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STOCK MARKET SIMULATION
An Interactive Qualifying Project Report
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of the
WORCESTER POLYTECHNIC INSTITUTE
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Degree of Bachelor of Science
by

Brian Duncan

Adam Duczynski

Ben Gardner

Tom Huleatt

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Professor Joe Zhu
Project Advisor

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Abstract

A stock market simulation was conducted over a 10-week period of time. During this time, we used two stock trading strategies, trend trading and day trading. We used various resources to research the stock market and certain stocks. We learned ways to analyze stocks and discovered which methods are the most successful when trading in the stock market. This experience has given us the knowledge needed to pursue real investment in the future.

Chapter 1: History of the Stock Market

1.1 Beginning

The stock market originated at the same time as the founding of the United States of America. It was not the same as it is today, but its roots are from merchants who would buy and sell items such as furs, guns, and tobacco. In the year 1789, Congress met on Wall Street to issue the use of \$80 million of government bonds to finance the cost of the American Revolution. The stock market exchange still exists today on Wall Street. It was soon after the war that stocks were created to establish the Bank of the United States and offered shares to the public. As more and more banks were established and as more people and bonds came out, there was an increased need for an organized market to help control the buying and selling of bonds. Businessmen would meet regularly to auction off the stocks. Auctioneers would receive a commission for each stock they sold. After this system grew an improved system was needed, so 24 brokers met on May 17, 1792 and signed a document that enabled them to trade among themselves and to maintain a fixed commission on these trades and to prevent any of them from trading with any outside auctions. This is what is considered to have been the founding of the New York Stock Exchange.¹

1.2 NYSE

In March of 1817, the members of the New York Stock Exchange adopted a formal constitution of trading regulations and rules. Members could trade securities and be at the auction for a cost of \$400. This was the beginning of what is called owning a seat on the exchange. Auctions were held once a day, but then as the sales activities

¹ Wyss, B. O'Neill. Fundamentals of the Stock Market. New York: McGraw-Hill, 2001. Pg 2.

increased, there were auctions held twice a day. Eventually continuous trading was established after the civil war.² When stock trading increased and more members joined the market, there was also a need to move the accommodation of the market several times. It finally moved to 11 Wall Street in New York where it is currently held today.³

With the discovery of gold and the building of railroads, along came interest in buying mining and railroad stocks. Some of the later, bigger stocks included U.S. Steel, AT&T, Westinghouse, Eastman Kodak, Sears, Kellogg, and Nabisco Crackers. Some people traded stocks outside of the building on Wall Street and were called curbstone brokers. They would attain their information from brokers on the inside of the building through the windows using hand signals. These brokers later created what is now known as the American Stock Exchange.

As the popularity of the stock market grew, it received greater media coverage. People all over the country were able to follow the market and become more interested. More and more companies would be created to join in the actions of the stock market. Brokerage companies who did not have a seat on the major stock exchange were called non-member firms. Their orders were processed by another member firm or were done in the third market. This is where the term Over-the-Counter Market came from.⁴

1.3 Crashes

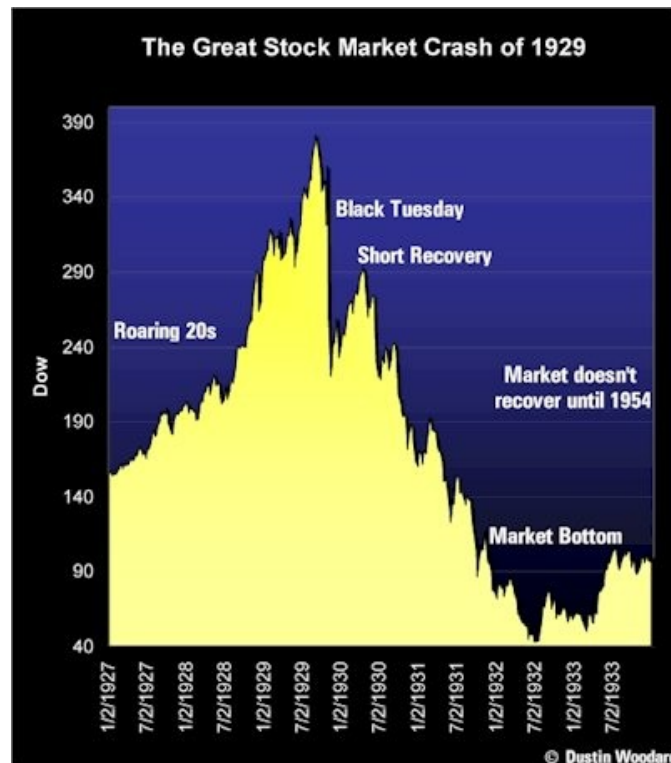
Since the beginning of the stock market there have been many crashes, including the crash of 1929, 1987, and 2000. On September 4, 1929, the stock market reached an all-time high. Many banks were invested in stocks and investors borrowed on margin to invest in stocks. The stock market dropped 11.5%, bringing the DOW down 39.6% off

² McMahon, Bernard. History of the Stock Market. Columbia: Columbia Publishing Company, 1998.

³ Wyss, B. O'Neill. Fundamentals of the Stock Market. New York: McGraw-Hill, 2001. Pg 3.

⁴ Ibid. Pg 3.

its all time high on October 29, 1929. By the summer of 1930 the market had made a slow comeback by regaining 30% of what it had lost, but in July 1932 the DOW had lost almost 89% of its value since October 29, 1929. Some reasons for the crash were overvalued stocks, low margin requirements, interest rate hikes, and poor banking structures. In the end, a total of 14 billion dollars of wealth were lost during this crash. After this crash, the Securities and Exchange Commission (SEC) was established. Also, the Glass-Steagall Act was passed which separated commercial and investment banking activities. The 1987 crash dropped 508 points in one day which was 22.6% of the DOW at the time. Once again overvalued stocks were one of the reasons for the crash. A total of 1/2 Trillion dollars of wealth were lost in the 1987 crash. 8 trillion dollars of wealth was lost in the crash of 2000.⁵



⁵ "History of U.S. Stock Market Crashes." Market Volume. 2007. Highlight Investment Group. February 13, 2007. < http://www.marketvolume.com/info/stock_market_trading/stock_market_crashes.asp>

1.4 Current Stock Market

The exchanges of today are designed to organize the buying and selling of stocks and other securities instantaneously. The two types of exchanges include the registered exchange and the OTC (Over-the-Counter) market. The NYSE and AMEX are among the registered exchanges which are connected electronically in order to make possible the activities of trading. In the OTC market dealers must communicate with each other by a system known as the NASDAQ. Thousands of brokers and dealers communicate electronically to buy and sell shares of different companies.⁶

The New York Stock Exchange is the largest marketplace in the world. Approximately 3,000 people trade billions of shares that total \$16 trillion dollars. The NYSE represents about 80% of the value of all publicly owned companies in the United States. Since 1976 most stock orders have been done electronically, but some stock orders are brought to brokers on the floor who then give them to a specialist who pairs buy and sell orders. No broker is allowed to have more than 10 orders at a time.⁷

The American Stock Exchange (AMEX), is a secondary exchange and no stocks are listed on the NYSE or AMEX simultaneously. The AMEX is also located in New York City like the NYSE. The AMEX has different member requirements, specific companies listed, and instruments traded from the NYSE. Many companies have to be a part of the NYSE and the AMEX for this reason. The AMEX allows for diverse family options that improve investors' control of risk and increases the potential to maximize profits.⁸

⁶ Wyss, B. O'Neill. Fundamentals of the Stock Market. New York: McGraw-Hill, 2001. Pg 4.

⁷ Wyss, B. O'Neill. Fundamentals of the Stock Market. New York: McGraw-Hill, 2001. Pg 4

⁸ Ibid. pg 5

The Over-the Counter (NASDAQ) market was created in February 1971. It was the first market to use computers to match buy and sell orders. By 1999, the NASDAQ trading volume reached a level of 270 billion shares which was more than the NYSE by 70 billion shares. The NASDAQ appears as if it going to be the worlds' first truly global market. It is becoming the leading market choice for business and industry. One of the major successes of the NASDAQ has been that is allows small companies to achieve incredible growth by selling their stocks publicly.⁹

Chapter 2: Previous IQP Review

An Interdisciplinary Qualifying Project that we looked at was titled Stock Market Simulation, written by Von Tourgee, Michael Miller and Daniel Butay. This group we will call team1. Our stock market simulation was run by Adam Duczynski, Brain Duncan, Ben Gardner and Tom Huleatt, and this group will be called MyTeam. Team1 decided to have their project set up into five different strategies towards their stock investment simulation. The five strategies were technical analysis trading, short trading, momentum trading, trend trading and fundamental analysis trading. The general goal for team1's project was to gain a better understanding of the stock market.

2.1 Momentum Trading

Team1's strategy on momentum trading has the trader find a stock with a high volume of trade, which appears to be on a continuing upward trend. Then the investor predicts at what prices the stock will start to decline. The investor will hold on to the

⁹ Wyss, B. O'Neill. Fundamentals of the Stock Market. New York: McGraw-Hill, 2001. Pg 5

stock until the stock hits that price mark, or it is obvious that it will not hit that price mark in the time the investor has allotted for his stock [3]. Team1 invested in four separate stocks, all energy related. Their theory was that more people would be seeking alternative energy solutions in response to the rising prices in crude oil. The total simulation for this type of trading strategy lasted six weeks. Within these six weeks the students of Team1 received mixed results in how their chosen stocks fared in the stock market. Team1 had picked four companies based upon theory and momentum shifts of which they thought were in their favor to make a profit. Team1 was forced to sell two of the stocks they invested in, which put them in the negative numbers for profit and used the maintained money to invest in other stocks which Team1 felt were doing better in the stock market. The momentum stock trading strategy showed that there was a lot of fluctuation in the stocks which could happen in both directions and it was proven to be difficult to predict which way the market would cause stocks to vary. Team1 decided that this style of investment strategy was hard to predict however, that if a person was to find a stock with a slow rising momentum for a long period of time this method is a valid way to make a profit in the stock market, even though it can be risky.

MyTeam had an opposite belief since crude oil prices were going down slightly we decided to invest a large percentage of our trend traded investment capital into Royal Dutch Shell with the belief that there would be another rise in crude oil prices. MyTeam however, decided to use some of the techniques used from the momentum trade strategy to be applied to one section of our simulation, trend trading. MyTeam looked at how certain stocks varied during certain times of previous years and how the stocks values and trends were when we decided to invest our money into our simulation. MyTeam was

able to pick one stock, American Eagle Outfitters, which had a positive momentum that did not fluctuate a great deal over time. MyTeam's confidence in this stock and how the stock's momentum was headed proved to be a wise investment since MyTeam ended up holding onto the stock for ten weeks and making an overall profit on the American Eagle Company stock.

2.2 Short Trading

Another investment strategy which Team1 used in their stock market simulation was short trading. The main approach of short trading is to determine when the price of a stock is going to fall. Then the buyer (in this case me) will actually sell shares of a stock before they buy them. Then when they think the stock price can't get any lower they buy the stocks that they had already sold [3]. Team1 picked three stocks to invest in which they felt were on the bottom of a downward slope and would fluctuate again soon.

Team1 had three very different stocks, one Internet, one technical and one pharmaceutical, which gave the group three very different perspectives. Team1 decided to split the money equally for each of the three stocks in which they invested. Team1 students would watch over each week when they rose the stocks would be at their highest point and would then buy that stock and hold onto the stock for a period of days until Team1 felt the stock was going to reach what they interpreted as the lowest price for the week. The technique of short trading proved to be a wise strategy to use for the first couple of weeks allowing Team1 to have large profit gains by selling the stock at a high price and buying the stock at a lower price. When the stock market began to take a downward slide short term trading actually was profitable, therefore when the other

investment strategies were struggling this style of trading made a profit. Overall, Team1 was able to make profit over the six-week period.

MyTeam felt that this method of trading stocks was an interesting approach to the stock market but was not the best strategy based upon the charts and data available. It is just as hard to estimate when a stock is going to fall as to when it is going to rise; therefore MyTeam decided not to use this method of investment in our stock market simulation.

2.3 Technical Analysis

Another investment strategy which Team1 used in their stock market simulation was technical analysis. Technical Analysis can be very simple. This is because it does not focus on the reason why stock prices are moving, but rather whether it is moving in a particular direction or in a particular chart pattern. This rules out concern about a company's difficult business environment, poor management, poor earnings, or general unpopularity. Technical analysts follow the trends of the stock. If a stock price is continually rising, for example, then the analyst will look for opportunities to buy the stock. They will continue in this manner until they are convinced that the upward trend either ends or reverses. The trader will then form patterns based on price activity in anticipation of the expected action of the prices. The most important concept of Technical Analysis is the assumption that prices must trend either upwards, downwards, or sideways [3]. Team1 decided to invest their money into three different stocks with a capital split ratio of 4:3:3. The simulated stock with the highest ratio of money invested was an information technology stock and the other two stocks invested in with a lower ratio were a gold mining company and a titanium metals company. Team1 started the

simulation by researching these companies and found the company's stocks to be on the rise based upon previous charts. This information gave Team1 options to see which stocks would have the most potential to increase in value over each week in the six-week simulation. After the first few weeks the stocks showed significant improvement and Team1 made a large profit and the strategy was proving to be a sensible investment strategy. The next two weeks was a completely different effect on Team1's invested stocks; the stocks took a downward fall in their price values in the stock market. Team1 decided to sell one third of each of the two stocks which were the least profitable, these were the two stocks which had the least amount of capital invested in them. The reasoning behind selling the stocks when they started to fall was to try and save some of their initial capital investment. The next two weeks proved to be the same results a loss or flat chart for each of the three stocks Team1 invested their money in. Team1 decided to try and make a quick profit by investing the money they gained from selling a portion of two of the stocks previously and purchased a stock with an upward chart trend, Hewitt Packard. Team1 proved to have made a good decision and ended up selling the Hewitt Packard stock in the last week and making a profit. The other three stocks were sold at assumed peaks earlier than Friday on the sixth and final week, and all stocks sold made profits. Therefore the strategy for this stock market simulation proved to be a valid method for making a profit.

MyTeam used similar investment techniques in our analysis of charts prior to investing in certain stocks for both trend trading and daily trading. During MyTeam's simulation we looked at our results after each week and decided after looking at our results we should complete with each one of our stocks. MyTeam recommend using this

technique as a basis of research before investing but not as the only strategy while investing in the stock market.

2.4 Trend Following

Another strategy for investment used by Team1 for their stock market simulation was trend following. Trend following involves a risk management system that uses current market price, equity level in an account and current market volatility. Changes in price may lead to a gradual reduction or increase of your initial trade. On the other hand, adverse price movements may lead to an exit for your entire trade. Historically, Trend Following trader's average profit per trade is significantly higher than the average loss per trade. Trend following stocks need to be on an upward swing, I feel that these will continue their upward pattern and after a very short time will show promising results [3]. Once again in this simulation Team1 picked three stocks; the first being an electrical stock (Microtune), the second was a stock dealing with food products (Tyson Inc.), and the third was an international online gaming stock (Limited 9). Team1 was able to choose stocks with a wide spectrum of variety which would hopefully bring them a strong profit return. For the first two weeks of Team1's stock market simulation two of the three stocks were heavily falling into the negative profit range, while the third was making strong gains in profit. The next two weeks following continued the trend for the same two stocks causing even more money to be lost by having Team1 hold onto these stocks, while the third stock has also started to lose money. After the fourth week Team1 students decided to sell the two stocks which were losing the most money and use the money they had left from selling these stocks to purchase two new stocks in the following week. The group studied data from the previous week to see which stocks had

the highest trends and which stocks the group thought would still continually rise.

Team1 decided to purchase Best Buy and Dean Foods, for their week five stock market simulation. The two new stocks proved to a wise purchase since both made profits, while the third stock which was kept since the beginning of the simulation made huge gains over the period of week 5. The final week of the simulation proved to be uneventful, compared to the large profit hopes they had wanted but the stocks did give Team1 a small profit. Overall, for the six week trading simulation Team1 students did not turn a profit and they actually lost some of the money they had invested.

Although Team1 had trouble turning a profit during their simulation, MyTeam liked the style of trend trading and felt like we could use further techniques, research and variables in order to make it profitable for our stock market simulation. MyTeam decided to use this strategy and was able to have an overall much better experience and was able to turn quite a large profit. In MyTeam's stock market simulation using the trend following strategy we decided to split up our money favoring stock in which we felt could provide us with a long term overall profit. Timing of when MyTeam placed our money into the stock market for our trend-traded stocks was also critical based upon previous years' data. MyTeam decided to place money into the Deere and Toro Corporations, but waited until later in our stock market simulation to purchase these stocks because we knew that they would continue to fall during certain months and we could eventually buy them for a lower price and increase our chances of turning over a larger long term profit gain.

2.5 Fundamental Analysis

The final technique strategy used by Team1 during their stock market simulation was fundamental analysis. Fundamental Analysis is a type of stock market valuation that utilizes financial and economic analysis in order to predict the movement of stock prices. Unlike Technical Analysis that mainly relies on charts, trend following, and common sense, Fundamental Analysis is concerned with a important company information, including financial reports, as well as non-financial information that include estimates of growth of demands for similar products, company comparisons, or changes that effect the whole economy. Rather than simple chart analysis that is involved in Technical Analysis, Fundamental Analysis focuses on company factors such out of company price trend estimation, the manner with which a company manages their money, the amount of debt the company has, or the growth of the company's earnings. Thus, Fundamental Analysis relies more on factual and tangible company development and less on assumption [3]. The stocks chosen by Team1 for the final simulation of the project were General Electric and Exxon Mobil Corporation. By choosing only two stocks the students of Team1 were limited to their range in variety and were hoping that their research in the stocks before hand would pay off for their large investments in only two stocks. The firsts two weeks of the simulation proved that the research completed before the investment was a wise decision as both invested stocks made profits. Over the next two weeks of the simulation project the stock market prices fell for the two stocks Team1 invested in; causing losses that put the stocks below their initial purchased price costing the investors money. The final two weeks of the stock market simulation both of the stocks Team1 invested in fell further below their initial purchased price costing the group

some of their initially invested money. Overall, for the six-week stock market simulation Team1 lost a portion of their initial investment. This stock market investment strategy was shown by Team1 to be an ineffective way to invest in the stock market.

MyTeam feels that if the simulation was run using more stocks and a greater variety of stocks based upon research it could be a strategy that could possibly turn a positive profit. MyTeam used some of the techniques of fundamental analysis to research stocks before purchasing in both our daily trading strategy as well as our trend trading strategy. One example of MyTeam students using this strategy of fundamental analysis was with the Pfizer Corporation. Large pharmaceutical companies are constantly under scrutiny for how they spend their money on testing and what new products they have come out with which will cause their stock value to fluctuate. MyTeam found that these factors caused the price of the Pfizer stock to fluctuate heavily upon a daily basis and this stock would be good to use as a daily traded stock for our stock market simulation. The stock market investment strategy of fundamental analysis makes sense as to why stocks would fluctuate based upon a corporation's practices with their money management, the amount of debt the company has, or the growth of the company's earnings and their potential problems or successes in the future.

2.6 Summary

The Interdisciplinary Qualifying Projects that we looked at was titled Stock Market Simulation, written by Von Tourgee, Michael Miller and Daniel Butay. Team1 decided to have their project set up into five different strategies towards their stock investment simulation. The five strategies were technical analysis trading, short trading, momentum trading, trend trading and fundamental analysis trading. Throughout the

project the students of Team1 learned a lot about the stock market and how it works. Therefore, Team1 was able to achieve its main goal, which was to gain active trading knowledge in the stock market, stock market history, and its trends in the near future. MyTeam feels that the way Team1 was able to attain their goals by having the chance to gain experience on Team1's research and analyzing data from their investment decisions. Team1 was able to use multiple strategies and decide which was the most efficient and decide which method was their favorite strategy. Based upon the research and data in order of the worst to best tactic of investments were momentum trading, trend trading, fundamental analysis, technical analysis and the most profitable over the six week simulation was short trading. The experience gained by Team1 as well as MyTeam has provided each of the members with valuable information and knowledge about how to invest in the stock market as a money management tool for our future.

Footnoted Bibliography

3. Stock Market Simulation. Project Number: DZT0508. Von Tourgee, Michael Miller and Daniel Butay.

Chapter 3: Literature Review and Methodology

One of the major sections of the interdisciplinary qualifying project was the background needed for the group to gain an understanding of how the stock market functioned, in order to properly invest and manage their capital. The resources that were used by our group for the complete of the interdisciplinary qualifying project included: books, magazines, Internet websites, newspapers and people.

3.1 Book Review

One of the primary books that we used in the research of strategies and techniques for the stock market simulation was Options: Trading Strategy and Risk Management, by Simon Bond. This book provided the group with our two main strategies for trading stocks: day trading and trend trading. The book allowed us to gain pivotal information about the terminology used in trading stocks and applying strategies to the project and how to use certain strategies for trying to gain the most profit from our stock market simulation. Some of the definitions and terms that were used by our group were:

Put: Gives you the right (but not the obligation) to *buy* the underlying asset on a specific date, at a predetermined price [2].

Call: gives you the right (but not the obligation) to *sell* the underlying asset on a specific date, at a predetermined price [2].

Bull market: This is a period when stock prices are rising higher than the historical average. This usually occurs due to an economic recovery, economic boom, or due to investor psychology. The largest bull market was during the economic boom of the 1990s [2].

Bear market: This is the opposite of a bull market, one where stock prices fall faster than historical averages. Usually this is accompanied by pessimism. This often happens when the market is in an economic regression when unemployment is high, or while there

is rapid inflation. If it occurs immediately after a bull market it is called a correction. The stock market crash which brought about the Great Depression in 1930 was the largest bear market yet [2].

Long position: a position in which you purchased a given underlying or financial instrument [2].

Short position: a position in which you sold a given commodity or financial instrument [2].

Net change: Is the value of the net change in a share from opening to close. It gives investors and traders quick information as to how stocks performed on a particular day [2].

Dividends: Once a year, the company board decides how to spend the earnings received in the past fiscal year. They can decide to give shareholders part of the money, which is also called dividends, since they are entitled to a share of the profits. Sometimes this does not happen and instead the company will reinvest the earnings to allow for further growth. The company can also buy back some of its shares which will reduce the amount of shares available on the market thus driving up the price of the stock [2].

The Price/Earnings (P/E) ratio: is also important in the stock market because it shows how much each share costs in relation to the earnings of each share. A high P/E ratio

means the stock is expensive and the investor is paying a higher multiple of the earnings per share while a lower P/E ratio means the stock is cheap. Generally, for large-cap or income stocks the P/E should be between 10 and 20 while growth stocks should carry a P/E between 30 and 40 [2].

Trailing P/E: This is the P/E ratio of the last four quarters [2].

Forward P/E: This is the estimated P/E ratio for the next four quarters [2].

PSR: This is the price to sales ratio. It is calculated by taking the capital of the company divided over the sales of the last year. A lot number is a better investment, because the investor is paying less per sale. This is usually only used for unprofitable companies because they do not have a P/E ratio [2].

52-week high: Is the highest price a stock has obtained in the last 52 weeks. Prices fall and rise constantly and it can be very useful for an investor to know how the current trading price relates to the stock in the past year. This way the public knows whether the current price is unusually high, and if they should perform further research as to why this is the case [2].

52-week low: Like the 52 week high, this is the lowest price a stock has been to over the last year [2].

Day Last: Refers to how much a particular stock traded at closing for the day [2].

Moving average: The market price tends to regress towards the average of a certain time period known as the moving average. This moving average can be calculated over any time period, but usually it is a 15 or 20-year average for long-term investments and 50 or 200-day average for traders looking to ride a recent price trend. The average is calculated by taking the average price of the stock in the defined time period [2].

Stock symbol: This is a short abbreviation for a company, usually 2 or 3 letters long. Whenever a trader wants a stock quote he must look it up using the stock symbol rather than by name of the company as they are listed by symbol rather than by name. This can be confusing at times because the symbol does not always resemble an abbreviation of the company name. For example, Pfizer, a world wide pharmaceutical conglomerate, has the symbol PFE. Symbol lookups have become easier in recent times with the ability to perform lookups online [2].

Shareholder: When investors buy shares in a company, they become shareholder and a part owner of that company [2].

Volume: This is the actual amount of shares being traded in any one company. Stock market investors should also pay attention to the volume of any shares they own. Day-to-day it does not necessarily matter but if it's unusually high one day then one should take

notice because it means something is happening with that particular stock whether it be negative or positive [2].

Net revenue: This is the total value of all the sales a company has made, minus any costs the business had to incur to make those sales [2].

Total revenue: This is the amount of money obtained for sales and services, as well as any assets gained or anything else which would increase the total equity of the company. This is calculated before any costs are deducted. This can be reported differently based upon the timing used. Some companies consider revenue gained as soon as they perform a service, or sell an item, and some wait until they actually receive the money. Depending on the method of accounting there are different guidelines [2].

Gross profit: This is the total revenue for all the products sold, minus the costs involved with actually obtaining them. This does not subtract any overhead, such as taxation, insurance, payroll, or anything else. It just takes into account the cost to purchase the product if it is retail, or the cost to manufacture. This is a good indicator of how well a small business is doing because it only involves the actual product [2].

Total assets: The sum of all of the assets owned by a company. This includes anything of economic value, especially if it can be turned into cash [2].

Total liabilities: The net sum of all the money the company owes [2].

Net stockholder's equity: The total assets owned by a company, minus their total liabilities. Due to the fact that companies generally grow and earn more profit over time, the actual value of a company is generally greater than the equity suggests [2].

Net income: This is the total revenue minus all of the costs. It is often called the bottom line, since it is the final determiner of how much profit or loss a company made [2].

For example we were able to use puts and calls in our report which allowed us to buy and sell stocks at certain predetermined times. In our case we used these techniques in day trading by purchasing stocks at 10am and selling them at 2pm to see how they moved throughout the day. Using these techniques allowed us to make adjustments to see what times during the day the stock would fluctuate most in our advantage. The book also showed us how to read and analyze charts, as well as draw charts, to find out which information was the most critical for our project. These skills proved to be great assets for our group in both day and trend trading. In day trading we would be constantly analyzing the data over a daily basis trying to pin point at what times the stocks would be at the greatest profit for our group to sell. In trend trading we were able to investigate charts from years ago and analyze them to see what items would tend to rise and fall during the time of the year we were purchasing stocks (October to December) and why they tended to fluctuate during that time period. The book allowed the group to see why risk management of stocks was such an important part of investing. We took two hundred thousand dollars and we were able to try and balance our investment risks by

choosing two techniques that could potentially provide our group with the largest possible profit gains. We learned from the book and from our project that the portion of risk management that is most essential is time.

3.2 Website Review

One of the websites that was heavily used throughout the duration of the project was Yahoo! Finance. This website had many of the functions that we needed in order to complete the project, such as; charts, stock names, helpful hints, buying and selling options, and historical data. We were able to use the charts to show in the results portion of our report when we bought and sold shares of the individual stocks. These charts provided the data for the daily traded stocks as well as keeping records of the trend-traded stocks. The stocks we were interested in purchasing and trading were able to be located using the symbol finder on this website: an example of these symbols were PFE for Pfizer, DE was Deere Corporation, BAC was Bank of America and RDS-B was Royal Dutch Shell. Some of the helpful hints that the website had to offer were such things as daily trade suggestions, recapping of previous day's events, company information, and anticipated events. The historical data that Yahoo! provided was a great feature because it allowed the group to look back at charts and data files from years of prior trades on Wall Street. We were able to find data which helped us decide which stocks had trends and when these trends usually occurred. Once we found a trend then the problem was figuring out why this trend happened and if it would occur again at a later time. The Yahoo! Finance website provided us with the information about the trading and stock valuation method that was the method of Technical Analysis. Technical Analysis, is also known as Chartism [4], involves the use of numerical series that is produced by market

activity. Some numerical quantifiers used in this method involve price or volume of the stocks. Traders use these to predict future price trends. This strategy can be applied to any market, provided it has a comprehensive price history. This strategy was one of the heaviest used by our group during our stock market simulation within the accordance of day trading and trend trading. Rather than relying on financial data of a company, Technical Analysis mainly involves the studying of charts of past price movement. Technical Analysis relies mainly on the assumption that price patterns and trends exist in the stock market. These trends are then identified and exploited by the traders. Technical Analysis is an interesting method of trading because it is not necessarily the most accurate of methods, but overall, provides the outcome that is most likely to occur when investing [4]. The website allowed our group to use this information and look back at data of many different stocks and help us decide which stocks would be best for us to purchase and sell in order to make the largest profit. An example of this technique is with a trend-traded stock we picked, the Deere Corporation. The chart below shows that there is a drop in the chart around August to October and then a sudden rise until the end of February over the span of three years.



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This chart and data provided allowed us to analyze these changes and invest during our simulation and sell when we could benefit from the most profit possible. The website Yahoo! Finance allowed us to make our stock market portfolio and complete our IQP on stock market simulation. Another website that we used to receive data and charts was BigCharts.com. This website allowed our group to obtain useful graphs of data that we could compare to Yahoo in order to show that these graphs were correct. The website also allowed us to look at single day graphs that were up to two weeks old; this helped us in researching daily trading information prior to purchasing stocks.

3.3 Newspaper/Magazine Review

The newspapers and magazines that we used during this project to gain information were The New York Times, The Boston Globe, The USA Today, Business Week, TIME, and the newspaper we used most was The Wall Street Journal. The Wall Street Journal allowed the group to obtain useful trade tips, company news and complete information about the previous day's events. This editorial provided the group with data and articles that sparked our interest and made the group want to find out more

information using other websites to investigate happenings with certain companies for both daily and trend trading. An example of these findings we put to the test by picking one of our day trading stocks to be Pfizer. The newspaper had the drug conglomerate mentioned almost everyday in paper throughout the entirety of our stock market simulation. This gave our group the idea after seeing certain stocks appear more often on a daily basis in this paper that these stocks must fluctuate a great deal within a small amount of time throughout the day. The magazine Business Week offered the group stories about companies who were going to be on the rise, or those who were likely to fall. The facts and figures received by the group in this magazine were used to research companies online and see how their past stock data looked. The magazine also provided students with ideas of what stocks would be good to invest in based upon those company's trends in the stock market.

3.4 Human Interaction

Another source which provided the group with a lot of information and ideas to investigate was people. Whether it was family members, friends, peers or elders, everyone we talked to about our project had information for us to research and try to use in order to try and expand our profit gain. The majority of the tips we received from our human sources were not that incredibly helpful however it was very interesting and some of the tips were very helpful. One such tip was from a relative who follows stocks just through the newspaper checking his favorites and reading about others. He told us that there was a stock perfect for our group's day trading section since it had a high fluctuation on a daily basis. The stock was Kyocera the mobile phone produce from Japan. He was correct and this was one of our most profitable day traded stocks. The

experience of doing a project on the stock market and being able to simulate results based upon our own involvement really attracted the attention of a lot of people we knew. Therefore, it was always pleasant to know what others were talking about when mentioning the stock market and being able to take their advice and tell them yours was a surprising advantage of the project.

Footnoted Bibliography

2. Options: Trading Strategy and Risk Management, by Simon Vine.
4. www.yahoo.com/finance

Chapter 4: Description of Strategies

After our research, we decided to focus on two stock trading strategies that we will be able to compare and contrast after our simulation via trend trading and day trading.

4.1 Trend Trading

Trend trading involves long term deals where previous patterns in a certain stock's price fluctuations determine if we should buy, when we should buy, how much to buy, and when to sell. Trend traders assign risk values to certain stocks as well. Some stocks may be very "safe" to buy and sell. This could mean that a stock is steadily on the rise, but at a very slow pace. So if we looked at a graph of this stock's price, we would see a trend with a small, positive slope. The longer this trend has been going on, the less chance that it will change, so the safer this stock is. If we buy this stock, there is a good chance that we will make money, but we will need to hold onto it for a long time before

we see any significant profit. Another way a stock can be defined as safe is if a stock's price has a trend of rising and falling in a wave pattern, but there is not much of a price difference in the highs and lows of the price. In other words, there is not much risk of losing a lot of money because the stock does not have any sharp drops, and when it does drop, it does not drop very much. On the other hand, we cannot make much money for the same reasons. This type of pattern will be more useful in day trading, which we will talk about later.

Trend trading with safe stocks will not lose us a lot of money, but we cannot make a lot of money either. We will need to choose riskier stocks with more reward. These types of trend trading stocks involve more analysis and strategy. What we are looking for in these types of stocks are distinct patterns over a long period of time, with a large amount of fluctuation in price. One important thing about choosing which of these stocks to buy is finding ones that have the same amount of time between each high and low point. The more constant this time period is, the more confidence we have that this trend will continue. For example, if a stock has hit a low point in January, then a high point in April, then a low point in July for the last 3 years, we hope that this 3-month pattern will continue, and capitalize by buying low and selling high. This can be very effective if we are able to find this type of pattern in a stock. We will identify the time where we predict the stock will hit a low, then using the previous changes in price between a low and high point, we will estimate when we should sell, and how high the price will be at that time. We can then follow the stock and if the stock reaches that predicted price before the estimated time, we can decide to sell early, or if we think it will continue to rise, hold onto it and sell at a later time. The same can be said if the stock

reaches the estimated sell date at a low price. While we predict when to sell and at how much, it is not always that simple and we will have to monitor the stock throughout the process, and make adjustments as we see fit. This can be a profitable strategy if used correctly, just like day trading.

4.2 Day Trading

Day trading involves short-term deals where long-term patterns do not mean much. These trades are all made within one day taking the overnight price changes out of the picture. When choosing stocks to trade with, we will focus on their volume and how much their prices fluctuate throughout the day. We want to find stocks with a high volume, and large fluctuations in price. This gives us the best opportunity to make money, because there will be sharp rises to follow. We do not want a stock that does not change much throughout the day because the trends will not be easy to detect. Also, with the large fluctuations, we will be able to make more money if we buy and sell at the right times. With day trading comes two strategies to try and make money.

The day strategy is very simple and similar to trend trading. This tactic is used to take the overnight price changes out of the picture. We buy at a certain time in the morning, and sell at a certain time in the afternoon. This repeats everyday. Once the week ends, we evaluate our success and decide if we should stick with this strategy. We choose stocks for this strategy by evaluating the previous week's graphs. We look at the prices at the beginning of each day and at the end of each day, and figure if we had used the strategy last week, how much profit we could have made. This strategy can be dangerous because we just have to trust our original judgment, and cannot make changes

throughout the day if it is not looking good. This way is very simple and straightforward. Another tactic can be very time consuming, but very profitable in the end.

The minute strategy is a lot more involved than the day strategy. Instead of buying for a whole day, we are now only buying for 10-15 minutes at a time. Just like the day strategy, we evaluate at week's end whether we will keep this strategy the same as the previous week, change to the day strategy, or switch times (from minute strategy in the morning to minute strategy in the afternoon, or vice-versa). We pick a certain time of the day to trade. We then look at the daily graph of this stock. If the price is on the rise at this time, and we feel it will continue to rise, we buy, and then sell 10-15 minutes later. Since the change in price cannot be much during this short amount of time, we buy more shares than we would with the day strategy. If the stock's price is declining at the time we declared, or if it is in question, we don't make a trade. We need to be fairly sure that we can make a profit and the price will rise during this 10-15 minute span because we will be risking a lot of money.

4.3 Summary

Trend trading and day trading seem very different because of the strategies and decisions being made, but in fact they are very similar. We are basing our decisions on patterns of the stock prices, and to do this we use graph analysis. Whether we use yearly graphs and find steadily rising stocks, or monthly graphs and see a common rise-drop wave, or weekly graphs to see the intra-day fluctuation in price, or the daily graphs to see the current price trend, we look at these patterns to make all of our decisions. While this is not an exact science, if we do the proper research and dedicate a certain amount of time and patience into both of these strategies, we will be able to make a profit with all types

of stocks. After our simulation is performed, we will be able to further compare and contrast these strategies, describing the difficulties involved and which one seems superior.

Chapter 5: Description of Simulation

5.1 Introduction

We performed a 10-week stock market simulation where we attempted to attain a maximum amount of profit. We used each strategy, trend trading and day trading, as separate simulations so we would be able to compare them at the end. Our goal was to find not only which strategy was more effective, but also which one was easier. We started out with \$100,000 for each type of strategy. There was no limit on the number of stocks or number of trades. The only restriction was that we use trend trading for one simulation, and day trading for the other. These would both be conducted during the same 10-week span, so we were able to follow the progress of each as we went along. After the simulation we expected to have gained a better knowledge of how the stock market works and to learn more about effective strategies to succeed when trading in the stock market.

5.2 How We Chose Stocks

The way we chose stocks for trend trading was using graph analysis. We used the graphs to find certain trends in stocks that we felt would continue, so we could capitalize with a buy-low/sell-high strategy. We ended up finding four stocks throughout the simulation to use trend trading with. Those stocks were Shell, American Eagle, Toro,

and Deere. We classified American Eagle as a “safe” stock because it was steadily rising for the last 10 months at \$.625 per week. The other three stocks had distinct patterns in their respective graphs that we decided to use to our advantage. Shell had a wave pattern, with the peaked at \$70 in late January, \$73 at the beginning of May, and \$74 at the beginning of August. So we used this 3.5-month trend to predict how this stock would perform. We came to the conclusion that if it kept up this pattern, it would reach \$75 at the beginning of December. So we used a yearly graph for Shell to find a trend, but we used a 3-year graph for Toro and Deere. These two stocks had very similar trends, mostly because they are in the same industry. Deere would have a steady incline from October to May at about \$1.07 per week. Toro would have a steady incline from October to March at about \$.60 per week. So we felt if we bought these stocks during the rising in price, we could make a profit. When deciding how many shares to buy it came down to how confident we were that each stock could make a profit. The more confidence we had, the more of our \$100,000 we were willing to spend. When it was all said and done, we invested about 40% in Shell, about 25% in American Eagle, and about 16%-18% each in Toro and Deere. So while the graphs told the whole story when it came to trend trading, there were some other factors to consider when picking daily stocks.

There were five stocks we found to trade with using the daily strategy. Those stocks were CVS, Pfizer, Dell, Bank of America, and Kyocera. As explained in the description of strategies, we looked for both a high volume and a large fluctuation in price during the day. Around the time of our simulation, CVS had an average volume of 8,386,370, Pfizer had an average volume of 28,460,700, Dell had an average volume of 23,061,100, Bank of America had an average volume of 11,169,100, and Kyocera had an

average volume of 17,774. It was clear that the first four stocks had both a large volume and large price fluctuations, but Kyocera was different. It did not have the high volume we were looking for, but it had extreme price fluctuations that we felt we could use to our advantage. So this outweighed the fact that it did not have a very large volume. Given this fact of extreme fluctuations, we decided to use only the daily strategy with this stock because of the unpredictability in its price. With the other four, we were able to rotate between the minute and daily strategies as we saw fit. When choosing how many shares to buy for each trade, we would spend about \$20,000 for each minute strategy trade, and about \$10,000 for each daily strategy trade. This was because for the minute trading, there was such a short time span to have a change in price that if we didn't invest a larger amount than the daily trades that the profits would simply be insignificant.

5.3 Goals

So after reviewing previous IQP's and after all the research we had done, we decided a fair goal for us to attempt to achieve was about 5% profit for each strategy. After we chose all of our stocks, decided when to buy, and decided how much to buy, we were ready to put our skills to the test and compare the trend trading and daily trading strategies, while improving our own stock market knowledge and trading skills at the same time.

Chapter 6: Results

6.1 Trend Trading

Shell

On 9/26/06 we bought 600 shares of Shell at \$66.60, for a total of \$39,960.00. We expected to sell these shares at the beginning of December, with the price reaching around \$75. In fact the stock peaked around 11/11/06 at around \$74. We ended up holding onto the stock until 11/30/06 when we sold 600 shares at \$71.85. That gave us a profit of \$3,150.00, or 7.9%.



American Eagle

On 9/26/06 we bought 550 shares of AEOS at \$44.10, for a total of \$24,255.00. We expected to sell these shares after 10 weeks, with the price reaching around \$50.35. In fact the stock peaked around 11/19/06 at around \$48.25. We ended up holding onto the stock until 11/30/06 when we sold 550 shares at \$46.15. That gave us a profit of \$1,127.50, or 4.6%.



Deere

On 10/16/06 we bought 200 shares of Deere at \$89.20, for a total of \$17,840.00. We expected to sell these shares after 10 weeks, with the price reaching around \$99.91. In fact the stock peaked around 11/23/06 at around \$98. We ended up holding onto the stock until 11/28/06 when we sold 200 shares at \$95.60. That gave us a profit of \$1,280.00, or 7.2%.



Toro

On 10/16/06 we bought 350 shares of Toro at \$44.55, for a total of \$15,592.50. We expected to sell these shares after 10 weeks, with the price reaching around \$50.55. In fact the stock peaked around 11/15/06 at around \$45.50. We ended up holding onto the stock until 12/1/06 when we sold 350 shares at \$44.87. That gave us a profit of \$112.00, or .7%.

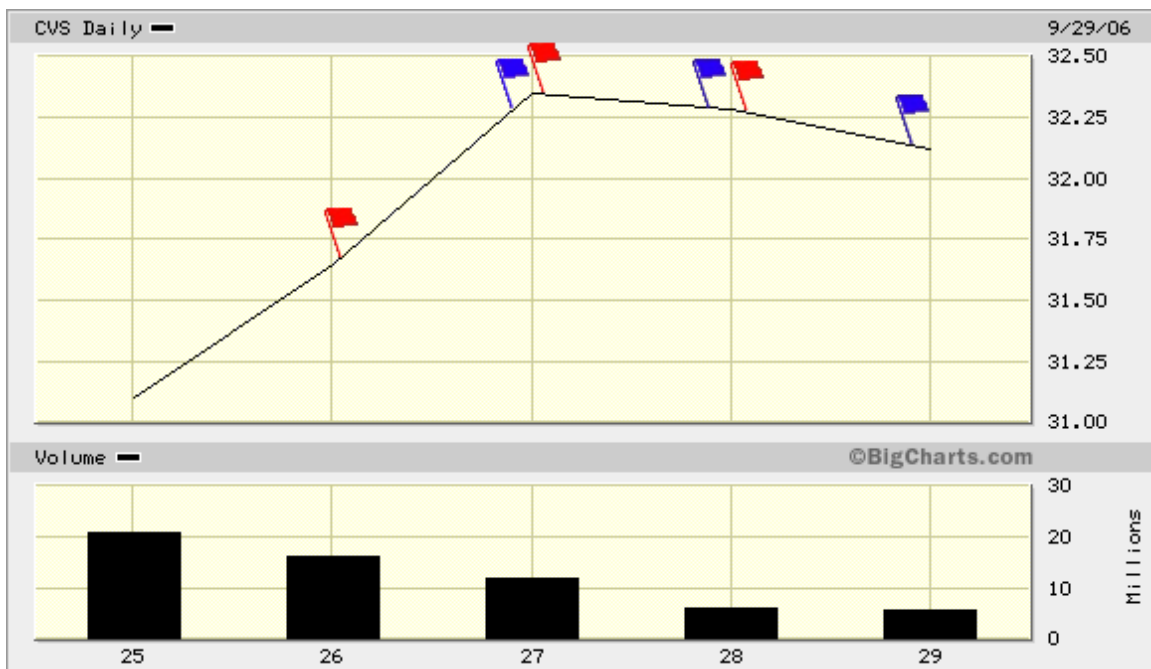


6.2 Day Trading

CVS

Week of 9/25

Our strategy for the week of 9/25 was to buy stocks daily during the middle of the week: Tuesday, Wednesday and Thursday. We decided to hold onto the stocks for the majority of the day: we would buy at 10:00 am and sell at 2:30 pm; we figured that this would increase our chances for large fluctuations of the stock prices. We eliminated the overnight fluctuations in price and focused directly on intra-day price changes. The data in the chart below shows where we purchased and sold the stock on those days. For Tuesday we lost 30 dollars, for Wednesday we profited 90 dollars and on Thursday our profit was 2 dollars. Therefore, our technique proved to be profitable over the week giving us a net gain of 62 dollars.



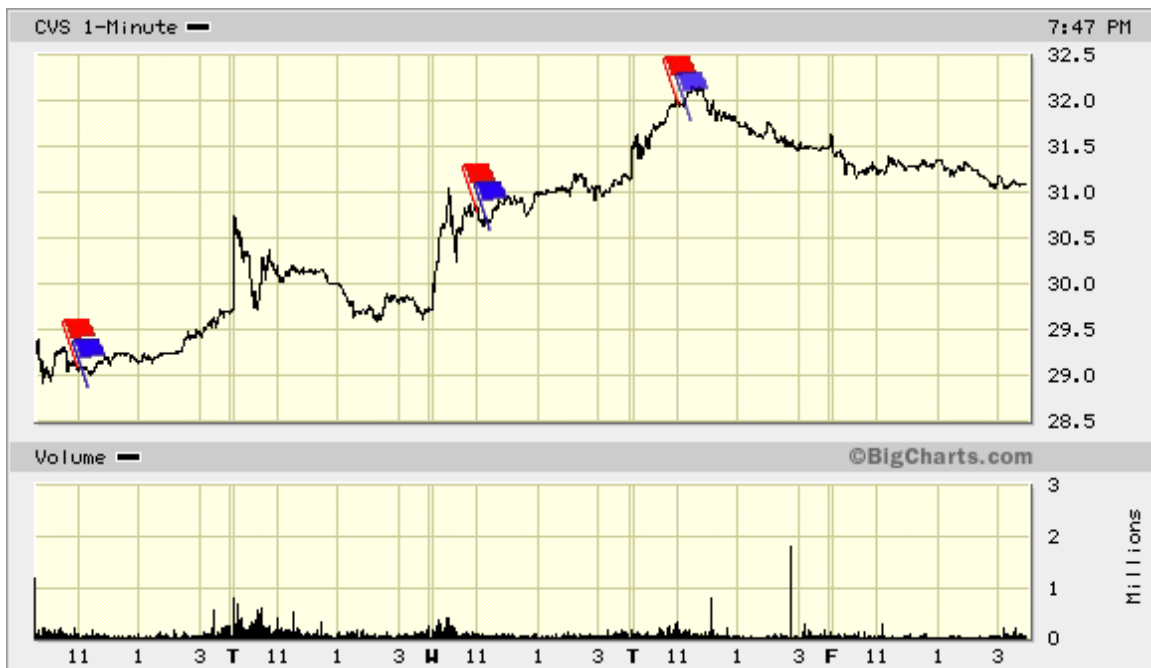
Week of 10/2

Our strategy for the week of 10/2 was to buy stocks daily through out the week: Monday, Tuesday, Wednesday, Thursday and Friday. Based upon the data gathered last week from the price fluctuations throughout the week of CVS stock we realized that if we include Monday and Friday to the midweek we could have increased our profit. We decided to hold onto the stocks for the majority of the day: we would buy at 10:00 am and sell at 2:00 pm; we figured that this would increase our chances for large fluctuations of the stock prices. The data in the chart below shows where we purchased and sold the stock on those days. For Monday we lost 15 dollars, for Tuesday we gained 117 dollars, for Wednesday we lost 204 dollars and on Thursday our lost 2 dollars and on Friday we profited 36 dollars. Therefore, our technique by adding Monday and Friday was not as successful as we hoped since over the week we lost a total of 192 dollars.



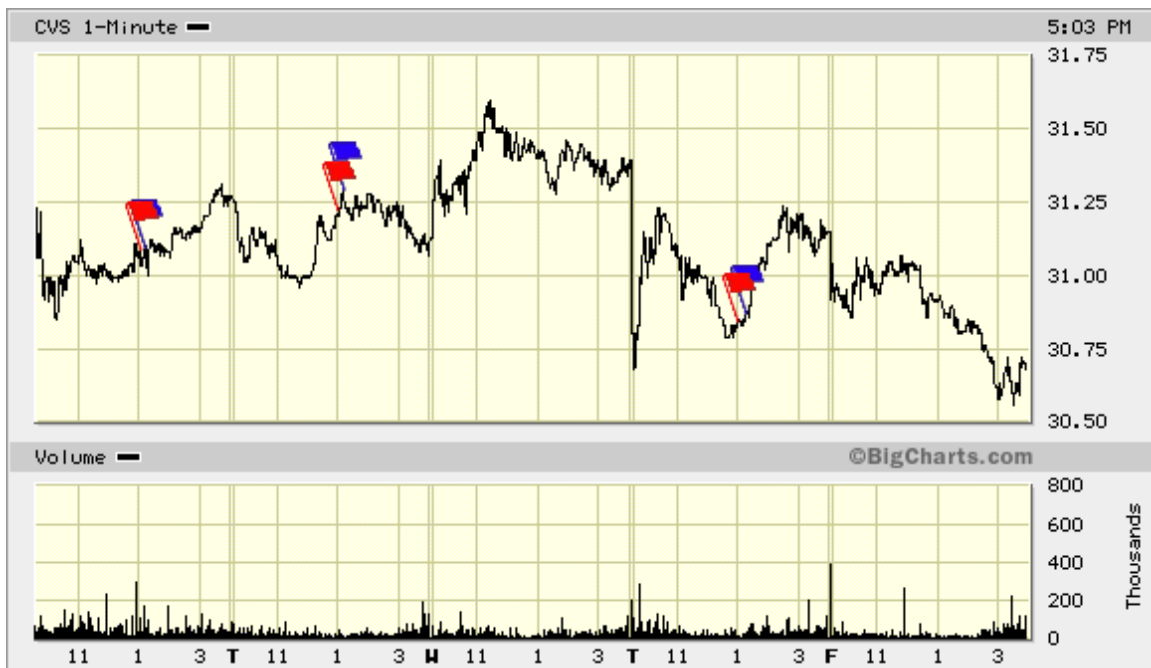
Week of 10/9

Our strategy for the week of 10/9 was to buy stocks daily through out the week: Monday, Wednesday and Thursday. We decided to use a technique called minute day trading this week because our loss of money with our day trading techniques used last week. Minute day trading is when we notice a stock is on the rise we will purchase and watch it for ten or fifteen minutes then sell it for a profit. On Monday we purchased the stock at 11:00 and sold it at 11:15 and gained a profit of 14 dollars, On Wednesday we purchased the stock at 11:00 and sold it at 11:15 and lost 14 dollars, and on Thursday we purchased the stock at 11:00 and sold it at 11:15 for a profit of 119 dollars. Therefore our technique of minute trading worked for a profit of 119 dollars.



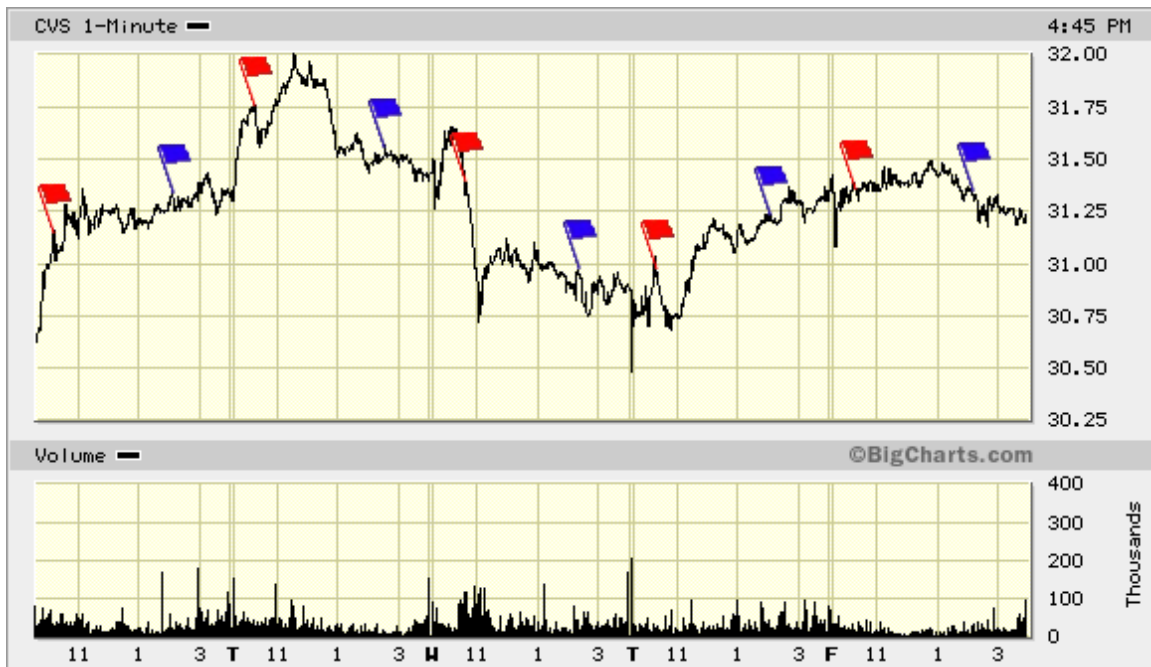
Week of 10/16

Our strategy for the week of 10/16 was to buy stocks daily through out the week: Monday, Tuesday and Thursday. We decided to use a technique called minute day trading this week because of our success in profit last week. However this week we decided to wait until later in the day to better read how the stocks were fluctuating throughout a portion of each day. On Monday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 49 dollars, on Tuesday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 49 dollars, on Thursday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 49 dollars. Therefore, the technique of minute trading proved once again to be profitable. For the week we had a net gain of 147 dollars.



Week of 10/23

Our strategy for the week of 10/23 was to buy stocks daily through out the week: Monday, Tuesday, Wednesday, Thursday and Friday. We decided to buy at the beginning of the day and sell at the end of the day because of the continuous rises throughout the last couple weeks. On Monday we purchased stock at 10:00 and sold stock at 2:00 for a profit of 105 dollars, on Tuesday we purchased stock at 10:00 and sold stock at 2:00 for a loss of 27 dollars, on Wednesday we purchased stock at 10:00 and sold stock at 2:00 for a loss of 225 dollars, on Thursday we purchased stock at 10:00 and sold stock at 2:00 for a profit of 126 dollars, and on Friday we purchased stock at 10:00 and sold stock at 2:00 for a profit of 45 dollars. Therefore, the technique was profitable, but minute trading probably would have been more beneficial. For the week our profit was 23 dollars.



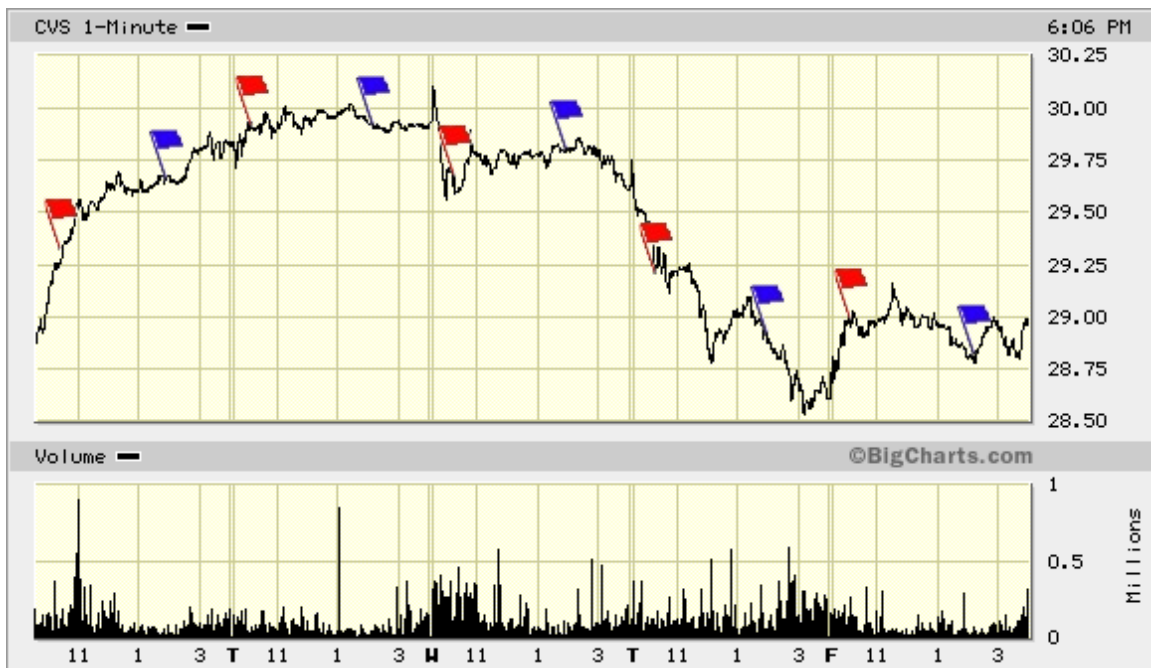
Week of 10/30

Based on our very small profit last week using the daily strategy, and our previous success using the minute strategy, we decided to use the minute strategy this week, buying at 1:00 and selling at 1:15. However, there were now steady rises in price that would make us want to make a trade, so we made no trades for the week.



Week of 11/6

Since last week we tried the minute strategy and didn't find any opportunities to make a trade, we decided to switch to the daily strategy this week. We bought every day at 10:00 and sold at 2:00. On Monday we had a profit of 175 dollars, on Tuesday we had a loss of 7 dollars, on Wednesday we had a profit of 42 dollars, on Thursday we had a loss of 192.50 dollars, and on Friday we had a loss of 56 dollars. Overall we had a loss of 38.50 dollars.



Week of 11/13

Last week we used the daily strategy and came out with a loss, so we went back to the minute strategy this week. We have had success with this stock in the afternoon, so we will try that again. We decided to buy at 1:00 and sell at 1:15. We found 1 day to make a trade, and on Wednesday we had a loss of 14 dollars. So overall we had a loss of 14 dollars.



Week of 11/20

Last week we had a small loss, so we changed back to the morning, but we will still use the minute strategy. We would buy at 11:00 and sell at 11:15. However, we didn't find any opportunities to make a trade.



Week of 11/27

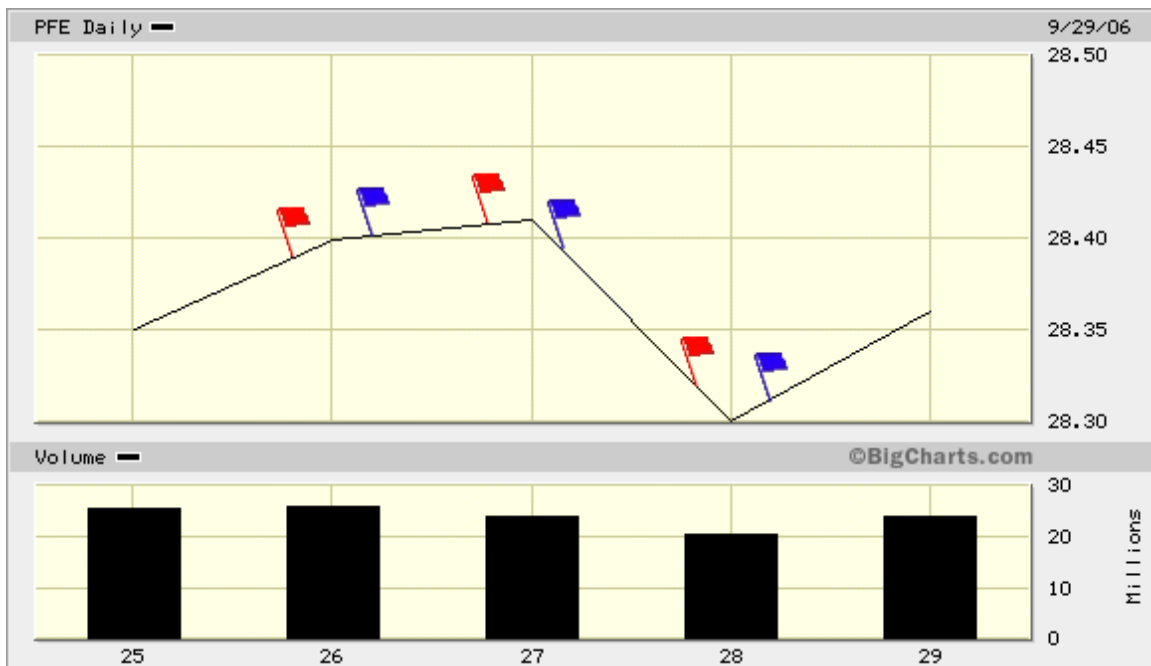
Last week we didn't find any times to make a trade, so we will try the minute strategy again and see if we find any opportunities this week. We will buy at 11:00 and sell at 11:15. We found one day to make a trade and on Wednesday we had a profit of 63 dollars. So overall we had a profit of 63 dollars.



Pfizer

Week of 9/25

Our strategy for the week of 9/25 was to buy stocks daily during the middle of the week: Tuesday, Wednesday and Thursday. We decided to hold onto the stocks for the majority of the day: we would buy at 10:00 am and sell at 2:30 pm; we figured that this would increase our chances for large fluctuations of the stock prices. The data in the chart below shows where we purchased and sold the stock on those days. For Tuesday we lost 4 dollars, for Wednesday we profited 26 dollars and on Thursday our loss was 50 dollars. Therefore, our technique proved to be not profitable over the week giving us a loss of 28 dollars.



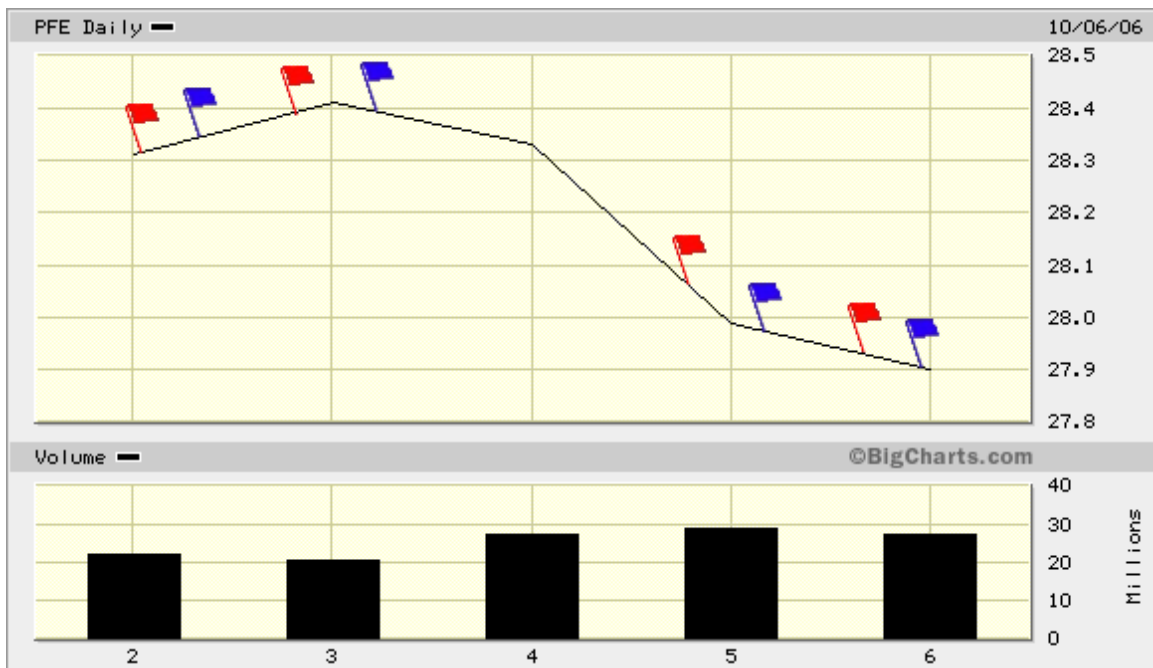
Week of 10/2

Our strategy for the week of 10/2 was to buy stocks daily during the entire week:

Monday, Tuesday, Wednesday, Thursday and Friday. We decided to hold onto the stocks for the majority of the day: we would buy at 10:00 am and sell at 2:00 pm; we figured that this would increase our chances for large fluctuations of the stock prices.

The data in the chart below shows where we purchased and sold the stock on those days.

For Monday we profited 24.50 dollars, for Tuesday we lost 17.50 dollars, for Wednesday we lost 21 dollars and on Thursday our loss was 59.50 dollars and on Friday we lost 10.50 dollars. Therefore, our technique proved to be not profitable over the week giving us a loss of 84 dollars.



Week of 10/9

Our strategy for the week of 10/9 was to buy stocks daily through out the week: Monday, Wednesday and Thursday. We decided to use a technique called minute day trading this week because our loss of money with our day trading techniques used last week. Minute day trading is when we notice a stock is on the rise we will purchase and watch it for ten or fifteen minutes then sell it for a profit. On Monday we purchased the stock at 11:00 and sold it at 11:15 and gained a profit of 28 dollars, On Wednesday we purchased the stock at 11:00 and sold it at 11:15 and lost 42 dollars, and on Thursday we purchased the stock at 11:00 and sold it at 11:15 for a profit of 14 dollars. Therefore our technique of minute trading worked for a profit of 84 dollars.



Week of 10/16

Our strategy for the week of 10/16 was to buy stocks daily through out the week: Monday, Tuesday, Thursday and Friday. We decided to use a technique called minute day trading this week because of our success in profit last week. However this week we decided to wait until later in the day to better read how the stocks were fluctuating throughout a portion of each day. On Monday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 14 dollars, on Tuesday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 14 dollars, on Thursday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 21 dollars, on Friday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 7 dollars. Therefore, the technique of minute trading proved once again to be profitable. For the week we had a net gain of 56 dollars.



Week of 10/23

Our strategy for the week of 10/23 was to buy stocks daily through out the week:

Wednesday and Thursday. However, this week we decided to wait less late in the day to better read how the stocks were fluctuating throughout the early portion of each day. On Wednesday we purchased stock at 1:00 and sold stock at 1:10 for a loss of 14 dollars, on Thursday we purchased stock at 1:00 and sold stock at 1:10 for a profit of 14 dollars.

Therefore our technique proved profitable, giving us a net gain of 28 dollars for the week.



Week of 10/30

We would continue of using our minute strategy with this stock based on previous success. We would buy at 1:00 and sell at 1:15. We found three opportunities to make a profit during this week. On Monday we lost 14 dollars, on Wednesday we lost 42 dollars, and on Thursday we lost 14 dollars. Overall we lost 70 dollars.



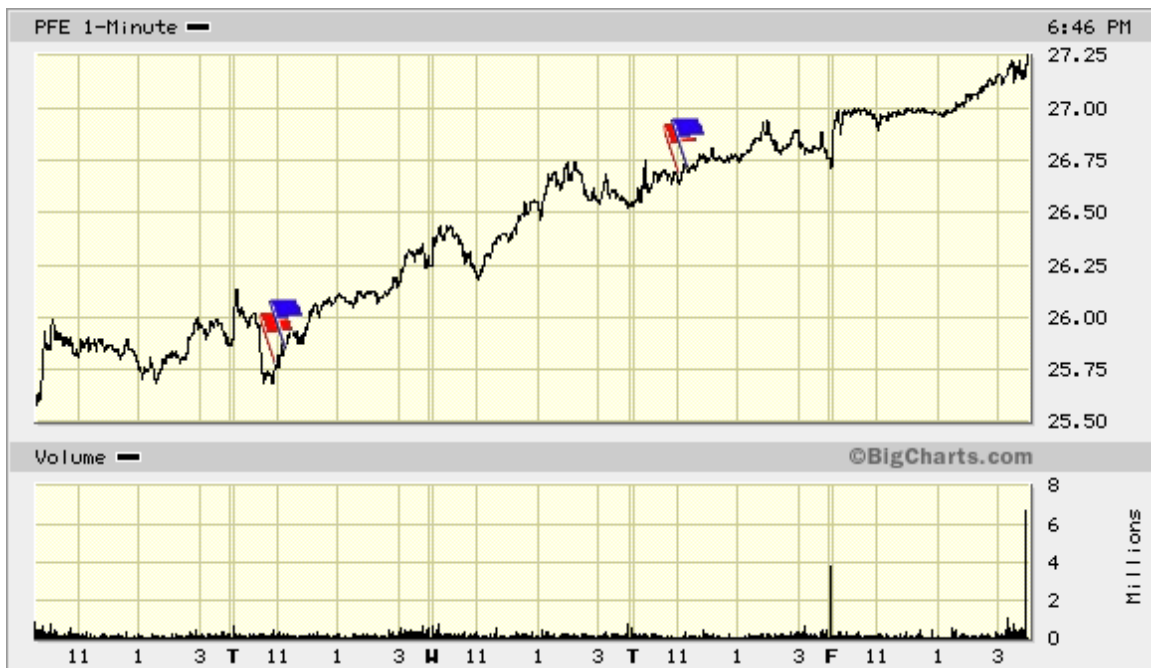
Week of 11/6

The minute strategy has worked well so far with this stock, and even though we lost money last week we will stick with it, but move the time to the morning. So we decided to buy at 11:00 and sell at 11:15. The only time we found to make a trade was on Monday, and we made a profit of 30 dollars. So for the week on this stock we made a profit of 30 dollars.



Week of 11/13

We had a profit last week with the minute strategy, so we decided to use the same technique at the same time of the day. We would buy at 11:00 and sell at 11:15. We found 2 days to make trades. On Tuesday we had a profit of 37.50 dollars, and on Thursday we had a profit of 37.50 dollars. So overall we had a profit of 75 dollars.



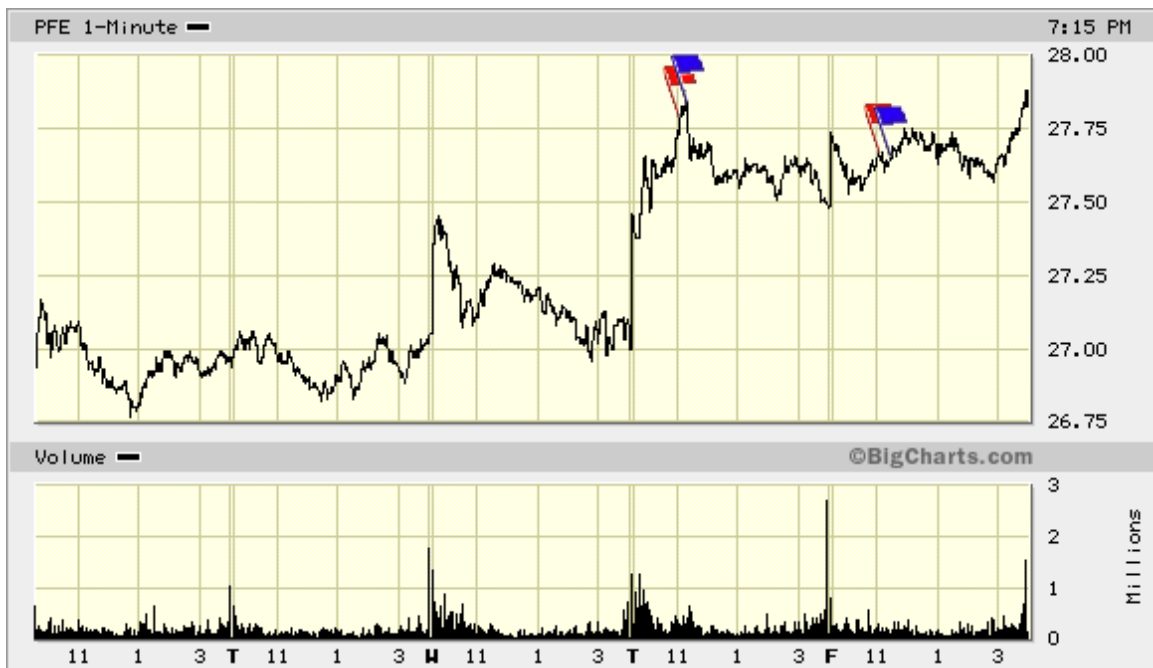
Week of 11/20

With the profit we had last week, we would stick with the minute strategy at the same time. We would buy at 11:00 and sell at 11:15. We found one day to make a trade. On Wednesday we bought and sold at the same price, so we neither gained nor lost money.



Week of 11/27

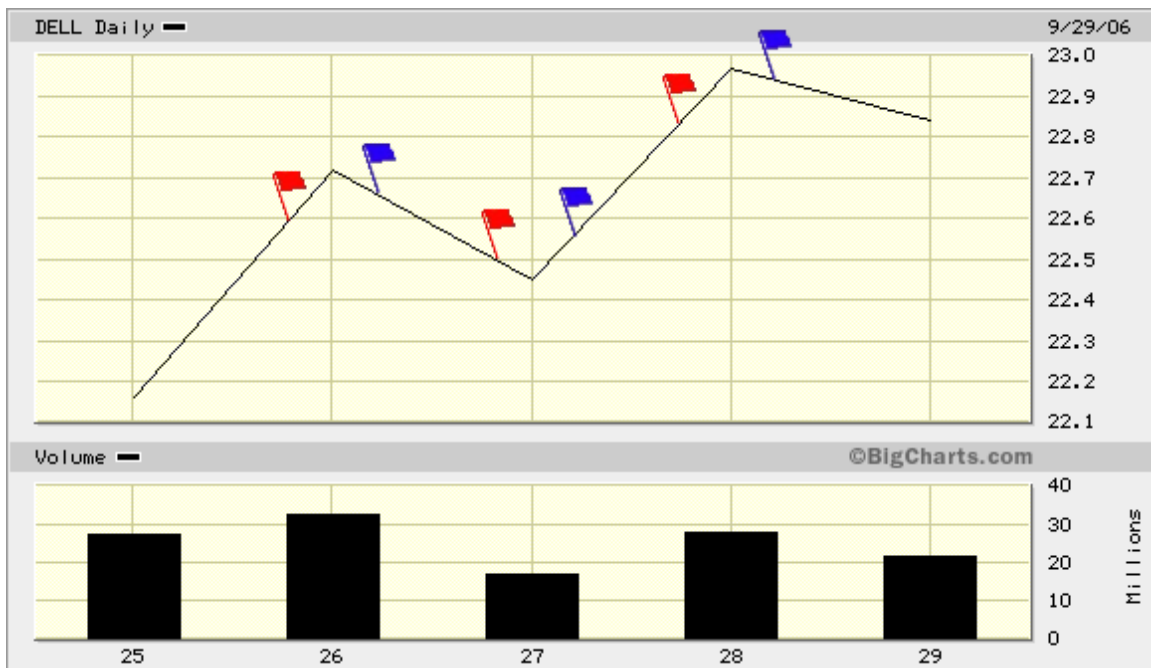
We didn't gain or lose money last week, but with the success the previous week, we will use the minute strategy. We will buy at 11:00 and sell at 11:15. We found 2 days to make a trade. On Thursday we had a profit of 120 dollars, and on Friday we had a loss of 30 dollars. So overall we had a profit of 90 dollars.



Dell

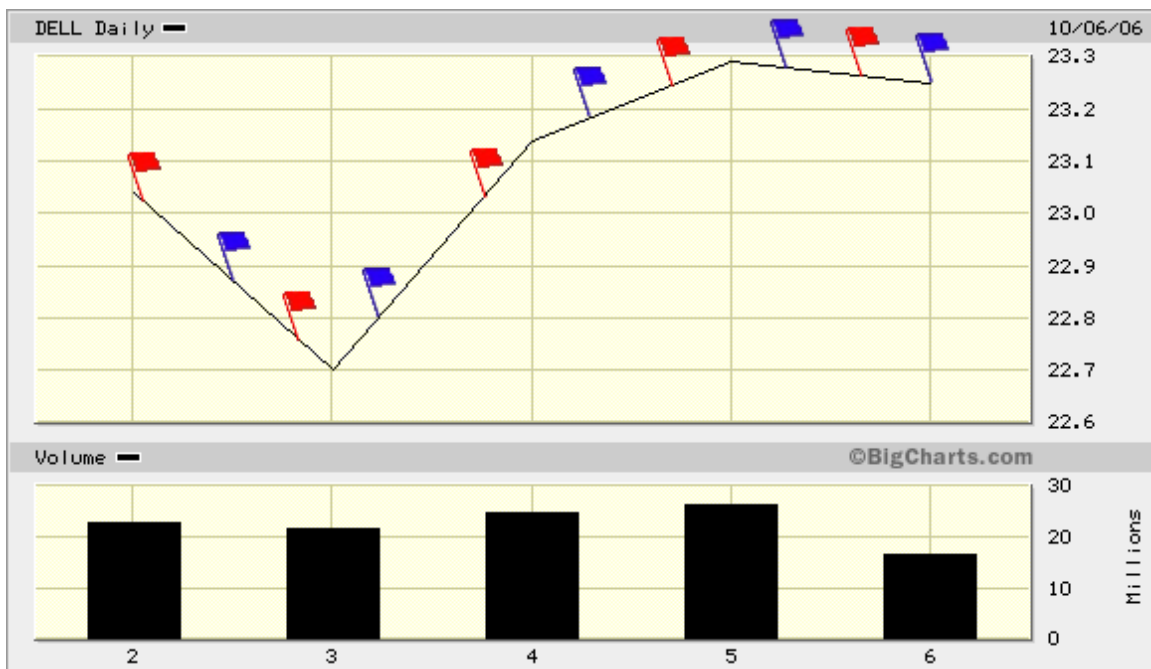
Week of 9/25

Our strategy for the week of 9/25 was to buy stocks daily during the middle of the week: Tuesday, Wednesday and Thursday. We decided to hold onto the stocks for the majority of the day: we would buy at 10:00 am and sell at 2:30 pm; we figured that this would increase our chances for large fluctuations of the stock prices. The data in the chart below shows where we purchased and sold the stock on those days. For Tuesday we lost 174 dollars, for Wednesday we lost 63 dollars and on Thursday our profit was 156 dollars. Therefore, our technique proved to be profitable over the week giving us a net gain of 267 dollars.



Week of 10/2

Our strategy for the week of 10/2 was to buy stocks daily through out the week: Monday, Tuesday, Wednesday, Thursday and Friday. We would use the same strategy as last week because of the high profit we gained. Based upon the data gathered last week from the price fluctuations throughout the week of Dell stock we realized that if we include Monday and Friday to the midweek we could have increased our profit. We decided to hold onto the stocks for the majority of the day: we would buy at 10:00 am and sell at 2:00 pm; we figured that this would increase our chances for large fluctuations of the stock prices. The data in the chart below shows where we purchased and sold the stock on those days. For Monday we lost 96 dollars, for Tuesday we gained 48 dollars, for Wednesday we lost 52 dollars and on Thursday our profited 36 dollars and on Friday we lost 4 dollars. Therefore, our technique by adding Monday and Friday was not successful as we hoped since over the week we lost a total of 60 dollars.



Week of 10/9

Our strategy for the week of 10/9 was to buy stocks daily through out the week:

Wednesday and Thursday. We decided to use a technique called minute day trading this week because our loss of money with our day trading techniques used last week. Minute day trading is when we notice a stock is on the rise we will purchase and watch it for ten or fifteen minutes then sell it for a profit. On Wednesday we purchased the stock at 11:00 and sold it at 11:15 and profited 63 dollars, and on Thursday we purchased the stock at 11:00 and sold it at 11:15 for a profit of 36 dollars. Therefore our technique of minute trading worked for a profit of 99 dollars.



Week of 10/16

Our strategy for the week of 10/16 was to buy stocks daily through out the week:

Thursday. We decided to use a technique called minute day trading this week because of our success in profit last week. However this week we decided to wait until later in the day to better read how the stocks were fluctuating throughout a portion of each day. On Thursday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 18 dollars. Therefore, the technique of minute trading proved once again to be profitable. For the week we had a net gain of 18 dollars.



Week of 10/23

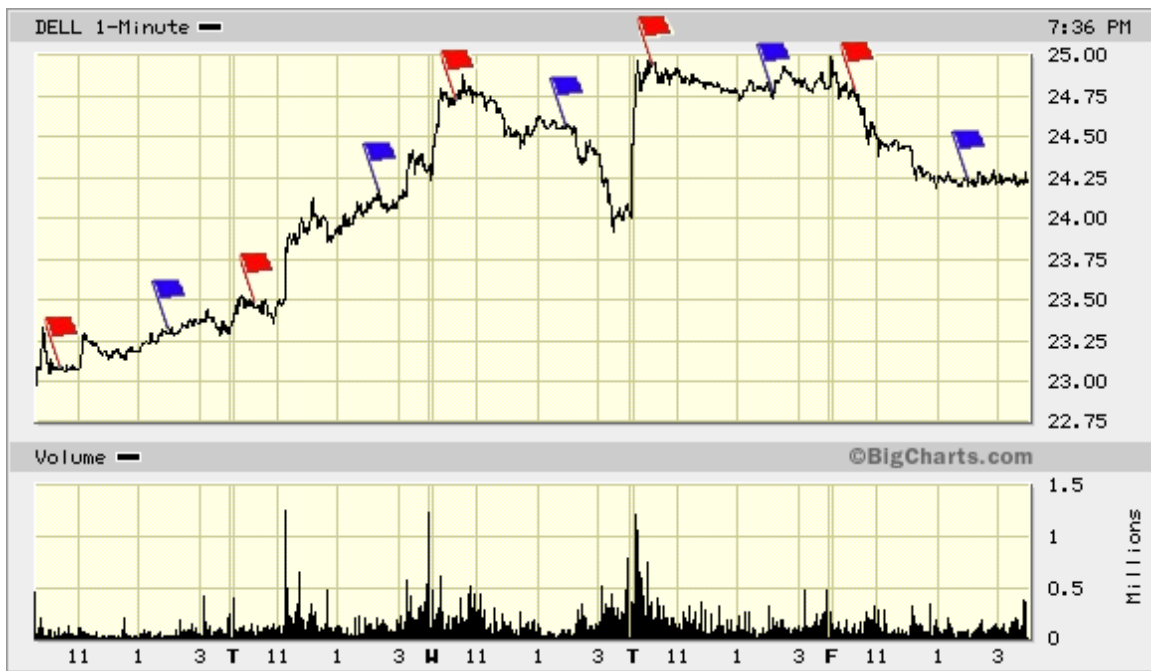
Our strategy for the week of 10/23 was to buy stocks daily through out the week:

Monday, Tuesday, Wednesday, Thursday and Friday. We only were able to make one trade last week with this stock using the minute trade strategy because of the uncertainty of how the stock was going to act. Therefore we decided to go back to purchasing it throughout the day. On Monday we purchased stock at 10:00 and sold stock at 2:00 for a profit of 72 dollars, on Tuesday we purchased stock at 10:00 and sold stock at 2:00 for a loss of 64 dollars, on Wednesday we purchased stock at 10:00 and sold stock at 2:00 for a loss of 12 dollars, on Thursday we purchased stock at 10:00 and sold stock at 2:00 for a profit of 120 dollars, and on Friday we purchased stock at 10:00 and sold stock at 2:00 for a loss of 32 dollars. For the week our profit was 84 dollars.



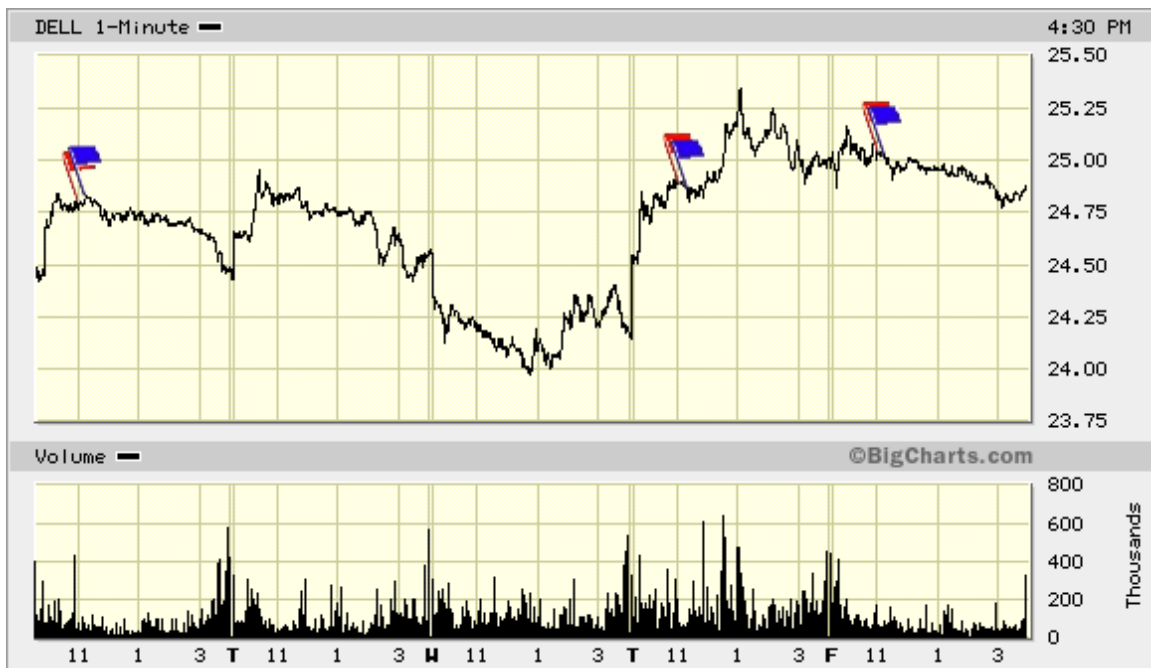
Week of 10/30

Based on our success last week using the daily strategy, we decided to once again employ this strategy. We would trade everyday of the week. We would buy at 10:00 and sell at 2:00. On Monday we had a profit of 100 dollars, on Tuesday we had a profit of 252 dollars, on Wednesday we had a loss of 88 dollars, on Thursday we had a loss of 60 dollars, and on Friday we had a loss of 228 dollars. Overall we had a loss of 16 dollars.



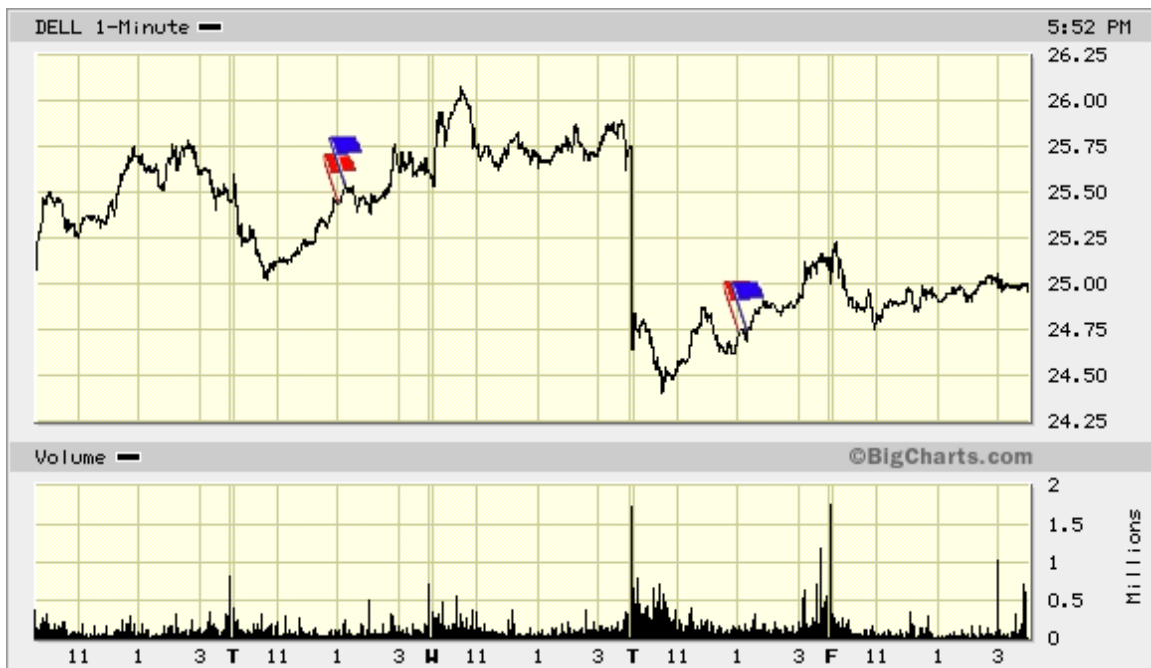
Week of 11/6

The daily strategy was ineffective last week, and we felt if we employed the minute strategy last week we could have turned a profit. So this week we decided to use the minute strategy, and buy at 11:00 and sell at 11:15. We found 3 days where we felt we could make money. On Monday we had a profit of 32 dollars, on Thursday we had a loss of 32 dollars, and on Friday we had a loss of 16 dollars. Overall we had a loss of 16 dollars.



Week of 11/13

We decided to stay with the minute strategy this week, but move the time to later in the day. We would buy at 1:00 and sell at 1:15. We found 2 days where we felt we would make a profit. On Tuesday we had a profit of 24 dollars, and on Thursday we had a loss of 40 dollars. So for the week we had a loss of 16 dollars.



Week of 11/20

Just like CVS, we had a small loss last week, so we will change back to the morning. We would buy at 11:00 and sell at 11:15. However, we didn't find a time to make a trade where we felt like we could make a profit, so we didn't make any trades.



Week of 11/27

Just like CVS, last week we didn't find any chances to make a trade, but we will stay with the minute strategy. We will buy at 11:00 and sell at 11:15. This week we found 4 opportunities to make a trade. On Tuesday we had a loss of 22.50 dollars, on Wednesday we had a profit of 75 dollars, on Thursday we had a loss of 97.50 dollars, and on Friday we had a profit of 37.50 dollars. So overall we lost 7.50 dollars.



Bank of America

Week of 10/9

Our strategy for the week of 10/9 was to buy stocks daily through out the week: Monday, Tuesday, Thursday and Friday. We decided to use a technique called minute day trading this week because of our success in other stocks in prior weeks and we have been researching how much the stock fluctuates daily. Minute day trading is when we notice a stock is on the rise we will purchase and watch it for ten or fifteen minutes then sell it for a profit. On Monday we purchased the stock at 11:00 and sold it at 11:15 and profited 72 dollars, On Wednesday we purchased the stock at 11:00 and sold it at 11:15 and profited 76 dollars, On Thursday we purchased the stock at 11:00 and sold it at 11:15 and lost 16 dollars, and on Friday we purchased the stock at 11:00 and sold it at 11:15 for a loss of 40 dollars. Therefore our technique of minute trading worked for a profit of 92 dollars.



Week of 10/16

Our strategy for the week of 10/16 was to buy stocks daily through out the week:

Monday, Tuesday, Thursday and Friday. We decided to use a technique called minute day trading this week because of our success in profit last week. However this week we decided to wait until later in the day to better read how the stocks were fluctuating throughout a portion of each day. On Monday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 44 dollars, on Tuesday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 44 dollars, on Thursday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 32 dollars, on Friday we purchased stock at 1:00 pm and sold stock at 1:10 for a profit of 24 dollars. Therefore, the technique of minute trading proved once again to be profitable. For the week we had a net gain of 140 dollars.



Week of 10/23

Our strategy for the week of 10/23 was to buy stocks daily through out the week:

Monday, Tuesday, Wednesday, Thursday and Friday. After comparing the graphs of the previous two weeks we found if we used the day strategy we should be able to gain a larger profit. On Monday we purchased stock at 10:00 and sold stock at 2:00 for a profit of 94 dollars, on Tuesday we purchased stock at 10:00 and sold stock at 2:00 for a loss of 22 dollars, on Wednesday we purchased stock at 10:00 and sold stock at 2:00 for a gain of 22 dollars, on Thursday we purchased stock at 10:00 and sold stock at 2:00 for a loss of 12 dollars, and on Friday we purchased stock at 10:00 and sold stock at 2:00 for no gain or loss. For the week our profit was 84 dollars.



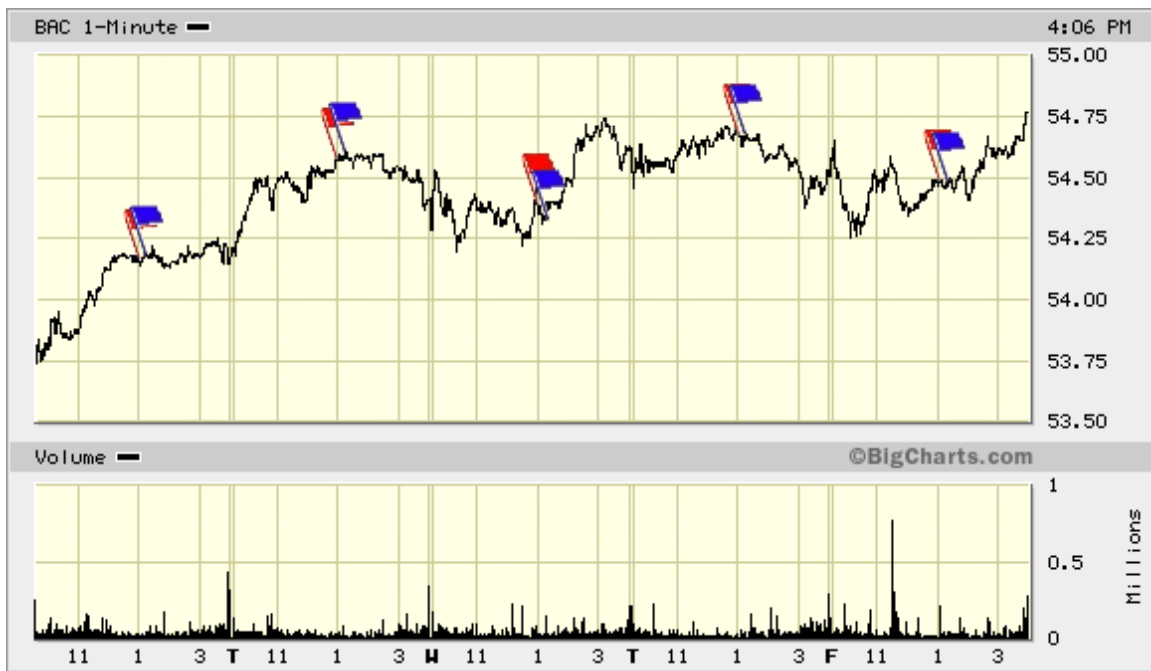
Week of 10/30

Last week we used the daily strategy and made a profit, but the previous two weeks we made a much greater profit using the minute strategy. So we decided to go with the minute strategy and buy at 1:00 and sell at 1:15, as that was most effective last time. We found one time during the week that we thought we could make a profit, and on Monday we had a profit of 16 dollars. So overall we also made a profit of 16 dollars.



Week of 11/6

We would use the same strategy as last week and trade for 15-minute intervals. We would buy at 1:00 and sell at 1:15. We found that every day would be a reasonable time to make a trade. On Monday we lost 8 dollars, on Tuesday we bought and sold at the same price so we broke even, on Wednesday we lost 12 dollars, on Thursday we lost 4 dollars, and on Friday we lost 8 dollars. So overall we lost 32 dollars.



Week of 11/13

Just like with Dell, we decided to stick with the minute strategy, but change the time in which we would make the trades. So since last week we traded in the afternoon, this week we would trade in the morning. We would buy at 11:00 and sell at 11:15. We found 2 days to make trades. On Tuesday we had a profit of 36 dollars and on Wednesday we had a profit of 28 dollars. So overall we had a profit of 64 dollars.



Week of 11/20

We had a large profit last week, so we will stay with the minute strategy this week. We will buy at 11:00 and sell at 11:15. We found one time to make a trade. On Monday we lost 12 dollars. So overall we lost 12 dollars.



Week of 11/27

We had a small loss last week, but the minute strategy had worked well with this stock and we will stay with it. We will buy at 11:00 and sell at 11:15. We found 2 days to make a trade. On Thursday we had a profit of 8 dollars, and on Friday we had a profit of 28 dollars. So overall we had a profit of 36 dollars.



Kyocera

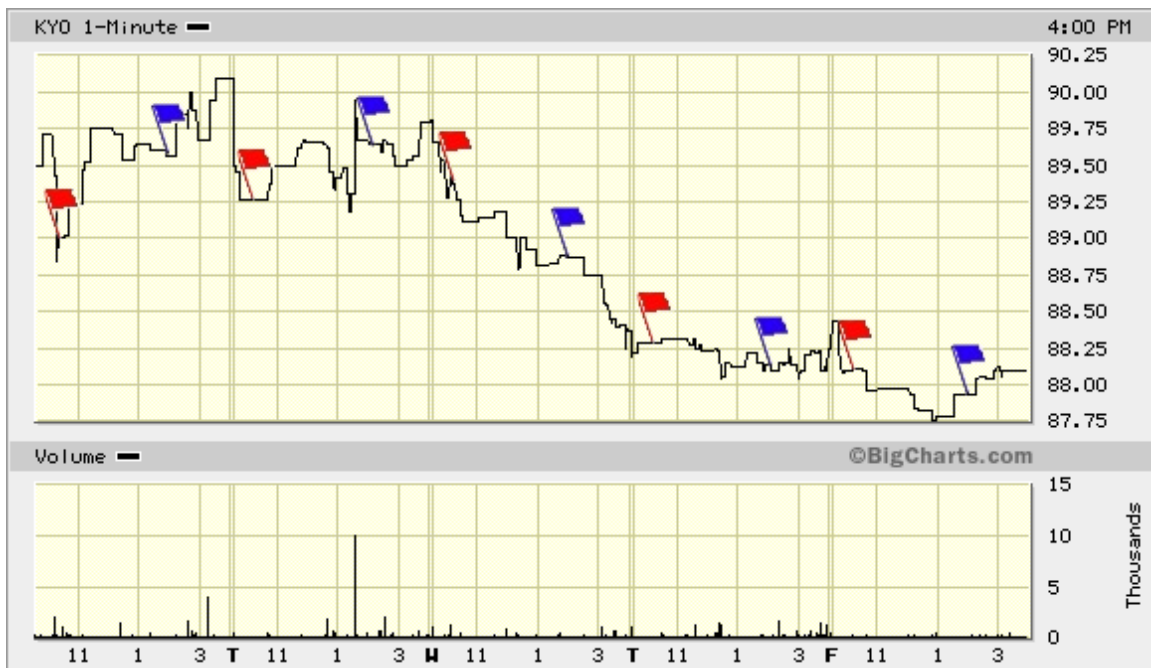
Week of 10/23

Our strategy for the week of 10/23/2006 was to buy stocks daily through out the week: Monday, Tuesday, Wednesday, Thursday and Friday. We decided to use the day strategy on this new stock because it was very difficult to tell from the graphs whether the price was steadily rising or not. There were very sharp jumps that made it difficult to read. On Monday we purchased stock at 10:00 and sold stock at 2:00 for a profit of 132 dollars, on Tuesday we purchased stock at 10:00 and sold stock at 2:00 for a profit of 4.50 dollars, on Wednesday we purchased stock at 10:00 and sold stock at 2:00 for a gain of 13.50 dollars, on Thursday we purchased stock at 10:00 and sold stock at 2:00 for a gain of 3 dollars, and on Friday we purchased stock at 10:00 and sold stock at 2:00 for a loss of 43.50 dollars. Therefore, the technique of minute trading proved once again to be profitable. For the week our profit was 109.50 dollars.



Week of 10/30

Given the very unpredictable jumps this stock as, and the great success we had last week, we decided to use the daily strategy once again. We would buy at 10:00 everyday and sell at 2:00 everyday. On Monday we had a profit of 10.50 dollars, on Tuesday we had a profit of 51 dollars, on Wednesday we had a loss of 72 dollars, on Thursday we had a loss of 24 dollars, and on Friday we had a loss of 22.50 dollars. Overall we had a loss of 57 dollars.



Week of 11/6

We lost money last week, but given the previous great profits we have had with this stock, we decided to stick with it. These extreme changes in price without any trends whatsoever led us to the daily strategy once again. We would buy everyday at 10:00 and sell everyday at 2:00. On Monday we gained 87.50 dollars, on Tuesday we gained 72.50 dollars, on Wednesday we gained 67.50 dollars, on Thursday we gained 32.50 dollars, and on Friday we lost 10 dollars. Overall we made a profit of 250 dollars.



Week of 11/13

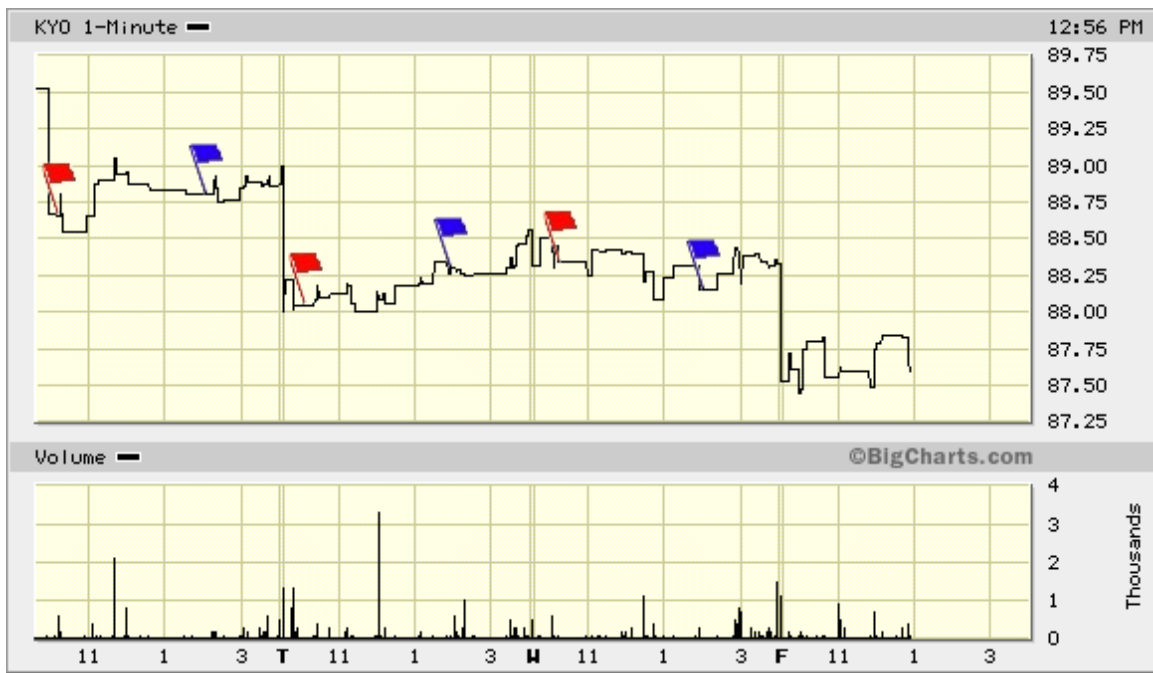
With the extremely large profit last week, we decided to stick with the daily strategy. We would buy at 10:00 and sell at 2:00, everyday of the week. On Monday we lost 27.50 dollars, on Tuesday we didn't have a profit or loss, on Wednesday we had a profit of 81.25 dollars, on Thursday we had a profit of 10 dollars, and on Friday we had a profit of 55 dollars. So overall we had a profit of 118.75 dollars.



Week of 11/20

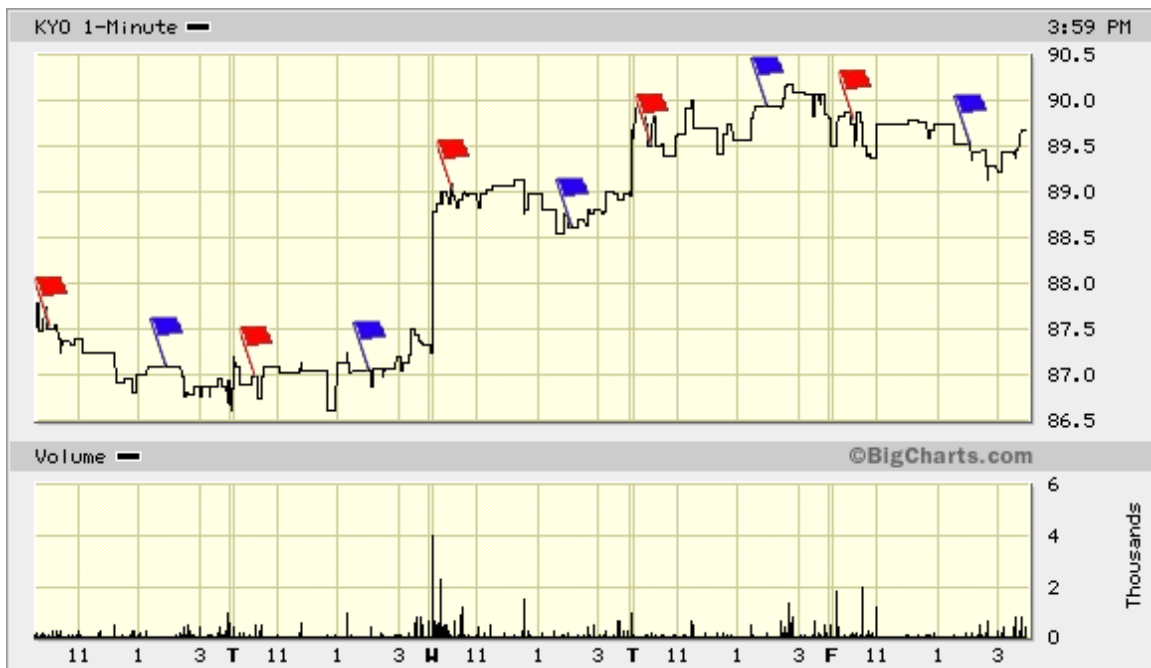
The daily strategy has worked extremely well with this stock, so we will stick with it.

We will buy at 10:00 and sell at 2:00 from Monday-Wednesday (because of Thanksgiving). On Monday we had a profit of 30 dollars, on Tuesday we had a profit of 26.25 dollars, and on Wednesday we lost 36.25 dollars. Overall we made a profit of 20 dollars.



Week of 11/27

There is no reason to change to the minute strategy with this stock given the success we have had with the daily strategy. We will trade everyday, buying at 10:00 and selling at 2:00. On Monday we had a loss of 51.25 dollars, on Tuesday we had a loss of 8.75 dollars, on Wednesday we had a loss of 35 dollars, on Thursday we had a gain of 51.25 dollars, and on Friday we had a loss of 47.50 dollars. So overall we had a loss of 91.25 dollars.



6.3 Overall Profit

Trend

Shell: \$3150, 7.9%

American Eagle: \$1127.50, 4.6%

Deere: \$1280, 7.2%

Toro: \$112, .7%

Total: \$5669.50, 5.7%

Day

CVS: \$170.50, \$17.05/week

Pfizer: \$181, \$18.10/week

Dell: \$440.50, \$44.05/week

Bank of America: \$390, \$48.75/week

Kyocera: \$351.50, \$58.58/week

Total: \$1533.50, 1.5%

Chapter 7: Conclusions

7.1 Summary

When the simulation ended and we analyzed the data, we found that we had a successful experience. This includes not only our success with our profit, but we also feel we have learned a lot from this simulation. But, from profit alone, we feel like we chose some good stocks to trade with, and we executed our trades at mostly the right times. Trend trading gave us a profit of \$5669.50, or 5.7%. So this was over our 5% benchmark. Day trading, on the other hand, while we still made a profit, it was only \$1533.50, or 1.5%. For trend trading, Shell was our most effective stock, providing a profit of \$3150, or 7.9%. Deere was also very effective, giving a profit of \$1280, or 7.2%. American Eagle, our “safe” stock, gave us a profit of \$1127.50, or 4.6%. Toro was our least profitable stock, giving us only \$112, or .7%. For day trading, we broke it down to profit per week since we did not trade with all five stocks for all ten weeks. Kyocera turned out to be our most effective day trading stock, giving us a profit of \$351.50, or \$58.58/week. This shows that our decision to trust this stock’s extreme price fluctuations even though it had a low volume paid off. Dell and Bank of America were also fairly profitable for us, giving us \$440.50, or \$44.05/week, and \$390, or \$48.75/week, respectively. CVS and Pfizer weren’t as good as we had hoped, giving us \$170.50, or \$17.05/week, and \$181, or \$18.10/week, respectively. However, all nine of the stocks we traded with (four with trend trading and five with day trading) gave us a profit. We feel that is the most important result of all. Even though a couple of the stocks did not do as well as we had hoped, they still gave us some profit, and a profit is

better than a loss. But overall, trend trading was a more effective strategy than day trading.

7.2 Strategy Comparison

It is clear that trend trading (\$5669.50) was more profitable than day trading (\$1533.50). But this does not tell the whole story. Trend trading was also much easier and much less time consuming. Once we did the graph analysis and research for the trend trading stocks before we started the simulation, most of the work was already done. From that point, we did a lot of sitting, watching, and waiting. We had already decided when we were going to sell the stocks. We made a total of 4 trades for trend trading, while we made 134 trades for day trading. We also needed to trade every day of the week for day trading and make decisions on the spot. We had to look at the daily graph of each stock, and determine if it was wise for us to make a trade at that time. While for trend trading, we didn't need to make any decisions for weeks. It seems like day trading should be more profitable since there is so much more work involved, but we feel that if you do your homework about the stocks and make an educational guess of how the trend stocks will act in the future, then you could make a large profit. One characteristic that you need for trend trading is patience. We had to trust some of our estimates in order to get out of a hole with a couple of stocks. Deere and Toro both started out going downward in price, but we stuck with our assessment and they both turned out to give us a profit. With day trading, there is a set amount of time that you hold a stock, so patience is not involved. Day trading is a lot more definitive. In other words, once you make the decision that you are making a trade, you immediately find out if you made a profit or

not. For trend trading, sometimes you need to use your head. If a stock's price is dropping steadily, you may need to cut your losses and sell before you wanted to.

We feel that trend trading is not only easier and less time consuming, but it also can provide a better chance of a profit. But that does not mean trend trading is a lock to make anyone rich. You do need to be wise enough and involved in the stock market to know what is going on. Experience is a huge advantage for either strategy. We definitely improved at day trading as the simulation went on. We were a lot more selective when making trades and got a better hang of how to read the graphs and realize when a stock's price is most likely to continue to rise. With either of these strategies, anyone looking to go into trading in the stock market must realize that the stock market is never 100% predictable and losses could occur. Our simulation was successful because we made a profit with both strategies, determined trend trading is a more effective strategy than day trading, and we gained a lot of experience with trading in the stock market.

7.3 Learning Experience

This stock market simulation was a great experience for us. We learned a lot about how the stock market works and what it takes to succeed when trading. If we choose to, we can now use this experience to make some money while investing in the stock market. This gave us a lot more confidence in this area, especially since we came out with a profit. But this was not all easy. We needed to put a lot of work into these two strategies, especially day trading. At first we had some difficulties determining when to make a trade with the minute strategy and it showed with the results. Sometimes we were undecided on what strategy to use from week to week. It was not always a cut and

dry situation. If we did another simulation, we would definitely be a lot more patient and careful when making day trades. We feel like there were some times when a trade should not have been made when we actually made one. We learned by the end of the simulation that if you are unsure whether or not the stock will rise, we should not make a trade. With trend trading, we could have used more statistics and ratios to determine which stocks to buy. When it comes to day trading stocks, these types of statistics aren't as important, but if we were going to use trend trading for a longer period of time, we would need to take some of these into consideration. With all of this being said about analyzing graphs and using them to our advantage, this type of research is only available due to technology. We cannot even imagine how we could have performed this simulation without the Internet at our fingertips at all times. We needed to check out the daily graphs to make our decisions and without these, it would be near impossible to have any day trades using the minute strategy. We would basically have to use the daily strategy every week. For trend trading, the new technology gives us access to 3-year graphs, where I am sure a few years ago these were not available, and we could not have made the types of analysis we did on stocks such as Deere and Toro. If we actually made real trades, we could have done it on the computer sitting in our room. Technology makes everything simpler, especially with a subject like the stock market, which involves so many numbers and calculations.

Our stock market simulation gave us a great experience that we will never forget. We learned a lot and we can now use this knowledge to our advantage in the future. We compared a couple of trading strategies and used current techniques to turn these strategies into profit. When it comes to making money, any subject can be considered

relevant. This stock market simulation taught us a lot about managing money when investing in a certain area. We have definitely come away from this simulation with a more comfortable mindset about the stock market, and pursuing this field could be in our future.

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