	144	130	21
STERNE		110	60	30	26	63	21	19	31	25	65	83	54	138	122	193	316	213	487	209	226	272	258									
STIFEL	140	93	92	96	70	75	115	170	144	148	168	188	547	344	484	461	438	703	472	509	444	465	398	405	343	376	278	348	332	303	241	41
SUMMCAP	1	7	34	26	11	10	15	25	56	42	46	37	28	27	28	46	53	81	61	69	58	68	56	49	55	48	49	52	56	31	11	2
SUSQUEH												230	163	159	143	116	82	263	165	133	131	118	155	136	132	104	107	89	63	70	65	17
TDSI		5	24	43	60	95	39	32	48	62	52	39	53	78	72	40	53	47	65	53	63	44	34	44	34	54	100	57	50	47	34	8
THEBENCH														77	55	30	76	87	75	63	56	41	52	43	92	55	62	145	164	387	118	22
UNTERBUR						63	95	160	122	132	109	135	88	78	65	175	147	131	106	13												
VANKASPR	2	60	83	65	53	84	98	202	206	201	104	152	76																			
VIRGINIA					52	112	107	93	87	123	129	82	97	124	117	124	143	114	69	53	52											
WEISEL							187	209	363	430	528	240	237	486	188	185	197	63														
WHEAT	150	261	251	248	246	314	487	420	333	402	550	420	420	414	492	331	370	413	364	451	403	476	382	389	440	333	960	497	415	395	418	68
WMJM	106	45	80	73	70	72	61	84	65	86	102	72	83	71	102	95	132	95	126													
WOLFE																30	26	34	35	28	96	92	101	138	157	253	170	313	372	292	275	68
WOODGUND	34	37	48	50	60	62	72	72	150	97	73	79	69	60	53	44	32	33	33	28	36	37	44	69	30	22	33	28	25	25	34	5

Table VI

No of Analysts Per Firm

This table contains the yearly average number of unique analysts in each investment bank/broker. The criteria on which these investment banks/ brokers were selected were those that for every year for at least ten consecutive years issued at least 10 recommendations for 10 different firms.

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
ADAMS	10	12	11	12	14	18	21	23	25	23	25	22	18	17																		
ARGUS					1	9	14	15	16	5	16	21	21	29	29	28	23	13	14	12	14	15	13	14	14	15	16	18	17	15	16	8
ATLANEQU												8	11	11	11	12	16	17	17	14	14	15	13	18	15	15	17	19	18	15	11	
AVONDALE									3	7	12	12	12	15	14	14	21	21	20	19	12	14	14	12	9							
BACHE	49	62	62	65	66	62	65	62	62	49	48	48	51	44	31																	
BAKER			8	8	9	9	12	10	11	12	11	15	18	23	28	17																
BARRING	8	11	6	6	7	9	8	8	8	8	8	7	7	7	8	7	9	10	10	10	8	10	11	10	8	9	8	7	7	7	6	
BEAR	32	54	66	69	79	91	101	92	98	130	120	111	116	116	124	76																
BERN	16	18	20	22	27	25	27	18	30	35	35	30	32	30	31	29	37	36	40	41	42	38	35	36	35	41	37	38	33	39	40	18
BLAIR	17	20	22	27	26	37	41	41	36	27	23	26	27	24	31	35	30	31	34	36	38	39	35	38	37	38	42	37	43	45	45	17
BREAN				5	11	11	10	10	12	12	12	14	15	17	14	17	17	15	15	19	14	17	14	12	2	1	1					
BRILEY						4	4	3	6	9	10	10	10	11	12	12	10	12	16	20	19	16	18	19	18							
BTIG																		3	5	4	5	8	12	19	19	24	28	27	30	29	28	13
BUCK			11	11	12	10	13	13	14	15	21	17	19	20	20	17	20	17	14	15	19	19	17	19	23	21	20	5				
BURNS	12	12	23	22	23	27	22	25	24	32	29	25	21	19	26	24	21	26	26	27	23	65	56	51	54	58	55	50	48	49	47	18
CANTORFZ												1	7	8	9	6	6	10	15	13	13	18	14	15	16	17	15	20	22	23	12	
CAPELEUR	4	9	8	6	12	17	19	14	17	31	16	8	26	30	31	24	26	28	28	25	32	29	41	36	30	33	36	42	43	35	52	20
CLKA	1	4	5	6	8	9	6	8	9	9	12	8	9	9	9	10	8	10	11	12	10	6	7	7	8	5	7	6	5	4	4	1
CLUSA						7	13	9	14	13	12	13	14	11	13	13	16	25	29	32	28											
CRAIG										6	9	11	9	11	13	15	15	17	20	25	21	18	20	21	19	16	19	21	17	18	18	11
CRUTTEN	4	8	12	13	17	20	15	10	10	19	21	26	27	19	26	35	26	25	29	24	21	20	22	22	25	24	25	25	25	21	37	12
DAVIDSON	6	5	8	7	8	10	13	13	10	11	12	14	13	13	14	17	15	17	16	17	16	16	19	17	19	20	29	27	30	26	24	9
EDWARDS			40	49	53	53	59	62	76	80	62	60	55	59	59																	
FAHN	8	20	13	15	11	15	14	15	16	14	23	27	30	31	33	65	48	49	47	38	41	43	39	41	32	37	44	38	41	46	46	16
FBOSTON	3	68	71	79	94	129	128	155	143	155	120	116	115	108	125	125	91	91	99	97	97	96	95	95	90	88	78	86	81	84	52	
FIRSTALB	12	12	14	25	15	17	20	19	23	17	26	26	20	23	21	11																
FRCLAYSC																67	76	67	82	85	74	74	70	64	63	66	63	56	58	67	63	26

Do Retail Investors need Analysts' Recommendations?

Firm	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
FRIEDMAN						49	47	43	46	46	41	48	53	52	51	47	33	35	37	24	30	32	35	32	42	38	38	32	38	34	35	14
GABELLCO																26	28	22	24	24	22	23	31	31	27	28	14	6	5			
GARTNER	7	9	10	15	16	20	24	39	34	35	29	29																				
GHUNTER															2	8	6	18	16	16	13	12	12	17	19	20	14	14	19	17	20	13
GKM	7	11	17	18	20	20	18	28	30	32	23	20	27	30	32	35	34	37	41	40	51	29										
GOLDMAN	54	68	66	76	92	111	132	126	132	159	99	91	103	110	118	126	113	135	142	105	103	109	111	94	93	100	107	94	93	88	72	32
HALLUM	6	3				7	7	12	20	21	30	28	29	34	24	22	22	24	20								1	1	1	1	1	1
HILLIARD			6	6	8	9	10	11	10	10	10	8	8	7	8	10	10	9	10	12	13	12	12	9	9	8						
JANNEY	11	14	17	19	15	15	22	18	21	14	17	11	17	18	16	18	22	26	24	29	27	29	29	17	13	12	16	12	11	15	12	5
JEFFEREG		5	6	14	22	23	21	22	29	34	42	57	57	57	57	57	60	79	89	74	78	85	81	91	87	92	86	86	90	108	112	47
JOHNRICE	6	9	7	7	8	7	7	5	8	10	7	7	8	8	8	8	12	10	11	10	10	10	9	7	9	9	7	4	4	4	3	2
JOLSON								3	9	11	15	16	23	21	21	22	23	27	27	27	23	24	26	25	24	22	21	21	23	31	30	14
JPMORGAN		50	59	69	68	88	93	81	145	175	167	180	167	155	148	154	124	130	112	101	98	104	106	110	106	99	116	112	133	124	105	46
KAUFBRO						4	8	7	11	12	14	15	14	15	12	10	10	10	9	5												
KEEFE		1	3	5	16	23	31	25	27	21	28	27	30	28	40	37	36	41	39	34	32	37	31	31	28	25	25	24	24	33	25	12
LADENBUR													5	4	14	13	15	14	13	14	18	15	18	12	11	11	11	12	10	13	4	
LAWRENCE	18	30	27	43	50	62	131	118	101	103	109	106	86	93	99	97	94	89	98	91	87	90	78	89	91	76	70	56	54	58	49	22
LAZARD			4	5	8	17	14	14	14	15	15	10	13	17	20	22	22	34	29	20												
LEERINK								2	7	14	12	13	14	14	16	16	16	13	16	11	13	12	15	13	14	18	20	18	20	18	10	
LEGG	15	20	22	21	27	38	35	31	38	44	41	45	41																			
LEHMAN	62	70	79	95	90	92	98	117	115	118	105	108	112	110	111	87																
LONGBOW												3	6	10	7	12	15	16	17	16	18	17	15	13	11	13	11	9	7	4	1	2
MACQUARI								1	2		1	4	3	10	26	67	69	55	49	49	49	49	49	53	39	43	15	15	17	15	6	
MAXIM											6	7	8	7	11	9	10	11	10	12	15	15	11	12	12	13	10	9	13	11	10	8
MCDONALD		20	19	24	28	23	28	28	35	32	27	30	33	37	29	27	30	33	34	34	31	32	46	34	48	42	38	36	33	39	32	15
MCLEOD		12	13	13	15	26	20	18	19	20	17	25	23	22	24	21	24	32	28	32	31	33	35	24	14	20	31	28	28	26	33	9
MERRILL						203	282	269	291	346	253	235	241	240	243	266	231	205	215	207	200	214	202	190	179	182	178	194	189	209	202	82
MIDEST					8	9	9	13	20	24	30	35	29	39	30	26	23	7														
MIZUSEC																		7	12	12	11	12	14	17	20	19	22	22	29	26	30	14
MKEEGAN	9	10	15	18	20	23	21	24	29	22	22	23	24	22	22	25	23	24	27	16												
MKMPARTN																4	5	12	16	13	12	13	14	12	11	11	9	11	10	10	13	2
MONTSEC	26	30	36	50	58	81	89	93	84	74	79	66	74	73	83	70																
MORGAN	49	62	75	88	107	116	121	121	144	249	160	97	92	104	104	100	74	95	95	90	91	98	93	97	88	93	86	104	108	95	110	43
NEEDHAM	9	18	18	21	20	22	23	23	26	31	30	28	27	28	32	28	29	28	24	23	22	23	21	20	21	22	21	25	30	25	26	10

Do Retail Investors need Analysts' Recommendations?

NORTHLAN										1	3	4	4	6	9	8	10	12	15	18	17	23	16	10	11	12	14	13	11	10	6
OLMSTEAD	6	8	9	6	9	16	13	16	17	17	12	15	21	17	18	39	38	33	26	30	36	21	26	20	21	20	19	20	22	19	8
OPPEN	32	45	55	57	70	75	86	76	71	79	53	47	49	47	43	9															
PACCREST	5	6	5	8	12	8	14	12	11	12	14	15	14	17	20	20	18	18	20	17	17	17	16	19	16						
PACGROW		5	10	9	14	12	13	15	15	18	18	22	18	15	18	6															
PICKERIN														1	2	8	6	13	12	13	12	13	11	11	12	9	11	10	7	9	8	3
PIPER	23	31	34	26	33	30	43	43	41	41	41	55	47	45	39	41	35	37	41	36	34	31	45	42	44	45	43	61	64	67	57	29
POINT																		5	6	9	8	9	10	14	13	13	16	13	9	10	9	4
RAYMOND	13	25	29	32	35	35	38	42	49	61	52	50	62	57	65	59	65	69	94	113	86	83	84	60	58	60	54	60	57	57	60	25
RBCDOMIN				18	23	23	21	30	76	82	67	75	63	62	63	57	62	73	89	87	78	89	87	78	74	62	68	73	63	58	61	21
ROBINSON	18	22	22	24	30	28	30	29	35	41	33	30	29	25	20	20	18	22	23	33	31	38	44	45	43	45	40	44	39	45	35	17
SANDLER					6	8	12	13	18	19	23	23	25	23	21	19	22	25	26	24	20	23	21	26	25	22	23					
SCOAST	8	9	12	16	16	6	7	9	7	8	9	10	11	3	4	4	4	5	6	9	9	8	8	8	10	8	9	9	8	13	13	2
SCOTT		5	1	15	14	19	21	18	21	19	24	29	28	24	20	19	25	32	27	25	22	25	20									
SIDOTI							20	30	21	35	50	49	54	55	58	63	59	60	78	85	86	80	49	36	22	22	21	21	19	13	8	5
STEPHENS	8	10	12	14	24	22	25	22	25	24	22	24	24	21	21	28	30	30	32	32	35	34	34	33	31	31	38	29	28	28	25	13
STERNE		4	5	4	5	10	5	3	2	2	9	9	9	17	15	24	29	31	55	51	33	43	48									
STIFEL	7	8	7	10	6	6	13	16	17	17	17	18	53	56	64	66	68	93	89	90	78	76	71	63	55	56	55	51	55	71	56	25
SUMMCAP	1	4	4	3	4	2	4	6	9	10	9	9	6	5	6	10	13	12	11	11	11	12	11	12	10	11	7	11	8	2	1	
SUSQUEH												21	28	30	20	20	14	29	28	25	23	23	22	23	23	20	15	15	12	8	10	5
TDSI		2	8	11	18	24	15	16	17	19	18	14	22	22	22	17	22	22	25	25	28	21	16	17	17	20	23	16	18	16	15	7
THEBENCH														5	7	6	9	12	11	14	11	8	10	8	12	11	12	17	22	23	20	10
UNTERBUR						15	21	31	24	18	13	9	15	13	10	16	19	16	15	8												
VANKASPR	1	8	13	11	18	20	21	31	33	26	18	20	19																			
VIRGINIA						8	9	9	10	12	12	15	11	10	17	19	14	16	17	13	11	10										
WEISEL							21	39	42	45	42	38	37	37	35	39	35	24														
WHEAT	18	26	26	31	31	33	60	59	52	48	44	50	55	60	61	55	51	55	61	66	69	73	75	69	74	72	68	62	60	62	64	36
WMJM	8	7	8	10	9	11	14	15	11	15	14	12	15	12	12	13	12	10	10													
WOLFE																1	1	2	3	3	6	8	11	14	16	25	27	33	38	35	35	21
WOODGUND	17	20	22	23	30	29	30	25	32	32	26	22	20	20	16	17	14	15	17	19	18	19	20	25	17	16	17	17	14	15	21	5

Table VII

Mean Firm Coverage per Analyst

This table contains the yearly average number of firms by each unique analyst in each investment bank/broker. The criteria on which these investment banks/ brokers were selected were those that for every year for at least ten consecutive years issued at least 10 recommendations for 10 different firms.

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
ADAMS	5.30	5.83	7.45	8.50	10.07	8.11	7.90	8.57	8.44	6.65	8.20	6.45	7.83	11.53																		
ARGUS					1.00	7.89	14.64	6.40	4.13	4.60	20.81	20.95	10.90	15.21	16.59	16.36	12.48	10.15	8.57	10.17	9.00	9.33	9.46	10.14	10.07	8.93	8.19	8.11	7.47	6.27	5.88	1.63
ATLANEQU												3.88	5.09	4.27	4.09	4.33	5.00	3.88	3.88	4.00	3.64	4.27	5.38	3.94	4.33	3.67	4.24	4.21	3.61	4.20	3.36	
AVONDALE									1.33	5.86	7.50	6.17	7.33	7.73	6.43	8.21	5.05	5.19	4.80	5.53	6.25	4.36	6.36	7.75	2.67							
BACHE	12.45	7.32	6.82	6.86	6.85	9.06	7.45	8.00	9.40	10.04	13.13	7.04	7.00	7.64	4.87																	
BAKER			11.38	7.63	8.44	6.78	6.33	5.50	6.18	7.33	8.09	6.93	6.22	5.83	5.18	2.12																
BARRING	11.38	6.45	14.00	8.33	9.57	8.67	8.63	7.50	8.63	11.13	8.63	6.29	6.86	6.43	7.25	8.14	6.44	5.40	5.00	6.30	7.13	6.60	6.36	4.80	4.88	5.44	4.13	7.00	5.43	5.00	3.33	
BEAR	5.94	9.94	6.08	6.30	5.58	5.80	6.96	6.11	5.23	7.48	5.03	4.51	4.73	4.76	4.78	3.04																
BERN	7.25	8.11	5.75	6.05	4.56	5.00	4.30	3.39	2.97	3.89	3.74	3.67	3.56	4.10	4.65	3.31	4.92	2.94	3.28	3.02	2.43	3.21	2.89	3.14	3.37	2.95	2.73	3.50	3.12	3.15	2.78	1.61
BLAIR	13.18	6.90	6.73	3.93	5.85	4.38	3.88	4.88	3.33	9.96	5.09	5.96	5.56	5.92	5.45	4.69	5.67	5.16	6.85	5.00	4.74	4.46	5.03	4.37	5.27	3.82	3.60	3.57	5.19	3.20	3.69	1.18
BREAN				1.40	5.91	4.18	3.40	3.00	3.42	6.17	6.25	7.14	8.00	10.29	8.00	7.24	9.18	7.73	9.47	6.42	6.29	5.41	6.79	5.58	5.00	3.00	2.00					
BRILEY						2.75	3.75	9.67	5.67	6.67	6.70	5.90	5.00	4.27	5.08	7.58	7.60	6.50	5.75	10.60	7.63	7.75	6.94	6.26	4.78							
BTIG																		7.33	4.00	5.50	6.20	8.88	11.08	9.42	6.05	6.25	5.46	8.89	7.60	6.62	7.07	2.15
BUCK			15.18	13.27	7.67	8.00	6.46	8.08	10.50	11.53	10.90	10.00	8.37	7.30	6.70	8.53	7.30	13.00	5.57	4.87	5.05	6.95	5.47	5.37	5.70	5.57	4.80	3.20				
BURNS	3.17	2.17	2.43	2.59	2.30	3.00	2.77	2.52	2.58	3.88	4.10	3.60	3.62	3.74	3.35	3.54	3.86	3.62	2.92	2.22	3.26	11.05	6.02	6.80	5.48	4.47	4.85	5.94	5.08	4.31	4.47	3.44
CANTORFZ												10.00	8.71	7.38	5.78	7.00	8.67	6.80	9.87	5.77	5.08	7.56	6.79	7.93	17.31	5.35	6.27	5.70	5.86	5.96	2.67	
CAPELEUR	1.75	2.67	3.25	2.83	2.17	3.88	3.42	2.64	2.65	2.94	3.56	2.75	5.38	4.47	4.03	2.63	2.77	2.00	1.75	2.36	2.13	2.28	3.12	1.94	2.97	2.30	2.97	2.36	2.02	2.20	4.06	1.80
CLKA	1.00	5.25	12.00	7.33	9.50	6.78	7.00	4.63	6.56	7.00	7.58	7.38	6.78	7.56	7.67	7.50	6.75	6.20	12.73	6.50	4.30	4.17	4.86	6.86	5.75	7.60	3.57	4.50	2.40	6.75	6.75	1.00
CLUSA						8.29	5.85	6.22	6.86	7.15	6.50	8.85	6.50	8.27	9.15	7.85	9.75	6.68	5.00	5.22	2.89											
CRAIG										5.33	6.00	4.82	5.89	7.00	5.62	5.87	5.67	7.53	9.80	5.00	6.57	6.22	5.65	5.33	6.21	6.06	6.37	6.19	7.41	6.17	7.33	1.55
CRUTTEN	5.50	5.13	5.58	6.38	8.47	7.10	5.00	3.60	5.40	4.68	6.24	7.12	6.19	11.32	5.27	4.77	5.27	11.76	6.86	6.88	6.29	6.90	7.27	7.50	5.80	6.50	6.52	7.12	6.36	6.19	6.11	1.33
DAVIDSON	10.83	18.80	12.38	14.43	12.88	11.90	8.15	6.46	9.50	11.45	8.83	7.57	8.00	9.46	9.07	8.76	9.20	9.24	9.31	6.47	8.19	7.31	7.84	9.29	8.26	8.70	14.34	8.41	5.97	5.58	5.54	2.11
EDWARDS			15.05	11.45	7.51	8.28	7.14	6.97	7.89	10.61	5.39	5.83	5.91	5.27	4.85																	
FAHN	3.75	12.70	8.46	6.73	10.36	8.60	4.64	4.87	4.50	8.86	6.39	6.44	7.17	6.74	7.67	15.15	8.17	6.39	5.94	5.03	5.68	6.16	7.31	4.29	5.16	4.62	5.05	5.63	6.17	4.30	3.91	2.13
FBOSTON	1.67	13.07	6.07	5.11	5.54	5.11	5.73	6.14	6.29	8.79	6.64	6.16	5.70	7.03	6.01	9.06	5.13	5.07	4.42	5.46	5.84	5.63	5.68	5.33	5.16	6.03	4.94	5.19	4.74	6.04	3.04	

FIRSTALB	6.17	7.33	5.79	5.08	9.00	6.00	8.70	6.68	4.74	8.65	8.92	9.15	9.95	7.57	8.81	6.00																
FRCLAYSC																14.12	7.59	6.76	7.78	13.08	5.80	6.08	6.90	6.86	6.44	7.15	6.59	7.73	7.67	4.84	5.52	3.19
FRIEDMAN						9.08	6.15	5.42	7.43	9.52	8.05	8.08	7.08	6.46	7.33	7.34	8.36	8.89	6.19	6.58	9.30	6.19	7.71	7.44	13.55	6.95	6.13	7.13	5.11	5.12	5.09	2.14
GABELLCO																10.69	6.79	7.32	5.67	4.63	3.68	4.22	4.16	3.74	2.96	3.64	4.29	4.17	2.80			
GARTNER	10.43	7.00	7.70	6.40	5.56	6.75	7.21	6.13	4.97	7.03	5.31	4.03																				
GHUNTER															4.00	8.25	6.83	9.11	8.81	13.44	10.62	14.17	13.33	13.59	20.05	7.70	6.36	9.14	5.53	4.35	5.65	2.23
GKM	6.14	3.82	5.35	5.00	5.60	7.20	5.83	5.14	5.50	6.22	10.52	7.25	7.41	12.50	7.13	5.71	6.68	6.49	5.88	6.40	6.37	2.90										
GOLDMAN	5.83	11.82	6.18	8.28	5.93	5.63	7.02	5.16	4.26	7.99	6.99	5.98	5.84	10.39	8.32	7.11	7.32	5.71	6.75	7.66	8.67	7.74	7.97	8.07	6.49	7.54	11.72	6.74	8.03	5.59	5.04	2.03
HALLUM	5.67	2.33				3.57	4.00	5.42	6.25	6.57	7.73	5.93	6.76	5.65	6.29	9.82	7.23	7.58	7.30								19.00	13.00	20.00	19.00	17.00	4.00
HILLIARD			10.17	3.50	16.25	13.44	6.70	5.27	6.30	8.70	10.10	5.63	6.50	8.00	7.75	6.70	10.50	6.22	5.70	5.50	5.08	4.25	5.00	7.00	5.89	3.50						
JANNEY	4.27	14.36	8.00	6.63	6.07	5.80	7.55	8.94	6.10	7.36	5.59	7.27	12.47	5.50	6.56	6.61	9.77	8.12	7.54	7.17	8.89	6.21	6.34	8.71	7.54	5.92	11.56	5.75	5.73	5.40	6.08	1.20
JEFFEREG		24.20	10.33	15.36	9.45	8.39	10.67	8.77	8.14	8.71	8.10	6.67	6.82	6.25	7.26	6.96	9.82	6.14	6.09	5.24	5.27	5.04	4.91	4.25	4.34	4.55	4.70	5.08	5.71	4.44	4.46	2.02
JOHNRICE	3.83	14.44	13.57	10.00	7.38	5.14	4.14	3.20	8.63	6.10	4.71	18.14	16.50	6.00	7.13	17.00	6.25	5.30	12.82	5.30	4.60	9.20	16.00	7.14	5.33	5.78	4.86	18.00	8.25	4.00	7.67	1.00
JOLSON								2.00	6.44	9.82	9.40	9.06	9.04	9.10	8.29	7.50	7.57	7.04	6.30	6.93	9.13	7.79	7.23	6.24	7.58	6.36	5.33	5.38	6.00	4.06	3.50	1.79
JPMORGAN		5.34	4.63	4.25	4.72	3.88	4.56	4.58	7.17	6.58	5.00	5.13	4.57	4.75	5.10	5.48	4.47	4.53	4.62	5.62	5.49	5.10	6.06	4.75	5.08	6.30	5.09	5.63	5.37	4.61	5.12	1.85
KAUFBRO						11.25	10.25	12.00	8.36	7.08	6.50	6.40	6.29	6.87	6.33	7.40	9.00	6.20	7.11	2.00												
KEEFE		2.00	5.33	46.00	9.06	8.26	8.00	9.00	8.04	9.33	7.61	7.00	7.03	6.32	6.85	5.73	5.56	4.24	4.21	5.32	7.25	5.32	5.55	5.23	5.11	5.64	5.00	5.38	6.38	5.06	4.00	1.83
LADENBUR														5.60	6.75	8.93	7.92	6.67	7.00	5.38	6.64	6.33	6.40	6.11	7.00	9.00	6.09	6.45	4.58	6.00	4.92	2.75
LAWRENCE	13.78	6.90	6.07	6.26	5.30	4.60	11.09	6.58	6.25	8.43	4.59	4.84	6.00	5.33	4.57	4.05	5.07	4.72	4.67	4.98	5.07	4.83	5.22	4.71	5.05	5.46	4.94	4.75	4.83	4.57	4.96	3.95
LAZARD				3.25	2.20	1.75	6.65	5.57	6.86	6.79	5.53	4.13	7.90	6.69	7.12	7.35	7.73	7.95	12.03	6.41	5.75											
LEERINK								7.00	5.86	7.14	4.42	4.54	5.14	5.21	5.57	8.44	5.75	4.25	5.31	5.50	7.36	7.23	6.75	5.53	5.23	7.07	5.83	5.40	7.44	5.05	4.78	1.10
LEGG	13.80	9.30	9.36	9.29	8.00	6.71	5.91	7.90	5.79	10.41	6.76	5.18	5.85																			
LEHMAN	12.45	6.83	10.68	5.73	7.37	6.02	5.61	5.45	5.69	9.86	6.84	7.31	5.78	5.98	5.74	4.66																
LONGBOW												14.33	9.67	11.30	8.57	7.17	6.67	7.06	5.88	5.00	13.50	5.35	6.40	5.62	6.73	5.54	7.09	6.67	4.29	3.25	4.00	2.50
MACQUARI									1.00	1.00		6.00	2.00	3.00	3.10	6.50	7.88	4.86	5.31	5.02	5.06	5.90	5.92	5.20	4.13	4.13	3.40	2.73	4.00	3.47	2.60	2.67
MAXIM											5.50	6.86	5.25	7.14	5.82	5.89	6.80	5.09	7.50	8.92	7.87	7.13	9.09	10.00	7.92	8.23	9.40	8.44	7.15	8.55	10.50	2.25
MCDONALD		10.80	9.42	7.25	6.36	7.91	7.21	7.89	6.00	6.13	6.74	7.43	7.15	6.49	7.00	13.78	7.10	6.45	6.41	6.29	7.03	5.84	17.37	5.94	8.63	5.00	6.61	7.44	7.21	6.26	5.69	2.87
MCLEOD		2.08	3.00	3.31	4.13	2.81	3.45	2.11	2.79	2.95	4.12	4.28	3.30	2.91	4.00	3.76	3.08	3.44	2.71	3.81	3.06	2.48	2.51	3.04	2.71	2.75	6.13	4.46	3.21	2.92	4.48	2.00
MERRILL						6.90	5.16	4.67	4.07	5.26	3.88	3.91	3.72	3.89	3.89	5.74	4.94	4.34	4.27	3.97	4.38	4.27	4.57	4.54	4.45	4.69	4.67	5.05	5.21	4.70	4.22	2.10
MIDEST					9.88	4.33	4.89	5.00	7.85	8.25	9.70	5.43	6.17	5.97	6.80	4.04	5.96	1.43														
MIZUSEC																		8.14	10.50	5.17	7.73	8.00	9.00	9.53	8.40	8.42	6.59	7.23	5.93	4.73	5.13	2.79
MKEEGAN	8.78	16.70	11.67	10.61	8.95	7.87	7.62	5.67	4.93	7.00	5.95	5.83	7.63	8.50	7.55	6.76	5.65	6.04	6.67	2.38												

MKMPARTN														8.00	7.80	4.83	5.38	6.54	6.50	4.23	3.79	4.75	5.09	3.55	6.22	5.18	6.80	5.20	5.77	1.50	
MONTSEC	12.04	11.77	8.33	8.84	7.12	6.98	9.22	6.08	7.24	8.03	11.56	8.95	6.91	6.48	7.05	5.04															
MORGAN	11.49	6.34	12.56	7.66	8.05	6.84	6.02	5.48	5.38	5.98	4.51	5.91	6.73	5.47	5.77	6.65	8.51	8.96	6.21	6.29	6.56	7.34	6.73	6.95	6.16	7.27	6.00	7.08	6.88	6.75	5.86	3.19
NEEDHAM	11.11	6.00	8.94	9.00	7.10	6.86	7.17	6.83	8.65	7.90	9.13	9.36	7.63	8.04	8.31	7.54	6.55	6.21	6.42	7.48	7.59	7.35	7.14	6.35	7.00	6.27	7.90	5.68	6.33	5.64	4.96	1.50
NORTHLAN											1.00	6.67	4.00	7.00	5.50	4.56	8.13	6.60	5.42	7.27	6.89	6.06	6.35	7.38	7.40	8.55	6.33	8.86	7.23	7.36	7.80	2.00
OLMSTEAD		8.00	5.25	3.67	6.17	6.44	3.69	6.54	6.19	7.06	5.65	6.42	7.87	10.57	7.24	6.83	9.72	5.79	5.39	5.27	5.00	4.39	6.67	6.54	6.90	7.43	6.30	7.37	8.10	6.50	8.16	1.88
OPPEN	7.66	10.49	8.51	7.75	5.90	6.48	5.77	6.20	6.79	10.06	8.45	7.09	7.27	8.02	7.19	1.33																
PACCREST	8.20	7.00	8.60	6.88	6.58	4.50	13.36	6.50	8.45	7.08	6.36	10.00	5.93	5.59	5.60	5.20	4.06	5.17	4.70	5.06	5.29	5.82	12.88	4.95	3.25							
PACGROW			1.80	6.00	6.00	4.14	5.58	5.69	6.20	9.13	6.67	7.72	5.23	5.56	5.00	5.17	2.00															
PICKERIN														18.00	10.00	9.75	7.17	6.92	6.75	8.46	6.08	7.38	6.64	7.82	5.17	7.44	3.91	5.50	6.43	3.67	4.13	1.67
PIPER	10.26	8.61	7.00	7.35	6.73	7.97	8.63	9.09	10.76	9.56	8.78	14.53	7.34	7.91	15.74	9.24	16.86	7.68	7.20	7.50	7.94	7.77	7.80	9.55	6.73	5.49	6.21	10.93	7.19	7.03	6.95	2.00
POINT																		5.20	9.17	9.56	10.75	9.22	6.50	7.07	7.08	5.00	7.63	8.23	6.33	5.60	5.78	2.25
RAYMOND	7.54	6.32	7.76	5.50	7.06	5.69	6.97	7.90	6.61	7.56	7.56	7.62	5.45	7.53	6.91	6.76	6.85	6.94	5.67	5.32	6.50	5.65	6.18	7.70	6.60	6.97	7.74	7.67	8.05	6.35	6.38	2.24
RBCDOMIN				3.89	3.09	3.22	4.05	4.87	8.20	10.49	5.78	5.48	5.27	6.15	5.92	6.00	6.90	6.03	4.65	4.60	5.01	4.87	4.99	4.49	4.35	4.79	4.54	11.84	5.48	4.29	3.21	1.86
ROBINSON	13.17	9.55	9.05	10.63	8.57	7.57	9.47	8.28	8.51	10.29	7.09	7.13	6.86	6.84	8.50	6.50	9.22	8.05	8.52	13.88	6.94	15.68	6.00	15.58	6.26	5.82	6.20	6.82	6.79	4.87	4.97	2.06
SANDLER					8.83	3.50	4.33	8.00	6.67	9.47	9.35	7.87	7.28	5.91	6.00	7.26	6.64	5.44	5.69	5.33	6.05	5.39	5.86	5.35	4.20	5.18	4.78					
SCOAST	12.63	13.22	10.17	6.69	4.56	8.83	9.71	6.22	9.00	13.50	9.22	10.00	6.18	12.67	7.00	19.25	17.25	12.60	8.83	6.89	5.56	18.13	8.13	8.00	5.60	8.38	8.00	7.33	4.88	3.00	4.46	1.50
SCOTT			2.60	1.00	8.93	8.64	6.16	6.29	6.83	7.14	9.47	10.58	6.24	6.93	5.79	7.60	6.58	6.84	4.72	5.19	4.84	5.00	7.68	4.60								
SIDOTI							5.40	4.67	2.81	6.74	6.22	6.73	5.26	5.45	5.72	5.41	6.41	5.52	6.21	8.04	5.38	3.80	4.18	4.89	6.05	4.59	4.52	6.76	4.42	3.62	2.25	1.40
STEPHENS	5.63	4.10	6.25	7.93	7.33	5.86	5.76	5.05	6.16	8.92	6.05	5.25	6.00	5.76	5.81	6.04	6.27	5.43	4.97	7.78	6.40	5.94	7.65	7.67	6.71	6.42	5.97	8.34	5.89	5.32	5.24	1.62
STERNE		27.50	12.40	7.50	5.20	7.80	4.20	6.33	16.00	12.50	7.33	9.22	6.11	8.24	8.13	8.25	11.31	6.87	9.51	4.27	6.85	6.47	5.42									
STIFEL	20.00	11.88	13.29	9.90	11.67	12.50	9.00	11.13	9.12	9.06	9.88	10.50	10.49	6.21	7.75	7.06	6.51	7.75	5.31	5.76	5.72	6.32	5.61	6.44	6.31	6.82	5.07	6.94	6.18	4.28	4.30	1.64
SUMMCAP	1.00	1.75	8.50	8.67	3.50	5.00	3.75	4.33	7.44	4.80	5.11	4.33	4.67	4.50	5.60	7.67	5.30	6.23	5.08	6.27	5.27	6.27	4.67	4.55	4.67	4.80	4.73	7.43	5.09	3.88	5.50	2.00
SUSQUEH												11.10	5.96	5.33	7.20	5.80	5.93	9.07	5.93	5.32	5.70	5.13	7.05	6.04	5.74	5.20	7.13	5.93	5.25	8.75	6.50	3.40
TDSI		2.50	3.00	3.91	3.61	4.00	2.60	2.00	2.88	3.26	2.94	3.00	2.45	3.68	3.32	2.35	2.45	2.14	2.60	2.12	2.36	2.10	2.19	2.59	2.00	2.75	4.35	3.69	2.83	2.94	2.27	1.14
THEBENCH														15.40	7.86	5.00	8.56	7.25	6.82	4.57	5.09	5.13	5.20	5.38	7.92	5.00	5.17	8.53	7.45	16.87	5.90	2.20
UNTERBUR						4.73	5.10	5.42	5.17	7.94	8.62	6.90	6.27	6.08	6.50	11.19	7.74	8.25	7.07	1.63												
VANKASPR	2.00	7.75	6.46	5.91	3.17	4.55	4.90	7.00	6.58	8.00	5.83	7.65	4.00																			
VIRGINIA					6.50	12.44	12.33	9.50	7.75	10.33	8.80	7.45	9.70	7.41	6.84	8.86	9.88	6.88	5.38	4.82	5.20											
WEISEL							8.95	5.56	9.33	10.07	12.98	6.32	6.41	13.22	5.40	4.85	5.66	2.63														
WHEAT	8.33	10.73	9.88	8.58	8.52	9.79	8.45	7.25	6.52	8.52	13.02	8.50	7.78	7.00	8.21	6.07	7.37	7.58	6.02	6.85	5.87	6.66	5.13	5.67	6.03	4.64	14.71	8.16	6.97	6.42	6.58	1.89
WMJM	13.25	6.43	10.13	7.50	8.44	6.73	4.43	5.80	6.00	5.80	7.50	6.00	5.53	5.92	8.50	7.31	11.08	9.90	13.00													

WOLFE																30.00	26.00	17.00	11.67	9.33	16.00	11.88	9.36	9.86	10.06	10.36	6.33	9.52	9.82	8.60	7.89	3.24
WOODGUND	2.00	1.95	2.27	2.30	2.13	2.34	2.60	3.24	5.09	3.47	2.88	3.86	3.55	3.20	3.31	2.71	2.36	2.27	1.94	1.53	2.00	1.95	2.25	3.20	1.76	1.38	1.94	1.76	1.79	1.67	1.67	1.00

Table VIII – Average Analyst Recommendation per Investment Bank/Broker

This table contains the yearly mean recommendation of each investment bank/broker. The criteria on which these investment banks/ brokers were selected were those that for every year for at least ten consecutive years issued at least 10 recommendations for 10 different firms.

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
ADAMS	3.85	3.58	4.13	3.91	3.89	3.92	4.06	3.90	3.71	3.83	3.72	3.71	3.76	4.36																		
ARGUS					5.00	4.00	4.23	3.78	3.57	3.59	3.83	3.54	3.67	3.40	3.69	3.46	3.23	3.68	3.68	3.71	3.82	4.27	3.89	3.93	4.15	4.07	3.75	4.00	4.30	3.88	4.04	3.62
ATLANEQU												3.58	3.32	3.36	3.37	3.20	3.15	3.29	3.33	3.24	3.45	3.40	3.25	3.12	3.24	3.39	3.22	3.44	3.49	3.30	3.30	
AVONDALE									4.25	4.29	3.80	4.02	3.76	3.97	4.08	3.92	3.74	3.94	4.02	3.56	3.85	4.23	3.80	3.51	3.75							
BACHE	3.84	4.01	3.87	4.04	4.08	3.99	4.08	4.05	3.40	3.65	3.31	3.11	3.07	3.11	3.09																	
BAKER			3.50	3.59	3.66	3.71	4.07	4.16	4.08	4.02	3.81	3.81	3.97	3.76	3.92	3.36																
BARRING	4.06	4.23	4.22	4.21	4.00	4.12	4.05	4.16	3.97	3.84	3.67	3.54	3.77	3.74	3.90	3.79	3.93	4.15	4.29	4.06	3.94	4.20	4.19	3.88	3.74	4.20	4.12	3.97	4.17	3.67	4.04	
BEAR	3.44	3.53	3.77	3.87	4.08	4.04	4.14	4.08	4.08	3.43	3.20	3.28	3.28	3.27	3.30	3.26																
BERN	3.65	3.85	3.74	3.89	3.66	3.69	3.79	4.02	3.71	3.64	3.56	3.73	3.68	3.08	3.74	3.86	3.65	3.81	3.57	3.53	3.48	3.67	3.98	3.70	3.41	3.82	3.56	3.45	3.97	3.86	3.44	3.90
BLAIR	4.32	4.37	4.28	4.39	4.51	4.44	4.55	4.59	4.25	3.70	3.68	4.05	3.93	3.84	4.00	3.95	4.21	4.05	4.02	4.16	3.88	4.15	3.98	3.80	4.10	4.27	4.09	4.38	4.45	3.82	3.92	3.90
BREAN				4.00	3.82	3.76	3.54	3.78	3.78	3.92	3.89	4.17	4.04	3.94	3.77	3.86	3.84	4.05	3.99	4.06	3.96	4.21	4.13	4.05	4.09	4.50	3.00					
BRILEY						3.69	3.83	3.89	4.18	4.25	3.99	4.00	4.10	4.04	4.05	4.01	3.77	4.06	4.32	3.72	3.43	3.50	3.48	3.52	3.52							
BTIG																3.96	4.00	3.72	4.11	4.16	4.24	3.81	4.11	4.14	4.19	4.22	4.35	3.98	3.85	4.21		
BUCK			3.80	3.54	3.89	4.01	3.94	4.05	3.88	3.81	3.68	3.70	3.76	3.62	3.69	3.36	3.66	4.01	4.03	3.84	3.75	3.81	3.88	3.78	3.84	3.99	3.68	3.50				
BURNS	3.76	3.78	3.08	3.41	3.34	3.19	3.49	3.58	3.37	3.40	3.23	3.26	3.10	3.26	3.32	3.24	3.18	3.26	3.41	3.18	3.17	3.38	3.43	3.38	3.49	3.46	3.37	3.42	3.46	3.38	3.41	3.45
CANTORFZ													4.00	3.64	3.58	3.45	3.19	3.44	3.46	3.40	3.38	3.39	3.54	3.56	3.62	3.70	3.62	3.69	3.82	3.68	3.60	3.59
CAPELEUR	3.71	3.29	2.74	3.38	3.89	3.72	3.59	3.51	3.04	3.21	3.10	4.04	3.24	3.18	3.24	3.27	3.01	3.33	3.27	3.22	3.19	3.23	3.32	3.35	3.24	3.35	3.27	3.31	3.44	3.43	3.36	3.06
CLKA	4.00	3.77	3.50	3.64	3.94	4.09	4.33	4.28	3.71	4.24	3.78	3.81	3.75	3.80	3.90	3.62	3.79	3.80	3.77	3.67	3.52	3.55	3.83	3.56	3.56	3.55	3.70	3.76	3.54	3.74	3.75	3.00
CLUSA						4.22	4.18	4.50	3.93	3.78	3.51	3.63	3.77	3.77	3.88	3.75	3.06	3.56	3.71	3.53	3.21											
CRAIG									4.71	4.29	4.32	4.09	4.32	4.48	3.92	3.96	3.90	3.66	3.46	3.48	3.55	3.50	3.50	3.59	3.54	3.56	3.60	3.59	3.47	3.55	3.29	
CRUTTEN	4.41	4.17	4.44	4.24	4.26	4.09	4.38	4.51	4.08	4.26	4.06	4.00	3.84	3.59	3.43	3.49	3.52	3.63	3.58	3.63	3.65	3.76	3.62	3.63	3.69	3.66	3.60	3.67	3.73	3.59	3.61	3.81
DAVIDSON	4.24	3.49	3.09	3.04	3.05	3.66	3.77	4.01	3.76	3.80	3.55	3.62	3.68	3.65	3.70	3.66	3.55	3.91	3.85	3.69	3.73	3.94	3.99	3.83	3.93	4.05	3.65	3.50	3.68	3.46	3.47	3.26
EDWARDS			3.60	3.50	3.76	3.79	3.70	3.80	3.94	3.46	3.25	3.30	3.34	3.32	3.37																	
FAHN	3.90	3.60	3.68	3.79	3.52	3.62	3.83	3.90	3.76	3.59	3.73	3.85	3.96	3.87	4.03	3.80	3.61	3.87	3.98	3.94	3.78	4.04	4.06	3.89	4.12	4.24	4.14	4.16	4.31	4.00	3.88	4.12
FBOSTON	3.40	3.63	3.60	3.71	3.83	3.81	3.86	3.86	3.70	3.34	3.23	3.27	3.34	3.25	3.37	3.33	3.18	3.44	3.46	3.29	3.37	3.47	3.27	3.34	3.37	3.32	3.31	3.35	3.47	3.32	3.36	
FIRSTALB	3.77	3.67	3.57	3.67	3.58	3.75	4.02	4.12	3.79	3.59	3.59	3.62	3.59	3.67	3.64	3.66																
FRCLAYSC																3.31	3.28	3.39	3.40	3.37	3.36	3.31	3.24	3.14	3.27	3.30	3.26	3.27	3.34	3.21	3.25	3.23
FRIEDMAN						3.99	4.21	4.14	4.06	3.73	3.63	3.68	3.76	3.62	3.56	3.34	3.49	3.69	3.82	3.57	3.89	3.90	4.09	3.85	3.72	3.62	3.64	3.52	3.71	3.53	3.63	3.23
GABELLCO																3.63	3.45	3.52	3.62	3.57	3.51	3.48	3.61	3.57	3.52	3.64	3.45	3.20	3.36			

Do Retail Investors need Analysts' Recommendations?

GARTNER	3.80	4.00	4.10	3.87	4.18	3.83	4.25	4.23	3.87	3.40	3.40	3.51																				
GHUNTER															4.00	3.67	3.34	3.74	3.70	3.68	3.51	3.57	3.63	3.48	3.47	3.63	3.42	3.62	3.53	3.53	3.53	3.21
GKM	4.05	3.87	3.91	3.89	4.03	3.80	4.15	3.99	4.23	4.05	3.72	3.47	3.54	3.28	3.27	3.25	3.22	3.37	3.38	3.34	3.32	3.52										
GOLDMAN	3.65	3.53	3.79	4.03	3.99	3.86	4.18	3.95	3.91	3.54	3.08	3.11	3.09	3.12	3.15	3.08	3.15	3.14	3.14	3.16	3.15	3.22	3.11	3.14	3.17	3.17	3.26	3.29	3.30	3.24	3.29	3.25
HALLUM	3.15	3.43				3.92	3.85	4.24	3.73	3.71	3.30	3.22	3.19	3.25	3.19	3.67	4.22	3.98	4.14								4.00	4.00	4.00	4.00	4.00	4.00
HILLIARD			3.68	4.52	3.86	3.90	4.02	4.16	3.72	3.85	3.47	3.75	3.66	3.81	3.71	3.84	3.78	3.70	4.05	3.76	3.54	3.53	3.56	3.42	3.39	3.75						
JANNEY	4.36	3.60	3.85	3.69	3.85	3.87	4.03	3.86	3.85	3.91	3.70	3.82	3.80	3.59	3.79	3.71	3.83	3.79	3.98	3.87	3.97	4.04	4.07	3.82	3.70	4.18	3.91	3.84	4.23	3.93	4.03	4.33
JEFFEREG		3.28	3.48	3.73	3.76	3.72	3.63	3.67	3.65	3.56	3.41	3.37	3.41	3.43	3.43	3.28	4.08	3.89	3.87	3.68	3.81	4.01	3.89	3.65	3.82	4.00	3.86	3.99	4.28	3.83	3.78	3.93
JOHNRICE	4.43	3.97	3.99	4.25	4.21	4.45	4.26	4.19	4.36	4.15	4.35	4.51	4.45	4.23	4.00	4.31	3.73	4.12	3.80	3.60	3.59	3.68	3.69	3.60	3.83	3.77	3.56	3.66	3.78	3.78	3.64	3.50
JOLSON								4.43	4.01	3.76	3.59	3.81	3.75	3.50	3.58	3.54	3.36	3.52	3.54	3.42	3.53	3.60	3.48	3.35	3.44	3.53	3.47	3.60	3.71	3.58	3.47	3.50
JPMORGAN		4.14	4.04	4.19	4.11	4.09	4.10	4.10	4.17	3.40	3.13	3.14	3.22	3.20	3.29	3.15	3.22	3.32	3.29	3.28	3.33	3.41	3.31	3.24	3.26	3.16	3.18	3.21	3.31	3.14	3.22	3.20
KAUFBRO						3.77	3.95	4.08	3.93	3.58	3.74	3.83	3.80	3.95	3.77	3.95	3.76	3.80	3.82	3.60												
KEEFE		4.00	4.56	3.17	3.59	3.77	3.89	3.82	3.70	3.58	3.25	3.24	3.24	3.35	3.22	3.12	3.18	3.31	3.37	3.33	3.38	3.45	3.34	3.25	3.38	3.48	3.25	3.46	3.54	3.17	3.23	3.09
LADENBUR														4.29	4.35	4.20	4.08	4.26	4.39	4.14	4.20	4.35	4.00	3.63	4.41	4.43	3.86	4.26	4.29	4.33	3.83	3.91
LAWRENCE	3.41	3.48	3.58	3.65	3.69	3.67	3.87	3.91	3.75	3.56	3.25	3.38	3.42	3.41	3.37	3.21	3.32	3.48	3.47	3.41	3.42	3.48	3.35	3.31	3.37	3.48	3.37	3.50	3.52	3.41	3.41	3.38
LAZARD			3.85	4.00	4.71	4.40	4.02	3.76	3.64	3.48	3.67	3.70	3.82	4.11	3.75	3.83	3.92	3.73	3.43	3.38												
LEERINK								3.57	3.96	3.84	3.33	3.44	3.55	3.39	3.65	4.23	3.85	3.97	4.09	4.26	4.18	4.50	4.26	3.77	4.24	4.15	4.19	4.27	4.23	3.94	3.97	3.91
LEGG	3.95	3.99	3.72	3.93	3.97	3.97	4.07	3.85	3.97	3.84	3.61	3.80	3.75																			
LEHMAN	3.73	3.89	3.75	3.95	4.15	4.07	4.14	4.15	3.87	3.26	3.22	3.24	3.23	3.30	3.31	3.25																
LONGBOW												3.09	3.10	3.40	3.27	3.80	3.48	3.60	3.86	3.86	3.42	3.48	3.31	3.23	3.22	3.45	3.47	3.19	3.30	3.57	3.50	3.20
MACQUARI								5.00	4.00			3.33	3.13	3.36	3.56	3.33	3.23	3.39	3.36	3.26	3.27	3.35	3.29	3.19	3.33	3.43	3.44	3.56	3.53	3.45	3.45	3.56
MAXIM											3.92	3.60	3.44	3.56	3.51	3.58	3.34	3.56	3.31	3.65	3.60	3.62	3.65	3.55	3.56	3.63	3.59	3.58	3.83	3.68	3.59	3.72
MCDONALD		3.61	3.71	3.68	3.74	3.69	3.77	3.59	3.55	3.77	3.36	3.60	3.49	3.49	3.58	3.35	3.28	3.46	3.45	3.34	3.37	3.45	3.42	3.32	3.44	3.40	3.38	3.54	3.56	3.36	3.39	3.49
MCLEOD		4.14	3.70	3.73	3.43	3.56	3.55	3.71	3.36	3.60	3.16	3.06	3.04	3.17	3.21	3.21	3.17	3.30	3.32	3.29	3.36	3.45	3.50	3.26	3.18	3.26	3.34	3.20	3.31	3.40	3.50	3.21
MERRILL						3.85	3.92	3.97	3.77	3.67	3.61	3.60	3.60	3.63	3.61	3.46	3.63	3.77	3.73	3.64	3.75	3.79	3.64	3.52	3.73	3.73	3.58	3.78	3.81	3.59	3.70	3.56
MIDEST						3.85	3.65	3.84	3.62	3.39	3.49	3.46	3.63	3.57	3.64	3.60	3.61	3.64	3.40													
MIZUSEC																		3.55	3.54	3.43	3.51	3.52	3.43	3.38	3.29	3.52	3.44	3.48	3.49	3.45	3.45	3.35
MKEEGAN	4.88	4.66	4.25	4.18	4.29	3.76	3.92	3.94	4.04	3.71	3.55	3.78	3.83	3.70	3.88	3.61	3.82	4.01	4.00	3.73												
MKMPARTN																3.44	3.23	3.42	3.46	3.40	3.40	3.39	3.53	3.40	3.28	3.43	3.74	3.48	3.44	3.51	3.56	3.00
MONTSEC	4.27	4.29	4.20	4.31	4.32	4.27	4.24	4.42	4.28	3.85	3.68	3.47	3.67	3.55	3.73	3.64																
MORGAN	4.46	4.53	3.64	3.92	3.99	3.90	3.93	3.87	3.73	3.17	3.08	3.13	3.15	3.21	3.18	3.11	3.12	3.25	3.20	3.17	3.17	3.22	3.20	3.14	3.19	3.22	3.19	3.24	3.22	3.13	3.18	3.15
NEEDHAM	3.68	4.19	4.05	3.85	4.07	3.66	3.99	4.20	3.84	3.80	3.79	3.77	3.65	3.66	3.65	3.63	3.56	3.78	3.62	3.61	3.66	3.75	3.62	3.70	3.72	3.75	3.58	3.69	3.71	3.50	3.48	3.47
NORTHLAN											4.00	3.68	3.59	3.56	3.55	3.47	3.66	3.58	3.62	3.48	3.48	3.57	3.56	3.65	3.57	3.53	3.50	3.54	3.63	3.64	3.54	3.38
OLMSTEAD		3.46	3.56	3.76	3.77	3.64	4.06	4.08	3.71	3.65	3.72	3.78	3.83	3.59	3.49	3.38	3.43	3.74	3.88	3.65	3.85	3.99	3.93	3.59	3.92	4.08	3.83	4.07	4.06	3.72	3.88	4.07

Do Retail Investors need Analysts' Recommendations?

OPPEN	3.86	3.49	3.68	3.79	3.82	3.78	3.93	4.04	3.97	3.36	3.11	3.15	3.26	3.33	3.42	3.25																
PACCREST	4.12	3.98	3.94	4.09	4.08	4.31	4.17	4.19	3.90	3.64	3.62	3.49	3.40	3.36	3.40	3.24	3.40	3.36	3.42	3.48	3.43	3.50	3.45	3.31	3.44							
PACGROW			4.80	4.68	4.47	4.57	4.56	4.57	4.48	3.52	3.68	3.59	4.01	4.09	4.19	4.03	3.33															
PICKERIN														4.17	4.15	4.23	3.90	3.99	3.89	3.96	3.59	3.96	3.72	3.63	3.95	3.93	3.79	3.25	3.96	4.03	4.00	4.20
PIPER	4.43	4.06	4.14	4.13	4.11	4.09	4.20	4.07	3.76	3.65	3.49	3.42	3.35	3.41	3.47	3.32	3.27	3.38	3.40	3.40	3.48	3.50	3.44	3.31	3.46	3.55	3.51	3.50	3.61	3.28	3.32	3.31
POINT																		3.28	3.85	3.61	3.70	3.87	3.83	3.46	3.74	3.70	3.67	3.69	4.29	3.79	3.47	3.67
RAYMOND	4.31	4.02	4.14	4.24	4.23	4.09	4.01	3.97	4.01	3.53	3.58	3.71	3.69	3.65	3.70	3.62	3.46	3.68	3.66	3.51	3.54	3.73	3.63	3.54	3.58	3.71	3.62	3.72	3.76	3.64	3.74	3.66
RBCDOMIN				3.73	3.66	3.53	3.38	3.88	4.13	3.42	3.14	3.30	3.35	3.28	3.40	3.26	3.38	3.50	3.50	3.51	3.40	3.53	3.46	3.35	3.49	3.52	3.42	3.48	3.55	3.38	3.46	3.40
ROBINSON	4.26	4.36	4.33	4.42	4.43	4.45	3.94	4.06	4.01	3.70	3.55	3.69	3.90	3.82	3.74	3.83	4.11	3.77	3.80	3.42	3.45	3.49	3.46	3.56	3.53	3.57	3.46	3.54	3.61	3.45	3.46	3.40
SANDLER					3.52	3.86	3.71	3.64	3.69	3.46	3.13	3.27	3.36	3.28	3.21	2.90	3.20	3.43	3.47	3.42	3.31	3.56	3.49	3.34	3.42	3.56	3.44					
SCOAST	3.64	3.57	3.85	4.05	4.24	4.22	4.08	4.29	4.29	4.20	3.61	4.09	3.84	4.29	4.14	4.01	3.46	3.63	3.79	3.76	3.57	3.44	3.19	3.35	3.46	3.17	3.44	3.33	3.61	3.70	3.67	3.00
SCOTT			4.00	4.00	3.86	3.97	4.11	4.04	3.93	4.00	3.77	3.97	3.87	3.70	3.82	3.79	3.78	4.05	4.01	3.61	3.84	3.96	3.76	3.55								
SIDOTI							4.51	4.07	4.04	4.18	3.94	4.15	4.09	4.01	4.20	4.16	4.12	4.22	4.34	4.18	4.01	4.31	4.16	3.98	4.04	4.20	3.84	4.23	4.25	4.43	3.96	3.00
STEPHENS	4.59	3.47	3.67	3.42	3.91	3.87	3.91	3.98	3.73	3.89	3.92	3.94	3.91	3.88	3.89	3.85	3.96	3.94	4.09	3.99	4.05	4.02	3.93	3.77	3.82	4.11	3.99	3.89	4.23	4.01	4.03	3.90
STERNE		3.41	3.19	4.12	4.41	3.87	3.96	3.65	3.67	3.26	3.33	3.62	3.58	3.34	3.47	3.20	3.12	3.42	3.45	3.30	3.37	3.43	3.49									
STIFEL	3.55	3.73	3.82	3.91	3.79	3.84	3.76	3.63	3.41	3.73	3.47	3.55	3.70	3.65	3.66	3.68	3.62	3.94	3.84	3.78	3.80	3.99	3.94	3.52	3.86	3.97	3.96	4.04	4.18	4.07	4.11	3.78
SUMMCAP	5.00	5.00	4.53	4.10	4.62	4.73	4.42	4.59	4.48	4.22	4.38	4.17	4.39	4.22	3.98	4.15	3.86	4.04	3.74	3.99	3.85	4.37	4.03	3.76	4.00	4.14	4.13	4.43	4.16	4.06	4.45	4.00
SUSQUEH												3.31	3.37	3.32	3.48	3.48	3.32	3.39	3.40	3.27	3.29	3.45	3.36	3.41	3.35	3.37	3.44	3.38	3.59	3.42	3.49	3.24
TDSI			3.40	3.31	3.23	3.59	3.98	3.79	3.58	3.74	3.53	3.43	3.42	3.76	3.44	3.58	3.32	3.57	3.58	3.33	3.39	3.40	3.58	3.50	3.64	3.74	3.73	3.62	3.71	3.73	3.72	3.33
THEBENCH														3.39	3.38	3.25	3.26	3.45	3.43	3.58	3.42	3.69	3.61	3.60	3.63	3.63	3.69	3.62	3.75	3.75	3.61	3.52
UNTERBUR							4.19	4.21	4.17	3.81	3.76	3.70	3.77	4.03	3.98	3.98	3.96	3.52	3.79	3.45	3.36											
VANKASPR	4.50	4.23	4.19	4.41	4.33	4.38	3.93	4.17	3.64	3.74	3.96	3.86	3.85																			
VIRGINIA					3.52	3.62	3.68	3.70	3.42	3.89	3.70	3.54	3.66	3.71	3.57	3.59	3.49	3.47	3.62	3.48	3.46											
WEISEL							4.28	4.15	3.77	3.65	3.24	3.36	3.37	3.42	3.39	3.37	3.43	3.55														
WHEAT	3.97	4.03	3.94	4.04	4.18	4.32	4.25	4.03	3.85	3.58	3.60	3.55	3.69	3.63	3.83	3.47	3.55	3.81	3.86	3.85	3.77	3.78	3.80	3.61	3.81	3.88	3.53	3.16	3.35	3.23	3.28	3.18
WMJM	3.95	3.94	3.72	3.88	4.19	4.25	4.33	4.36	3.99	3.89	3.62	3.74	3.61	3.59	3.34	3.78	3.65	4.13	4.17													
WOLFE																3.38	3.13	3.15	3.24	3.60	3.48	3.37	3.14	3.42	3.52	3.48	3.47	3.60	3.86	3.27	3.50	3.79
WOODGUND	3.74	3.82	4.15	4.30	4.28	3.84	3.91	4.04	3.91	3.56	3.08	3.22	2.98	3.19	3.11	3.27	3.31	3.41	3.48	3.24	2.91	3.21	3.30	3.28	3.22	3.21	3.22	3.36	3.31	3.54	3.60	3.20