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HONORS THESIS

Investment Behavior: The Difference Between Indiviual and Professional Investors

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ABSTRACT

In the modern world, there is greater accessibility to information and investment opportunities. This has led to more people from many different backgrounds to start investing in various markets. Because of this, the modern-day investor can look like many different things and have significantly varied levels of financial knowledge. This study will look into the differences in investment behaviors for individual investors, who typically have lower financial literacy rates, and professional investors, who typically have higher financial literacy rates. The data will be obtained by surveying individuals with various financial literacy rates in order to gauge the differences between individual investors and professional investors by creating proxies for the two groups based on financial intelligence scores. The surveys consist of questions that test financial literacy, as well as their investment behaviors such as diversification, risk tolerance, and so on. The data is then analyzed to find commonalities in investment behaviors among the two proxy groups. Based on the findings of the research, commonalities, and differences between the two groups, investment behaviors are explored. The analysis shows some behaviors, such as each group's level of temperament are similar, while other behaviors, such as preferences for asset class selection, appear different between the two groups.

INTRODUCTION

Recently, a variety of evolutions in fintech have made investing in stocks, bonds, ETFs, and various other securities more accessible to individual investors. This has led to a greater percentage of the population investing in financial securities in the United States. During the past two years, the effects of individual investors investing in stocks have been brought to the forefront of the public eye. This has, for the most part occurred due to the short squeeze on AMC and GameStop that was exploited by the public. When looking into the difference between investment returns between the professional group and individual groups, there is some information on the variance of practices partaken by the individual and professional investors in scholarly writings. Despite this, a gap in knowledge as to the differences in behaviors between the two groups persists.

The objective of this research is to provide insight to investors on both sides as to the tendencies they share, and the inclinations that separate them. On the other hand, the data and conclusions from this paper could also be used to teach non-professional investors what practices they should employ that the average individual investor does not typically consider.

LITERATURE REVIEW

The current literature has a lot of information on the investment behaviors of individual investors, and the investment behavior of professional investors, but does little to compare the two. The papers that are about individual investor behavior are split quite evenly between quantitative and qualitative methodology. The qualitative papers primarily focus on the behaviors and behavioral effects of individuals who are investing, while also delving into the outcomes resulting from these behaviors.

Terrance Odean wrote about how investors with discount brokerage accounts typically tend to trade too much (Odean, 1999, p. 1276). Individual retail investors tend to use discount brokerage accounts, putting them at a bit of a disadvantage. These investors are hindered because they do not have access to a retail broker who can suggest purchase prospects. This is important because this would narrow the search for potential investments. While theoretically this would hurt returns due to a constrained investment frontier, this also restricts the amount of research individual investors would have to partake in order to find worthwhile investments, hence helping their long run risk adjusted returns (Huang, Kim, 2023, p. 116). This is in part due to the paper also stating that most individual investors cannot evaluate each individual stock, hence this narrowing down of potential purchases would allow the investor an opportunity to create valuations and do more research on their eventual stock picks. This further advanced research into the business that the stock is based upon would lead to greater potential of positive investments as the investor will have a greater, and deeper understanding of the market value and the true worth of the stock in a financial sense.

When considering Individual Investors, it may be more important to understand the lack of an efficient market due to the aforementioned reasons. Access to good business research would not only allow individual investors a chance to understand what stocks to buy, and why, but also afford them the knowledge to understand the price at which the stock should be sold in order to maximize profit. Instead, Individual Investors rely on media and past experiences, which was described as having a negative influence on many investors. When it comes to potential growth stocks, this research may be the difference between finding a stock that fails in the coming months, and finding one that goes on to be a future Fortune 500 company.

"Return patterns after purchases and sales are more difficult to understand. It is possible that some of these investors are among the last buyers to contribute to the rise of overvalued momentum securities and are among the first to suffer losses when these securities decline" (Odean, 1999, p. 1296). Due to this, there is a clear lag in information for Individual investors that does not seem to plague professional investors the same way.

It is also stated that households that own taxable investment accounts are more affluent and financially knowledgeable than households with only retirement accounts, which are in turn more affluent and financially knowledgeable than the households without investment accounts. This was especially clear when, in another study, subjects were asked questions about risk, as people who did not own an account only answered about 30% of questions correctly. What is even more concerning is that people who did own taxable accounts in which they invested only, only 68% answered the same risk questions correctly (Mottola, 2015).

Almost half of all Americans hold some kind of investment portfolio. A study by Hilgert and Hogarth found that 46% of individual investors invested in mutual funds, while 24% invested in stocks and only 6% invested in bonds (Hilgert and Hogarth2003, p. 317). This means that individual investors may look to mutual funds in order to diversify their portfolios. There are many different kinds of funds that have many different focuses, so it is hard to say, based on these findings, that individual investors do in fact diversify their portfolio through the use of mutual funds. If it is in fact true that individual investors have undiversified portfolios, they are prone to worse risk adjusted returns (Hilgert and Hogarth, 2003, p. 311). According to 'The Behavior of Individual Investors', "Many [Individual Investors] hold poorly diversified portfolios, resulting in unnecessarily high levels of diversifiable risk" (Barber and Odean, 2013, p.37).

Based on the literature, it seems as though individual investors do not use consistent investment strategies like those employed by professional investors. The literature also describes several aspects of the investment behavior of professional investors.

Professional investors use different factors to screen potential investments. "Agents tend to apply complex decision-making mechanisms, but formal rules of rational choice can be overturned by subjective views, beliefs, and habits, which generate personal mental models that affect their decision processes." (Flori, Panmoli, Buldyrev, Regis, Stanley, 2019, p. 6573). Agents refers to professional investors. The data may be flawed as it was a limited data set, but in this sample, 20% of the invested portfolio was invested in government bonds, which is far higher than we saw with casual investors. This total does not even include corporate bonds, which another 25% was invested in. This 45% allocation to bonds is likely to be skewed by some very safe funds being in the sample data used in this paper (Flori, Panmoli, Buldyrev, Regis, Stanley, 2019).

US funds, which refers to mutual funds and ETFs, achieve good profit when they have good Morningstar ratings, good analyst ratings, large size, low management fees, and low ongoing fees. European funds achieve meaningful returns when they have good Morningstar ratings, high analyst ratings, large size, low management fees, low ongoing fees, and managers with long tenures. Comparing US and European funds reveals that both US and European funds achieve good profit under the same conditions, but the main difference is that European funds must also have managers with long tenures. This is not as much of a concern in the US market. This gives us a better understanding of what makes a fund worth investing in.

It seems as though experience from working as a fund manager has a significantly lower level of impact on returns than the European market. Based on this, experience as a fund manager seems less important than earlier teachings of investment concepts and experience gained in lower-level positions. (Graham, Lassala, Naverrete, 2020).

The potential effects on investment behavior that company fund manager meetings have are discussed in previous literature. It was essentially stated that “through company meetings, tacit knowledge is obtained efficiently and uniquely from the communicational richness of the face-to-face encounter. The meetings are useful because they enable fund managers to frame or make sense of the plethora of hard data provided by the companies themselves and by analysts” (Barker, Hendry, Roberts, and Sanderson, 2012, p, 219). Based on these findings, professional investors have yet another advantage when finding help with critical thinking and seeing investments from different angles and really understanding the growth potential of investments.

The type of account that individual investors generally hold does not give them access to a professional broker, which puts them at a disadvantage. This means that professional investors have greater information and are more knowledgeable in every investment category. On top of that, they have the opportunity to discuss their decisions with others who have a lot of information and expertise. Individual investors, on the other hand, have the word of their neighbors and friends. “Many are unduly influenced by media and past experience” (Barber and Odean, 2013, p.37). This is not necessarily true if they put time and effort into resources that discount brokerages provide as well as doing their own research. Even then, the same level of detail on specific investments would still be missing. Having said all of this, individual investors can invest in mutual funds and ETFs with professional management. This does not provide them with more information and an expert to discuss investment decisions with but does allow for them to reap the benefits of what professional investors are given access to. This does not give them the same level of advantage as a rate is paid on earnings from these funds.

It is important to consider financial literacy as a factor in all of this as those considered professional investors will have higher financial literacy rates than those who are not. Financial literacy is defined as “financial capability according to which a financially capable person has an understanding of credit, debt, budget, insurance and all other financial dimensions” (Goyal, Kumar, 2021, 81). The presented factors that determine financial literacy should be considered when assessing one’s financial literacy. Hsiao and Tsai created a financial literacy survey that tested money management and savings, credit and loan management, financial and investment planning, and insurance and retirement planning (Hsiao and Tsai, 2018, p. 27). The survey results were used to calculate the impact of aforementioned topics on decision making

Hsiao and Tsai showed that those with higher financial literacy rates are more likely to purchase derivatives (Hsiao and Tsai, 2018, p. 26). RCTs refer to randomized control trials. Kaiser, Lusardi, Menkhoff, and Urban observed “that the number of recent RCTs added to the database is driving the more positive result of financial education treatment effects on financial knowledge and behaviors" (2022, p. 271). The RCTs refer to trails that collect data for the database used in the study. The study showed that more recent financial education has had a more positive effect on financial knowledge and behaviors. This, in addition to the earlier found correlation between higher financial literacy rates and likelihood of purchasing derivatives, should mean that those who more recently partook in financial education are more likely to purchase derivatives. This could lead to the age of the sample for this study potentially swaying the data for derivative purchases. According to researchers, Carpena, and Zia, "Responses from the open-ended questions in our endline are likewise consistent with our finding that the main hindrance subjects faced in opening a bank account is not awareness, but rather attitudes" (2020, p. 169). This essentially means that when it comes to some financial operations one may have to partake in normally, it is their attitude, not awareness that leads to the subject not partaking in the financial operation. Considering attitudes have an impact on behavior, it will be interesting to see if this remains true for more complex operations such as participating in the options market.

Education will not change behavior completely, Santini and Ladeira mention that "individuals' cultural characteristics and personal values (power distance, uncertainty avoidance and indulgence), which are moderators in relationships pertaining to financial literacy, seem to coordinate their attitudes and consumption behaviors" (2019, p. 1474). If this is true, then there may not actually be any statistically significant differences between individual and professional investors, as the real differences in behaviors could potentially be seen within these groups. Furthermore, Xu and Zia found that those aged 25 to 65 are typically more financially literate than other age groups, scoring about 5% better on average than those not in this age range (Xu and Zia, 2012, p. 11). Another source suggests that "financial education has multiple benefits for improving financial well-being such as facilitating knowledge acquisition, enhancing confidence in knowledge and ability, and encouraging action taking" (Xiao and Porto, 2017, p. 14). This means that there should be a greater percentage of those who act among those who have a higher financial literacy rate. "Taking action" means buying or selling assets or acting in some way to manage a portfolio. It will be interesting to see how this also affects risk tolerance.

The literature discusses individual investors and professional investors, and their behaviors, albeit independent of each other. But there is not any literature comparing the behavior of individual and professional investors. This is especially the case from a qualitative standpoint. The literature reveals numerous factors that hold back individual investors outside of their, more likely than not, lower level of financial literacy in comparison to professional investors. Individual investors tend to trade too often, as well as getting in late on trends, and this leads to losses in their short-term investments (Odean, 1999, p. 1296). In the long term and according to this research, it seems that low financial literacy leads investors not diversifying enough, which leads to poorer risk adjusted returns to take on more risk for nearly the same if not a worse overall return. This study was conducted a quarter century ago, so this conclusion needs to be reassessed as the penalty for performance may be less severe today than in 1999.

METHODOLOGY

The paper incorporates a survey given to random individuals. The survey questions are shown in Appendix A. The survey is comprised of two parts. The first part tests financial literacy, focusing on the topic of investments. Some of these questions were meant to test aspects of financial literacy other than strictly investments topics (e.g. taxes). The questions that comprise the second part of the survey ask about investor behavior.

Question 13 asks who had invested before, and those that answered yes were sent to the second part of the survey. The second part of the survey then focused on asking questions to narrow down the general investing behaviors of all the remaining subjects. The behaviors that the questions pertain to include diversification, temperament, and risk tolerance. Once the results of the surveys were gathered, analysis of the first part of the survey was conducted. A score was given to each response to determine each respondent's general financial literacy score on a scale from 0-90.

The financial literacy score is based on questions 2, 3, 4, 8, 9, 10, 11, 12, and 13. Questions 1, 5, 6, and 7 were excluded from this score: 1, because of it only asking for consent to use the survey responses, 5 because of all participants answering it correctly, 6 because the question did not provide enough context, and 7, for the same reason as 5, but also due to feeling the question left way for personal bias. The remaining nine questions were scored on differing scales with values ranging anywhere between 0 and 10, culminating in an overall financial literacy score.

Question 2 asks how familiar the subject was with the stock market. The subject then answers on a scale from one to ten. This answer is then used as their score for the question. Question 3 asks if the subject ever invested in stocks bonds or mutual funds. Stocks and bonds are worth three points each, while mutual funds are worth four points. If someone invested in more than one, then the score for each asset class they invested in was added up to a possible ten points. The following question, question 4, asks whether bonds are riskier than stocks. The answer to the question is no, so anyone that answered “no” garnered ten points, while anyone who answered “yes” earned zero points.

The following scored question, question 8, was used to determine whether the subject ever calculated their personal rate of return for stocks, mutual funds, neither, or both. Those that answered “neither” received zero points while those who answered “stocks”, or “mutual funds” received 8 points. Those who said both received 10 points. This is scored differently than question 3 because it is assessing whether the respondent is able to calculate a personal rate of return. Due to this, even answering one of the two means the respondent still shows greater acumen for the concept than someone who answers none. The next question, question 9, asks whether the subject knows what a dividend is, those answering “yes” getting 10 points while those who answered “no” received zero points.

Question 10 asks which of the following was not a risk to investing. The correct answer is “that too many stocks in a portfolio would diminish the return.” This is not true. Those who answered the correct answer received ten points while any wrong answer received zero points. Questions 11 queries about how often the subject consumes financial media. For this question, “daily” receives ten points, “weekly” receives eight points, “monthly” receives five, while “never” receives zero.

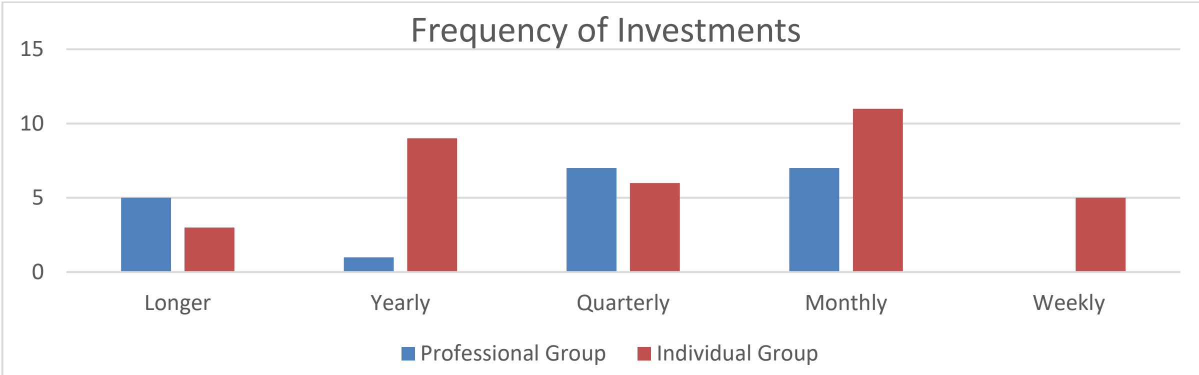
Question 12 asks the subject whether they knew how to calculate return on investment and gave examples of possible equations. The correct answer is worth ten points, while any wrong answers were scored zero points. The last question, question 13, asks whether the subject ever invested in financial assets. Those who answered “no” received zero points while those who answered “yes” were given ten and then sent to the second part of the survey. Only people who answered “yes” to the last question of part one was scored and sent to the second part of the survey.

Everyone who earned a score of 67 or higher based on the aforementioned grading scale was then put into the ‘Professional Investor’ proxy group. The remainder of those who said they invested were put into the ‘Individual Investor’ proxy group. After that, the data was sifted through in order to find overarching trends in investment behavior that appear in the two groups based on the responses to the second part of the survey.

DATA ANALYSIS

Most of the data analysis conducted for this study was based on the second part of the survey, which includes questions 14 through 32 of the survey, as shown in appendix A. After creating the separate proxy groups, t-scores were calculated for each of the questions to see if the two proxy groups, Professional investors, and Independent investors, showed statistically significant behavioral differences.

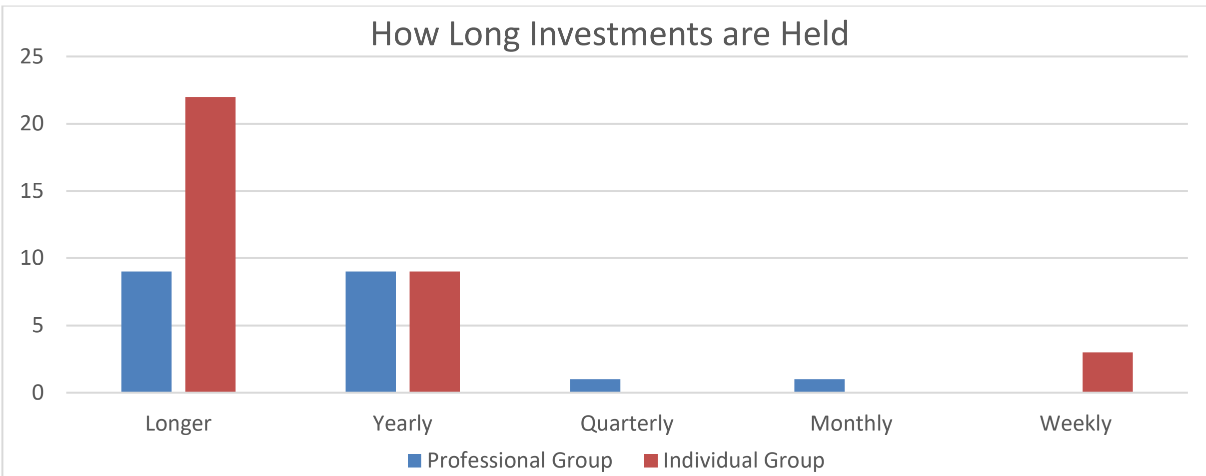
Question 14 asks how often the two groups invested in financial products or assets. The results of the survey showed a lack of statistical significance when testing for 95% confidence. Despite this statistical outcome, some differences can be seen between the two groups. The professional proxy group tended to be between monthly and quarterly. The individual investors proxy group more commonly chose monthly, and yearly, which is far less common for professional investors. Unlike the professional group, the individual group also had some investors who invested on a weekly basis. In addition, the individual group had some who invested in longer intervals, while this was not seen in the professional group. Overall, this shows that professional investors tend to invest in a similar time frame, which does not seem to be the case for individual investors.



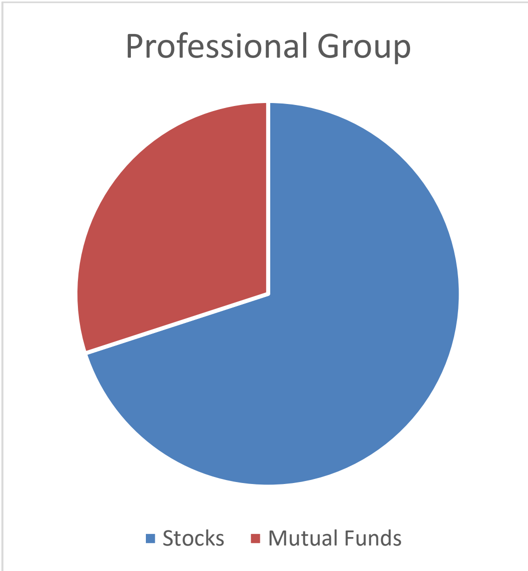
Question 15 focuses on the reason the subject invests in financial assets. Everyone in the professional group said the reason they invest is to increase wealth. Almost everyone in the individual group said they also invested to increase their wealth. There were three exceptions though. Out of the four individual investors that replied with a different answer, two said they invested to "preserve wealth" while the other two in the individual group replied, "safety net." The two groups being different was found to be statistically significant based on the calculated t-score to a 95% level of confidence.

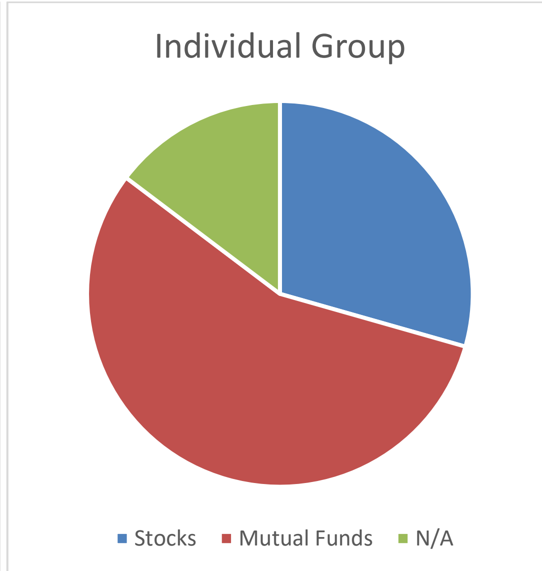
It does make sense for most to say "increase wealth" as investing in financial assets tends to come with taking on some risk, which is not typically done for free. Because of this, it was surprising that there were people in the individual investor group who replied, "safety net" and to "preserve wealth". The two from the individual investor group who replied preserve wealth later went on to say their preferred investment type is mutual funds. What is more surprising is that the two respondents who said they aimed to preserve wealth also said they invested primarily in stocks. The risk that comes with stocks does not make it seem like the type of asset one would invest in to simply preserve wealth, yet two of the survey respondents seem to disagree. This does make it seem like the reason for investing tends to be the same from a qualitative perspective, with outliers being more frequent among individual investors than professional investors.

Question 16 asks how long, on average, the survey respondent holds on to any single investment. This is a proxy for a "buy and hold" strategy. The professional investors split nine and nine between yearly and longer while the remaining two responded quarterly and monthly. A majority of the individual group responded either “yearly” or “longer”. The exact split was 22 for longer, nine for yearly, and three for weekly. The difference between the two proxy groups was not found to be statistically significant. However, some observations can nevertheless be made. The main thing worth noting being that the split between yearly and longer was around one to one for professional, but two to one for the individual proxy group. In addition, it may be worth noting that there were some individual investors who held assets for only a week. That is a very short amount of time and suggests a day trading strategy, especially considering that this was not seen at all in the professional group.



Question 17 simply asked the survey respondents about their preferred method of investment. The professional group was split 14 and 6 between stocks and mutual funds. The individual group on the other hand was split 19 and 10 between mutual funds and stocks. The remaining five responded N/A. As can be seen, the two groups were different in this regard. This was proven with statistical analysis as the t-score showed statistical significance that the two groups differed in this respect. It is interesting that both groups are around a two to one but favor different types of investment. This makes sense as the group with more financial knowledge is more reliant on stocks, while those who may not be as experienced or check their portfolio as often may find additional comfort knowing a fund manager is actively looking over their investment for them.

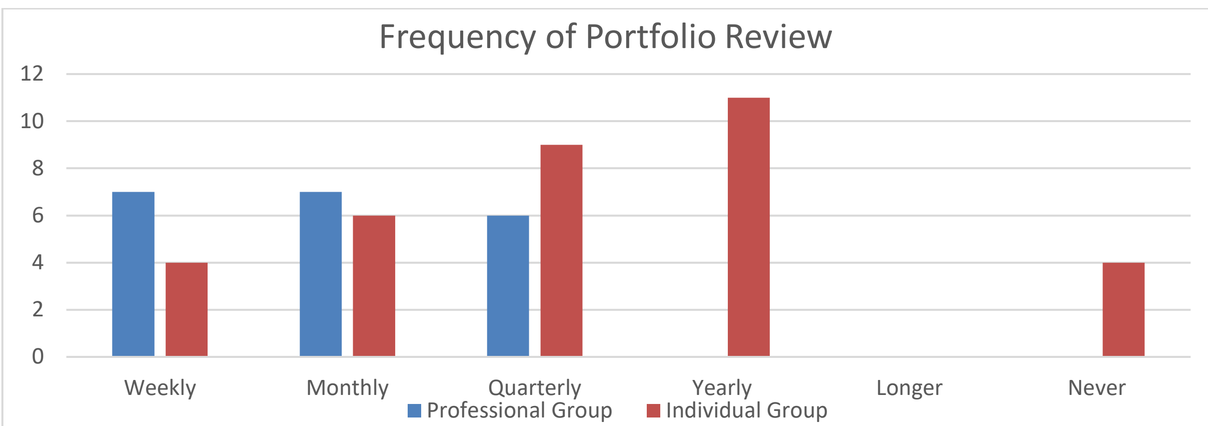




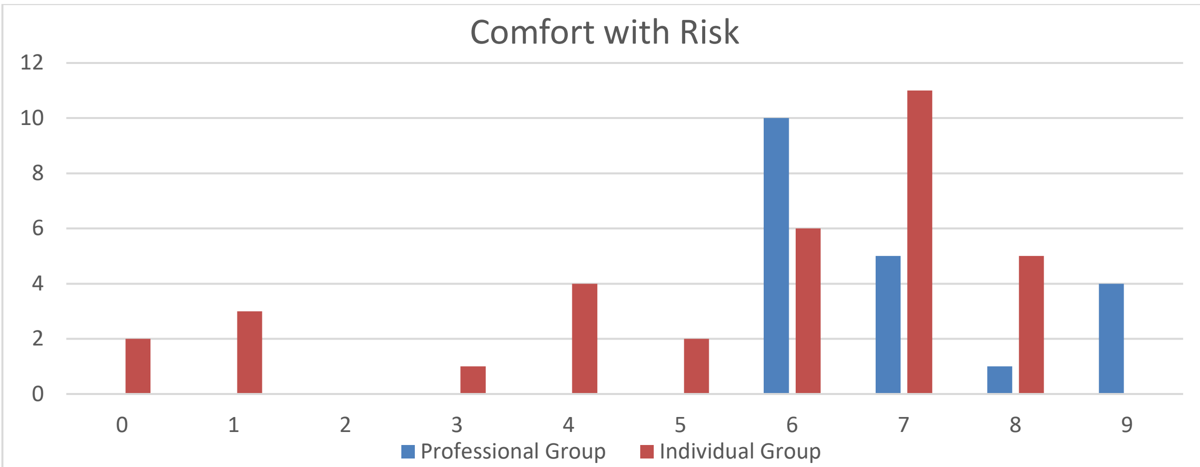
Question 18 was very similar to question 15. It asked what the most typical reason behind the individual investments you make. The professional group continued to all say their reasoning was to "increase wealth" showing consistency between the two questions. The individual group on the other hand had some people switch away from the increase wealth answer. This group had twenty-four say increase wealth, four say preserve wealth, three say safety net and three say they didn't know. There was one more say safety net and two more say preserve wealth as well as three individuals claiming they did not know what their most typical reason behind the individual investments they made than the responses to question 15. Like question 15, the two proxy groups responses were found to be statistically different using a t-score and 95% confidence. Despite this, the two groups tend to agree on the reason for investing being to increase wealth.

Question 19 asks whether the subjects ever invested using leverage. The entirety of the professional proxy group responded no, while some individual investors answered that they did. The exact split was five respondents from the individual group saying they did while twenty-eight responded they did not. The other respondent in the group responded that they did not know. Through a t-score analysis the two groups were found to be different using the same 95% confidence level that was used for all of the questions. The responses to this were especially surprising to me as leverage from my understanding is a tool used to extend potential profits, which seems like something those with higher financial literacy rates would be more likely to do.

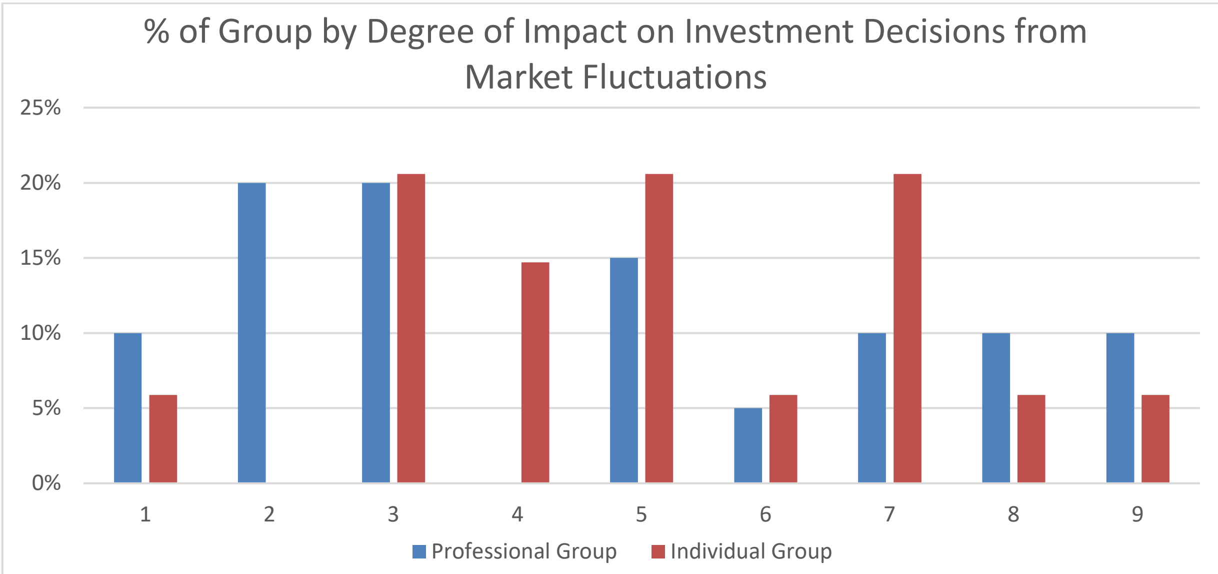
Question 20 asks how often the respondents reviewed their investment portfolios. The professional group was split as follows: seven for "weekly," seven for "monthly" and six "quarterly." The individual group was far more fragmented: four for "weekly," six for "monthly," nine for "quarterly", eleven for "yearly," and four who responded "never." On average the professional group would review their portfolios monthly, while the individual group was closer to reviewing their portfolios quarterly. The two groups' responses were found to be statistically significant here as well. Additionally, nearly half of all individual investors (15 out of the 34) responded that they checked their portfolio either yearly or never. This makes sense because of the group's predilection for mutual funds. Therefore, individual investors are essentially hiring someone to monitor the portfolio's stock selection.



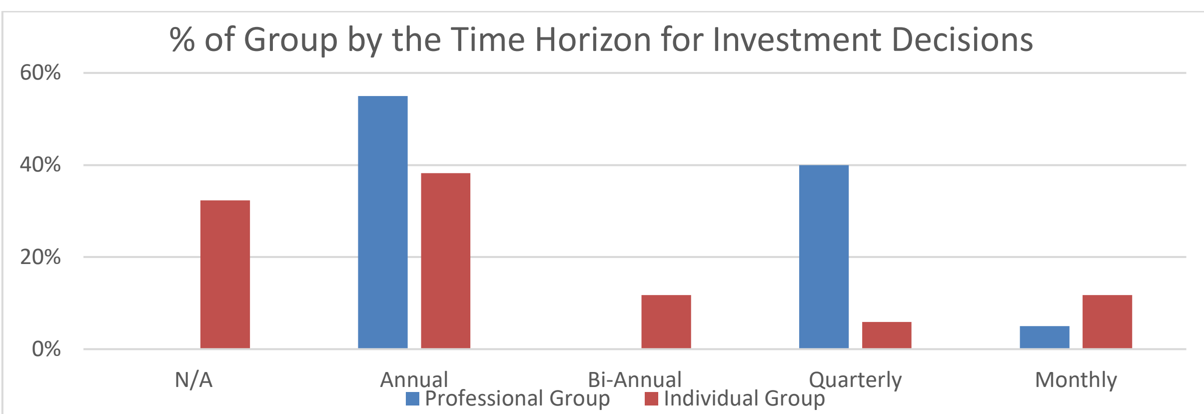
Question 21 asks how comfortable the respondents are with risk. The respondents then ranked their comfort level on a scale from zero to ten. The professional group's answers scored between six and nine, while the individual group's answers ranged between zero and eight. The professional group was split with ten saying six, five saying seven, one saying eight, and the other four responding nine. The individual group was split with two responding zero, three responding one, one responding three, four responding four, two responding five, six responding six, eleven responding seven, and five responding eight. The two groups' responses were found to be different using statistical analysis with the professional groups average comfort level with risk scoring an average of 6.95. By comparison, the individual group's comfort level with risk was 5.44 on average. This appears to contradict the question on leverage because leverage increases risk. Despite that, there were still some individual investors who used leverage while no professional investors did.



Question 22 asks how market fluctuations impact investment decisions. This essentially encapsulates their temperament on a scale from zero to ten. The split for professional investors was two responding one, four responding two, another four responding three, three responding five, one saying six, then two for seven, eight, and nine. The individual investors were split two for one, seven for three, five for four, seven for five, two for six, seven for seven, two for eight and another two for nine. The average for the professional group was 4.55 while the individual group average was 5.09. There was no statistical significance found between the two groups. It may be worth noting that half of the professional investors were under a four while only a third of the individual investors fell in the same group. Overall, it does not seem as though there is a correlation between temperament and being a professional or individual investor.



Question 23 asks about the subject's typical time horizon for an investment. The professional investor proxy group was split, eleven annually, eight for quarterly, and one for monthly. The individual investors were split thirteen annually, four for bi-annually, two for quarterly, four for monthly and the remaining eleven saying they did not know. The averages for both groups, if the group of individual investors who answered that they did not know are excluded, were about the same. No statistically significant difference between the groups was found.



Question 24 asks how important the time horizon is when deciding whether to buy or sell investments. The professional investment group responded one for two, two for three, one responding four, two for five, five for six, another five for seven, and four responding eight.

The individual proxy group was split, five for zero, one for one, four for three and four, six for five, seven for six, three for seven, and four for eight. The average for the professional group was 5.95, while the individual group average was 4.53. The two groups' responses were found to be different using statistical analysis with the professional group stressing the importance of time horizon in their investments more than the individual investor proxy group.

Question 25 asked how many different investment classes were held by the respondent. The professional group was split with two responding one, three responding two, six responding three, seven responding more, and two responding they did not know. The individual group was split with five responding one, six responding two, ten responding three, four responding more, and nine responding that they did not know. These responses do not reveal a statistically significant difference between the groups. This outcome could reflect a flaw in the survey because there were no specific answers available above the level of three asset classes, this could lump together a large portion of respondents.

Question 26 asks how many investments the respondent made in each investment class. The professional proxy group was split with four choosing 2-3, ten choosing 4-6, two choosing more, and four saying they did not know. The individual proxy group was split with nine responding 2-3, five responding 4-6, and a staggering twenty saying they did not know (although this may be explained by the groups' high usage of mutual funds). The difference between the two groups was found to be statistically significant with the professional group holding slightly more when ignoring all who did not know. The massive amount of "did not know" responses from the individual proxy group may also be skewing the data.

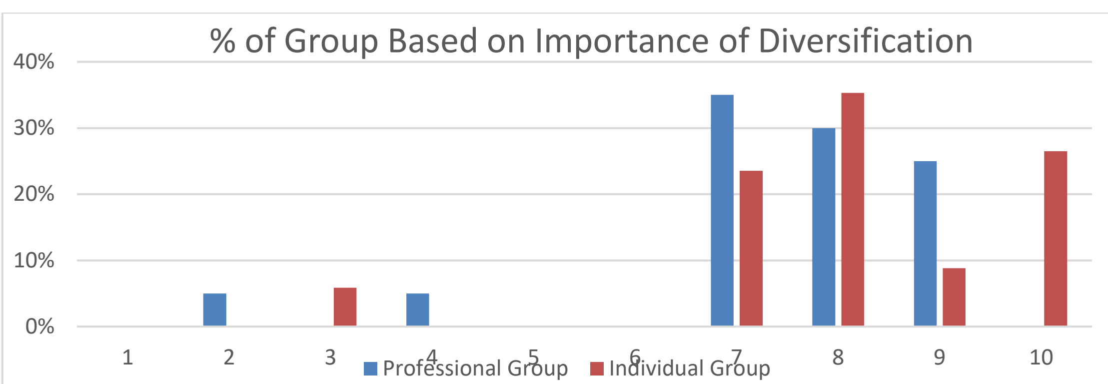
Question 27 asks what percent of the subject's portfolio was invested in stocks. The professional group had one respond 0-20%, three for 20-40%, five for 40-60%, and eleven for 80-100%. The individual proxy group responded seven for 0-20%, four for 20-40%, eight for 40-60%, seven for 60-80%, while the other eight said they did not know. The average for the professional group was 67% while the average for the individual group was 42%. The difference between the two groups was found to be statistically significant. This also makes sense when considering the professional proxy group favors stocks far more than the individual group, as well as the professional group being more comfortable with risk. Having said that, the high amount of "don't know" responses may have distorted the results.

Question 28 asked for the percent of the respondent's portfolio that is in safer assets such as bonds. The split for the professional proxy group was 13 responding between 0 and 20%, 6 between 20 and 40%, and one responding 40-60%. The individual group responded with three for 0-20%, eight for 20-40% and for 40-60%, seven for 60-80%, and one saying they did not know. The average for professional investors was 18% while the average for individual investors was 45%. The difference between the two proxy groups was found to be statistically significant. This lines up with the earlier responses to questions 27 and 28 because the individual investor is clearly more likely to invest in safer assets.

Question 29 asks what percent of the subject's portfolio is invested in more volatile investments. The split for professional investors was 19 for 0-20% and one for 60-80%. The split for individual investors had 24 for 0-20%, two for 20-40%, one for 40-60%, and seven that did not know. The two groups were not found to be statistically significantly different. Both groups, almost in their entirety, replied 0-20%, so there does seem to be a lot of similarities here.

Question 30 asked whether the subject ever rebalanced or adjusted their portfolio to maintain diversification. The split for professional investors was 16 for yes and four for no. The split for individual investors was 26 for yes, three for no, and five replied they did not know. The results were not found to be significant. The two proxy groups seem to place a similar amount of importance on diversification based on this.

Question 31 asked the subjects how important diversification is for the subjects when investing on a scale from 0-10. The split for professional investors included five responding nine, six responding eight, seven responding seven, one responding four and the last one responding two. The individual group was split two for three, eight for seven, 12 for eight, three for nine, and nine for ten. The averages were both remarkably similar, placing around 7.4 for the professional group and 8.0 for the individual group. The results were not found to be statistically significant for this question. The average for the individual group is higher than for the professional group, which is surprising considering the answers to the previous question. The individual investors predilection for diversification may explain what seems to be a discrepancy in results between these two questions.



Question 32 asks whether the subject ever invested in derivatives. The professional group was split with 13 responding yes and six responding no. The other respondent said they did not know. The independent group was split with 24 responding no, only one responding yes, and nine responding that they did not know. The result of statistical analysis was that the two groups were different. These results make sense as more experienced investors would be more likely to use such complex financial instruments.

DISCUSSION

The goal of this research was to reveal differences and similarities in investment behavior between individual and professional investment groups. Based on the survey results it can be seen that the two proxy groups tend to have the same reason for investing (although the individual proxy group is less consistent in this). The only real difference between the professional and individual investor groups was that the individual investors were less consistent in their reason for investing. In addition, the two groups held onto investments for the same average length of time. There is no significant difference in how frequently the two groups invest in financial products or assets. The average time horizon for investment decision for the two groups was also found to be similar and is bi-annual. The average for the importance of time horizon was different for the two groups. The professional groups' average was close to six, on a scale of one to ten, while the individual groups' score was around four and a half, showing a clear difference between the two groups.

Between stocks and mutual funds, the professional proxy group tended to favor stocks while the individual proxy group tended to favor mutual funds. The amount of investment classes the two proxy groups invest in on average is also similar at approximately three. The professional group scores a little higher, but there was no statistical significance found for this parameter. However, the amount of investments per investment class was different between the two proxy groups. The professional group was averaging around the 4-6 option while the individual proxy group was closer to averaging the 2-3 option. An interesting result of the survey was that none of the professional groups used leverage to invest while a few of the individual investors did use leverage (15% of the proxy group). It is also worth noting that the professional proxy group was found to review their portfolio once a month on average while the individual proxy group was found to be closer to once a quarter.

The portfolio for professional investors relied more heavily on stocks as around 67% of their portfolios, on average, while the individual investors averaged around 42% of their portfolio including stocks. The amount of the professional proxy groups' portfolio invested in safer assets like bonds was around 18%, while the amount for the individual proxy group averaged out to around 45%. Finally, the more volatile investments like cryptocurrency made up about 0-20% of both groups' investment portfolios.

The difference in the two groups' comfort for risk was also apparent. The professional proxy group scored about a seven on average while the individual proxy group scored about a five and a half on average. This difference in comfort with risk is apparent when looking at the general make up of portfolios as the individual proxy group invests far more heavily in safer assets like bonds (about twice as often) than those in the professional investors group, on average.

The temperament of the two groups was found to be quite similar. This was concluded through the two proxy groups averaging around a five for how market fluctuations affect their investment decisions. The professional group was slightly lower, but with no statistical significance to the difference found.

Both groups are similarly likely to rebalance their portfolios in order to maintain diversification. This is concluded from the level of importance both groups placed on diversification. Both were around eight on average, showing a high level of importance placed upon the concept of diversification by each of the proxy groups.

In the professional proxy group, 70% of respondents invest in derivatives. By comparison, in the individual proxy group only 5% percent of respondents invest in derivatives. This difference is drastic and is consistent with the hypothesis that complex financial tools such as derivatives, would more likely be utilized by those with deep investments knowledge.

CONCLUSION

In conclusion, while behaviors such as temperament and diversification held similar levels of importance between the professional and individual groups many behaviors are markedly different. Risky taking when investing seems to be higher among professional investors. Similarly, the professional investors' assets allocation weight more heavily on stocks, while the individual investors tended to shift their allocation toward safer asset classes such as bonds. A somewhat expected outcome is that the groups' reason for investing tends to be the same. Unsurprisingly, the professional group invests in more assets per asset class, as well as more advanced financial tools like derivatives, although on average the two groups invest in the same number of different asset classes on average. While many investors' behaviors are consistent between professional and individual investors, the research shows that there are several aspects of investing behavior that differ between the two groups. Some of these differences are likely attributable to financial literacy.

APPENDICES

Appendix A – (Survey Questions)

3) Have you ever invested in any of the following? (can select more than one)

- Stocks
- Bonds
- Mutual Funds
- None

4) Are bonds riskier than stocks?

- Yes
- No

5) Do you know what a 401(k)-retirement plan is?

- Yes
- No

6) What has a bigger tax advantage, traditional or Roth IRA (assuming you make no money when you retire and stay in the same state)?

- Traditional IRA
- Roth IRA
- They have an equal tax advantage
- I don't know

7) Do you know what diversification is in terms of investing?

- Yes

- No

8) Have you ever calculated your personal rate of return for a stock or mutual fund?

- Yes, stocks
- Yes, mutual funds
- Yes, stocks and mutual funds
- No

9) Do you know what a dividend is?

- Yes
- No

10) Which of the following is not a risk to investing in the stock market?

- The asset may not be able to be sold at the time or price you want to sell it at
- Too many stocks in a portfolio will diminish the return seen by the portfolio
- An increase in interest rates could decrease the value of stocks
- Inflation decreases the value of your investment
- Poor economic conditions or significant political investments could affect the value of investments

11) How often do you watch finance related programs/ tv channels/ or read financial papers?

- a. Never
- b. Monthly
- c. Weekly

- d. Daily

12) Which one of the following equations calculates the return of an investment?

- a. (Current value of investment – cost of investment)/ cost of investment
- b. Current value of investment/ cost of investment
- c. Current value of investment – cost of investment
- d. Cost of investment – current value of investment/ beta of the stock

13) Do you currently, or have you ever invested in any kind of financial assets?

- Yes
- No

14) How often do you invest in financial products or assets?

- Weekly
- Monthly
- Quarterly
- Yearly
- Longer
- Never

15) Which of the following reasons is closest to the reason you invest?

- Increase wealth
- Preserve wealth

- Reduce risk
- Safety net
- Don't know

16) On average, how long do you typically hold onto a single investment?

- Weekly
- Monthly
- Quarterly
- Yearly
- Longer
- Never

17) Which of the following is your preferred type of investment

- Stocks
- Bonds
- Mutual Funds
- Other
- N/A

18) What is the most typical reason behind the individual investments you make?

- Increase wealth
- Preserve wealth

- Reduce risk
- Safety net
- Don't know

19) Have you ever invested using leverage (borrowed money)?

- Yes
- No
- I don't know

20) How often do you review your investment portfolio (make up options)?

- Weekly
- Monthly
- Quarterly
- Yearly
- Longer
- Never

21) On a scale from 1 – 10 how comfortable are you with risk when it comes to investing?

Not at all likely   Extremely likely

0 1 2 3 4 5 6 7 8 9 10

22) On a scale from 1 – 10, to what degree do market fluctuations (sudden drops or large spikes) impact your investment decisions?

Little to no impact Heavy impact

0 1 2 3 4 5 6 7 8 9 10

23) What is typically your time horizon for investment decisions?

- Monthly
- Quarterly
- Bi-Annually
- Annually
- Don't know

24) On a scale from 1 – 10, how heavily does this time horizon come your decision to buy or sell investments?

Little to no impact Heavy impact

0 1 2 3 4 5 6 7 8 9 10

25) How many different types of investment classes do you currently hold in your portfolio?

- 1
- 2
- 3
- More
- Don't know

26) For each investment class, how many securities do you pick?

- 1
- 2-3
- 4-6
- More
- Don’t know

27) What percent of your portfolio is invested in stocks versus other asset classes, including bonds, real estate, cryptocurrency, etc.?

- 0%-20%
- 20%-40%
- 40%-60%
- 60%-80%
- 80%-100%
- Don’t know

28) What percent of your portfolio would you say is in safer assets like bonds and real estate?

- 0%-20%
- 20%-40%
- 40%-60%
- 60%-80%
- 80%-100%
- Don’t know

29) What percent would you say is typically in more volatile investments like cryptocurrency?

- 0%-20%
- 20%-40%
- 40%-60%
- 60%-80%
- 80%-100%
- Don’t know

30) Have you ever rebalanced/adjusted your portfolio to maintain diversification?

- Yes
- No
- I don't know

31) How important from a scale from 1 – 10 would you say diversification is when considering investments?

Not Important Extremely Important

0 1 2 3 4 5 6 7 8 9 10

32) Have you ever bought derivatives products such as swaps, futures, forwards, options (put, call, cap, floor, or exotic options), warrants, credit default swaps (CDS), collateralized debt obligation (CDO) or leveraged ETFs?

- Yes
- No

- I don't know

Appendix B – (Survey Results)

Question	Hypothesis	Sample Size (Independent group)	Sample Size (Professional Group)	T score	Finding
Question 14	The frequency of the two groups investments is different.	34	20	1.101	Not Statistically Significant/ Hypothesis is incorrect
Question 15	The two groups reason for investing is the same.	34	20	2.487	Statistically Significant/ Hypothesis is correct
Question 16	The duration investments are held by the two groups are different.	34	20	-0.308	Not Statistically Significant/ Hypothesis is incorrect
Question 17	The preferred method of investment is different between the two groups.	29	20	2.355	Statistically Significant/ Hypothesis is correct
Question 18	The reason for investment is different between the two groups.	31	20	18.783	Statistically Significant/ Hypothesis is correct

Question 19	The likelihood of investing on leverage between the two groups is different.	34	20	-2.390	Statistically Significant/ Hypothesis is correct
Question 20	The frequency of portfolio reviews is different between the two groups.	34	20	-4.935	Statistically Significant/ Hypothesis is correct
Question 21	The two groups comfort with risk is different.	34	20	2.583	Statistically Significant/ Hypothesis is correct
Question 22	The temperament of the two group is different.	34	20	-0.765	Not Statistically Significant/ Hypothesis is incorrect
Question 23	The time horizon of investments is different between the two groups.	23	20	-0.231	Not Statistically Significant/ Hypothesis is incorrect
Question 24	The importance of time horizon when investing is different between the two groups.	34	20	2.450	Statistically Significant/ Hypothesis is correct

Question 25	The two groups invest in different amounts of investment classes.	25	18	1.524	Not Statistically Significant/ Hypothesis is incorrect
Question 26	The average number of securities in each investment class is different between the two groups.	14	16	2.538	Statistically Significant/ Hypothesis is correct
Question 27	The percent of the total portfolio invested in stocks is different between the two groups.	26	20	3.698	Statistically Significant/ Hypothesis is correct
Question 28	The percent of total assets invested in safer assets is different between the two groups	26	20	-5.597	Statistically Significant/ Hypothesis is correct
Question 29	The percent of total assets invested in more volatile assets is different between the two groups	27	20	0.435	Not Statistically Significant/ Hypothesis is incorrect
Question 30	The two groups likelihood to rebalance their portfolios for the sake of diversification is different	29	20	0.300	Not Statistically Significant/ Hypothesis is incorrect

Question 31	The importance of diversification is different between the two groups	34	20	-1.418	Not Statistically Significant/ Hypothesis is incorrect
Question 32	The two groups have different likelihood to purchase derivative products.	25	20	5.523	Statistically Significant/ Hypothesis is correct

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