“Evaluating the performance of the Motley Fool’s Stock Advisor™”

AUTHORS	Greg Filbeck Alexander Lyon Xin Zhao https://orcid.org/0000-0003-0604-9641

ARTICLE INFO	Greg Filbeck, Alexander Lyon and Xin Zhao (2017). Evaluating the performance of the Motley Fool’s Stock Advisor™. *Investment Management and Financial Innovations*, *14*(3), 280-290. doi:10.21511/imfi.14(3-1).2017.12
DOI	http://dx.doi.org/10.21511/imfi.14(3-1).2017.12
RELEASED ON	Monday, 13 November 2017
RECEIVED ON	Wednesday, 12 July 2017
ACCEPTED ON	Wednesday, 27 September 2017

LICENSE	This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License

JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
16	0	6

© The author(s) 2026. This publication is an open access article.

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10, Sumy, 40022, Ukraine

www.businessperspectives.org

Greg Filbeck (USA), **Alexander Lyon** (USA), **Xin Zhao** (USA)

EVALUATING THE PERFORMANCE OF THE MOTLEY FOOL'S STOCK ADVISOR™

Abstract

Since March 2002, The Motley Fool's founders, David Gardner and Tom Gardner, have published monthly stock recommendations under Motley Fool's premium Stock Advisor service. In this paper, the authors investigate whether analysts' recommendations can add value for investors by examining the performance of portfolios constructed based on Motley Fool's recommendations. They evaluate the announcement effect on share price corresponding to the publication of stock recommendations. Additionally, the researchers examine holding period returns for a portfolio imitating the actions of Stock Advisor. They find portfolios composed of recommendations through Stock Advisor added value initially upon recommendation and across extended holding periods. Additionally, the authors find that the Stock Advisor sample outperforms other sample portfolios on a risk-adjusted basis and over several subperiods. The findings contribute to the literature on the usefulness of analysts' recommendations in adding value to investors' portfolios.

Keywords shareholders wealth, event study, investment strategy

JEL Classification G11, G14

Received on: 12th of July, 2017
Accepted on: 27th of September, 2017

© Greg Filbeck, Alexander Lyon, Xin Zhao, 2017

Greg Filbeck, Samuel P. Black Professor of Finance and Risk Management, Penn State Behrend, USA.

Alexander Lyon, Schreyer's Scholar, Penn State Behrend, USA.

Xin Zhao, Professor of Finance, Penn State Behrend, USA.

This is an Open Access article, distributed under the terms of the Creative Commons Attribution-Non-Commercial 4.0 International license, which permits re-use, distribution, and reproduction, provided the materials aren't used for commercial purposes and the original work is properly cited.

INTRODUCTION

Analyst stock recommendations are exceedingly prevalent and accessible, which is attributable to the progression of the Internet and mobile devices. Searching for stock recommendations on Google generates approximately 151 million results. According to Google Trends (2017), numerous sources remain and are dedicated to providing their input regarding the stock market. Popular online sources for recommendations include Barron's, TheStreet, J. P. Morgan, CNBC, Forbes, and Kiplinger.

One popular investing website is The Motley Fool, which ranks sixth among home/personal finance websites in terms of monthly visits[1]. The Motley Fool provides an extensive range of stock news and analysis on its free website, www.fool.com. Additionally, the website provides premium stock recommendations including its Stock Advisor™ service. Beginning in March 2002, brothers David and Tom Gardner, who founded The Motley Fool, began recommending stocks on a monthly basis. They only propose to sell recommendations for securities that they have previously endorsed. Additionally, each of the two discloses their five favorite stocks each month, which are securities they have previously recommended.

1 http://www.alexa.com/topsites/category/Home/Personal_Finance

In this paper, we evaluate the performance of the proposed excess return-generating strategy of The Motley Fool's Stock Advisor premium service. We benchmark the performance of recommendations of the service using a matched sample of companies based on company size and book-to-market ratio, a matched sample of companies recommended by analysts, as well as the overall market. We find portfolios composed of recommendations through Stock Advisor added value initially and across extended holding periods, compared to the market and matched samples. Additionally, we find that the Stock Advisor sample outperforms other sample portfolios on a risk-adjusted basis over several periods.

1. LITERATURE REVIEW

Investors may rely on stock recommendations to expand their portfolio by adding an active component. Altınkılıç et al. (2016) analyze post-revision drift (PRD) following the revision of stock recommendations by sell-side security analysts. They refer to a sample from 2003 to 2010 that asserts that average PRD is relatively close to zero. They argue that high transaction costs create inefficiencies that attract arbitrage-seeking investors. The presence of high frequency trading has led to investors quickly reacting to recommendations that minimize PRD and arbitrage opportunities.

Barber et al. (2001) examine the ability of investors to profit from security analysts' recommendations. They utilize consensus data from 1985 to 1996 and discover that investors who followed the consensus for recommended securities earned an 18.8 percent return, while stocks with the least favorable outlook earned 5.78 percent. As a reference, investors who maintained a value-weighted market portfolio earned 14.5 percent.

Barber et al. (2003) perform a similar evaluation of sell-side analysts' stock recommendations during 2000 and 2001. Analysts' most favored stocks (strong buys) actually underperformed the least favored stocks (strong sells). According to the authors, the most highly recommended securities underperformed the market by 7.06 percent, while the least favored securities earned an average annualized market-adjusted return of 13.44 percent.

Bolster et al. (2012) evaluate the performance and impact of Jim Cramer, who is the host of CNBC's Mad Money and one of the more well-known security analysts. They collected Jim Cramer's buy and sell recommendations from July 28, 2005, to December 31, 2008, and created a portfolio utilizing a buy and hold strategy with his recommendations. Buy recommendations resulted in an average abnormal return of 0.38 percent on the day Mad Money was broadcasted and 1.88 percent on the day following the buy recommendations. The returns of Cramer's sell recommendations persisted, while his buy recommendations generated negative alpha over time.

Desai, Liana, and Singh (2000) consider the selections recommended by the Wall Street Journal(WSJ)'s "all-star" analysts. These senior analysts earned the all-star title by being top five performers in a respective industry over the previous calendar year. WSJ recommendations possessed abnormal returns of 0.42 percent on the day of publication. Additionally, the holding period abnormal return after 250 days was 4.02 percent, while after 500 days was 6.04 percent, both statistically significant.

In addition to herd-leading analysts present in print and televised media, the presence of analysts has increased on the web. Hirschey, Richardson, and Scholz (2000) explore the advent and increasing popularity of analyst recommendations available on the Internet. The Motley Fool, launched on August 4, 1994, routinely attracted 1.5 million investors to its online investment advice in 1999. They consider the impact of Motley Fool's Rule Breaker Portfolio on pricing and trading volumes. The authors utilize buy announcements for the Rule Breaker Portfolio from between 1994 and 1998. They calculate market-adjusted returns by using the Russell 2000 Index as a benchmark, as the portfolio focuses on small-cap growth stocks. The cumulative average returns of the buy recommendations were 3.72 percent greater than the Russell 2000 index on the day of announcement. Abnormal returns on the day after the announcement indicate quick integration into the security price of the recommendation.

Stephan and Nitzsch (2013) compare the performance of online stock recommendations between a larger population and a subset of more experienced investors within an online community. They evaluate over 60,000 stock recommendations, which include both German and U.S. stocks. The authors use cumulative abnormal returns based on the capital asset pricing model to evaluate performance before and after the publication of a recommendation and find minimal abnormal returns when considering transaction costs.

2. HYPOTHESIS

This paper compares the performance of The Motley Fool's Stock Advisor service with the market and a matched sample. Our primary hypothesis is to test whether security recommendations generate long-term returns in excess of the market. After considering trading costs related to active trading strategies, alpha is typically close to zero or not significant. However, some research suggests positive, statistically significant alpha when considering a shorter time horizon. We anticipate similar results through our research.

The second hypothesis investigates whether buy recommendations from The Motley Fool's Stock Advisor produce longer-term holding period returns in excess of the benchmarks with our null hypothesis that security recommendations from The Motley Fool's Stock Advisor service do not produce statistically significant returns in excess of the S&P 500 and matched samples. We argue that superior analysts can add long-term value to portfolios based on timely responses to recommendations.

3. DATA

We obtain the data for this study from The Motley Fool's Stock Advisor service. Stock Advisor™, a monthly security recommendation service, was introduced in March 2002. Stock Advisor is described as: [An] investment service that helps any level of investor beat the market, no matter how much time or money they have. Inside, Motley Fool co-founders David and Tom Gardner hand you great stocks and the winning investment philosophy that's given their readers massive returns.

Our sample covers the data from January 1, 2002, until December 31, 2016. Since inception, David and Tom have made 360 buy recommendations as of December 16, 2016, and subsequent sell recommendations for 151 of their buy recommendations. Twenty securities are excluded due to unavailability of data, leaving 340 recommendations. Out of the 340 recommendations, 66 stocks are recommended multiple times (e.g., Priceline Group and Netflex have been recommended five and seven times, respectively). To test whether these repeated recommended stocks result in superior returns, we create a Repeated Recommended Stock subsample that comprises of 167 recommendations (66 distinct stocks).

We divide our Stock Advisor sample into six market segments according to each company's two-digit SIC: manufacturing, transportation, communications, electric, gas and sanitary services; wholesale and retail trade; finance, insurance and real estate; services; and other (which includes agriculture, forestry, fishing, mining, construction, and public administration). We also divide the Stock Advisor sample into three subperiods (2002–2006, 2007–

Table 1. Sample description

Samples	Market segment						Total
	Finance, insurance, & real estate	Manufacturing	Wholesale & retail trade	Services	Trans., comm., electric, gas & sanitary services	Other	
Stock Advisor sample	46	109	55	89	30	11	340
Repeated recommended sample	32	36	24	55	15	5	167
Years 2002–2006	22	26	19	30	13	0	110
Years 2007–2011	11	41	16	30	8	8	114
Years 2012–2016	13	42	20	29	9	3	116

Note: Table 1 shows the number of stocks across different market segments and different subperiods for the Motley Fool Stock Advisor sample and subsamples.

2011, and 2012–2016) to test the performance of Stock Advisor sample in different periods.

We report the summary description of the Stock Advisor sample and subsamples in Table 1. About 32 percent of the recommendations (109 out of 340) belong to manufacturing segment, followed by services segment (89.26 percent), wholesale and retail services (55.16 percent) and finance, insurance, and real estate (46.14 percent). In the repeated recommended sample, stocks from services and finance, insurance and real estate segments seem to have higher probability to be recommended again following the initial recommendation. For example, about 32 percent (55 out of 167) and 19 percent (32 out of 167) of the repeated recommendations are from services segment and finance segment, respectively. Both these percentages are higher than their respective percentages in the whole Stock Advisor sample. Comparing different time periods, finance, insurance, and real estate segment were recommended more (22 out of 110 recommendations, 20 percent) in the earliest period (2002–2006) and then its percentage decreased to about 9.6 percent in 2007–2011 and 11.2 percent in 2012–2016 subperiods. This result is not surprising, as the finance, insurance and real estate segment had less favorable outlooks following the financial crisis of 2007–2008.

4. METHODOLOGY AND RESULTS

First, standard event methodology is utilized to produce abnormal returns regarding the announcement of stock recommendations through Motley Fool's Stock Advisor™. To be included in the sample, the recommended firms must meet the following criteria:

1. The sample firms must have return records on the Center for Research on Stock Prices (CRSP) Daily Combined Return File 326 trading days immediately prior to the announcement date.

2. The sample firms must have return records on the CRSP Daily Combined Return File after the announcement date until the next press release date of next survey.

3. The firm must have complete data on Standard and Poor's (S&P) Research Insight®.

A total of 340 buy recommendation announcements are evaluated in the event study. We consider $t = 0$ as the publication of the recommendation newsletter.

We report the share price reaction to the publishing of the newsletter beginning five days prior to the actual event "date". The market model is used to approximate expected returns, and expected returns are estimated during the interval (–5, 5).

Second, we investigate whether long-term effects are present by comparing holding period returns of the Stock Advisor recommendations to the performance of two matched benchmark portfolios and the S&P 500 Index.

Our first matched sample is matched based on market capitalization and book-to-market ratios in the same industry (using the/a two-digit SIC code). In order to identify our match sample, we utilize prior year-end closing price and market capitalization of all stocks with available data from CRSP for each year. We characterize BE/ME ratios as the book value of common equity from Research Insight, divided by the year-end market value of common equity of the prior year. For this study, we eliminate firms with negative book to common equity ratios. Potential selections for matching firms include securities that have not been recommended through Stock Advisor and have obtainable data from CRSP and Research Insight. To determine the most appropriate match for each firm in our Stock Advisor sample, we use Equation 1 to calculate the following matching score (MS) for each recommended stock against the remaining stocks:

$$MS = \left[\frac{X_1^B - X_1^M}{\left(X_1^B + X_1^M\right)/2}\right]^2 + \left[\frac{X_2^B - X_2^M}{\left(X_2^B + X_2^M\right)/2}\right]^2, \quad (1)$$

where X_1 – represents the first matching characteristics: market capitalization; X_2 – represents the second matching characteristics: BE/ME ratio; B – refers to the Best Leader sample; M – refers to the remaining stock universe.

For every stock in Stock Advisor sample, we select the stock in the same industry with the smallest MS. This procedure results in 340 matched stocks based on same industry, similar market capitalization and BE/ME ratios.

To test whether Stock Advisor sample outperforms the stocks recommended by other financial analysts, we create a matched sample based on IBES recommendations. Specifically, we retrieve the recommendations data for all available stocks during our sample period from IBES. The median number of recommendations is four per stock. We eliminate stocks with less than four recommendations and calculate the average percentage of buy recommendations of each stock in each year. We further eliminate stocks with less than 50 percent of average buy recommendations. Of the remaining stocks, we further eliminate stocks that are in the Stock Advisor sample. After applying all filters, the remaining stocks comprise our matching universe of IBES recommended stocks. For every stock in Stock Advisor sample, we select the stock in the same industry with the smallest MS based on market capitalization and BE/ME ratio. We repeat this procedure for each stock and create our IBES matched sample.

Table 2 displays descriptive statistics for the Stock Advisor sample, matched sample, and IBES matched sample. The table displays the similarity between these samples in terms of market capitalization and BE/ME ratio.

We then test the long-run stock performance of the Stock Advisor sample. This Stock Advisor portfolio is formed on the recommendation date and then "held" until the date of the sell recommendation. If a stock is not recommended to sell during our sample period, it is held until the end of our sample period (December 31, 2016). In each monthly newsletter, the portfolio is rebalanced to reflect the inclusion of the newly added recommended companies. We repeat this procedure for each subsequent holding period. We compare raw holding period returns of the Stock Advisor sample to the performance of two matched portfolios and the S&P 500 index using the risk-adjusted performance measures.

Following Filbeck, Gorman and Zhao (2009), we calculate three risk-adjusted performance measures: Sharpe Index, Treynor Index and Jensen's Alpha. In addition, we test the long run performance of the Stock Advisor sample using buy-and-hold abnormal returns (BHARs) and Fama-French 3- and 4-factor models.

The Sharpe Index (1966, 1994) examines excess return per unit of total risk, which is defined as mean monthly difference between the portfolio (market return) and the T-bill return divided by the standard deviation of the monthly return differences. The Sharpe Index provides insight on the risk-adjusted return of investors who are following the recommendations of Stock Advisor, which may not always be as diversified as the overall market.

Table 2. Descriptive statistics for the Stock Advisor sample and matched sample

Variable	Standard		Percentile				
	Mean	deviation	Min	25	50	75	Max
Market capitalization (millions)							
Stock Advisor sample	17,501	48,672	124	1,558	3,787	11,889	534,764
Matched sample	16,623	49,856	128	1,427	3,207	10,854	534,764
IBES matched sample	16,089	48,249	68.78608	1,306	3,017	9,896	534,764
BE/ME ratio							
Stock Advisor sample	5.51	8.15	0.80	2.41	3.84	6.16	114.93
Matched sample	4.34	3.08	0.82	2.23	3.56	5.33	20.44
IBES matched sample	3.96	2.69	0.82	2.08	3.10	4.93	16.74

Note: Table 2 displays descriptive statistics for the Motley Fool Stock Advisor sample and matched samples. We calculate the prior year-end market capitalization and BE/ME ratio of each stock. We characterize market value of common equity (ME) as the prior year share price times the quantity of shares outstanding. We define the BE/ME ratio as the book value of common equity from Research Insight, divided by the year-end market value of common equity of the prior year.

The Treynor (1965) Index measureis more suitable to consider when an investor has a diversified portfolio. Instead of using sample standard deviation of the monthly return differences in the denominator, it uses systematic risk (i.e., portfolio beta as a proxy).

Additionally, we calculate Jensen's (1968) Alpha using Equation 2, which assesses the differential return of a portfolio compared to the expected return from a benchmark index. We compute Jensen's Alpha, α, which is the intercept term in a regression analysis, for the Stock Advisor portfolio (and matched portfolio) against excess market returns:

$$R_{pt} - R_{ft} = \alpha + \beta \cdot \left(R_{mt} - R_{ft}\right) + e_{pt}. \quad (2)$$

A positive (negative) Alpha indicates a positive excess return of the Stock Advisor portfolio relative to the return of the market portfolio.

We also determine long-term abnormal returns by calculating buy-and-hold abnormal returns (BHARS) as outlined by Barber and Lyon (1997). BHARs are computed by subtracting simple buy-and-hold returns on two matched portfolios, respectively, from simple buy-and-hold returns on the Stock Advisor portfolio. According to Barber and Lyon, this analysis eliminates potential bias from summing daily and monthly abnormal returns. In order to test the null hypothesis, which is that BHARs are equal to zero, we calculatethe t-test statistic of the BHARs.

We also test the long-run performance of the Stock Advisor sample using the Fama-French (1993) 3-factor and 4-factor models (Jegadeesh and Titman (1993)). The 3-factor (4-factor) model expands on the capital asset pricing model (CAPM) by adding size and book-to-market factors (size, book-to-market and momentum factors) to the market risk factor in CAPM. Specifically, the 3-factor model (Equation 3) and 4-factor model (Equation 4) are defined as:

$$\begin{aligned} R_{pt} - R_{ft} &= \alpha_i + b \cdot \left(R_{mt} - R_{ft}\right) + \\ &+ s \cdot SMB_t + h \cdot HML_t + e_t, \end{aligned} \quad (3)$$

$$\begin{aligned} R_{pt} - R_{ft} &= \alpha_i + b \cdot (R_{mt} - R_{ft}) + \\ &+ s \cdot SMB_t + h \cdot HML_t + m \cdot UMD_t + e_t, \end{aligned} \quad (4)$$

where R_{pt} – the simple return on the Stock Advisor portfolio; R_{ft} – the return on one-month T-bills; R_{mt} – the return on a value-weighted market index; SMB_t – the return on a value-weighted portfolio of small stocks less the return on a value-weighted portfolio of big stocks; HML_t – the return on a valued-weighted portfolio of high book-to-market stocks less the return on a value-weighted portfolio of low book-to-market stocks; UMD_t – the return on the two prior high return portfolios less the returns on the two prior low return portfolios.

A positive intercept for these regressions, α, indicates that after controlling for the market, size, book-to-market ratio, and momentum factors in returns, the sample firms have higher returns than expected. To determine whether the regression intercepts, α, are significantly different from zero, we report t-statistics.

5. EVENT STUDY RESULTS

The results from the event study for the publication of Stock Advisor security recommendations are shown in Table 3. Using the newsletter publication date as t = 0, we find that the announcement of recommendations through Stock Advisor generates a significant positive market reaction. While there is a negative abnormal return on date –1, which is statistically significant at the 5 percent level, abnormal returns on date 0 and date 1 are 0.64 percent and 0.46 percent, respectively, and statistically significant at the 1 percent level. Moreover, the Stock Advisor portfolio generates statistically significant positive abnormal returns over all evaluated intervals. Specifically, the portfolio produces a cumulative abnormal return of 0.41 percent from dates –1 to 0. Over the interval from dates –5 to 5, the portfolio earns cumulative abnormal returns of 1.51 percent. Both of these interval results are statistically significant at the 1 percent level. Comparing the cumulative abnormal returns (CARs) across different subperiods, the Stock Advisor sample yields a highest CAR of 1.97 percent (statistically significant at the 1 percent level) in years 2007–2011. Over the (–5, 5)

Table 3. Abnormal returns (ARs) and cumulative abnormal returns (CARs) around the event date for the Stock Advisor sample and subsamples

	Stock Advisor sample (n = 340)		Years 2002–2006 (n = 110)		Years 2007–2011 (n = 114)		Years 2012–2016 (n = 116)		Repeated recommended sample (n = 167)	
Panel A. Abnormal returns (%) around event date										
Day	AR	Z-stat	AR	Z-stat	AR	Z-stat	AR	Z-stat	AR	Z-stat
–5	0.23	1.84*	0.30	1.19	0.32	1.56	0.08	0.44	0.22	0.93
–4	0.06	0.42	0.21	0.37	–0.30	–0.72	0.28	1.07	0.12	0.46
–3	–0.03	–0.26	0.07	0.33	0.05	0.12	–0.21	–0.88	–0.20	–1.32
–2	0.13	1.14	–0.12	–0.71	0.47	2.36***	0.02	0.30	0.34	1.80*
–1	–0.22	–2.02**	0.12	0.66	–0.23	–1.54	–0.53	–2.58***	–0.36	–1.86*
0	0.64	5.39***	–0.13	–0.36	0.69	2.92***	1.31	6.69***	0.69	2.98***
1	0.46	3.55***	0.80	3.82***	0.49	1.93**	0.12	0.44	0.28	1.43
2	0.28	1.32*	0.65	1.67*	0.00	–0.05	0.19	0.70	0.25	0.99
3	0.13	1.19	0.00	–0.22	0.31	1.36	0.08	0.90	0.11	1.00
4	–0.12	–1.54	–0.15	–1.28	–0.13	0.00	–0.07	–1.40	–0.32	–1.62
5	–0.04	–1.15	–0.20	–1.86*	0.30	1.12	–0.24	–1.28	0.17	1.07
Panel B. Cumulative abnormal returns (%) around event date										
Interval	CAR	Z-stat	CAR	Z-stat	CAR	Z-stat	CAR	Z-stat	CAR	Z-stat
(–5, –2)	0.39	1.57	0.47	0.60	0.54	1.66*	0.18	0.46	0.48	0.93
(–1, 0)	0.42	2.41***	–0.01	–0.22	0.45	0.99	0.78	2.92***	0.33	0.82
(1, 5)	0.71	1.49	1.09	1.06	0.98	1.82*	0.07	–0.37	0.49	1.20
(–5, 5)	1.52	2.94***	1.54	1.09	1.97	2.73***	1.03	1.25	1.30	1.79*

Notes: Table 3 displays the outcome of the event study for the Motley Fool Stock Advisor sample and sub samples. We examine the reaction of the share price to the release of the recommendations beginning five days prior to the event date by calculating abnormal returns (ARs) and cumulative abnormal returns (CARs). Expected returns are approximated during the interval (–5, 5). ***, **, * indicate statistical significance at 0.01, 0.05 and 0.10 level, respectively.

event window, the repeated recommended stock sample only yields 1.30 percent CAR (statistically significant at the 10 percent level), which is lower than the CARs for the whole Stock Advisor sample. A possible explanation could be that market only reacts to the new information, so a repeated recommendation may not be considered as a surprise to the market and therefore a less announced effect.

Overall, the event study results in Table 3 indicate that the Stock Advisor sample does generate statistically significant abnormal returns around the event dates, which suggests that The Motley Fool, and specifically Stock Advisor, possess a substantial following of investors who value their analysis and react to new recommendations quickly.

6. LONG-TERM EFFECTS

Table 4 reports the monthly raw returns and the results of risk-adjusted performance measures for the Stock Advisor portfolio compared to the S&P 500 index, the matched sample, and the IBES matched sample. Comparing the holding period returns for the Stock Advisor portfolio with those of the S&P 500 index, the Stock Advisor sample produces higher monthly returns than the S&P 500 index over the whole period, and the difference is statistically significant at the 1 percent level. The Stock Advisor sample outperforms the S&P 500 index and both matched samples for both Sharpe and Treynor measures in the whole period. Additionally,

Jensen's alpha for the Stock Advisor sample (statistically significant at the 1 percent level) exceeds Jensen's alpha for the matched sample but has a lower alpha when compared with the IBES matched sampleover the whole period. Overall, the repeated recommended stock sample yields higher raw returns and risk-adjusted measures when compared with their matched samples and S&P 500 index. For example, the repeated recommended stock sample yields a monthly raw return of 1.30 percent, which is higher than the monthly raw returns of 1.13 percent for the whole Stock Advisor sample. It is also higher than the raw monthly returns of both matched samples and the S&P 500 index.

7. FAMA-FRENCH 3-FACTOR AND 4-FACTOR MODEL RESULTS

Table 5 displays the results of the two regressions for four multi-year periods. We only report the regression intercepts for brevity. Our results indicate that after controlling for additional factors covered by the Fama-French models, we do observe statistically significant superior performance (at the 1 percent level) for our Stock Advisor sample for the whole period. By comparing the results of different sub-periods, we only find statistical significant intercepts (at the 10

Table 4. Raw and risk-adjusted returns of the Stock Advisor sample, matched sample and subsamples compared to the S&P 500

Sample	Whole period	Years 2002–2006	Years 2007–2011	Years 2012–2016	Repeated recommended sample
Monthly raw return (%)					
Motley Fool (1)	1.130	1.513	0.614	1.276	1.304
Matched (2)	0.911	0.938	0.568	1.228	0.896
IBES Matched (3)	1.210	1.258	0.943	1.430	1.150
S&P 500 Index (4)	0.484	0.493	–0.050	1.010	0.484
(1) – (2)	0.208	0.529	0.078	0.028	0.382
(1) – (3)	–0.119	0.181	–0.302	–0.226	0.101
(1) – (4)	0.646***	1.020***	0.665**	0.266	0.820***
Sharpe ratio					
Motley Fool (1)	0.195	0.254	0.078	0.335	0.220
Matched (2)	0.138	0.128	0.062	0.313	0.131
IBES Matched (3)	0.195	0.192	0.114	0.389	0.190
S&P 500 Index (4)	0.092	0.083	–0.029	0.336	0.092
Treynor ratio					
Motley Fool (1)	0.902	1.081	0.449	1.151	1.049
Matched (2)	0.635	0.537	0.361	1.057	0.613
IBES Matched (3)	0.898	0.822	0.663	1.272	0.899
S&P 500 Index (4)	0.384	0.300	–0.157	1.005	0.384
Jensen's alpha					
Motley Fool (1)	0.592***	0.953**	0.685**	0.161	0.763***
Matched (2)	0.321*	0.328	0.662**	0.060	0.298
IBES Matched (3)	0.635***	0.676*	1.035***	0.299	0.601***

Notes: Table 4 displays the raw and risk-adjusted returns of the Stock Advisor sample compared to the matched samples and S&P 500. We first calculate the monthly raw returns for the Stock Advisor sample, as well as returns of two matched samples and S&P 500 returns. For each stock in the Stock Advisor sample, we compare its raw returns to the matched samples and S&P 500 over the holding period and use the paired T-test to assess whether returns are significantly different from zero. Then we calculate the three performance measures: Sharpe ratio, Treynor ratio, and Jensen's alpha. ***, **, * indicate statistical significance at 0.01, 0.05 and 0.10 level, respectively.

Table 5. Regression results for Fama-French 3- and 4-factor model for the Stock Advisor sample and subsamples

		Whole period	Years 2002–2006	Years 2007–2011	Years 2012–2016	Repeated recommended stock sample
Panel A. Regression intercept for 3-factor model: $R_{pt} - R_{ft} = \alpha_i + b \cdot \left(R_{mt} - R_{ft}\right) + s \cdot SMB_t + h \cdot HML_t + e_{it}$						
Intercept	Coefficient	0.2817	0.6322	0.2819	0.0254	0.4585
	t-stat	2.06**	1.89*	1.38	0.13	2.62***
Panel B. Regression intercept for 4-factor model: $R_{pt} - R_{ft} = \alpha_i + b \cdot \left(R_{mt} - R_{ft}\right) + s \cdot SMB_t + h \cdot HML_t + m \cdot UMD_t + e_{it}$						
Intercept	Coefficient	0.3204	0.6343	0.2114	0.1490	0.4893
	t-stat	2.44**	1.88*	1.18	0.76	2.82***

Notes: Table 5 displays the regression results of Fama-French 3- and 4-factor models for the Stock Advisor sample and subsamples. The 3-factor (4-factor) model expands on the capital asset pricing model (CAPM) by adding size and book-to-market factors (size, book-to-market and momentum factors) to the market risk factor in CAPM.***, **, * indicate statistical significance at 0.01, 0.05 and 0.10 level, respectively.

percent level) for the first sub-period (2002–2006). Our repeated recommended stock sample yields statistically significant intercepts (at the 1 percent level) for both Fama-French 3- and 4-factor models for the entire time period and for the first subperiod (at the 10 percent level).

8. BUY AND HOLD ABNORMAL RETURNS RESULTS

Table 6 reports the buy and hold abnormal returns (BHARs) for the Stock Advisor sample against two matched samples. We test the null hypothesis that the mean BHARs (i.e., the differences between the buy-and-hold returns of the sample and its matched sample) are equal to zero using a parametric test statistic. The t-stat is calculated as the sample mean $BHAR_{iT}$ divided by the sample standard deviations of abnormal returns for the sample. Buy and hold abnormal returns are calculated for each year from 2002 to 2016 in addition to the four subperiods referenced in the previous analyses. In each case, we have in place the matched samples according to the BHAR technique suggested by Barber and Lyon (1997).

The paired t-test results are reported in Table 6. When compared with the matched sample, over the whole period, BHARs for the Stock Advisor portfolio are equal to 1.258 percent and statistically significant at the 1 percent level. During the subperiod between 2002 and 2006, the Stock Advisor portfolio produces substantial BHARs equal to 3.398 percent, which is also statistically significant at the 1 percent level. Additionally, the Stock Advisor portfolio yields positive BHARs during the period 2007–2011 and 2012–2016, but the results are not statistically significant.

When assessing the single-year performance of the Stock Advisor portfolio, the portfolio yields substantial BHARs during its initial years. In 2002 and 2003, the portfolio produces BHARs of 1.308 percent and 2.544, which are statistically significant at the 10 percent level and 5 percent level, respectively. In 2004, the Stock Advisor portfolio exceeds the matching sample by a notable margin of 10.001 percent, and this figure is statistically significant at the 10 percent level. Beyond the first few years of the sample, the Stock Advisor sample only produces a significant BHAR in 2008, which is statistically significant at the 10 percent level. After 2008, BHARs for the Stock Advisor portfolio are predominantly minimal with negative values

Table 6. Buy and hold abnormal returns (BHARs) for the Stock Advisor sample

Year	BHR of Stock Advisor sample (1)	BHR of matched sample (2)	BHAR: (1) – (2)	t-stat	BHR of IBES matched sample (3)	BHAR: (1) – (3)	t-stat
2002	3.285	1.977	1.308	1.76*	2.490	0.916	1.39
2003	3.761	1.331	2.544	2.53**	2.495	1.412	2.78**
2004	11.186	1.645	10.001	1.78*	3.924	7.594	1.32
2005	1.953	1.430	0.581	0.88	1.644	-0.283	–1.00
2006	4.300	1.660	2.640	1.29	1.483	3.079	1.43
2007	2.809	1.256	1.735	0.84	1.164	1.875	0.94
2008	2.612	1.708	0.904	1.89*	2.141	0.471	0.89
2009	2.426	2.242	0.184	0.45	3.894	–1.681	–1.26
2010	2.058	2.042	0.017	0.04	2.152	–0.186	–0.47
2011	1.339	1.875	–0.540	–1.31	1.742	–0.401	–1.37
2012	1.661	1.599	0.105	0.36	1.713	–0.194	–0.63
2013	1.361	1.587	–0.190	–0.90	1.440	–0.197	–1.06
2014	1.298	1.201	0.097	0.86	1.349	–0.068	–0.57
2015	0.912	1.009	–0.066	–0.69	1.043	–0.103	–1.02
2016	1.106	1.060	0.045	0.70	1.087	0.026	0.39
2002–2006	4.886	1.594	3.398	2.74***	2.412	2.568	2.02*
2007–2011	2.234	1.823	0.444	1.03	2.161	0.060	0.13
2012–2016	1.267	1.286	0.001	0.02	1.309	–0.103	–1.40
2002–2016	2.771	1.567	1.258	2.88***	1.980	0.851	1.84*

Notes: Table 6 reports the buy and hold abnormal returns (BHARs) for the Stock Advisor sample. We test the null hypothesis that the mean BHARs (i.e., the differences between the buy and hold returns of the sample and its matched samples, respectively) are equal to zero using a parametric test statistic. The t-stat is calculated as the sample mean BHARiT divided by the sample standard deviations of abnormal returns for the sample. ***, **, * indicate statistical significance at 0.01, 0.05 and 0.10 level, respectively.

in the years 2011, 2013, and 2015, but these figures are not statistically significant.

We find similar but less statistically significant results when compared with the IBES matched sample. Specifically, the results show that for seven out of fifteen years in our sample period, the Stock Advisor sample produces higher buy-and-hold returns compared to its IBES matched sample. In addition, over the whole sample period, the Stock Advisor sample yields statistically significant (at the 10 percent level) BHARs of 0.851 percent compared to its matched sample. These indicate that in our overall sample period, the Stock Advisor sample outperforms both its matched samples.

Taken together, the Stock Advisor portfolio generates significant BHARs over the whole period, which signifies the exceptional stock-picking ability by the Stock Advisor service. Given that securities in the Stock Advisor sample and matched samples are similar in terms of market capitalization and BE/ME ratio, the service recommended the overachieving stock with relative consistency. This performance is attributable to exceptional performance during the initial sample years of the Stock Advisor service, specifically in 2004. The performance of the sample declined substantially from 2010 to 2016, as indicated by both low and negative BHARs values during this period.

CONCLUSION

In this paper, we have examined the performance of securities recommended through Motley Fool's Stock Advisor service. We find that the Stock Advisor recommendations do statistically outperform the matched samples and S&P 500 index, since the creation of Stock Advisor in 2002 regarding both

short-term and long-term holding periods. Event study results indicate a statistically significant market reaction on the day the recommendation is announced and the subsequent two days, which indicates a favorable reaction by investors to the recommendation. Over a longer holding period, the Stock Advisor portfolio repeatedly outperforms the S&P 500 index and matched samples in terms of monthly raw returns and risk-adjusted measures. Additionally, regression results for Fama-French 3- and 4-factor models reveal statistically significant abnormal returns for the Stock Advisor portfolio over the whole period. The performance of the Stock Advisor portfolio also exceeds the matched samples in generating buy and hold abnormal returns. Although the overall performance of the Stock Advisor portfolio benefits from remarkable recommendation performances between 2002 and 2006, the portfolio still exceeds the benchmarks regarding risk-adjusted measures during the subsequent period between 2007 and 2011. It is evident that investors who follow Stock Advisor's recommendations to build their portfolio outperform the S&P 500 index and the matched samples to an extent over the whole period, although the portfolio benefits from particularly favorable investments during the initial sample years. Additionally, the results indicate that investors react favorably to the release of recommendations through Stock Advisor.

REFERENCES

1. Altinkiliç, O., Hansen, R. S., & Ye L. (2016). Can analysts pick stocks for the long-run? *Journal of Financial Economics, 119*(2), 371-398. https://doi.org/10.1016/j.jfineco.2015.09.004
2. Barber, B., Lehavy, R., McNichols, M., & Trueman, B. (2001). Can investors profit from the prophets? Security analyst recommendations and stock returns. *The Journal of Finance, 56*(2), 531-563. http://dx.doi.org/10.1111/0022-1082.00336
3. Barber, B., Lehavy, R., McNichols, M., & Trueman, B. (2003). Reassessing the returns toanalysts' stock recommendations. *Financial Analysts Journal, 59*(2), 88-96.
4. Barber, B., & Lyon, J. D. (1997). Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. *Journal of Financial Economics, 43*(3), 341-372.
5. Bolster, P., Trahan, E., & Venkateswaran, A. (2012). How mad is mad money? Jim Cramer as astock picker and portfolio manager. *Journal of Investing, 21*(2), 27-39. Retrieved from https://www.cfainstitute.org/learning/products/publications/dig/Pages/dig.v42.n4.68.aspx
6. Desai, H., Liang, B., & Singh, A. K. (2000). Do all-stars shine? Evaluation of analyst recommendations. *Financial Analysts Journal, 56*(3), 20-29.
7. Fama, E., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics, 33*(1), 3-56.
8. Filbeck, G., Gorman, R., & Zhao, X. (2009). The best corporate citizens: Are they good for their shareholders? *Financial Review, 44*(2), 239-262. http://dx.doi.org/0.1111/j.1540-6288.2009.00217.x
9. Google Trends. (2017). Retrieved from https://trends.google.com/trends/explore?date=all&q=stock%20recommendations
10. Hirschey, M., Richardson, V. J., & Scholz, S. (2000). How foolish are internet investors? *Financial Analysts Journal, 56*(1), 62-69.
11. Jegadeesh, N., & Titman, S. (1993). Returns to buying winners and selling losers: Implications for stock market efficiency. *Journal of Finance, 48*(1), 65-91.
12. Jensen, M. (1968). The performance of mutual funds in the period 1945–1964. *Journal of Finance, 23*(2), 389-416.
13. Sharpe, W. (1966). Mutual fund performance. *Journal of Business, 39*(1), 119-138.
14. Sharpe, W. (1994). The Sharpe ratio, 1994. *Journal of Portfolio Management, 21*(1), 49-58.
15. Stephan, P., & von Nitzsch, R. (2013). Do individual investors' stock recommendations in online communities contain investment value? *Financial Markets and Portfolio Management, 27*(2), 149-186. Retrieved from https://link.springer.com/article/10.1007/s11408-013-0208-7
16. Treynor, J. (1965). How to rate management of investment funds. *Harvard Business Review, 43*(1), 63-75.