**Worcester Polytechnic Institute**
**Digital WPI**

August 2008

# Interactive Qualifying Project - Stock Market Simulation

Craig Allen Blanchette
*Worcester Polytechnic Institute*

Follow this and additional works at: https://digitalcommons.wpi.edu/iqp-all

Project Number:  DTZ 0727

An Interactive Qualifying Project Report: submitted to the Faculty of

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

By

Craig Blanchette          _____

Submitted:
August 27th 2008

Approved by Professor Dalin Tang, Project Advisor

_____

## Acknowledgments

First off, I would like to thank Dale Snyder; thank you so much for all of the help you've given me in the last year and helping me persevere on this project. I would also like to extensively thank my family; thank you so much for all of your support. I would not be here if it weren't for you guys. Lastly, I would like to thank Dalin Tang; thank you for the opportunity to complete this project, your time, patience, and understanding.

# Table of Contents

# Table of Figures

## [1] Introduction

This chapter briefly describes the scope of this project, the stock market, history of the market and types of investing.

## [1.1] Goals

The main goal of this project is to use the internet and available stock simulation programs in order to compare and contrast the theory and implementation of a few different investment strategies.  In order to accomplish this, we will first conduct research into the investment strategy of our choice and then complete simulations using stocks that we have also researched and picked to best suit our different strategies.
During this simulation one of us will be employing an active management style, while the other shows a passive management or passive investing style.

First and foremost, a thorough understanding of just how stock markets work and all the terms that go with it must be acquired, mainly through research over the web, but also from speaking with contacts that have experience with the stock market and some of the many books that have been published on the subject.

In the times we live in today and the current state of the economy, knowledge of the stock market and proper investing methods is becoming more and more important.  We intend to use these two strategies to influence the timing and amounts of our trades; however the selection of our companies will

be another big challenge, especially with the current condition of the stock market.

Our companies will be selected by studying the different sectors of the market, selecting the most promising based on both historical performance and current trends. From there we will select companies in the chosen sectors that we believe will be the most profitable for our individual trading methods.

## [1.2] The Stock Market: A Brief History

Stock market trading has been in existence in the Unites States for over 200 years. The New York Stock Exchange or NYSE was officially created in 1792, although bonds were sold, promising a profitable payout, by the government to Colonials in order to finance the Revolutionary War [1]. In addition to these bonds or government notes, private banks began to sell shares of the company in order to raise money for their company to use. It wasn't until 1792 that a meeting of 24 of the larger merchants in America came together to create the NYSE, agreeing to trade stocks and bonds everyday while meeting on Wall Street in New York City, NY.

At first, the NYSE was essentially a tool for the wealthy to increase their wealth. As time went on and America hit the Industrial Revolution during the mid 1800's, companies realized that in order to keep up with the innovations and progress, they would need more funds. Investors and companies alike began to realize just how useful and profitable the NYSE could be. It still remained a tool used mostly by wealthier citizens along with the

larger companies until the turn of the century, when the market started increasing at a much faster rate. By 1900, there was millions of dollars being traded every day in the NYSE.

Today, there are many different stock exchanges that serve different areas around the world and trade different companies. The NYSE does not have the most companies, although it does have the biggest, most elite companies in it. AMEX and NASDAQ are the next largest American exchanges and are made up of smaller companies, but this is not to diminish their importance and influence.

# [1.3] - Mutual Funds

A mutual fund is a fund operated by a professional company which collects money from shareholders and invests it into such things as stocks, bonds, money market and other investments [2]. The fund manager, which is also known as the portfolio manager, trades and invests the funds securities and passes the gain on to the individual investors.

### Open-end Funds

An Open-end fund is an open-end investment company. Open-ended means that every day the fund gives new shares to investors, and buys shares back from investors who wish to leave the fund. There are

also closed-end funds which have a limited number of shares, but this is not classified as being a mutual fund.

### Exchange-traded Funds

Exchange-traded funds or ETF's are relatively new. They combine ideas from both mutual funds, and closed-end funds. ETF's are traded during the day on a stock exchange like closed-end funds, but they are at prices which estimate the net asset value of the ETF.

### Equity Funds

Equity funds are the most common type of mutual fund. Equity funds account for about 50 percent of all amounts invested in mutual funds in the United States. Equity funds consist mainly of stock investments; they usually focus investments on particular strategies and certain types of issuers.

# [1.4] – Bonds

A bond is a debt security. The issuer owes the holders a debt and must repay them the principal and the interest at a specified date, or its 'maturity [3].' A bond is basically a loan in the form of a security. Bonds allow the issuer to make long term investments with external funds. Bonds and stocks are both

securities but they are different as well. Stock holders actually own their stock and thus a piece of the company the stock was purchased from. Bond holders are lenders to the issuing company.

Bonds are a good investment because what you get out of them is always more than you put in. They are useful in preserving your capital or trying to increase it. Often they are used for a child's college fund or to increase retirement income.

## [1.5] Money Market

The Money Market is a world-wide financial market that allows people to conduct short-term borrowing and lending [4]. The Money Market is where bankers' acceptances, treasury bills, and commercial paper are bought and sold. The basis of the Money Market consists of banks lending and borrowing money from each other which is usually based off of the London Interbank Offered Rate (LIBOR). Finance companies usually fund themselves by using commercial paper, or asset-back commercial paper (ABCP). Commercial paper is used by large banks and corporations. Commercial paper is considered a pretty safe investment. As it is a low-risk investment, its returns tend to be rather small.

During a bear market, lots of investors turn to the money market in order to make a profit. Although the money market seems a lot like a bond in the fact that you put in money and it will mature, the money market will

mature much faster than a bond. Because the money market usually trades in high amounts, it is difficult for the individual investor.

## [1.6] Swing Trading

Swing trading is a combination of day trading, and trend following [5]. A swing trader will pick stocks and hold them somewhere between a few days, to a couple of weeks. The shares are purchased based on oscillations during the month and the current week. All stocks have similar tendencies and trends, as you can see from a sample chart here, the price oscillates, meaning it is continuously jumping up, and down, with occasional larger increases and decreases.
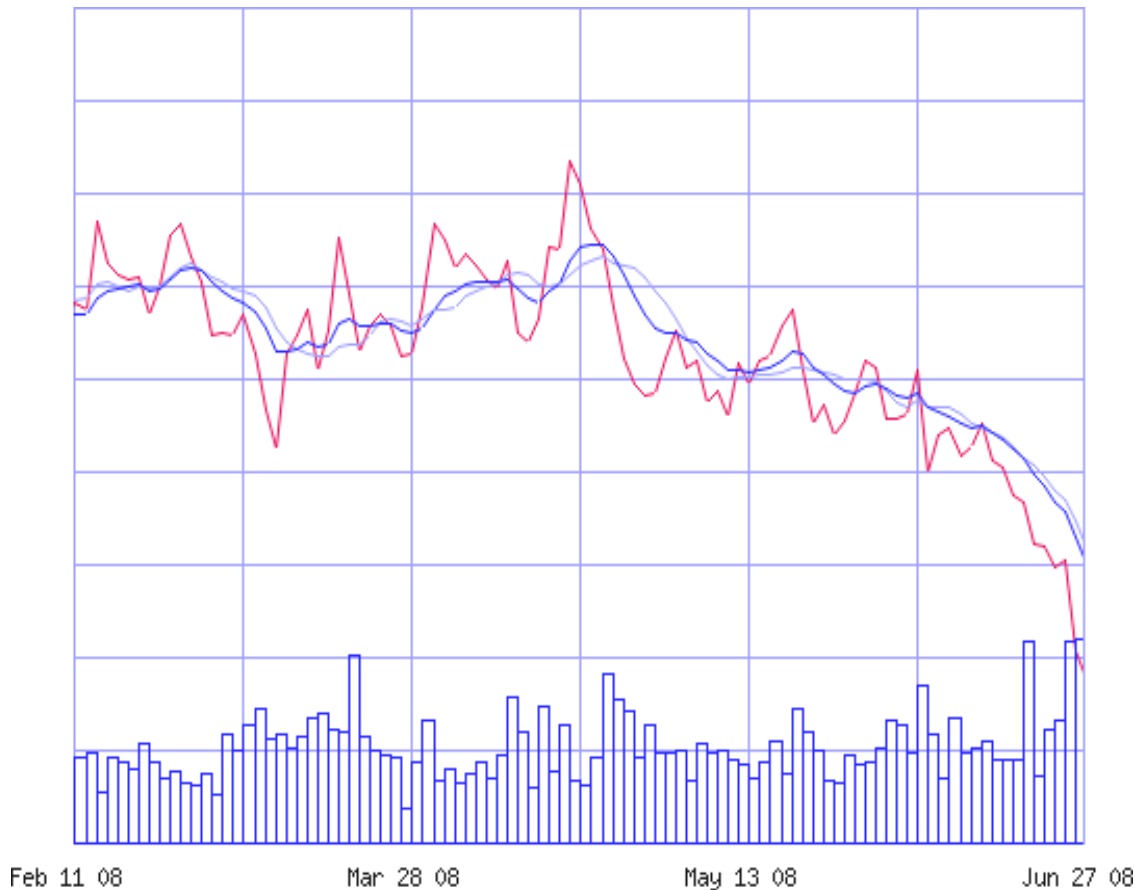
**Figure 1.6 Swing Trading and Oscillations**

If you observe the chart above, you will see a red line which is the stocks actual value. The dark blue line is the Exponential Moving Average, or EMA; and finally the light blue line is the stock's Simple Moving Average, or SMA. The EMA and SMA are created from the stocks closing values, but are smoother. They are used here to better depict the oscillations.

Swing trading is a strategy that does not make a lot of money on a single security. Usually with each sell the investor makes anywhere from a few hundred, to a few thousand dollars depending on how many shares are

purchased. This also works in reverse; swing traders tend to not lose a lot of money in one security as well.

# [2] Choosing Your Stocks

This chapter briefly describes what thought goes into choosing a certain stock, and what strategies can be used to pick a stock that will be beneficial to the investor.

## [2.1] - Fundamental Analysis

Fundamental analysis attempts to value a company based on the company's actual business [6]. The fundamental analysis of a company can be very helpful in forecasting the tendency of a stock. When using the analysis in order to decide what stock to buy, there are two different approaches:

Before an investor looks at financial statements or does any research, there is one important question: What does the company actually do? This is the company's *business model* or how a company makes its money [7]. You can find lots of information about a company's business model from their website, or now, a good place to check is Wikipedia. Some business models are very easy to understand and are very basic; however, there are some businesses that do more than they appear to do at the surface.

It is often helpful to invest in a company whose sector you understand. If you are in the computer field, it may be helpful for you to invest in companies that utilize technology. If you rarely use a computer, it is going to be very difficult for you to understand the business model of a tech company and decide whether or not this is useful for the economy.

A helpful business choice to consider is the *competitive advantage*. This occurs when a certain company has most of the control over a certain market. The company essentially has a "wall" around them keeping away competitors and allowing that company to keep making profits. Even if other companies are sustaining themselves, it would either take a long time for them to overcome the large company, or their proceeds will be so small it won't affect the larger corporation.

# [2.2] - Technical Analysis

*Technical Analysis* means that the value of the stock is already reflected in its price and technical analysis is used to track the trends of the stock [8]. Technical analysis has become increasingly powerful and accurate. However, the technical analysis of a stock - no matter how much the data agrees – will ever be entirely accurate. With today's computers, technical analysis has become much easier to perform. A program analyzes a stock's trends and its previous data, and can give back results that can be very useful for the investor.

## [2.2.1] - Moving Average

Statistically, a moving average is used to analyze data over a period of time. Here, the data is the closing price of a companies stock. The Simple Moving Average (SMA) is simply the mean of a set number of data points. For example,

if you wanted the Simple Moving Average of the last 10 days, then you would sum the closing prices of the last 10 days, and divide it by 10 [9]. The actual moving average of the stock itself is not very helpful as it basically just slowly follows the trend of the stock and is not very predictive. However as we will discover later, we can take moving averages of data other than the stocks closing prices which will further help us to predict the stocks movement.

$$\sum_{i=1}^{n} \frac{P_i}{n}$$

**Figure 2.2.1**

The Weighted Moving Average (WMA) is similar but as noted in its name, different values have different weights; thus the more recent prices are reflected better in the average. The most recent price is multiplied by *n* (the number of data points we are calculating) down to the oldest price, which is multiplied by 1, leaving it un-weighted.

$$\sum_{i=1}^{n} \frac{i \times P_i}{\left(\frac{n(n+1)}{2}\right)}$$

**Figure 2.2.2**

Finally, the mostly commonly used moving average is the Exponential Moving Average (EMA), which can also be known as the Exponentially Weighted Moving Average. As you can see, the Simple Moving Average has no factors, the Weighted Moving Average has a linear factor, and the Exponential Moving Average has an exponential factor. Below is an *approximation* of the weights for each of the different moving averages:
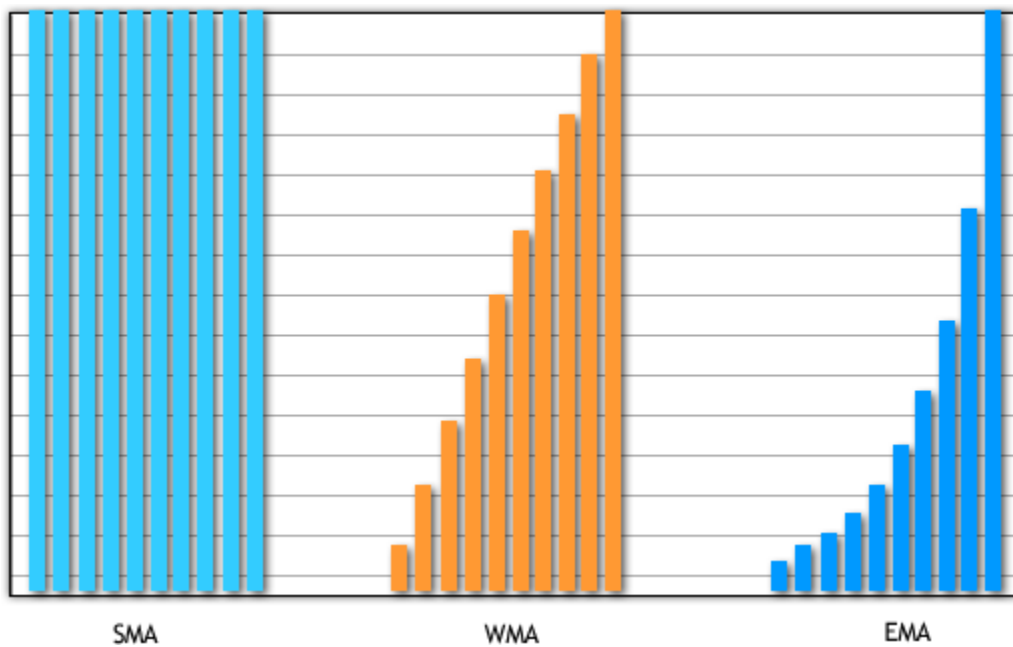


**Figure 2.2.3 – Sample Moving Average Weights**

Calculating the EMA is a little more complicated than the SMA, and the WMA.

$$\alpha = \frac{2}{N+1}$$

$\alpha$ is the *smoothing* factor for the EMA.

$N$ is the amount of days we are calculating

$$EMA_n = EMA_{n-1} + (Current\ Price - EMA_{n-1}) * \alpha$$

**Figure 2.2.4 – Calculating an EMA [10]**

The EMA works with previously calculated values and uses the *smoothing* factor to blend in the new levels [11]. The smoothing factor does not necessarily have to be a function of the amount of days we are calculating but ran rather be an arbitrary value like 0.1 (10% smoothing). Here is an example graph which depicts a SMA, and an EMA:

**Figure 2.2.5 – Microsoft EMA Example**

The solid black line is the graph of the closing values of the stock. The dark blue line is the Moving Average, or Simple Moving Average (SMA). Finally the red line is the Exponential Moving Average (EMA). In this image, the EMA is being measured over a 20 day period. Using the formula above to calculate the smoothing factor, this leaves us with 2/21 ~ .095. To give a feel of the

smoothing factor, I've also included another graph which takes place over a 60

day period:



**Figure 2.2.6 – Microsoft EMA Example**

Calculating the smoothing factor again, we get: 2/61 ~ .032. As you can

see, compared to the previously smoothing factor of .095, the red line here is

much smoother.

## [2.2.2] Moving Average Convergence/Divergence (MACD)

The Moving Average Convergence/Divergence was created by Gerald Appel in the 1960's. The MACD is the difference between two different Exponential Moving Averages. The two most common EMA's used are 12, and 26. As mentioned before, we can take Exponential Moving Averages of data other than the stock [12]. Here, the *signal* of the MACD is the 9 day EMA of the MACD itself.

$$MACD = \underbrace{EMA_{12}(S) - EMA_{26}(S)}$$

$$Signal = EMA_9(MACD)$$

S = Closing Prices

**Figure 2.2.2.1**

What is the purpose of calculating the signal you might ask? Well, since the signal is an average of the MACD, mathematically it will move slower than the MACD itself. When the MACD crosses over the signal from below to above, this is said to be a *bullish* crossover. When conversely, the MACD crosses from above to below, this is said to be a *bearish* crossover.

## [2.3] Bullish and Bearish Markets

A *bullish* market represents a market with lots of investor confidence. When lots of investors are investing in a particular stock, others tend to follow [13]. By doing this, the value of the stock increases and more investors will keep following. Below is an image depicting a bullish crossover; you will notice

on the bottom right portion of the chart a small rectangle. Where the arrow is, is where the crossover takes place. The black line is the MACD, and the red line is the signal line:



**Figure 2.3.1 – Honda Bullish Signal Example**

When the investors feel like the stock has reached a peak, lots of them will sell and the stock will start to drop. More and more investors will follow, leaving it a *bearish* market. Below is an example of a bearish crossover. You will notice in the bottom center portion of the chart that the MACD crosses

over the signal line from top to bottom, and continues for quite some time.

Even if the MACD itself is increasing, this does not indicate a bullish tendency.



**Figure 2.3.2 – Honda Bearish Signal Example**

# [3] Company Profiles

**Bank of America (NYSE: BAC)**



**Figure 3.1 Bank of America 3 Month Chart**

Up until 1998, Bank of America was known as NationsBank. In 1998, NationsBank purchased BankAmerica in San Francisco, and renamed the company to Bank of America [14]. In 2004, Bank of America purchased a company in Louisville, Kentucky known as National City Corp for $1.4 Billion. The company was renamed BA Merchant Services and provides financial solutions for travel and healthcare companies.

Later in 2004, Bank of America purchased FleetBoston Financial based in Boston, Massachusetts. The company was purchased in an all-stock deal making Bank of America the largest FDIC-rated deposit market share in the United States having $513 billion in deposits, followed by JPMorgan Chase-Bank One with $353 billion in deposits.

**Google Inc. (NASDAQ: GOOG)**



**Figure 3.2 Google 3 Month Chart**

Google is an American public corporation co-founded by Sergey Brin and Larry Page [15]. When they founded the company they were students at Stanford University.

Google started a search engine based on the assumption that websites that were linked more on other pages, were more likely to be of better value. Other search engines of the time were just searching pages for the number of occurrences of the search string and ordered them accordingly.

In 2003, Google leased a complex of buildings located at 1600 Amphitheatre Parkway, in Pao Alto, from Silicon Graphics. Google has remained here ever since and the complex has become known as the "Googleplex."

**Microsoft (NASDAQ: MSFT)**



**Figure 3.3 Microsoft 3 Month Chart**

Microsoft is an American multinational computer technology company [16]. Microsoft manufactures licenses and supports many software and hardware products. Its most successful product is the Microsoft Windows Operating System. Microsoft was founded by Bill Gates who has recently retired.

**Honda Motor Company Co. Ltd. (NYSE: HMC)**



**Figure 3.4 Honda 3 Month Chart**

Honda is a multination corporation which manufactures engines, and is also an engineering corporation located in Japan [17]. Honda manufactures many products, including: scooters, electrical generators, motorcycles, jets, jet engines, water crafts, ATV's and much more. Honda is the 5th largest engine

manufacturer in the world. Their shares trade on the Tokyo Stock Exchange and the New York Stock Exchange, as well as exchanges in Osaka, Nagoya, Sapporo, Kyoto, Fukuoka, London, Paris and Switzerland. Honda currently manufactures two vehicles in the top 5 sold cars in all of America, with the Civic being the number one vehicle sold.

**Verizon Communications Inc. (NYSE: VZ)**



**Figure 3.5 Verizon 3 Month Chart**

Verizon is an American broadband and telecommunications company. Verizon was formed in 2000 when Bell Atlantic merged with GTE [18].

Verizon provides many services such as land voice lines, wireless (Verizon Wireless), FiOS (which uses fiber optics to deliver digital music and television, along with HD television), and Data transfer (DSL).

**American Intl Group, Ltd. (NYSE:AIG)**



**AIG** (American Intl Group, Inc.) NYSE                    © StockCharts.com
7-Aug-2008 3:29pm    **Last** 23.65 **Volume** 137.1M **Chg** -5.44 (-18.70%) ▼
RSI(14) 41.31

AIG (Daily) 23.65
MA(50) 29.07
MA(200) 45.03
Volume 137,104,816

MACD(12,26,9) -0.486, -0.804, 0.318

**Figure 3.6 AIG 3 Month Chart**

American International Group is a large American insurance company based in New York City [19]. According to 2008 Forbes Global 200 list, AIG is the 18th largest company in the entire world.

AIG originally started in 1919 by Cornelius Vander Starr. He established an insurance agency in Shanghai, China. He was the first Westerner in Shanghai to sell insurance to the Chinese. His business soon became successful and he expanded the business to other countries.

AIG owns many other businesses as well. They own ILFC (International Lease Finance Corporation), which is the largest aircraft leasing company in the world. AIG also owns nearly 100% of 21$^{st}$ Century Insurance group as well.

**3M Co. (NYSE: MMM)**



**Figure 3.7 3M Co. 3 Month Chart**

3M Company was previously known as the Minnesota Mining and Manufacturing Company [20]. The company produces more than 75,000 products including adhesives, abrasives, optical films, laminates, electrical materials, dental products, electronic circuits, and passive fire protection. 3M Co. currently resides in Maplewood, and has a complex of over 475 acres with

more than 50 buildings, bike paths, and an 'innovation center' which showcases products that 3M has manufactured.

# [3.1] Stocks Chosen

## Microsoft

I purchased this stock based on its technical analysis. Briefly, the stock is rather low compared to the previous months. The stock also recently had a bullish crossover and is still continuing upward.
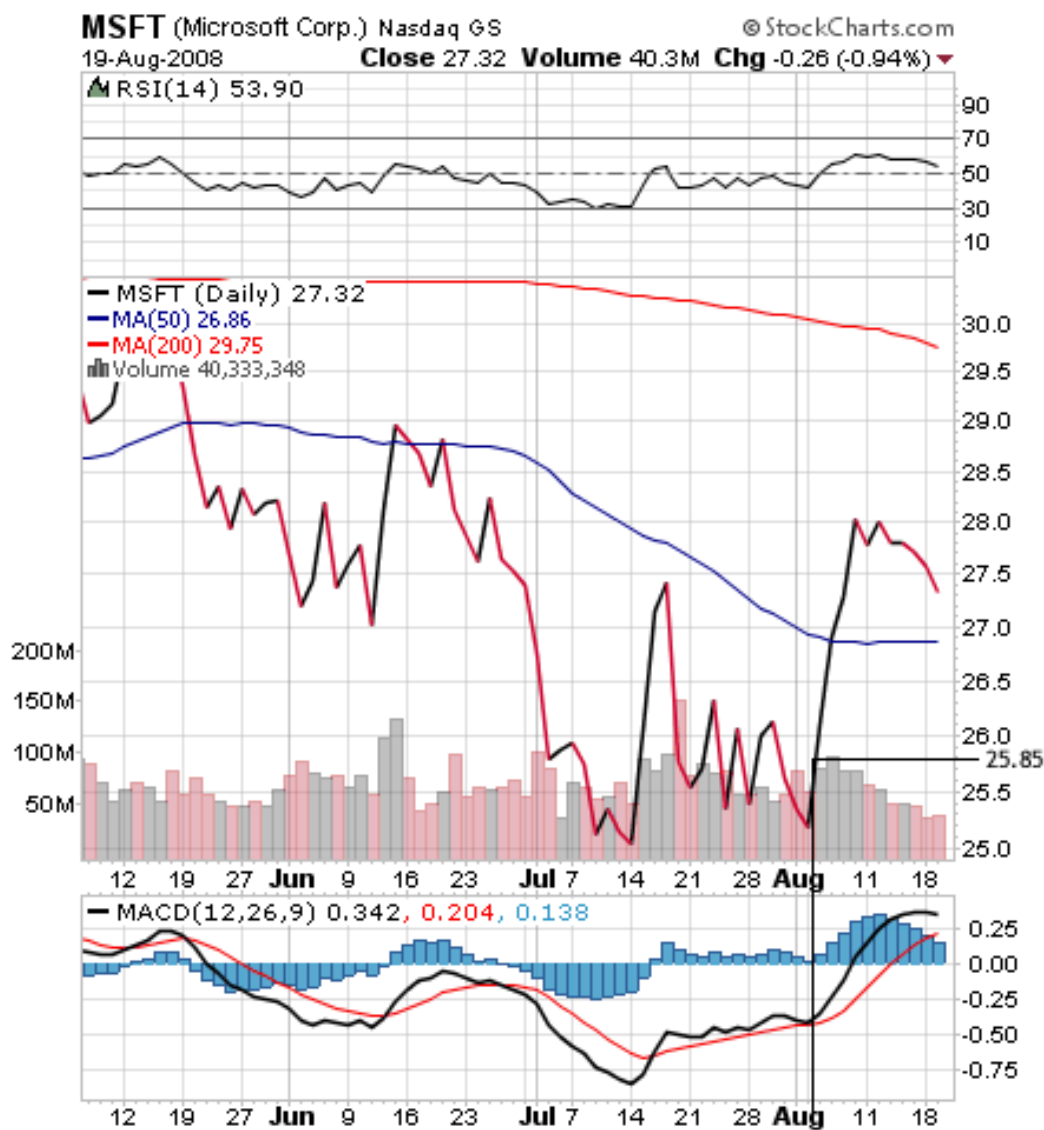


**Figure 3.2.1 Microsoft Buy/Sell Chart**

There are two black lines that I have added to the chart for clarity. The vertical black line shows the date at which I purchased the stock, and the horizontal line depicts at what price the stock was purchased. Thus, where they both meet is where the and when the stock was purchased. At the time of purchase Microsoft was rather low, and it was still bullish according to the MACD. Since the MACD is slightly delayed because of how it is calculated, I deduced that it would be a safe bet to purchase Microsoft at this point. The stock was already bullish and had just started to climb.

## 3M Co.

As with Microsoft, 3M Co. was bought based on its MACD. When 3M caught my eye, it had just dropped about $1.25, and was rather close to its 52-week low. The MACD was still above the signal line so I decided to purchase. I later ended up selling this stock for a profit of $945. If you notice the higher black line on the chart, this is the point at which I sold my shares. I had a lucky instinct about this security and sold it at a very good time, just before it started to come down again. The price of the stock is just about where I had bought it again. If I were to keep investing, I would keep an eye on this stock and wait for it to plummet further. When the MACD catches back up to the signal line, then I would purchase it again.

**Figure 3.2.2 3M Co. Buy / Sell Chart**

## Honda and Bank of America

Keeping on track with the technical analysis, two more stocks were purchased: Honda Motor Company and Bank of America. Using the MACD as a powerful tool once again, and analyzing previous tendencies, shares of both

Honda and Bank of America were purchased at a relatively low price compared to recent closes.

## Google

Google was not purchased with much knowledge of the stock market, or fair analysis. Knowing that Google is a successful company, and will continue to be on the frontier of its technology seemed a good reason to purchase. This was a foolish mistake seeing as the current market values of a company do not directly coincide with the company's success. A great deal of a stocks price has to do with what investors are doing. If there are more investors, the price goes up (bullish) and if lots of investors sell, the stock plummets (bearish).

## AIG

AIG was a combination of technical analysis, and slight fundamental analysis. There was a big news break about AIG dropping 10% because of a problem that occurred in the company. Reviewing the chart showed that this new price was much lower than previous values and I decided to purchase. There were other investors that did the same thing, but investors soon started to lose confidence and after a days time, it became very bearish. As you can see from the following chart from about August 5th on, the prices are steadily decreasing:

**Figure 3.2.3 AIG Bearish Chart**

## [4] Trading Strategies

Given the amount of time of this simulation, I decide that swing trading would be most beneficial. In addition to this, it also gives me a chance to understand the stock market better as I will be buying and selling quite often. If I had just invested in all my stocks at the beginning and let them sit, I wouldn't have time to realize my mistakes and make corrections during the simulation. I would have just learned once it was over thus not being able to utilize my knowledge.

**Figure 4.1 S&P 500 3 Month Chart**

This is a stock chart of the S&P 500. On the day of my first transaction the low was: $1,260. On the date of my final transaction the price was at: $1,278. In order to equate this to the swing trading that was done, we need to have the start value here also be $30,000.

**floor ( $30,000 / $1,260 ) = 23 Shares**

Comparing the start price to the final price, times the number of shares:

**$1,278 - $1,260 = $18**

**$18 x 23 Shares = $414**

Now to find a percentage of the overall gain:

**$414 / $30,000 = .0138 = 1.38%**

# [5] Stock Simulation

## [5.1] General Plan

During the simulation, I chose to utilize swing trading. Since there isn't a lot of time to do the actual simulation, I decided that swing trading would be beneficial.
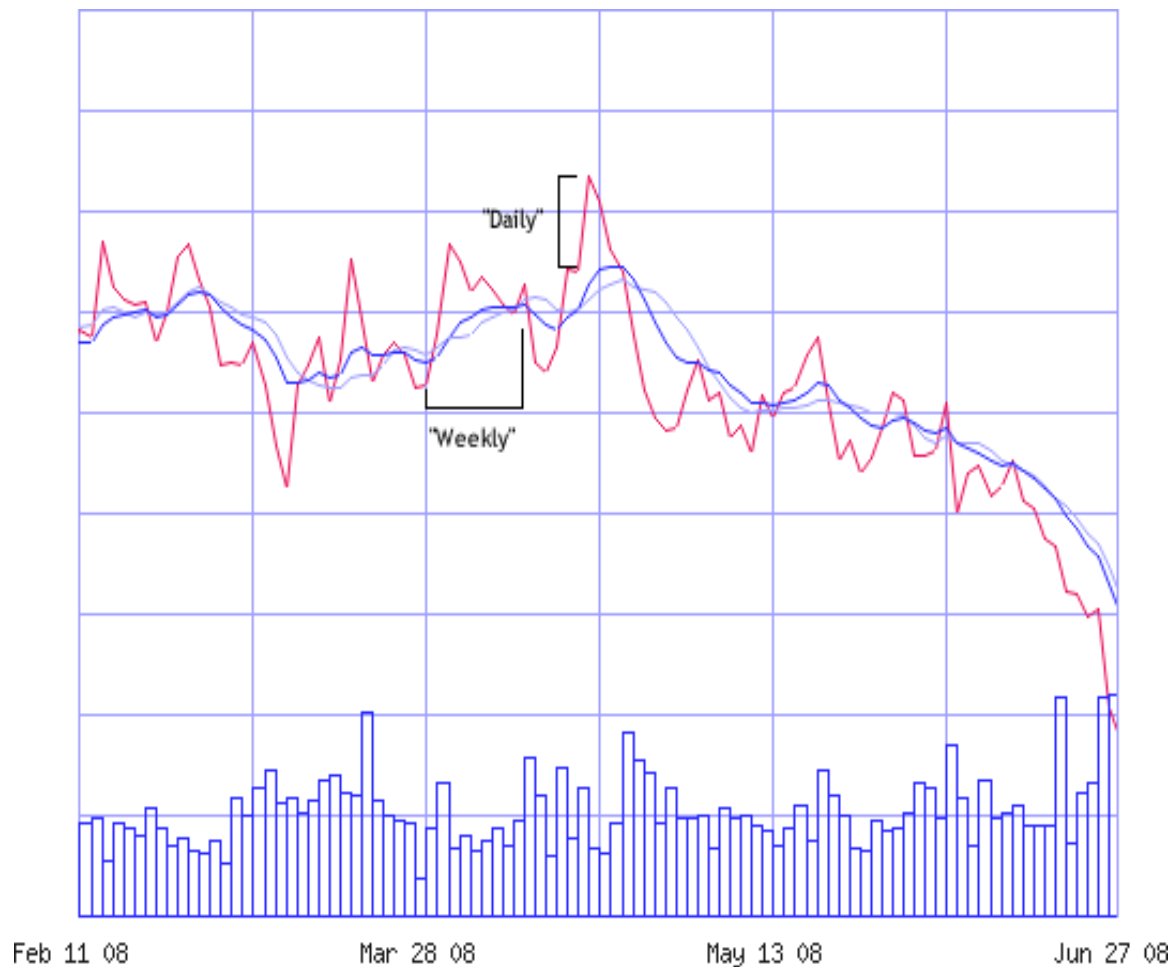


**Figure 5.1.1 Daily and Weekly Oscillations**

Swing trading does not require lots of research or time following a stock. General knowledge about the company may not even be needed either. Swing trading takes advantage of the oscillations of the stocks prices [21]. If you

notice the chart above, you will notice that the red line looks *jagged* or similar to a chain of mountains.

I mostly used Technical Analysis of the stocks that I was going to choose, and usually found the stocks I was going to choose by finding stocks that had been recently dropping in price. Noted on the chart are two brackets, titled "Daily" and "Weekly." After checking the MACD of the stock these are some of the things I would notice. If you simply go by the MACD, this could get you in trouble. For example, if there had been a bullish signal for quite some time, and the stock was reasonably high relative to its recent prices, you can probably assume it is going to come back down again.

As mentioned before, swing traders use the tendency of the oscillations. The weekly oscillation noted on the graph is a larger oscillation with a lesser frequency. The daily oscillations usually tend to be less but they oscillate on top of the weekly ones. At the beginning, (or technically the end) of each oscillation is usually a good place to purchase the stock and it is useful to try to find these points.

## Transactions

## Week 1

**Google** – Purchasing shares of Google was a hasty task. Being in the Computer Science field I had figured that Google is a very well performing company, and will continue to succeed in its field. This may be so, but it is not always reflected in its current market price. I didn't even take the time to wait for it to be at a low or watch it for a few days to see how it was doing; a rough introduction to the Stock Market here.

**Honda** – Honda was purchased with a bit more thought. It had dropped slightly recently and was lower than the last couple of weeks. The MACD was bullish so I decided to purchase shares of Honda.

## Week 2

**Bank of America** – Learning my lesson from the Google purchase, I took sufficiently more time in purchasing shares of Bank of America. Bank of America had been slowing dropping in price for about 3 months. The MACD had been just under its signal. Finally, they had a very dramatic bullish crossover and here is the point of purchase. In the course of about a week, the stock jumped about +$16. It started to decline and I held it for a day or so thinking that it would continue its trend. It continued to decrease and the shares were sold for a profit of $2,250.

**Microsoft -** I purchased Microsoft at $25.85, after it took a drop of about $1.50. The MACD indicates that the stock is still bullish so I figure that this is a good time to buy. Microsoft's 52-Week high is $37.50, and their 52-Week low is $24.87 which was just before I bought it. Also, Microsoft is currently very low in volume which means that lots of other investors are purchasing shares which will increase the stocks value over the next couple days.

## Week 3

**Google -** I've still kept Google around hoping that it will eventually come up, which it should. Currently, I am behind about $1,000 with this stock.

**Microsoft –** Microsoft is doing well as I had anticipated. The price I purchased it at was $25.85, and it is currently up to $27.62 (+$1.77). I have decided to sell 500 shares of the 800 that I have invested, hoping to get out with a profit right now before it starts to decline again. However, leaving 300 shares still invested leaves me room to continue making money, but if its price drops again I can sell the remaining 300 and still have made a profit on this company.

**Verizon –** Verizon has dropped substantially in the last couple of days, and is pretty close to its 52-week low. They aren't having any business problems right now and are a successful company so I feel it's safe to assume

that it should bounce back up, and buying this low is a pretty sound investment.

## Week 4

**3M Co.** – 3M Co. is doing really well as of the end of the day Monday. This will probably have to be sold later in the week. I'm going to watch the volume closely to see when others are selling to because it is most likely going to drop again when this happens.

**Verizon** – Verizon is in the same situation as the 3M Co. I bought it pretty low and it has risen $1.71 (+5.09%) at the end of the day Monday. I'll be watching this one closely for volume changes, or a MACD signal change.

## Week 5

**Microsoft** – I sold off the rest of the shares of Microsoft for a small profit. The shares I had saved from the last purchase were for my fear of it dropping again but it really hasn't been moving much. Selling here seems like a good idea while I'm still making a profit seeing as the number of shares I have now won't make, or lose me much money.

**Verizon** – Verizon keeps bouncing back and forth but I'm still making a small profit. I got away with selling this +$0.51 above the selling price for a pretty decent profit as I had 500 shares here.

**3M Co.** – Sold all 300 shares of 3M Co. for +$3.15 above where I bought it. I have a feeling that it will go back down again soon so I might as well sell it and make the profit.

## Week 6

**AIG** – AIG has just dropped 10% due to a problem in the company. It seems to have sustained itself here so I purchased shares.

**AIG (II)** – There is a lot of talk going on that AIG is still bearish and is predicted to keep dropping. I'm currently making a profit on AIG, so I will sell now and take what I have.

# [6] Analysis

| Date | Trade Type | Symbol | Quantity | Price | Fee |
|---|---|---|---|---|---|
| 7/17/08 10:01 AM | Buy | GOOG | 20 | $534.16 | $19.99 |
| 7/17/08 10:01 AM | Buy | HMC | 300 | $32.76 | $19.99 |
| 7/18/08 3:39 PM | Buy | GOOG | 30 | $480.10 | $19.99 |
| 7/22/08 9:56 AM | Buy | BAC | 500 | $27.85 | $19.99 |
| 7/23/08 11:48 AM | Sell | BAC | 500 | $32.74 | $19.99 |
| 7/31/08 9:56 AM | Buy | MSFT | 800 | $25.85 | $19.99 |
| 7/31/08 10:05 AM | Buy | MMM | 300 | $70.84 | $19.99 |
| 7/31/08 11:44 AM | Sell | HMC | 300 | $32.43 | $19.99 |
| 8/7/08 12:21 PM | Sell | MSFT | 500 | $27.64 | $19.99 |
| 8/7/08 12:31 PM | Buy | AIG | 500 | $24.38 | $19.99 |
| 8/7/08 12:56 PM | Buy | VZ | 500 | $33.59 | $19.99 |
| 8/12/08 12:26 PM | Sell | MMM | 300 | $73.99 | $19.99 |
| 8/15/08 1:43 PM | Sell | MSFT | 300 | $27.77 | $19.99 |
| 8/15/08 2:34 PM | Sell | GOOG | 50 | $510.66 | $19.99 |
| 8/21/08 9:55 AM | Open | VZ | 500 | $34.10 | $19.99 |
| 8/21/08 9:56 AM | Buy | AIG | 800 | $20.34 | $19.99 |
| 8/22/08 10:24 AM | Sell | AIG | 800 | $20.42 | $19.99 |
| | | | | | $319.84 |

**Figure 6.1 Transaction Chart**

Above is a list of dates and times of all of the trades that were made. The simulator that I used, which can be found at (http://investopedia.com) charged a brokerage fee of $19.99 per transaction, costing up to $319.84 in total. The above chart does not show gains/losses but calculating them is rather simple. Multiply the difference between buy and sell prices, and multiply by the number of shares: (Sell-Buy) x Shares = Gain / Loss

| Symbol | Buy | Sell | Quantity | Gain / Loss |
|--------|-----|------|----------|-------------|
| HMC | $32.76 | $32.43 | 300 | -$99.00 |
| GOOG | $534.16 | $510.66 | 20 | -$470.00 |
| GOOG | $480.10 | $510.66 | 30 | $916.80 |
| BAC | $27.85 | $32.74 | 500 | $2,445.00 |
| MSFT | $25.85 | $27.64 | 500 | $895.00 |
| MSFT | $25.85 | $27.77 | 300 | $576.00 |
| MMM | $70.84 | $73.99 | 300 | $945.00 |
| VZ | $33.59 | $34.10 | 500 | $255.00 |
| AIG | $20.34 | $20.42 | 800 | $64.00 |
|  |  |  |  | $5,527.80 |

**Figure 6.2 Gain/Loss Chart**

Starting with a portfolio of $30,000, the final outcome was a profit of:

**$5,527.80 - $319.84 = $5,124.80**

We can also figure out the percentage of our proceeds:

**$5,124.80 / $30,000 ~ .1708 = 17.08%**

There was an overall gain of 17.08%. Given more time, and the experience I have now, I feel that I could make this number substantially larger.

Compare the 17.08% from swing trading with the previously calculated value of %1.08 from investing in the S&P 500. Being active in the stock market appears to be more effective than investing and letting your money sit. This is not true with all types of investing, and may not necessarily turn out this way every time however.

# [7] Conclusion

As discussed previously, swing trading does not deal with great losses or gains. From what I have experienced, if you pay close attention to a stock day to day, and use technical analysis to determine a good investment. The risks of swing trading are rather low. Buying shares as soon as a stock becomes bullish, and not being greedy, albeit a small return, there is still a good chance for a positive gain.

One thing that I've learned is that swing trading requires a lot of time, and good instincts. The stocks that you are currently investing in are going to require you watching them constantly. Since swing trading depends on small day to day, or weekly changes, often times you need to sell with even a small positive change usually around a dollar or less.

I can concur with a common rhyme among swing traders; that "trends are your friends." By following a stock and relying on its MACD and its previous trends, there is a fairly good chance you can predict its movement. Of course, since the stock market is chaotic, you can never be certain.

# References

[1]      Stock Market History
http://www.bullinvestors.com/Stock_Market_History.htm

[2]      Mutual Funds – Wikipedia, The Free Encyclopedia
http://en.wikipedia.org/wiki/Mutual_fund

[3]      Bonds (Finance) – Wikipedia, The Free Encyclopedia
http://en.wikipedia.org/wiki/Bond_(finance)

[4]      Money Market - Wikipedia, The Free Encyclopedia
http://en.wikipedia.org/wiki/Money_market

[5]      Swing Trading – Wikipedia, The Free Encyclopedia
http://en.wikipedia.org/wiki/Swing_trading

[6]      Fundamental Analysis – Wikipedia, The Free Encyclopedia
http://en.wikipedia.org/wiki/Fundamental_analysis

[7]      Janssen, Cory, "Fundamental Analysis: Introduction"
http://www.investopedia.com/university/fundamentalanalysis/

[8]      Cory Janssen, Chad Langager and Casey Murphy, "Introduction to Technical Analysis
http://www.investopedia.com/university/technical/

[9]      Technical Analysis – Wikipedia, The Free Encyclopedia
http://en.wikipedia.org/wiki/Technical_analysis

[10]     Exponential Moving Average and Calculation – PandaCash
http://www.pandacash.com/technical-analysis/moving-average/exponential.htm

[11]     Exponential Moving Average – Investopedia
http://www.investopedia.com/terms/e/ema.asp

[12]     Moving Average Convergence Divergence – Investopedia
http://www.investopedia.com/terms/m/macd.asp

[13]     Bear Market – Wikipedia, The Free Encyclopedia
http://en.wikipedia.org/wiki/Bear_market

[14]     Bank of America – Wikipedia, The Free Encyclopedia
http://en.wikipedia.org/wiki/Bank_of_America

[15]    Google – Wikipedia, The Free Encyclopedia
        http://en.wikipedia.org/wiki/Google

[16]    Microsoft – Wikipedia, The Free Encyclopedia
        http://en.wikipedia.org/wiki/Microsoft

[17]    Honda – Wikipedia, The Free Encyclopedia
        http://en.wikipedia.org/wiki/Honda

[18]    Verizon Communications – Wikipedia, The Free Encyclopedia
        http://en.wikipedia.org/wiki/Verizon

[19]    AIG – Wikipedia, The Free Encyclopedia
        http://en.wikipedia.org/wiki/American_International_Group

[20]    3M Co. – Wikipedia, The Free Encyclopedia
        http://en.wikipedia.org/wiki/3M

[21]    Van Bergen, Jason, "Introduction to Types of Trading: Swing
        Traders"
        http://www.investopedia.com/articles/trading/02/101602.asp

# [Appendix] - Market Values of Selected Companies

## Google Values:

| Date | Open | High | Low | Close | Volume |
|------|------|------|------|-------|--------|
| 7/2/2008 | 536.51 | 540.38 | 526.06 | 527.04 | 4223000 |
| 7/3/2008 | 530.88 | 539.23 | 527.5 | 537 | 2400500 |
| 7/7/2008 | 542.3 | 549 | 535.6 | 543.91 | 4255200 |
| 7/8/2008 | 545.99 | 555.19 | 540 | 554.53 | 4932400 |
| 7/9/2008 | 550.76 | 555.68 | 540.73 | 541.55 | 4154000 |
| 7/10/2008 | 545 | 549.5 | 530.72 | 540.57 | 4331700 |
| 7/11/2008 | 536.5 | 539.5 | 519.43 | 533.8 | 4981400 |
| 7/14/2008 | 539 | 540.06 | 515.45 | 521.62 | 4424800 |
| 7/15/2008 | 516.28 | 527.5 | 501.1 | 516.09 | 6071000 |
| 7/16/2008 | 514.04 | 536.5 | 510.6 | 535.6 | 4742200 |
| 7/17/2008 | 534.16 | 537.05 | 524.5 | 533.44 | 8787400 |
| 7/18/2008 | 498.35 | 498.98 | 478.19 | 481.32 | 11292400 |
| 7/21/2008 | 480.88 | 484.09 | 465.7 | 468.8 | 5901500 |
| 7/22/2008 | 466.72 | 480.25 | 465.6 | 477.11 | 4691500 |
| 7/23/2008 | 481.61 | 497.23 | 478.1 | 489.22 | 4894100 |
| 7/24/2008 | 496.7 | 496.87 | 475.62 | 475.62 | 3540900 |
| 7/25/2008 | 486.49 | 493.13 | 481.5 | 491.98 | 3183500 |
| 7/28/2008 | 492.09 | 492.09 | 475.13 | 477.12 | 3160000 |
| 7/29/2008 | 479.3 | 487.26 | 478 | 483.11 | 2802800 |
| 7/30/2008 | 485.5 | 486.02 | 472.81 | 482.7 | 3490700 |
| 7/31/2008 | 474.56 | 480.89 | 471.44 | 473.75 | 2865100 |
| 8/1/2008 | 472.51 | 473.22 | 462.5 | 467.86 | 3007900 |
| 8/4/2008 | 468.12 | 473.01 | 461.9 | 463 | 2487000 |
| 8/5/2008 | 467.59 | 480.08 | 466.33 | 479.85 | 3584500 |
| 8/6/2008 | 478.37 | 489.77 | 472.51 | 486.34 | 3375800 |
| 8/7/2008 | 482 | 484 | 476.41 | 479.12 | 2773800 |
| 8/8/2008 | 480.15 | 495.75 | 475.69 | 495.01 | 3739300 |
| 8/11/2008 | 492.47 | 508.88 | 491.78 | 500.84 | 4239300 |
| 8/12/2008 | 502 | 506.13 | 498 | 502.61 | 2755700 |
| 8/13/2008 | 501.6 | 503.54 | 493.88 | 500.03 | 3625500 |
| 8/14/2008 | 497.7 | 507.61 | 496.29 | 505.49 | 2918600 |
| 8/15/2008 | 506.99 | 510.66 | 505.5 | 510.15 | 3545700 |
| 8/18/2008 | 509.84 | 510 | 495.51 | 498.3 | 3333900 |
| 8/19/2008 | 490.43 | 498.28 | 486.63 | 490.5 | 3046500 |
| 8/20/2008 | 494.72 | 496.69 | 482.57 | 485 | 3982100 |
| 8/21/2008 | 482.92 | 489.9 | 479.27 | 486.53 | 3514100 |
| 8/22/2008 | 491.5 | 494.88 | 489.48 | 490.59 | 2297200 |

## Microsoft Values:

| Date | Open | High | Low | Close | Volume | Adj Close |
|------|------|------|-----|-------|--------|-----------|
| 7/1/2008 | 27.27 | 27.38 | 26.44 | 26.87 | 1.00E+08 | 26.76 |
| 7/2/2008 | 26.9 | 27 | 25.88 | 25.88 | 84669000 | 25.78 |
| 7/3/2008 | 25.97 | 26.1 | 25.6 | 25.98 | 37074500 | 25.88 |
| 7/7/2008 | 26.11 | 26.39 | 25.45 | 26.03 | 71527600 | 25.93 |
| 7/8/2008 | 25.93 | 26.2 | 25.51 | 25.85 | 65553200 | 25.75 |
| 7/9/2008 | 25.79 | 25.85 | 25.18 | 25.23 | 54255800 | 25.13 |
| 7/10/2008 | 25.2 | 25.67 | 24.98 | 25.45 | 57830600 | 25.35 |
| 7/11/2008 | 25.16 | 25.64 | 24.87 | 25.25 | 69532600 | 25.15 |
| 7/14/2008 | 25.48 | 25.81 | 25.07 | 25.15 | 51216200 | 25.05 |
| 7/15/2008 | 24.93 | 26.64 | 24.93 | 26.15 | 92719300 | 26.05 |
| 7/16/2008 | 26.13 | 27.29 | 25.92 | 27.26 | 82060400 | 27.15 |
| 7/17/2008 | 27.58 | 27.91 | 27.11 | 27.52 | 96526100 | 27.41 |
| 7/18/2008 | 26.36 | 26.47 | 25.11 | 25.86 | 1.50E+08 | 25.76 |
| 7/21/2008 | 25.66 | 26.17 | 25.53 | 25.64 | 77575600 | 25.54 |
| 7/22/2008 | 25.54 | 25.94 | 25.48 | 25.8 | 88657200 | 25.7 |
| 7/23/2008 | 25.86 | 26.84 | 25.85 | 26.43 | 79408800 | 26.33 |
| 7/24/2008 | 26.09 | 26.17 | 25.44 | 25.44 | 81092600 | 25.34 |
| 7/25/2008 | 25.64 | 26.22 | 25.5 | 26.16 | 58682300 | 26.06 |
| 7/28/2008 | 26.06 | 26.11 | 25.34 | 25.5 | 59707800 | 25.4 |
| 7/29/2008 | 25.52 | 26.19 | 25.4 | 26.11 | 66368200 | 26.01 |
| 7/30/2008 | 26.2 | 26.49 | 25.9 | 26.23 | 51977700 | 26.13 |
| 7/31/2008 | 25.85 | 26.28 | 25.71 | 25.72 | 60461000 | 25.62 |
| 8/1/2008 | 25.92 | 25.95 | 25.07 | 25.44 | 82720200 | 25.34 |
| 8/4/2008 | 25.39 | 25.55 | 25.11 | 25.28 | 60588300 | 25.18 |
| 8/5/2008 | 25.64 | 26.28 | 25.5 | 26.21 | 84297600 | 26.11 |
| 8/6/2008 | 26.73 | 27.16 | 26.38 | 27.02 | 95550000 | 26.91 |
| 8/7/2008 | 26.9 | 27.75 | 26.73 | 27.39 | 82565800 | 27.28 |
| 8/8/2008 | 27.35 | 28.23 | 27.19 | 28.13 | 80814100 | 28.02 |
| 8/11/2008 | 27.86 | 28.4 | 27.66 | 27.9 | 68743800 | 27.79 |
| 8/12/2008 | 27.78 | 28.36 | 27.58 | 28.12 | 62813000 | 28.01 |
| 8/13/2008 | 28.07 | 28.5 | 27.76 | 27.91 | 51165200 | 27.8 |
| 8/14/2008 | 27.82 | 28.28 | 27.56 | 27.91 | 49732300 | 27.8 |
| 8/15/2008 | 27.98 | 28.15 | 27.58 | 27.81 | 47267400 | 27.7 |
| 8/18/2008 | 27.78 | 28.05 | 27.55 | 27.69 | 38078200 | 27.58 |
| 8/19/2008 | 27.54 | 27.75 | 27.27 | 27.32 | 40332900 | 27.32 |
| 8/20/2008 | 27.54 | 27.58 | 27.17 | 27.29 | 41497200 | 27.29 |
| 8/21/2008 | 27.1 | 27.23 | 26.86 | 27.18 | 43614200 | 27.18 |
| 8/22/2008 | 27.23 | 27.88 | 27.22 | 27.84 | 47930400 | 27.84 |

## Honda Values:

| Date | Open | High | Low | Close | Volume | Adj Close |
|------|------|------|-----|-------|--------|-----------|
| 7/1/2008 | 33.7 | 34.27 | 33.54 | 34.02 | 2181400 | 34.02 |
| 7/2/2008 | 34.01 | 34.33 | 33.25 | 33.29 | 1481400 | 33.29 |
| 7/3/2008 | 33.4 | 34.04 | 33.4 | 33.57 | 796400 | 33.57 |
| 7/7/2008 | 33.97 | 34 | 33.27 | 33.48 | 1519700 | 33.48 |
| 7/8/2008 | 33.5 | 33.83 | 33.11 | 33.4 | 2826600 | 33.4 |
| 7/9/2008 | 33.44 | 34.37 | 33.44 | 33.6 | 2452700 | 33.6 |
| 7/10/2008 | 33.77 | 34.11 | 33.57 | 33.99 | 681400 | 33.99 |
| 7/11/2008 | 33.12 | 33.83 | 33 | 33.43 | 773500 | 33.43 |
| 7/14/2008 | 33.41 | 33.44 | 32.59 | 32.73 | 1207600 | 32.73 |
| 7/15/2008 | 32.08 | 32.63 | 31.9 | 32.38 | 1544900 | 32.38 |
| 7/16/2008 | 32.17 | 32.9 | 32.08 | 32.9 | 2542700 | 32.9 |
| 7/17/2008 | 32.76 | 33.23 | 32.54 | 33.02 | 2010000 | 33.02 |
| 7/18/2008 | 32.66 | 32.9 | 32.5 | 32.76 | 969000 | 32.76 |
| 7/21/2008 | 33.85 | 33.85 | 32.56 | 32.7 | 406700 | 32.7 |
| 7/22/2008 | 33.12 | 34.14 | 33.09 | 34.12 | 1515400 | 34.12 |
| 7/23/2008 | 34.25 | 34.98 | 34.25 | 34.67 | 1064100 | 34.67 |
| 7/24/2008 | 35.2 | 35.42 | 34.67 | 34.76 | 930500 | 34.76 |
| 7/25/2008 | 35.1 | 35.67 | 33.79 | 33.95 | 701300 | 33.95 |
| 7/28/2008 | 34.36 | 34.36 | 33.13 | 33.29 | 1013500 | 33.29 |
| 7/29/2008 | 33.25 | 33.66 | 33 | 33.47 | 1086600 | 33.47 |
| 7/30/2008 | 32.72 | 32.84 | 32.33 | 32.69 | 940700 | 32.69 |
| 7/31/2008 | 32.4 | 32.54 | 31.96 | 31.99 | 784500 | 31.99 |
| 8/1/2008 | 32.77 | 32.77 | 31.66 | 31.93 | 790800 | 31.93 |
| 8/4/2008 | 30.6 | 30.6 | 30.07 | 30.32 | 1040800 | 30.32 |
| 8/5/2008 | 30.5 | 31.61 | 30.5 | 31.57 | 594200 | 31.57 |
| 8/6/2008 | 31.83 | 31.97 | 31.19 | 31.84 | 693100 | 31.84 |
| 8/7/2008 | 31.33 | 31.71 | 31.2 | 31.27 | 643100 | 31.27 |
| 8/8/2008 | 31.27 | 32.63 | 31.21 | 32.52 | 1094800 | 32.52 |
| 8/11/2008 | 32.84 | 33.36 | 32.84 | 33.08 | 1043400 | 33.08 |
| 8/12/2008 | 33.69 | 33.93 | 33.51 | 33.74 | 1045100 | 33.74 |
| 8/13/2008 | 33.9 | 33.94 | 33.33 | 33.69 | 1125800 | 33.69 |
| 8/14/2008 | 33.79 | 33.84 | 33.13 | 33.64 | 968000 | 33.64 |
| 8/15/2008 | 33.58 | 33.93 | 33.58 | 33.88 | 325100 | 33.88 |
| 8/18/2008 | 33.99 | 33.99 | 33.13 | 33.42 | 302900 | 33.42 |
| 8/19/2008 | 32.8 | 33 | 32.43 | 32.7 | 1057100 | 32.7 |
| 8/20/2008 | 32.25 | 32.68 | 32.22 | 32.65 | 482400 | 32.65 |
| 8/21/2008 | 32.4 | 32.61 | 32.04 | 32.49 | 314500 | 32.49 |
| 8/22/2008 | 32.1 | 32.32 | 31.89 | 32.31 | 539200 | 32.31 |

## 3M Co. Values:

| Date | Open | High | Low | Close | Volume | Adj Close |
|---|---|---|---|---|---|---|
| 7/1/2008 | 68.66 | 70.05 | 67.57 | 69.78 | 6353100 | 69.29 |
| 7/2/2008 | 70.18 | 70.18 | 68.48 | 68.48 | 4661200 | 68 |
| 7/3/2008 | 68.77 | 69.96 | 68.68 | 69.46 | 3083300 | 68.97 |
| 7/7/2008 | 69.89 | 70.88 | 69.28 | 69.85 | 4913300 | 69.36 |
| 7/8/2008 | 69.92 | 71.17 | 69.52 | 71.03 | 5163700 | 70.53 |
| 7/9/2008 | 70.1 | 71.21 | 68.56 | 68.64 | 6226600 | 68.16 |
| 7/10/2008 | 68.79 | 69.75 | 68.3 | 68.92 | 5286200 | 68.44 |
| 7/11/2008 | 68.27 | 69.38 | 67.76 | 68.72 | 6262400 | 68.24 |
| 7/14/2008 | 69.41 | 70 | 68.65 | 69.02 | 5117900 | 68.54 |
| 7/15/2008 | 68.61 | 68.67 | 67.26 | 67.69 | 8230000 | 67.22 |
| 7/16/2008 | 67.9 | 68.67 | 67.28 | 68.64 | 4636500 | 68.16 |
| 7/17/2008 | 69.22 | 69.58 | 67.54 | 69.45 | 5856300 | 68.96 |
| 7/18/2008 | 69.48 | 69.53 | 68.3 | 68.94 | 4473900 | 68.46 |
| 7/21/2008 | 69.36 | 69.7 | 67.92 | 68.73 | 3354600 | 68.25 |
| 7/22/2008 | 68.12 | 70.45 | 68.1 | 70.3 | 5804800 | 69.81 |
| 7/23/2008 | 70.47 | 71.06 | 70.06 | 70.8 | 4189600 | 70.3 |
| 7/24/2008 | 72.4 | 72.77 | 70.91 | 71.05 | 6515000 | 70.55 |
| 7/25/2008 | 71.53 | 71.9 | 70.23 | 70.95 | 4947500 | 70.45 |
| 7/28/2008 | 70.87 | 70.99 | 69.39 | 69.63 | 4832600 | 69.14 |
| 7/29/2008 | 69.77 | 70.57 | 69.55 | 70.49 | 3599600 | 70 |
| 7/30/2008 | 70.75 | 71.44 | 70.05 | 71.3 | 3860200 | 70.8 |
| 7/31/2008 | 70.84 | 71.25 | 70.29 | 70.39 | 4254200 | 69.9 |
| 8/1/2008 | 70.53 | 71.06 | 69.84 | 70.15 | 3026400 | 69.66 |
| 8/4/2008 | 70.03 | 70.44 | 69.35 | 69.75 | 2279700 | 69.26 |
| 8/5/2008 | 70.23 | 72.03 | 70 | 71.88 | 4878600 | 71.38 |
| 8/6/2008 | 71.75 | 72.08 | 70.84 | 71.81 | 3929000 | 71.31 |
| 8/7/2008 | 71.33 | 72.04 | 70.65 | 71.18 | 4324200 | 70.68 |
| 8/8/2008 | 71.14 | 73.91 | 71.14 | 73.48 | 5424900 | 72.96 |
| 8/11/2008 | 73.19 | 74.68 | 73.18 | 74.38 | 5461500 | 73.86 |
| 8/12/2008 | 74.54 | 74.54 | 73.38 | 73.6 | 4087600 | 73.08 |
| 8/13/2008 | 73.49 | 73.94 | 72.2 | 72.96 | 3847600 | 72.45 |
| 8/14/2008 | 72.55 | 73.87 | 72.21 | 73.04 | 2992100 | 72.53 |
| 8/15/2008 | 73.09 | 74.1 | 73.09 | 73.49 | 4407800 | 72.97 |
| 8/18/2008 | 73.59 | 73.9 | 72.04 | 72.45 | 4294100 | 71.94 |
| 8/19/2008 | 72.15 | 72.31 | 70.85 | 71.31 | 3688200 | 70.81 |
| 8/20/2008 | 71.24 | 71.43 | 70.29 | 70.69 | 2930700 | 70.69 |
| 8/21/2008 | 70.26 | 71.29 | 69.75 | 70.91 | 2978000 | 70.91 |
| 8/22/2008 | 70.91 | 72.71 | 70.54 | 72.28 | 3062400 | 72.28 |

## Verizon Values:

| Date | Open | High | Low | Close | Volume | Adj Close |
|---|---|---|---|---|---|---|
| 7/1/2008 | 34.97 | 35.99 | 34.76 | 35.53 | 22806500 | 35.1 |
| 7/2/2008 | 35.72 | 35.99 | 35.5 | 35.63 | 17068700 | 35.2 |
| 7/3/2008 | 35.67 | 36.1 | 35.51 | 35.75 | 10597200 | 35.32 |
| 7/7/2008 | 35.94 | 36.33 | 34.86 | 35.43 | 16144500 | 35 |
| 7/8/2008 | 35.17 | 35.68 | 34.72 | 35.36 | 14601400 | 35.36 |
| 7/9/2008 | 35.47 | 35.97 | 34.61 | 34.66 | 12818100 | 34.66 |
| 7/10/2008 | 34.74 | 34.96 | 34.3 | 34.9 | 16304500 | 34.9 |
| 7/11/2008 | 34.53 | 35.32 | 34.21 | 34.92 | 13349700 | 34.92 |
| 7/14/2008 | 35.28 | 35.45 | 34.73 | 34.88 | 12616000 | 34.88 |
| 7/15/2008 | 34.54 | 35.57 | 34.2 | 35.04 | 20665700 | 35.04 |
| 7/16/2008 | 35.02 | 35.43 | 34.48 | 35.38 | 12783000 | 35.38 |
| 7/17/2008 | 35.5 | 35.6 | 34.97 | 35.43 | 15215000 | 35.43 |
| 7/18/2008 | 35.52 | 35.54 | 34.98 | 35.45 | 13339500 | 35.45 |
| 7/21/2008 | 35.52 | 35.66 | 35 | 35.15 | 8958000 | 35.15 |
| 7/22/2008 | 34.97 | 35.33 | 34.24 | 34.68 | 17923500 | 34.68 |
| 7/23/2008 | 34.79 | 36.16 | 34.67 | 35.84 | 17123300 | 35.84 |
| 7/24/2008 | 36.07 | 36.07 | 34.96 | 35.09 | 12152300 | 35.09 |
| 7/25/2008 | 35.06 | 35.41 | 34.1 | 34.45 | 12867200 | 34.45 |
| 7/28/2008 | 34.07 | 34.33 | 33.35 | 33.6 | 20265600 | 33.6 |
| 7/29/2008 | 33.79 | 34.42 | 33.69 | 34.13 | 15601100 | 34.13 |
| 7/30/2008 | 34.25 | 34.49 | 33.86 | 34.34 | 13647100 | 34.34 |
| 7/31/2008 | 34.07 | 34.92 | 33.95 | 34.04 | 20438000 | 34.04 |
| 8/1/2008 | 34.44 | 34.64 | 33.97 | 34 | 16929900 | 34 |
| 8/4/2008 | 34.13 | 34.31 | 33.5 | 33.83 | 11209500 | 33.83 |
| 8/5/2008 | 34.17 | 34.68 | 33.74 | 34.55 | 13631000 | 34.55 |
| 8/6/2008 | 34.49 | 34.62 | 33.96 | 34.24 | 12928700 | 34.24 |
| 8/7/2008 | 34.03 | 34.28 | 33.41 | 33.7 | 16211600 | 33.7 |
| 8/8/2008 | 33.81 | 34.74 | 33.7 | 34.59 | 13838800 | 34.59 |
| 8/11/2008 | 34.79 | 35.64 | 34.62 | 35.3 | 12324300 | 35.3 |
| 8/12/2008 | 35.25 | 35.26 | 34.61 | 34.82 | 12806000 | 34.82 |
| 8/13/2008 | 34.78 | 34.87 | 34 | 34.35 | 10989900 | 34.35 |
| 8/14/2008 | 34.1 | 34.9 | 33.8 | 34.69 | 11068600 | 34.69 |
| 8/15/2008 | 34.84 | 35.25 | 34.7 | 34.96 | 11371500 | 34.96 |
| 8/18/2008 | 35.03 | 35.38 | 34.49 | 34.74 | 10781600 | 34.74 |
| 8/19/2008 | 34.61 | 34.78 | 34.05 | 34.2 | 9186300 | 34.2 |
| 8/20/2008 | 34.35 | 34.75 | 33.83 | 34.45 | 10785000 | 34.45 |
| 8/21/2008 | 34.1 | 34.74 | 34.01 | 34.57 | 9518200 | 34.57 |
| 8/22/2008 | 34.84 | 35.46 | 34.71 | 35.29 | 10268600 | 35.29 |

# AIG Values:

| Date | Open | High | Low | Close | Volume | Adj Close |
|---|---|---|---|---|---|---|
| 7/1/2008 | 26.09 | 27.03 | 25.7 | 26.73 | 40648700 | 26.73 |
| 7/2/2008 | 26.77 | 27.34 | 26.47 | 26.75 | 30708000 | 26.75 |
| 7/3/2008 | 27.04 | 27.04 | 25.77 | 26.24 | 17312600 | 26.24 |
| 7/7/2008 | 26.4 | 26.75 | 25.31 | 25.94 | 29188800 | 25.94 |
| 7/8/2008 | 25.91 | 27.52 | 25.4 | 27.4 | 32825900 | 27.4 |
| 7/9/2008 | 27.4 | 27.72 | 26 | 26.14 | 29648700 | 26.14 |
| 7/10/2008 | 25.71 | 26.22 | 23.76 | 23.99 | 50615000 | 23.99 |
| 7/11/2008 | 23.17 | 23.9 | 21.75 | 23.08 | 60884000 | 23.08 |
| 7/14/2008 | 24 | 24.49 | 22.49 | 22.55 | 31053900 | 22.55 |
| 7/15/2008 | 21.55 | 22.08 | 19.73 | 20.64 | 71398800 | 20.64 |
| 7/16/2008 | 21 | 23.28 | 20.7 | 23.28 | 49372900 | 23.28 |
| 7/17/2008 | 23.77 | 24.93 | 23.13 | 24.92 | 51327500 | 24.92 |
| 7/18/2008 | 25.04 | 25.17 | 23.88 | 25.07 | 38746900 | 25.07 |
| 7/21/2008 | 26.36 | 28.19 | 26.36 | 26.53 | 49439400 | 26.53 |
| 7/22/2008 | 26.17 | 28.39 | 25.1 | 28.14 | 36440500 | 28.14 |
| 7/23/2008 | 28.23 | 31.09 | 28.23 | 30.1 | 50158200 | 30.1 |
| 7/24/2008 | 30.22 | 30.25 | 27.11 | 27.43 | 41909900 | 27.43 |
| 7/25/2008 | 27.68 | 28.47 | 26.8 | 27.24 | 32486700 | 27.24 |
| 7/28/2008 | 27.22 | 27.75 | 23.81 | 23.96 | 45045400 | 23.96 |
| 7/29/2008 | 23.24 | 25.85 | 22.14 | 25.85 | 62548200 | 25.85 |
| 7/30/2008 | 26.32 | 27.58 | 25.49 | 26.76 | 39607200 | 26.76 |
| 7/31/2008 | 26.31 | 27.3 | 25.85 | 26.05 | 28531500 | 26.05 |
| 8/1/2008 | 26.52 | 27.03 | 25.5 | 26.79 | 23483900 | 26.79 |
| 8/4/2008 | 26.79 | 27.21 | 25.94 | 26.69 | 21809200 | 26.69 |
| 8/5/2008 | 28 | 29.9 | 27.83 | 29.89 | 41651600 | 29.89 |
| 8/6/2008 | 29.21 | 29.47 | 28.08 | 29.09 | 35764300 | 29.09 |
| 8/7/2008 | 25.5 | 25.72 | 23.53 | 23.84 | 1.55E+08 | 23.84 |
| 8/8/2008 | 23.88 | 25.16 | 23.34 | 24.87 | 60725400 | 24.87 |
| 8/11/2008 | 24.9 | 25.16 | 23.92 | 24.47 | 40907900 | 24.47 |
| 8/12/2008 | 24.06 | 24.07 | 22.59 | 22.85 | 43599600 | 22.85 |
| 8/13/2008 | 22.78 | 22.8 | 21.34 | 22.05 | 54653100 | 22.05 |
| 8/14/2008 | 21.96 | 23.04 | 21.56 | 22.82 | 31996500 | 22.82 |
| 8/15/2008 | 23.27 | 23.39 | 22.68 | 22.99 | 30980900 | 22.99 |
| 8/18/2008 | 22.84 | 22.89 | 21.55 | 21.6 | 32547300 | 21.6 |
| 8/19/2008 | 20.56 | 21.13 | 19.75 | 20.32 | 58418200 | 20.32 |
| 8/20/2008 | 20.47 | 21.24 | 19.78 | 20.8 | 38243100 | 20.8 |
| 8/21/2008 | 20.34 | 20.57 | 19.48 | 19.78 | 47311500 | 19.78 |
| 8/22/2008 | 20.41 | 20.42 | 19.49 | 19.87 | 47655900 | 19.87 |