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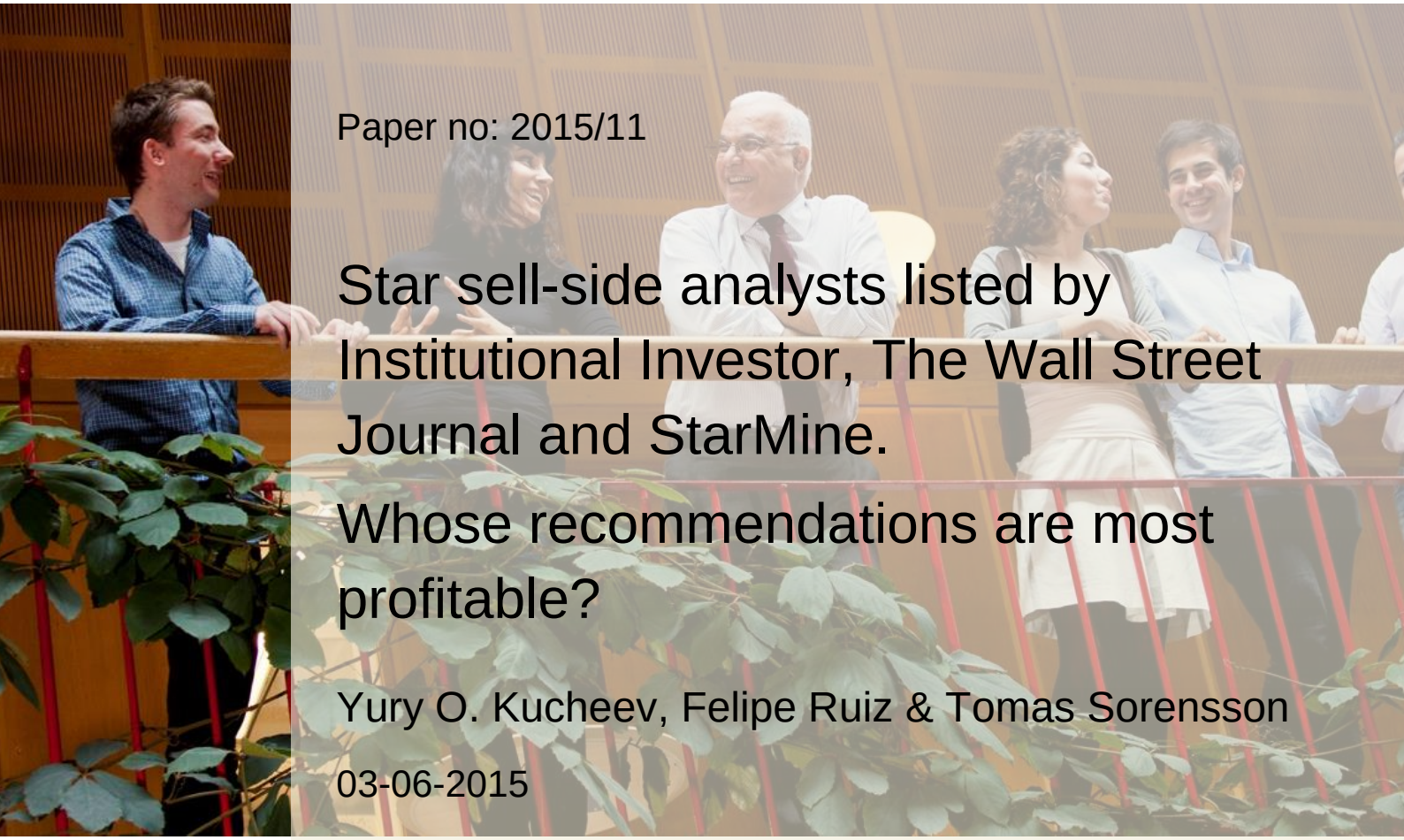

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Yury O. Kucheev[1, 2, 3], Felipe Ruiz[1], Tomas Sorensson[2, 3]

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Abstract: In this study, we compare the profitability of the investment recommendations of analysts listed in four different star rankings: *Institutional Investor* magazine, *StarMine's* "Top Earnings Estimators" and "Top Stock Pickers" and *The Wall Street Journal*. We document that the highest average monthly abnormal return of holding a long-short portfolio, 1.58 percent, is obtained by following the recommendations of the group of star sell-side analysts rated by *The Wall Street Journal* during the period from 2003-2013. The results indicate that the choice of analyst ranking is economically important in making investment decisions.

Keywords: Star analysts; Analyst recommendations; StarMine; Institutional Investor; The Wall Street Journal

JEL Code: G10; G20

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[1]Department of Industrial Management, Business Administration and Statistics, School of Industrial Engineering, Technical University of Madrid (UPM)/Universidad Politécnica de Madrid, c/ José Gutiérrez Abascal, 2, 28006 Madrid, Spain
[2]Department of Industrial Economics and Management, School of Industrial Engineering and Management, KTH-Royal Institute of Technology, SE-100 44 Stockholm, Sweden
[3]Swedish House of Finance, Stockholm School of Economics, Stockholm, Sweden

[2] Corresponding author´s contacts: kucheev@kth.se

1 Introduction

This study analyzes whether investors can profit from the recommendations of ranked security analysts. We further examine whether an investor's choice of a rating "agency" matters. Academic theory and banks do not reach the same conclusions about the value of security analysts. The semi-strong form of market efficiency states that investors should not be able to earn excess returns from trading on publicly available information, such as analysts' recommendations. However, banks and other firms spend large amounts of money on research departments and security analysts, presumably because they and their clients believe that security analysis can generate large abnormal returns. The importance of security analysis and analysts is also manifest in the establishment, in 1998, and growth of *StarMine*, a competitor *to The Wall Street Journal* and *Institutional Investor*'s rankings of analysts. *StarMine* states on their homepage: *"StarMine is the world's largest and most trusted source of objective equity research performance ratings"* (*StarMine*, 2015).

The above observations provide a strong motivation for our study and distinguish our analysis from studies that focus on corporate actions. Studies of dividend policy, share repurchases, stock splits, or firm characteristics such as recent firm performance and actions are not directly tied to how people invest their funds. In our study, we analyze the economic value of security analysis – an activity performed by thousands of professionals in the finance industry with the goal of improving their clients' return performance.

The possibility that there could be profitable investment strategies based on the published recommendations of security analysts is supported by multiple studies (Stickel 1995; Womack 1996; Barber et al. 2001; Boni and Womack 2006; Barber, Lehavy, and Trueman 2010; Loh 2010) that show that favorable (unfavorable) changes in individual analysts' recommendations are accompanied by positive (negative) returns at the time of their announcements. Hence, early work by Womack documents a post-recommendation stock price drift for upgrades that lasts up to one month and for downgrades that lasts up to six months.

Our perspective, however, differs from that of the above-mentioned studies. While the studies cited focus on measuring the average price reaction to changes in individual analysts' recommendations, we compare the profitability of recommendations issued by different groups of analysts. However, we pursue a common goal of providing evidence as to whether, assuming no transaction costs, profitable investment strategies could potentially be based on the use of analysts' recommendations. Specifically, we focus on differences between the rankings of security analysts by *Institutional Investor*, *The Wall Street Journal* and *StarMine* and on the profitability of their recommendations. Using this approach, we can determine whether investors

can earn positive abnormal returns on the investigated strategies and whether differences in profitability are associated with the use of different star rankings. Additionally, we compare star analysts' recommendations with those of non-star analysts.

We use data from the Thomson Financials Institutional Brokers' Estimate System (I/B/E/S) *Detail Recommendations File* for the period from 2002-2013. We manually collected lists of star analysts from *Institutional Investor* magazine (October 2003 – October 2013*), The Wall Street Journal* (May 2003 – April 2013), and *StarMine* (October 2003 – August 2013). The lists of stars are matched with I/B/E/S by analysts' names and broker affiliations. Our final database contains 177,308 recommendations for 5,109 companies listed on the NYSE, AMEX and NASDAQ markets that were announced between January 2002 and December 2013. The hand-collected database enables us to conduct original research by comparing the profitability of *StarMine´*s rankings of analysts with the rankings of *Institutional Investor and The Wall Street Journal*.

Using this database, we measure and compare the investment values of portfolios formed by recommendations of an entire group of star analysts (referred to as Stars), a group of non-star analysts (Non-Stars), and groups of stars as indicated by the different rankings (groups of I/I, TEE, TSP and WSJ). We divide our sample into two time frames, *Year Before* and *Year After*, which correspond to the evaluation year and the one-year period after a particular star ranking is announced, respectively. We only consider firms covered by star analysts during the Year After or Year Before and identify all other analysts who cover the same firms (group of Non-Stars) during the same time period (Year Before or Year After).

In line with Emery and Li (2009) and Fang and Yasuda (2013), we sort analysts according to their star/non-star status and use a well-established buy-and-hold portfolio simulation with a holding period of 30 calendar days to form a "Long" and "Short" portfolio for each group of analysts. The portfolio composition is formed according to the recommendations issued by a particular group of analysts. A Long portfolio includes all Buy and Strong Buy recommendations, while a Short portfolio contains all Hold, Sell and Strong Sell recommendations. Each time an analyst reports that he or she has started covering a firm or changes his or her recommendation for a firm, the firm is included or excluded from the portfolio at the close of the recommendation announcement day (or at the close of the next trading day if the recommendation is issued after the closing of trading or on a non-trading day). Any returns that investors might have earned from prior knowledge of recommendations or from trading the recommended stocks during the recommendation day are not included in the return

calculations. Time series of daily returns were aggregated to monthly returns and used to estimate average risk-adjusted monthly alphas for each portfolio.

For our sample period, we find that the recommendations of star analysts generated higher monthly average excess returns (alphas) (1.40 percent) than recommendations by non-stars (0.89 percent).

Among the entire groups of stars, the best performance was observed for *The Wall Street Journal* with a monthly excess return of 1.58 percent followed by *StarMine*'s "Top Earnings Estimators" with 1.52 percent, and *Institutional Investor* with 1.42 percent. The worst performance was observed for the *StarMine*'s "Top Stock Pickers" stars, with an excess return of 0.99 percent. However, on a detailed level, *Institutional Investor*'s Long portfolio is the number one portfolio, but their Short portfolio is the number three portfolio, which we interpret as suggesting that *Institutional Investor* might focus more on buy recommendations. Comparing the Long portfolios of the top-ranked analysts, we find that the analyst ranked number one by *The Wall Street Journal* had higher returns than the group of Non-Star analysts and that the difference in returns was statistically significant.

Our results show that star analysts who are ranked in terms of the accuracy of their earnings forecasts and the profitability of their recommendations, as in the methodology of *StarMine*'s "Top Earnings Estimators", show more consistent performance from the year of evaluation to the year after than star analysts who are ranked exclusively based on the previous performance of their recommendations (stars listed *by The Wall Street Journal* and *StarMine*'s "Top Stock Picker"). This result reveals that focusing on EPS and recommendations in an evaluation provides higher predictive power in selecting skilled analysts, while considering only the profitability of the previous year's recommendations leads to a large influence of luck.

Our contribution is in the comparison of four different star rankings with a focus on the profitability of investment recommendations using a recent dataset with a unique (hand-collected) list of star analysts. Emery and Li (2009) use the information ratio, which is the t-statistic of the intercept of the regression estimation, rather than a direct performance measure of the profitability of recommendations, as is used here. While Fang and Yasuda (2013) discuss the returns of *Institutional Investor* stars compared with those of all other analysts (Non-Stars) and include in their analysis firms not covered by stars, we only consider firms followed by star analysts in our sample and primarily compare different rankings among these analysts.

In this study, we continue to explore the relationship between reputation/status and the profitability of recommendations by examining various star rankings that utilize different evaluative approaches in selecting analysts. While reputation is based on observable previous

performance, status is based on social recognition (Sorenson 2014). In view of this distinction, we cover three reputation-based rankings (Top Earnings Estimators, Top Stock Pickers and *The Wall Street Journal*) and one status-based ranking (*Institutional Investor*). As status is not necessarily attributed to performance, *Institutional Investor* stars should not necessarily outperform the group of Non-Stars. At the same time, reputation-based rankings reflect previous performance and should reduce uncertainty about future profitability. However, we show that the performance of recommendations by *Institutional Investor* stars does differ from that of Non-Stars in the previous year. For rankings that reflect previous performance and are thus indicative of reputation, it is important to select, as a proxy for reputation, appropriate performance attributes that have reasonable predictive power with respect to the future performance of recommendations.

1.1 Ranking evaluation approaches

An analyst is rated as a "star" based on the quality of his/her previous reports, the accuracy of his/her forecasts and the returns that he/she has generated for his/her clients (Loh and Mian 2006). Ratings of sell-side analysts can mainly be divided into two groups according to the evaluation approach used: (1) rankings based exclusively on the investment value of recommendations, for example, "Best on the Street," issued by *The Wall Street Journal* (WSJ), and "Top Stock Pickers," issued by Thomson Reuters' *StarMine* (TSP); and (2) rankings that use mixed evaluation methods, for example, the survey-based "All-America Research Team," issued by *Institutional Investor* (I/I) magazine, and "Top Earnings Estimators," issued by *StarMine* (TEE).

To select the members of the "All-America Research Team" ranking, *Institutional Investor* (I/I) magazine sends a questionnaire to buy-side investment managers that asks them to evaluate various attributes of sell-side analysts. *Institutional Investor* magazine ranks three analysts in each industry and also provides names of so-called "runners-up" who are promising and could possibly be chosen in subsequent years. This list of stars is published in October and is usually supplemented by 12 attributes that investors view as the most important to possess. Attributes such as industry knowledge and integrity are listed among the most important, while stock selection and earnings estimates are among the lowest-ranked attributes. Thus, the I/I ranking is not primarily focused on stock picking ability but rather covers a wide range of attributes that are perceived to directly or indirectly relate to the ability of an analyst to make profitable recommendations.

Previous research shows mixed results regarding the profitability of recommendations issued by I/I stars. Measuring the investment value of recommendations during the period from 1994-

2009, Fang and Yasuda (2013) show that I/I stars outperformed the group of non-stars, finding Carhart 4-factor monthly alphas of 1.25 percent for Long portfolios and –0.83 percent monthly alphas for Short portfolios of I/I stars compared with 1.09 percent and –0.71 percent for Long and Short portfolios for non-stars, respectively. Using historical data from 1993-2005, Emery and Li (2009) investigate I/I and WSJ ratings. The authors identify the determinants of star status and compare the two rankings on the basis of EPS accuracy and the industry-adjusted performance of investment recommendations in the year before and one year after analysts become stars. Emery and Li (2009) find, for the period from 1993-2005, that after becoming stars, star analysts' forecast accuracy of earnings per share (EPS) does not differ from that of their non-star peers; the recommendations of I/I stars are not statistically better than those of non-stars, while the recommendations of WSJ stars are significantly worse. They conclude that both rankings are largely "Popularity Contests" and do not provide any significant investment value. In contrast, Leone and Wu (2007) investigate the investment value of I/I stars' recommendations issued from 1991 to 2000 and find that star analysts persistently issued profitable recommendations and that this outperformance was due not to luck but to a superior ability to pick stocks.

Since 1993, *The Wall Street Journal* (WSJ) has published a list of "Best on the Street" analysts (before 2000, this ranking was named "All-Star Analysts"), with five analysts ranked in each industry. This ranking is based on the score that an analyst obtained during the previous year, calculated as the sum of one-day returns of recommendations (if an investor would invest one day before a recommendation is announced and realize the return by the end of the recommendation day). Such an evaluation methodology focuses on short-term price forecasts and favors analysts who issue recommendations on days when a price changes the most. At the same time, it penalizes analysts who issue their recommendations before or after such days of sharp price changes. Additionally, to benefit from such recommendations, investors should be able to receive a recommendation one day before it is announced, which could be the case for a limited number of investors with privileged access to analysts' recommendations. Additionally, WSJ's evaluation method is blind to avoiding analysts who announce their recommendations on the same day but after a significant price change has already occurred (Yaros and Imielinski 2013). All of these considerations may generate significant randomness in the selection of analysts into the WSJ star ranking. Emery and Li (2009) find that, after becoming stars, WSJ star analysts issue recommendations that underperform the group of non-stars. They interpret this result as an effect of regression to the mean, as the short-term recommendation performance includes a substantial random component.

Thomson Reuters' *StarMine* "Stock Picking Awards" (TSP) and "Earnings Estimate Awards" (TEE), which include three analysts per industry and are based on a two-step measurement of the previous year's profitability, have been issued annually since 1998. The Coverage-Relative Rating is the first evaluation step for both rankings, while the second step is different for TEE and TSP. The Coverage-Relative Rating is based on the excess returns of a long-only portfolio that is constructed according to all of the recommendations of each analyst and that measures how well an analyst distinguishes among the stocks he/she covers. For the TSP's second step, all of the recommendations for each analyst are evaluated using the long and short buy-and-hold portfolio method adjusted to the market capitalization-weighted portfolio for a given industry. For the TEE's second step, the accuracy and timing of earnings forecasts are evaluated.

Although *StarMine*'*s* rankings appeared much later, they play an essential role in sell-side research by providing an "…influential and an important reference in the industry" (Kim and Zapatero 2011). According to Beyer and Guttman (2011); Ertimur, Mayew, and Stubben (2011), many Wall Street firms use *StarMine* rankings when defining payments to their analysts. Recent work by Kerl and Ohlert (2015) investigates the accuracy of earnings per share forecasts and target prices of *StarMine* analysts compared with their non-star peers one year after the analysts became stars. They find that analysts possess a persistent ability to issue accurate earnings forecasts, as after becoming stars, they continue to issue more accurate earnings forecasts than non-star analysts. Regarding the accuracy of target prices (TP), the authors cannot find any difference between the two groups of analysts. The insignificant difference in TP forecasts could be due to the research methodology: star analysts with "Stock picking awards" and "Earnings estimate awards" are grouped together to compare their accuracy with that of non-stars without splitting the sample of *StarMine*'s stars into Top Stock Pickers and Top Earnings Estimators. However, according to the *StarMine* methodology for determining the "Stock picking awards", analysts are not evaluated on the basis of accuracy of EPS. Thus, it is possible that, even in the year before they receive an award, stars do not outperform non-star peers in terms of the accuracy of their forecasts. Furthermore, Kerl and Ohlert (2015) focus solely on the accuracy of EPS and TP and the factors that influence such accuracy and do not compare the performance of recommendations issued by star analysts with that of non-stars.

2 Data and descriptive statistics

We use four data sources. The Thomson Financials Institutional Brokers' Estimate System (I/B/E/S) *Detail Recommendations File* provides standardized stock recommendations for all of the various brokers' scales by mapping all of the recommendations on a final scale from 1 to 5, where 1 corresponds to "Strong Buy", 2 to "Buy", 3 to "Hold", 4 to "Sell" and 5 to "Strong

Sell". The Center for Research in Security Prices (CRSP) *Daily Stock File* provides daily holding period stock returns, which include dividends, price and cash adjustments. The *Fama-French Factors – Monthly Frequency* database provides monthly returns for the factors of value-weighted market index, size, book-to-market and momentum. We manually collected lists of star analysts from *Institutional Investor* magazine (October 2003 – October 2013), *The Wall Street Journal* (May 2003 – April 2013), and *StarMine* (October 2003 – August 2013). The lists of stars are matched with I/B/E/S by analysts' names and broker affiliations and double-checked for any possible inconsistencies (typos in names, analyst changes of broker in a given year, etc.). Our sample does not include analysts from some brokerage houses, notably Lehman Brothers and Merrill Lynch, as their recommendations are no longer available at I/B/E/S.

To enable a fair comparison of performance in different groups, we limit our sample to firms that are followed by star analysts during a one-year period after a particular list of stars was published or during the previous calendar year (that is, the evaluation year). As a result, our sample contains only firm observations for which there is at least one recommendation by a star analyst during the specified time period, that is, Year Before or Year After.

Our final database contains 177,308 recommendations for 5,109 companies listed on the NYSE, AMEX and NASDAQ markets that were announced between January 2002 and December 2013.

The entire sample of analysts is divided into the following groups:
(1) Stars and Non-Stars;
(2) *Institutional Investor* (I/I), *The Wall Street Journal* (WSJ), and *StarMine* Top Stock Pickers (TSP) and Top Earnings Estimators (TEE);
(3) Analysts ranked as number one (Top-Ranked): WSJ-1, I/I-1, TSP-1, and TEE-1.

When a particular analyst is rated as a star in two different industries, the analyst is included only once in a particular group of Stars. However, the same analyst can appear in more than one ranking group. The similarities between the lists are discussed below and are reported in Table IV.

We compare these groups using two time frames:

1) The *Year Before* is the calendar year before a ranking is announced. For example, the WSJ list of stars is announced in May 2003. Thus, the previous calendar year, from January 2002 through December 2002, is the evaluation year for the WSJ rating. As a result, the whole sample period for Year Before spans from January 2002 until December 2012.

2) The *Year After* is the one-year period that begins on the day that a particular ranking is announced. For example, if the WSJ announcement is on May 12, 2003, the Year After begins on that day and ends on May 12, 2004. Although an entire sample period for Year After spans from May 2003 until December 2013, we begin by comparing groups one month after *StarMine* and I/I have published their lists, that is, from November 2003 (an incomplete month, October, is excluded from the regression analysis). Because the last month is December 2013, we do not cover the whole Year After for groups of stars selected in 2013 due to data availability.

Table I shows the number of firms in the sample, which ranged from 1,829 for 2013 to 2,270 for 2007, and the percentage of firms covered by each group. On average, each group of star analysts covers approximately 50 percent of the firms in the sample (WSJ covers 56 percent, I/I – 44 percent, TEE – 46 percent, TSP – 47 percent). This difference suggests that these groups have different firm coverage (they issue recommendations for different universes of firms).

Insert Table I here

Table II displays the total number of analysts in the sample on an election-year basis. On average, approximately 14 percent of analysts are listed as "stars" every year. The table shows that for every one star analyst, there are approximately six non-star analysts in our sample. Additionally, 14 percent of analysts among the non-stars have been chosen as stars in some other year but not in the year under consideration.

Insert Table II here

As seen in Table III, the group of Star analysts issues on average 27 percent of all recommendations in our sample. Both WSJ and I/I Stars issue more recommendations than TEE and TSP Stars.

Insert Table III here

The average overlap among the ranking lists in each sample year is presented in Table IV. It shows the number of analysts listed by different rankings, the number of the same analysts in each pair of rankings, and the portion of the same analysts in each ranking list. Panel A presents these data for the entire groups of Stars, while Panel B reports the results for the Number-one ranked Stars. The table also presents the percentages of analysts who appear in another ranking. For example, the *Institutional Investor* ranking has, on average, nine percent of analysts out of 191 unique names who were listed as "Top Stock Pickers" by *StarMine* in the same years. As can be observed, Top Stock Pickers and *The Wall Street Journal* exhibit the highest similarity in their published lists, while *Institutional Investor* and *The Wall Street Journal* have the lowest

similarity. Such interdependence is expected given the similarities in the evaluation methods used. It also shows how different the lists of Star analysts are, which might explain the differences in the returns from their recommendations.

Insert Table IV here

3 Results: risk-adjusted portfolio returns.

3.1 Methods

To measure the profitability of the recommendations, we apply a well-established portfolio simulation method. We use a simulation of buy-and-hold "Long" and "Short" portfolios for each sub-group of analysts in the year subsequent to the year in which the rankings were assigned (referred to as Year After) and for the year during which the analysts were evaluated (referred to as Year Before) (Barber et al. 2006; Fang and Yasuda 2013). For each new Strong Buy or Buy recommendation, $1 is invested at the end of the recommendation announcement day (or at the close of the next trading day if the recommendation is issued after the closing of trading or on a non-trading day) into the "Long" portfolio. The stock is held in the portfolio for the following 30 calendar days if there are no recommendation revisions or recommendation changes by the same analyst. If, during the following 30 days, the analyst changes his or her recommendation level from Strong Buy or Buy to Hold or Sell or Strong Sell, then the stock is withdrawn from the "Long" portfolio and placed in the "Short" portfolio by the end of the trading day on which the new recommendation is issued (if the recommendation is issued after the closing of trading or on a non-trading day). If there is a recommendation revision, but the new recommendation is on the same level (that is, Buy or Strong Buy), then the stock is not kept in the same portfolio for an additional 30 calendar days or until the next recommendation change. Thus, re-iterations of recommendations are not included in the portfolio simulation.[2] The same procedures are applied to a "Short" portfolio that includes Hold, Sell, and Strong Sell recommendations. As a result of this strategy, the calendar day t gross return on portfolio p includes from $n=1$ to N_{pt} recommendations and could be defined as:

$$R_{pt} = \frac{\sum_{n=1}^{N_{pt}} X_{n,t-1} R_{i_n,t}}{\sum_{n=1}^{N_{pt}} X_{n,t-1}}, \quad (1)$$

[2] We also performed the portfolio simulation by including re-iterations of recommendations in the portfolio simulation and obtained lower returns, but with results that are qualitatively the same. These results remain unpublished and are available upon request from the authors.

where $X_{n,\,t-1}$ is the cumulative total gross return of stock i_n from the next trading day after a recommendation was added to the portfolio to day *t-1*, which is the previous trading day before *t*, that is:

$$X_{n,t-1} = R_{i_n,recdat_n+1} R_{i_n,recdat_n+2} * \ldots * R_{i_n,recdat_n t-1} \tag{2}$$

Monthly portfolio returns are obtained from a geometric compounding of daily returns. Thus, a raw monthly return of a portfolio *p* is:

$$r_{p\tau} = \left[\prod_{t=1}^{n_\tau} R_{pt} \right] - 1, \tag{3}$$

where n_τ is the number of trading days in month τ.

Monthly excess returns for each group´s "Long" and "Short" portfolios are estimated as an intercept (alpha) that is calculated according to the four-factor model proposed by (Carhart 1997):

$$r_{p\tau} - rf_\tau = \alpha_p + \beta_p (rm_\tau - rf_\tau) + s_p SMB_\tau + h_p HML_\tau + m_p UMD_\tau + \varepsilon_{p\tau}\,, \tag{4}$$

where rm_τ is a monthly market return,

rf_τ is the risk-free rate of return,

SMB_τ is a size factor, that is, the difference between the value-weighted portfolio returns of small and large stocks,

HML_τ is a book-to-market factor, that is, the difference between the value-weighted portfolio returns of high book-to-market and low book-to-market stocks,

UMD_τ is a momentum factor, that is, the difference in the returns of stocks with a positive return momentum and those with a negative return momentum over months τ-*12* and τ-*2*.

The alpha differentials (differences in alphas) are statistically tested using two approaches. Alphas for groups in the same year, that is, Year After or Year Before, are compared using monthly differences in gross returns, which are regressed on four factors according to Equation (2). An intercept from this regression returns the difference in alpha, and a t-test indicates whether this difference is statistically significant. To compare excess returns between Year After with Year Before, the seemingly unrelated estimation is accompanied by a test for significant differences in the intercepts from various regressions (*suest* and *test* procedures in STATA).

3.2 Results and discussion

Table V represents the average monthly excess returns (alphas) for "Stars" and "Non-Stars" during the year after rankings have been published (Panel A), during the evaluation year (Panel

B) and as a comparison of the returns in the Year After with those of the Year Before (Panel C). The first two rows in each Panel of the table show the returns of the Long and Short portfolios, while the third row (Long-Short) presents the total return on all of the recommendations for a particular group, which is the Long minus the Short portfolio returns and that is the return of a strategy where an investor goes long on all Buy and Strong Buy recommendations and short on all Hold, Sell and Strong Sell recommendations.

As we see in Table V, Panel A, the Long-Short portfolio of Stars, with monthly alphas of +1.40 percent, outperformed the Non-Stars, with monthly alphas of +0.86 percent, leading to a statistically significant difference of 54 basis points in abnormal returns for a Long-Short portfolio in the year after rankings were published. As can be expected, during the evaluation year (Panel B in Table V), Stars had even higher recommendation returns, of +2.13 percent, than Non-Stars, with +0.90 percent. When we analyze the differences in returns from the Year Before to the Year After, as reported in Panel C, we conclude that the Stars do not continue to perform on the same level, which is reflected as a significant difference in the returns on their Long-Short portfolios, while the group of Non-Stars had an insignificant difference in the returns on their Long-Short portfolios. Even with a lower result for the Year After the group of stars persistently issues more profitable recommendations than their Non-Star peers, although the Stars show a decrease in their performance in the Year After.

Insert Table V here.

Table VI shows the excess returns from recommendations issued by entire groups of Stars: "I/I", "TSP", "TEE" and "WSJ" in the Year After (Panel A) and Year Before (Panel B) and the difference in returns between the Year After and Year Before (Panel C). In the Year After, the highest average monthly excess returns of the Long-Short portfolios (Long minus Short), +1.58 percent, were exhibited by the WSJ group of Stars, followed by TEE group of Stars with 1.52 percent and by I/I group of Stars with 1.42 percent and the lowest returns, +0.99 percent, were exhibited by the groups of TSP Stars. In the Year Before, the highest return, +3.29 percent, was generated by recommendations issued by analysts who in the next year were listed by the WSJ, and the lowest excess return, +1.38 percent, was generated by recommendations issued by the next year's TEE stars. This result is expected given the evaluation methodologies applied by the WSJ and TEE: while the WSJ is focused on the investment value of recommendations, TEE ranks stock picking ability as one attribute of several attributes in selecting their stars.

As seen in Panel C of Table VI, WSJ and TSP Stars exhibit the strongest decrease in performance after election as a star, this can be explained as regression to the mean. At the same time, the investment value of the recommendations of TEE analysts increases after the rankings

are published. This increase in profitability could be attributable to the influence of the analysts' reputations on stock prices (Fang and Yasuda 2013).

Insert Table VI here.

Table VII shows the average monthly excess returns for the top-ranked analysts (Number-one ranked Analysts) for the Year After election (Panel A) and the Year Before (Panel B) and the difference between the Year After and the Year Before (Panel C). In the Year After election, the highest total return (Long-Short portfolio) was observed for WSJ-1, with +2.93 percent, while the lowest total return, for TSP-1, was only +0.87 percent. The Short portfolio of the top-ranked TSP-1 had a statistically insignificant return (excess return equal to zero). The highest return among the Short portfolios in the Year After was generated by the TEE-1 group, with –1.16 percent, while the lowest return was generated by I/I-1, with 0.12 percent (statistically insignificant). Among Long portfolios in the year after election, the highest excess return was generated by the Long portfolio of the top-ranked WSJ-1 analysts, with +2.15 percent, and the lowest excess return was generated by TEE-1, with 0.80 percent. In the Year Before, WSJ-1, with an average monthly alpha of +3.65 percent, performed better than all of the other groups of top-ranked analysts, while the TEE-1 group had the lowest excess return of +0.91 percent. Comparing returns in the Year After election with the Year Before election in Panel C of Table VII, the TEE-1 group improve the performance after election, while the returns of WJS-1, I/I-1 and TSP-1 decrease, with a significant difference of -2.08 percent between alphas in the Year After and Year Before for the TSP-1 group.

Insert Table VII here.

In Table VIII, we report the alpha differentials obtained by comparing the abnormal returns between groups of Stars in the Year After and Year Before for Long (Panel A and B) and Short (Panel C and D) portfolios. First, we discuss whether each particular group of Stars outperformed the Non-Stars; then we comment on the differences in performance among all of the groups of Star analysts.

Comparing the returns of the Long portfolios of all of the groups of Stars with those of Non-Stars in the Year After (first column in Panel A of Table VIII), we find that the returns of TEE and TSP Stars did not significantly differ from those of the group of Non-Stars, while WSJ and I/I Stars significantly outperformed Non-Stars. However, in the Year Before (Panel B), the results are similar: WSJ, I/I and TSP Stars outperformed Non-Stars, while the returns of TEE Stars do not significantly differ from those of Non-Stars. Similar results are found for the returns of the Number-one ranked Stars: in the Year Before, the WSJ-1 and TSP-1 Stars significantly outperformed the Non-Stars, but the returns of the I/I-1 and TEE-1 Stars were not significantly

different from those of Non-Stars, while in the Year After, only WSJ-1 Stars had significantly higher returns than Non-Stars, but I/I-1 Stars exhibited a difference in returns that was significant at the 10 percent level.

The difference in the returns of the Long portfolios among the entire groups of Star analysts shows that, while WSJ Stars significantly outperformed I/I, TEE, and TSP Stars in the Year Before (Panel B), the differences in returns among all of the groups in the Year After are insignificant. Different results are observed among the Long portfolios of the Number-one ranked Stars. Number-one WSJ-1 Stars had insignificant difference with I/I-1 Stars but they significantly outperformed Number-one ranked TEE-1 and TSP-1 Stars. In the Year Before (Panel B), there were statistically significant differences in returns among Number-one ranked Stars (except of the returns for the group of I/I-1 being not significantly different from those of the TEE-1). This result confirms the assumption that in most cases there is the regression to the mean which explains why in the Year Before the differences in returns were mostly statistically significant while in the Year After most of the groups of Stars perform insignificantly different from each other.

Analyzing Panels C and D of Table VIII for the Short portfolios, we find that the differences between the excess returns of all of the groups of Stars and those of Non-Stars were insignificant in the Year After, except for WSJ Stars and Number-one ranked TEE-1 Stars. In the Year Before, WSJ Stars, TEE Stars, and TSP Stars significantly outperformed the group of Non-Stars. However, the differences in returns among most of the Short portfolios in the Year After are insignificant, except of WSJ and TEE-1 being significantly better than some other groups of Stars. We interpret this result to reflect less priority being given to sell recommendations by analysts and a limited possibility for investors to incorporate sell and strong sell recommendations into their portfolios.

Insert Table VIII here.

Figure 1 shows a comparison of frequency of months when a particular sub-group appears to be the best group compared with other sub-groups within the same comparison pool. For example, using raw monthly returns, Stars are compared with Non-Stars: the number of months when Stars outperformed Non-Stars is divided by the total number of months in the sample period. These results are in line with the abnormal returns analyzed above. We observe that, for 57 percent of the months in our sample period, the total group of Stars outperformed the Non-Stars. In the pool with the entire groups of Stars, I/I and TSP Stars had the highest number of months when their Long portfolios outperformed the Long portfolios of the other Star groups. While the Short portfolio of the TEE Stars had the highest frequency, the lowest frequency was

found for the TSP Short portfolio. For top-ranked analysts, the Long portfolios of the I/I-1 and WSJ-1 analysts exhibited the highest frequency, while TSP and TEE exhibited the lowest. However, the Short portfolios of TEE-1 and WSJ-1 showed the highest frequency of months, 30 percent and 26 percent, leaving I/I-1 and TSP-1 behind.

Insert Figure 1 here.

According to the results obtained by comparing the portfolio returns and analyzing the frequency of months in which particular groups outperformed the others, Star analysts listed as "Top Earnings Estimators" by *StarMine* (TEE) outperformed all of the other groups of Stars as well as their Non-Star peers. The "Top Stock Pickers" (TSP) appear to perform the worst, which suggests that this ranking has the lowest predictive power for the future profitability of recommendations. This result might be explained by regression to the mean, whereby the previous year's best performers should exhibit results that are closer to the average in subsequent years. However, we observed significantly positive returns for WSJ and WSJ-1 Stars, which outperformed Non-Stars in the year after selection, even though there is a decline in performance compared with the evaluation year. In contrast, the returns for I/I and TEE Stars in the Year After insignificantly differ from those of the Year Before.

An additional point to consider concerns differences in what particular rating methodologies measure: reputation or status. According to Sorenson (2014), reputation is based on previous visible performance, while status is attributed more to social recognition and is not necessarily associated with high quality performance. In terms of this distinction, Top Earnings Estimators, Top Stock Pickers and *The Wall Street Journal* provide *Reputation*-based rankings, which indeed reflect the past performance of analysts. Consistent with this theory, these rankings should not be considered "popularity contests," as concluded by Emery and Li (2009). Rather, they reflect strong performance in the past, which may (or may not) be a good proxy for future performance. Another question is how strong is the predictive power of these rankings? In our study, we show that the WSJ and TSP ratings do reflect strong performance in the past; however, TSP has not the same high predictive power for the future, and TEE is the only rating with a better performance the Year After than the Year Before.

At the same time, the ranking by *Institutional Investor* magazine is based on a survey, which clearly measures recognition rather than pure performance. Thus, this ranking reflects the *Status* of selected analysts and might not be directly related to strong performance. This view is consistent with the fact that analysts listed by I/I usually work in large, high-status banks (Emery and Li, 2009). But, our study shows that analysts' performance in the year preceding election to the I/I star ranking does differ from that of the group of Non-Stars, while after the list of I/I Stars

is published, the profitability from returns decreases slightly. We interpret this fact as it is difficult to be ranked as a Star without performing better than Non-Stars in the Year Before.

3.3 Robustness test

Our principal analysis controls for differences in the performance of star rankings by different ratings. In this we employ a method used by other researchers (Barber et al., 2006; Fang and Yasuda, 2013) holding the stocks for 30 calendar days in the portfolio. In this section we report results from holding the stocks for other time periods, 45 days, 60 days, 90 days, and 180 days.

The results are displayed in Figure 2. The level of alphas decreases when the holding period increases, which is in line with the findings of Womack (1996). The Stars are always better than Non-Stars no matter what the time periods are. The most interesting result is that WSJ Stars are only performing the best for the 30 holding period. TEE Stars are the best for all other holding periods. Even if TEE Stars are performing best for the 45-180-day holding periods, WSJ Stars are among the best analysts for all periods. We explain the results by the fact that TEE Stars are also considering earnings and not only try to find the stocks with the best short term performance.

Insert Figure 2 here

4 Conclusion

The goal of this study was to determine whether star rankings can be employed an indicator of the future profitability of analysts' recommendations. By using a unique database for the period from 2003-2013, we find that sell-side analysts indeed issue profitable recommendations. This conclusion is supported by the previous research of Mikhail, Walther, and Willis (2004), who find that sell-side analysts are consistent in issuing profitable recommendations. In our study, we found that the entire group of Star analysts shows persistency in the performance of their recommendations. However, the complex approach utilized to determine the "Top Earnings Estimators" in forming rankings leads to substantially higher predictive power than is observed for "Top Stock Pickers" rankings based exclusively on recommendations. We also found that the *Institutional Investor*'s Stars outperform Non-Stars by 46 basis points for Long portfolios, but *The Wall Street Journal* Number-one ranked Stars had the highest returns on Long and Long-Short portfolios, which might be explained by the influence these top-ranked analysts have on the market in affecting stock prices through their recommendations.

Specifically, our findings can be summarized as follows:

- The abnormal returns of Star recommendations are higher than those of Non-Stars for both Long and Short portfolios after star rankings are issued as well as during the evaluation year.

Additionally, Stars outperform Non-Stars as measured by the frequency of months in which they have higher raw returns.

- Each "Long" portfolio of Star analysts (WSJ, I/I, TEE, and TSP) performed better than the "Long" portfolio of Non-Stars. However, the "Short" portfolios of TSP had lower alphas. All four overall portfolios (Long-Short) of the Stars perform better than the Long-Short portfolio of Non-Stars.
- The "Long" portfolios of analysts ranked exclusively by the performance of their recommendations (WSJ and TSP) had bigger drops in alphas than those of the TEE and I/I Stars in the subsequent year.
- The WSJ and TSP have the highest percentages of the same analysts appearing in both rankings in the same year (with an average of 31 percent of analysts), while the WSJ and I/I have the lowest percentages of interdependence (9 percent on average). Similar results are observed for Number-one ranked Analysts among the four investigated groups.
- The performance of the WSJ, I/I, and TSP analysts declines in the year following election as a star, while TEE analysts show an increase in the investment value of their recommendations.
- For investors not wanting to trade every month TEE analysts are the best to work with.

Thus, there is strong evidence that star rankings that employ a mixed evaluation approach can identify analysts who have persistent stock picking ability. Their recommendations outperform those of Non-Stars and of other groups ranked only according to the past profitability of their recommendations except for analysts ranked by "*The Wall Street Journal"*. An important finding is that the survey-based ranking of *Institutional Investor* magazine of Number-one ranked Analysts shows the third highest investment value of recommendations, even though *Institutional Investor*'s evaluation methodology is qualitative.

In summary, the choice of which analysts to work with is of great importance for the long-term growth of an investor's portfolio. In our study, we provided empirical evidence regarding which star rankings of sell-side analysts a potential investor should have relied on, namely, "*The Wall Street Journal"* and the *StarMine* "Top Earnings Estimators" Additionally, our results show that stock picking ability reflects a set of skills that can be captured using mixed evaluation methods such as surveys or other methods that consider recommendations and earnings forecasts simultaneously.

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Tables and Figures

Table I. Number of firms and percentage of firms in the sample covered by each group, calculated on an election-year basis. Rankings by *The Wall Street Journal* (WSJ), *Institutional Investor* (I/I), and Thomson Reuters' *StarMine* "Top Stock Pickers" (TSP) and "Top Earnings Estimators" (TEE). Indexation by -1 signifies a Number-one ranked Analyst. Each group of star analysts covers approximately 50 percent of firms in the sample. Thus, the coverage universe differs for the various groups of stars. Number-one ranked I/I Analysts cover half of the firms of the entire group of I/I Stars (which includes 3 other ranking positions).

Election year	Total number of firms	Portion of firms covered by entire groups of Stars				Portion of firms covered by Number-one ranked Stars			
		WSJ	I/I	TEE	TSP	WSJ-1	I/I-1	TEE-1	TSP-1
2003	1994	61%	63%	38%	39%	18%	15%	15%	15%
2004	1994	63%	52%	36%	41%	19%	14%	14%	17%
2005	2042	60%	52%	37%	40%	18%	16%	16%	16%
2006	2131	56%	51%	47%	49%	15%	21%	21%	23%
2007	2270	60%	45%	43%	43%	14%	19%	19%	19%
2008	2119	53%	50%	51%	52%	15%	26%	26%	26%
2009	1879	55%	38%	53%	52%	17%	22%	22%	22%
2010	2028	60%	23%	51%	53%	17%	25%	25%	24%
2011	1921	61%	25%	48%	49%	18%	20%	20%	22%
2012	2010	41%	44%	52%	48%	17%	22%	22%	21%
2013	1829	46%	39%	49%	47%	20%	22%	22%	20%
Average	2020	56%	44%	46%	47%	17%	20%	20%	21%
Overall	5109	82%	54%	69%	74%	45%	32%	43%	49%

Table II. Number of analysts and the percentage of each group represented in the sample on an election-year basis. Rankings by *The Wall Street Journal* (WSJ), *Institutional Investor* (I/I), and Thomson Reuters' *StarMine* "Top Stock Pickers" (TSP) and "Top Earnings Estimators" (TEE). Indexation by -1 signifies a Number-one ranked Analyst. On average, there were 13 percent of star analysts per year.

Election year	All analysts	Non-Stars ever elected as stars	Portion of analysts in entire groups of Stars					Portion of analysts in Number-one ranked Stars			
			Stars	WSJ	I/I	TEE	TSP	WSJ-1	I/I-1	TEE-1	TSP-1
2003	4099	12%	13%	5%	6%	3%	3%	1%	1%	1%	1%
2004	3878	13%	14%	5%	6%	3%	3%	1%	1%	1%	1%
2005	3827	14%	15%	5%	7%	4%	3%	1%	2%	1%	1%
2006	3884	14%	15%	5%	6%	4%	4%	1%	1%	1%	1%
2007	3957	15%	15%	5%	6%	4%	4%	1%	1%	1%	1%
2008	3922	15%	15%	5%	6%	4%	4%	1%	1%	1%	1%
2009	3681	13%	13%	5%	3%	5%	4%	1%	1%	2%	1%
2010	3683	12%	13%	5%	2%	4%	4%	1%	2%	2%	1%
2011	3665	13%	13%	6%	1%	4%	4%	1%	1%	2%	2%
2012	3726	14%	13%	3%	5%	4%	4%	1%	1%	2%	1%
2013	3212	15%	15%	4%	4%	5%	5%	1%	2%	2%	2%
Average	3776	14%	14%	5%	5%	4%	4%	1%	1%	1%	1%
Overall	11286	21%	20%	12%	5%	9%	9%	3%	1%	4%	4%

Table III. Number of recommendations and the percentage of Star recommendations on an election-year basis by each ranking. Rankings by *The Wall Street Journal* (WSJ), *Institutional Investor* (I/I), and Thomson Reuters' *StarMine* "Top Stock Pickers" (TSP) and "Top Earnings Estimators" (TEE). Indexation by -1 signifies a Number-one ranked Analyst.

Election year	Entire sample	All Stars	Entire groups of Stars				Number-one ranked Stars			
			WSJ	I/I	TEE	TSP	WSJ-1	I/I-1	TEE-1	TSP-1
2003	29353	25%	10%	12%	5%	5%	2%	3%	2%	1%
2004	25252	26%	11%	10%	5%	6%	3%	2%	2%	2%
2005	25059	26%	11%	10%	5%	6%	2%	2%	2%	2%
2006	24245	28%	10%	10%	8%	8%	2%	2%	3%	3%
2007	27000	30%	13%	9%	7%	10%	5%	2%	2%	3%
2008	27966	30%	11%	9%	8%	9%	4%	2%	3%	4%
2009	23936	27%	11%	6%	8%	10%	4%	2%	3%	3%
2010	25209	24%	10%	3%	8%	8%	2%	3%	3%	3%
2011	22641	24%	11%	3%	7%	7%	2%	3%	3%	2%
2012	25845	24%	6%	8%	8%	7%	2%	2%	3%	3%
2013	16851	27%	9%	7%	9%	8%	3%	2%	3%	3%
Average	24851	27%	10%	8%	7%	8%	3%	2%	3%	3%
Overall	177308	33%	14%	10%	10%	11%	4%	3%	4%	4%

Table IV. Average percentage of interdependence among rankings, average number of analysts listed in particular groups and the proportion of the same analysts in each ranking list. Panel A presents the data for entire groups of Stars, while Panel B reports results for Number-one ranked Stars. The final line shows the average for each value. Comparisons are made on an election-year basis. Rankings by *The Wall Street Journal* (WSJ), *Institutional Investor* (I/I), and Thomson Reuters' *StarMine* "Top Stock Pickers" (TSP) and "Top Earnings Estimators" (TEE). Indexation by -1 signifies a Number-one ranked Analyst. The highest correlation is between WSJ and TSP; the lowest is between WSJ and I/I.

Panel A. Entire groups of Stars

Year	Number of Star analysts				Number of the same analysts						Proportion of the same analysts (# of the same analysts/# of Star analysts)											
	I/I	WSJ	TSP	TEE	I/I & WSJ	I/I & TSP	I/I & TEE	WSJ & TSP	WSJ & TEE	TSP & TEE	WSJ in I/I	TSP in I/I	TEE in I/I	I/I in WSJ	TSP in WSJ	TEE in WSJ	I/I In TSP	WSJ in TSP	TEE in TSP	I/I In TEE	WSJ in TEE	TSP in TEE
2003	271	212	121	111	41	30	41	55	25	16	15%	11%	15%	19%	26%	12%	25%	45%	13%	37%	23%	14%
2004	259	203	121	125	24	22	32	57	21	13	9%	8%	12%	12%	28%	10%	18%	47%	11%	26%	17%	10%
2005	273	196	135	140	23	21	32	54	17	19	8%	8%	12%	12%	28%	9%	16%	40%	14%	23%	12%	14%
2006	257	198	158	164	21	17	40	64	20	36	8%	7%	16%	11%	32%	10%	11%	41%	23%	24%	12%	22%
2007	247	201	150	165	14	23	26	56	25	31	6%	9%	11%	7%	28%	12%	15%	37%	21%	16%	15%	19%
2008	236	196	156	166	15	23	26	50	19	35	6%	10%	11%	8%	26%	10%	15%	32%	22%	16%	11%	21%
2009	118	188	159	172	18	20	15	43	27	33	15%	17%	13%	10%	23%	14%	13%	27%	21%	9%	16%	19%
2010	57	208	158	164	7	9	6	52	26	28	12%	16%	11%	3%	25%	13%	6%	33%	18%	4%	16%	17%
2011	54	210	162	164	4	3	5	61	23	31	7%	6%	9%	2%	29%	11%	2%	38%	19%	3%	14%	19%
2012	178	122	153	168	8	12	17	30	9	34	4%	7%	10%	7%	25%	7%	8%	20%	22%	10%	5%	20%
2013	149	124	163	170	8	18	16	33	11	29	5%	12%	11%	6%	27%	9%	11%	20%	18%	9%	6%	17%
Avg.	191	187	148	155	17	18	23	50	20	28	9%	10%	12%	9%	27%	11%	13%	35%	18%	16%	13%	18%

Panel B. Number-one ranked Analysts

Year	Number of Star analysts				Number of the same analysts						Proportion of the same analysts											
	I/I-1	WSJ-1	TSP-1	TEE-1	I/I-1 & WSJ-1	I/I-1 & TSP-1	I/I-1 & TEE-1	WSJ-1 & TSP-1	WSJ-1 & TEE-1	TSP-1 & TEE-1	WSJ-1 in I/I-1	TSP-1 in I/I-1	TEE-1 in I/I-1	I/I-1 in WSJ-1	TSP-1 in WSJ-1	TEE-1 in WSJ-1	I/I-1 in TSP-1	WSJ-1 in TSP-1	TEE-1 in TSP-1	I/I-1 in TEE-1	WSJ-1 in TEE-1	TSP-1 in TEE-1
2003	55	42	41	39	3	1	5	7	0	2	5%	2%	9%	7%	17%	0%	2%	17%	5%	13%	0%	5%
2004	60	44	43	44	1	1	4	6	1	1	2%	2%	7%	2%	14%	2%	2%	14%	2%	9%	2%	2%
2005	60	40	45	50	0	3	3	7	2	4	0%	5%	5%	0%	18%	5%	7%	16%	9%	6%	4%	8%
2006	59	41	59	57	1	2	3	9	2	10	2%	3%	5%	2%	22%	5%	3%	15%	17%	5%	4%	18%
2007	55	39	56	58	0	2	1	8	0	5	0%	4%	2%	0%	21%	0%	4%	14%	9%	2%	0%	9%
2008	56	40	60	57	0	3	3	6	2	6	0%	5%	5%	0%	15%	5%	5%	10%	10%	5%	4%	11%
2009	43	37	54	57	0	2	2	6	2	4	0%	5%	5%	0%	16%	5%	4%	11%	7%	4%	4%	7%
2010	57	43	57	61	1	3	2	6	1	4	2%	5%	4%	2%	14%	2%	5%	11%	7%	3%	2%	7%
2011	54	43	58	57	1	1	2	4	2	3	2%	2%	4%	2%	9%	5%	2%	7%	5%	4%	4%	5%
2012	37	40	54	56	0	1	2	5	0	7	0%	3%	5%	0%	13%	0%	2%	9%	13%	4%	0%	13%
2013	53	43	60	61	0	0	1	3	0	3	0%	0%	2%	0%	7%	0%	0%	5%	5%	2%	0%	5%
Avg.	54	41	53	54	1	2	3	6	1	4	1%	3%	5%	2%	15%	3%	3%	12%	8%	5%	2%	8%

Table V. Monthly abnormal returns (alphas) for groups of Star and Non-Star analysts and differences in abnormal returns.

Rankings by *The Wall Street Journal* (WSJ), *Institutional Investor* (I/I), and Thomson Reuters' *StarMine* "Top Stock Pickers" (TSP) and "Top Earnings Estimators" (TEE). Portfolios are built according to recommendations: when a new recommendation is announced, 1 USD is invested in the recommended stock by the end of the trading day (or on the next trading day if the recommendation is issued after the closing of trading or is announced on a non-trading day), and the stock is held for the next 30 calendar days or until the same analyst changes his or her recommendation or drops coverage, in which case the stock is withdrawn by the end of that trading day. All figures are obtained as intercepts from the regressions of the monthly returns time series from two sample periods: the Year Before (January 2002 – December 2012) and the Year After (November 2003 – December 2013) on four standard risk factors (Carhart's four-factor model). The Long portfolio includes Buy and Strong Buy recommendations, while the Short portfolio includes all Hold, Sell, and Strong Sell recommendations. Recommendations issued by both groups outperformed the market and showed statistically significant positive abnormal returns. Buy and Sell recommendations by Star analysts have higher abnormal returns than recommendations by Non-Stars in the year after election as well as during the evaluation year. Star analysts persistently outperform Non-Stars.

	Average monthly abnormal returns (%) Overall groups		Difference Stars – Non-Stars
Portfolio	**Stars**	**Non-Stars**	
Panel A. Year After (November 2003 – December 2013)			
Long: Strong Buy/Buy	1.03*** (0.14)	0.66*** (0.11)	0.38*** (0.13)
Short: Hold/Sell/ Strong Sell	-0.37*** (0.13)	-0.20* (0.11)	-0.16 (0.13)
Long-Short	1.40*** (0.17)	0.86*** (0.11)	0.54*** (0.16)
Panel B. Year Before (January 2002 – December 2012)			
Long	1.67*** (0.12)	0.79*** (0.12)	0.88*** (0.12)
Short	-0.45*** (0.12)	-0.11 (0.13)	-0.35*** (0.13)
Long-Short	2.13*** (0.15)	0.90*** (0.13)	1.23*** (0.15)
Panel C. Difference Year After – Year Before (SUEST TEST)			
Long	-0.64***	-0.13*	--
Short	0.08	-0.09	--
Long-Short	-0.73***	0.04	--

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table VI. Average monthly abnormal returns (alphas) for each group of Star analysts. Rankings by *The Wall Street Journal* (WSJ), *Institutional Investor* (I/I), and Thomson Reuters' *StarMine* "Top Stock Pickers" (TSP) and "Top Earnings Estimators" (TEE). Portfolios are built according to recommendations: when a new recommendation is announced, 1 USD is invested in the recommended stock by the end of the trading day (or on the next trading day if the recommendation is issued after the closing of trading or is announced on a non-trading day), and the stock is held for the next 30 calendar days or until the same analyst changes his or her recommendation or drops coverage, in which case the stock is withdrawn by the end of that trading day. All figures are obtained as intercepts from the regressions of the monthly returns time series from two sample periods: the Year Before (January 2002 – December 2012) and the Year After (November 2003 – December 2013) on four standard risk factors (Carhart's four-factor model). The Long portfolio includes Buy and Strong Buy recommendations, while the Short portfolio includes all Hold, Sell, and Strong Sell recommendations. The highest abnormal returns in the Year After were generated by recommendations by TEE, while the lowest were observed for I/I and TSP. The highest alpha among the Long portfolios was observed for TEE; the lowest was observed for TSP.

Portfolio	Average monthly abnormal returns (%) Entire groups of Star analysts			
	WSJ	**I/I**	**TEE**	**TSP**
Panel A. Year After (November 2003 – December 2013)				
Long: Strong Buy/Buy	1.07*** (0.20)	1.12*** (0.20)	1.01*** (0.21)	0.98*** (0.20)
Short: Hold/Sell/ Strong Sell	-0.51*** (0.19)	-0.30 (0.20)	-0.52** (0.23)	-0.01 (0.20)
Long-Short	1.58*** (0.25)	1.42*** (0.26)	1.52*** (0.29)	1.00*** (0.26)
Panel B. Year Before (January 2002 – December 2012)				
Long	2.73*** (0.20)	1.37*** (0.24)	0.89*** (0.20)	2.34*** (0.18)
Short	-0.57*** (0.16)	-0.19 (0.22)	-0.48** (0.19)	-0.63*** (0.18)
Long-Short	3.29*** (0.25)	1.56*** (0.32)	1.37*** (0.25)	2.97*** (0.22)
Panel C. Difference Year After – Year Before (SUEST TEST)				
Long	-1.66***	-0.25	0.12	-1.36***
Short	0.06	-0.11	-0.04	0.62***
Long-Short	-1.71***	-0.14	0.14	-1.98***

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table VII. Average monthly abnormal returns (alphas) for each group of Number-one ranked Analysts.

Rankings by *The Wall Street Journal* (WSJ), *Institutional Investor* (I/I), and Thomson Reuters' *StarMine* "Top Stock Pickers" (TSP) and "Top Earnings Estimators" (TEE). Indexation by -1 signifies a Number-one ranked Analyst. Portfolios are built according to recommendations: when a new recommendation is announced, 1 USD is invested in the recommended stock by the end of the trading day (or on the next trading day if the recommendation is issued after the closing of trading or is announced on a non-trading day), and the stock is held for the next 30 calendar days or until the same analyst changes his or her recommendation or drops coverage, in which case the stock is withdrawn by the end of that trading day. All figures are obtained as intercepts from the regressions of the monthly returns time series from two sample periods: the Year Before (January 2002 – December 2012) and the Year After (November 2003 – December 2013) on four standard risk factors (Carhart's four-factor model). The Long portfolio includes Buy and Strong Buy recommendations, while the Short portfolio includes all Hold, Sell, and Strong Sell recommendations. The highest return of a Long-Short portfolio is observed for I/I-1 analysts, while the lowest is observed for TSP-1. Statistically insignificant abnormal returns were observed for the Short portfolio of WSJ-1, the Long portfolio of TSP-1 in the year after selection, and the Long-Short portfolio of TEE-1 during the evaluation year.

	Average monthly abnormal returns (%) Number-one ranked Star analysts			
Portfolio	**WSJ-1**	**I/I-1**	**TEE-1**	**TSP-1**
Panel A. Year After (November 2003 – December 2013)				
Long: Strong Buy/Buy	2.15*** (0.54)	1.25*** (0.32)	0.80** (0.34)	0.88** (0.35)
Short: Hold/Sell/ Strong Sell	-0.78** (0.34)	0.12 (0.54)	-1.16*** (0.37)	-0.00 (0.36)
Long-Short	2.93*** (0.60)	1.14 (0.62)	1.95*** (0.47)	0.87* (0.52)
Panel B. Year Before (January 2002 – December 2012)				
Long	3.32*** (0.40)	1.13*** (0.33)	0.69** (0.31)	2.34*** (0.33)
Short	-0.33 (0.32)	-0.22 (0.39)	-0.22 (0.33)	-0.62** (0.31)
Long-Short	3.65*** (0.51)	1.35*** (0.50)	0.91** (0.41)	2.95*** (0.43)
Panel C. Difference Year After – Year Before (SUEST TEST)				
Long	-1.17**	0.12	0.11	-1.46***
Short	-0.45	0.34	-0.94**	0.62
Long-Short	-0.72	-0.21	1.04*	-2.08***

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

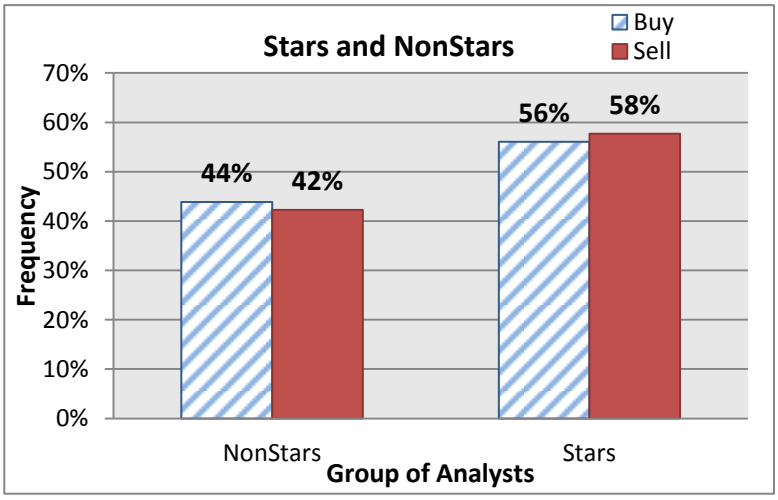
Table VIII. Alpha differentials calculated as the difference in the excess return from the horizontal group minus the excess return for a vertical group of stars.

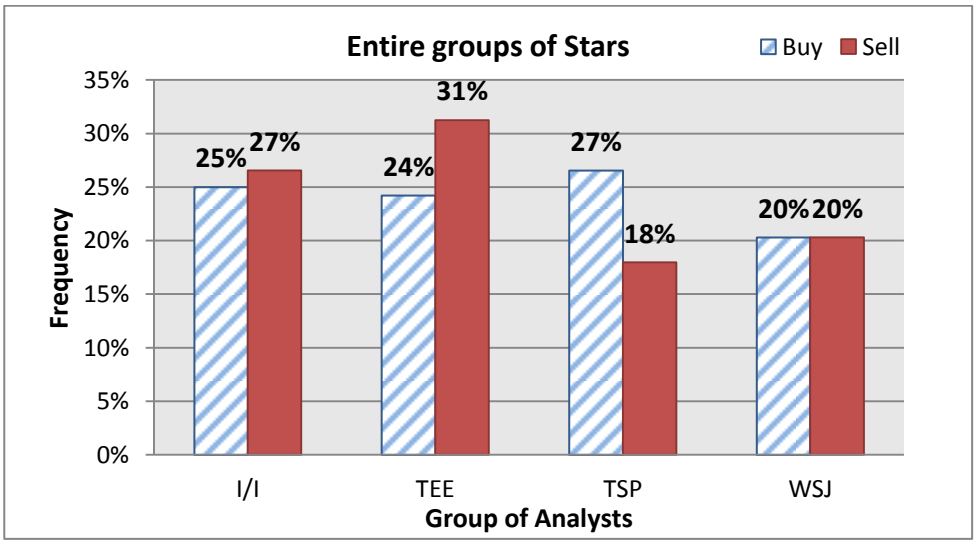
Rankings by *The Wall Street Journal* (WSJ), *Institutional Investor* (I/I), and Thomson Reuters' *StarMine* "Top Stock Pickers" (TSP) and "Top Earnings Estimators" (TEE). Indexation by -1 indicates a Number-one ranked Analyst. Excess returns were obtained from regressions for time series from two sample periods: the Year Before (January 2002 – December 2012) and the Year After (November 2003 – December 2013). Negative values are in red. Panels A and B show the results for the Long portfolios; Panel C and D are for the Short portfolios.

	Alpha differentials (%) Groups of analysts							
	Non-Stars	**WSJ**	**I/I**	**TEE**	**TSP**	**WSJ-1**	**I/I-1**	**TEE-1**
Panel A. Alpha differentials for Long Portfolios in the Year After (November 2003 – December 2013)								
WSJ	-0.41**	---						
I/I	-0.47**	-0.05	---					
TEE	-0.35*	0.06	0.12	---				
TSP	-0.33	0.08	0.14	0.02	---			
WSJ-1	-1.50***	-1.09**	-1.03*	-1.15**	-1.17**	---		
I/I-1	-0.60*	-0.19	-0.13	-0.24	-0.27	0.90	---	
TEE-1	-0.14	0.27	0.32	0.21	0.19	1.36**	0.45	---
TSP-1	-0.22	0.19	0.24	0.13	0.11	1.28**	0.38	0.08
Panel B. Alpha differentials for Long Portfolios in the Year Before (January 2002 – December 2012)								
WSJ	-1.94***	---						
I/I	-0.58**	1.36***	---					
TEE	-0.10	1.83***	0.47	---				
TSP	-1.55***	0.39**	-0.97***	-1.44***	---			
WSJ-1	-2.53***	-0.59*	-1.95***	-2.43***	-0.98**	---		
I/I-1	-0.34	1.59*	0.23	-0.24	1.20***	2.19***	---	
TEE-1	0.09	2.03***	0.67*	0.20	1.64***	2.62***	0.43	---
TSP-1	-1.55***	0.39	-0.97***	-1.44***	0.00	0.98**	-1.21***	-1.64***
Panel C. Alpha differentials for Short Portfolios in the Year After (November 2003 – December 2013)								
WSJ	0.31*	---						
I/I	0.10	-0.21	---					
TEE	0.32	0.00	0.21	---				
TSP	-0.19	-0.50**	-0.29	-0.51*	---			
WSJ-1	0.57*	0.27	0.47	0.26	0.77**	---		
I/I-1	-0.31	-0.63	-0.42	-0.64	-0.13	-0.89	---	
TEE-1	0.95**	0.64	0.85**	0.64**	1.15***	0.38	1.27*	---
TSP-1	-0.20	-0.51	-0.31	-0.52	-0.01	-0.78*	0.12	-1.16**
Panel D. Alpha differentials for Short Portfolios in the Year Before (January 2002 – December 2012)								
WSJ	0.46**	---						
I/I	0.08	-0.37	---					
TEE	0.37*	-0.08	0.28	---				
TSP	0.52***	0.06	0.43*	0.15	---			
WSJ-1	0.22	-0.24	0.14	-0.15	-0.30	---		
I/I-1	0.11	-0.35	0.03	-0.26	-0.41	-0.11	---	
TEE-1	0.11	-0.35	0.02	-0.26	-0.41	-0.11	0.00	---
TSP-1	0.51	0.05	0.43	0.14	-0.01	0.29	0.40	0.40

*** p<0.01. ** p<0.05. * p<0.1

Figure 1. Frequency of months when a particular group of analysts outperformed the other groups. Rankings by *The Wall Street Journal* (WSJ), *Institutional Investor* (I/I), and Thomson Reuters' *StarMine* "Top Stock Pickers" (TSP) and "Top Earnings Estimators" (TEE). Indexation by -1 signifies a Number-one ranked Analyst.





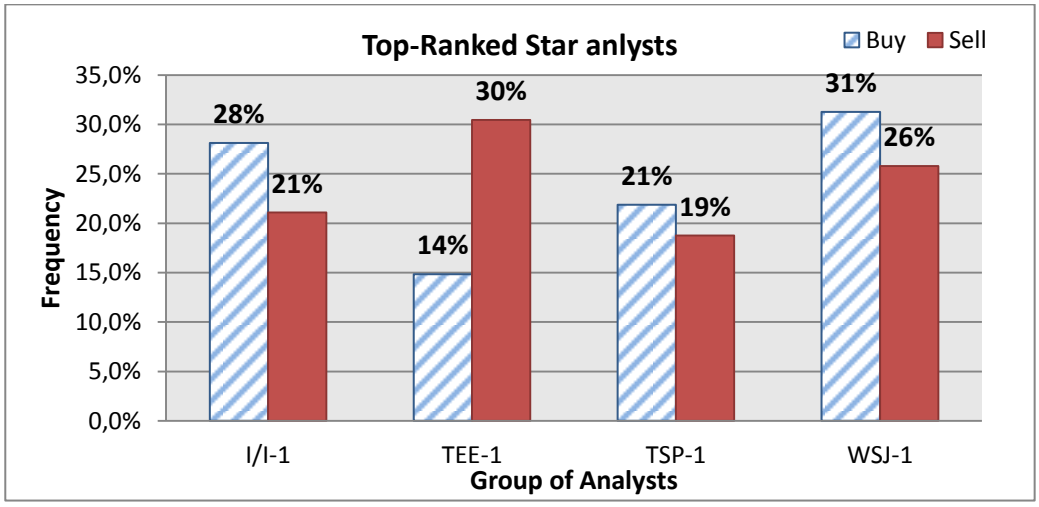


Figure 2. Monthly Excess returns (alphas) for different holding periods. Rankings by *The Wall Street Journal* (WSJ), *Institutional Investor* (I/I), and Thomson Reuters' *StarMine* "Top Stock Pickers" (TSP) and "Top Earnings Estimators" (TEE).