

Would you be better off by random stock picking? A study on public equity research reports quality in Vietnam.

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Abstract: Recommendations released by stock analysts are considered as valuable sources to individual investors, especially noise investors. However, is it beneficial to Vietnamese investors if they follow recommendation from public sources, this is an open question. This paper aims at discovering the quality of public equity research reports (ERRs) in Vietnam, together with some characteristics of the reports and report providers. We used Python software, with OCR technique, to crawl and to analyze the recommendations from public reports released online. These important results were found, (i) stock analysts in Vietnam have the tendency to follow the market up trends, and they focus on glamour stocks; (ii) analysts prefer to provide positive recommendations as a sign of optimism; and (iii) it might not be wise for individual investors to follow these public ERRs recommendations due to low predicting quality of these reports.

Keyword: Efficiency, ERR, Glamour, Random, Stock pickers, VNIndex

I. The importance of public ERRs and their quality.

Equity research reports (ERR) provided by financial analyst is an important source of decision making for investors. However, there are certain aspects of ERR to be seriously considered before applying any kind of recommendations to investment practices. Equity research reports are often produced by analysts employed by financial institutions that have their own interests and biases, consists of unverifiable information that might not be suitable for individuals' investment goals. Also, not all equity research reports are created equal in terms of the depth of analysis, research methodology, and data sources used. By critically evaluating equity research reports, investors can make more informed decisions, reduce the risk of relying on flawed analysis, and align their investment strategies with their specific goals and preferences.

One of the important aspects of verifying ERRs should be their analyses quality, that traces back to the old question: Whether professional stock pickers could correctly predict the market's movements, and, therefore, beat the market? In a variety of perspectives, one could be assessed in different ways, including market efficiency, credibility of investment advice, or is there any difference between professional, costly ERRs and publicly available ERRs that cost little or nothing to readers.

This paper, aiming at answering the question about the quality of public ERRs available in Vietnam, shall focus on the following aspects: (1) What about the accuracy of target price, (2) should there be any form of analyst optimism existed, (3) could these ERRs beat the market portfolio, and (4) could they beat a random pick, in such a way that previous experiments have been conducted.

II. Latest updates from literature

1. *Are the walks still random?*

One of the core assumptions of classical financial studies is the random walk hypothesis, which acts as a base for various forms of market efficiency. According to random walk assumption, no one, even stock pickers, could predict stock prices, or beat the market. As a result, if a market is considered to be efficient, even in the weak form, then equity analysis or any form of financial consultation, if they work, shall be a clear violation of the market efficiency. Recent literature still suggests that the markets are somehow efficient, with evidence from different countries and regions.

Durusu-Ciftci et al. (2019) re-evaluated the efficiency of stock markets by examining the impact of cross-sectional dependency and structural breaks using newly developed panel unit root tests proposed by (Nazlioglu & Karul, 2017). The analysis focuses on 33 countries' stock price indexes from May 1992 to May 2018. The findings of this research showed that (i) Considering cross-sectional dependency and structural breaks is crucial for a better understanding of stock market index behavior. (ii) Recent testing methodologies provide strong evidence supporting the weak-form efficiency of stock markets.

Dash (2019) analyzed random-walk hypothesis in relation to twenty stocks within the Indian banking sector from April 1, 2017, to March 31, 2018. The study employed various methods including the runs test, the Augmented Dickey-Fuller root test, and Auto-regressive integrated moving average (ARIMA) modeling on the log-returns of the stocks. The results of the runs test and ADF test support randomness, suggesting that stock prices follow a random walk. However, the findings from the Auto-regressive moving average (ARMA) modeling offer some contradicting evidence.

Dias et al. (2020) examined the weak form efficiency by analyzing the stock market indices of several countries including Belgium, France, Germany, USA, Greece, Spain, Ireland, Portugal, and China from December 2019 to May 2020. The research methodology involved panel unit root tests by (Hadri, 2000) to evaluate the stationarity of the time series. The (Clemente et al., 1998) test was employed to identify structural breaks. The variance ratio methodology proposed by (Lo & MacKinlay, 1988) was used to test the random walk hypothesis. The findings revealed mixed results. Based on the rank variance test, the random walk hypothesis was rejected for most of the indices, while it was accepted for the IBEX 35 and ISEQ indices. The results also indicated that prices do not fully reflect available information and that price changes are not independent and not identically distributed.

Dias and Santos (2020) assessed the weak form of the efficient market hypothesis in the stock markets of Botswana, Egypt, Kenya, Morocco, Nigeria, and South Africa during the period from September 2, 2019, to September 2, 2020. The focus is to determine whether the global pandemic (Covid-19) has impacted the weak form efficiency of African stock markets. The findings provide evidence that the random walk hypothesis was not supported by the analyzed financial markets during the global pandemic period. The variance ratios indicate that the stock returns exhibit autocorrelation over time and tend to revert to the mean. Moreover, no significant differences were observed among the stock markets examined. The authors believe that these results are valuable for investors seeking diversification opportunities in these regional stock markets.

2. *Would it be a wise idea to listen to stock advisors?*

As aforementioned, if a market is efficient, then it would be a waste of time to listen to financial advisors. However, with their expertise and understandings about markets movements, it may still be

profitable to consider advices from them and apply to specific portfolios. Ismail (2010) investigated whether renowned investment banks provide beneficial outcomes for their clients by analyzing a dataset of 6,379 M&A deals in the United States. The study revealed that acquirers who sought advice from top-tier advisors incurred losses exceeding \$42 billion, while those advised by second-tier advisors gained \$13.5 billion upon the announcement of the merger. However, if large loss deals were excluded, the results supported the hypothesis that top-tier advisors for target companies outperformed second-tier advisors, and a primary driver behind the initial outcomes was the significant losses observed in deals advised by top-tier advisors. The results support the hypothesis that top-tier advisors for target companies outperformed second-tier advisors, and having a prestigious advisor involved in an M&A transaction led to higher overall wealth gains for the combined entity.

Shapira and Venezia (2001) analyzed patterns of a large number of clients of a major Israeli brokerage house during 1994. They compared the behavior of clients making independent investment decisions to that of investors whose accounts were managed by brokerage professionals. Their main objective was to investigate whether the disposition effect also held for professional investors. They showed that both professional and independent investors exhibited the disposition effect, although the effect was stronger for independent investors. In addition to that, they demonstrated that professionally managed accounts were more diversified and that round trips were both less correlated with the market and slightly more profitable than those of independent accounts.

Gaudecker (2015) applied quantitative diversification statistics, and their relationship with key variables regarding financial literacy. They found that almost all households with high scores in financial literacy or those who sought advice from professionals or private contacts achieved satisfactory investment outcomes. In contrast, households with below-median financial literacy who relied on their own decision-making abilities experienced an average loss of 50 basis points. The variations between these groups were primarily observed at the higher end of the loss distribution.

The effectiveness of investment advice relies on the quality of the advice provided and the investor's alternative investment choices. Chalmers and Reuter (2020) examined the changes made to the Oregon University System Optional Retirement Plan to demonstrate how plan design impacts the investment choices of individuals seeking advice. In situations where brokers are accessible and target date funds (TDFs) are not available, brokers assist participants with a highly anticipated need for advice in managing market risks. Conversely, when brokers are eliminated and TDFs are introduced, new participants with a highly anticipated need for advice predominantly opt for TDFs.

On the digital trend, alternative investment advisory schemes are also investigated. Cho et al. (2021) proposed an investment approach that combines natural language processing with equity research reports in the Korean financial market and machine learning algorithms for binary classification. Initially, the researchers extract the part-of-speech information from the reports using KoNLPy and Mecab. The results demonstrate that the random forest algorithm performs best across all periods. The positively predicted stocks from the random forest classifier's test set are used as the investment universe for monthly re-balancing and buy-and-hold investment. The proposed strategy exhibits significantly higher returns compared to benchmarks during the pre-COVID-19 and COVID-19 periods, while showing comparable returns during the post-COVID-19 period.

About recommendations offered by professional analysts, Arand et al. (2015) investigated whether the significance of sell-side analyst reports is influenced by the regulatory environment, and their findings

indicated that the value of research information rises as investor protection levels improve. This conclusion remains robust across various investor protection specifications. Asquith et al. (2005) conducted an analysis of Institutional Investor All-American analyst reports, documenting their complete contents and studying the market response upon their publication. This research found that the importance of earnings forecasts and recommendation revisions diminishes, and in some cases, loses significance in certain models. Analysts play a dual role by providing fresh information as well as interpreting previously disclosed data. Another research attempted to answer the question of whether investors can profit from consensus recommendations made by stock market analysts in US equity markets. Results indicated that transaction costs have significantly decreased since 2001, and a strategy involving buying 'strong buy' stocks and shorting 'strong sell' stocks generates abnormal returns of 4.7-5.8% per year during the 2001-2016 period, even after accounting for transaction costs (Park & Park, 2019). Furthermore, they observed that 'strong buy (sell)' stocks are typically growth (value) companies and short-term winners (losers).

Jegadeesh et al. (2004) showed that analysts from sell-side firms generally recommend “glamour” (i.e., positive momentum, high growth, high volume, and relatively expensive) stocks. Naïve adherence to these recommendations can be costly because the level of the consensus recommendation adds value only among stocks with favorable quantitative characteristics (i.e., value stocks and positive momentum stocks).

Interestingly, Balboa et al. (2008) examined the significance of analysts' consensus recommendations and their variations in eight developed stock markets during the period from January 1994 to December 2006, utilizing data from Factset/JCF. The findings reveal that analysts tend to display optimistic bias as they issue a considerably higher number of buy recommendations compared to sell recommendations. It appears that sell recommendations carry a stronger signal than buy recommendations, and the latter hold more value in countries where there is a lower level of optimism bias.

3. *Crowdsourced reports and their credibility*

Not only paid ERRs, publicly available ERRs, especially those based on crowdsourced are also potential advisory source for investors. Dyer and Kim (2021) evaluated anonymous equity research published on crowdsourced financial information platforms. Using short windows, the findings indicated that investors tend to discount the information provided in anonymous research compared to non-anonymous research. This discount is attributed to concerns about the credibility of the authors. Furthermore, author-level analysis reveals that an author's online reputation has a greater impact on the market reaction for anonymous authors compared to non-anonymous authors, highlighting the importance of reputation when the author's identity cannot be verified. Jame et al. (2016) examined the value of crowdsourced earnings forecasts and found that Estimize forecasts offer additional value in predicting earnings and gauging market expectations, demonstrating that crowdsourced forecasts serve as a valuable supplementary source of information in capital markets.

According to reports in the financial press, it is claimed that Internet stock message boards could influence market movements. In (Antweiler & Frank, 2004), they examined the impact of over 1.5 million messages posted on Yahoo! Finance and Raging Bull concerning 45 companies listed in the Dow Jones Industrial Average and the Dow Jones Internet Index. Computational linguistics techniques are employed to measure the level of optimism expressed in these messages. Findings revealed that these stock messages can provide insights into market volatility. While their impact on stock returns is statistically

significant, the actual effect is relatively minor from an economic standpoint. Additionally, they observe that increased trading volume is associated with a higher level of disagreement among the messages posted.

Chen et al. (2014) explored the relationship between investor opinions shared through social media and their ability to predict future stock returns and earnings surprises by analyzing articles published on a prominent social media platform for investors in the United States, as well as the accompanying commentaries from readers. The findings showed that the expressed views in both articles and commentaries hold predictive power in forecasting future stock returns and earnings surprises.

III. What we did and discussion of the results

1. Methodology

a. Crawling and handling report:

We tried to gather as many public ERRs as possible by crawling, reports was crawled using Python from *VietStock Finance*. After crawling, reports are converted from pdf files to images, then to gray images, finally to texts that are contained in .docx files. Afterward, text patterns inside .docx files are scanned to get information inside reports, including: current price, target price, names of recommended stocks, type of recommendation, security companies that are owner of reports, the date that recommendations were made and the holding period. From date of recommendation and holding period, the final date of holding period is calculated. After gathering, a total number of 3375 reports was collected, from 45 different securities companies, and reports ranged from 2014 to 2022.

b. Crawling and handle data of stock price:

- Data of stock prices are collected from *cophieu68* web page, since prices from this source are reported as adjusted ones (prices are adjusted by dividend yield), consequently, they needed to be converted back to the price before adjustments to compare between the “current price” and “target price” in the recommendation reports. The adjusted coefficient is calculated as the following formula:

$$\text{RAC}(t) = \text{AC}(t) * \text{RAC}(t+1)$$

In which:

$\text{RAC}(t)$: real adjusted coefficient of the adjustment at time t

$\text{AC}(t)$: adjusted coefficient of the adjustment at time t

$\text{RAC}(t+1)$: real adjusted coefficient of the adjustment at time $t+1$ (just after t)

- Adjusted price is calculated as a product of current price and real adjusted coefficient. This information is used to calculate and compare returns.
- ##### c. Random portfolio and compare results:
- According to the hypothesis that if the market follows random walk, then random stock picking could be as efficient as intentional stock picking, we formed random portfolio for each recommendation. For each recommendation, a random stock is picked with the same timeframe that matches recommendation periods, using the same trading floor (HNX or HOSE). We then get the “first price”, “last price” and “maximum price” of each random stock to calculate holding period returns and maximum return in the holding period.
 - After creating random portfolios, the process is repeated 100 times to eliminate the effect of small number or survivorship bias, and average return of these repetition was calculated to

represent the random picking result. Those returns will be used to test whether recommendations' returns are significantly higher than random portfolios' returns.

The following tests were conducted:

- First, recommendations, stored in recTar variable, were tested against realized value to see the predicting power of those public ERRs, on both final value for the holding period return, and maximum value for any opportunities of return that might be realized during the recommendation period. We apply independent t-test to test the differences in this research. Another calculated statistic is called maximum drawdown, which is the distance between the current price in the recommendation reports and minimum price. This statistic would tell us the potential loss could occur to investors if they follow recommendation reports. Drawdown is calculated by using formula in the holding period: $\text{current price}/\text{minimum price} - 1$.
- We test returns of recommendations with returns of VNIndex to validate if returns of those recommendations are higher than VNIndex, with the purpose of testing whether these ERRs could beat the market. Among which, two sets of returns were employed. "Final return" is the return with the assumption that the asset is held from the beginning until the end of the recommendation period while "maximum return" is the maximum return that the asset could reach in the recommendation period.
- We also compare returns of recommendations against random picking, to test the ability of winning over random choices.
- Finally, VNIndex returns were used to compare with random returns.

2. Findings and Discussions

Among 45 securities companies, MBS occupies largest number of recommendation in our data (10.2%), top 10 companies with the highest number have taken up 70% of the reports released, an amount of 23 companies released less than 1% of the public ERRs. These numbers have shown different approaches in the way securities companies choose to build their expertise images.

Table 1: Top 10 securities companies regarding to the number of reports released, as percentages

Securities companies	Number of reports
KIS	4.5%
VCBS	4.9%
BSC	5.0%
ACBS	5.3%
PHS	6.1%
VCI	8.0%
MSI	8.1%
FTPS	8.5%
MAS	8.6%
MBS	10.2%

In line with previous findings (Baik et al., 2009) (Krische & Lee, 2000) (Jegadeesh et al., 2004), it is also a case in Vietnam, where reports are concentrated in some stocks, especially some glamour stocks. The

following wordcloud has shown that some big and well-known stocks (FPT, PNJ, HPG, NLG, MWG) are recommended the most. Those stocks are all recommended with positive or at least neutral status.

Figure 1: Wordcloud for all recommended stocks

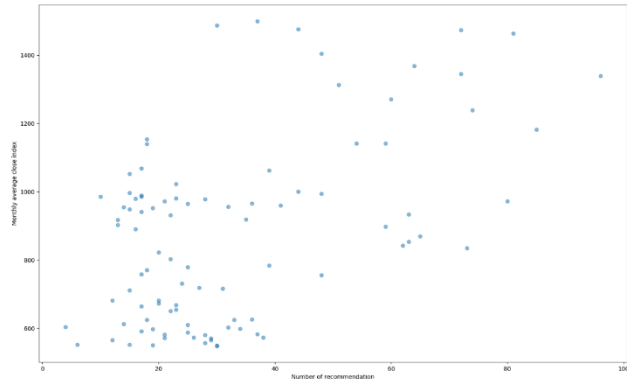


Securities companies also tend to release more report when market is in uptrends. In figure 2, each dots represent a report. Consequently, areas that contains more dots are the areas that securities companies release more reports. There are more dots in market uptrends periods, especially in the period of 2020-2022. Compared to this period, with a huge uptrend, the frequency of public ERRs released by securities companies were far less frequent in other periods. It is a hint toward either herding practice by securities companies, or, with a higher chance of explanation, a practice of ‘riding the waves’, in extreme bullish periods when you can basically make money with anything you buy, so a “buy” recommendation shall always be a right bet. It is also clear from figure 3 that the number of recommendations and average close price of VNIndex are positively correlated. It also shows that securities companies tend to release mor reports when the market is in uptrends.

Figure 2: Reports in each phrase of market



Figure 3: Number of reports and monthly average close index each month



To further test the quality of public ERRs, we aimed at targets price of recommendations. With the number of ERRs downloaded, we decided to narrow down number of reports to be processed to 200, focuses on reports with verifiable prices and recommendations, with manual cross check after OCRs.

Table 2 describes basic statistics of recTar variable:

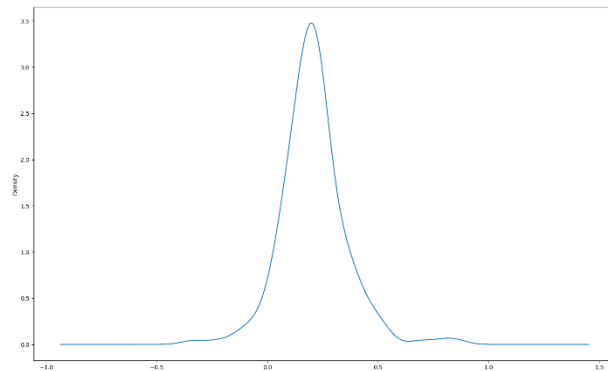
Table 2: Descriptive statistics of target returns in reports

	recTar
count	200
mean	0.20729 9
std	0.14720 6
min	-0.34007
25%	0.13640 9
50%	0.20382 2
75%	0.26439 9
max	0.85469 4

Companies within the sample prefer to provide positive rather than negative recommendations (mean and median of returns both greater than 20%, maximum is far greater than absolute value of minimum).

Mean of expected returns given by companies is 20%. Several previous studies has also shown signs of analyst optimism in a similar manner (Butler & Lang, 1991), (Easterwood & Nutt, 1999), (Xu et al., 2013).

Figure 4: Distribution of target returns in reports



Within the sample, 107 stocks were given recommendations. Among them, only 4 stocks are recommended to be sold. The stocks that have the most number of recommendations are MWG and VHC with 7 recommendations for each stock.

Table 3: Average target returns in reports for each recommendation

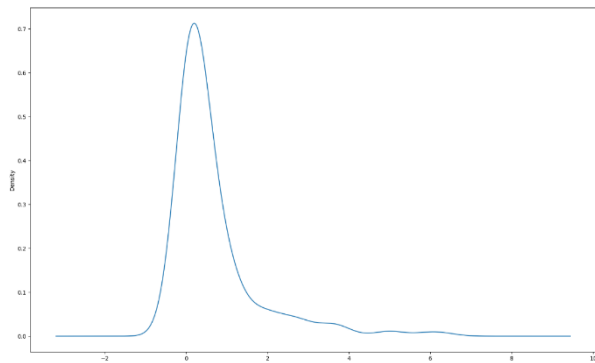
recommendation	recTar
Sell	-0.20
Negative	-0.07
Neutral	-0.01
Hold	0.06
Follow	0.09
Suitable	0.10
Positive	0.16
Increase weight	0.16
Buy	0.27
Strong buy	0.51

It is interesting to observe that for negative domain, there are only two types of recommendation, namely “sell” and “negative”. But in the positive side, there are 8 levels of recommendations with different choices of wordings. It’s interesting to observe that analysts hesitate to use any other word than “sell” for the negative side, and they tend to urge people into buying by using a complicated system of terminologies. In another word, prospect theory has come to play in this situation. Securities companies usually recommend to sell if the expected target is -20% and recommend to buy if the expected target is 27%. Similar to Sedor (2002) and Lee et al. (2008), stock analysts in Vietnam tends to choose favorable recommendations, and, in situations where they could make easy judgements.

Average of maximum drawdown of positive recommendation is 67.3% and the median of maximum drawdown is 24.3%. Maximum drawdown is 628%, meaning that on average, investors could loss 67.3%

of their investment on average and the maximum potential loss is 628% if they follow the recommendations.

Figure 5: Distribution of target returns



The stocks that have higher target returns tend to have higher drawdown compared to lower target stocks (figure 5). The correlation coefficient of two variables was significantly positive (0.21). The standard deviations of stocks also tell the same story. Scatter plot (figure 6) has shown that stocks with higher target seemed to have higher standard deviation of real returns. The correlation between target returns and standard deviations of stocks is significantly positive (figure 7). These statistics implied that securities companies possibly try to recommend riskier stocks with more potential to fall in order to gain more returns.

Figure 6: Relationship between target returns and maximum drawdowns

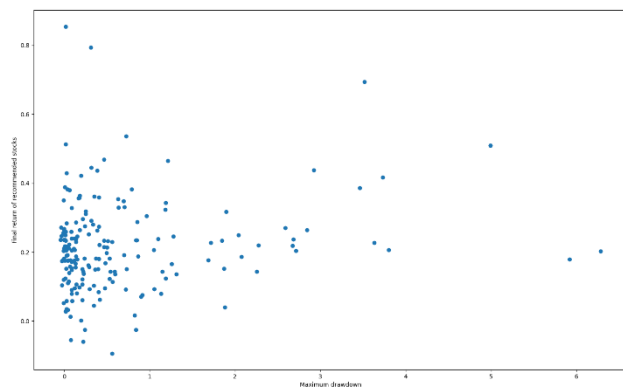


Figure 7: Relationship between target returns and standard deviation of real returns

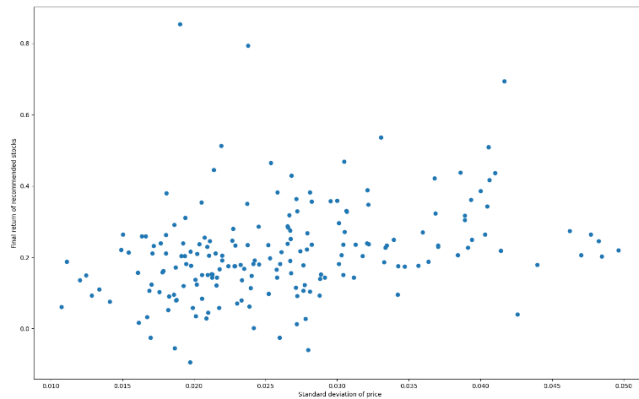
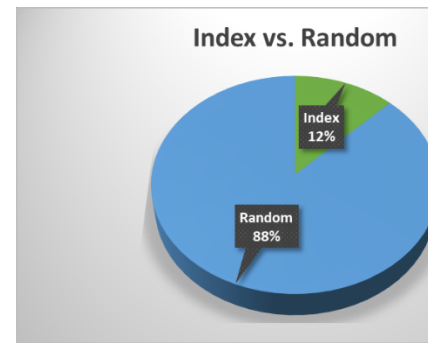
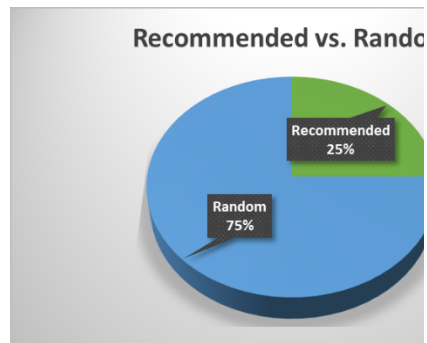
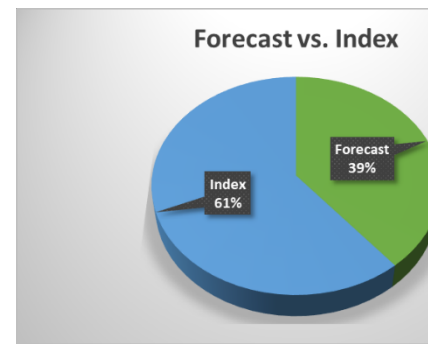
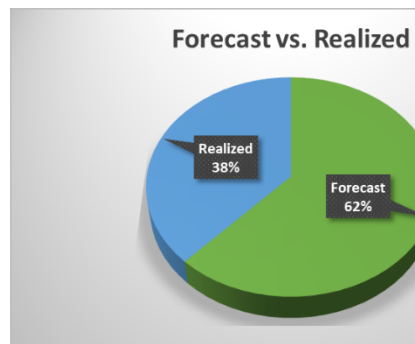


Figure 8(a,b,c,d): Percentage of winning between values, pairwise



Finally, results from pairwise comparisons show that:

- Between predicted and realized value of the recommended stocks: maximum returns of recommended stocks in the holding period have shown that it is significantly greater than what they have targeted, but not the same story with final returns. There were 76 times that realized returns of recommended stocks are greater than what securities companies had expected (38% of all times). However, based on the test outcomes, forecasted returns are not significantly

greater than realized value. This has shown that forecasts by public ERRs had low accuracy, with a high level of underestimation.

Between VNIndex and recommended stocks: There were 78 times that returns of recommended stocks are greater than returns of index (39% overall). Final returns and maximum returns of the recommended stocks are not significantly different from VNIndex. Return of VNIndex also does not significantly greater than return of recommended stocks, according to tests. However, returns of recommended stocks have shown that they are significantly greater than maximum returns of VNIndex in the same holding period. Recommendations could not outperform index, or at least as close as possible to the performance of index, which raises another concern about the quality of these public ERRs. And this makes the next test meaningful, which is the ability of ERRs to win over random stock picking.

- Between recommended stock and random portfolio: There were only 50 times that returns of recommended stocks outperform returns of random portfolio (25% of all times). Both final returns and maximum returns of recommended stocks could not show that they are significantly greater than final and maximum returns of random portfolio in the same holding period. The test result has shown that both final and maximum returns of random portfolio are greater than recommended stocks. This result has strengthened the argument that there are significant problems with the credibility of public ERRs issued by securities companies.
- Between VNIndex and random portfolio: To further concretize the outcomes, this paper tested random stock picks against VNIndex. Results shown that both final returns and maximum returns of random portfolios are significantly greater than returns of VNIndex, which is quite surprising. There were 175 times that returns of random portfolio are greater than returns of index (87.5% of the times). However, putting them altogether in to the context of glamour stocks and bullish times, it makes sense, totally, by the meaning that during such extreme bullish times, basically any stock would perform better than VNIndex, which mostly contains "heavy bottomed" stock, these are slow to rise due to their considerable inertia. In such times, randomly picked stocks have plenty of opportunities to outperform VNIndex.

IV. What's in it for individual investors?

1. Implications for investors

It might initially look like, for individual investors, that they could follow recommendations of these public ERRs and get a return because performance of these recommended stocks would eventually be better than predicted values, however, it is not a good idea indeed. There are a number of reasons for that.

- These reports are mainly issued in extreme bullish times, where basically any stock would be a good investment.
- Test results show that recommendations do not stand a chance of victory over an index, or even a random pick.

Another possible outcome of the story here is that for an average investor, picking randomly would yield best results, because random picks outperform both index and ERRs. But this is not a good advice either, since random strategy could only work well in the extreme bullish times, which is unpredictable and happens from time to time in the short run. In the long run, indexes, with their stable nature, would reserve the situation.

As such, a best advice, if any, for individual Vietnamese investors in such context, is not to believe in public ERRs, with their weak predicting power, low quality and affected by biases.

2. *Limitations of the research*

- We focused on the public ERRs, and therefore premium reports were missed. Furthermore, the reports were collected from only one source, which is Vietstock Finance. This could be a limitation of our research because this page could selectively post reports or they do not have enough reports to post. So the reports that are crawled may not represent all recommendation reports, especially premium reports.
- We tried, but OCR technique used in this research have not been optimized enough to recognize Vietnamese text inside reports, especially reports with colored background or reports with small font size.
- Based on our information extraction technique, the number of reports that we could get precise information was limited, and we could not be able to explore in-depth information.

3. *Recommendations for future research*

We are working on the following areas of improvements:

- Enhance OCR technique to extract information from a larger number of reports.
- Employ Natural Language Processing technique to pickup needed information and analyse reports so it could provide more quality insight about quality of reports.
- Analyze and rank quality of ERRs from different securities companies.

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