Stock Market Simulation

An Interactive Qualifying Project Report: Submitted to the

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By

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Abstract

This project is a six-week stock market simulation with a comparative analysis of trading methods and a research report on the inner workings of the stock market. The goal of the simulation is to run two different simulations with different trading methods for comparisons. The first trading strategy was the Buy and Hold strategy where an initial investment was made, and no further trading was done. The second trading method was the Swing Trading method where utilizing market indicators was necessary to determine when to buy or sell stock shares. Each simulation began with a theoretical $100,000 to invest in five companies. Each of the five companies were invested evenly with approximately $20,000. The returns for the strategies were similar: 2.7% profit for the Buy and Hold strategy and 2.9% profit for the Swing Trading method. This proved that technically the Swing Trading method was more successful than the Buy and Hold strategy. This project not only had a comparative analysis but gave participants valuable experiences for future investments in the stock market.

Acknowledgements

Throughout this project I have experienced many challenges that I could not have overcome without the amazing support of so many individuals. First I would like to thank Professor Tang for his unwavering patience in guiding me through this project. Next, I would like to recognize the financial aid office at WPI for being financially supportive of me and this project, without the lovely staff in this office I would not have been able to complete this project. I also must acknowledge the support of a dear friend who encouraged me to do this project and helped me whenever I felt unsure of anything when it came to stock market trading, thank you, Lauren Meinhold. And finally, I have the utmost gratitude for Worcester Polytechnic Institute for hosting the project program and for providing me with ample sources for my research.

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Chapter 1: Introduction

1.1 Goals and General Plan

The purpose of this stock market IQP (Interactive Qualifying Project) is to become comfortably familiarized with the inner workings of the stock market. Over the course of six weeks, I will invest $100,000 in hypothetical money in stocks of my choice and inspect my success in making money through the stock market. I will do in-depth research over the course of two weeks examining the history of the stock market, investment methods, and the different branches of the market such as the NASDAQ, the Dow, etc. Having a better understanding of the inner workings of the stock market, I will then focus on two investment methods to use while investing theoretical money; swing trading method and buy and sell method. Then I will find an adequate stock market simulator. With research aiding my understanding of the stock market, using the simulator, and keeping the chosen methods in mind, I will invest $100,000 of hypothetical money into stocks for various companies ranging over many industries. After collecting six weeks' worth of data from chosen stock investments, I will compare the two methods and analyze my newly gained knowledge of the stock market to assess the most effective ways to utilize the stock market. With the knowledge learned from this IQP I hope to become a skillful stock market investor.

1.2 History

The stock market exchange became prevalent in the 1600's in Europe, where countries such as France, The Netherlands, and England chartered companies in the East Indies and Asia. The British East India Company played a significant role in the development of the modern day stock market. Because transporting goods during the 1600s happened predominantly by boat, there were many risks of goods not arriving in middle European countries. Considering pirates, barbarians and sea voyages dismantling many transport ships. Buying products became very risky. Companies, or business owners would seek investors for these goods and if the products arrived successfully, investors would get a payout from the companies who successfully received and sold their products. Investors also faced the risk of not getting any compensation if the goods did not make it. This concept became immensely popular and therefore the stock

market was established. Through centuries of trading goods, insurance, supply and demand and economic growth altered and improved the global stock market.

In London in 1773 the first modern stock market was developed called the London Stock Exchange (LSE). Nearly two decades later the New York Stock Exchange (NYSE) was developed. Both grew dramatically following their introduction into the corporate world, however because of less restrictive laws, and Wall Street being in a prime location of the business district in New York City, the NYSE thrived more than any other stock exchange. When technologies were developed and applied to the stock market, it only perpetuated and sped up the stock market process.

The technology within the stock market allowed drastically more people to invest in companies globally. This was specifically noticeable when the internet revolutionized the market by introducing online buying and selling, and automatic order execution (1). Automatic order execution applied algorithms and depleted the need to manually input trading stocks. Notifications could also be sent to let an investor know that the stock price had gone up or down by any given amount.

1.3 Factors that influence the stock market

The stock market is influenced by many aspects of global economies. Interest rates, economic growth, and the media are key factors in the uptake or downfall of stocks. The market is constantly being bought or sold. The more buyers for a product or company, the price for said company's stock will increase, and when there are fewer buyers, or more sellers, the stock of a given company will decrease in price. Often, the fluctuation in stock price is not drastic and remains consistent. However, when economic growth is high, interest rates are low, and inflation rates are also low thus the stock market can be more appealing and therefore changes the pricing of stocks. Natural disasters and economic decay can also affect stock prices depending on the scenario for which the circumstances arise.

Media has a major influence in every corner of the world, but media is particularly influential in the buying and selling of stocks. The media is a great resource of knowledge and information sharing which can help future investors of the stock market. However, there is a great deal of misinformation in the media

leading to nearly fraudulent situations. Even the most educated minds can be manipulated with the involvement of technology in the stock market (2). There are benefits and issues with media involvement in the stock market, regardless of good or bad influence, the media plays a key role in sharing information on the stock market. Most news stations dedicate an entire portion of their show to updating their viewers on the conditions of the Dow Jones, 500 Index, the Nasdaq, and even the Russell 2000 Index.

1.4 Stock Market Indexes

The Stock market indexes are subgroups of the stock market. An index tracks the performance of a collection of stocks. Market indexes have a collection of stocks which can be collected based on the type of product, such as tech stocks, or can be all encompassing of the stock market. These indexes help track the quality of the stock market's financial identity. There are many indexes, but the most well-known indexes are the Standard and Poor's 500 (S&P 500), the Dow Jones (DJIA), the Nasdaq, the Russell 2000, the NYSE Composite, and the Wilshire 5000 Total Market Index (3). But the media most commonly reports on the S&P 500, the Dow Jones, and the Nasdaq. These three are the most representative of the statistical change in the economy as exemplified by the stock market as a whole. Indexes such as these are run by many people, but a head manager determines what stocks are desired for the given index and then provides index weighting where companies impact on their index is valued differently or equally depending on how it is determined they are weighted. There are three types of index weighting, price weighting, market cap weighting and equal weighting, and each index follows one of these three types of index weighting.

1.4.1 The Dow Jones Industrial Average Index (DJIA)

The Dow Jones Industrial Average Index, also known as DJIA or the Dow, was established in the late 1800s. The goal was to compile a group of stocks representative of key industries in the global economy. Originally 12 stocks were picked representing companies that had fuel products, metal products, agriculture and so on (4). These 12 stock prices were averaged and represented the stability of this stock index based on the average price of a stock. Now the Dow represents 30 companies with exceptionally enormous influence in the economy of the United States. The DJIA still uses a similar averaging model to represent its stocks financially. As stated in section 1.4, stock market indexes use certain types of index weighting. The Dow uses the price-weighting method of valuing the stocks and the index. A price weighted index (PWI) means that when a single stock costs more it has a higher percentage of representation in the index, for example if a stock is priced at $150 it is accorded higher than a stock that costs $100. The PWI is effective because it does not examine how large or small a company is, or how many shares it has. This method works for the Dow because of its selective nature in only having 30 of the most influential companies, meaning though they are not all the same in size or number of shares, they are all powerhouse companies in the global economy.

The DJIA current market price is $33,833.61. Though through the last decades the Dow has been trending up, in the past year there has been a slight downward trend, but it is on the rise once again. Figure 1.1 gave the price chart for DJIA for the past 30 years.

Figure 1.1 The market trend of the DJIA over the past 30 years, including current market price ($33,833.61).

The DJIA typically trends upwards with a few dips in market price following the 2008 recession, and one following the peak of the pandemic in 2021. Currently the market is in a minor upward trend and is up just slightly from last year's market price of $31,993.99.

1.4.2 The Standard and Poor's 500

Established in 1957, the Standard and Poor's 500 index (S&P 500) is a collection of 500 of the most influential corporations in the United States' economy. The index represents stocks from both the NYSE and the NASDAQ. Only highly influential companies can be included in the index, meaning there is a liquidity-based size requirement. Because this index represents the 500 most influential companies in the U.S. economy, and 80% of total value in the stock market, it is a great indicator of the movement of the U.S. stock market. The S&P is a float-weighted index. This means the number of shares available for public trading is considered when adjusting the market capitalizations of the companies in the index (5). This also makes it a market-weighted index. Figure 1.2 gave the price chart for S & P 500 for the past 30 years.

Figure 1.2 The market trend of the S&P 500 over the past 30 years, including current market price ($4,298.86).

The S&P 500 did exceptionally well in the late 1990s to early 2000s. Similarly, to the DJIA, the S&P 500 trended upwards over the last three decades with a few dips in market price following the 2008 recession. and during 2021, however the impact of the pandemic on this index was minor compared to the DJIA. Currently the market is in a minor upward trend and is up just slightly from last year's market price of

1.4.3 Nasdaq Composite Index

The Nasdaq Composite Index, often called the Nasdaq, is mainly representative of technology-related companies and their stocks. The Nasdaq was the first stock index to have a woman standing as it is CEO. This is a valuable index because a technological revolution is occurring globally and is one of the most well-funded industries in the modern global economy. It is the world's first electronic exchange and started as a security exchange commissioner. Its acronym stands for National Association of Security Dealers Automated Quotations. Microsoft, Apple, and Google are some of the big-name stock companies out of the nearly 3,700 companies encompassed by the Nasdaq. Based on its technological nature, the

Nasdaq became officially established in 2006, after branching from another index. Figure 1.3 shows the trends of the Nasdaq market from 1993 to the present.

Figure 1.3 The market trend of the Nasdaq over the past 30 years, including current market price ($13,259.14).

The Nasdaq, though technically officially established less than 30 years ago, was a part of the Nasdaq index. As technological revenue began to skyrocket, the Nasdaq eventually became its own entity and has done very well. The pandemic had an impactful, damaging effect on the Nasdaq, but based on numerical value, the Nasdaq has trended the most upward compared to other major stock indexes. It also has the largest uptrend of all major stock indexes over the past two decades.

1.4.4 The Russell 2000 Index

The Russell 2000 Index of smaller companies represents the impact of economic change on smaller companies, and in theory small businesses. Though the Russell index stands out for obvious reasons such as it isn't reported on in the media, the index also has a tendency to fluctuate much more than big company-based indexes. Figure 1.4. shows the prices of the Rusell 2000 Index over the last 30 years.
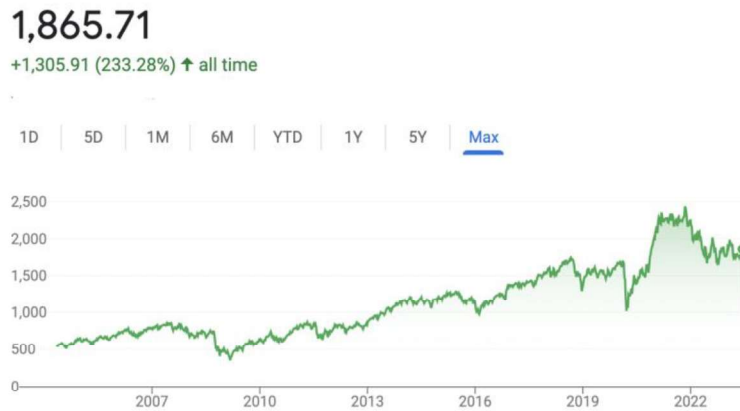
Figure 1.4 The market trend of the Russell 2000 Index over the past 30 years, including current market price ($1,865.71).

The Russell 2000 Index did not suffer as drastically during the 2008 market recession compared to other major stock market indexes; however, it is rambunctious nature in stock price makes it more unpredictable to invest in. During the pandemic of 2020, this index suffered, much more than large business stock indexes, but it came back nearly double its stock price prior to the pandemic just two years after suffering so greatly. However, unlike the other indexes, the Russell 2000 index is currently struggling, though the index is ahead all time, it is currently down from its 2022 comeback.

1.5 Recent History of the Stock Market

The stock market has become a daunting financial tool to be researched. In the past fifty years, with the addition of technology, the electronic capacity to transfer money and the unprecedented exponential growth in the global economy, the stock market has become a Hydra. To understand the inner workings of the stock market, the media can be helpful in delivering updates on financially successful and unsuccessful stock movements. The media has also been a key informer on the historical inflation occurring in the United States. Inflation is exceptionally high, and it is detrimental to the global economy, especially small businesses, and small countries. A representation of this can be seen in the stability of the major stock market indexes. Following the detriments of the pandemic, 2022 was a comeback year for the stock market,

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but due to inflation all the major indexes are slowly falling. It is particularly notable that the index to suffer the most from inflation is the Russell 2000 index which is representative of smaller corporations in the stock market. Because richer countries are experiencing increase in price fall of the value of an American dollar, smaller countries suffer, especially countries that are still developing. Most developing countries are already in debt, and with the global economy in this state, the debt of these countries could be unsustainable and detrimental to the impacted communities.

The war in Ukraine has also had an impact on the stock market. Natural disasters and global struggle are key influences in the stock market and this war is an obvious representation of that. Russia especially, but Ukraine as well, have many exports which are now more difficult to obtain due to trade restrictions and lack of access to the countries for safety reasons. International trade exportation for these two countries is exceptionally low and many of the resources these countries need is focused on helping their war efforts. It puts stress on the trade of energy resources, and food resources especially. Due to the strain on resources, there is a higher demand for them, and therefore raises the stock prices for those resources. Any products desired from Russia or Ukraine have higher stock prices and any products Ukraine or Russia may need to receive also have high pricing because of how difficult it is to get resources there.

India's economy is experiencing unprecedented success. With their continued growth in population there is a high need for resources, and high production with more people working in the country. The economic boom in India is making them a powerhouse in the global economy, recently becoming more successful than Germany and if this trend continues their economy will be even stronger than Japan, the third most successful country in the world. The Sensex 30 index, which is the index with stocks from 30 of India's most influential companies, rose by over 21%, outperforming two of China's top indexes. This economic boom has made them a powerhouse in eastern Asia and has improved their stock market as well as the global stock market, impacting how well the U.S. does in the meantime. This has directly improved the global economy greatly and has helped the overall stock market be on the upswing.

1.6 Stock Market Indicators

In order to be a profitable investor, or a successful broker, it is important to understand the movement and trends of the stock market. Tracking movements and assessing where profit margins increase, and decrease is called a market indicator. Stock market indicators are mathematically reasoned data points of stock price movement often appearing on charts. These charts and the data within them are used to identify prime times of buying, selling, or trading. Influences such as volume of a given stock, interest in investing in a certain stock and company performance are all technically analyzed. From there patterns can be developed and the data can be used to create information to indicate the movement of the stock market.

1.6.1 Moving Averages

A moving average constantly tracks the average stock price to help investors analyze price data. By using the history of stock pricing and current trends in the market, a calculation is done to track short term fluctuations in the market, a moving average (6). This stock market indicator has two main types; a simple moving average and an exponential moving average. A simple moving average (SMA) is just the average pricing over a specified period. It is used to smooth price data, the longer the SMA is tracked over time, the smoother the price data. SMA is used primarily for observing trends both short term and long term.

An exponential moving average (EMA) is a lot like a SMA where stock average prices are tracked over time. What sets the EMA apart is the calculations apply weight to more current stocks, or more expensive stocks fluctuation to give a more concise reading of the stock market. Because the EMA calculation has more complexity, it has more fluctuation than the SMA (7). It is extremely sensitive to price change. Figure 1.5 shows SMA and EMA on the same graph, and the exponential moving average is more sporadic and rigid in comparison to the simple moving average.

Figure 1.5. Simple moving average and Exponential moving average used comparatively.

1.6.2 Relative Strength Index

The relative strength index (RSI) is a valuable measure of short-term buying and selling of stocks. It is referred to as a momentum indicator because it identifies trends that are considered drastic and is represented using a graph. This indicator uses momentum swings to predict when a stock will be overbought or oversold, at the peak of overbuying or selling is when it is most valuable to trade stocks, but also the riskiest, because as soon as the overbuying or overselling of stocks occurs it shifts to trending in the opposite direction. And this process is continuous over time causing stock prices to constantly oscillate (8). Many short-term traders use the RSI to determine when to buy or sell stocks. Figure 1.6 is an RSI chart showing oscillating lines moving up and down to represent the movement of stock prices.
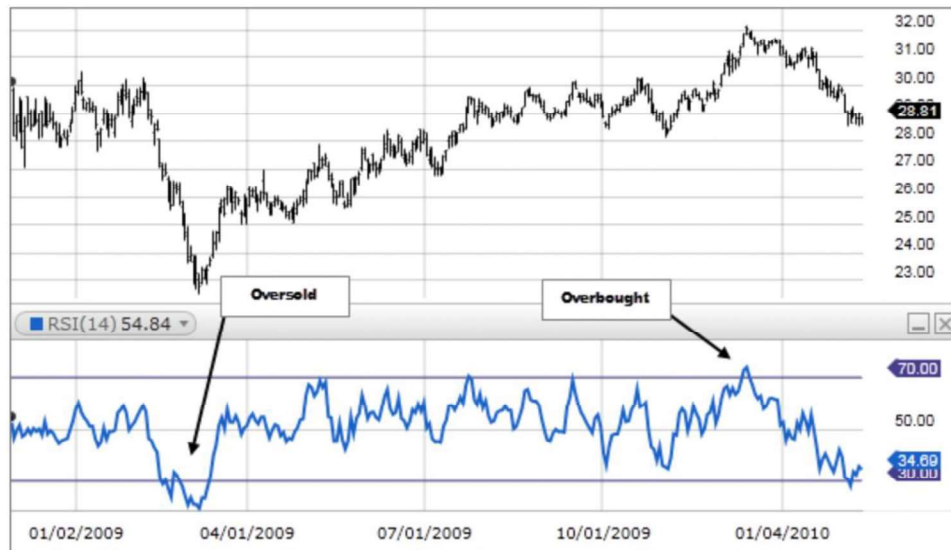
Figure 1.6 Two charts side by side; one showing the price trends of any given company compared to the second chart which has overbought or oversold lines where the price oscillated around.

Chapter 2: Methods

2.1 Stock Market Simulation

  To conduct this experiment a stock market simulator is necessary. After reviewing the numerous online options and researching past projects of this IQP, Investopedia serves as an efficient, easy-to-use platform. It simulates $100,000 in initial investment money. It allows for trading and research of the stocks that are being invested in, but most importantly it collects all data from the buying, selling, and trading process over the next two months and stores the information in a portfolio. Figure 2.1 shows the introduction to beginning a stock market simulation.
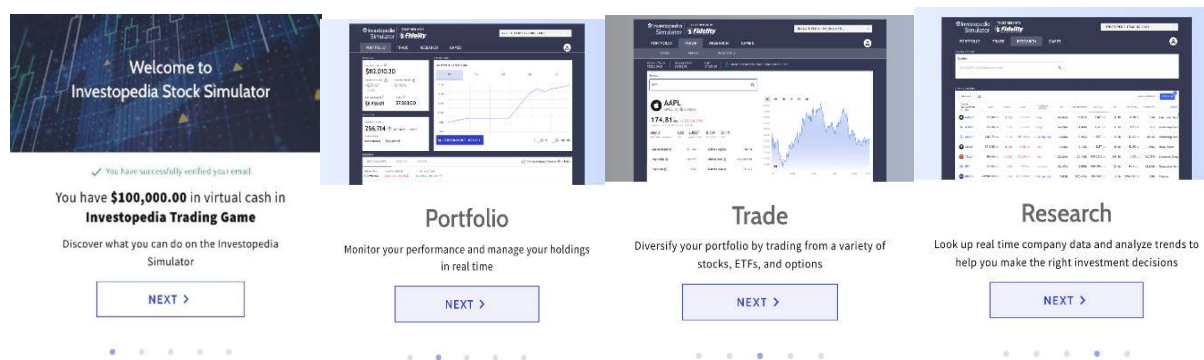
Figure 2.1 The onboarding introductory steps to work Investopedia. Including introduction, portfolio, trading processes, and research.

2.2 Data Analysis

  This project has two main focuses; to have a better understanding of the inner workings of the stock market, and a comparative analysis of two different trading methods. To compare both the buy and hold strategy and the swing trade method, I will run the same simulation twice for both strategies. All the stocks and price of initial investments in each stock will remain the same. Over six weeks, I will do a weekly assessment of profit and loss for each strategy. By collecting this data, I can assess the success of the swing trading strategy and consider the short-term success of the buy and hold strategy. In doing weekly reports

on my success, I can also analyze my personal understanding of how best to utilize the stock market as a financial tool in the future.

2.3 Buy and Hold Strategy

The idea of this strategy's success is based on the overall general uptrend of the stock market. Based on the current state of the stock market, and considering all major indexes are trending upwards, this investment strategy is very sound. Despite this uptrend, the market is also known to have had its dips. With that said the market always recovers, this can be seen after the market crash of 2008 and the pandemic's impact during 2020. Because the market is recovering and this strategy is a long-term investment, it is likely that there will be a payout because based on both historic market trends and current market trends, an investment would be profitable. This is a very lengthy turnaround though because if an investor had bought stock in an index like S&P 500 during the market crash of 2008, it took 3 years for the index to recover from the decline and the S&P 500 did not become profitable until 2012 (9). The utility of this strategy is to use it as a marker in comparison to the swing trading strategy. This means that as I utilize the swing trading method, I can compare it against how the stocks I invest in would do without trading, buying, or selling them.

2.4 Swing Trading Method

Contrary to the buy and hold strategy, the swing trading method is a short-term investing strategy which requires a lot of care and attention. This strategy works by using technical analysis, such as simple moving and exponential moving averages to conclude what stocks will be profitable at a given time. The ideal use of this strategy is to assess when a stock price is going to swing high or swing low. The goal is to trade long when the stock is increasing, and short trade when the stock is falling. Long trading means that an investor will buy the stock believing that the price will increase, meaning the investor will profit if the stock price goes up. Short trading means that an investor will sell thinking the stock price will decrease and the investor will profit from the stock falling (10). This is a very fast-paced way to profit from the stock market if done effectively. However, there is a lot of risk involved with this strategy because there is no

certainty that the market will do exactly as an investor predicts. Figure 2.2 shows an example of how the market swings in order to decipher when to buy or sell using the swing trading method.
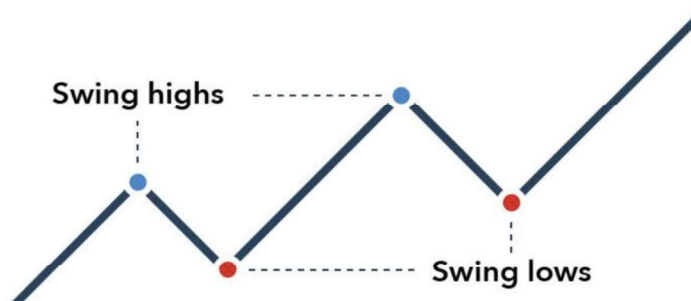
Figure 2.2 Graph of high and low swings indicate prime moments for long and short trading.

A major difference between the buy and hold strategy and the swing trading strategy is the profit timeline. Ideally swing trading is profitable short term and if done over time can be more profitable than the buy and hold strategy, whereas the buy and hold strategy will nearly guaranteeably be profitable over prolonged periods of time because the stock market is always trending upward, even following crashes the market historically has recovered and done better than prior to any crash. Because these two strategies follow different timelines, the importance of stock market indicators is more valuable to the swing trading method. The Swing trading method is not bound by buying and trading each day or week but is based on guessing (with proper analysis and research) the finest times to trade stocks. This could be over multiple days or happen in as little time as an hour. Moving averages such as the SMA and EMA from Chapter 1.6.1 are key indicators of when to trade. By equating the two averages together a mean average of stocks over time is examined. Because these averages are an analysis of prices that have already occurred this indicator isn't used to predict future averages, but to identify trends. The volume of a company's stock is extremely important to swing trading investors because the more investors involved in buying and selling a company's stocks means the stronger the trend will be. And finally RSI is useful to swing traders because it is an oscillating momentum analyzer which identifies when a stock is overbought or oversold, indicating the best

times to buy or sell based on if a stock is excessively trending upward, indicative of when to sell, or when

a stock is falling in price, indicating a time to buy.

Chapter 3: Selected Companies

3.1 Selection of stocks

After examining the various indexes and the companies within them, I decided using only stocks from companies in the S&P 500 would be most valuable to my goal of better understanding the stock market. The companies in the S&P 500 are the most well-known companies in the United States. These companies are not the most successful companies in the world but contain some of the most well-known profitable companies in various industries, spanning from electronics to automotives, and beyond. All companies chosen are multimillion dollar companies and the companies are household names such as Apple, Amazon, Tesla, Mastercard and Cisco. These companies are all well known, meaning that there is ample news and media coverage for the companies. Each of these companies is also at least 20 years old, meaning that each of these companies has a solid foundation in the stock market, and also an established history of trends, patterns and market indications.

The current state of the stock market is seeing impeccable gains, all major indexes have been trending upwards for the past 8 weeks (about 2 months). This is due to officially raising the debt ceiling, technological advances pertaining to AI. The upward trend is also in part accredited to the poor performance of the market in 2022. Fears of inflation hikes, and skyrocketing interest rates are a major concern for the current economy and impacted the prior year's stock performance. The rebound is a bit curious considering these concerns are still prominent. With so much economic worry and deficient performance in the past year, rebounding and trending upwards only satisfies the historical trends of the market to recover and gain after times of lackluster success.

3.2 Apple Inc (AAPL)

Apple Inc. Is one of the most recognizable brands in the world. It's signature apple with a small bite taken out of it is branded on all of their products and they are the best-selling smartphone brand across the globe. Apple is a tech company producing computers, tablets, phones, and computer software. Founded

in 1976, in California, the company grew rapidly and entered the stock market just four years later with stock prices starting at $22.00 (11).

After an unpredictable 2022, Apple's stock strengthened and is at an all-time high since the introduction of Apple into the stock market in 1980. After having record years in 2009, 2019, and unexpectedly 2020, apple is looking to have another unprecedented year in 2023 (12). It is typical of stock prices to recover after a poor year, explaining 2009 after the recession of 2008. The economy was thriving prior to the pandemic in 2020 hence Apple's success in 2019. The unpredictable success of 2020 came from the need for technology in order to communicate. Many schools, offices, and individuals desired technology in order to use Zoom, or Facetime. This led to Apple's success in an otherwise somber time for the stock market. Though 2022 was not necessarily a down year for the company, it was not an extremely profitable time either. 2023 has proven to be a bounce back year from the tumultuous financial threats of recession and inflation in 2022. Figure 3.1 shows he trends of Apple stock from the past month.

Figure 3.1 Apple Inc.'s stock activity over the month of June to date (June 15th) and current stock price as of June 15th.

3.3 Tesla (TSLA)

Tesla Inc. Is an American born company which produces electric automobiles, solar panels, car batteries and home power storage. Tesla's goal is to enhance and invent products; especially motor vehicles which are environmentally sustainable (13). The company, originally called Tesla motors was established in 2003, named after Nikola Tesla, a famous inventor from the 18th century. The mission of Tesla motors initially was to mass produce electric sports cars, which it finally achieved in 2008 (14).

Going public on June 29th, 2010, Tesla's initial share value was $17.00, but ended the day at $23.89. This was one of the most successful first days on the stock market for any company, having a 40.5% one day gain (15). Following the pandemic's strike of March 2020, Tesla had been trending upward, reaching a peak stock price of $407.36 in November of 2021. Unfortunately for Tesla, like most companies, 2022 was unpredictable and the company experienced severe downward trending at the end of 2022. The company started the year 2023 with a stock price of $113.06. Figure 3.2 shows the high and low points of Tesla stock prices over the past two years.
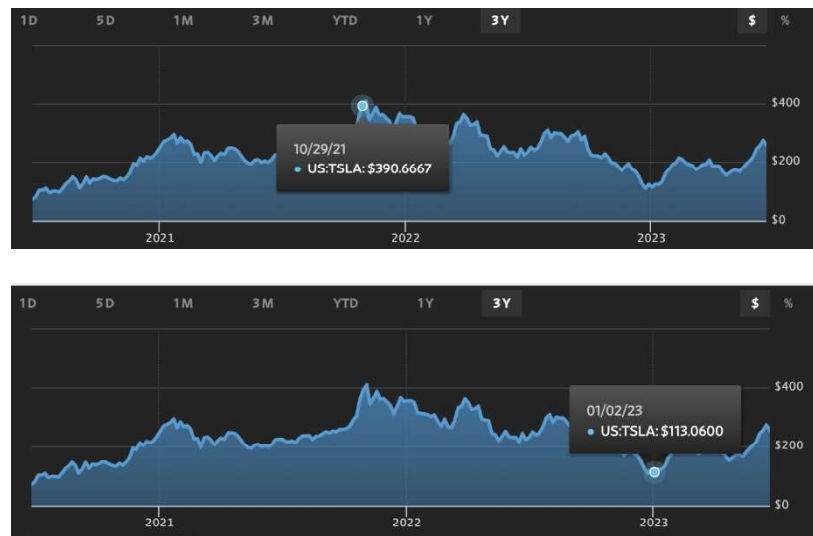
Figure 3.2. Stock trends over the past 3 years including October 21st, 2021's second highest stock price since the company went public ($390.67) and one of the company's lowest points, January 2nd, 2023, with a stock price of $113.06.

While most stocks for companies are thriving in 2023, Tesla is looking to rebound from a poor ending to 2022. While it is on the uptrend 2023, Tesla historically has done very well during the summer, particularly in the month of June, making it a good time to buy initially and sell high. The past three summers have had increasing stock prices and higher volumes. Figure 3.3 shows the stock activity of Tesla from the past six months, including rising stock prices as the summer approaches.

Figure 3.3 Tesla's stock activity during 2023, with an increase in stock price from the start of the year, spiking during the month of June 2023. Current stock price as of June 15th is included as well.

3.4 Amazon (AMZN)

Amazon is an online retailer, initially specializing in selling and reselling books, and CDs is now a global powerhouse, monopolizing the selling of thousands of products, spanning from technology to household goods and everything in between. Essentially, if you can think of it, you can buy it online through Amazon. They have also monopolized distribution centers and across the United States and continue to grow exponentially both in profit margin and company size.

Due to its continued success, over the past three decades, Amazon's stock prices have proven valuable to investors. In 1997, Amazon went public with an initial stock price of just $18.00. Though there have been many prosperous years for the online retailer, 2020 had unprecedented success. At first March

2020 was a horrendous month for the market, contrary to most companies, Amazon thrived during this month and throughout the entire pandemic. Because in person shopping had been put on hold, and due to Amazon's well-established presence as an online marketplace, it thrived excessively during the pandemic being one of the strongest retail companies to come out of the pandemic.

The company experienced immense success up until March of 2022. As fears of recession grew, tech companies got crushed, Amazon having a large portion of capital coming from tech, suffered greatly during this time. Because they had been doing so well, their fall from greatness was even more dramatic than a lot of major companies in the S&P 500. Amazon lost approximately half its value in 2022 (16). During January of 2023 Amazon's stock was priced at just $86.00, but since then the company's stock has been trending up. Figure 3.4 shows the upward trend of Amazon stock including the current price of $125.49, a big increase from January.

Figure 3.4 Amazon's stock activity over the past six months and current stock price as of June 15th.

3.5 Mastercard (MA)

Mastercard is one of the largest payment processing corporations worldwide. The company markets themselves as a global technology company in payment processing. Making its profit off transaction fees,

processing fees and interest. Because they make a bulk of their profit off interest rates, when interest rates go up, credit card companies can raise their interest rates as well and gain higher capital because of the higher rate.

This credit card company went public in 2006 despite having been established in 1966. The initial share price was $39.00, and the company immediately thrived in the market. The company remained nearly unscathed following the market crash of 2008, and continued trending upward over its nearly 30 years in the stock market. However, the company did suffer during the Covid-19 pandemic, taking an entire year to recover from the economic downfall. It took another six months for the company to be more successful than prior to the pandemic. After a bumpy 2022, 2023 is looking more successful. Figure 3.5 displays the volume of stock purchases in comparison to the price of stock.
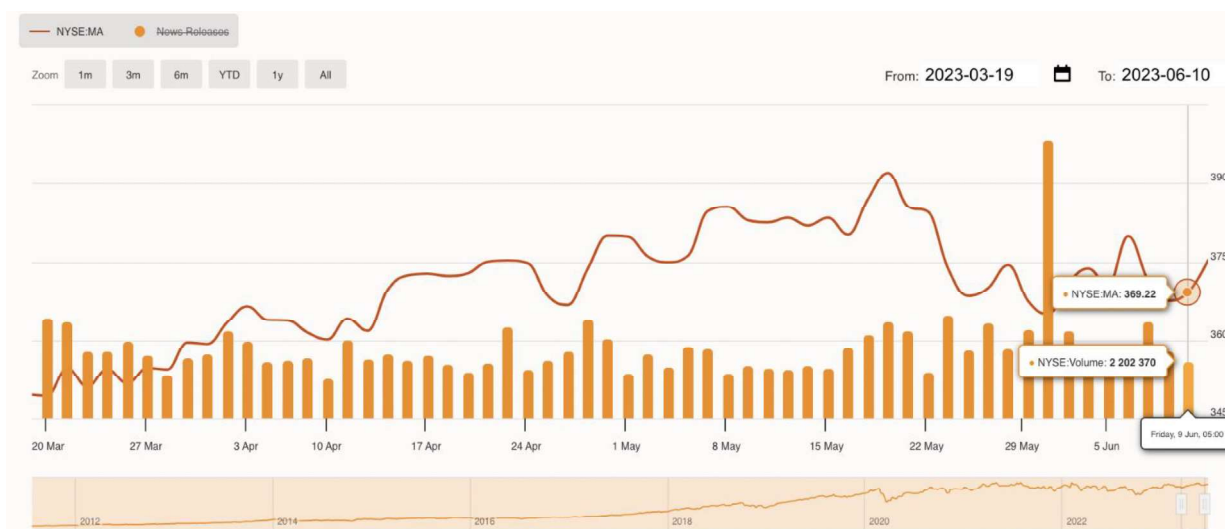
Figure 3.5 The fluctuations of price and volume for Mastercard stock over the past two months.

2023 has not been as prosperous a year for Mastercard in comparison to other companies in the S&P 500, and it is still a very up and down market for Mastercard. Volume and stock price have fluctuated actively for the past 22 months, making this a very interesting prospect for swing trading investors. Figure 3.6 shows the fluctuation in stock price for Mastercard Inc. from January to June of 2023.

Figure 3.6 Mastercard's stock activity during 2023 and current stock price as of June 15th.

3.6 Cisco Systems Inc (CSCO)

Cisco Systems Inc is an American technology company known best for its computer networking systems. Their mission is "...to shape the future of the internet by creating unprecedented value and opportunity..." for their customers, employees and investors. The company produces innovative networks which can access the internet more efficiently than before. They work towards technological optimization.

At the turn of the century Cisco experienced historical economic growth. After entering the stock market in 1990, just ten years later Cisco's stock tripled in just one short year. This allowed their market capitalization to increase by nearly $400 billion. After two years of prosperity, Cisco's stock price fell from grace but was still more prosperous than before the massive spike, being one of the most successful companies in the S&P 500. Like most companies, Cisco experienced struggles during 2008, and 2020, but was able to bounce back each time. Unfortunately for the company, it did very well in 2021, but has not experienced overall upticks in stock price since then. 2022 was not kind to Cisco in the stock market. The current year has been a bit of a roller coaster for Cisco investors. After having a promising start to the year, April 2023 had overpriced stocks with a decrease in volume, causing the stock to drop 4.51% (18). Figure 3.7 displays, Cisco has since rebounded with stock price back to $52.07 as of June 15th.
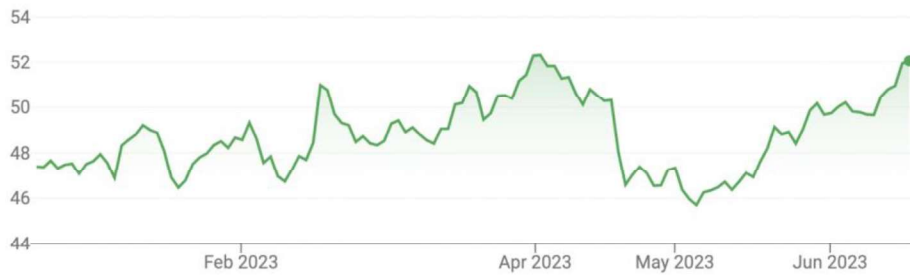
Figure 3.7 Cisco Systems Inc's stock activity over the past six months. Current stock price was $52.07 as of June 15th.

Chapter 4: Buy and Hold Strategy Simulation

4.1 Introduction

The buy and hold strategy is one of the least complex trading strategies that can be used for investing in the stock market. In order to use this strategy, an investor invests in a stock and observes it over time. It does not require daily check-ups because it is a long-term investment plan. Typically, the buy and hold strategy is observed over multiple years. However, given this project's time constraints, it would be difficult to examine the success of this strategy in just six weeks. Although this project does not fully analyze the success of the strategy, it is a great gage to compare the swing trading strategy to. In my simulation of the buy and hold strategy, I invested in the five companies mentioned in chapter 3. Using the $100,000 of theoretical money, I invested approximately $20,000 in each company and observed how the gains and losses of the market impact my account value.

4.2 Week One

For the first week of this project, I invested $100,000 into each simulation. I split the $100,000 almost evenly into $20,000 increments for each of the five companies I selected. I did this twice identically for both simulations. In doing so I have chosen to use the first week of the simulation to observe the movement of market prices while researching the relative strength index and moving average data in connection with the trends of each company's stock. The buy and hold strategy is not an active strategy. This passive approach to week one does not affect the buy and hold strategy because there is no trading involved in this strategy. Figure 4.1 shows my initial investments including quantity, unit price, and total price.

	TOTAL VALUE	TODAY'S CHANGE	TOTAL GAIN/LOSS				
	$98,850.11	$0.00 (0.00%)	-$266.44 (-0.27%) ↓				

Symbol	Description	Current Price	Today's Change	Purchase Price	QTY	Total Value	Total Gain/Loss
AAPL	Apple Inc	$186.68	-$34.24 ↓ (-0.17%)	$186.47	107	$19,974.76	$22.46 ↑ (0.11%)
AMZN	Amazon.com Inc.	$129.33	-$126.28 ↓ (-0.63%)	$129.32	154	$19,916.82	$1.56 ↑ (0.01%)
CSCO	Cisco Systems, Inc.	$50.33	-$311.26 ↓ (-1.55%)	$50.89	394	$19,830.02	-$218.67 ↓ (-1.09%)
MA	Mastercard Incorporated - Ordinary Shares - Class A	$379.81	$102.51 ↑ (0.53%)	$375.76	51	$19,370.31	$206.81 ↑ (1.08%)
TSLA	Tesla Inc	$256.60	-$616.77 ↓ (-3.03%)	$260.22	77	$19,758.20	-$278.59 ↓ (-1.39%)

Figure 4.1 Initial investments in five chosen stock companies.

The following week will have more data once I begin using the swing trading strategy in simulation two. Table 4.1 shows the initial investments with my profit margin and stock trends at the end of the first week of simulation. For four of the five companies initially invested in, they trended downward, which was concerning at first because using the stock market as a profitable tool is one of the goals for this project. One great quality of the market is that it always bounces back, but sometimes it takes a long time. I am hopeful that the market will be prosperous throughout this simulation because the economy is experiencing a bear market thus far in the second quarter of 2023. A bear market is when the stock market experiences a slowdown and trends downward.

4.3 Week Two

The values of shares for each of the companies I have invested continued trending upwards, therefore the buy and hold strategy is proving to be profitable as of right now, however this process is accumulative over long periods of time and is not so easily predictable. It is a good comparison for the second simulation where I can examine my success in using the swing trading method. Though the market is still technically a bar market it is trending upward rapidly, and a bull market is looming. A bull market is when there is a span of time where the market continues to trend upward (usually this means margins

improve by 20% or more) (17). Figure 4.2 shows the performance of the five companies I invested in without buying or selling any shares per the buy and hold strategy.

		TOTAL VALUE	TODAY'S CHANGE	TOTAL GAIN/LOSS			
		$94,089.21	$0.00 (0.00%)	$1,775.05 (1.92%) ↑			

Symbol	Description	Current Price	Today's Change	Purchase Price	QTY	Total Value	Total Gain/Loss
AAPL	Apple Inc	$193.97	$0.00 (0.00%) —	$186.62	107	$20,754.79	$786.45 (3.94%) ↑
AMZN	Amazon.com Inc.	$130.36	$0.00 (0.00%) —	$129.74	154	$20,075.44	$95.48 (0.48%) ↑
CSCO	Cisco Systems, Inc.	$51.74	$0.00 (0.00%) —	$50.92	394	$20,385.56	$323.08 (1.61%) ↑
MA	Mastercard Incorporated - Ordinary Shares - Class A	$393.30	$0.00 (0.00%) —	$376.74	33	$12,978.90	$546.48 (4.40%) ↑
TSLA	Tesla Inc	$261.77	$0.00 (0.00%) —	$261.46	76	$19,894.52	$23.56 (0.12%) ↑

Figure 4.2 Performance of investments at end of week two

The market thrived this week. All five companies ended the week in the green. Apple Inc. Had a very strong week gaining 3.94%. It was the second most successful company I invested in, right behind Mastercard who gained 4.40%. The company jumped from $376.74 to $393.30. This was a large jump and put Mastercard at the highest price per share it had been all year. Cisco, Tesla, and Amazon all experienced growth, but not as drastically. Tesla and Amazon gained by less than 1%.

4.4 Week 3

Week 3 of the buy and hold strategy simulation continued to be prosperous. Though there is no trading involved in the strategy, due to the bull market this strategy is proving to be very promising and steady. It is proving to challenge the success of the swing trading method due to its lack of risks, with that said the success can be great for the other strategy while this strategy remains observant. The strategy appears particularly strong because the S&P 500 index had another week of gains, this included the five companies I invested in. During the third week of simulation, the market has officially transitioned from a bear market to a bull market, making the simulation that more exciting. Figure 4.3 shows the success of this strategy for week 3 of the simulation.

		TOTAL VALUE	TODAY'S CHANGE	TOTAL GAIN/LOSS				
		$94,162.06	$0.00 (0.00%)	$1,847.90 (2.00%) ↑				

Symbol	Description	Current Price	Today's Change	Purchase Price	QTY	Total Value	Total Gain/Loss
AAPL	Apple Inc	$190.68	$0.00 (0.00%) —	$186.62	107	$20,402.76	$434.42 (2.18%) ↑
AMZN	Amazon.com Inc.	$129.78	$0.00 (0.00%) —	$129.74	154	$19,986.12	$6.16 (0.03%) ↑
CSCO	Cisco Systems, Inc.	$50.99	$0.00 (0.00%) —	$50.92	394	$20,090.06	$27.58 (0.14%) ↑
MA	Mastercard Incorporated - Ordinary Shares - Class A	$388.68	$0.00 (0.00%) —	$376.74	33	$12,826.44	$394.02 (3.17%) ↑
TSLA	Tesla Inc	$274.43	$0.00 (0.00%) —	$261.46	76	$20,856.68	$985.72 (4.96%) ↑

Figure 4.3 Performance of investments for week 3 of the Buy and Hold strategy.

I invested in. Apple Inc. did very well this week, climbing four dollars as a result of the stock gaining 2.18%. Though early summer can be a weaker time of year for Apple stock, the company has gained each week of the simulation thus far. Mastercard experienced some rambunctious movement. Though it ended in the green, a share at the end of week 3 was worth $388.68, whereas last week the share price ended being worth $393.30. Regardless, the price is still greater than the initial investment I made. Tesla had a tough start to the week, but the company was able to come out on top for the week. The company ended nearly $13.00 above my initial investment. Cisco has remained around the same price changing by nickels and dimes each day. Though Cisco overall was down from last week, it is still barely ahead of my initial investment. Amazon is in a similar boat, changes in the price of their stocks have fluctuated by small margins, but still maintains a profitable position compared to my initial investments. This can be credited to the raging bull market and the nearing of the end of the second quarter. These trends proved the buy and hold strategy to be moderately effective. That being said, this strategy is typically observed over longer periods of time like months or years so no true analysis can be done on its efficiency yet. With that being said, because these five companies continue to be profitable through this strategy, the strategy is challenging the swing trading method and making for a great comparison.

4.5 Week 4

Week four of the buy and hold simulation was another successful week. The bull market continued to flourish and though not all the stocks I invested in ended in the green, the market has been trending in the right direction. As this strategy continues to prosper it makes it more and more difficult to be as successful with the swing trading strategy. Though the buy and hold strategy requires much longer periods of time for observation, it is serving well as a gage for the success of the other trading method. Figure 4.4 shows the gains and losses of the five companies at the end of week four of the simulation.

TOTAL VALUE	TODAY'S CHANGE	TOTAL GAIN/LOSS					
$95,661.98	$0.00 (0.00%)	$3,347.82 (3.63%) ↑					
Symbol	Description		Current Price	Today's Change	Purchase Price	QTY	Total Value	Total Gain/Loss
AAPL	Apple Inc		$190.69	$16.05 (0.08%) ↑	$186.62	107	$20,403.83	$435.49 (2.18%) ↑
AMZN	Amazon.com Inc.		$134.68	$58.52 (0.28%) ↑	$129.74	154	$20,740.72	$760.76 (3.81%) ↑
CSCO	Cisco Systems, Inc.		$50.38	-$453.10 (-2.23%) ↓	$50.92	394	$19,849.72	-$212.76 (-1.06%) ↓
MA	Mastercard Incorporated - Ordinary Shares - Class A		$402.51	$64.35 (0.49%) ↑	$376.74	33	$13,282.83	$850.41 (6.84%) ↑
TSLA	Tesla Inc		$281.38	$264.48 (1.25%) ↑	$261.46	76	$21,384.88	$1,513.92 (7.62%) ↑

Figure 4.4 Performance of investments over the fourth week of the simulation for buy and hold strategy.

Cisco is the standout company of the week, but not for good reasons. The company ended the week losing, being down 1.06%. Fortunately, the price per share, though continuing to be lower each week, is still very close to the initial investment price. Despite the one red bar in figure 4.4, Amazon, Mastercard, and Tesla had major profit margins. Tesla especially jumped 7.62% and was above $280.00 per share by the end of the week. $20.00 per share above my initial investment. Mastercard was almost as successful as tesla, gaining 6.84% this week, and reaching over $400.00 per share. Amazon had remained very steady over the last three weeks of simulation. Week four transitioned from a mediocre investment to a profitable one by gaining 3.81% and being nearly $5.00 greater per share than my initial investment. Apple Inc. Had a steady week with minor changes, however it remained profitable.

4.6 Week 5

As the simulation starts to near an end the market continues to be trending upward and staying in a bull market. Per the buy and hold strategy, I have continued to observe the five companies I invested in at the beginning of the six-week simulation. Because of the bull market, the buy and hold strategy has been profitable, though it takes longer periods of time to truly gage its success, it is great for comparing to the swing trading method because the two are opposites. Meaning the swing trading strategy is active and the buy and hold strategy is passive. Once again, nearly all five companies were profitable, challenging my abilities to use the swing trading method to be more successful than the buy and hold strategy. Figure 4.5 shows the gains and losses of week five of the simulation.

TOTAL VALUE	TODAY'S CHANGE	TOTAL GAIN/LOSS					
$94,172.49	$0.00 (0.00%)	$1,858.33 (2.01%) ↑					
Symbol	Description	Current Price	Today's Change	Purchase Price	QTY	Total Value	Total Gain/Loss
AAPL	Apple Inc	$191.94	$0.00 (0.00%) —	$186.62	107	$20,537.58	$569.24 (2.85%) ↑
AMZN	Amazon.com Inc.	$130.00	$0.00 (0.00%) —	$129.74	154	$20,020.00	$40.04 (0.20%) ↑
CSCO	Cisco Systems, Inc.	$52.63	$0.00 (0.00%) —	$50.92	394	$20,736.22	$673.74 (3.36%) ↑
MA	Mastercard Incorporated - Ordinary Shares - Class A	$397.49	$0.00 (0.00%) —	$376.74	33	$13,117.17	$684.75 (5.51%) ↑
TSLA	Tesla Inc	$260.02	$0.00 (0.00%) —	$261.46	76	$19,761.52	-$109.44 (-0.55%) ↓

Figure 4.5 Performance of the buy and hold strategy simulation for week five.

This week, the standout of the group of companies was Tesla. This was not unexpected, after a massive jump in the prior week. The relative strength index identifies that when a company has a massive unprecedented jump, it typically falls rapidly after due to many investors selling at profitable peaks, causing drastic deficits in volume of shareholders, thus making the stock less appealing, as it goes back down one might conclude that it will entice investors to buy, causing the share price to climb back up. This is very true for Tesla over the past week, unfortunately it reacted so drastically that the price per share is less than the initial price per share I bought shares five weeks ago. Despite Tesla's prosperous rise and rapid decline, the four other companies I invested in were profitable, but only by small margins. Amazon, Apple and Mastercard were near or just below their success from last week. Shockingly, Cisco jumped 3.36% which

has been a rare raise for them considering they floated around $50.00 per share for the entire year and now the company has jumped to over $52.00 per share.

4.7 Week 6

During the final week of the simulation the market remained in a bull market. During this time the companies I invested in were not as profitable, making the buy and hold strategy look worse than it had all summer. Figure 4.6 shows that all five companies were in the green for the final week of the simulation.

Symbol	Description	Current Price	Today's Change ↑	Purchase Price	QTY	Total Value	Total Gain/Loss
AAPL	Apple Inc	$195.83	$0.00 (0.00%) —	$186.62	107	$20,953.81	$985.47 (4.94%) ↑
AMZN	Amazon.com Inc.	$132.21	$0.00 (0.00%) —	$129.74	154	$20,360.34	$380.38 (1.90%) ↑
CSCO	Cisco Systems, Inc.	$52.09	$0.00 (0.00%) —	$50.92	294	$15,314.46	$343.98 (2.30%) ↑
MA	Mastercard Incorporated - Ordinary Shares - Class A	$392.96	$0.00 (0.00%) —	$376.74	18	$7,073.28	$291.96 (4.31%) ↑
TSLA	Tesla Inc	$266.44	$0.00 (0.00%) —	$261.86	91	$24,246.04	$416.73 (1.75%) ↑

Figure 4.6 The performance of the buy and hold strategy for the final week of the simulation.

This week the market did exceptionally well. All five companies I invested in gained by over 1.75%. Notably, Apple had a very prosperous week jumping to $195.83 per share. This is a very large profit from my initial investment of $186.62 per share. Cisco went back up to over $52.00 per share. Amazon also reached a peak upward trend and ended the week at the highest price per share it had experienced all simulation. Mastercard remained like last week but because of its early jump in week three of the simulation, Mastercard remained profitable throughout the simulation. Tesla, despite having a very strong week four, did plummet during week five, but has since recovered to $266.44 per share, $4.58 per share greater than my initial investment. With all companies ending in the green, the buy and hold strategy appeared to be a great stock trading strategy and will be a great tool for analyzing my success in using the swing trading method.

Chapter 5 Swing Trading Strategy Simulation

5.1 Introduction

The swing trading simulation will be an active trading strategy, meaning that each week I will use different analyses of the market to determine the best times to buy and sell shares for each company I have invested in. My goal is to be profitable and examine my success against the buy and hold strategy. Though this strategy is not as concise as the day trading strategy or the weekly trading strategy, it has a lot of freedom, but a lot of room for error which I hope to avoid.

5.2 Week One

The first week of this project I had to invest $100,000 into each simulation. By evenly dividing the $100,000 for each stock, I bought different quantities of each stock. I bought the most stocks in Cisco because they had the lowest unit price, therefore I could buy more from that company than any other company I invested in. Mastercard was the most expensive stock to invest in and therefor I had the fewest shares in that company. All five companies had different unit prices, which was great for my own personal knowledge of using the swing trading method. Because of the different unit prices and varied quantities of stock n each company I can learn the value of selling and buying different quantities of stock for each company based on how much the company's stock is worth. This is true for both simulations. I have passively watched the movement of the market and have not traded any stocks this week in order to learn how to analyze moving averages and RSI in accordance with the companies I have invested in. In order to properly utilize the swing trading strategy, I will begin trading during week 2 of the simulation. At the end of week one, where no trading was done, I ended with very small gains, in three of the five companies I invested in (Apple, Amazon, and Mastercard), meaning I experienced loss for two of the companies I invested in (Cisco and Tesla). Table 5.1 shows the initial investments in each of the five companies along with the number of shares (quantity) I have in each company and how much cash I have.

Table 5.1 My profit margin and stock trends at the end of the first week of simulation. Because the two simulations are identical at this time, I have identical profit and loss for both simulations.

Date	Company	Symbol	Action	Quantity	Stock Price (USD)	Net Cost/ Proceed	Profit/ Loss	Stock Portfolio Value	Total Cash	Total Profit	Total Asset
6/22/23									100,000		
6/22/23	Apple	AAPL	Buy	107	$186.47	19,952.30			80,047.70		
6/22/23	Tesla	TSLA	Buy	77	$260.22	20,036.79			60,010.91		
6/22/23	Amazon	AMZN	Buy	154	$129.32	19,915.26			40,095.65		
6/22/23	Mastercard	MA	Buy	51	$375.76	19,136.51			20,959.14		
6/22/23	Cisco	CSCO	Buy	394	$50.89	20,048.69			910.45		
Week 1	Portfolio							99,265.49	883.45		100,148.95

This table will be my standard table for the next six weeks. Each row shows a different trade made during that week of the simulation along with how much profit/ loss I have made and the new quantity of shares I possess. At the end of each week, I will show the total cash, total profit and total assets of my account after a week of trading, along with my portfolio value.

5.3 Week Two

The second week of the simulation began on June 26th. This was my first week trading, which was a bit of trial and error. Although having a poor end to the week after week one of the simulation, fortunately all of the companies I invested in began the week in the positive. I felt confident in selling stocks, however had a difficult time gaging when the stock was going to continue to rise in value or when it was about to fall. In Table 3.5.3, it shows that I had a difficult time trading Mastercard stock, where I did originally sell for profit, but later in the week, the stock continued to rise and I bought it back because although this results in a loss, the relative strength index for this stock indicated it would continue to rise at the beginning of next week. I also made the mistake of selling nearly all of my stock in that company which I regret doing, but now know better. When it was time to trade Apple stock, I traded a good portion of my shares, but reserved some in case the market continued to rise. I also was able to sell Amazon stock later in the week, despite its downward trend earlier in the week. Although I did not have a technically profitable first week of trading, I learned the importance of quantity when buying and selling and am looking forward to next week. Table 5.2 depicts my trading through week two of the simulation including my profits and loss for each trade along with my total profit and loss for the entire week.

Table 5.2 Week two transaction record.

Date	Company	Symbol	Action	Quantity	Stock Price (USD)	Net Cost/ Proceed	Profit/ Loss	Stock Portfolio Value	Total Cash	Total Profit	Total Asset
6/28/23	Apple	AAPL	Sell	50	$188.17	9,408.25	$85.00		10,291.70		
6/28/23	Mastercard	MA	Sell	51	$379.53	19,356.03	$192.27		29,647.73		
6/30/23	Mastercard	MA	Buy	50	$391.75	19,587.50	($611.00)		10,060.23		
6/30/23	Amazon	AMZN	Sell	50	$130.39	6,519.50	$53.50		16,579.73		
6/30/23	Apple	AAPL	Sell	20	$192.89	3,857.80	$128.40		20,437.53		
Week 2							($151.83)	70,213	29,648		99,860.43

The table shows my initial struggles in trading Mastercard stocks, because they are so valuable, I was eager to trade them despite having sold them all and having to rebuy them when the price did not go back down but continued to grow from $379.53 a share to 391.75 per share. If I had used the relative strength index to determine if the company had been overbought yet or not, I would have held on to the stock longer before selling. But ultimately, I learned from this process.

Apple also had a week of gains which made it very attractive for selling, though I will have to keep a watchful eye for next week as the price will most likely drop from its high on friday June 30th where the stock price was $192.89. Figure 5.1 shows the performance of the stocks, including the large gains of Apple Inc and Mastercard.

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Figure 5.1 Performance of investments at end of week two.

Though all of the companies I invested in are in the green at the end of week two of the simulation I did not make a lot of trades which could have been profitable. Going forward, using the moving averages and relative strength index may be useful to determine whether to be patient or to move fast when it comes to selling.

5.4 Week 3

This week the stock market fluctuated greatly, which made for excellent trading opportunities. The S&P 500 started the week trending upward, but after the day off for the fourth of July the market began trending downwards. Oddly, Cisco Systems Inc trended up on July 5th unlike every other company I invested in that day, and it was for the first time in three weeks that it gained over 1.00% growth. Because of the holiday there was no trading on Tuesday July 4th. Friday July 7th had some uptrend for Apple. Using the relative strength index for this company, I was able to determine that Apple would be at a high stock price because there was an elevated volume of bought shares making the company overpurchased and therefore it would be a good time to sell because it would begin to trend down following a probable peak. As the bull market continues to hold the market back from high gains, it is a great time to take risks in buying and selling.

The interest rates continue to rise, which some investors theorize will cause the stock market to fall and are crediting the downward trends from this week based on current interest rates and inflation. Based on this, and the relative strength index of the five companies I invested in, I made an assortment of purchases and sales. Table 5.3 shows the 11 actions I took this week using the swing trading strategy.

Table 5.3 Week three transaction record.

Date	Company	Symbol	Action	Quantity	Stock Price (USD)	Net Cost/ Proceed	Profit/ Loss	Stock Portfolio Value	Total Cash	Total Profit	Total Asset

7/3/23	Tesla	TSLA	Sell	40	$278.82	11,152.80	$744.00		40,800.53		
7/3/23	Mastercard	MA	Sell	25	$393.96	$9,849.00	$55.25		$50,649.53		
7/5/23	Mastercard	MA	Buy	10	$392.84	$3,928.40	($11.20)		$46,721.13		
7/5/23	Apple	AAPL	Buy	20	$190.80	$3,816.00	($41.80)		$42,905.13		
7/5/23	Amazon	AMZN	Buy	10	$129.76	$1,297.60	($6.30)		$41,607.53		
7/5/23	Apple	AAPL	Sell	10	$191.09	$1,910.90	$2.90		$43,518.43		
7/5/23	Cisco	CSCO	Sell	120	$51.52	$6,182.40	$75.60		$49,700.83		
7/6/23	Amazon	AMZN	Buy	10	$127.97	$1,279.70	($24.20)		$48,421.13		
7/6/23	Tesla	TSLA	Buy	20	$276.75	$5,535.00	($41.40)		$42,886.13		
7/7/23	Apple	AAPL	Sell	10	$191.15	$1,911.50	$3.50		$44,797.63		
7/7/23	Cisco	CSCO	Sell	50	$51.42	$2,571.00	$26.50		$47,368.63		
Week 3							$782.85	61,283.32	41,479.33		102,762.65

This week as the market continues to experience a bull market, many of my stock companies trended downward. Though this was unfortunate for the buy and hold strategy, this worked to my advantage for the swing trading method. Because prices fluctuated a lot and I had mostly sold last week, I was able to invest more and then sell as soon as the price went back up. Tesla started to trend up so on July 3rd I immediately sold shares because the company had experienced a ton of growth since the end of the first week of simulation. Given this growth it was likely that the price would continue to oscillate and when it hit a downward trend, I bought some more shares on July 6th. Like mentioned above, July fifth was a low day for the stock market making it a prime time to buy. I purchased more shares in Mastercard, Apple and Amazon. I made small moves in each, buying 10 shares in Mastercard, 20 shares in Apple, and 10 shares in Amazon costing me approximately $9,042.00 but a small loss of $59.30. Because of these drops and a few more purchases on July 6th, I made almost as many purchase transactions as sale transactions, and still came out of the week with a small profit.

5.5 Week Four

Week four of the simulation for the swing trading method was another successful week, proving the trading strategy to be profitable once again. The market is slowly exiting the bull market phase but has not quite been on such an upward trend to become a bear market, but it seems to be on its way. This week each of the five companies I invested in continued to grow in share price. In hopes of impacting my profit

margins, the bulk of my trade transactions were selling. Table 5.4 shows the 11 trade movements I made to profit from the swing trading method.

Table 5.4 Purchases and sales for the week of July 9th through July 13th.

Date	Company	Symbol	Action	Quantity	Stock Price (USD)	Net Cost/ Proceed	Profit/ Loss	Stock Portfolio Value	Total Cash	Total Profit	Total Asset
7/10/23	Apple	AAPL	Buy	20	$188.12	3,762.40	($60.60)				
7/10/23	Amazon	AMZN	Buy	10	$127.18	1,271.85	($32.10)				
7/12/23	Cisco	CSCO	Sell	100	$51.57	5,174.50	$68.00				
7/12/23	Mastercard	MA	Sell	15	$401.67	6,025.05	$132.45				
7/12/23	Amazon	AMZN	Sell	20	$129.60	2,592.08	$48.40				
7/12/23	Apple	AAPL	Sell	15	$190.35	2,855.25	$33.45				
7/13/23	Amazon	AMZN	Sell	20	$133.32	2,666.40	$122.80				
7/13/23	Mastercard	MA	Sell	10	$401.55	4,015.50	$87.10				
7/13/23	Tesla	TSLA	Buy	10	$273.11	2,731.13	($57.10)				
7/13/23	Amazon	AMZN	Buy	50	$133.99	6,699.50	($33.50)				
7/13/23	Amazon	AMZN	Sell	75	$134.31	10,073.26	$24.00				
Week 4							$332.90	46,426.58	57,178.95		103,605.53

This week was Amazon prime week, which has impacted the company's stock value every year since "prime day" began. This made buying and selling Amazon stock a no brainer. I started the week by initially buying 10 shares in Amazon stock the day prior to prime day. Amazon stock did begin to climb both on prime day and the day after, so I sold 20 shares later in the day on prime day. Then again, I sold 20 shares the next day. Ultimately these trades were not as profitable as I had originally thought. Because of this I decided on friday afternoon before the market was going to close to buy 50 shares and sell them before the market closed as long as the selling was somewhat profitable. It was barely making money, which really bummed me out because I had initially thought it would be an obvious investment. After a bit more research on why the stock performance for Amazon was not a super spike, it can take the market a few days to react to financial moves like this. So next week I will keep my eye out for even better moves for this company.

Because I was being so attentive to my Amazon stock, it also pushed me to give more care to all my stocks. This was by far my busiest week for trade transactions, making 11 trades this week. Week four of the simulation is over the halfway point where it encourages me to really push to profit from the market. Apple and Mastercard have had a very good summer, continuing to trend upward since the beginning of the simulation. Therefore, they are obvious companies for me to trade in, I was able to buy 20 Apple stock shares early in the week and sold fifteen shares four days later. For the week I did not make a profit off of Apple but made a worthy investment that will hopefully pay off next week. I did not purchase anymore Mastercard shares but sold 25 shares over this fourth week of simulation.

I decided to make a big move with Cisco stock. I sold 100 shares of the stock. Because the stock is the cheapest of all the companies I invested in, when I made the initial $10,000 investment at the beginning of the simulation, I had the most shares in Cisco because it was at a lower price. Therefore, bigger trades like this were much more comfortable. This drove my profit for the week, which helped me grow my total assets. After making this move, I felt comfortable buying Tesla stock because the company had been trending down for a few days and I hope that next week it will oscillate back in the positive direction.

5.6 Week Five

The stock market had a unique week in comparison to the consistent gains the market experienced all summer. The S&P was able to remain in the green, but the Nasdaq did not come out of the week trending up. Though there is a transition from a bull market to a bear market, the companies I invested in have not been fortunate enough to trend upwards in stock price. This means that many of the stock companies I have invested in to be at low prices. Table 5.5 Shows the transactions I made in week five of the swing trading simulation.

Table 5.5 Purchases and sales for the week of July 16th through July 20th, week five of the simulation.

Date	Company	Symbol	Action	Quantity	Stock Price (USD)	Net Cost/ Proceed	Profit/ Loss	Stock Portfolio Value	Total Cash	Total Profit	Total Asset
7/19/23	Mastercard	MA	Buy	15	$397.46	$5,961.90	($61.35)				
7/19/23	Amazon	AMZN	Sell	20	$135.22	$2,704.40	$24.60				
7/19/23	Cisco	CSCO	Sell	100	$52.31	$5,231.00	$142.00				
7/20/23	Apple	APPL	Buy	20	$192.98	$3,859.60	$52.60				
7/20/23	Tesla	TSLA	Buy	13	$264.62	$3,440.06	($184.60)				
Week 5							($26.75)	50,272.25	51,852.18		102,124.43

Tesla dropped to $260.77 a share, the lowest price it had been all summer during this simulation especially. This made it a good time to buy, however it is not appearing promising that the company will rebound by the end of the simulation. Because the stock is at a low price for this company at this time, and volume of investors is so low, two possibilities will happen. Either many people will invest in the company because the price is great causing the stock to rebound rapidly, or this will not occur, and the company will recover over a lengthy period of time. Because of this, I bought stock in Tesla but only a small number in case the company did not rebound within the next week. I was able to sell more Amazon stock, after the company continued to thrive from prime week, however the stock price slowly went back down to the price it was prior to the surge of last week.

5.7 Week 6

The final week of the simulation was rather uneventful. The stock market was trending in a very consistent direction, however many of my stocks were not performing well. This made it difficult for me to find times to buy and sell without risking greater loss. I made fewer transactions this week than typical due to a very unpredictable market. Table 5.6 shows the three transactions that transpired during week six of the simulation.

Table 5.6 Transactions for the final week of the swing trading stock market simulation.

Date	Company	Symbol	Action	Quantity	Stock Price (USD)	Net Cost/ Proceed	Profit/ Loss	Stock Portfolio Value	Total Cash	Total Profit	Total Asset
7/26/23	Mastercard	MA	Sell	15	$401.97	$6,029.59	$67.65				
7/27/23	Cisco	CSCO	Sell	100	$53.23	$5,322.50	$92.00				
7/28/23	Tesla	TSLA	Buy	15	$263.89	$3,958.35	($10.95)				
Week 6								$87,431.12			$102,664.35

Tesla stock continued to trend down, and it had trended down for more than five days in a row. I had hoped that the stock would climb up to be greater than $263.89 a share, which is what I bought it for this week, however, it only continued to decline. I sold Mastercard because Forbes Magazine, a reputable financial newspaper, posted a story explaining how credit card companies may not have a thriving month due to fear of inflation prices. I regret not selling more shares, however, was right in selling on 7/26, because Mastercard stock dropped below $397 a share by the end of the week. I also sold Cisco shares because the company had a very strong week and continued to trend up when the other companies I invested in trended downward.

Chapter 6: Comparative Analysis

Over the last six weeks I have run two simulations that test trading methods in the stock market; the buy and hold strategy and the swing trading strategy. I had two goals for this project, one was to learn the inner workings of the stock market and one was to complete a comparative analysis of different stock trading strategies. The market this summer was perfect for experimenting with trading due to having experienced both a bull market and a bear market. Because of the fluctuation in stock prices, I was able to make a profit from the swing trading method. I was also able to profit from the buy and hold strategy. However, because the five companies I invested in were mostly successful this made trading easier.

The buy and hold strategy was not being hyper analyzed because this strategy is utilized over long periods of time. Its success is based on the idea that no matter what happens, the market will always rebound and become stronger than before. This is historically true, and this summer was successful for the companies I invested in. By the end of the simulation, I had made a profit.

Initially I began with $100,000 to spend on stocks, and that was the value of my account. Cash beginning at $100,000 shrunk immensely when I began investing, but remained the same after the first week because there was no trade movement. And the account value fluctuated within the $5,000 range. The account value after initial investments was $99,983.79 and got as close to $104,000 as could get before slowly declining to $102,664.35 at the end of the simulation. This was due to the success of the five companies I invested in through the first four weeks of the simulation, Then the last two weeks, though the market was doing well, my companies were not. Tesla stock dropped dramatically, affecting my entire account value.

The swing trading method had very similar results where initially I had invested $100,000 in cash, and my cash instantly dropped but my account value was ahead of the initial account value after just two days of the simulation starting. From there it went down but then started trending up. For three weeks the value of my account remained similar, but my cash went up. Table 6.1 shows the account value of the swing trading simulation over the six-week simulation.

Table 6.1 My stock portfolio and account value success over the six-week simulation using the swing trading method.

Date	Cash	Stock Portfolio Value	Account Value
6/20/23	$100,000	$0	$100.000
6/24/23	$883.45	$99,265.49	$100,148.95
6/28/23	29,647.73	$70,212.70	$99,860.43
7/4/23	$41,479.33	$61,283.32	$102,762.65
7/8/23	$38,241.78	$64,324.33	$102,566.11
7/12/23	$49,854.42	$52,804.45	$102,658.87
7/18/23	$57,178.95	$46,334.74	$103,513.68
7/22/23	$51,852.18	$50,700.35	$102,552.53
7/26/23	$52,005.84	$50,872.61	$102,878.45

The result of the swing trading simulation had my account valued at $102,878.45, only $200 greater than the buy and hold strategy. This means that both strategies were nearly equal in success. This could be a result of two entities; one is that the market had a major effect on the companies I invested in, or my trading abilities were not adequate enough to profit from the swing trading method.

Contrary to the movement of the U.S. stock market this summer, the five companies I invested in were successful and all trended upward finishing the simulation better than they started. One exception to this was Tesla who trended upward the first five weeks of the simulation but unfortunately dropped drastically in the final week of the simulation. These movements led to the success of the buy and hold strategy and aided the swing trading strategy, because upward trends are when the swing trading method can profit by selling shares at a higher price than they were bought for. If the market continued to trend down, it would be harder to find times to buy at lower prices than the shares could be sold for.

My new knowledge of the stock market could only get me so far when it came to trading. And I had a few stumbles in trading which affected the success of the swing trading method. In the second week

of simulation, I made some errors when trading Mastercard stock, but it was all a part of the learning process. But because of this, I feel there was a possibility to profit more from the swing trading method. Although I feel that way, there is no way of proving that and the results of the experiment show that both methods were profitable.

Chapter 7: Conclusion

Both the buy and hold strategy and the swing trading strategy are viable options for traders and in this simulation, they proved to be equals. Though the swing trading was technically slightly more profitable, and it could have been more profitable with a professional investor or broker, both strategies are solid options, especially for novice investors. Due to the market's transition from a bear market to a bull market, both simulations were profitable and all five of the companies I invested in experienced a prosperous summer.

As far as reflecting on my two goals, I feel that goal number one was definitely reached. I feel I have a great grasp on how the market works and I'm extremely grateful for the opportunity to have worked on this project. Prior to this simulation I could not have explained what a stock index was or had any idea how trading worked. Now I see the market is truly a tool that can be financially valuable.

My second goal was also met. I wanted to analyze different trading methods to see how successful the swing trading method could be against the buy and hold strategy. Both the simulations yielded similar results making it difficult to decipher if one strategy is better than the other, however on a technicality, the swing trading method was more profitable by $200.

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