Project Number: DZT 2015

Stock Market Simulation

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Abstract

The goal of this project was to perform stock market simulations using two distinguished stock market investing methods, technical trading, and swing trading. Data from these simulations would be collected, compared, and analyzed to draw conclusions about optimal trading strategies. Experiences gathered and conclusions drawn would aid new traders in navigating the stock market. A six-week stock market simulation was conducted for each method with initial cash of $500,000. The overall final performances of the two portfolios were +7.46% for the technical simulation and -0.317% for the swing trading. Conclusions from the completion of this project allowed us the ability to make more educated decisions in future stock market trading.

Acknowledgements

The success of this project would not have been possible if not for multiple other individuals. First and foremost, we wish to thank our parents for their unconditional support across the duration of this project. Furthermore, we would like to thank Professor Tang for his advisement and guidance from the beginning to end. Lastly, we wish to thank Worcester Polytechnic Institute, for providing us the opportunity to undertake this project, as well as the environment to synthesize and submit our IQP report.

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Chapter One: Introduction

With the goal to enhance our knowledge of trading in the stock market, and to provide a comprehensive analysis of three different trading strategies. The project will encompass a brief history of the stock market, and its different companies and indices. This is followed by an introduction to our three trading strategies, our weekly results, and finally an analysis and comparison of our three strategies. Our focus will be on our six-week simulation which will be conducted using TD Ameritrade's digital "Paper Money" simulation platform. The number of companies and indices we are choosing to analyze for our simulation is nine. Choosing this allows for three different sets of data for each the technical, swing, and position trading analysis. The initial purse is set to be 500,000 valueless digital US Dollars, an amount this large will magnify the difference in effectiveness between our trading strategies. This is especially necessary with our six-week simulation length. At the end of the simulation, we will individually assess which trading strategy was most profitable and compare our results. We will provide an analysis of why the more effective strategies prospered, and whether we would recommend them for longer-term investments. As a result of this simulation and analysis, we hope to provide useful insight on different trading techniques and garner the tools to become successful investors in the future.

1.1 Stock Market History

The stock market operates worldwide, with its origins dating back to the late 16th century when countries in the New World began trading with one another. Substantially large businesses were impossible for one singular merchant to fund on their own, so investors pooled their money together, as co-owners and business partners. To record this, collections of individual shares were created, forming joint stock companies. This market practice spread to maritime powers such as

Portugal, Spain, and France, then eventually England. This led to trading ventures being initiated within the New World for the stock market [1].

The oldest paper shares for stocks date back to 1602, issued by the Dutch East India Company. As an exchangeable medium, these shares allowed for convenient buying, selling, and trading of stocks between parties. Dutch East India Company conducted the world's first initial public offering and played an integral role in modern history's first stock market crash. The pioneer company served as one of the first businesses to compete in the trade for export of slaves and spices. Merchants at the time in this market competing formed limited liability companies, where investors funded voyages for a percentage return on profits. Much like the stock market now, these investments were speculative, due to the unpredictability of the supply of spice [2].

As the demand for international exchange rose, volume of shares increased, leading to the formation of the London Stock Exchange. The exchange was founded in 1773 in a coffeehouse, purchased by the stock traders, renamed to stock exchange. This reached American colonies, starting an exchange in Philadelphia in 1790, and later the market on Wall Street May 17th, 1792. On March 8, 1817 the group of supply brokers who signed the Buttonwood Agreement renamed itself the New York Stock and Exchange Board (NYS&EB) [1]. The new guidelines passed under the agreement included restriction of manipulative trading. The NYS&EB continued to grow up until its first major drop in the Panic of 1837, but recovered partly due to the telegraph being invented, promoting broad reach of the market [3].

1.2 Important Factors of the Stock Market

The factors of the stock market that influence share prices vary from interest rates to inflation, GDP, unemployment, and trade wars. Overall, consumer involvement in the stock market

supports stock prices, when more people are buying goods and services, the economy expands. On the opposite, consumers avoiding spending causes stocks to decline.

Interest rates play an integral factor in the price of tradeable stocks. Higher interest rates mean money is expensive for companies to borrow, lowering their profits. The lower profits for companies cause the stock to drop in value. The federal reserve can perform an interest rate cut, to make money less expensive to borrow, to try to help heal the market, but it does not always work.

The next factor for influencing stock market prices is inflation. Inflation is also called upwards price pressure and makes things more expensive. High inflation is characterized as a decrease in buying power, causing companies to hold funds, which weakens the economy. This may seem much less desirable than deflation, but deflation is a warning sign for future economic troubles. The inflation and deflation of a countries currency is managed by government changing the interest rates based on the market data, to ensure a small amount of inflation always [4].

Gross Domestic Product (GDP) of a country is the output of all goods and services in its economy. As a factor for share prices of stocks, GDP affects the market more than the market affects GDP. This is best exemplified by a rise in GDP, which increases corporate earnings, driving stocks up. A fall in GDP drives the market down, as there is less spending by businesses and consumers [5].

As the unemployment rate goes up, stock prices go down. This higher unemployment rate lowers confidence in the economy, as less cash means a decrease in consumer spending, and a decrease in the demand for products. The large amount of health, food, and unemployment assistance needed from state and federal governments during high unemployment is difficult to distribute. This is due to less taxes are being collected, decreasing reserve funds, leading to ill-

advised budget cutbacks, and borrowing money. Low unemployment rate is like deflation, in the sense that it appears to be beneficial economically at first glance, but to the contrary. Low unemployment rates can be caused when jobs added to the economy aren't covering the cost of labor, otherwise known as slack in the labor market. Another cause of low unemployment rate is inflation, which should occur naturally. Wage inflation will sometimes exceed natural inflation, when labor demand is high, due to the need to attract workers. This means companies make less profits, lowering their value in the stock market [6].

Trade wars between different countries factor into the stock market. These tend to not be as long lasting as other factors, and mainly occur due to tariffs on imports for U.S. companies. The higher taxes paid on these imports force companies to decide whether to increase consumer prices. Increasing consumer prices can cause slower economic growth from slower buying, while if the company does not increase prices, its profits margins will suffer, negatively impacting its stock market value [4].

1.3 Stock Market Index

A stock market index measures how much share prices of a group of different companies change. Grouping these companies into an index is crucial for describing the overall market activity for a particular sector. Calculating the price-weighted average of the prices of these stocks produces the value of the index. These Indices can be defined by geography, industry, social class, or be deemed global. Two of the most popular U.S. indexes are the Dow Jones Industrial Average (DJI), and the Standards and Poor 500 (S&P 500). Tracking the activity of these in segments can generate benchmarks to indicate the overall U.S. stock market activity [7].

In the simulations conducted with paper money purse, both the DJI as well as the S&P 500 are purchased and traded. This is complimented other indices and companies, many of which exist in these indices as well.

1.3.1 Dow Jones Indices (DJI)

The DJI is a price weighted index, made up of thirty of the most valuable stocks. The index measures the group of stocks market value and values the index accordingly. As a price weighted index, the sum of the price of 30 stocks are added together and are divided by the "Dow Divisor". The Dow Divisor now is 0.147. This divisor is calculated to combat sudden changes in the market such as stock splits [8]. Table 1.3.1 shows the thirty companies currently in the DJI, highlighting how the big-name companies populate the index [9].

Table 1.3.1: 30 Companies included in the Dow Jones Indices (DJI)

3M	American Express	Amgen	Apple Inc.	Boeing	Caterpillar Inc
Goldman Sachs	Honeywell	IBM	Intel	Johnson & Johnson	JPMorgan Chase
McDonald's	Merck & Co.	Microsoft	Nike	Proctor & Gamble	Salesforce
Coca-Cola Company	The Home Depot	The Travelers Companies	The Walt Disney Company	United Health Group	Verizon
Visa Inc.	Walgreens Boots Alliance	Walmart	Chevron Corporation	Cisco Systems	Dow Inc.

Figure 1.3.1 [10] shows DOW Jones Indices 2021 Year to date return graph. From this graph we can see an upward trend, which shows the rising value of the return on the index for the investor. The year-to-date return of the index is just one of the characteristics investors could decide to focus on.

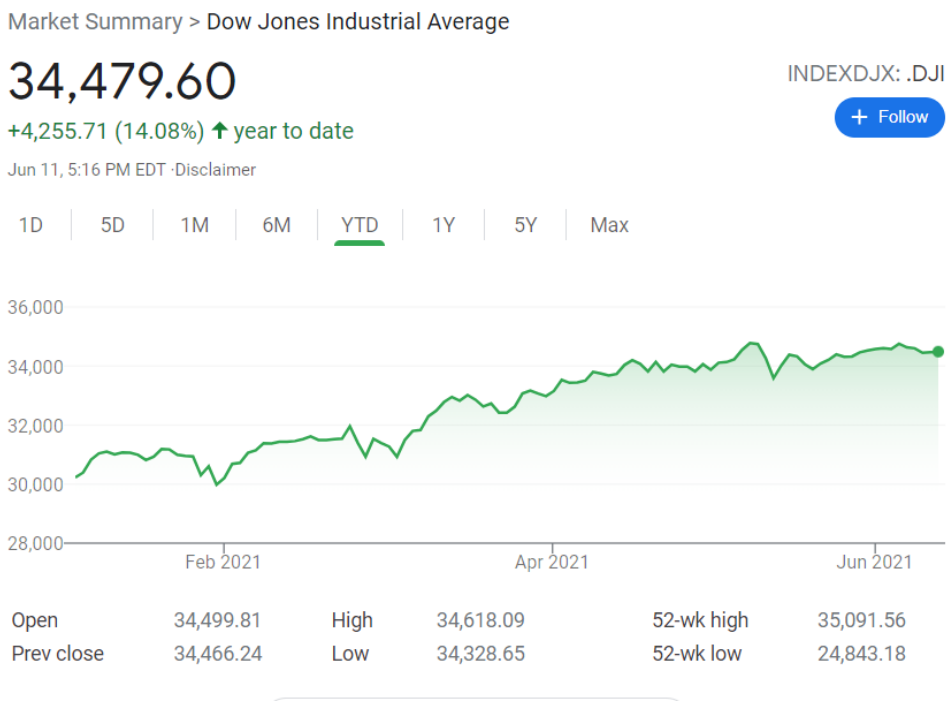

Figure 1.3.1: Dow Jones Industrial Average YTD return as of June 11th, 2021

To ensure long term success in investments, return over a longer time must be analyzed. In Figure 1.3.2 [10], which shows the 5-year data, the same upward trend for the index is observed.

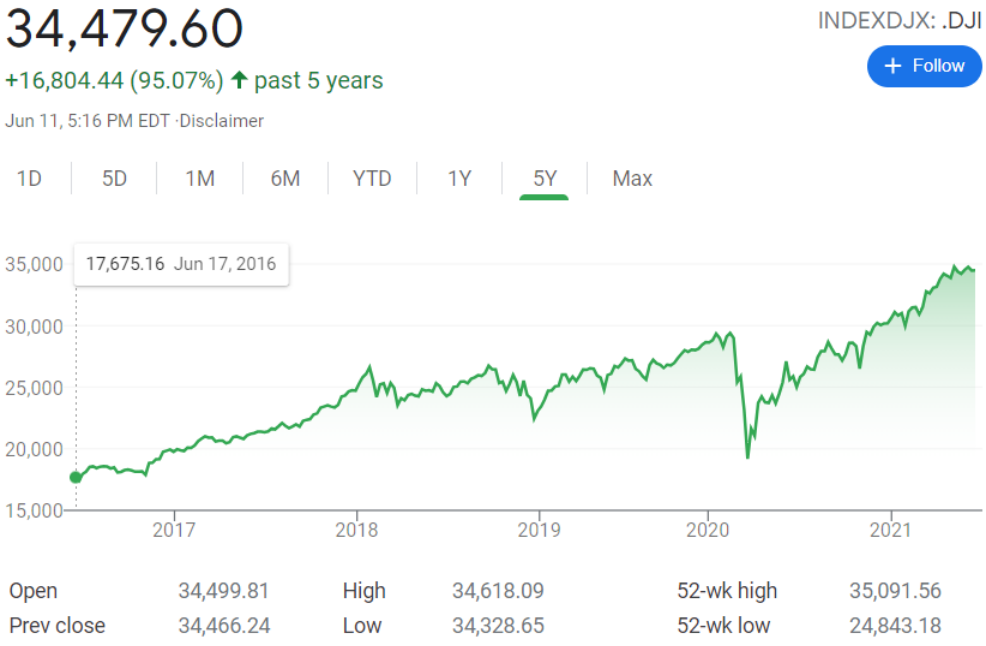

Figure 1.3.2: Five Year Return Graph for DOW Jones Index as of June 11th, 2021

Seeing the same upward trend throughout highlights the “blue-chip stock” characteristic, a continuously increasing good investment. The long-term production of these is an excellent help for investors.

1.3.2 Standard and Poor’s 500 Index (S&P 500)

The S&P 500 Index tracks the stocks of 500 impressive US companies with a large market cap. Its use as a benchmark for the overall market is helpful for comparing other investments. The S&P 500 officially began on March 4th, 1957 by the company Standard and Poor. It was then owned by McGraw Hill in 1966, and later became a joint venture of S&P Global, McGraw Hill Financial, CME Group, and News Corp [11]

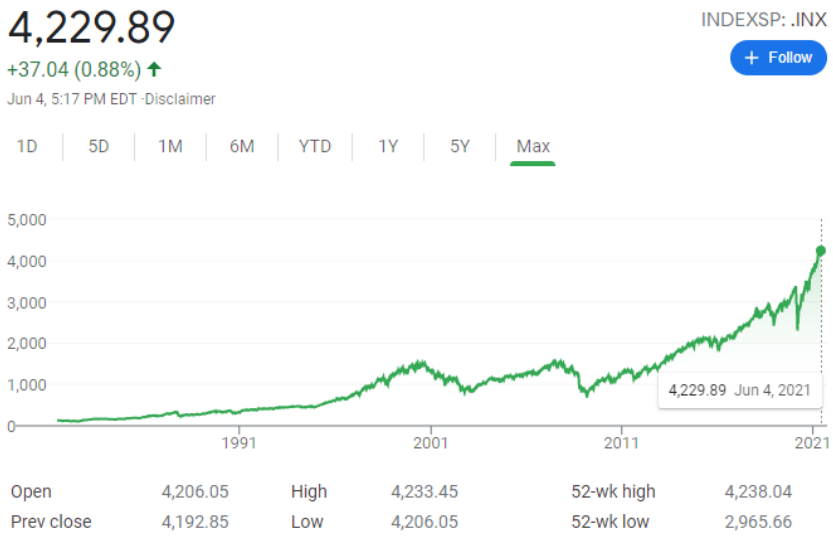

Figure 1.3.3: S&P 500 Index Value from 1981 to 2021 from google finance

The S&P 500 companies each have a market cap, the total value of all shares of stock a company has issued, calculated by multiplying the number of shares issued by the stock price. Another important aspect to note about the index is the qualifications to enter, including at least 50% of the stock being available to the public, and at least 50% of its fixed assets and revenues must be in the United States.

1.4 Past Research on Stock Simulation

1.4.1 WPI Research

As of 2021, 136 WPI IQP reports on stock market simulation are available in the WPI library database. Upon reading various project descriptions, it's clear that a lot of different trading strategies have been used across the years. These methods ranged from trend following to news following, penny stock trading, and short-term trading. Some strategies are so closely related, as many of them, such as the swing and technical trading we will be performing, rely on many of the same indicators. The range of WPI research that has been collected from stock market simulation encapsulates many more broad aspects of trading in the market our team will not be touching on.

A notable highlight in the WPI research on stock simulation was in chapter two of the penny stock trading method's project, where the author reports the results of their simulation. They state "The penny stock trading was successful with a profit of $16,601.85 which was a 166.01% profit on the $10,000 that was started with" [12]. The ability of this student to earn a profit shows that other strategies aside from the ones we picked can also be effective. It is clear from the effectiveness of the method and how they explained their results that they did their research, as when company turnaround is expected, many penny stocks can be difficult to make money on, due to whale shareholders who own large percentages and are unwilling to sell.

One other distinct stock market simulation performed by a WPI IQP team compared position trading and day trading. This took place across a five-week span, and the reading of this project gave our team a much better perspective on the range of applicable trading strategies. Consistencies remain across these projects, regardless of trading methods. Unsurprisingly, a weekly, sometimes daily recording of earnings is reported in these projects. Our team will be focused on weekly earnings reports more so than daily, as none of our trading methods will have

buying and selling of the same stock in the same day. Daily activity of the stock's value may be recorded minus the action of buying and selling of the stocks in the same day, useful conclusions from WPI research.

1.4.2 Non-WPI Research

As previously stated, the end goal of all these investors picking stocks and purchasing them is a positive financial return. To fully understand how young investors in the present day are being instructed in making these selections, researching as if you were the one buying stocks is critical for this education. Analyzing WPI research was a nice inside view into what previous students have done for this project, but most other investors knowledge is coming from else ware. The need for basic trading knowledge online may lead consumers anywhere for their information, with a common source for traders being these simulation platforms. These simulations are consistent across the board, so diving deeper into simulation applications proves to be useful. Most notably of these applications is the ability to educate people on how to invest their money. Now a days, algorithms are written to trade stocks based off previously programmed indicators. A Canadian stock simulation study highlights the evolution of these algorithmic trading strategies. These algorithmic strategies allow for pre-defined spreads and limit buys to occur repeatedly in a very short period. Furthermore, the algorithmic strategies existence gives a leg up in all the different strategies we have already discussed [15].

Chapter Two: Methodology

2.1 Stock Simulation Engine

There is a plethora of platforms to use in trading stocks, options, futures, and cryptocurrency. Amongst the most popular are Robinhood, WeBull, E-Trade, Charles Schwab, and TD Ameritrade, which is our platform of choice. There are pros and cons to each platform, although most new investors would find any of these options to include all the features they desire. Those who are new to trading may appreciate the clean user interface of Robinhood, while E-Trade and TD Ameritrade offer more ways to buy and sell. For instance, TD Ameritrade offers almost a dozen different limit order options and allows foreign exchange (also known as Forex) trading which many competitors, like E-Trade do not.

With all the different brokerage options, confusion can easily surface, which discourages many newcomers. One of the best ways to combat this is to utilize stock simulation. Stock simulation looks and feels almost equivalent to live trading, but without the risk. While simulating, the stocks you buy, sell, and hold are all imaginary as is any value associated with them. Of course, this means that any profits are imaginary as well, however, being able to make mistakes and learn without penalty can be invaluable.

As mentioned at the exposition of this chapter, our IQP team will utilize TD Ameritrade as our trading platform. More specifically, we will be using their stock simulation software called “Paper Money”. This platform was chosen because it is reliable and convenient. Paper money can be accessed from a browser or mobile application and has an easy-to-use UI. Paper money also allows the team to select any principal investment amount they desire. For the purposes of this project that starting balance will be $500,000.

2.2 Trading Strategies

2.2.1 Technical Trading

Technical trading is the practice of using previous market events and data to create an educated prediction about the direction of prices. Technical trading is based on technical analysis, which can be used to forecast the direction and momentum of the market. Technical trading relies on the use of trendlines and various indicators to assist in both making predictions and deciding the optimal times for entry and exit.

One such of these indicators is the Moving Average Convergence/Divergence indicator, also known as MACD. The MACD indicator is intentioned to help investors understand the level of convergence or divergence present in an asset. In Technical Trading, convergence is when an asset's price moves in the same direction as its trendline. Divergence on the other hand is the opposite and usually indicates that a trend is weakening, and a price direction reversal could be near. The MACD indicator is calculated by taking the 12-period exponential moving average (EMA) and subtracting the 26-period EMA. MACD is not designed for use with day-trading but is highly utilized when the period is longer than a week.

The second indicator the team will utilize is the Relative Strength Index or RSI. The RSI indicator is intentioned to gauge an asset’s price momentum. RSI measures the magnitude of recent price changes and displays the result as an oscillator bounded between zero and one hundred. RSI can be used for shorter-term trading than MACD and by default is calculated based on 14 periods. Generally, RSI is a useful indicator when the value does not fall between 30-70. This range represents the midpoint where there is no significant price momentum. When over 70 this indicates that the asset may be overbought and could be in for a trend reversal. An RSI below 30 indicated that the asset may be oversold, this is generally regarded as the right time to buy. Overall, RSI is

a useful trading indicator, that can also help gauge when the time is right to make an entrance or exit from a position.

It is important to note that while technical trading can have very substantial upside, it is still a prediction, and nothing is assured. The stock market has a strong tendency to repeat itself, but rarely does so exactly and can completely deviate from the past without warning. The use of indicators is meant to assist in making well-informed decisions as the market deviates from the past

2.2.2 Swing Trading

Swing trading differs from other trading types as swing traders look to make gains on both the uptrend and downtrend of an asset. If a swing trader believes an asset is bullish, meaning showing an uptrend, they will buy shares or call options. If they believe that the trend is bearish, they can short shares or place put options. Swing trading is somewhat like day trading in that respect; however, it is intentioned for slightly longer term than a single day. Swing trading can take place over a longer period, although it most commonly is shorter term than technical or position trading with times ranging from a single day to two weeks.

Blue-Chip stocks, or those of large companies that are extremely high market capitalization are some of best assets on the stock market to swing trade. That is because these stocks are highly traded and experience momentous price fluctuations on a daily to weekly basis. These companies tend to show clear price trends and hold those trends strongly until they break.

In addition, the ideal environment for success in swing trading is a polarized market. A market that is strongly bullish or bearish allows those trends to become even clearer and last for longer. A middling market where hourly or daily fluctuations are high can make it very difficult

to correctly predict trends. On top of this, even correct predictions can be rendered meaningless by a quick departure from the traders predicted pattern.

In our project, we aim to utilize both bullish and bearish swing trades at some point during our simulation. Our team will utilize the two indicators described in the previous section, RSI and MACD, as well as the risk-reward ratio to guide our swing trading process. The risk reward-ratio attempts to relate a prices potential ceiling to its floor. For instance, stocks which are at or near an all-time high generally have a higher potential to fall than to rise. Throughout the project the team will also attempt to utilize strategies like stop out points and limit orders to either lock in profits or hedge against losses.

2.3 Analysis Strategy

In comparing the different trading strategies at the conclusion of both member's simulations we aim to start by using quantitative measures. The team will provide a simple and straightforward explanation of the results of our simulation-based on two numerical metrics. First will be the profit or loss of each individual company within each method. Second, a weekly total cash comparison, focusing on the Total P/L at the end of each week over the six weeks.

The profit/loss of each company will provide the most ambiguous yet important answer in investing, was money gained or lost? This can of course be impacted by the timing of the market, outside events regarding a company, global economic changes, and a variety of other factors. However, selecting multiple stocks for each trading category and performing two simultaneous simulations will allow these quantitative measures to show a stronger trend and allow the team to come to a more precise conclusion. The weekly total cash comparison will give an idea of the consistency of each method, and how it would fare with a longer duration simulation.

Chapter Three: Company Selections

3.1 Criteria

In selecting the companies which the team would trade throughout the project, two important factors had to be considered. Firstly, we had to select companies that would allow for each strategy to perform optimally. Our results would be inconclusive if one was handicapped by being applied to incorrect assets. With, it is equally important that we choose stocks of relative similarity as that also will make our final analysis more accurate and informative.

Our team tackled this by selecting two companies from two top sectors. This way, while each method would have four individual stocks that could be slightly tailored for optimality, they would also be related and easily analyzed as large companies in the same sector often move with some correlation. The two markets chosen were technology and consumer. Technology is one of the fastest growing and most highly traded industries on the planet right now. This made it easy to find stocks with larger daily fluctuations and large market capitalization. On the other hand, the consumer industry is a trading staple and has been one of the most popular for decades. With the restrictions of the recent COVID-19 pandemic beginning to loosen, the consumer industry is beginning to rise again which makes it a perfect fit for our simulation.

3.2 Selections

3.2.1 Technical Trading

In the first of our two trading types, the selection criteria were influenced more by the timeframe of our simulation than the strategy with which we would be performing trades. Technical trading can be performed on nearly any asset, provided it has sufficient data from the past; however, it is best to choose companies or sectors with a tendency to hold strong trends. For this project, we chose stocks in rapidly growing industries that have a large market capitalization.

High market-cap is almost a necessity with our other trading method, swing trading, so choosing similar stocks in this category will help provide more accurate analysis.

Following the guidelines set in Section 3.1, two technology companies and two consumer companies were selected. For technology, we selected Microsoft and Google. These are two extremely well know, highly traded, industry giants. Figure 3.2.1 shows the all-time market performance of Microsoft. Dating all the way back to 1986, this selection is a well-known company, meeting our criteria.

Figure 3.2.1: Microsoft all time market performance via Google Finance

The market capitalizations for Microsoft and Google are currently 2 Trillion and 1.67 Trillion respectively. This is labeled as the mkt cap in figures 3.2.1 and 3.2.2. Figure 3.2.2 shows the stock for Google, parent company Alphabet Inc Class A.

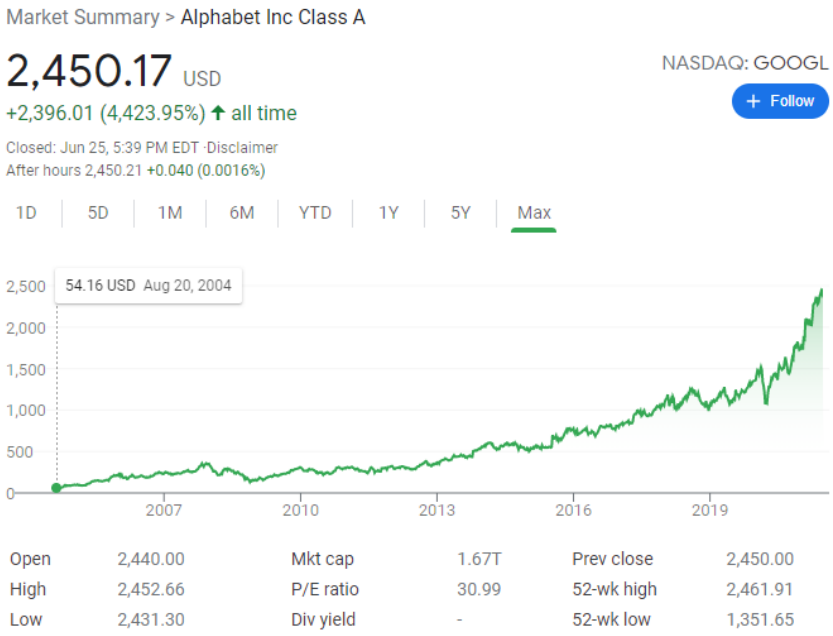

Figure 3.2.2: Google all time market performance via Google Finance

While high market capitalization isn't necessary for technical trading, both stocks have more than sufficient previous market data. 264,920% gain all time for Microsoft and 4,423.95% for Google are both quite admirable. This large difference can be attributed to Google opening at a higher price at a much later date, holding its IPO in 2004, giving it much less time to make that large of gains. These characteristics make our consumer companies compare favorably to the technology stocks chosen in the next section.

For the consumer sector, the stocks selected were Walmart and Johnson and Johnson. Like our technology choices, these are industry giants with market capitalizations of 394.4 Billion and 434.4 Billion. Their all-time market performance data is shown in figures 3.2.3 and 3.2.4.

Figure 3.2.3: Walmart all time market performance via Google Finance

The two stocks have very similar ask prices, as well as historical performance. They opened in the same year and have P/E ratios that indicate consistent growth and reasonably low risk. Walmart and Johnson & Johnson have P/E ratios of 32.20 and 29.01 respectively. These values are quite low compared to Tesla stock, with a P/E ratio of 677.07 (figure 3.2.5). These lower numerical value ratios indicate consistency, and reasonable expectation of performance.

Figure 3.2.4: Johnson & Johnson all time market performance via Google Finance

Dating back to being two of the 448 IPOs released in 1981 [16], Walmart and Johnson & Johnson will be excellent stocks for the technical trading simulation, as they show consistant trends and are capable of growing well.

3.2.2 Swing Trading

The second of our two styles, swing trading, has a few more concrete specifications for what type of assets it can be performed optimally on. Swing trading is best performed on large-cap stocks that are traded by millions every day. This is because, while these stocks do tend to follow the trends of their sectors, they tend to exhibit clear trends in a brief amount of time. These stocks can change from bullish to bearish or vice-versa multiple times in a single week, allowing swing traders to capitalize on both the uptrend and downtrend in a short period of time.

Following the foundation established in Sections 3.1 and the companies selected for technical trading, two companies from the technology sector and two companies from the consumer sector were chosen. This time the technology stocks are Tesla and Apple. Tesla is one of the fastest-growing technology companies in the world and has broken its all-time high several times in recent history. Figure 3.2.5 shows this massive spike, highlighting how Tesla's growth is so recent, with large growth spikes in 2020-2021.

Figure 3.2.5: Tesla all time market performance via Google Finance

With a market cap of 587.5 Billion and constant media attention causing frequent oscillations in price, this is an ideal stock to swing trade. The potential for large growth is shown by the astoundingly large 677.07 P/E ratio.

Apple is the largest yet at a 2.12 Trillion market cap and is slightly more stable than Tesla, but recently performed a stock split and often holds and bucks trends with announcements and product releases. The all-time market performance for Apple is pictured in figure 3.2.6. This is a more stable stock, with constant trend upwards.

Figure 3.2.6: Apple all time market performance via Google Finance

Apple holds a reasonable P/E ratio of 29.87, making it a bit more like our technical trading stocks with its lower risk involved with trading.

Finally, for the consumer sector, we selected Amazon and Procter and Gamble. Amazon combines many of the strengths of the technology sector with the added benefit of profiting from high consumerization. The all-time market performance for Amazon is pictured in figure 3.2.7.

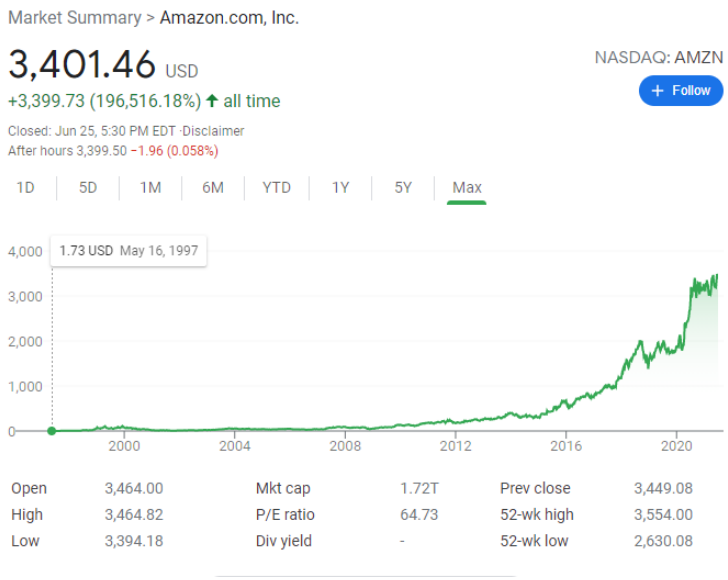

Figure 3.2.7: Amazon all time market performance via Google Finance

It is clear Amazon is well established, and its trading price is so large compared to Proctor & Gamble that a variety of different conclusions of gains can be drawn. Proctor & Gamble market data is shown in figure 3.2.8.

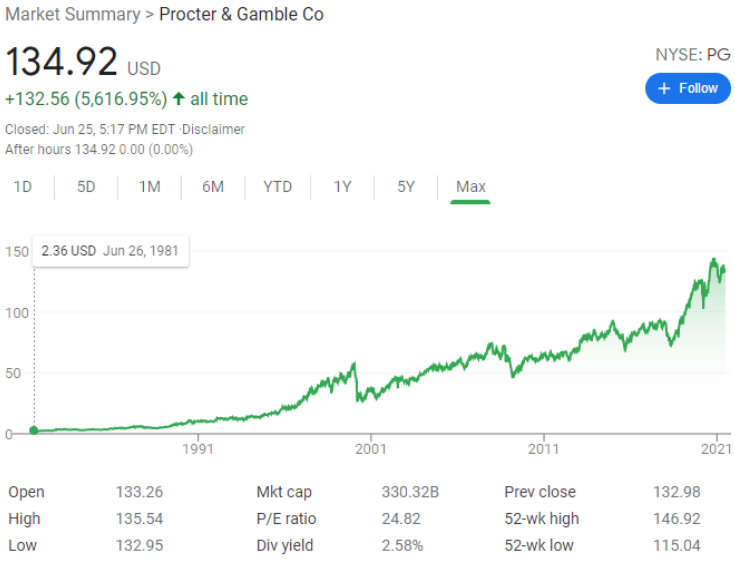

Figure 3.2.8: Proctor & Gamble all time market performance via Google Finance

With market capitalizations of 1.68 Trillion and 330.16 Billion, the blue-chip assets should both allow for optimal swing trading performance and easy comparison to the consumer stocks chosen in the technical trading section.

Chapter Four: Technical Trading Simulation

4.1 Week One

In the first week of the technical trading simulation, the market was somewhat sporadic with none of the companies in my watchlist exhibiting clear trends that spanned multiple assets. Because of this, I was hesitant to spend too much of my budget in the first week and held out on purchasing Walmart and Johnson and Johnson. Figures 4.1.3 and 4.1.4 below show their prices holding high throughout most of the week. Microsoft and Google, on the other hand, both experienced a dip mid-week as shown in figures 4.1.1 and 4.1.2. This provided a nice buy opportunity. On Wednesday I was able to pick up 20 shares of Google at about $2,508 which was showing a favorable MACD and an RSI reading around 25, indicating good entrance time. This can be viewed in Figure 4.1.2 below. That same afternoon Microsoft dipped as well prompting me to place a buy order for 300 shares at a limit that was soon fulfilled. Below is a chart detailing both purchases as well as charts for each of the companies that will be followed throughout the technical trading series. Overall, I am pleased with the positions I was able to take in week one and look to spend a significant portion of my remaining budget in week two. Table 4.1.1 gives a summary of my Week One activities.

Table 4.1.1: Technical Trading Simulation Data Week One. P/L: Profit/Loss.

Date	Symbol	Buy/ Sell	Price ($)	Shares	Net Cost/ Proceeds	P/L	Cash ($)	Total P/L
6/16/2021	MSFT	BUY	255.04	300	76,512.00	0	423,448	0
6/16/2021	GOOG	BUY	2508.67	20	50,173.4	0	373,314.60	0

Figure 4.1.1: MSFT Stock Chart June 14-18

Figure 4.1.2: GOOG Stock Chart June 14-18

Figure 4.1.3: WMT Stock Chart June 14-18

Figure 4.1.4: JNJ Stock Chart June 14-18

4.2 Week Two

The second period of trading represented a relatively dormant week for three-quarters of the stocks in my watchlist. As viewed in Figures 4.2.1-4.2.4 below, the prices of Walmart,

Microsoft, and Johnson and Johnson were all up at the market open on Monday the 21st but moved very little throughout the week. Johnson and Johnson, one of the two stocks I still needed to acquire, had a weekly range of only 1.2% separating its minimum and maximum. Walmart and Microsoft showed slightly more deviance throughout the week, but to little effect. This was despite what appeared overall to be a strong week for the market as several indices showed bullish trends by the week's end. This was led by the DJI which rose nearly 4% with the S&P500 not far behind. The only asset in my portfolio which exhibited this was Google. As seen in Figure 4.2.2, Google rallied early on Monday before correcting some the next day. From there it continued a slow increase throughout the week. I heavily considered selling a few shares near the end of the week, but total profits peaked at only $45 per share. This combined with an RSI that spent most of the week below 56.1 and a MACD that read very flat prompted me to hold on in hopes of seeing better profit opportunities later. The goal for next week would be to attempt to determine early on whether the trend depicted in the DJI and S&P500 will hold. This allows for an educated guess to be made about when possible sell opportunities could arise.

Despite the slower than ideal market week, the goal set at the end of week 1 of acquiring the final two stocks in my portfolio was successful. The market conditions discussed lead to weak or conflicting indicators early in the week, so I chose to acquire both at their current prices without depleting my balance. I believe this was a smart choice as it would give me shares to sell if the overall bullish market trend continues into the next week and higher peaks are realized. 400 shares of WMT and 400 of JNJ were purchased on Tuesday and Wednesday respectively. At this point, I had used half of my available cash, a number which I wanted to dwindle further by the end of the week. GOOG was clearly bullish in the first half of the week and was now my smallest holding, I hoped to change that but was met with a small dip in Microsoft stock in the final two trading

days. The MACD indicator for MSFT took a bullish cross early on Thursday and sustained it into Friday. On Friday morning the RSI value was as low as 35 and the MACD was still bullish, so I purchased an additional 200 shares decreasing my balance to approximately $200,000. This completely fulfilled my goals coming into simulation week 2 and left me ample money to hopefully acquire more GOOG should a good buying opportunity present itself next week. In addition, despite not closing any positions so far, my current P/L is +4,662.60 after two weeks of trading. Below is the table recording this week's transactions as well as the weekly chart for each asset.

Table 4.2.1: Technical Trading Simulation Data Week Two

Date	Symbol	Buy/ Sell	Price ($)	Shares	Net Cost/ Proceeds	P/L	Cash ($)	Total P/L
6/22/2021	WMT	BUY	136.95	400	54,780	0	318,534.6	0
6/23/2021	JNJ	BUY	162.99	400	65,196	0	253,338.6	0
6/25/2021	MSFT	BUY	265.40	200	53,080	0	200,258.6	4,662.60

Figure 4.2.1: MSFT Stock Chart June 21-25

Figure 4.2.2: GOOG Stock Chart June 21-25

Figure 4.2.3: WMT Stock Chart June 21-25

Figure 4.2.4: JNJ Stock Chart June 21-25

4.3 Week Three

At the closure of week two I had 200,000 dollars of my budget remaining and my primary goal was to acquire more GOOG. After delving deeper into the indicators in recent months I set a price target of about 2500 dollars. I thought google was overall bullish but had some resistance pushing it down to this level. Based on low RSI values, bullish MACD crosses, and the price Moving Average seeming to only fall below this value very briefly, I thought support at 2500 was high and the overall bullish trend would continue into next week. These trends can be observed in Figure 4.3.2 below. On Tuesday I set a limit order for 40 shares of GOOG at a price of $2505 per share. The limit triggered mid-day on the 30th of June, and I spent half of my remaining budget at a price I was very happy to acquire GOOG at.

The second goal I set at the end of last week was to find opportunities to take profit if the bullish trend continued and appeared to be coming to an end. The bullish trend did continue, but as prices across my portfolio continued to rise on Friday it did not appear it was ready to buck yet. This made selling stocks which I had low profit/share values on difficult as I believe those numbers

could become much more appealing early next week. The one stock I did sell as we approached market close was Microsoft. The additional shares I purchased last week made it easy to cash out at $15.19 profit per share and still can benefit later if the bullish trend continues. Next week I hope my prediction that the bullish trend will continue will be correct and I will be able to find opportunities to take profit if that trend appears to be nearing reversal. Below are the figures for each of the assets in my portfolio as well as the table recording my transactions for week 3.

Table 4.3.1: Technical Trading Simulation Data Week Three

Date	Symbol	Buy/Sell	Price ($)	Shares	Net Cost	P/L	Balance ($)	Total P/L ($)
6/30/2021	GOOG	BUY	2505.00	40	100,200	0	100,058.60	15,176
07/02/2021	MSFT	SELL	274.38	100	27,438.00	1,519	127,496.60	16,829

Figure 4.3.1: MSFT Stock Chart June 28 – July 2

Figure 4.3.2 GOOG Stock Chart June 28 – July 2

Figure 4.3.3 WMT Stock Chart June 28 – July 2

Figure 4.3.4: JNJ Stock Chart June 28 – July 2

4.4 Week Four

Week Four met the goals set last week as we found several early opportunities to take profit. At the very beginning of the week the RSI indicator on GOOG and MSFT were still well oversold and had been for the closing 2 days of the previous week. In addition, the MACD lines were very tight knit indicating little divergence. There didn't appear to be much support or resistance and long-term evidence would suggest a correction was necessary. I used the extended oversell rating on the RSI of MSFT, GOOG, and JNJ as an indication that retrace could be happening immediately. As shown in figures 4.4.1 and 4.4.2 below, the RSI value of MSFT and GOOG held over 85 leading into Tuesday. This is what prompted to me to put closing limit orders in for both as I was already at a point where locking in profits was necessary. After these sells processed my cash balance was again higher than I was looking for, so I placed a limit order to purchase more GOOG, my most bullish pick for all the reasons listed in the previous section, at a price just a few percent below its current value hoping for one further dip before the return of the

bull trend. I got that dip Thursday morning and could've purchased even lower than I did had I set my limit order deeper, but I was happy to place more cash into GOOG at a price of 2580 per share.

Figure 4.4.1: MSFT Stock Chart July 2-9

Figure 4.4.2: GOOG Stock Chart July 2-9

Outside of the tech sector, JNJ also entered the week with bearish RSI readings as indicated in figure 4.4.3 below. However, it stumbled three dollars right out of the gate at this week's market open which left me in a position where I no longer wanted to sell and instead had to see how far the retrace would go. By Wednesday strong support appeared to lie between 167 and 168 dollars so I set a limit order and used some of my profits from early in the week to accumulate more at this level. The chart did briefly show a deep bullish cross of the MACD line and indicator line, but it crossed back around 180 where it ended the week. My hope is that the correction was a shallow one and the uptrend will roar again next week. If support fades, I'll be looking to preserve profits before a trend reversal.

Figure 4.4.3: JNJ Stock Chart July 2-9

Finally, WMT had the graph with by far the most sporadic appearance, but further investigation reveals it moved less than two dollars from peak to valley all week. This combined with a price that is less than four dollars above my average share price left me with almost no room

to take profits. I held on in hopes of a breakout next week. This data can be viewed in figure 4.4.4 below along with the table recording my transactions for the week.

Figure 4.4.4: WMT Stock Chart July 2-9

Table 4.4.1: Technical Trading Simulation Data Week Four

Date	Symbol	Buy/Sell	Price ($)	Shares	Net Cost	P/L	Balance ($)	Total P/L($)
07/06/2021	GOOG	SELL	2585.00	20	51,700	1,580	179,196.54	16,829
07/06/2021	MSFT	SELL	278.00	100	27,800	1,778	206,996.54	20,187
07/07/2021	JNJ	BUY	168.25	200	33,650	0	173,364,54	18,085
07/08/2021	GOOG	BUY	2580.00	20	51,600	0	121,746.54	18,117

4.5 Week Five

Week Five was unfortunately a slow week for trading as my predictions about the continuing bull market were only somewhat realized. My two sectors performed very differently with GOOG and MSFT continuing their uptrend and JNJ and WMT holding steady for the most part. With the end date for this simulation drawing very close, I was hesitant to make moves that would risk my nearly +20,000 total P/L. I decided to sell about a quarter of my MSFT and GOOG positions to lock in some of these profits. MSFT pushed my hand in doing this as the stock's price climbed sharply Tuesday morning. The short moving average bounced sharply off the $283 mark at which point the RSI read more than 86 and the MACD line appeared to be forming a bearish cross. These metrics can be viewed in Figure 4.5.1 below. Figuring this was a short-term high I sold at 281.94, exactly twenty dollars profit per share.

Figure 4.5.1: MSFT Stock Chart July 12-16

Like MSFT, GOOG started off Week Five with a small sell-off and rebounded strong later in the week. GOOG peaked out at nearly 2,660 without ever sustaining a value over 75 on the RSI

indicator which can be viewed in Figure 4.5.2 below. I was unable to time my trade that close to the peak but still managed to part with a quarter of my GOOG holdings at 111.33 dollars profit per share. Looking at this from an end of the week standpoint, I am extremely pleased with the move as a trend reversal is certainly possible in Week 6 which makes locking in profits now extremely important. I still own 45 shares should a return to the uptrend continue, but regardless I have less of my balance at risk to decrease.

Figure 4.5.2: GOOG Stock Chart July 12-16

As mentioned earlier, my other asset sector did not perform as well this week. WMT performed very similar to last week. It only rose by $1.50 throughout the week and it closed within one dollar of tis highest price. This can be viewed in Figure 4.5.3 below. This is the third week it has exhibited this same trend, but my P/L per share is still not high enough to make selling attractive. My hope is that this trend will continue for a fourth week and I can cash out a moderate profit on a high amount of shares before the conclusion of this simulation. JNJ started the week off similarly but fell hard around midweek. It almost fell enough to entice a buy opportunity but

worries of a trend reversal with only one week remaining pushed me to hold on to my balance. As seen in Figure 4.5.4 JNJ closed at approximately $168 which is exactly where it seemed to have set up support throughout Wednesday and Thursday. The MACD indicator shows almost no divergence so it is difficult to make a confident prediction for how JNJ will start out in Week Six. Accompanying the charts below is Table 4.5.1 which contains all my transactions for Week Five.

Figure 4.5.3: WMT Stock Chart July 12-16

Figure 4.5.4: JNJ Stock Chart July 12-16

Table 4.5.1: Technical Trading Simulation Data Week Five

Date	Symbol	Buy/Sell	Price ($)	Shares	Net Cost	P/L	Balance ($)	Total P/L ($)
07/13/21	MSFT	SELL	281.94	100	28,194	2,000	149,940.64	19,450
07/14/21	GOOG	SELL	2641.47	15	39,622.05	1670.10	189,562.59	21,865

4.6 Week Six

While this doesn't happen often in the stock market, Week Six was the perfect ending to my technical trading series. I took a risk on Monday as time was running out and I planned on playing the rest of the week very conservative as we led up to the end day. I had almost half of my budget in cash from locking in profits last week and was met with a fair dip in both of my technology sector stocks as shown in Figures 4.6.1 and 4.6.2. After some chart analysis I felt

strongly that this was only a short correction as conditions looked very similar to the retrace, which we experienced in Week Four before the return to the current bull trend. The indicators did hold a buy rating, but signals were weak and short-lived just as last time. With all this considered I took my final gamble and reinvested nearly 65,000 in 25 shares of GOOG at near my average purchase price. I was thrilled to acquire this here as I felt I could make significant profit if the bull trend returned before my simulation period ended.

Figure 4.6.1: MSFT Stock Chart July 19-23

Figure 4.6.2: GOOG Stock Chart July 19-23

The rest of Week Six I stuck to my original plan and didn't take any risks that would jeopardize the profit I had garnered throughout this project. I chose to close out all my stocks at the end of day price on Friday as I felt that made the most sense given the simulation ended. These prices as well as my final profit can be viewed in Table 4.6.1 below. If it were not for the end of the simulation I would've held onto my positions as my prediction of the small correction to continued uptrend was correct. Despite some small turbulence all my assets finished the week strong, and I was happy to have waited to sell JNJ and WMT for the majority of the last few weeks. I was able to squeak out a few more dollars profit on each share as they both reached a high for my six-week period at the closure of the week. This is depicted below in Figures 4.6.3 and 4.6.4.

Figure 4.6.3: WMT Stock Chart July 19-23

Figure 4.6.4: JNJ Stock Chart July 19-23

Table 4.6.1: Technical Trading Simulation Data Week Six

Date	Symbol	Buy/Sell	Price($)	Shares	Net Cost	P/L	Balance ($)	Total P/L($)
07/19/21	GOOG	BUY	2584.96	25	64,624	0	124,938.59	19,887
07/23/21	MSFT	SELL	290.02	200	58,004	4,924	183,942.59	37,317.90
07/23/21	GOOG	SELL	2758.91	70	193,123.70	13,597.5	377,066.29	37,317.90
07/23/21	WMT	SELL	142.47	400	56,988	2,208	435064.90	37,317.90
07/23/21	JNJ	SELL	172.09	600	103,254	4.410	537317.90	37,317.90

Chapter Five: Swing Trading Simulation

5.1 Week One

For the first week of swing trading simulation, June 14-18, zero trades were performed. Much of this first week was dedicated to developing watchlists. The initial purse of $500,000 was set. Watchlists on TD Ameritrade thinkorswim papermoney were linked to the "Monitor" and "Charts" tabs in the platform to view stock data. Gadgets were established in the "Trade" tab for convenient trading, as well as viewing news articles and level two quotes. The information from these sources will be the driving force of our decision making in the swing trading simulation. Since level two and higher quotes are written more often for seasoned swing traders, we will be focusing on level one quotes to guide us as inexperienced traders. Table 5.1.1 shows how data will be collected and recorded throughout the simulation.

Table 5.1.1: Week One Swing Trading Simulation Data

Date	Symbol	Buy/Sell	Price	Shares	Proceeds	P/L	Cash	Total P/L
N/A	N/A	N/A	N/A	N/A	N/A	N/A	500,000	0

Between June 14-18, the activity of the stock market was a little all over the place for our four assets. There has been much talk this week in the economy regarding inflation. This may have caused some wild activity by buyers in the market this week.

Apple has great expectations coming up based on its historical performance. It holds the Blue-Chip quality, as it is a consistent winner at the end of weeks. Figure 5.1.1 shows the full market data from this week.

Figure 5.1.1: AAPL Stock Chart June 14-18

AAPL will be one to watch as we go forward, with the large amount of support it already has it will look to gain more. Service carriers across the globe will fuel these sales even further, as the accessibility of 5G networks to patrons continues to grow. Apple only changed about $3 across the whole week, while TSLA was much more volatile. This change is shown in figure 5.1.2 with the full market data for TSLA from June 14-18.

Figure 5.1.2: TSLA Stock Chart June 14-18

TSLA stock proved to fluctuate from about $600 to $625 in value across the span of this week. Tesla has raised some concerns, as C.E.O Elon Musk has been making some promises he has not kept, as his new Gigafactory near Berlin would be completed in this current June 2021 month, and his construction has been delayed 6-8 months due to German regulations. The factory produces electric cars, which is a positive step for the earth, but the factory building itself must also be built environmentally safe [17].

Blue Origin, one of AMZN CEO Jeff Bezos' other companies, has been making strides to fly to space for June 20th. Their long-term goal is to be able to host commercial flights to space. They have been making news lately for their preparation and are surely gaining the attention of investors. AMZN stock price this week seemed to enjoy the attention, showing substantial gains across this period. The chart for market data from this week for AMZN is shown in figure 5.1.3.

Figure 5.1.3: AMZN Stock Chart June 14-18

Data on our other company from the consumer sector, Proctor & Gamble, is shown in figure 5.1.4. The stock worked it way down steadily during the week, so hopefully next week, we can buy in early to earn profits when it goes back up.

Figure 5.1.4: PG Stock Chart June 14-18

Both are blue chip stocks, as they will generally grow in value. Differences between the two include the bearish trend that existed for Proctor and Gamble this week, and bullish trends which existed for AMZN. In the coming weeks, we hope to see improvement from PG, as well as continued success from AMZN.

5.2 Week Two

Week two of our swing trading simulation consisted of the initial buying of shares, as well as the first sell to take profits. On Thursday, June 24, the market values of our stocks were relatively low compared to the earlier days in the week, as well as the price in week one. I wanted to take advantage of this, to perform more higher quality trades this week, and to make up for not trading in the first week. These lead to the first approximately $230,000 being spent this first day. The setup of thinkorswim platform to present us with market data with our watchlists and assigned gadgets in the first week helped greatly in the decision-making process for these trades. The trading data collected on these stocks is shown in table 5.2.1, with our six buy trades and one sell.

Table 5.2.1: Week Two Swing Trading Simulation Data

Date	Symbol	Buy/Sell	Price	Shares	Proceeds	P/L	Cash	Total P/L
6/24/21	AAPL	BUY	133.46	300	-40,038	0	459,962	2,118.30
6/24/21	TSLA	BUY	688.78	200	-137,756	0	322,206	2,118.30
6/24/21	PG	BUY	133.16	250	-33,290	0	236,903.50	2,118.30
6/24/21	AMZN	BUY	3467.50	15	-52,012.50	0	270,193.50	2,118.30
6/25/21	AAPL	BUY	132.86	100	-13,286	0	223,617.50	-3976.43
6/25/21	AMZN	BUY	3400.72	10	-34,007.20	0	189,610.30	-3976.43
6/25/21	PG	SELL	135.21	100	13,521	205	203,131.30	-3976.43

Friday June 25th, I picked up some more Apple and Amazon shares to get more of my money working. These can be great longer-term swing trades to attempt to capitalize from, so they were held throughout the rest of the week.

In my first attempt to take some earnings, 100 of the 250 shares of Proctor and Gamble purchased were sold, with the P/L calculation value at the end of week 2 was recorded after Monday, June 28th, to ensure the dust settles from our first sell.

PG P/L:

$$\frac{P}{L} = (Position\ Size)(Price\ Movement) = (Position\ Size)(\text{Price Sold at} - \text{Avg trade price})$$

$$\frac{P}{L} = (100\ shares)(135.21 - 133.16) = 2.05x100 = \$205$$

Where Price Movement is (Price Sold at – Avg trade price). In this case, average trade price is the average of the only PG trade we have made thus far, $133.46. P/L for this transaction reported as $205, a small, but good start to locking in profits. Figure 4.2.1 shows AAPL stock chart data for this week.

Figure 5.2.1: AAPL Stock Chart June 21-25

After analyzing the AAPL stock chart at the end of this week, we conclude there was clearly a lot of buying in the market, shown by the high RSI value early in the week. It is unfortunate we did not purchase earlier in the week, as we saw losses at the end of the week, but we expect these losses will be recovered by a similar strong beginning to next week. Now looking at TSLA, whose market data is shown in figure 5.2.2, very sudden spikes are seen compared to the other stocks. This is another stock we would have benefited from buying earlier in the week.

Figure 5.2.2: TSLA Stock Chart June 21-25

The swing trading method rewards riskier stock trades, such as TSLA, of which we see potential in because of its high P/E ratio. Within our data collection, shown in table 5.2.1, a net cost of $137,756 for our Tesla shares means Tesla was about half the week one spending, totaling approximately the cost of all our other assets initially bought that day. Figure 5.2.3 shows AMZN stock from June 21-25.

Figure 5.2.3: AMZN Stock Chart June 21-25

AMZN stock price failed to continue the success it was having last week. Although it ended the week lower than where it started, based on the MACD and Signal lines crossing on the 24th and 25th when we made our purchases, we are confident we got in at a decent time. Moving onto our other stock from the consumer sector, PG, with market data in figure 5.2.4, the opposite trend was experienced, as it was bullish, and climbed upward across the week.

Figure 5.2.4: PG Stock Chart June 21-25

After collecting the data from these two different sectors, we can safely say the technology sector outperformed the consumer sector companies this week. AMZN showed significant losses, while the gains of PG were not enough to rival the performances of AAPL and TSLA this week.

5.3 Week Three

During the morning on Monday of this week (6/28-7/2), the opening performance of the market was monitored for swing trading opportunities. Table 5.3.1 Shows the week 3 swing trading simulation data collected for this week. Accompanying the table is the P/L calculation for our one AAPL sell on Tuesday, June 29th.

Table 5.3.1: Week 3 Swing Trading Simulation Data

Date	Symbol	Buy/Sell	Price	Shares	Proceeds	P/L	Cash	Total P/L
6/28/21	PG	BUY	135.55	100	-13,555	0	189,576.07	1,159.55
6/29/21	TSLA	BUY	679.19	50	-33,959.50	0	155,616.57	104.23
6/29/21	AAPL	SELL	136.08	150	20,412	429	176,028.23	104.23

AAPL P/L:

$$P/L = \ Position\ Size\ x\ Price\ Movement$$

$$\frac{P}{L} = \ (Position\ Size)(Price\ Sold\ at - AAPL\ Avg\ Trade\ Price\ on\ 7/2)$$

$$= (150\ \text{Shares})(136.08 - 133.22) = \ \$429$$

On Tuesday in the morning, Apple stock was pushing just over $136, which was higher than normal. To lock in some of my profits from my pervious apple purchase at lower prices, 150 shares sold at $136.08. Towards the end of the week, Thursday and Friday were reporting values even higher topping out at $139.96. Figure 5.3.1 shows AAPL market data from this week.

Figure 5.3.1: AAPL Stock Chart June 28-July 2

The beginning of the coming week will surely bring noticeable market change, and hopefully, AAPL will stand strong. The hype and activity surrounding this company is strong, but maybe not as much as TSLA, who's market data is shown in figure 5.3.2.

Figure 5.3.2: TSLA Stock Chart June 28-July 2

Slightly uncharacteristic of TSLA, the company appeared to follow the same trends as the rest of the market this week, with the candle stick and histogram plot almost identical to the RSI plot. Watching the early morning spikes in the four stocks on my watchlist made it tempting to buy more Amazon shares, with the market value hovering around $3,430. Figure 5.3.3 shows AMZN market data for this week.

Figure 5.3.3: AMZN Stock Chart June 28-July 2

This ask price is relatively high compared to our previous Amazon purchase, so a limit order for about the same amount as our previous purchase will be set. Essentially, it is around $3430, but because it is early in the day, early in the week, it is reasonable to expect that is will dip below $3400 once again. I am unsure if this will happen within the day, so to make sure we continue putting our money to work, a limit order, with good till close, as the time of force for AMZN at $3400. As previously stated, that $30 dip may not be seen within the day, but can be expected early in the week, which is why good till cancel (GTC) was chosen instead of day for the TIF. As the week ended, the limit order did not complete, as the price of AMZN rocketed by the end of Friday. We plan to keep the limit order into early next week, but then move on to focus on other purchasing strategies we can execute. The other consumer sector stock, PG, has market data presented in figure 5.3.4, also follows its RSI very closely, showing it fell in line with the market just as AMZN did.

Figure 5.3.4: PG Stock Chart June 28-July 2

We picked up 100 more shares of Proctor and Gamble on Monday morning as well. I chose to make this trade because of positive media coverage on P&G manufactured company Old Spice

in the early Monday hours. A news article linked from the TD Ameritrade thinkorswim platform written by Business wire, highlights Old Spice in their recent "Men Have Skin Too" campaign. Their forward-thinking work in natural ingredients such as shea butter and coconut oil is very forward thinking for men's health and skincare. This positive news coverage influenced my purchase of 100 shares of PG [18]. We have the same hopes for these shares as AMZN, hoping they will spike up early next week for a quick turnaround.

5.4 Week Four

For the fourth week of our swing trading simulation, four orders were filled. One order was placed on each of the four stocks owned. The price of Amazon, our most expensive stock, continued to climb, ending the week at $3719.34. The stock reached even higher value during the week, so the old $3,400 limit order was cancelled, as we find it unlikely the company even dips back down there again. Table 5.4.1 shows the data collected for these four orders.

Table 5.4.1: Week 4 Swing Trading Simulation Data

Date	Symbol	Buy/Sell	Price	Shares	Proceeds	P/L	Cash	Total P/L
7/6/21	AMZN	SELL	3643.66	10	36,436.60	2,206.80	212,464.21	1,996.50
7/8/21	AAPL	SELL	142.19	50	7,109.50	451.50	219,537.59	2,380.55
7/8/21	TSLA	BUY	638.03	50	31,901.50	0	187,672.09	2,380.55
7/9/21	PG	SELL	137.17	50	6,858.50	140.75	194,530.47	3,833.57

AMZN P/L: $\frac{P}{L} = (Position\ Size)(Price\ Sold\ at - AMZN\ Avg\ Trade\ Price\ on\ 7/6)$

$$\frac{P}{L} = (10\ Shares)(3643.66 - 3422.98) = \$2{,}206.80$$

AAPL P/L: $\frac{P}{L} = (Position\ Size)(Price\ Sold\ at - AAPL\ Avg\ Trade\ Price\ on\ 7/8)$

$$\frac{P}{L} = (50\ Shares)(142.19 - 133.16) = \$451.50$$

PG P/L: $\frac{P}{L} = (Position\ Size)(Price\ Sold\ at - PG\ Avg\ Trade\ Price\ on\ 7/9)$

$$\frac{P}{L} = (50\ Shares)(137.17 - 134.355) = \$140.75$$

Apple showed excellent gains throughout the week, largely following the market, with its histogram, RSI, and MACD shown in figure 5.4.1.

Figure 5.4.1: AAPL Stock Chart July 5-July 9

The early parts of the week showed promising rise in price, with a mid-week drop in the middle, leading into a quick recovery. Apple ended the week trading at $145.11, and we sold on Thursday, July 8th.. We could have held a little bit longer, but with the swing trading aspect in mind, seeing these profits was hard to resist selling off some shares.

The stock we have the most shares of, TSLA, was in a bearish mode this week, as the price continued to climb downwards. Figure 5.4.2 shows the TSLA stock chart for this week.

Figure 5.4.2: TSLA Stock Chart July 5-July 9

Getting in on buying more on Thursday was a great play for our portfolio, as the MACD graph spears to show a buy indicator around 3 P.M Thursday. Us buying in at $638.03 per share, has already shown quick returns, with TSLA ending the week at a value of $656.59.

Early in the week, on Tuesday, we sold 10 shares of AMZN at $3643.66. This locked in some profits for us, as we had bought the amazon shares in week 2 at an average price per share of $3434.11, purchasing at two different points in the week. There appears to have been a lot of selling early in the week, shown by figure 5.4.3. The RSI dropped under 30 on three separate occasions, on July 6th, 7th, and 8th (Monday, Tuesday, Wednesday), indicating the stock was oversold early in the week.

Figure 5.4.3: AMZN Stock Chart July 5-July 9

Holding onto this AMZN position could have been even more profitable had we continued to hold the stock rallied all the way up to $3719.70 by the end of the week. Just as with when we saw AAPL rise early in the week, we could not resist the chance to lock in some profits.

Fifty PG shares were sold at $137.17 per share at the end of the day on Friday. Charts for the stock's performance across the week is shown in figure 5.4.4.

Figure 5.4.4: PG Stock Chart July 5-July 9

For PG, RSI on Wednesday raised above 70, showing the stock may have been overpurchased by many buyers early in the week. MACD crosses the signal line at a few different points, and going into next week, we plan to buy a lot more shares early in the week, so we can start seeing some substantial gains.

5.5 Week Five

Throughout week five of our swing trading simulation, the market performance generally performed bearish. Three trade orders were filled, with shares being purchased for AMZN, PG, and AAPL. Table 5.5.1 shows the simulation data collected from this week's trades. After attempts in previous weeks to catch the market early in the trading day, swing trading transactions this week transitioned to the middle of the day. The volatility of the market in the earlier hours of the day (approximately before 11:30 A.M) proved to be very difficult to predict, as last week we tried for earlier trades, so now we did later trades.

Table 5.5.1: Week 5 Swing Trading Simulation Data

Date	Symbol	Buy/Sell	Price	Shares	Proceeds	P/L	Cash	Total P/L
7/14/21	AMZN	BUY	3712.50	15	-55,687.50	0	138,842.97	2,694.80
7/14/21	PG	BUY	137.96	200	-27,592	0	111,250.97	2,694.80
7/14/21	AAPL	BUY	149.37	200	-29,874	0	81,376.97	2,694.80

There was a lot learned this week about data collected, giving us a better understanding of important market data. Securities and Exchange Commission Fee has been automatically applied to each sell throughout this simulation. It was nice to realize this, as total P/L being different from Net liquidating value is now understood. The total P/L at the end of the day after buying our stocks Wednesday is reported in table 5.5.1 in the total P/L column. Unfortunately, after our portfolio was up $2,694.80 on Wednesday, at the end of the week (Friday 7/16) we found ourselves down $-3,386.70, placing our net liquidating value at $496,611.87.

Market data on the swing trading stocks for this week displayed AAPL, AMZN, and TSLA as bearish, while Proctor & Gamble increased in value. Hopefully, these losses will be recovered early next week, as we expect the market to jump up, with lots of activity.

AAPL had a high RSI early in the week, indicating it may have been overbought, while showing the interest in the stock is very clear. The RSI dipping below 30 at the end of the week may indicate it was oversold, which makes sense, as it has climbed high in the recent days, and other swing traders must have been seeking to lock in profits at this time. July 12-16 market data for AAPL is shown in Figure 5.5.1.

Figure 5.5.1: AAPL Stock Chart July 12-16

We observed many slips and rallies for AAPL across the week, but unfortunately, our Wednesday buy occurred at a point which we should have been selling. July 14th when we purchased these it seems we were among the "overbought" crowd with the high RSI reported. The MACD and signal lines took a very long time to come back together after this, which would have been nice for us. Moving onto our other technology stock, TSLA, we present the market data for this week in figure 4.5.2.

Figure 5.5.2: TSLA Stock Chart July 12-16

TSLA proved to be truly bearish this week, starting from the beginning of the week being high with the market. It declined into Tuesday, then experienced bearish divergence, as it appeared to rally after Tuesday, but continued to fall soon afterwards. It would have been nice to have other stocks make up for these losses, but AMZN experienced the same struggles, with its bearish market data shown in figure 4.5.3.

Figure 5.5.3: AMZN Stock Chart July 12-16

AMZN stock chart can also be analyzed as overbought in the beginning of the week. It experienced some consistent loss across Tuesday to Friday, but we hope it climbs back up to where we can gain funds. Lastly, we look at Proctor & Gamble, our other consumer stock, whose chart data is shown in figure 4.5.4.

Figure 5.5.4:PG Stock Chart July 12-16

PG experienced a nice steady climb across the five days. It closely followed the RSI, remaining overall consistent until consumers realized the gains, and overbought highly on the 16th, shown by the RSI climbing over 70. The MACD and signal line crossed on multiple occasions, further highlighting the acceptable performance of the stock.

5.6 Week Six

At the beginning of the final week of our simulation, the final buy trades were performed, purchasing shares of AAPL, AMZN, and TSLA on Monday and Wednesday. As this final week progressed, the remaining shares of all our companies were sold off. Table 5.6.1 shows the data collected from trades made this week.

Table 5.6.1: Week 6 Swing Trading Simulation Data

Date	Symbol	Buy/Sell	Price	Shares	Proceeds	P/L	Cash	Total P/L
7/19/21	AAPL	BUY	142.01	50	-7,100.50	0	74,276.47	-5,089.90
7/21/21	AMZN	BUY	3576.01	10	-35,760.10	0	38,513.37	-378.20
7/21/21	TSLA	BUY	655.31	50	-32,765.50	0	5,750.87	-378.20
7/22/21	AAPL	SELL	147.20	150	22,080	271.50	27,830	-746.25
7/22/21	AMZN	SELL	3620.78	15	54,311.70	764.55	82,141.28	-746.25
7/22/21	AMZN	SELL	3628.52	25	90,713	1467.75	172,852.75	-746.25
7/23/21	PG	SELL	139.53	400	55,812	1348	228,663.81	-1585.94
7/23/21	AAPL	SELL	148.56	300	44,568	951	273,231.06	-1580.00
7/23/21	TSLA	SELL	643.38	350	225,183	-11,200	498,414.06	-1580.00

It was unfortunate for us to see a loss for total P/L at the end of the swing trading data collection simulation. Analysis of our collected data after one week influenced our buying decisions for the next, sometimes much more than other methods we intended to use. For the swing trading aspect of this project, one example of this is we relied on previous market data, but mainly the data we had already collected. This caused occasional tunnel vision while utilizing the strategies we had on hand, sometimes disregarding the many other factors at hand. The following calculations show Profits and Losses for the final sells throughout this week.

AAPL: $\frac{P}{L} = (Position\ Size)(Price\ Sold\ at - AAPL\ Avg\ Trade\ Price\ on\ July\ 22)$

$$(150\ Shares)(147.20 - 145.39) = 271.50$$

$$\frac{P}{L} = (Position\ Size)(Price\ Sold\ at - AAPL\ Avg\ Trade\ Price\ on\ July\ 23)$$

$$(300\ Shares)(148.56 - 145.39) = 951$$

AMZN: $\frac{P}{L} = (Position\ Size)(Price\ Sold\ at - AMZN\ Avg\ Trade\ Price\ on\ July\ 22)$

$$(15\ Shares)(3620.78 - 3569.81) = 764.55$$

$$(25\ Shares)(3628.52 - 3569.81) = 1467.75$$

PG: $\frac{P}{L} = (Position\ Size)(Price\ Sold\ at - PG\ Avg\ Trade\ Price\ on\ July\ 23)$

$$(400\ Shares)(139.53 - 136.16) = 1348$$

TSLA: $\frac{P}{L} = (Position\ Size)(Price\ Sold\ at - TSLA\ Avg\ Trade\ Price\ on\ July\ 23)$

$$(350\ Shares)(643.38 - 675.38) = -11{,}200$$

These calculations show how we generally had positive gains on the stocks we had, shown by the positive P/L for AAPL, AMZN, and PG. Unfortunately, yet unsurprising, as the most volatile of our four stocks TSLA was our biggest loser. Selling all 350 shares for $225,183 (almost half of our net liquidating value) at once was not the best choice. The bearish activity of the last day was a heavy hit to our expected profits from this stake. almost half of our net liquidating value. Introducing the trading view charts for this week begins with Figure 5.6.1, which shows the market data for AAPL from this week.

Figure 5.6.1: AAPL Stock Chart July 19-23

Across the week of July 19-July 23, AAPL climbed as a consistent bullish stock. We were fortunate to see consistent gains on this stock for the entirety of the project, as we watched it climb from approximately $133 to $146 across the six-week simulation. We have great overall success this week on Apple, with it being oversold early in the week, shown by RSI below 30, and a lot of buying activity and interest in the stock as the week progressed. It was clearly overbought by the RSI breaking 70 twice later in the week. TSLA, who's market data is shown in figure 5.6.2, displayed a different trend compared to APPL from this week, climbing early in the week. After this climb, it fell and failed to recover before the end of week.

Figure 5.6.2: TSLA Stock Chart July 19-23

The RSI broadly speaking follows the market, and this week TSLA stock followed in stride. This RSI being dragged up early in the week causes higher lows for stocks, slashing the chances for profit to be made. Shareholders of TSLA prior to this week most likely saw this opportunity to cash in, sold, driving share prices down later in the week. Having performed our last buys early in the week, it was tough to watch the price fall as the week ended. Moving onto

AMZN, who's market data from this week is shown in figure 5.6.3, bullish activity is clearly shown.

Figure 5.6.3: AMZN Stock Chart July 19-23

Proving to be one of our winners this week, AMZN opened around $3530, and closed out the week at $3646.69. The MACD plot shows we got in at a great time, as the MACD line fell below the signal line, indicating a good time to sell. Our AMZN buy this week was on the 21st, and we sold in two separate transactions on the 22nd. Based on the chart we generated, we timed buy and sell times well, but could have held for longer, which could have been risky. Lastly, PG stock chart data is pictured below in figure 5.6.6.

Figure 5.6.4: PG Stock Chart July 19-23

Selling all four hundred of our PG shares at the end of this week was the only transaction made for this stock this week. In retrospect, if we sold much earlier in the week, higher profits could have been locked in. The overselling that was happening later in the week is highlighted by RSI dipping below 30 once Thursday and once Friday. Our transaction took place much earlier in the day, before the MACD dipped below the signal line, so we definitely missed out on some profit there.

Chapter Six: Analysis and Comparison

6.1 Profit/Loss of Each Company

As mentioned in the analysis section of this project's methodology, the simulation data will be examined using quantitative measures. The first of these is the total profit or loss for each company traded in each simulation. This measure allows us not only to view the relative success of each method, but also how consistent that method was. The stock market is extremely volatile so a strategy being successful for more independent assets than another speaks to its consistency.

6.1.1 Technical Trading

In the technical trading simulation, the goal was to methodically make trades based on indicators and eventually realize a profit that slowly built over the six-week span. The four assets traded represented two different sectors. Of these, Technology performed definitively better and realized a total profit of $30,697. Google, which was my favorite asset to trade in the latter half of this simulation, accounted for $18,853 total profit. Much of this came in the final week which accounts for the jump from the mid-twenties to nearly 38,000 dollars profit. While it benefitted me in this case an equally strong downtrend in the final week could have wiped out half my profit. This is just a further example of the volatility of the market even while using a good trading strategy. The other technology asset I held was Microsoft, which I traded heavily early while it was strongly bullish. MSFT made up the remaining $11,844 profit of my technology sector.

The other two companies I selected were Walmart and Johnson and Johnson, these represented diverse consumer companies with Walmart being involved in everything retail and Johnson and Johnson leaning heavier on its pharmaceutical branch as of late. These performed similarly to each other and overall showcased very little movement throughout the simulation. I purchased Walmart stock for the first time in Week Two at a price of 136.95 and ended by selling

at 142.47, a profit of only $5.49 per share or 3.8%. Johnson and Johnson fared only slightly better at $9.10 per share or about 5.3% from my first buy to the simulation's end. Still, smart trading allowed me to realize small profits with both assets. Walmart gained me $2,212 profit while Johnson and Johnson netted a respectable $4,408. This was most influenced by the difference in trend strength between my two sectors, however, using indicators such as RSI to time entrances and exits allowed me to still realize profit in a situation that did not have a strong upside.

Table 6.1.1 below organizes the quantitative metrics used for this section's analysis. The company and ticker are included as well as the sector it is traded on. The third column, percent change, in this case is the percent the stock moved from the time I chose to first enter to the time I sold all my equity in that company which in this case was the end of my simulation. The final column is the Profit/Loss of each company present in my simulation.

Table 6.1.1: Technical Trading Simulation Profit/Loss for Each Company

Company (Ticker)	Sector	Percent Change	Profit/Loss
Microsoft (MSFT)	Technology	+13.7%	+$11,844
Google (GOOG)	Technology	+9.1%	+$18,853
Walmart (WMT)	Consumer/Retail	+3.8%	+$2,212
Johnson and Johnson (JNJ)	Consumer/Medical	+5.3%	+$4,408
Total	All Sectors	+7.4%	+37,317

6.1.2 Swing Trading

In the swing trading simulation, the goal was to make trades in a similar fashion to that of technical. Trades were performed with the same RSI and MACD indicators but were performed more frequently. Other swing trading aspects were integrated, including attempting a limit order for a close price change, which unfortunately never executed. Attempts to lock in of profits came in quick succession, proving to be very successful, aside from TSLA, whose value overall depreciated by the end of the simulation. Positive final Profit/Loss was obtained on the three other

stocks we owned, resulting in final Profit/Loss of -$1,580. This was a surprising finish, as the risk involved with swing trading methods had potential to produce either massive gain or loss, and the total percent change of our portfolio was only -0.31%. Table 6.1.2 shows the four companies traded in our simulation, along with the sectors they were chosen from. It also shows percent change of our investments ranging from the first day we bought in to the last day we sold. Finally, profit/Loss of each company is presented, showing our total money earned and lost on each of the stocks.

Table 6.1.2: Swing Trading Simulation Profit/Loss for Each Company

Company (Ticker)	Sector	Percent Change	Profit/Loss
Apple (AAPL)	Technology	+15.1%	+$3,871
Tesla (TSLA)	Technology	-6.59%	-$11,199.50
Amazon (AMZN)	Consumer/Retail	+4.44%	+$3,994
Proctor & Gamble (PG)	Consumer/Retail	+4.56%	+$1,754.50
Total	All Sectors	-0.31%	-$1,580

Consumer/retail stocks AMZN and PG together closed out with a combined +$5,748.50. From this sector, AMZN provided us the largest Profit/ Loss of any of our individual stocks, at +$3,994. Surprisingly, this maximum did not match companies with our Percent Change maximum, which was AAPL with +15.1%. AMZN had the largest buy in price for any of the stocks we owned, which we initially purchased on June 24th at an astounding $3467.50. This grew all the way up to $3712.50 on July 12th, when we bought more shares after seeing promising growth, but unfortunately, we lost out on some potential profits. This happened because we waited until July 22nd to sell off our shares in two separate transactions for an average price of $3,624.65. PG boasted an impressive +4.56% change, but we simply did not invest enough in it, and if we had, we could have made much more than the +1,754.50 which we made on it.

Our technology sector ended in the red, with a total loss of -$7,328.50. This sector was home to our largest range of percent change among stocks traded, with AAPL +15.1% and TSLA

-6.59%. It is safe to say a lot of our money in TSLA should have gone to AAPL early on, but TSLA gave us our best chance to properly swing trade, which we unfortunately did not capitalize on well. TSLA let us down at the very end of the simulation, ending with a total loss of -$11,199.50. The TSLA shares made up so much of my portfolio, and were so volatile, that spikes in the low ten thousand had been seen previously. Unfortunately, this spike never recovered, and with the simulation coming to an end, we did not get a chance for the shares to rise back up to the price which we purchased them at. The most prominent mistake in our trading of TSLA stock was that we were not selling off shares of it as often as we should have. The chance that it would go through the roof was always so enticing we were hesitant to sell off, but media coverage of the company has been relatively negative as of late. This may have caused market investors to pull out while they could, but the company at the same time still does not seem to be slowing down.

6.2 Weekly Total Cash Comparison

Figure 6.2.1 depicts the total weekly cash for each trading style, illustrating the effect each trading style had on a weekly basis. This total weekly cash, or the sum of all assets, was created using the initial $500,000, added together with total P/L values at the end of each week, revealing the similarities and differences in our trends over time.

At the beginning of Week One, both portfolios immediately began to diverge. For the first week, technical trading made small gains, while swing trading makes small losses. From Week Two to Week Five, both methods' trend roughly the same, which could well be explained via the market environment as a whole moving in these directions. Technical trading retained a higher value at this point, but the slopes are similar for much of the simulation. The difference in portfolio value is largely created in the final week, where the technical portfolio nearly doubles, while swing trading takes a strong step back to show its -$1,580 total P/L. This speaks to the unpredictability

of swing trading, as it seemingly followed the market up until the final two weeks, when it began declining in value, as technical trading continued to rise.

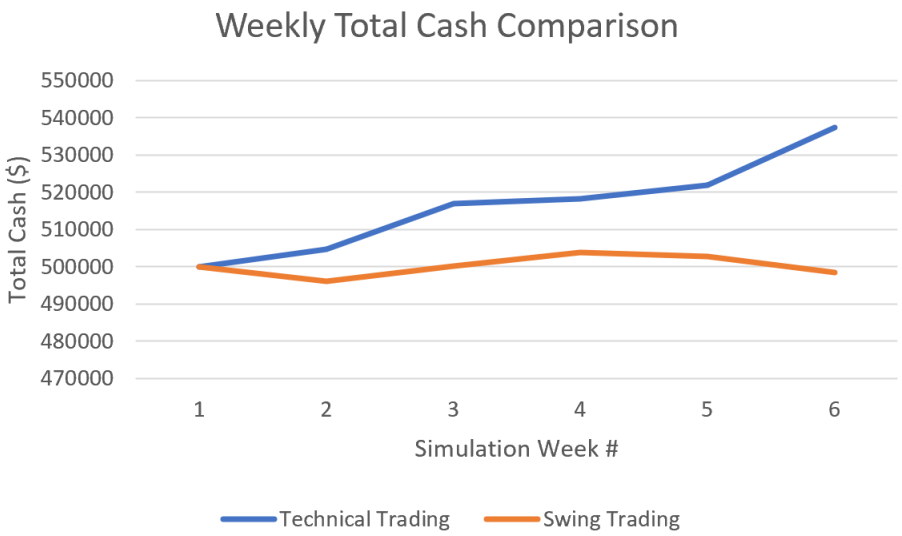

Figure 6.2.1: Weekly Total Cash Comparison for Technical and Swing Trading Simulations

6.3 Trading Strategies Comparison

The goal of this project was to simultaneously run two independent stock market simulations and compare the two different trading strategies utilized. Throughout the previous six weeks, technical trading and swing trading were applied to two separate groups of companies from similar sectors. These companies were selected to provide varying market data inside each simulation, while allowing for the two simulations to be compared adequately.

Quantitatively, technical trading performed better than swing trading over our six-week simulation. Considering the total profit or loss accumulated by each method, the technical trading portfolio grew 7.4 percent with a profit of 37,317 dollars. Conversely, the swing trading portfolio declined by 0.31 percent with an overall loss of 1,580 dollars. On the surface this is a definitive conclusion with one portfolio making significant gains while the other faced a small loss. However, the breakdown by individual company tells a much different story.

In Section 6.1 there is detailed analysis of the P/L of each simulation broken down by individual company. This allows for verification of a method's appeared effectiveness for which could be applied to work on multiple different assets. When comparing the companies present in the technical trading portfolio, there was one small standout. Google alone made over $18,000 which comprises half of the total profit. Interestingly, this is even though Microsoft increased more in value throughout the simulation period with a percent change of 13.7%. This can be explained by Google representing a larger portion of the technical trading portfolio which was a choice of the investor at the time. Holistically, these profits and high percent changes can mostly be attributed to strong performance in the technical sector, especially in the final week. The two consumer stocks which were traded technically also realized profits but to a lesser degree. These rose by a less lucrative amount throughout the simulation but had a similar level of effectiveness to each other.

The swing trading portfolio reflects the same breakdown with tech stocks rising an astronomical 15% in six weeks and the consumer stocks rising a more realistic but respectable 4-5%. So why is it that this strategy lost money? Is it worse over this time length? The answer is likely no. The answer more so has to do with the volatility and risk of swing trading, not its feasibility over six weeks. The three companies beside Tesla compared very similarly to those in our technical trading simulation, with AAPL, AMZN, and PG all realizing profits before the simulation's end.

With the data for the final portfolio change mainly coming from TSLA, as it was our most owned stock, the loss was detrimental to our portfolio value, resulting $-11,199.50 at the simulation's close. The value of TSLA following the end of our simulation has already once again began trading at over $700 a share, which means including another week or two of data collection

would have grew the portfolio value of our TSLA stock roughly another 20,000, already overcoming the loss we had to endure selling on the last day. We should have been prepared to sell TSLA at high points in the weeks analyzed, as we did not sell nearly enough, almost entirely just buying. This had potential to work, as the portfolio could have exploded in value had TSLA succeeded on their planned schedule. Having no choice but to sell at the very end shed light on how within the market, all your eggs should never be in one basket, and how it is important to stay active in the buying and selling of shares.

Chapter Seven: Conclusion

With six weeks of simulation data collected, analyzed, and compared, the most definitive conclusion to draw is that we are now better equipped to navigate the stock market than when the simulation began. Our knowledge of indicators, trends, market timing, and investment tools serve as a much stronger foundation to smart investing. Each of these is independent of the exact trading strategy an investor utilizes but can greatly aid them in reducing risk and performing proper market analysis. One of the most crucial lessons learned during this project is the value in reducing risk and taking profits. One of our portfolios repeatedly moved between profits and losses and ended in the red. The other portfolio took a more conservative approach and made smart trades on strong indicator readings which eventually netted a decent profit. We believe this would've been the outcome regardless of trading strategy, as the two of us traded over a very short and very turbulent time in the market.

As far as the question we sought out to answer, which trading strategy is better over six weeks? If you can only utilize one, the obvious answer is a conservative approach to technical trading. In a volatile market like the one experienced during our simulation patience seemed to always prevail so buying less frequently on stronger indicator readings lead to opportunities to take large profits later. The technical trading portfolio likely could have ended at an even higher value if the lesson on taking profits was applied earlier. Refraining from buying on impulse or selling for low profits lead to less frequent trades, but trades often were made at times where the market exhibited strong trends which lead to much less risk and uncertainty.

In conclusion, if presented with another six-week simulation a composite approach could be very advantageous. Applying the indicator analysis and risk-reducing factors that made technical trading successful in our simulation to both short and long orders could allow for the

steady growth shown in the “Weekly Cash Comparison” chart in Section 6.2 regardless of whether the market is bullish or bearish. This composite strategy would be a great method to compare to traditional ones in further research. Regardless, the takeaway remains that using market information like when technical trading allows investors to reduce risks and make smarter investments.

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Appendix

Table A-1: Technical Trading Simulation Complete Transaction Sheet

Date	Symbol	Buy/Sell	Price	Shares	Proceeds	P/L	Cash	Total P/L
06/16/2021	MSFT	BUY	255.04	300	76,512.00	0	423,448	0
06/16/2021	GOOG	BUY	2508.67	20	50,173.4	0	373,314.60	0
06/22/2021	WMT	BUY	136.95	400	54,780	0	318,534.6	3,058
06/23/2021	JNJ	BUY	162.99	400	65,196	0	253,338.6	4,234
06/25/2021	MSFT	BUY	265.40	200	53,080	0	200,258.6	6,658
06/30/2021	GOOG	BUY	2505.00	40	100,200	0	100,058.60	15,176
07/02/2021	MSFT	SELL	274.38	100	27,438.00	1,519	127,496.60	16,829
07/06/2021	GOOG	SELL	2585.00	20	51,700	1,580	179,196.54	16,829
07/06/2021	MSFT	SELL	278.00	100	27,800	1,778	206,996.54	20,187
07/07/2021	JNJ	BUY	168.25	200	33,650	0	173,364,54	18,085
07/08/2021	GOOG	BUY	2580.00	20	51,600	0	121,746.54	18,117
07/13/2021	MSFT	SELL	281.94	100	28,194	2,000	149,940.64	19,450
07/14/2021	GOOG	SELL	2641.47	15	39,622.05	1670.10	189,562.59	21,865
07/19/21	GOOG	BUY	2584.96	25	64,624	0	124,938.59	19,887
07/23/21	MSFT	SELL	290.02	200	58,004	4,924	183,942.59	37,317.90
07/23/21	GOOG	SELL	2758.91	70	193,123.70	13,597.5	377,066.29	37,317.90
07/23/21	WMT	SELL	142.47	400	56,988	2,208	435064.90	37,317.90
07/23/21	JNJ	SELL	172.09	600	103,254	4.410	537317.90	37,317.90

Table A-2: Swing Trading Simulation Complete Transaction Sheet

Date	Symbol	Buy/Sell	Price	Shares	Proceeds	P/L	Cash	Total P/L
6/24/21	AAPL	BUY	133.46	300	-40,038	0	459,962	2,118.30
6/24/21	TSLA	BUY	688.78	200	-137,756	0	322,206	2,118.30
6/24/21	PG	BUY	133.16	250	-33,290	0	236,903.50	2,118.30
6/24/21	AMZN	BUY	3467.50	15	-52,012.50	0	270,193.50	2,118.30
6/25/21	AAPL	BUY	132.86	100	-13,286	0	223,617.50	-3976.43
6/25/21	AMZN	BUY	3400.72	10	-34,007.20	0	189,610.30	-3976.43
6/25/21	PG	SELL	135.21	100	13,521	205	203,131.30	-3976.43
6/28/21	PG	BUY	135.55	100	-13,555	0	189,576.07	1,159.55
6/29/21	TSLA	BUY	679.19	50	-33,959.50	0	155,616.57	104.23
6/29/21	AAPL	SELL	136.08	150	20,412	429	176,028.23	104.23
7/6/21	AMZN	SELL	3643.66	10	36,436.60	2,206.80	212,464.21	1,996.50
7/8/21	AAPL	SELL	142.19	50	7,109.50	451.50	219,537.59	2,380.55
7/8/21	TSLA	BUY	638.03	50	31,901.50	0	187,672.09	2,380.55
7/9/21	PG	SELL	137.17	50	6,858.50	140.75	194,530.47	3,833.57
7/14/21	AMZN	BUY	3712.50	15	-55,687.50	0	138,842.97	2,694.80

7/14/21	PG	BUY	137.96	200	-27,592	0	111,250.97	2,694.80
7/14/21	AAPL	BUY	149.37	200	-29,874	0	81,376.97	2,694.80
7/19/21	AAPL	BUY	142.01	50	-7,100.50	0	74,276.47	-5,089.90
7/21/21	AMZN	BUY	3576.01	10	-35,760.10	0	38,513.37	-378.20
7/21/21	TSLA	BUY	655.31	50	-32,765.50	0	5,750.87	-378.20
7/22/21	AAPL	SELL	147.20	150	22,080	271.50	27,830	-746.25
7/22/21	AMZN	SELL	3620.78	15	54,311.70	764.55	82,141.28	-746.25
7/22/21	AMZN	SELL	3628.52	25	90,713	1467.75	172,852.75	-746.25
7/23/21	PG	SELL	139.53	400	55,812	1348	228,663.81	-1585.94
7/23/21	AAPL	SELL	148.56	300	44,568	951	273,231.06	-1585.94
7/23/21	TSLA	SELL	643.38	350	225,183	-11,200	498,414.06	-1585.94