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Stock Market Simulation

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Abstract

By researching investing strategies and the stock market through electronic and print sources, an eight-week stock market simulation was conducted to test three separate stock trading methods. The methods were: Buy and Hold, the Penny Stock method, and the Contrarian method. All three methods began with $100,000 of investing money and the amount of money was compared at the end of the 8-week period. The knowledge and experience gained from this project will be helpful in future realistic investments.

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1. Introduction

1.1 Goals and Methods

The primary goal of this stock market simulation is to gain an understanding of stock market concepts and investment concepts providing a foundation for future real-life investing. The goal is to be achieved through stock market research and an eight week simulation of several investing strategies. The secondary goal of the simulation is achieve an overall profit on each simulation carried out.

The first simulation that was carried out consisted of a portfolio of stocks chosen by a buy and hold investment strategy. This strategy is a passive strategy because once the initial stocks are bought there is normally no trading in the portfolio until the stocks all sold at the end of the predetermined time period. $100,000 was used to purchase the stocks in our portfolio, and both fundamental and technical analysis was used to determine which stocks to buy. Stocks were not to be traded but were to be held for the entire simulation.

The second simulation was carried out using a penny stock strategy. The penny stock investment strategy is very aggressive, as stocks are traded very frequently. In this simulation, $100,000 was invested initially in several stocks trading at less than $2.00 per share. The stocks were chosen according to a variety of criteria, including analysts' opinions, profit margin, company size, and business sector. The Penny Stock method conducted three separate simulations with different set selling prices; a conservative, a semi-conservative, and an aggressive method. Stocks were traded when stock prices reached +/-5%, 10%, or 15% of the buying price in the conservative, semi-conservative, and aggressive method respectively. Stocks were to be kept in the portfolio for no longer than a week.

The third simulation was carried out using a Contrarian investment strategy. This strategy is passive, and stocks are traded in a similar pattern to the buy and hold strategy. According to this strategy, the market is ignored and stocks are bought according to value. $100,000 was invested initially on stocks, and both fundamental and technical analyses were used to select the stocks. Unlike the Buy and Hold strategy, if the stock price fell below eighty percent of the original price, the stock was sold.

1.2 History of the Stock Market

The "stock market" is a collective expression which refers to a market which enable trading of company "stocks" (collective shares), securities, and derivatives. This form of trading is thought to be invented by the Muslin and Jewish merchants of the 11th century, from the fact that they had a strong foundation of credit and payment allowing transactions for trade.[3] Though this early form of the stock market may have existed in the 11th century, the oldest existing stock certificate was issued in 1606 for a stock of a Dutch spice trading company called the Vereinigte Oostindische Compaignie.[3] The stock market in the Old World was comprised of mainly businesses associated with the spice trade or the shipping business.

The stock market emerged in America in the form of the New York Stock Exchange and Wall Street which are the two major trading markets and founded both in New York. The first transactions took place in 1725 in the open streets of Wall Street, where commodities such as tobacco, wheat, securities, and slaves were traded.[3] This was the first form of market, which consisted of dealers meeting at noon at 22 Wall Street to carry out trades with consumers through a form of auctioning prices. Later, revolutionary war bonds were sold as securities, while stocks of the First Bank of the United States became available and caught the attention of the public who were interested in investing to make profit.[2]

In the beginning there was no "brokers" who specialized in trading securities, but merchants and auctioneers. In 1792, a group of people left the commodity based 22 Wall Street to form a separate organization which specialized in brokerage.[2] They made and signed an agreement known as the Buttonwood Tree Agreement which later in history became the founders of the New York Stock Exchange.

> We the subscribers, Brokers for the Purchase and Sale of Public Stock do hereby solemnly promise to pledge ourselves to each other , that we will not buy or sell from this day for any person whatsoever, any kind of Public Stock, at less than one quarter of one per cent Commission on the Specie value and that we will give preference to each other in our Negotiations… [2]

This agreement constructed the formal position of brokers and a system for charging commissions. This set the basis for the stock market and gradually as time passed the number of companies and wealth increased in the market.

1.3 Historical Stock Market Crashes

The Dow Jones Industrial Average (DJIA), or commonly known as 'The Dow') is one of many stock market indices which allow for measure the trends of the market.[1]

The Dow is comprised of a list of the thirty largest and prominent companies and the average of the price is calculated to give a value for the Dow. Historically the stock market has suffered many crashes which are characterized by a sharp decline in stock prices over a short period of time, followed with a long recovery period.

The top 3 most devastating crashes are from the period of 1906-1907, 1937-1938, and in 1932 and can be identified by significant decrease in DJIA prices.[1] The 1906-1907 crash is also known as the 'the panic of 1907 which resulted in a DJIA loss of 48.5% over a period of 665 days.[1] The 1937-1938 crash occurred during a period of recovery after the great depression. This was caused by a combination of World War II and the Wall Street scandals. The crash amounted to a decrease in DJIA from 194.40 to 98.95 which equates to a fall of 49.1% in stock price.[1] The greatest crash in history took place in 1932, causing a loss of 86.0%, and a DJIA drop of 294 to 41.22.[1] This crash was devastating not only in terms of percent loss, but because it also took 22 years to recover.

2. Different Types of Investments

2.1 Capital Markets

In its simplest form, a capital market is any market in which an entity can raise money to fund operations or long-term investments. Two of the most common forms of capital markets are bond markets and stock markets. In general, corporations and governments rely on capital markets more so than small businesses and individual people. An advantage of trading on capital markets is the ability to buy and sell assets continuously. Because these markets are a source of income for investors, the ability to drop a rapidly declining stock now instead of waiting until the end of a period to trade gives the investor great flexibility and a higher probability of turning a profit. In order for investors to manipulate the markets to their full advantage, a free flow of information is needed. This keeps investors up-to-date on developments and allows them to gauge the true value of their stocks. Today there are multitudes of sources of information, the most prominent being the Internet. Newspapers and economic magazines also provide much of the knowledge for investors as well. Within these articles, one might find economic reports on companies, opinions from various market analysts, plus prices of assets within the markets, all of which influence the decisions of the investor.[14]

In this report, we focus on the stock market. The stock market plays a huge role in the American economy; when stock prices increase, stockholders often spend more, promoting economic growth. The stock market also provides instant feedback to corporate executives about how the performance of their companies is judged. Opinions of new government policies that affect the economy can be reflected in stock prices. If investors believe that a new policy hurts the economy, the market declines. If the policy is thought to help the economy, the market improves. Overall, the stock market is the most commonly used capital market, as forty percent of U.S. families were stockholders in the mid-1990s.[14]

2.2 Commodity Exchange

A commodity exchange, also known as a futures market or futures exchange, is an organized market for the purchase and of contracts to deliver a commodity such as wheat, gold, or even U.S. Treasury bills on a future date. These contracts are called futures, and they are competitively traded by investors in an auction-like process on the commodity exchanges. Other financial instruments like options or indexes can be traded on these exchanges. An option conveys the right to engage in a future transaction on a futures contract or a security; however the owner of the option does not have to exercise the right, which makes it different from a futures contract. An index is a method of measuring a market as a whole; for instance, a stock market index measures the value of a market of stocks.[15]

When two parties enter into a futures contract, they do not plan on giving or receiving the commodity. The buyer or seller usually enters into another transaction, not necessarily with the same person, which offsets the obligation from the original contract. The exchange provides a basis for the determination of the prices at which the commodities will actually be traded. Essentially, a commodity exchange insures against the risk of a price change in a commodity by transferring the risk to speculators who will assume the risk.[15]

2.3 Money Markets

A money market is a set of institutions, conventions, and practices that wants to facilitate lending and borrowing money on a short term basis, similar to capital markets. The main difference is that capital markets look to trade on a mid to long term basis. For money markets, the money is tied up in a range of assets that can be turned into cash on short notice, such as bank notes and bills of exchange. The market is comprised of specialized facilities that handle bulk quantities of whichever assets are being traded. Commercial banks, savings institutions, and other finance establishments rely on the existence of money markets because they are necessary for these institutions to do their jobs, while the markets rely on competition among the bulk suppliers and seekers of funds to work out the best distribution of funds.[16]

For transactions of this type, the buyers and sellers rely on middlemen to be brokers or dealers. The characteristics of these middlemen vary from country to country, but in all cases communication between the middlemen and the other parties of the transaction is open and free. This allows the people involved to get or pay a good price on the asset that fairly reflects all influence on its selling price. There exists a unifying force of competition that is evident in similar transactions, and the competition is usually shown by different interest rates between transactions. If there are continuous fluctuations in interest rates, they are normally caused by pressures from supply and demand.[16]

2.4 Derivatives Markets

Derivatives markets are the financial markets for derivatives. A derivative is a security, usually a contract between two or more parties, whose price is dependent upon one or more underlying assets.[17] The fluctuations in underlying assets determine the value of the derivative. Common underlying assets include stocks, bonds, commodities, and market indexes. The most common types of derivatives are futures contracts, forward contracts, options, and swaps. A forward contract is a cash transaction in which delivery of a commodity is deferred until a contract has been made, with the price being set on the date of transaction. A swap is "the exchange of one security for another to change the maturity date (bonds), quality of issues (stocks or bonds), or because the investment objectives have changed."[26] Generally, derivatives are used to hedge risk but can be used for speculative purposes.

There are two market types on which derivatives are traded. Often derivatives are traded on futures markets in standard derivatives contracts. The other market where one could trade derivatives is an over-the-counter market.[17] These markets are not traded on exchanges, but trading is often accomplished by phone, telegraph, or a leased private wire. Trading on over-the-counter is more individual based, as dealers more often than not buy and sell for their own accounts, and often specialize in certain issues. Investors can either deal directly with dealers or can hire brokers who can find them the best price.[18]

2.5 Foreign Exchange Markets

The foreign exchange market is the world's largest trading market, with almost $2 trillion traded daily. This market, also known as the forex market, is the market on which the world currencies are traded. All trading is done over-the-counter, with no central marketplaces, allowing the forex market to be the most liquid of all markets. This also allows traders to deal with multiple dealers, which results in price comparisons. The larger a dealer is, usually the dealer has better access to pricing at the world's largest banks, and can pass that information onto clients.[20]

All trades involve buying one currency and selling another at the same time. The value of one currency is determined by comparison to the other currency chosen. The first currency is called the "base" currency, while the other is referred to as the "counter" currency. The pair shows how much of the counter currency is needed to buy one unit of the base. The currency pair can be thought of as a single unit bought or sold. If a pair is bought, the base currency was sold and the counter was bought; the opposite holds true if the pair is sold. There are four common currency pairs that are traded: the Euro and the US Dollar; the US Dollar and the Japanese Yen; the British Pound Sterling and the US Dollar; and the US Dollar and the Swiss Franc.[20]

3. Types of Investment Strategies

3.1 Buy and Hold Strategy

The buy and hold investment strategy is very passive. The investor actively researches which stocks to purchase for a portfolio and then holds onto the stocks for a long period of time without any transactions in the meantime. At the end of the period, the investor presumably sells his stock for a profit. The investor should expect the stocks to fluctuate in price, even post a loss during a large fraction of the overall period, but should not trade the stocks.[24] Typical portfolios diversify between stocks or even different types of investments in order to reduce risk.

There are two prominent strategies in selecting stocks: growth and value investing. When growth investing, the investor should research young companies that have carved out a significant market share and are now poised to make even bigger gains. Common traits between growing stocks are rising sales, steady profits, and generally rank high in the S&P 500. For value investing, the investor should examine stocks that are not doing well but are in good position to improve greatly in the future. The low prices that are typically seen in value stocks can be caused by poor management or new competition in the market that can drive down market share and profits for a short period of time. When comparing the success of growth investing versus value investing, generally value investing outperforms growth investing over the long haul. However, balancing between both is suggested because it normally leads to an overall average return, since it is not guaranteed that a value stock will rise dramatically in price. If given enough time, however implemented, investors usually see great results using the buy and hold method.[25]

3.2 Penny Stock Strategy

Penny stocks are appealing as they are cheap to buy and trade, and have the potential for high profit within a time period of several days. Stocks are usually traded for prices under $5 a share and transactions are placed through over the counter (OTC), quotation services and through Pink Sheets. A penny stock is defined as a stock which is traded outside of major exchanges and often characterized by being a speculative security and having a low price.

Penny stocks provide a market of high risk investment, as sudden changes in demand or supply of a stock can lead to sharp increase or decrease in stock price. This lack of liquidity and volatility is caused due to the fact that the penny stock market has fewer shareholders.

Another reason why penny stocks are a high risk investment is because there is a minimal requirement for enlisting in penny stock market. Therefore companies which fail to enlist in major stock exchanges come to enlist in penny stocks. Besides the high risk characteristics of penny stocks, fraud and manipulation of company information is prevalent which adds more risks.

3.3 Contrarian Strategy

A Contrarian investor practices similar trading habits as a buy and hold investor, focusing on long-term investing and patience with stocks. However, Contrarians take this strategy a little further by focusing on stocks in turnaround situations and stocks that are currently out of favor with investors. Companies that are undervalued for the wrong reasons are coveted, as the market eventually rises to the true value over time.[23]

Contrarian investing is a low-risk method for looking for superior long-term returns. This is because the stock prices are already low to begin with, and are more likely to go up than farther down. Stocks may also have a high dividend yield, which offsets potential losses. A Contrarian preaches rational thought when it comes to choosing stocks, recognizing that people tend to over rely on the experts for advice. In addition, investors tend to overreact, selling earlier than they should and letting their emotions rule how they trade. Instead, patience should be used in order to capitalize on the investments.[23]

3.4 Short Selling Strategy

Short selling is an investment strategy applied to stock trading, often applied during bear market periods. When one short sells a stock, the investor first sells a stock that the investor does not own, but is promised to be bought later. An example of a short sell is if a broker lends an amount of shares of a stock to an investor, which the investor subsequently sells. The proceeds go into the investor's account; later, the investor buys the same amount of shares of the stock that was sold earlier. A profit is made on the difference between the selling and buying prices, assuming that the buying price was lower.[21]

There are two motivations for investors to short sell. The most obvious reason is that the investor is speculating that the stock is going to fall in price, trying to capitalize on an overpriced market. The other motivation is to hedge a long position, such as buying and holding a stock, with an offsetting short position to reduce the risk in the investments.[21] When it comes to short selling, there are several risks. The first risk that is accepted is that the stock may go up in price; over time it has been proven that the majority of stocks appreciate, with inflation also aiding the in the rise. Another risk is that losses may be infinite. A stock price may rise to infinity, but the largest profit occurs if the company goes out of business. Short sellers often create their own risk when a stock price goes up. Once a price rises, many short sellers will buy the stock back to cover their borrowings, which in turn causes the price to go up at a faster rate. The most frustrating risk occurs when the stock is correctly judged to be falling in price, but the investor is unable to fully capitalize on their judgment for various reasons, such as the lender forcing the investor to cover.[22] Overall, short selling can be a powerful investing strategy if the investor is shrewd enough.

3.5 Fundamental Analysis

A fundamental analysis approaches stocks by reviewing "facts" while a technical analysis would approach stocks based on individual perception of values and trends. Fundamental analysis of a stock involves analyzing historical and all present data available to produce a forecast for a particular stock. A fundamental analysis involves analysis of financial statements, company decisions and internal managements, the credit risks, and the stocks competitors and market trends. This type of analysis is distinct from other types in that it does not produce a quantitative figure but a general financial forecast.

Objectives in a fundamental analysis are to evaluate a stock which enables to predict future trends of price. Other objectives involve assessing the company's management status and its business decisions. The process in this analysis involves factoring in, dividends paid, operating cash, equity issues, and capital finances. A simplified version and common model is the Price/Earning (P/E) ratio.

3.6 Technical Analysis

A technical analysis is contrary to the fundamental analysis approach as it focuses in the "trends" of the stock price regardless of the value and assessment of a stock in a fundamental analysis. In a technical analysis, the investor's emotions and trends in price movement is represented in a predictable pattern.

Factors which are considered in the model are the relative strength index, moving averages, cycles, and regressions. To summarize this method of analysis the popular phrase "The trend is your friend," describes the behavior one would take in buying or selling stocks.

4. Simulations

4.1 Method 1-Buy and Hold

4.1.1 Screening Process

We decided to select our stocks for this method from the stocks listed within the sectors listed on the sector list for Yahoo! Finance because the multitude of sectors and industries would provide us with a diverse portfolio, which will reduce risk, and because the performance of the sectors will give a good indicator of the performance of the economy in general. We selected our stocks using three steps. The first step was to select a business sector containing the stocks by comparing Price-to-Earnings (P/E) ratio, Price-to-Book (P/B) ratio, and Long-term Debt to Equity ratio. For any candidate sector, the P/E ratio needed to be between 10 and 17, indicating the stocks are at an acceptable trading level, not overvalued or showing no growth potential.[29] We also needed the P/B ratio and Long-term Debt to Equity ratio to be better in comparison to the other sectors. Once a sector was chosen, we applied the same technique for selecting an industry from the sector. After the industry was selected, we selected between one and three stocks from the industry to trade. We examined P/E ratios, Long-term Debt to Equity ratios, and P/B ratios, in addition to the trends that the stocks were on, income statements of the companies, and news about the companies. The reason we chose to trade at most three stocks from an industry was to eliminate potential risk by diversifying our portfolio.

The plan for this method of investing is to purchase stocks at the beginning of our simulation and hold them for the duration of the experiment. Then we will compare the return on our investment to the results for each business sector traded, and each industry traded. There will be no trading of stocks for this simulation because in using the buy and hold strategy; we accepted the fact that the stocks in our portfolio will decline at some point in time over the period of eight weeks. We are also investing as if we planned on holding onto the stocks for a period of at least one year, not eight weeks.

4.1.2 Companies and Stocks Selected

After initially examining the P/E ratios of the individual business sectors, we had six candidates for business sectors. Next we examined the Long-term Debt to Equity ratios of each sector, and after seeing that the Basic Materials sector had a low ratio of 0.26 to go along with a P/E ratio of 14.43 and a P/B ratio of 3.33, so we selected stocks from this sector first. We examined several industries within this sector, none of which having a P/E ratio between 10 and 17 and a Long-term debt to Equity ratio and P/B ratio better than the sector average. Eventually we settled on the Major Integrated Oil and Gas industry based on the strength of its low Long-term Debt to Equity ratio of 0.19 and P/B ratio of 2.57. The P/E ratio was 9.40, a little lower than ideal, but indicating that the industry is possibly undervalued. There were two stocks chosen from this industry, PetroChina, Company Limited, and Chevron Corporation because their ratios well better than the industry averages.

We decided to choose another sector to invest in, the Utilities sector, because of its P/E ratio of 14.00, and its P/B ratio of 2.49, which was above average among the sectors. The fact that the Long-term Debt to Equity Ratio was 1.48 did not affect the decision too much because utilities are consistent earners; people need to pay for electricity, gas, etc. Also, the US Economy Stimulus would seem to affect this sector positively as people have more money to pay their bills. Among the industries of this sector, the Diversified Utilities had a P/E ratio of 14.60, a long-term debt to equity ratio of 1.42, and a P/B ratio of 2.37, with the last two values being above the sector averages. Within this industry, we selected three stocks, PNM Resources, Inc., CH Energy Group, Inc., and Integrys Energy Group, Inc., all off which posted good ratios comparable to the industry averages.

The last sector we examined was the Consumer Goods sector. The P/E ratio was 15.54, and the long-term debt to equity ratio was 1.23, a little high for this sector, but because of the US Economy Stimulus, we felt that this had a greater impact over the timeframe that we are simulating over. We settled on the Farm Products industry because its P/E ratio was 12.60, the Long-term Debt to Equity was 0.72, and the P/B ratio was 2.19. The Long-term Debt to Equity ratio was well under the sector average, while we thought that the P/B ratio was reasonable since the sector's ratio was negative. We selected two stocks, Bunge Limited and Archer Daniels Midland Company because of their strong ratios comparable to the industry.

After choosing these first seven stocks, analysis of the other sectors really did not hint at future success. We decided that because it was summertime, thus meaning people would be seeing several blockbuster movies and would be going on vacations, it would not be too far-fetched to select an airline or movie production company. We chose one movie production company, Time Warner, Inc. based on its ratios and because of the release of a summer blockbuster. Southwest Airlines Co. was chosen because it was the most consistent performing airline company in addition to its ratios.

ADM

Archer Daniels Midland Company (ADM) was founded in 1898 and is based in Decatur, Illinois. It procures, transports, stores, processes, and merchandises agricultural commodities and products globally, but primarily in the United States. The company is divided into three segments: Oilseeds Processing, Corn Processing, and Agricultural Services. The Oilseeds Processing segment processes soybeans, cottonseed, sunflower seeds, and other oilseeds into vegetable oils and meals mainly for the food and feed industries. Salad oils, oilseed meals, cottonseed flour, and other miscellaneous products are also sold. The Corn Processing segment takes on wet and dry milling corn operations. It produces many corn derivatives such as syrup, starch, and glucose, as well as citric and lactic acids, lactates, and other corn-based products. The Agricultural Services segment buys, stores, cleans, and transports agricultural commodities, such as oilseeds, corn, and wheat. It also produces cocoa based products, soy based products, whiles also producing beans for use as a food ingredient, formula feeds, and animal nutrition products.[12]

We decided to invest in ADM because of a P/E ratio of 11.72, a long-term debt to equity ratio of 0.83, and a P/B ratio of 2.12, which was under the industry average. In addition, ADM had been increasing in price over the last several months and had posted two consecutive years of increase net income. We originally bought ADM for $43.45 per share on May 19th, and ended up selling the stock at a loss, at $30.29 per share.[12] ADM was the one of the worst performing stocks of our simulation, costing us over $3,000 by the end of our trading period.

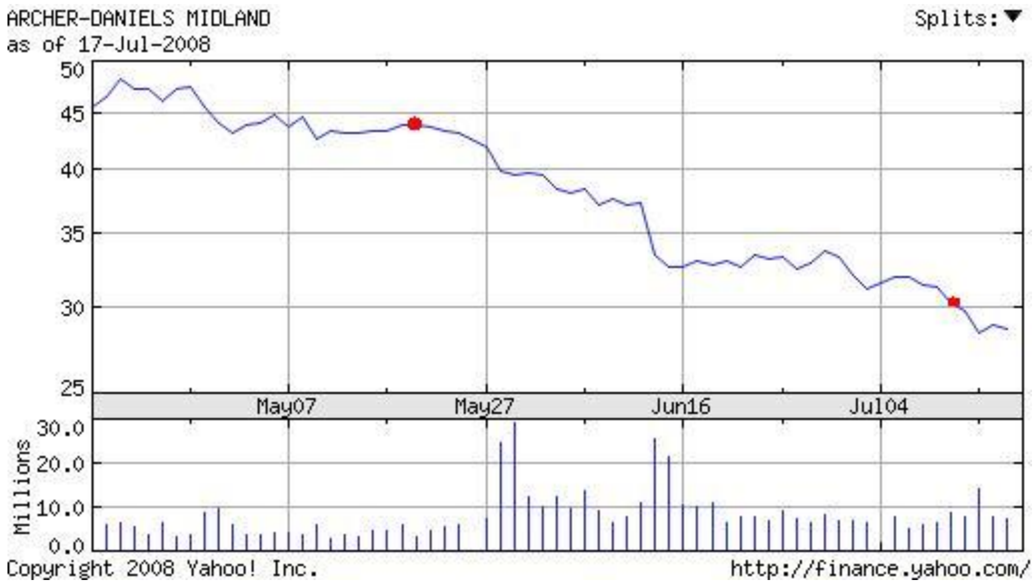

Figure 4.1.1: Change in ADM Price While Owned[12]

BG

Bunge Limited (BG) operates in three segments within the agriculture and food business: Agribusiness, Fertilizer, and Food Products. The Agribusiness segment purchases, stores, transports, processes, and sells agricultural commodities such as grains and oilseeds. It also sells its products to feed manufacturers, wheat and corn millers, and oilseed processors. The Fertilizer segment makes and supplies fertilizers to farmers in South America. Operations also include mining and processing of phosphate ore, and production of phosphate-based products for fertilizer blenders. Food Products offers edible oil products and milling products for food processors, foodservice companies, and retail outlets. It produces many products derived from the vegetable oil refining process such as margarine and mayonnaise. The section also produces miscellaneous corn and wheat products such as corn meal, flours, and grits. Bunge was founded in 1818, and has operations in Europe, North America, and South America, with a base in White Plains, New York.[12]

We invested in was Bunge because of a P/E ratio of 15.10, a long-term debt to equity of 0.60, and a P/B ratio of 1.94. These ratios were all better than the averages for the Farm Products industry. When we purchased BG, it was trading at $124.37, and at the end of the simulation it was valued at $96.12 per share.[12]

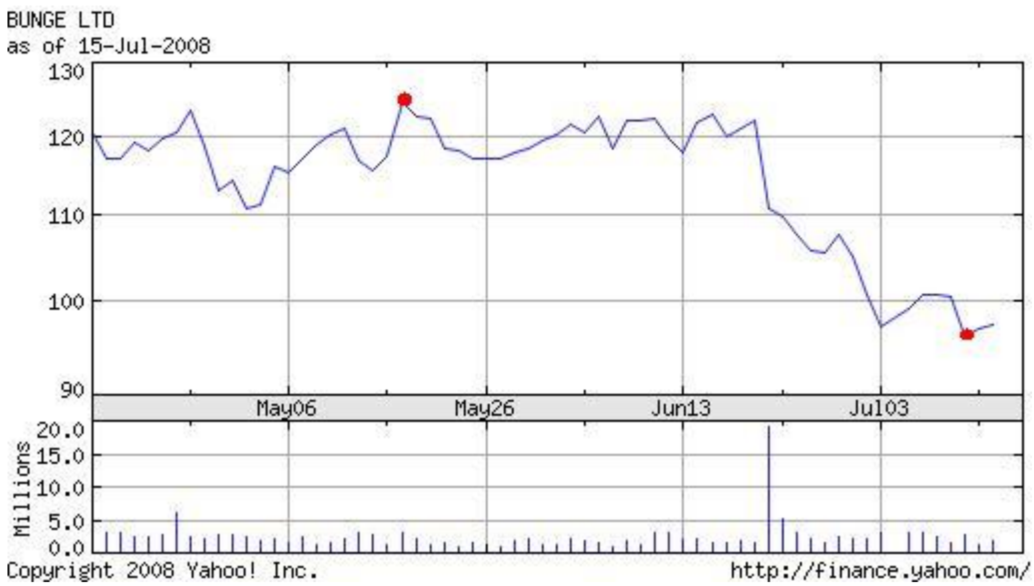

Figure 4.1.2: Change in BG Price While Owned[12]

CHG

Founded in 1926 and based in Poughkeepsie, New York, CH Energy Group, Inc, is involved in the electric utility, natural gas utility, and fuel distribution business through its subsidiaries: Central Hudson Gas and Electric Corporation and Central Hudson Enterprises Corporation. CH Gas and Electric buys, sells, and distributes electricity and natural gas in New York State. Central Hudson Enterprises markets petroleum products to retail and wholesale customers, as well as related petroleum services. It also provides service and maintenance of energy conservation and generation systems for private businesses, institutions, and government. Central Hudson Enterprises distributes many fuel types like gasoline and diesel fuel, while also installing and maintaining heating, ventilation, and air conditioning equipment on the East Coast of the United States. The subsidiary participates in alternate fuel projects in the Mid-Atlantic states, and is involved with a fuel ethanol production project in Nebraska.[12]

CH Energy was chosen for its P/E ratio of 14.75, a very low long-term debt to equity ratio of 0.86 and a P/B ratio of 1.11, well below the industry average. CHG almost broke even during the simulation, as it was bought at $36.93 and sold at $36.91 per share.[12] Unfortunately, that was almost the best performing stock of the simulation.

Figure 4.1.3: Change in CHG Price While Owned[12]

CVX

Based in San Ramon, California, Chevron Corporation was founded in 1879 as Standard Oil Company of California. It became Chevron Corporation in 1984, ChevronTexaco Corporation in 2001, and Chevron Corporation again in 2005. Chevron is an integrated energy company operating worldwide. It explores, develops, produces, and markets crude oil and natural gas. Chevron transports its petroleum products by pipeline, marine vessel, motor equipment, and railroads. The chemical operations include manufacture and marketing of commodity petrochemicals. Chevron also deals with coal mining, power generation, insurance, and real estates.[12]

We chose Chevron because of a P/E ratio of 10.79, a long-term debt to equity ratio of 0.09, and a P/B ratio of 2.65. The P/B ratio is slightly worse than the industry average, but is much better than the sector average. We originally bought CVX for \$100.62 per share on May 19th, and ended up selling for a large loss on July 11th at \$92.25 per share.[12]

Figure 4.1.4: Change in CVX Price While Owned[12]

LUV

Southwest Airlines Co. (LUV) is well-known as one of the premier passenger airlines in the United States. The company was founded in 1967 and is based out of Dallas, Texas. The company commands a fleet of five hundred twenty Boeing 737 planes, and services cities in thirty-two states. In addition to being an airline, Southwest sells credit to its various business partners, such as hotels, rental car agencies, and credit card companies.[12]

We chose Southwest because of a P/E ratio of 16.82, a long-term debt to equity ratio of 0.29, well below the industry average of 0.98, and a P/B ratio of 1.34, also below the industry average, which was 1.76. In addition, LUV had posted profits, especially in the fourth quarter last year, which during the summer. The stock has also been on an upward trend since January. During our simulation, LUV managed to suffer a small loss, beginning the period at $13.39 per share and ending it at $13.20 per share.[12]

Figure 4.1.5: Change in LUV Price While Owned[12]

PNM

PNM Resources, Inc., was founded in 1917 and is based in Albuquerque, New Mexico. The company and its subsidiaries are focused in energy and energy-related business, primarily engaging in the generation, transmission, and distribution of electricity. PNM focuses its business in the western United States and New Mexico, and provides regulated transmission and distribution services. Residential, commercial, and industrial customers are the primary groups that PNM provides electricity to.[12]

PNM stood out with a P/E ratio of 14.63, a long-term debt ratio of 1.39 (better than the industry average), and a great P/B ratio of 0.64, signifying that the company is undervalued. Despite what we thought were great numbers, the stock fared poorly during the simulation. PNM began at $14.83 per share and closed on July 11th at $11.23, which cost us over $3,000.[12]

Figure 4.1.6: Change in PNM Price While Owned[12]

PTR

PetroChina Company Limited was founded in 1988 and is a subsidiary of China National Petroleum Corporation, based in Beijing, China. The company engages in petroleum and natural gas activities in China. The company is divided into four segments: Exploration and Production, Refining and Marketing, Chemicals and Marketing, and Natural Gas and Pipeline. Refining and Marketing refines, transports, stores, and markets crude oil. It also is responsible for the wholesale, retail, and export of refined products, including diesel, gasoline, and fuel oil. The Exploration and Production segment explores, develops, produces, and sells crude oil and natural gas. Chemicals and Marketing produces and markets basic petrochemicals and other chemical products, including propylene, ethylene, polyethylene, synthetic resin products, synthetic fiber products, synthetic rubber products, and intermediates. The Natural Gas and Pipeline segment transmits and stores crude oil, refined products, and natural gas. The segment also sells natural gas. At the beginning of 2008, the company possessed over 11,000 million barrels of crude oil in reserves, and over 57,000 billion cubic feet of natural gas, as well as owning 22,043 kilometers of natural gas pipelines and 10,559 kilometers of crude oil pipeline.[12]

We chose PTR because they had a P/E ratio of 13.35, plus a long-term debt to equity ratio of 0.10 and a P/B ratio of 2.33, both of which were better than the industry average. PTR suffered the greatest fall in terms of the number of dollars per share of all of the stocks in our portfolio. We bought it for $147.51 and sold it for $126.86, which contributed a loss of more than $2,000.[12]

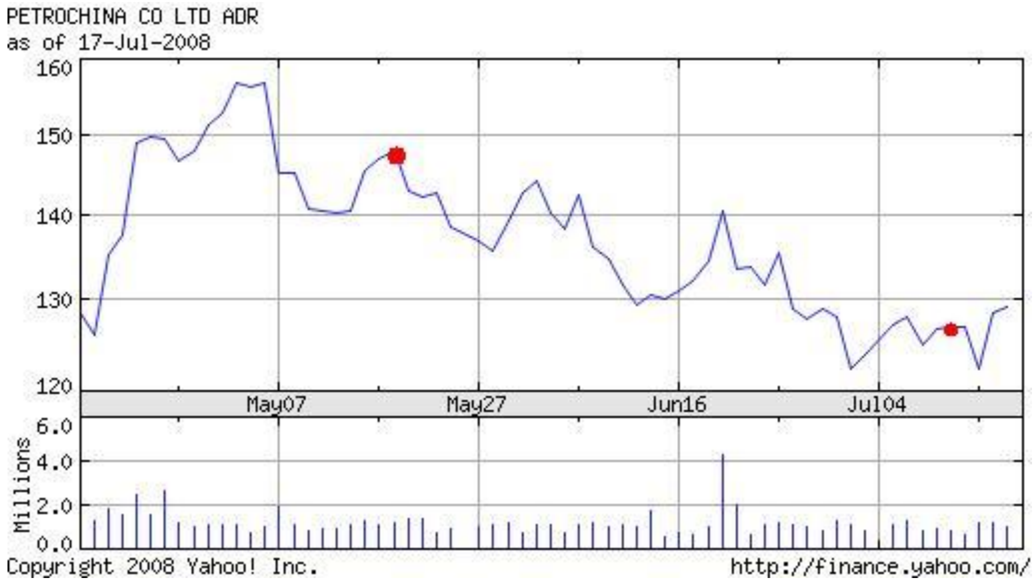

Figure 4.1.7: Change in PTR Price While Owned[12]

TEG

Integrys Energy Group, Inc., is based in Chicago, Illinois and was founded in 1883 as WPS Resources Corporation. The name was changed to Integrys in 2007. Through its subsidiaries, Integrys operates as an electric and natural gas utility company in the United States and Canada. Electricity is gathered through coal, natural gas, fuel oil, hydroelectric, nuclear, and wind power. The power is offered to municipal utilities, electric cooperatives, energy marketers, other investor-owned utilities, and municipal joint action agencies. Natural gas is also distributed in Michigan and Minnesota, and offers nonregulated energy and services to residential, commercial, industrial, and wholesale customers. As of the end of 2007, Integrys counted over two million customers.[12]

We selected Integrys for our portfolio because it had a P/E ratio of 14.25, a long-term debt to equity ratio of 0.86, and a P/B ratio of 1.17, values that were much better than the industry averages. TEG was the only stock in our portfolio that profited during the eight week period. It started at $51.20 per share and was sold for $52.22 per share on July 11th, which made us about $280.[12]

Figure 4.1.8: Change in TEG Price While Owned[12]

TWX

Time Warner, Inc. (TWX) is a global media and entertainment company based in New York, New York. Time Warner was founded in 1985 and operates five segments: AOL, Time Warner Cable, Filmed Entertainment, Networks, and Publishing. AOL provides online advertising services, offers Internet access subscriptions, and operates the AOL Network, which is a network of brands and free client software on the World Wide Web. Time Warner Cable offers video, high-speed data, and voice services through broadband cable systems to residential and commercial customers, while also selling advertising to be aired during programming. Filmed Entertainment produces and distributes motion pictures, television shows, and other programming. It also distributes home video products and licenses rights to characters, films and television programs. Domestic and international networks such as HBO and Cinemax are provided by the Network segment. The Publishing segment publishes several genres of magazines, such as sports and beauty, operates several Web sites, and also operates direct-marketing and selling businesses.[12]

We chose Time Warner because of a P/E ratio of 15.03, a long-term debt to equity ratio of 0.62, and a P/B ratio of 0.98. We also liked the fact that TWX was releasing *The Dark Knight* in theaters on July 18th, and the company had continuously posted profits. During our simulation, however, *The Dark Knight* failed to boost TWX as we had hoped, and the company fell in price. It began the period at $16.45 per share and ended it at $13.78 per share.[12]

Figure 4.1.9: Change in TWX Price While Owned[12]

4.1.3 Results

Now that the stocks had been selected, we had to actually purchase them. With $100,000 to spend on investments, we decided to invest more money with the first few stocks that we selected, as the analysis for those stocks were stronger. A standard commission of $10 per transaction was taken into account for all transactions made during simulation. For the Basic Materials sector, we tried to invest about $15,000 in each company selected. We bought 101 shares of PTR, at a price of $147.51 per share, for a total of $14,908.51 invested. We also bought 148 shares of CVX at $101.62 per share, for a total of $14,901.76 invested. For the Utilities sector, we purchased about $12,500 per business. We bought 842 shares of PNM at $14.83 per share, for a total of $12,496.86 bought. 338 shares of CHG were bought at $36.93 per share, making $12,492.34 invested. $12,451.60 was spent on TEG, a total of 244 shares bought at $51.20 per share. Next we bought about $10,000 worth of stock for the companies in the Farm Products sector. 80 shares of BG were purchased at $124.37 per share, a total of $9,959.60 spent, and 229 shares of ADM were bought for a total of $9,960.05 spent at $43.45 per share. Finally, we devoted about $6,250 per company for TWX and LUV. We purchased $6244.55 worth of TWX, 379 shares at $16.45 per share, and purchased 466 shares of LUV at $13.39 per share, a total of $6249.74. After we had finished filling our portfolio, we had invested $99,665.01, with $334.99 remaining in our budget.

Date	Stock	Action	Price[12]	Shares	Cost/Proceed
19-May-08	PTR	Buy	$147.51	101	$14,908.51
19-May-08	CVX	Buy	$100.62	148	$14,901.76
19-May-08	PNM	Buy	$14.83	842	$12,496.86
19-May-08	CHG	Buy	$36.93	338	$12,492.34
19-May-08	TEG	Buy	$51.20	244	$12,451.60
19-May-08	BG	Buy	$124.37	80	$9,959.60
19-May-08	ADM	Buy	$43.45	229	$9,960.05
19-May-08	TWX	Buy	$16.45	379	$6,244.55
19-May-08	LUV	Buy	$13.39	466	$6,249.74
	Total Invested			2827	$99,665.01
	Remaining Capital				$334.99

Table 4.1.1: Initial Transactions

At the end of the first week our stocks had gone down significantly. For every stock that had gone up in price during the week, (CVX, CHG) other stocks dropped in price by a greater magnitude (PTR, PNM, TEG, BG, ADM, TWX, LUV).

Stock	Initial Price[12]	Shares	Price (May 23-Close)[12]	Price Gain/Loss	Gain/Loss
PTR	$147.51	101	$138.38	(9.13)	(922.13)
CVX	$100.62	148	$100.73	0.11	16.28
PNM	$14.83	842	$14.24	(0.59)	(496.78)
CHG	$36.93	338	$38.29	1.36	459.68
TEG	$51.20	244	$50.88	(0.32)	(78.08)
BG	$124.37	80	$117.02	(7.35)	(588.00)
ADM	$43.45	229	$43.17	(0.28)	(64.12)
TWX	$16.45	379	$15.91	(0.54)	(204.66)
LUV	$13.39	466	$12.26	(1.13)	(526.58)

Table 4.1.2: Stock Prices at End of Week 1

We did not have to make any transactions this week, as most of the stocks gained a couple points or lost a few points. This week there were more stocks that gained in price than last week. The gainers were PTR, PNM, TEG, BG, and LUV, while the losers were CVX, CHG, ADM, and TWX.

Stock	Price (May 23-Close)[12]	Shares	Price (May 30-Close)[12]	Price Gain/Loss	Gain/Loss
PTR	$138.38	101	$142.55	($4.17)	($421.17)
CVX	$100.73	148	$99.15	$1.58	$233.84
PNM	$14.24	842	$14.85	($0.61)	($513.62)
CHG	$38.29	338	$37.88	$0.41	$138.58
TEG	$50.88	244	$51.35	($0.47)	($114.68)
BG	$117.02	80	$119.37	($2.35)	($188.00)
ADM	$43.17	229	$39.70	$3.47	$794.63
TWX	$15.91	379	$15.88	$0.03	$11.37
LUV	$12.26	466	$13.06	($0.80)	($372.80)

Table 4.1.3: Stock Prices at End of Week 2

During the third week, the majority of the stocks declined in price, while some dropped several points. PTR was the biggest loser, dropping almost seven dollars per share, while Southwest Airlines was the greatest gainer, rising sixty cents per share.

Stock	Price (May 30-Close)[12]	Shares	Price (June 6-Close)[12]	Price Gain/Loss	Gain/Loss
PTR	$142.55	101	$135.97	($6.58)	($664.58)
CVX	$99.15	148	$99.50	$0.35	$51.80
PNM	$14.85	842	$14.70	($0.15)	($126.30)
CHG	$37.88	338	$37.25	($0.63)	($212.94)
TEG	$51.35	244	$51.16	($0.19)	($46.36)
BG	$119.37	80	$118.27	($1.10)	($88.00)
ADM	$39.70	229	$37.20	($2.50)	($572.50)
TWX	$15.88	379	$15.27	($0.61)	($231.19)
LUV	$13.06	466	$13.68	$0.62	$288.92

Table 4.1.4: Stock Prices at End of Week 3

PTR again suffered a huge loss, and was joined by ADM in losing over four dollars per share. BG, CVX, and PNM posted smaller losses, while the rest of the stocks posted small gains. The biggest winner of the week was TEG, with an increase of $0.66 over the week.

Stock	Price (June 6-Close)[12]	Shares	Price (June 13-Close)[12]	Price Gain/Loss	Gain/Loss
PTR	$135.97	101	$129.99	($5.98)	($603.98)
CVX	$99.50	148	$99.40	($0.10)	($14.80)
PNM	$14.70	842	$13.69	($1.01)	($850.42)
CHG	$37.25	338	$37.31	$0.06	$20.28
TEG	$51.16	244	$51.82	$0.66	$161.04
BG	$118.27	80	$117.85	($0.42)	($33.60)
ADM	$37.20	229	$32.61	($4.59)	($1,051.11)
TWX	$15.27	379	$15.43	$0.16	$60.64
LUV	$13.68	466	$14.30	$0.62	$288.92

Table 4.1.5: Stock Prices at End of Week 4

For the fifth week of the simulation, PTR and ADM recovered, with PTR increasing almost three and a half dollars per share. BG showed the largest increase in price, rising more than four dollars. CHG also posted a small increase. Only CVX suffered a large loss for the week, declining by well over two dollars. The rest of the stocks were losers as well, but the losses were all under a dollar.

Stock	Price (June 13-Close)[12]	Shares	Price (June 20-Close)[12]	Price Gain/Loss	Gain/Loss
PTR	$129.99	101	$133.48	$3.49	$352.49
CVX	$99.40	148	$96.62	($2.78)	($411.44)
PNM	$13.69	842	$12.96	($0.73)	($614.66)
CHG	$37.31	338	$37.42	$0.11	$37.18
TEG	$51.82	244	$51.50	($0.32)	($78.08)
BG	$117.85	80	$122.17	$4.32	$345.60
ADM	$32.61	229	$32.67	$0.06	$13.74
TWX	$15.43	379	$14.60	($0.83)	($314.57)
LUV	$14.30	466	$14.11	($0.19)	($88.54)

Table 4.1.6: Stock Prices at End of Week 5

PTR resumed its descent during the sixth week, falling by over five dollars per share. BG suffered an enormous loss, falling by $16.65 per share. CHG fell by over three dollars as well. ADM and CVX were the only gainers for the week, with CVX rising by over a dollar. The rest of the stocks in our portfolio suffered losses within $1.50 per share.

Stock	Price (June 20-Close)[12]	Shares	Price (June 27-Close)[12]	Price Gain/Loss	Gain/Loss
PTR	$133.48	101	$127.94	($5.54)	($559.54)
CVX	$96.62	148	$97.80	$1.18	$174.64
PNM	$12.96	842	$11.73	($1.23)	($1,035.66)
CHG	$37.42	338	$34.25	($3.17)	($1,071.46)
TEG	$51.50	244	$50.14	($1.36)	($331.84)
BG	$122.17	80	$105.52	($16.65)	($1,332.00)
ADM	$32.67	229	$32.92	$0.25	$57.25
TWX	$14.60	379	$14.42	($0.18)	($68.22)
LUV	$14.11	466	$13.33	($0.78)	($363.48)

Table 4.1.7: Stock Prices at End of Week 6

The seventh week of our simulation was terrible for a few of our stocks. BG plummeted over eight dollars, while PTR fell $4.05 per share during the abbreviated trading week due to Independence Day. ADM suffered a somewhat large drop of $1.75 per share, while LUV and PNM posted small losses. CVX, CHG, TEG, and TWX did manage to post an increase in stock price this week, but none of the increases were sizeable, as none of the prices increased by more than eighty-three cents.

Stock	Price (June 27-Close)[12]	Shares	Price (July 3-Close)[12]	Price Gain/Loss	Gain/Loss
PTR	$127.94	101	$123.89	($4.05)	($409.05)
CVX	$97.80	148	$98.63	$0.83	$122.84
PNM	$11.73	842	$11.62	($0.11)	($92.62)
CHG	$34.25	338	$34.89	$0.64	$216.32
TEG	$50.14	244	$50.75	$0.61	$148.84
BG	$105.52	80	$97.13	($8.39)	($671.20)
ADM	$32.92	229	$31.17	($1.75)	($400.75)
TWX	$14.42	379	$14.69	$0.27	$102.33

Table 4.1.8: Stock Prices at End of Week 7

Any gains that were made during the final week of our simulation were negated by the losses by the other stocks. Once again, CVX was a loser, falling over six dollars per share. PTR and CHG both gained over two dollars per share, while TEG rose in price by $1.47. LUV was the only other stock that achieved an increase in stock price for the week, while PNM, BG, ADM, and TWX all fell in price. PNM did not fall by much, while the other stocks mention declined by around a dollar per share.

Stock	Price (July 3-Close)[12]	Shares	Price (July 11-Close)[12]	Price Gain/Loss	Gain/Loss
PTR	$123.89	101	$126.86	$2.97	$299.97
CVX	$98.63	148	$92.25	($6.38)	($944.24)
PNM	$11.62	842	$11.23	($0.39)	($328.38)
CHG	$34.89	338	$36.91	$2.02	$682.76
TEG	$50.75	244	$52.22	$1.47	$358.68
BG	$97.13	80	$96.12	($1.01)	($80.80)
ADM	$31.17	229	$30.29	($0.88)	($201.52)
TWX	$14.69	379	$13.78	($0.91)	($344.89)
LUV	$13.05	466	$13.20	$0.15	$69.90

Table 4.1.9: Stock Prices at End of Simulation

Since the simulation has been completed, we needed to sell all of the shares in our portfolio to see how well or poorly we fared. Unfortunately, only one stock achieved an increase in price over the eight week simulation: TEG. TEG was bought at $51.20 per share and sold at $52.22 per share; after the sale of 244 shares the profit was $280.08. The stock that performed the worst was PNM, which ended up costing us $3051.20. ADM also lost us over three thousand dollars, while PTR and BG both took away over two thousand dollars from us each. CVX and TWX lost over a thousand dollars for us, while CHG and LUV only lost us $26.76 and $108.54 respectively. After we sold all of our shares, we were left with $87,383.60, which turned out to be a loss of $12,616.40 overall for the simulation.

Date	Stock	Action	Price[12]	Shares	Cost/Proceed	Gain/Loss
11-Jul-08	PTR	Sell	$126.86	101	$12,802.86	($2,105.65)
11-Jul-08	CVX	Sell	$92.25	148	$13,643.00	($1,258.76)
11-Jul-08	PNM	Sell	$11.23	842	$9,445.66	($3,051.20)
11-Jul-08	CHG	Sell	$36.91	338	$12,465.58	($26.76)
11-Jul-08	TEG	Sell	$52.22	244	$12,731.68	$280.08
11-Jul-08	BG	Sell	$96.12	80	$7,679.60	($2,280.00)
11-Jul-08	ADM	Sell	$30.29	229	$6,926.41	($3,033.64)
11-Jul-08	TWX	Sell	$13.78	379	$5,212.62	($1,031.93)
11-Jul-08	LUV	Sell	$13.20	466	$6,141.20	($108.54)
	Remaining Capital				$334.99	
	Total Money				$87,383.60	
	Total Profit/Loss				($12,616.40)	

Table 4.1.10: Final Transactions

4.1.5 Comparison to Markets

Despite losing over ten thousand dollars during our simulation, the majority of our stocks managed to fare better than their respective markets overall. Each market that we invested in declined over the course of the simulation, with the Diversified Utilities market faring the best and the Farm Products market faring the worst. Six of the nine stocks we invested in declined in price or rose in price more than the market it was contained in, while only three performed worse than their markets.

The Major Integrated Oil and Gas market began May 19th at $1557.98 per share and ended the period on July 11th at $1404.20 per share, a decrease of 9.870%. Of the two stocks we chose within that market, CVX only declined by 8.32% while PTR declined by 14.00%. The Diversified Utilities market began the simulation at $1200.44 per share while closing at $1195.30 on July 11th, good for a decline of 0.428%. CHG managed to perform better, only lowing in price by 0.0542%, while PNM was terrible and dropped by 24.28%. TEG was the star or our portfolio and actually increased in price by 1.99%. These two markets were the best performing of the markets we used for our portfolio, which is unsurprised because we were the most confident in selecting companies from these two markets. The other three markets experienced huge losses during our simulation.

The Farm Products market managed to decrease by a whopping 26.90% beginning at $1806.67 per share and ending at $1320.60, easily the largest drop of all of the other markets. Both BG and ADM fared poorly as well, with BG dropping by 22.71% and ADM falling 30.29%. The Farm Products stocks we invested in were the greatest reason for our portfolio losing money, as these two stocks accounted for over 42% of the money that we lost on our simulation.

We expected both the Entertainment Diversified market and the Regional Airlines markets to decline significantly over time, and specifically chose the stocks within those markets for more reasons than just quantitative analysis. Entertainment Diversified began trading at $907.30 per share while ending at $738.60, and the Regional Airlines market was bought at $562.49 and sold at $477.50 per share. Entertainment Diversified fell by 18.59% during the simulation, which was worse than the 16.23% that TWX fell by. Regional Airlines decreased by 15.11%, and LUV easily outperformed its market, falling in price by only 1.42%.

Because the entire market was declining for the duration of our simulation (the S&P 500 declined by 13% for the eight weeks), we feel that we were successful in choosing two of the markets to invest in. That was not surprising because the other markets we examined did not have many suitable candidates and we struggled to select more markets after the first two. In comparing the stocks selected to their respective markets, we would say that we were successful in selecting the proper stocks as well, losing more than the market on only three stocks. Overall, despite losing money, we think we did a fair job in selecting stocks that performed better in a declining economy.

4.2 Method 2-Penny Stocks

4.2.1 Screening Process

There is no one set price range which defines a stock to be a penny stock but, in general, the price of a penny stock is a stock with shares under $5.00. Penny stocks are low priced stocks from companies of speculative security. They are traded through services such as the OTC Bulletin Board and Pink Sheets which, are outside of major exchanges (e.g. NYSE). For the purpose of our experiment, a penny stock will be defined as stock under $2.00.

Penny stocks are appealing as they are cheap to buy and trade, and have the potential for high profit within a time period of several days. Stocks in this simulation were bought and traded from Pink Sheets Electronic OTC Market, an online penny stock trade site.

The initial screening process to select stocks was to select a business sector of interest. For the project biology and biotechnology related companies with innovative products and research were chosen. Using a search filter on Pink Sheets OTC, companies which enlisted on the highest tiers of market where filtered from low tier companies such as those enlisted on the gray market. Companies were first narrowed down to stock traded in OTCQX –PremierQX, OTCQX –PrimeQX, OTCQX –International PremierQX, OTCQX –International PrimeQX, PinkSheets Current, and Pink Sheet/OTCBB.

A list of all possible biology and biotechnology companies was created. From this list of companies, the products and research was investigated by researching each individual company. 8 biology and biotechnology companies which had innovative and important products were chosen.

4.2.2 Stocks Selected

Cell Kinetics Ltd

Cell kinetics is a producer of the CKChip system which is an innovative tool which allows simultaneous analysis of thousands of individual cells trapped in individual micro-wells. The CKChip is a 4x4mm square consisting up to 10,000 micro-wells which allows compartmentalization of individual cells for analysis and treatments with multiple reagents.[7] The CKChip also allows for easy identification of each well by using a marked "address."

The CKChip system is used mainly in applications with fluorescence microscopy. Along with the CKChip periphery products such as the CK loader allows easy distribution of samples onto the CKChip.[7] CKWells software is user-friendly and allows analysis of data acquired from the CKChip. Research with the CKChip can be applied in areas such as cancer research, pharmacology, and immunology.

In April 2008, Cell Kinetics announced an agreement that allowed Rikaken Co. to distribute and market the CKChip in Japan. The President of Rikaken Co., Yoshio Morikawa said, "The CKChip is a unique new technology for single cell research, in particular for acquisition of kinetic data, and we believe that the CKChip has various research and, ultimately, clinical applications."[7]

We believe that the CKChip system is revolutionary in that it allows simultaneous analysis of single cells in combination with fluorescence microscopy and data sorting CKWells program. This will allow for an increased sample size and will provide for a more efficient method for researchers to investigate particular aspects of cell and tissue samples.

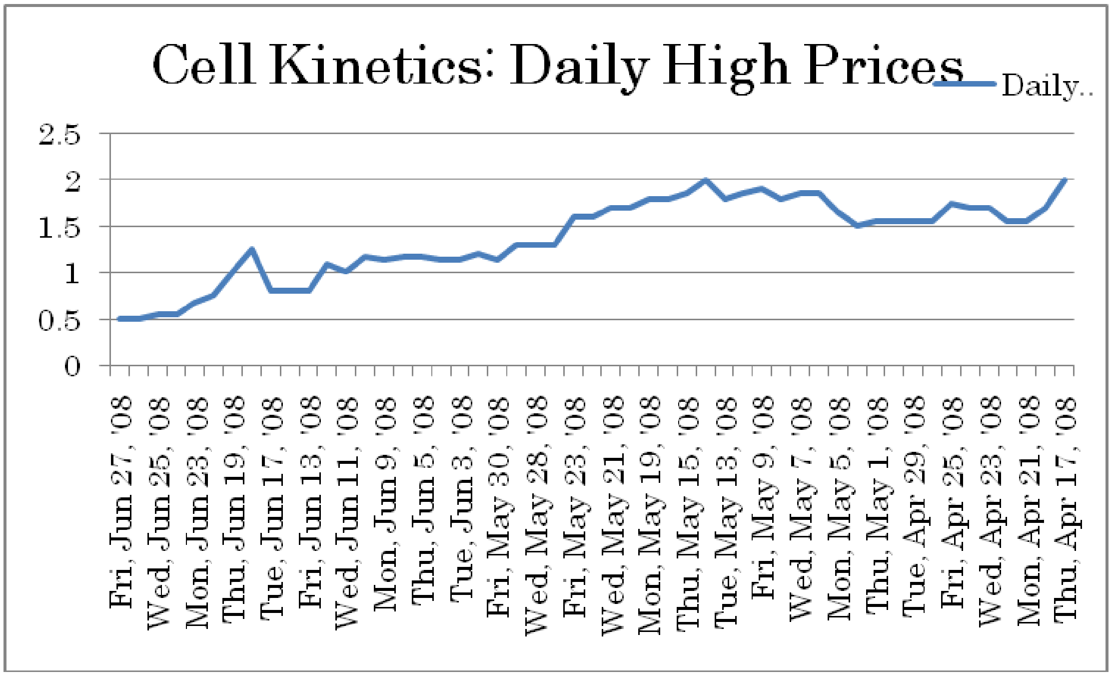

Fig. 4.2.1 Daily High Prices: Cell Kinetics

The daily high price was recorded onto a graph over the period one month before and during the simulation. [12]

BioLife Solutions

BioLife Solutions is a biotech company which specializes in producing fully-defined (serum-free) solutions for cryopreservation of cell and tissue samples from short- to long-term storage.[5] They excel in cryopreservation and hypothermic storage media which have been concocted to reduce cellular stress, damaging ice crystal formation, and tissue-specific formulas. They produce products such as the HypoThermosol and CryoStor preservation media which significantly reduce preservation induced and post-thawed cell damage and death.

A cryopreservation media is a solution which is used to freeze live cells and consists of sugars and cyroprotectants such as dimethyl sulfoxide (DMSO) which prevent formation of damaging ice crystals. The solution is fine-tuned to provide optimum cooling rates and to provide an environment which protects the cells for long-term storage. Cell cultures, especially animal cell cultures used for research, require daily maintenance of feeding and transferring, and also must be kept contamination free. Therefore, long-term storage is an ideal and necessary method when handling cell or animal cultures for research.

A hypothermic storage solution is a solution which is used for short-term storage of live cells at non-freezing temperatures. At these short-term storage methods are used particularly during surgery to temporarily store organs and blood.

The technology of BioLife Solutions can be found applied around the world in such places as hepatocyte preservation, fetal cord blood banking, skin graft storage, and in cell therapy products.[5] The performance of preservation and post-thaw viability of BioLife Solutions has been shown scientifically to be the best.[5]

In May 8th 2008, BioLife Solutions has announced that their preservation media CyroStor and its Master File for its patent was approved by the United States Food and Drug Administration (FDA).[12]

> Referencing out Master File should take some of the regulatory burden off our customers, so they can focus more time and resource on product development and clinical therapies…More than 100 development-stage cell therapy companies have evaluated or adopted HypoThermosol® and/or CryoStor in the production of novel cell-based products targeting a multitude of diseases and disorders such as cancer, heart failure, vision loss, and neurologic disorders. [12]

We believe that BioLife Solutions produces the most reliable cyroprervative media which is a significant product necessary for any research facility which handles cell cultures and animal cultures.

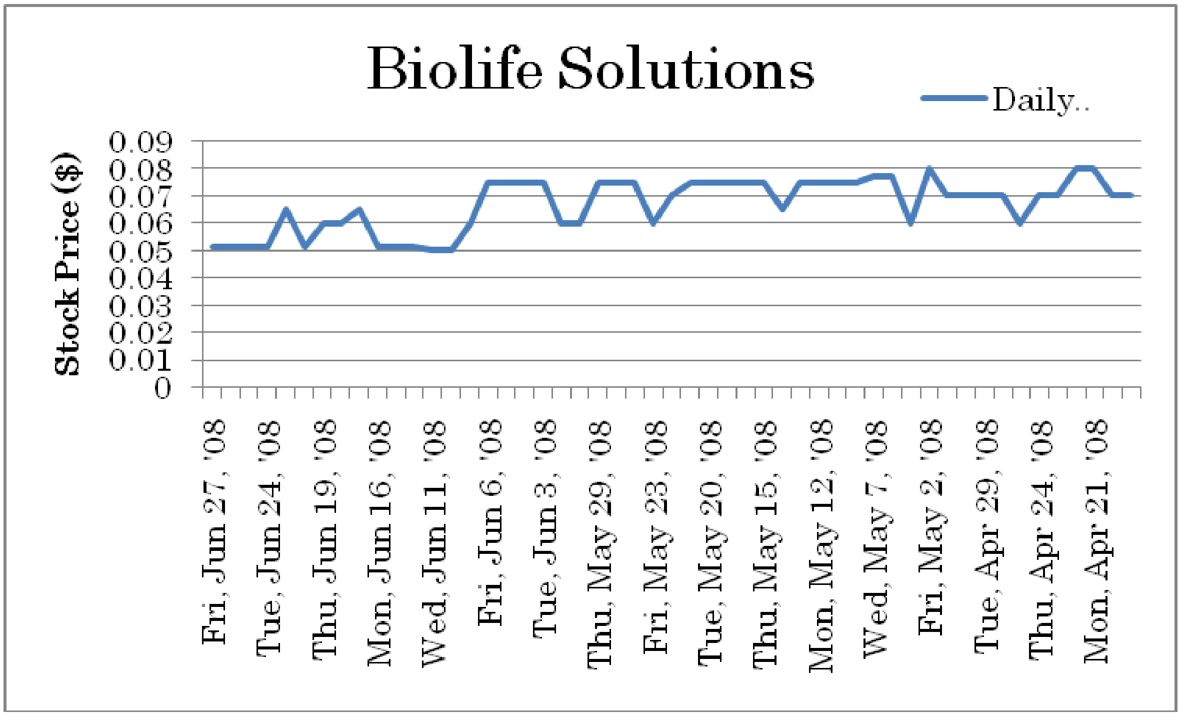

Fig. 4.2.2 Daily High Prices: Biolife Solutions

The daily high price was recorded onto a graph over the period one month before and during the simulation.[12]

Stem Cell Innovations

Stem Cell Innovations (SCI) is a biology company which aims to become the leader in new drug discovery assays for human diseases and therapies. Their product is the PluriCells cell line which is a pluripotent stem cell which is capable of differentiating into a wide variety of human cell types, allowing for studying diseases in different aspects of the human body.[11]

SCI also produces ACTIVTox which is a human liver cell line which can be used for drug toxicity.[11] The liver of a major target for drugs as the livers' metabolism on the drug determines the activity and potency of the drug.

In addition to ACTIVTox, a predictive database for drug toxicity of more than 50,000 drugs have be compiled in the PREDICTIVTox data system which have been constructed from data obtained from ACTIVTox, assuring a high accuracy data bank.[11]

PluriCells are derived from fetal tissue and therefore are legal to be used in laboratories funded by the governments. Certain types of stem cells were banned in correspondence to the Department of Health and Human Services in 2002.[11]

SCI's PluriCells provide researchers to investigate drugs for diseases such as Parkinson's, Huntingson's disease, multiple sclerosis, and other diseases.[11]

On Thursday May 22nd 2008, Stem Cells Innovation's income statement was released, and indicated almost a doubling of net income from US$ 3,345,000, to US$ 6,426,000 in the past year.[12]

We believe PluriCells from SCI is a valuable tool for researching drugs for human diseases. The use of human fetal cord stem cells allows for a good model for investigating different tissues types and there response to different drugs.

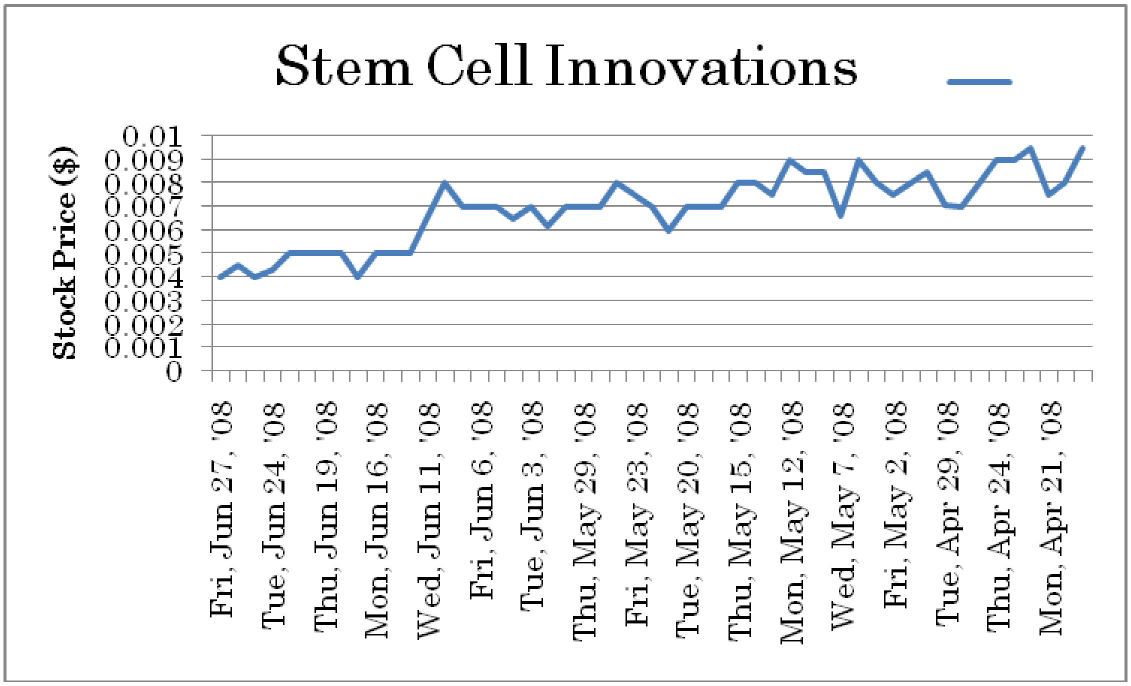

Fig. 4.2.3 Daily High Prices: Stem Cell Innovations

The daily high price was recorded onto a graph over the period one month before and during the simulation. [12]

AIDA Pharmaceuticals

AIDA Pharmaceuticals is a pharmaceutical company which has established the first antibiotic market in China. Etimicin Sulfate is a very effective and safe antibiotic which has patents through 2012.[4] Etimicin Sulfate is an antibiotic which can treat respiratory infection, kidney and soft tissue infections, and during and after operations and traumas. In 2005, AIDA has controlled 80% of the market and is therefore a major company in the pharmaceutical business.[4]

Apart from antibiotics, AIDA is developing two anti-cancer drugs which show strong promise. Of the 49 anti-cancer drugs which are enlisted and approved by the World Health Organization (WHO), China produces 40.[4] The anti-cancer business has grown from 17% in 1999 with a total of US$603 million, and was estimated at US$1.7 billion in 2006.[4]

The patent for the antibiotic etimicin sulfate through 2012 provides a valuable income and appears to be a valuable advantage AIDA Pharmaceuticals has over other competitors. I believe investment in antibiotics and in research to developing anti-cancer drugs is a good investment.

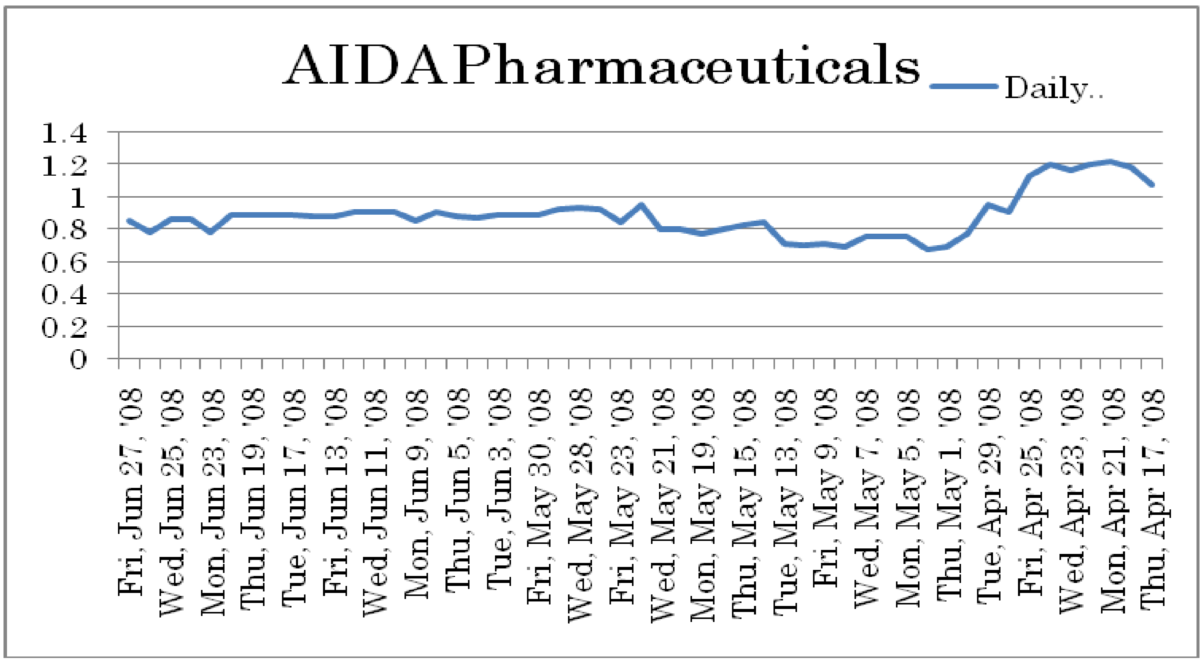

Fig. 4.2.4 Daily High Prices: AIDA Pharmaceuticals

The daily high price was recorded onto a graph over the period one month before and during the simulation.[12]

InNexus Biotechnology Inc

InNexus Biotechnology Inc is a biotechnology company specialized in producing and modifying monoclonal antibodies which are modified for increased drug potency, binding affinity, and primary properties. Therapies which use antibodies are modified by a patented process tagged by InNexus as Dynamic Cross Linking (DXL) which increases novel therapeutic properties of antibody based treatments. [9]

Antibodies consist of two variable light chains and two variable constant heavy chains of polypeptides, producing a Y-shaped protein which has two specific sites for binding antigens (targets), thus allowing delivery of drugs to specific body parts.[9] The Dynamic Cross Linking technology allows enhanced antibody:antigen complexes by increasing the affinity by allowing interactions between the antibodies, thus producing cross-links.[9]

The majority of antibodies developed are not approved by FDA and only a few are admitted as they most therapies do not present significant potency. The Dynamic Cross Linking technology allows for a non-toxic method to increase the potency of the antibody to possibility be FDA approved. Currently there exists 260 biotechnology companies in the world and have developed a total of 700 antibody-based products.[9]

InNexus plans on working with partners to collaborate, research, and develop new products using this technology.

We believe the technology to enhance the potency of existing and new antibiotic treatment would provide a large business as the company gains credibility in developing successful DXL enhanced antibody drugs.

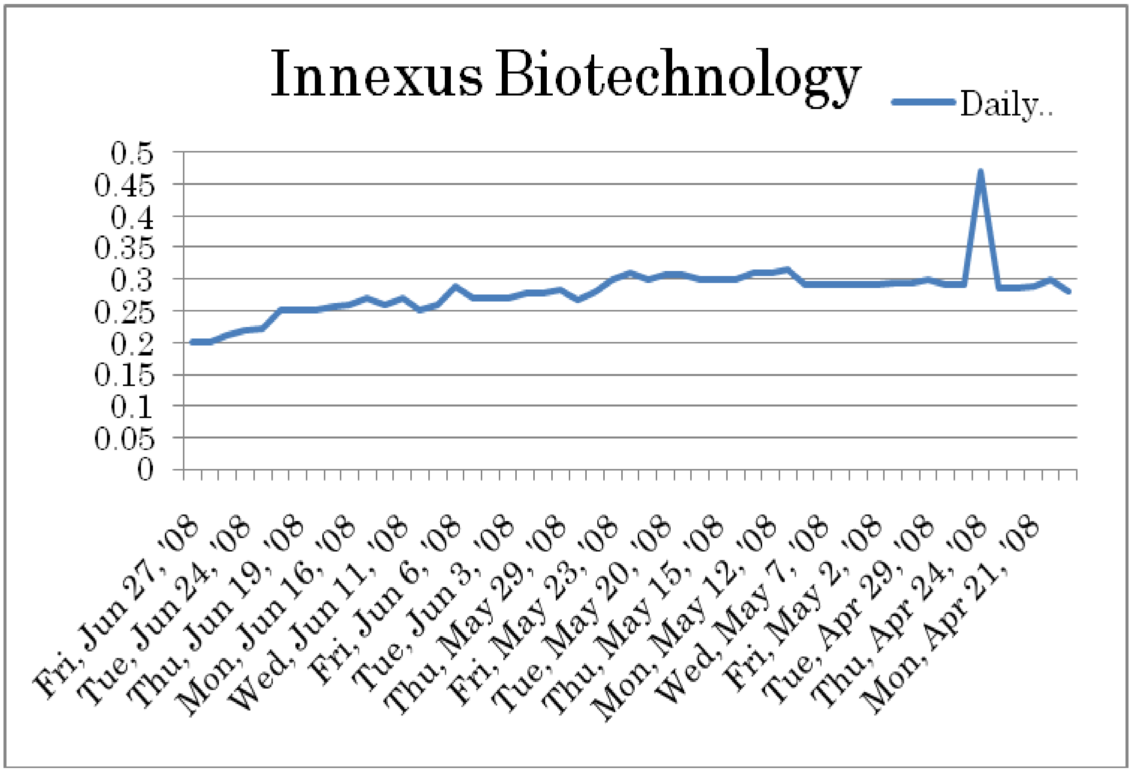

Fig. 4.2.5 Daily High Prices: Innexus Biotechnology

The daily high price was recorded onto a graph over the period one month before and during the simulation.[12]

Biovest International Inc.

Biovest International Inc. is the developers of the AutovaxID which is a self-contained apparatus which can automatically maintain and culture cells. In laboratories AutovaxID is an instrument which produces gram quantities of monoclonal antibodies and other cell products. The goal of BiovaxID is to be able to become a personalized apparatus to produce ideotype antibodies for treatment of non-Hodgkin's Lymphoma.[6] As of right now, AutovaxID is not approved by the FDA as "medical device" and therefore cannot serve the important role as a technology which can produce personalized medicine.[6]

Autovax can replace large cell culture facilities and removes the need to constantly maintain cell cultures for production of therapeutic cellular products such as personalized antibodies. Laboratories can now operate several dozen Autovax in a single room and culture different cells and would only have to be monitored by a few people, saving space, time, and costs.

Biovest International had released its quarterly income statement on June 3, 2008 and showed a half a million US$ increase in net income.[12] This illustrates a strong trend of success in the company.

We believe the technology which allows gram-scale production of antibodies and cellular products is a convenient and efficient tool for a researcher in the field of immunology and cell biology. The future for Autovax to become devices to produce personalized medicine may not be today but is a possibility in the near future.

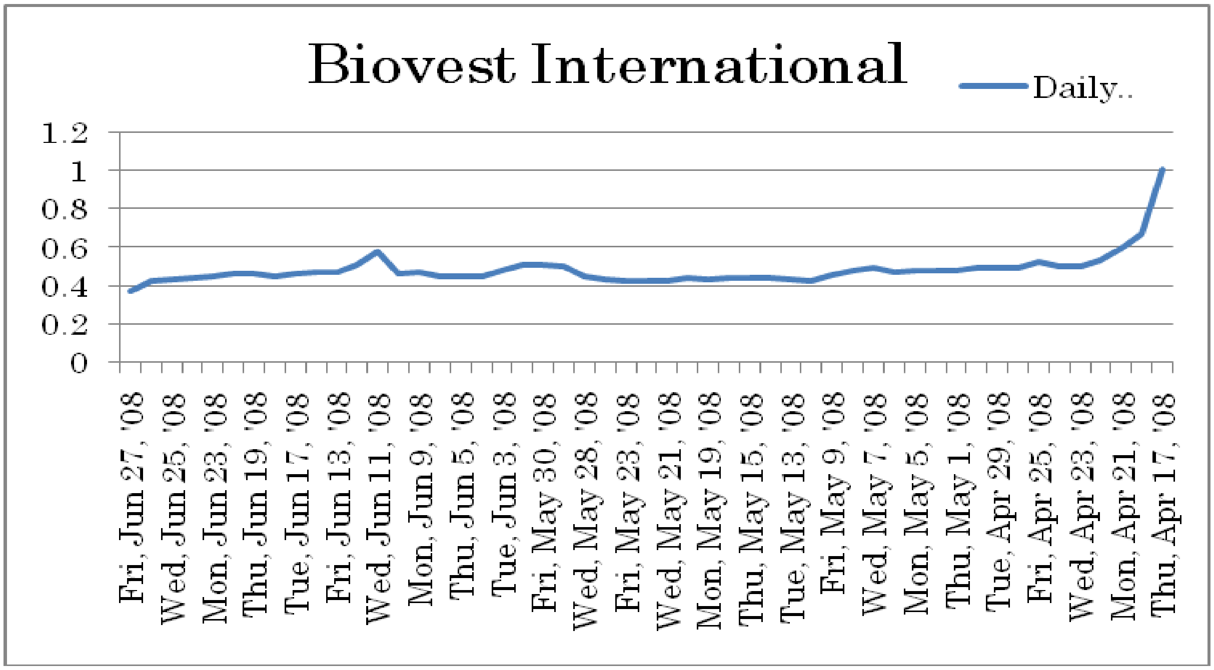

Fig. 4.2.6 Daily High Prices: Biovest International

The daily high price was recorded onto a graph over the period 1 month before and during the simulation.[12]

Metabolic Research, Inc.

Metabolic Research, Inc. is a biotechnology company which is devoted to researching potential metabolites from natural plants to find pharmaceutical grade anti-inflammatory, anti-infective, and anti-viral drugs.[10] Their method allows identifying new drugs which are non-synthetic and are more safe and effective than similar synthetic counterparts.

Metabolic Research, Inc. has acquired license to two provisionary patents for processes and methods which acquire effective drugs from fungi and eicosanoids. After obtaining the patents Metabolic Research Inc. will strive to develop more patents for natural drug development and will aim to apply them to curing diabetes, arthritis, hypertension, and other metabolic disorders.[10]

The short-term goal for the company is to develop a natural sports supplement consisting of growth hormone recruiters, mitochondria energizers, and stem cell recruit factors. This product will focus on aiding lean muscle mass gain, fat reduction, and increased endurance and strength performance.

Metabolic Research also has partnered with Cornerstone Pharmaceuticals to develop a marketable natural drug against lung cancer.

In recent news, Metabolic Research's Stemulite workout supplement has produced US$ 291,845 (US$583,690 in consumer purchase) in revenue for May which tops Aprils revenue by 46%.[12] The Stemulite product line consist of "Stemulite™ Fitness Formula for Men and Stemulite™ Fitness Formula for Women are "Quality of Life" (QOL) products that are non-synthetic nutraceuticals to support and enhance immunity, sleep, energy, muscle recovery, muscle development, and weight management."[12]

We believe their short-term goal for producing natural sports supplements will be a good alternative for athletes of all levels who seek all natural products derived from fungi and eicosanoids. Their main goal of producing methods for purifying valuable natural active molecules in fungi and eicosanoids is a safe and effective approach to drug development.

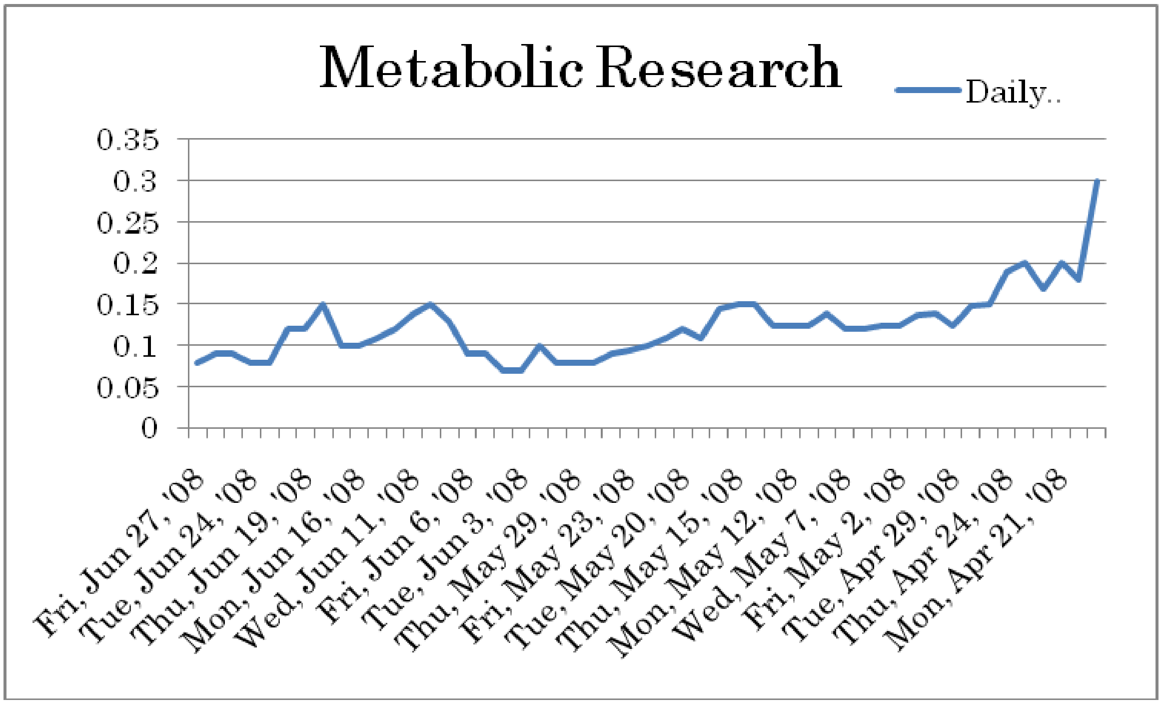

Fig. 4.2.7 Daily High Prices: Metabolic Research

The daily high price was recorded onto a graph over the period one month before and during the simulation.[12]

Human Biosystems

Human Biosystems (HBS) is a biotechnology company with a goal of becoming the leader in the development of technologies which extend the self-life of biological materials, focusing on preservation of blood platelets.[8]

The self-life of blood platelets is restricted by the US government discarded after 5 days after being donated form donors.[8] The safety and quality quickly diminishes over time and is limited to a period of 3 days in Japan.[8]

HBS has issued at least two patents which of techniques and methods for extending the self-life of blood platelets while also keeping quality and safety in mind.

The company estimates that with HBS technology applied to hospitals and blood centers, it will be able to save US$500 million annually.[8]

HBS also has a project which is under development and focuses on researching preservation methods of organs from organ donors.

The blood platelet market in North America alone was estimated to be US$300 million in 2007 and is estimated to increase another 10% the following year. The size of the market and trends are favorable for HBS.[8]

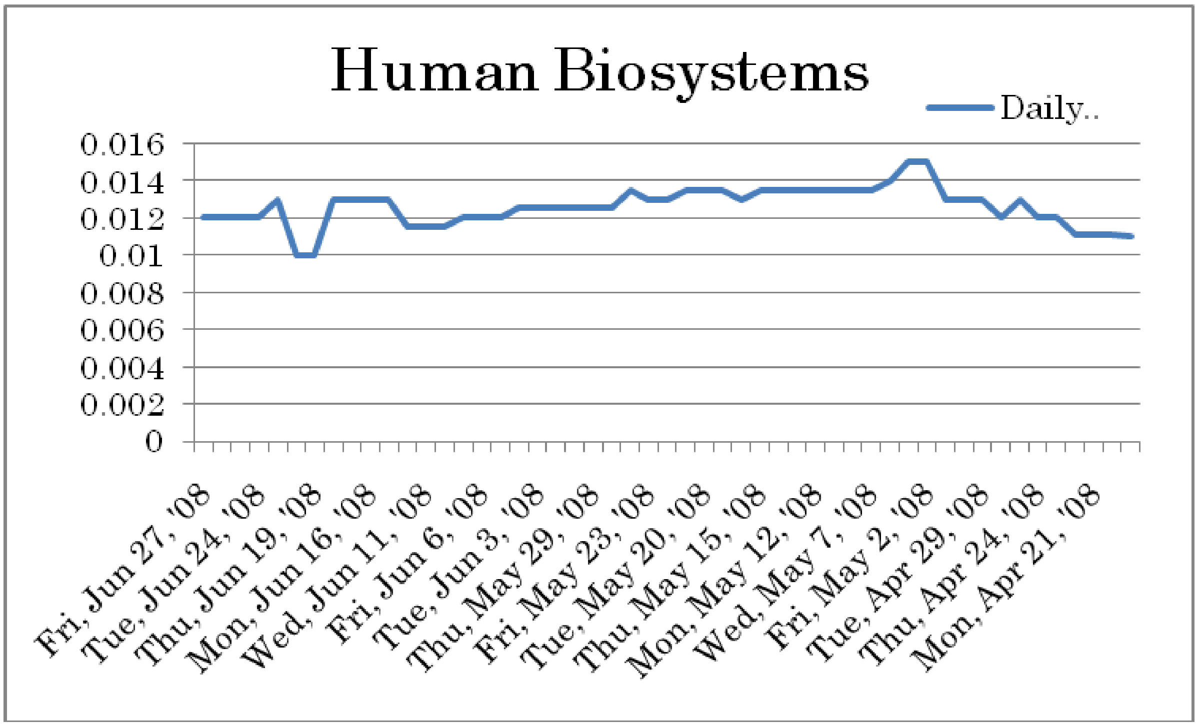

Fig. 4.2.8 Daily High Prices: Human Biosystems

The daily high price was recorded onto a graph over the period one month before and during the simulation.[12]

4.2.3 Method of Trade

The project invested $100,000 in a single stock at a time. Once stocks are sold, the money was re-invested into another penny stock. Stocks were bought from all of the selected eight companies and will continue to cycle through until the end of the eight week simulation.

A set price for selling the stocks was made at beginning of the simulation. The project had three sets of simulations with the same selected companies but with different set prices for selling stocks. The conservative simulation had a sell price 5% below and above the purchase price. The semi-conservative set had a greater sell price below and above 10% the purchase price. The aggressive model had the largest sell price below and above 15% the purchase price.

Because penny stocks are associated with high risks and high rewards the penny stock market consists of new companies and financially low companies. The penny stock is unpredictable, therefore a stock should not be held onto for a long period of time. A maximum of 7 days was set for a penny stock to be kept regardless of the stock price.

The stocks were bought from the eight selected companies and the line-up which defined the order in which they were bought was defined. The order of companies was the following; Cell kinetics ltd, BioLife Solutions, Stem Cell Innovations, AIDA Pharmaceuticals, InNexus Biotechnology Inc, Biovest International Inc, Metabolic Research, Inc, and Human Biosystems.

4.2.4 Results

Date	Company	Transaction	Price ($)[12]	Shares	Gain/Loss ($)	Cost/Proceed
05.20.08	CKNTF.OB	BUY	$1.7000	58823	N/A	$100,000.00
05.21.08	CKNTF.OB	SELL	$1.6000	58823	$-5,892.30	$94,107.70
05.21.08	BLFC.OB	BUY	$0.0600	1568461	N/A	$94,097.70
05.22.08	BLFC.OB	SELL	$0.0700	1568461	$15,654.61	$109,782.31
05.22.08	SCLL.PK	BUY	$0.0070	15683187	N/A	$109,772.31
05.23.08	SCLL.PK	SELL	$0.0075	15686282	$7,831.59	$117,613.90
05.23.08	AIDA.OB	BUY	$0.8000	147017	N/A	$117,603.90
05.27.08	AIDA.OB	SELL	$0.9000	147017	$14,691.74	$132,305.64
05.27.08	IXSBF.OB	BUY	$0.2800	472519	N/A	$132,295.64
05.28.08	IXSBF.OB	SELL	$0.2620	472519	$-8,515.51	$123,790.13
05.28.08	BVTI.OB	BUY	$0.4400	281340	N/A	$123,780.13
05.28.08	BVTI.OB	SELL	$0.4500	281340	$2,803.27	$126,593.40
05.28.08	MTBR.PK	BUY	$0.0800	152417	N/A	$126,583.40
06.02.08	MTBR.PK	SELL	$0.0900	152417	$15,814.17	$142,407.57
06.02.08	HBSC.OB	BUY	$0.0125	11392605	N/A	$142,397.57
06.05.08	HBSC.OB	SELL	$0.0111	11392605	$-15,959.65	$126,447.92
06.05.08	CKNTF.OB	BUY	$1.4000	90319	N/A	$126,437.92
06.06.08	CKNTF.OB	SELL	$1.1700	90319	$-20,783.37	$105,664.55
06.06.08	BLFC.OB	BUY	$0.0750	1408727	N/A	$105,654.55
06.06.08	BLFC.OB	SELL	$0.0600	1408727	$-21,150.91	$84,513.64
06.06.08	SCLL.PK	BUY	$0.0070	12073377	N/A	$84,503.64
06.09.08	SCLL.PK	SELL	$0.0060	12073377	$-12,083.28	$72,430.36
06.09.08	AIDA.OB	BUY	$0.8300	87265	N/A	$72,420.36
06.10.08	AIDA.OB	SELL	$0.9000	87265	$6,098.55	$78,528.91

06.10.08	IXSBF.OB	BUY	$0.2495	314745	N/A	$78,518.91
06.13.08	IXSBF.OB	SELL	$0.2700	314745	$6,442.27	$84,971.18
06.13.08	BVTI.OB	BUY	$0.4590	185122	N/A	$84,961.18
06.18.08	BVTI.OB	SELL	$0.4000	185122	$-10,933.18	$74,038.98
06.18.08	MTBR.PK	BUY	$0.0720	1028319	N/A	$74,028.98
06.18.08	MTBR.PK	SELL	$0.1500	1028319	$80,198.88	$154,237.86
06.18.08	HBSC.OB	BUY	$0.0110	14021624	N/A	$154,227.86
06.18.08	HBSC.OB	SELL	$0.0100	14021624	$-14,031.62	$140,206.24
06.18.08	CKNTF.OB	BUY	$1.1700	119834	N/A	$140,196.24
06.20.08	CKNTF.OB	SELL	$1.1000	119834	$-8,398.38	$131,807.86
06.20.08	BLFC.OB	BUY	$0.0510	2584467	N/A	$131,797.86
06.23.08	BLFC.OB	SELL	$0.0650	2584467	$36,172.54	$167,980.40
06.23.08	SCLL.PK	BUY	$0.0040	41995100	N/A	$167,970.40
06.27.08	SCLL.PK	SELL	$0.0036	41995100	$-16,808.00	$151,172.49
06.27.08	AIDA.OB	BUY	$0.8300	182135	N/A	$151,162.49
06.30.08	AIDA.OB	SELL	$0.7800	182135	$-9,126.15	$142,046.34
06.30.08	IXSBF.OB	BUY	$0.2000	710231	N/A	$142,036.34
07.01.08	IXSBF.OB	SELL	$0.2400	710231	$28,399.80	$170,436.14

N/A* = The total money was invested into a stock and therefore a gain/loss value was not calculated.

Table 4.2.1: Conservative Method Penny Stocks Transactions

A table was constructed for transactions performed on days of buying or selling of stocks. In the conservative method, stocks were sold when a +/- 5% change in price was observed. The net gain/loss in dollars was calculated by the difference in total money before and after the transaction of a stock. A $10 transaction fee was included into the simulation.

Date	Company	Transaction	Price[12]	Shares	Gain/Loss	Cost/Proceed
05.20.08	CKNTF.OB	BUY	$1.7000	58823	N/A	$100,000.00
05.27.08	CKNTF.OB	SELL	$1.3500	58823	$-20,599.00	$79,401.95
05.27.08	BLFC.OB	BUY	$0.0600	1323365	N/A	$79,391.95
05.28.08	BLFC.OB	SELL	$0.0750	1323365	$19,840.47	$99,242.42
05.28.08	SCLL.PK	BUY	$0.0065	15268064	N/A	$99,232.42
06.03.08	SCLL.PK	SELL	$0.0070	15268064	$7,624.03	$106,866.45
06.03.08	AIDA.OB	BUY	$0.8900	120074	N/A	$106,856.45
06.10.08	AIDA.OB	SELL	$0.8300	120074	$-7,214.30	$99,652.15
06.10.08	IXSBF.OB	BUY	$0.2590	384757	N/A	$99,642.15
06.18.08	IXSBF.OB	SELL	$0.2470	384757	$-4,627.08	$95,025.07
06.19.08	BVTI.OB	BUY	$0.4500	211166	N/A	$95,015.07
06.26.08	BVTI.OB	SELL	$0.4200	211166	$-6,344.98	$88,680.09
06.26.08	MTBR.PK	BUY	$0.0700	1266858	N/A	$88,670.09
06.30.08	MTBR.PK	SELL	$0.0750	1266858	$6,324.29	$95,004.38

N/A* = The total money was invested into a stock and therefore a gain/loss value was not calculated.

Table 4.2.2: Semi-conservative Method Penny Stocks Transactions

A table was constructed for transactions performed on days of buying or selling of stocks. In the semi-conservative method, stocks were sold when a +/-10% change in price was observed. The net gain/loss in dollars was calculated by the difference in total money before and after the transaction of a stock. A $10 transaction fee was included into the simulation.

Date	Company	Transaction	Price[12]	Shares	Gain/Loss	Cost/Proceed
05.20.08	CKNTF.OB	BUY	$1.7000	58823	N/A	$100,000.00
05.27.08	CKNTF.OB	SELL	$1.3500	58823	$-20,599.00	$79,401.95
05.27.08	BLFC.OB	BUY	$0.0600	1323365	N/A	$79,391.95
05.28.08	BLFC.OB	SELL	$0.0750	1323365	$19,840.47	$99,242.42
05.28.08	SCLL.PK	BUY	$0.0065	15268064	N/A	$99,232.42
06.03.08	SCLL.PK	SELL	$0.0070	15268064	$7,624.03	$106,866.45
06.03.08	AIDA.OB	BUY	$0.8900	120074	N/A	$106,856.45
06.10.08	AIDA.OB	SELL	$0.8300	120074	$-7,214.30	$99,652.15
06.10.08	IXSBF.OB	BUY	$0.2590	384757	N/A	$99,642.15
06.18.08	IXSBF.OB	SELL	$0.2470	384757	$-4,627.08	$95,025.07
06.19.08	BVTI.OB	BUY	$0.4500	211166	N/A	$95,015.07
06.26.08	BVTI.OB	SELL	$0.4200	211166	$-6,344.98	$88,680.09
06.26.08	MTBR.PK	BUY	$0.0700	1266858	N/A	$88,670.09
06.30.08	MTBR.PK	SELL	$0.0750	1266858	$6,324.29	$95,004.38

N/A* = The total money was invested into a stock and therefore a gain/loss value was not calculated.

Table 4.2.3: Aggressive Method Penny Stocks Transactions

A table was constructed for transactions performed on days of buying or selling of stocks. In the aggressive method, stocks were sold when a +/- 15% change in price was observed. The net gain/loss in dollars was calculated by the difference in total money before and after the transaction of a stock. A $10 transaction fee was included into the simulation.

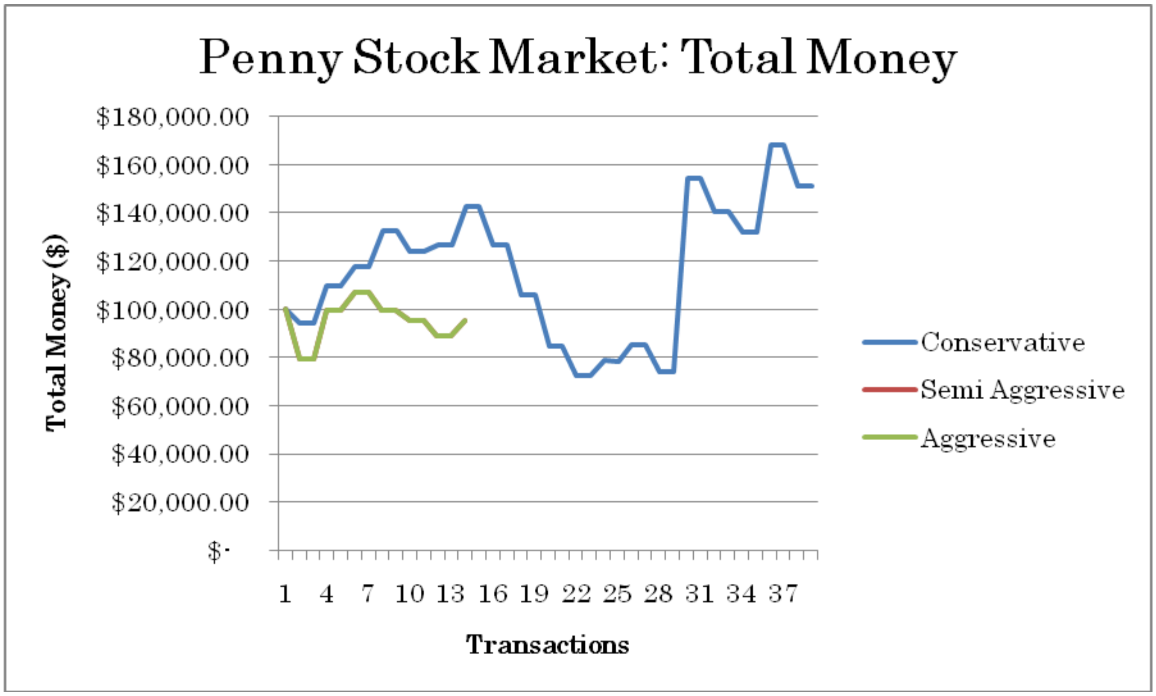

Fig. 4.2.9: Penny Stocks Market Simulation Total US$

The total amount of US dollars after each trade was recorded for each of the three individual sets of simulations; conservative, semi-conservative, and aggressive. The successions of trades were cycled through eight different stocks and in the order of, Cell Kinetics ltd, BioLife Solutions, Stem Cell Innovations, AIDA Pharmaceuticals, InNexus Biotechnology Inc, Biovest International Inc, Metabolic Research, Inc, and Human Biosystems.

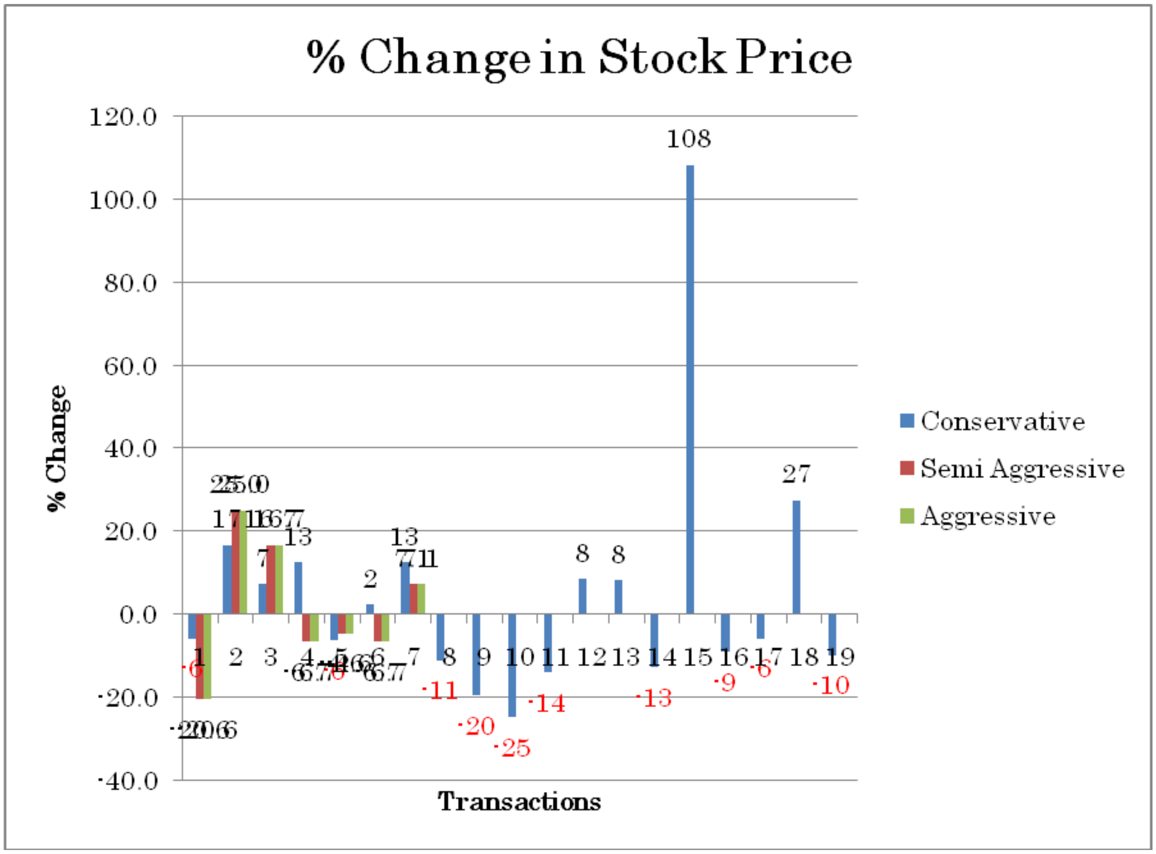

Fig. 4.2.10: Percent Change in Penny Stocks

The percent change in stock price from the buying price to the selling price was calculated for each trade. A negative percent indicates a loss in money, whereas a positive percent change indicates a gain in money. The successions of trades were cycled through eight different stocks and in the order of, Cell Kinetics ltd, BioLife Solutions, Stem Cell Innovations, AIDA Pharmaceuticals, InNexus Biotechnology Inc, Biovest International Inc, Metabolic Research, Inc, and Human Biosystems.

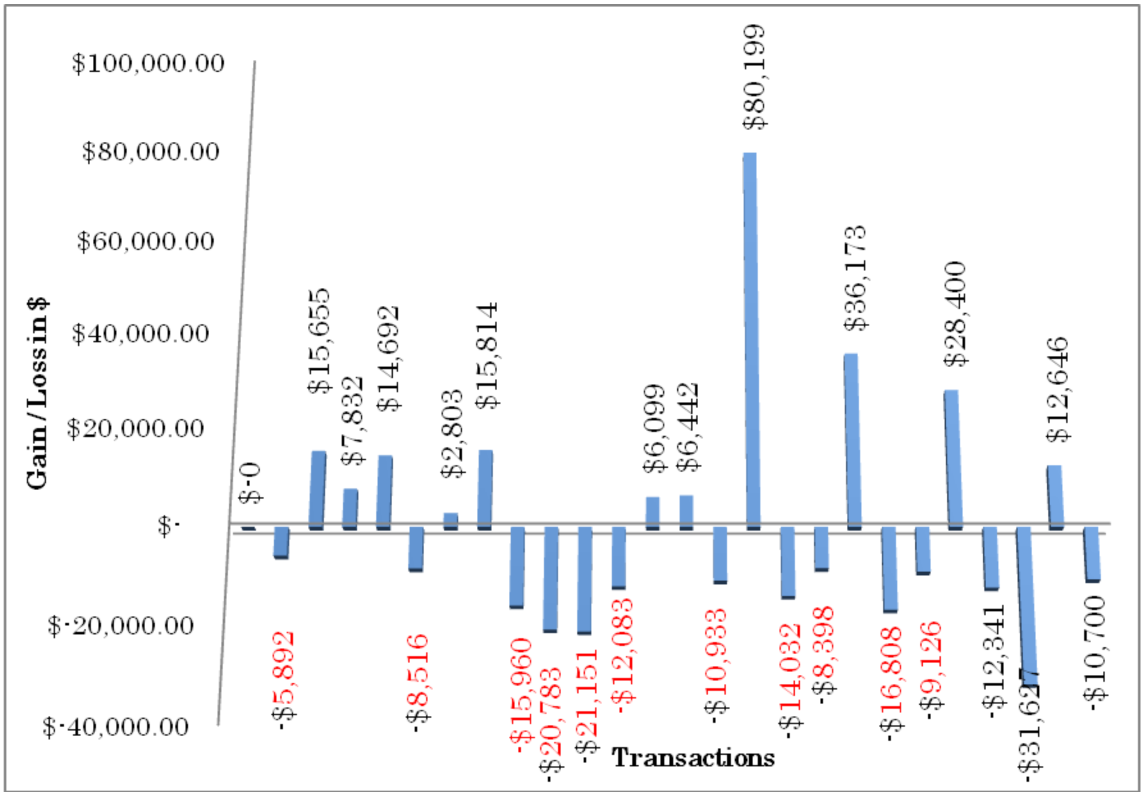

Fig. 4.2.11 Gain and Loss of Money for Transactions: Conservative Method

The amount of increase and decrease in money for all transactions in the conservative method was recorded.

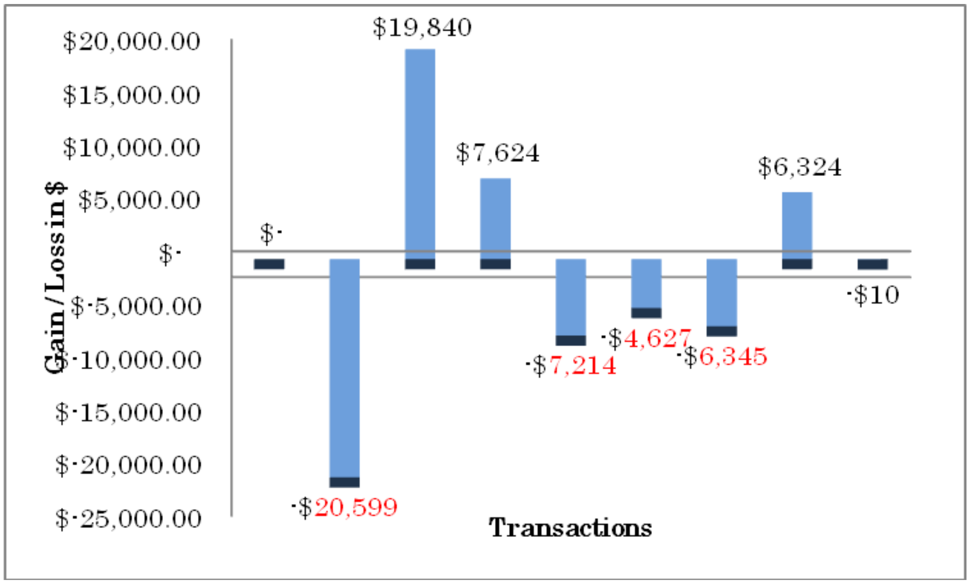

Fig. 4.2.12 Gain and Loss of Money for Transactions: Semi-Conservative Method

The amount of money lost and gained for all transactions in the conservative method was recorded.

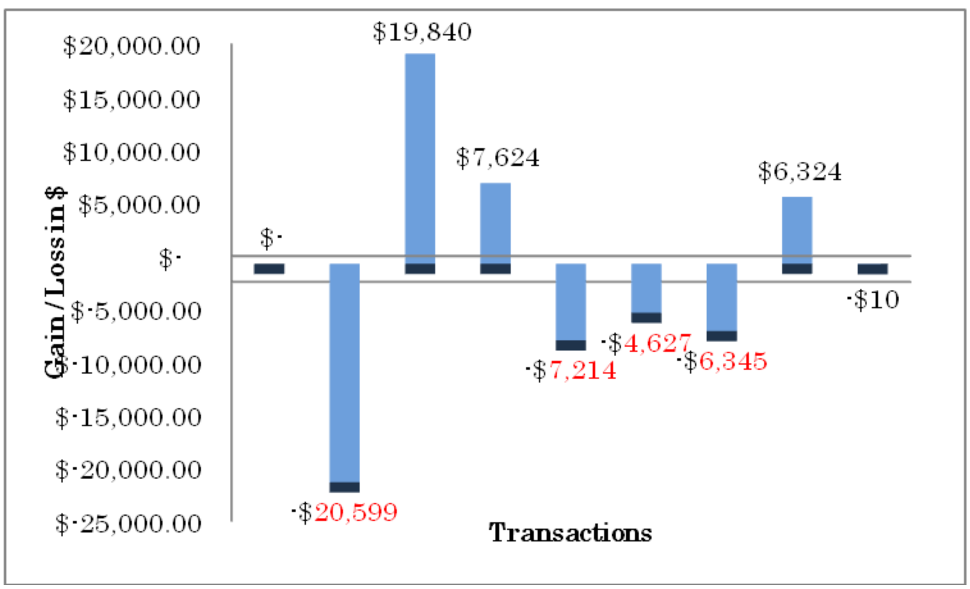

Fig. 4.2.13: Gain and Loss of Money for Transactions: Aggressive Method

The amount of money lost and gained for all transactions in the conservative method was recorded.

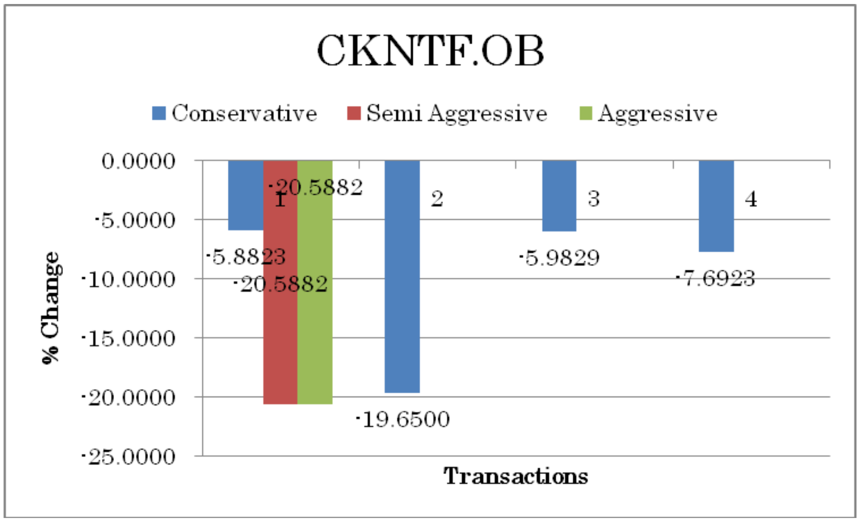

Fig. 4.2.14: Percent Change in Penny Stocks: Cell Kinetics (CKNTF.OB)

The percent change in stock price from the buying price to the selling price was calculated for each trade. A negative percent indicates a loss in money, whereas a positive percent change indicates a gain in money.

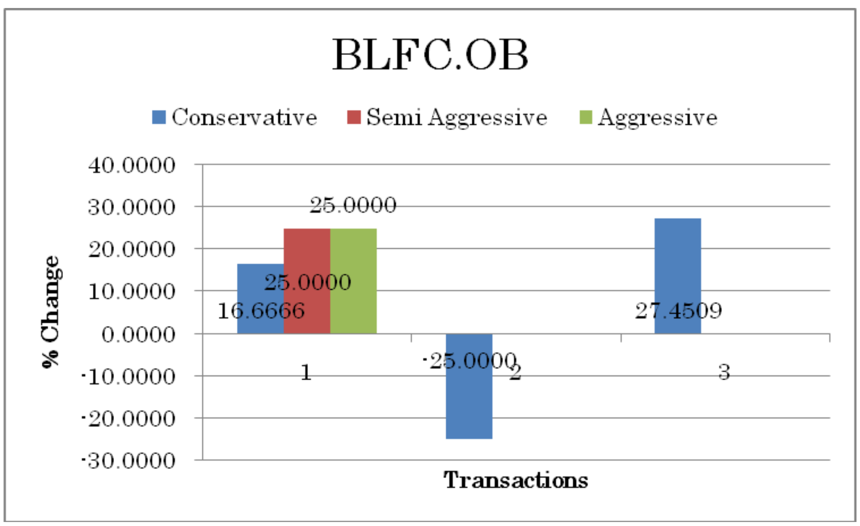

Fig. 4.2.15: Percent Change in Penny Stocks: Biolife Solutions (BLFC.OB)

The percent change in stock price from the buying price to the selling price was calculated for each trade. A negative percent indicates a loss in money, whereas a positive percent change indicates a gain in money.

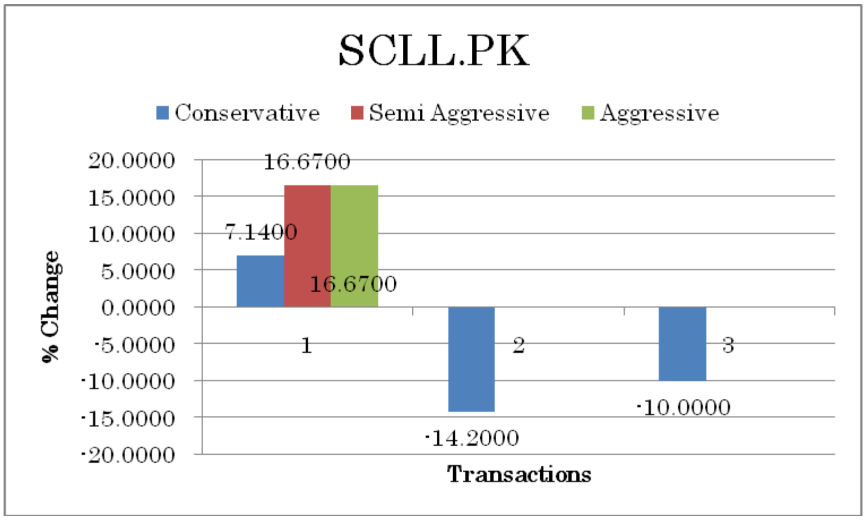

Fig. 4.2.16: Percent Change in Penny Stocks: Stem Cell Innovations (SCLL.PK)

The percent change in stock price from the buying price to the selling price was calculated for each trade. A negative percent indicates a loss in money, whereas a positive percent change indicates a gain in money.

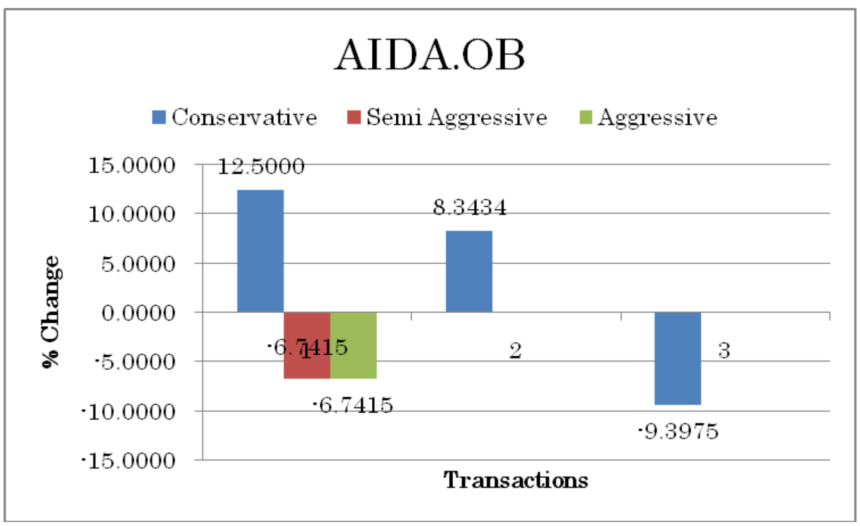

Fig. 4.2.17: Percent Change in Penny Stocks: AIDA Pharmaceuticals (AIDA.OB)

The percent change in stock price from the buying price to the selling price was calculated for each trade. A negative percent indicates a loss in money, whereas a positive percent change indicates a gain in money.

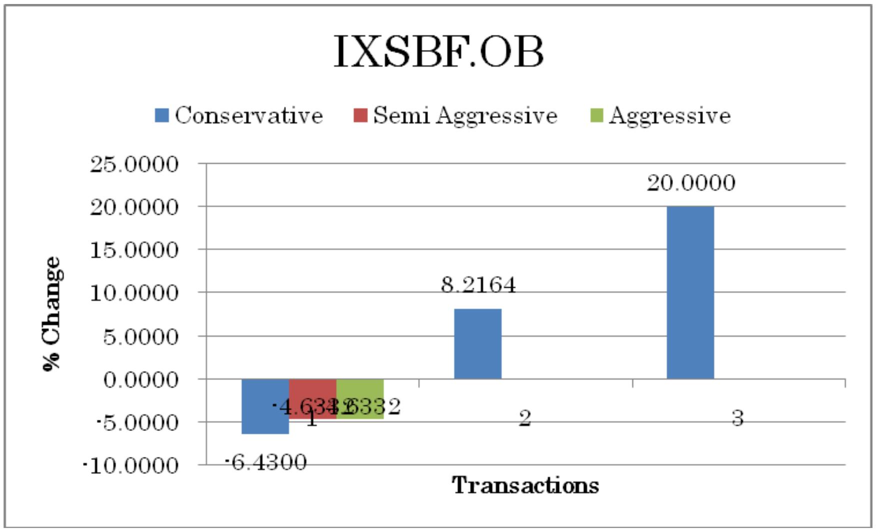

Fig. 4.2.18: Percent Change in Penny Stocks: Innexus Biotechnology (IXSBF.OB)

The percent change in stock price from the buying price to the selling price was calculated for each trade. A negative percent indicates a loss in money, whereas a positive percent change indicates a gain in money

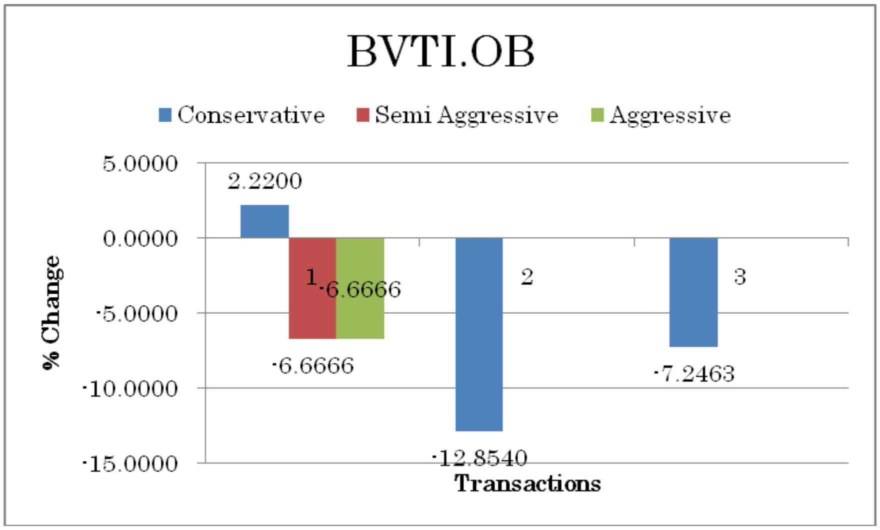

Fig. 4.2.19: Percent Change in Penny Stocks: Biovest International (BVTI.OB)

The percent change in stock price from the buying price to the selling price was calculated for each trade. A negative percent indicates a loss in money, whereas a positive percent change indicates a gain in money.

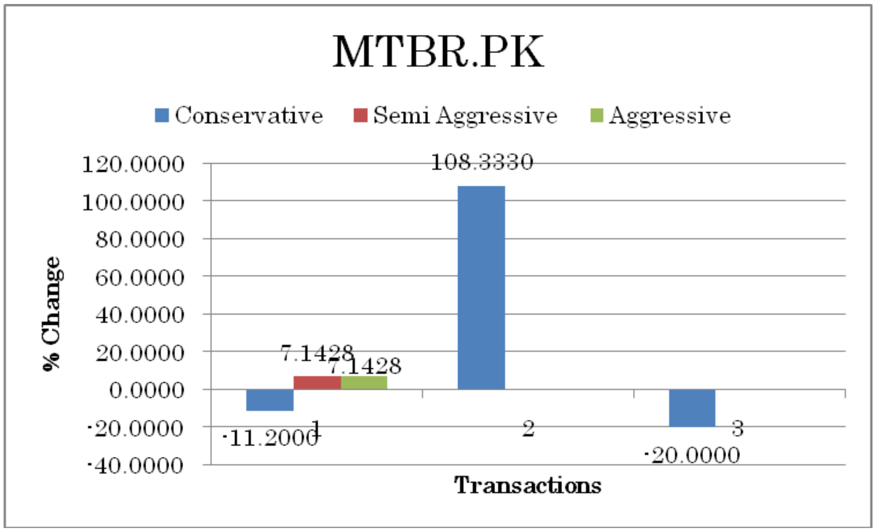

Fig. 4.2.20: Percent Change in Penny Stocks: Metabolic Research (MTBR.PK)

The percent change in stock price from the buying price to the selling price was calculated for each trade. A negative percent indicates a loss in money, whereas a positive percent change indicates a gain in money.

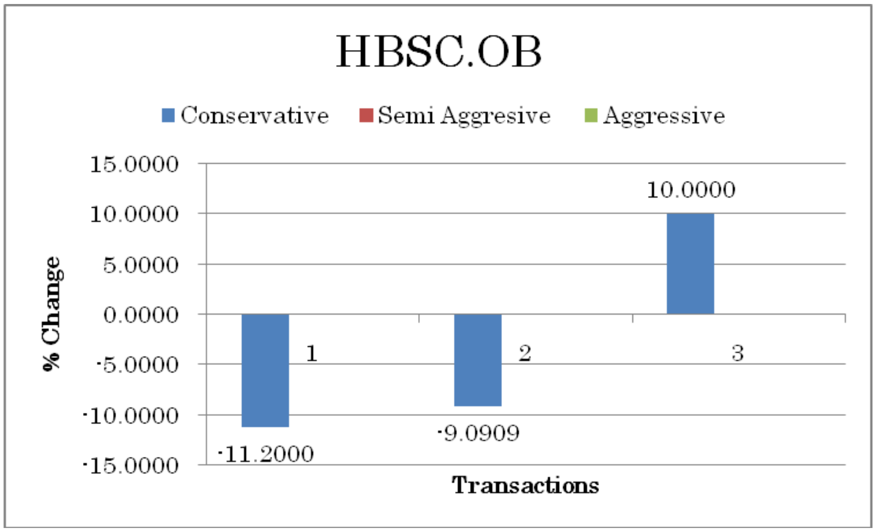

Fig. 4.2.21: Percent Change in Penny Stocks: Human Biosystems (HBSC.OB)

The percent change in stock price from the buying price to the selling price was calculated for each trade. A negative percent indicates a loss in money, whereas a positive percent change indicates a gain in money.

4.2.5 Discussion

After eight weeks of simulation using three different penny stock methods, all three methods; conservative, semi-conservative, and aggressive, resulted in a gain of proceed. The conservative method obtained the greatest profit of $28,374.04 (+28.3%) and reached a theoretical maximum profit of $70,472.14 (+70.4%). (See table 4.2.1) Of the three methods, the semi-conservative and aggressive method resulted in completely identical transactions, therefore had exactly the same result even though there was a 5% difference in selling price. Both the semi-conservative and aggressive method resulted in a positive final profit of $13,997.25 (+13.9%) and reached a possible maximum profit of $14,007.25 (+14.0%). (See table 4.2.2 and 4.2.3)

All three penny stock methods reached the set initial goal and went above and beyond by obtaining a substantial net profit. In terms of total profit, the conservative method resulted in the most significant net gain reaching 28.3%.

The conservative method which had a selling price of +/-5% of the buying price had great success probably due to large number of transactions which took place within the eight week period. The conservative method had a total of 52 transactions resulting in eleven sales with gain of profit totaling a cumulative gain of $226,753.19 which averages a gain of $20,613.93 per transaction. (See figure 4.2.9) This method also consisted of 14 sells with a loss of profit averaging -$14,167.87 per transaction. (See figure 4.2.9) The large number of transactions which occurred in the conservative method allowed for the large frequent losses in transactions to be outweighed by the greater frequency of gains.

When looking at the selling prices of the conservative method the majority do not fall close to the given +/-5% sell price. (See figure 4.2.10) On average the actual selling price of stocks in the conservative method was near 20%. This difference was due to the fact that the stock price significantly went over or under the set sell price. The closest to +/-5% a stock was traded was -5.88% (CKNTF.OB 05.21.08) and the farthest was a trade which took place at +108.33% (MTBR.PK 06.18.08). (See table 4.2.1 and figure 4.2.10)

Though the conservative method did result in a final net income of $28,374.04 (+28.3%) there were periods of great loss. During a seven day period between June 2nd and June 9th, four consecutive losing transactions took place. (See table 4.2.1 and figure 4.2.11) This losing streak combined to a total loss of -$69,977.21 reducing the total proceeds to an all-time minimum of $72,430.36 from the initial $100,000. This kind of devastating loss was also apparent in the semi-conservative and aggressive methods but in the form of a single transaction leading to -$20,599.00 (-20.5%) loss. (See table 4.2.2 and 4.2.3)

Both the semi-conservative and aggressive methods only had eight transactions (compared to 25 transactions in conservative) which barely cycled completely through the eight stock companies initially chosen. The lack of action in transactions was due the infrequent nature of the penny stocks to reach price differences in the 10% and 15% range. When prices did reach the set prices usually prices were of percent differences in the 20% range. (See figure 4.2.12 and 4.2.13) Transactions in the semi-conservative and aggressive method usually ended up being bought and kept until the 1-week selling restriction rule applied. Out of the eight transactions, six of the transactions were forced to be sold by the one week selling restriction. (See table 4.2.2 and table 4.2.3) This lack of stock price movement and transactions led to drastically fewer trades and the selling of stocks at sub-optimal prices.

The higher set prices of the semi-conservative (10%) and aggressive (15%) at first glance appears to have a much higher risk and rewards but, due to the nature of penny stocks this was proved wrong. In the conservative (5%) method, great changes in stocks price was seen instantaneously and were evident in short bursts, and took advantage of the slightest gain in price. By having a low set sell price of 5%, stocks were able to be traded multiple times within a single day in the market and allowed a large number of transactions. This lead to increasing the chance to buy a stock which would produce a large gain, such as in the case of the +108.33% Metabolic Research trade

(MTBR.PK 06.18.08). From this simulation, it appears that a penny stock method with a low set selling price (5%) is optimal.

In analyzing the eight individual biotechnology related stocks selected for the penny stock method, they showed a gain/loss trend of producing moderate loss, moderate gain, or significant gain. In general the stock companies which produced overall loss were Cell Kinetics, Biovest International, and Human Biosystems, which combined produced a total loss of -$72,890.61 (conservative method) and -$26,953.98 (semi-conservative and aggressive methods). (See figures 4.2.14, 4.2.19, and 4.2.21) Out of the fifteen transactions made on these stocks, thirteen transactions resulted in a loss. In the future, these stocks would be red flagged and should be dropped for a new stock company.

Stock companies which produced moderate gains were Aida Pharmaceuticals, Biolife Solutions, Innexus Biotechnology, and Stem Cell Innovations. (See figures 4.2.15, 4.2.16, 4.2.17, and 4.2.118) Combined these four companies produced a net total gain of $47,607.25 (conservative method) and $15,623.12 (semi-conservative and aggressive methods). If one were to only consider the three companies with overall loss and the four with gains, all three penny stock methods would fall short of breaking even.

The stock company which added a substantial amount of revenue into all three penny stock methods was Metabolic Research, which pumped in $7,142.80 to the semi-conservative and aggressive method, and hit a jackpot in the conservative method by adding an additional $80,198.88 to the total in one trade. (See figure 4.2.20)

Because all three methods had traded the same eight companies and experienced similar losses and gains within each company, it can be argued that the conservative (5%) penny stock method is a good trading method given the eight week time period.

Furthermore, besides selection of stock companies and setting sell prices, analysis of headlines and financial reports announced by individual companies may be something which should be considered when trading with the penny stocks method. Notable transactions with large fluctuation of stock price were seen consistently when a company posted their financial reports or research progress reports.

For example, on July 7th Cell Kinetics stocks were bought in the conservative method at $0.65 and coincidently a financial report was posted on the headlines by Cell Kinetics. This report was their first quarterly financial report from this past winter. This report had apparently a negative effect on buyer and had resulted in stock prices falling to $0.60 (-7.69%). (See table 4.2.1) A similar incidence with Stem Cell Innovations occurred on May 22nd with an increase in 7.14% after a financial report was released that same day. (See table 4.2.5) On days where companies release financial reports, buyers and sellers are more active and from reading and interpreting the report, significantly affects the stock prices.

Period Ending	Dec 31 07
Net Income in thousands	$2,096

Table 4.2.4: A Quarterly Financial Report from Cell Kinetics

A financial report from Cell Kinetics issued on July 7th on the headlines on Yahoo! Finance.[12]

Period Ending	Sep 30 07	Jun 30 07	Mar 3 07	Dec 31 06
Net income in Thousands	$6,426	$3,345	$1,976	$3,072

Table 4.2.5: A Quarterly Financial Report from Stem Cell Innovations

A financial report from Stem Cell Innovations issued on May 22nd on the headlines on Yahoo! Finance.[12]

Similarly to headline reports of financials, news such as Innexus Biotechnology's announcement of their expansion of the patent protection of their DXL technology was coincidently released on June 12th which lead to an increase in stock prices from $0.245 (06.10.08 IXSBF.OB) to $0.2700 (06.13.08 IXSBF.OB). (See table 4.2.1) I believe that in order to be successful, close attention must be paid to company announcements and news which provides for a great opportunity to trade

A more realistic method for penny stocks trading would be to set a definitive goal, when reached, the entire money is withdrawn to prevent the risk of a loss. For example, in the conservative method, there was a point in time when total proceed was at $170,472.14 (+70.4%). (See table 4.1.1) When reaching such a gain, there is greater risk involved in terms of the amount of money which could be gained or lost. A simple solution would be to re-invest $100,000 instead, and place the earned $70,472.14 into a savings account.

In analyzing the eight initial biotechnology related stock companies, all but one of the stocks presented a significant decrease in stock price over the 8-week simulation period. This suggests that in choosing stocks for the penny stocks method, it does not relatively follow the trend presented by the historical stock prices. Biotechnology companies which focused on products with significant importance and products which served a common application for a laboratory environment resulted in the greatest gains. While biotechnology companies which had patents for innovative but not 100% accepted into the scientific community, or technology which was still in early stages of development, resulted in losses.

Biolife Solutions produced a line of cryopreservation media which efficiently preserved samples both ranging from sub-freezing (long-term), and low-temperature (short-term) storage. This product can easily be recognized as being an essential material used frequently and ominously in any laboratory. However, over the eight week period, the stock price declined steadily from $0.06 to $0.05, a 16.6% decease. (See figure 4.2.2)

Stem Cell Innovations also produced a line of human pluri-potent stem cells which serves as an analysis and screening tool for drug development. This assay had been recognized as being reliable and has been used in several independent scientific research articles. This stock had also produced moderate gains but showed a significant decreasing trend in stock prices. Stem Cell Innovations had experienced a decrease from $0.0095 to $0.004, a 57.8% decrease. (See figure 4.2.3)

Aida Pharmaceuticals resulted in a moderate gain but showed a 18.1% decrease in stock price from $1.1 to $0.9. (See figure 4.2.4) Similarly, Metabolic Research which resulted in great gains had experienced a historical stock price decrease from \$0.30 to \$0.07, a 76.6% decrease. (See figure 4.2.7)

These four stocks which produced gains but had decreasing stock prices share a common characteristic which may help identify successful stocks in penny stock methods. In particular these four stocks had shown very violent and spontaneous changes in stock prices within each market day. The historical stock prices represent the daily high prices for each day. Therefore a strategy would be to take advantage of very spontaneous stock by buying at low and selling at a high. This is easily said than done however, by identifying potential stock which is spontaneous, the results have been successful.

Biovest Internation which produced a “medical device” not yet approved by FDA, Innexus Biotechnology which provides DXL modification to other independent companies’ antibodies to improve efficiency, and Human Biosystems which made an innovative method to preserve blood platelets for a slightly increased length of time. All three companies are companies which resulted in a moderate loss. These three companies had less movement in stock prices, probably due to lack of interest in buyers.

For future screening of penny stocks for the penny stock method, biotechnology companies specializing in common laboratory equipment and tools should be emphasized. While companies with innovative technology hold potential for great success but, in this simulation resulted in loss.

In future stock simulations with the penny stock method, further analysis of the conservative (5%) method should be conducted to reproduce its success. Along with the conservative method, another method which sells and buys stocks consistently everyday regardless of the price should be investigated. It appeared from this simulation that the more frequent transactions conducted resulted in positive results of gain. While more frequent transactions lead to more individual loss, there is a greater chance of landing a jackpot stock trade like in the conservative method with Metabolic Research.

4.3 Method 3-Contrarian Investing Strategy

4.3.1 Screening Process

We selected all of the stocks for this method from the S&P 500 because there were a large number of stocks to select from. To choose the stocks we would invest in for the Contrarian method, we set a few guidelines. The P/E ratio must be under 10, indicating the company may be undervalued.[29] We required the volume at which people had been trading must be under eight million shares, the lower volume the better, which means that people are staying away from this stock. The Contrarian method involves selecting stocks that conventional wisdom says to stay away from. We also required a P/B ratio less than 1, which meant that the company had room to grow combined with the P/E ratio under 10. The current stock price must be under $20 per share. We also looked to see if the companies posted increasing profits or had good news.

The plan for this method of investing is to purchase stocks at the beginning of our simulation and hold them for the duration of the experiment. Then we will compare the return on our investment to the results for the S&P 500, each business sector traded, and each industry traded. Stocks may be bought and sold, but trading may happen only if a stock price drops by twenty percent of its original transaction price.

4.3.2 Companies and Stocks Selected

To select the stocks we simply went down the list of the S&P 500, looking at stocks that initially appeared as candidates, with stock prices under 20 and low volumes. Then when we did further analysis we eliminated about 20 to 30 candidates, ending up with seven stocks which satisfied our criteria. The seven initial stocks were: Ambac Financial Group, Inc.; Bear Stearns Companies, Inc.; Countrywide Financial Corporation; CIT Group, Inc.; First Horizon National Corporation; Jones Apparel Group, Inc.; and MGIC Investment Corporation. During the simulation Ambac fell below twenty percent of the original sale price, while Bear Stearns merged with JPMorgan Chase, necessitating trades. Ambac was sold and Centex was bought to replace it on May 28, while D.R. Horton was bought to replace Bear Stearns on May 29. On June 2 we sold CIT Group and replaced it with Eastman Kodak. We bought KeyCorp to replace Centex on June 10th, Lennar Corporation to replace MGIC Investment Corporation on June 12th, and Liz Claiborne to replace KeyCorp on June 13th. On July 1st, Countrywide Financial Group merged with Bank of America, so we were forced to replace this stock with Marshall and Ilsley Corporation.

ABK

Ambac Financial Group, Inc, founded in 1971, is an American holding company, which means that it purchases other companies outstanding stock. This type of company does not manufacture or produce anything itself; it just controls stock of other companies. This type of business reduces risk for the owners of the company and can control stock from multiple companies. There are subsidiaries of Ambac that provide financial guarantee products and other kinds of financial services to clients in either public or private sectors all over the world. The subsidiaries are split into two segments, Financial Guarantee and Financial Services. The former provides financial guarantee insurance and other products to enhance credit, while also offering credit protection. The latter provides financial and investment products. The Financial Guarantee subsidiary focuses its business in U.S. markets.[12]

Ambac was selected because of a low volume of trading, 2,044,714, a P/E ratio of N/A, and a P/B ratio of 0.88, which indicated that Ambac was undervalued. The income statements showed profits of $751,010 in 2005 and $875,911 in 2006 before a large loss of $3,248,157 last year. While the huge loss is scary, the majority of the loss stemmed from a large increase in advertising expenses in the last quarter of the year, which could lead to increase revenue in the next quarter. We purchased the stock for $3.91 on May 19th, and sold it for $2.94 on May 28th, replacing it with CTX in the portfolio.

Figure 4.3.1: Change in ABK Price While Owned

BSC

Bear Stearns Companies, Inc, was founded in 1923 by Joseph Bear, Robert Stearns, and Harold Mayer as an equity trading house. The company handles a variety of financial investments such as corporate finance, derivatives, and foreign exchange. It also produced a famous market intelligence piece, "Early Look at the Market-Bear Stearns Morning View." It has also been recognized as one of the most admired securities firms. The company suffered a huge fall in stock price in March, a direct reaction from the announcement that JPMorgan Chase had purchased Bear Stearns. Since then, then the company had recovered in price, trending upward. No official date had been announced for the merger at the onset of the simulation, meaning it was possible for Bear Stearns to still be traded at the end of the eight week period; however, the merger became official on May 29, so the stocks were sold.[12]

Initially, Bear Stearns was selected because of its very low volume of 598,667, a P/E ratio of N/A, and a P/B ratio of 0.15, all of which indicated possible growth. The company also posted a positive net income over the last year, and had an aforementioned upward trending stock price. We purchase the company at $10.19 per share on May 19th, and received $9.55 per share from the merger on May 29th.[12]

CFC

Countrywide Financial Corporation was founded in 1969, and primarily engages in mortgage lending and other real estate finance related businesses based in the U.S. There are five segments to the company: Mortgage Banking, Banking, Capital Markets, Insurance, and Operations. The Mortgage Banking section deals with all facets of mortgages such as purchasing and selling while also providing loan closing products. The Banking segment is mainly involved with mortgage loans and home equity lines of credit. The Capital Markets segment works as a registered securities broker-dealer, residential mortgage loan manager, and a commercial mortgage loan originator. The Insurance section offers property, casualty, automobile, life, and disability insurance, plus offering reinsurance to mortgage insurers. The Operations segment supplies support services and software licensing.[12]

Countrywide closed at $4.90 per share on May 16, while trading at a volume of 3,972,896. It was selected because of its P/B ratio of 0.22, P/E ratio of N/A, indicating growth. The net income for the company was over $2 million for 2005 and 2006, but was negative last year ($703,538). However, the loss was due to a large, non-recurring expense in the first quarter last year and an increase in advertising, meaning revenue could increase, and showing profits for the company. We purchased CFC for $4.96 per share, and held onto the stock until it merged with Bank of America on the 1st of July. From the merger the stocks were sold at $4.26 per share.[12]

CIT

CIT Group, Inc, is a commercial finance company providing financial products and services all over the world. The main products are asset based loans, secured lines of credit, and operating, capital, and leveraged leases, while supplying several others. The services supplied by CIT are primarily financial risk management, asset management and servicing, and debt restructuring in addition to many more. The target clients for CIT are any sized company (small, middle, or large) within several industries such as retailing, wholesaling, and healthcare. CIT was founded in 1908 and is based in New York City.[12]

CIT was chosen based on its P/E ratio of N/A, a P/B ratio of 0.38, and a low volume of 1,306,649, which indicates possible growth. The income of the company was negative over the last year, but the loss was one percent of the total revenue, and the company had posted large profits in the previous two years. This led us to believe that the company would bounce back. The company was purchased initially at $12.21 per share on May 19th, but had to be sold on June 2nd at $9.56 per share. EK replaced CIT in our portfolio.[12]

Figure 4.3.2: Change in CIT Price While Owned[12]

CTX

Centex Corp. was founded in 1950 and primarily engages in the construction and sale of detached and attached single-family homes through subsidiaries. The company operates within seventy-four market areas in twenty-two states and Washington, DC.

The company also is involved with homebuilding operations including resort type projects in Florida. The company also offers mortgage lending and related services.[12]

Centex's P/B ratio was 1.00, which, along with a P/E ratio of N/A and an average volume of 5,629,830 over a ten day period indicated that the stock was undervalued. The company also posted profits over the last three years despite the bad housing market, leading us to believe that the stock had room to grow. We purchased CTX to replace ABK on May 28th at $19.55 per share. However, by June 10th we needed to replace CTX with KEY, selling CTX at $15.62 per share as its freefall continued.[12]

Figure 4.3.3: Change in CTX Price While Owned[12]

DHI

D.R. Horton, Inc is a homebuilding company based out of Fort Worth, Texas, and was founded in 1978. DHI is broken into two segments, Homebuilding and Financial Services. Homebuilding acquires and develops land for residential purposes, and builds and sells residential homes. The company works in twenty-seven states among eighty-three markets. The Financial Services segment deals with mortgage banking and title agency services to homebuyers.[12]

The company has a P/E ratio of N/A, while its P/B ratio was 0.97. The volume was a little high at 8,614,177, but because of the P/B ratio and P/E ratio, we allowed it. The company posted profits over $1 million in 2005 and 2006 before losing $712,500 last year. This was because the cost of revenue was greater than the revenue. With the expenses for advertising consistent, we decided that the revenue would eventually pass its cost. We bought DHI to replace Bear Stearns when it merged at a cost of $12.71 per share. At the end of the simulation we sold DHI for $9.62 per share.[12]

Figure 4.3.4: Change in DHI Price While Owned[12]

EK

Eastman Kodak Company (EK) was founded in 1880 and is based in Rochester, New York. The company focuses its business on developing, manufacturing, and marketing digital and traditional imaging products, services, and solutions all over the globe. Kodak is divided into three segments: the Consumer Digital Imaging Group, the

Film Products Group, and the Graphic Communications Group. The Consumer group offers digital products to consumers such as digital cameras, digital picture frames, and printers. The Film Products Group manufactures and markets different types of films, such as motion pictures and consumer films, and one-time-use and re-loadable film cameras. Digital prepress equipment and consumables, like plates, chemistry, and media, are offered by the Graphic Communications Group. This group also provides services and maintenance for other manufacturers' products and imaging services.[12]

EK was chosen for its P/E ratio of 6.13 and lower volume of 4,386,222. The P/B ratio of 1.42 was not ideal, but because of the strength of the P/E ratio with regards to our predetermined guidelines, we felt that the two ratios balanced each other out. The income of Kodak has been increasing each of the last three years, with steady earnings during the summer season of the year. We paid \$15.22 per share for EK to replace CIT in our portfolio on June 2nd. By the end of the eight week period, we sold EK at \$13.50 per share.[12]

Figure 4.3.5: Change in EK Price While Owned[12]

FHN

First Horizon National Corp. operates as a holding company for First Tennessee Bank National Association. The bank provides various services globally, mainly offering retail and commercial banking, mortgage banking, and capital markets services. The bank also offers general banking services for consumers and businesses alike, credit card services, discount and full-service brokerage, and even reinsurance. The banks also engages in mutual fund, retail, and commercial insurance sales, while also dealing with bank-eligible securities and other fixed-income securities among other roles. The company has business locations in 42 US States and Hong Kong, plus financial centers in 6 states. FHN was founded in 1968 and is headquartered in Memphis, Tennessee.[12]

We selected First Horizon because it was trading at a volume of 770,801, had a P/E ratio of N/A, and had a P/B ratio of 0.61. The company posted a net loss of less than 1% of total revenue for last year, but had a positive net income the two prior years. Plus, an article by Rich Smith of *The Motley Fool* cited FHN as a “drop-dead gorgeous” stock because the company recently hit a five-year low[27] and indicated that the stock was left for dead. We bought FHN at $9.91 per share on May 19th, and sold the company at the end of the eight week period for $ 6.70 per share.[12]

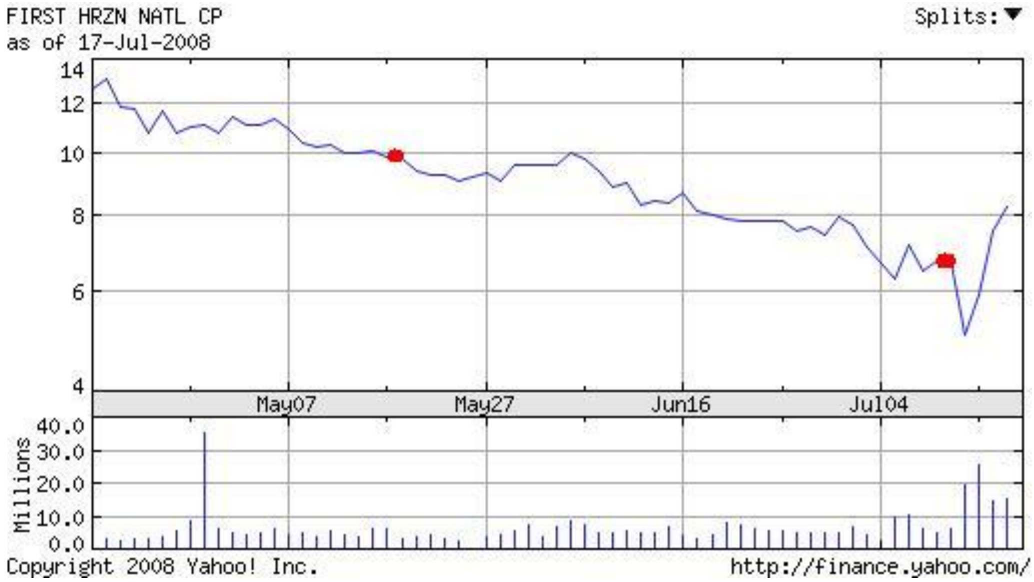

Figure 4.3.6: Change in FHN Price While Owned[12]

JNY

Jones Apparel Group, Inc, was founded in 1975 and is responsible for designing, marketing, and selling clothing, footwear, and accessories, mainly in the US and Canada. The products that Jones makes are for women and children, and range from skirts and blouses to suits and outerwear. The products are marketed under several categories, like career, casual, lifestyle, dresses, and suits. The company markets the products under several brands such as Anne Klein, l.e.i., and Jones New York. Footwear is marketed under the Dockers Women' brand licensed from Levi Strauss and Co. Jones also licenses its own brand names to manufacturers and distributors of women's and men's products.[12]

We chose Jones Apparel Group, Inc. (JNY) on the strength of a P/E ratio of 5.77, a P/B ratio of 0.76, a volume of 306,170. These numbers seemed to indicate that JNY was undervalued. We also liked that the company also posted profits last year, rebounding from losses the year before. This would seem to indicate that the company is growing. JNY was purchased by us for $17.06 per share on May 19th, and we sold it for $12.88 per share after the simulation was over on July 11th.[12]

Figure 4.3.7: Change in JNY Price While Owned[12]

KEY

Founded in 1849 and based in Cleveland, Ohio, KeyCorp (KEY) is the holding company for KeyBank National Association. IT provides banking services to various types of clients in the United States, primarily engaging in generating deposits and originating loans. Products that are deposited include savings and checking deposits, certificates of deposit, and NOW accounts. The types of loans that are generated are commercial, financial, and agricultural loans, real estate loans, and consumer loans. KEY also is in the business of providing personal and corporate trust services, personal financial services, and cash management services among other business facets. Accident, health, and credit-life insurance is also offered on loans made by the subsidiary bank. KEY operates retail banking branches in 13 states and ATMs in 15 states.[12]

We selected KEY because of a great P/B ratio of 0.45, a P/E ratio of 5.40, and an average volume of 6,946,997. The company also posted three consecutive years of profits. We originally bought the stock for $16.86 per share, but due to a sharp decrease in price on one day during the first week after we purchased the shares we were forced to sell. We purchased LIZ to replace the stock after it sold for $11.98 per share.[12]

Figure 4.3.8: Change in KEY Price While Owned[12]

LEN

The Lennar Corporation (LEN) operates in 14 US states and is based in Miami, Florida. It operates as a homebuilder, constructing and selling mostly single-family attached and detached homes. The company also produces multi-level residential buildings, and is involved in purchasing, developing, and selling residential land. LEN also offers some financial services like mortgage financing, title insurance, and closing services. The company owned 62,801 homesites and owned options to 85,870 additional homesites at the end of 2007. [12]

LEN was chosen on the strength of a P/E ratio that was N/A, an average volume of 6,332,180, and a lower total debt to equity ratio of 0.745. It was a little disconcerting that the income had been declining and the P/B ratio was N/A, but it seemed like the stock was turning a corner based on an upward trend in price. We bought the stock for \$14.98 and sold it at a loss at \$10.31 on July 11th.[12]

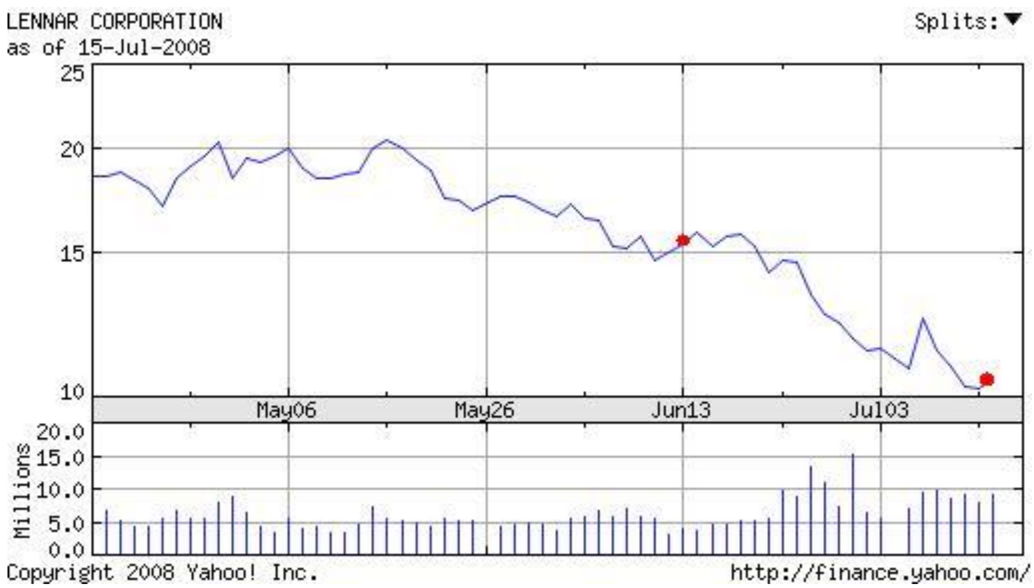

Figure 4.3.9: Change in LEN Price While Owned[12]

LIZ

Liz Claiborne, Inc. (LIZ) is designs, markets, and retails a whole range of apparel, fragrance products, and accessories all over the globe. The company was founded in 1976 and is based in New York City, operating 433 specialty retail stores in the US, Canada, and Western Europe, plus 350 outlet stores in those areas as of the end of 2007. The company markets contemporary apparel, denim, casual sportswear, and other items for men, women, and children. Additionally, LIZ provides accessories like handbags and fragrances, plus bath and body-care products. The company offers the products under its own brand names such as MEXX, LUCKY BRAND JEANS, JUICY COUTURE, and KATE SPADE, plus other wholesale-based brands such as CLAIBORNE, DANA BUCHMAN, and ENYCE. The company also provides licensed brands such as DKNY, and non-direct fragrance brands like LIZ CLAIBORNE and USHER.[12]

We chose LIZ because of a P/E ratio of N/A, an average volume of 2,027,680, and a total debt to equity ratio of 0.675. The company does not list a P/B ratio, and did post a large loss in the prior year, but the revenue remained steady. The reason a loss was posted was because of increased advertising expenses and a large nonrecurring cost. In the two years prior the company posted positive income. We bought LIZ to replace KEY on June 13th for $15.60 a share, and kept it until the end of the simulation, selling it at $11.44 per share.[12]

Figure 4.3.10: Change in LIZ Price While Owned[12]

MI

Marshall & Ilsley Corporation (MI) operates all of the US and is based in Milwaukee, Wisconsin. It was founded in 1847 and provides diversified financial services to many different types of customers in the US. There are three segments to MI: Commercial Banking, Community Banking, and Wealth Management. The first segment provides commercial, corporate, and real estate banking products and services to middle market, corporate, and public sector customers, while also offering lines of credit, construction loans, land acquisition and development loans for commercial real estate and correspondent banking markets. The Community Banking segment deals with consumer and business banking products and services. The Wealth Management aspect of MI provides asset management, trust, brokerage, life insurance, and advisory services. The company also offers several miscellaneous services, such as derivative or foreign exchange risk management services. [12]

We chose MI because of a low volume of trade, averaging 5,796,400 per day for the month, plus a P/E ratio of 3.57. The company has also enjoyed rising share prices despite large losses. We bought the company to replace CFC after it merged, purchasing MI at $15.60 per share on July 1st, and selling it at $12.84 on July 11th.[12]

Figure 4.3.11: Change in MI Price While Owned[12]

MTG

MGIC Investment Corporation provides private mortgage insurance through is subsidiary to the home mortgage lending industry based in the US. The private mortgage insurance involves primary and pool mortgage insurances. The primary insurance it provides covers mortgage default protection on individual loans and also other expenses associated with default and foreclosure. The insurance is generally written on first mortgage loans for an owner occupied small homes. The pool insurance is used as credit enhancement for some secondary market mortgage transactions, and covers defaulted mortgage loan loss exceeding claim payment under the primary coverage. Other various mortgage services are offered by the company for the mortgage finance industry. MGIC was founded in 1984 and is based in Milwaukee, Wisconsin.[12]

We selected MTG because the company traded at a volume of 286,149, had a P/E ratio of N/A, and a P/B ratio of 0.55, indicating that the company could be greatly undervalued. The company posted a large loss last year, but our worry was tempered by positive net incomes the two prior years, suggesting that the company can turn a profit this year. MTG was purchased on the day the simulation began on May 19th for $12.99 per share, but we had to sell it on June 12th for $9.07. We replaced it with LEN on the same day.[12]

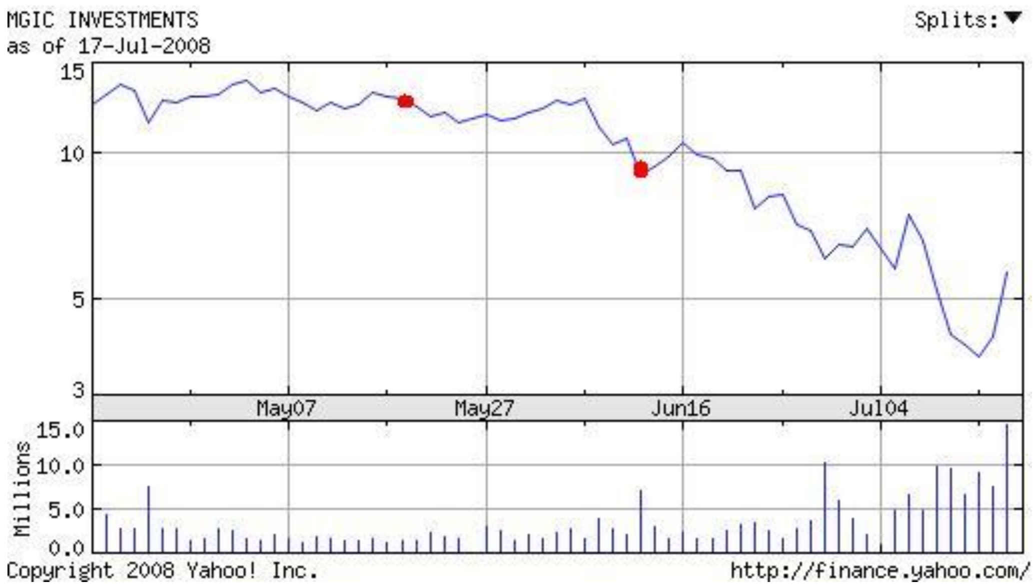

Figure 4.3.12: Change in MTG Price While Owned[12]

4.3.3 Results

We decided to invest $100,000 between these initial seven stocks. We put emphasis on the three stocks that had a stock price that was less than $10 per share, ABK, CFC, and FHN, with the thinking that these three stocks had the most potential to grow. We tried to invest about $20,000 for these three companies. For ABK, we purchased 5112 shares at $3.91 per share for a total investment of $19,997.92. We purchased $19,998.80 worth of CFC, 4030 shares at $4.96 per share. We bought 2017 shares of FHN for a total of $19,998.47 at $9.91 per share. For the other four stocks, we invested about $10,000 per stock. We bought 980 shares of BSC at $10.19 per share for a total of $9,996.20 invested. 818 shares of CIT were bought at $12.21 per share, totaling $9,997.78 spent. We bought $9990.10 worth of JNY at $17.06 per share, for a total of 585 shares bought. At $12.99, we bought 769 shares of MTG for a total of $9999.31 spent. Overall we spent $99,978.58 on this portfolio, and had $21.42 remaining to spend on future investments.

Date	Stock	Action	Price[12]	Shares	Cost/Proceed
19-May-08	ABK	Buy	$3.91	5112	$19,997.92
19-May-08	BSC	Buy	$10.19	980	$9,996.20
19-May-08	CFC	Buy	$4.96	4030	$19,998.80
19-May-08	CIT	Buy	$12.21	818	$9,997.78
19-May-08	FHN	Buy	$9.91	2017	$19,998.47
19-May-08	JNY	Buy	$17.06	585	$9,990.10
19-May-08	MTG	Buy	$12.99	769	$9,999.31
	Total Invested			14311	$99,978.58
	Remaining Capital				$21.42

Table 4.3.1: Initial Transactions

Through one week of the simulation, the stock market as a whole has not performed very well, but our portfolio has performed worse. Every stock has fallen in price significantly, while ABK is close to dropping below eighty percent of the original purchase price, meaning it would need to be sold.

Stock	Initial Price[12]	Shares	Price (May 23-Close)[12]	Price Gain/Loss	Gain/Loss
ABK	$3.91	5112	$3.22	(0.69)	(3,527.28)
BSC	$10.19	980	$9.29	(0.90)	(882.00)
CFC	$4.96	4030	$4.54	(0.42)	(1,692.60)
CIT	$12.21	818	$11.18	(1.03)	(842.54)
FHN	$9.91	2017	$9.08	(0.83)	(1,674.11)
JNY	$17.06	585	$16.06	(1.00)	(585.00)
MTG	$12.99	769	$11.50	(1.49)	(1,145.81)

Table 4.3.2: Stock Prices at End of Week 1

Midway through the week, ABK did in fact have to be sold as its price fell to $2.94 per share, well under eighty percent of the original price of $3.91. CIT is also getting close to the eighty percent threshold. On May 29th, BSC completed its merger with JPMorgan Chase, forcing us to sell the stocks for $9.55 per share, just as the price was starting to go up. Selling our shares of ABK and BSC resulted in $24368.28 of capital to reinvest. We bought 766 shares of CTX at $19.55 per share for a total sale of $14,985.30, and bought 707 shares of DHI at $12.71 per share for a total of $8985.97 invested. After these transactions we had $1.38 remaining in capital.

Date	Stock	Action	Price[12]	Shares	Cost/Proceed	Gain/Loss
28-May-08	ABK	Sell	$2.94	5112	$15,019.28	($4,978.64)
28-May-08	CTX	Buy	$19.55	766	$14,985.30	N/A
29-May-08	BSC	Sell	$9.55	980	$9,349.00	($647.20)
29-May-08	DHI	Buy	$12.71	707	$8,985.97	N/A
	Total Invested				$93,955.73	
	Remaining Capital				$418.43	

Table 4.3.3: Transactions for Week 2

The rest of our stocks recovered significantly during the second week, each going up half a point for the week.

Stock	Price (May 23-Close)[12]	Shares	Price (May 30-Close)[12]	Price Gain/Loss	Gain/Loss
ABK	$3.22	5112	N/A	N/A	N/A
BSC	$9.29	980	N/A	N/A	N/A
CFC	$4.54	4030	$5.26	$0.72	$2,901.60
CIT	$11.18	818	$10.00	($1.18)	($965.24)
CTX	N/A	766	$18.84	N/A	N/A
DHI	N/A	707	$12.60	N/A	N/A
FHN	$9.08	2017	$9.59	$0.51	$1,028.67
JNY	$16.06	585	$16.82	$0.76	$444.60
MTG	$11.50	769	$12.02	$0.52	$399.88

Table 4.3.4: Stock Prices at End of Week 2

At the beginning of the third week of the simulation, CIT fell below the eighty percent threshold, and was sold. Eastman Kodak was chosen to replace CIT in our portfolio. After the sale of 818 shares of CIT at $9.56 per share we had $7810.08 to spend. We bought 524 shares of EK for $15.22 per share for a total of $7,985.38 invested. After these transactions we had $243.13 in capital remaining.

Date	Stock	Action	Price[12]	Shares	Cost/Proceed	Gain/Loss
2-Jun-08	CIT	Sell	$9.56	818	$7,810.08	($2,187.70)
2-Jun-08	EK	Buy	$15.22	524	$7,985.38	N/A
	Total Invested				$91,943.33	
	Remaining Capital				$243.13	

Table 4.3.5: Transactions for Week 3

During the third week every stock in our portfolio declined, with CTX falling the hardest. CTX lost almost $1.50 per share for the week. FHN and CFC fared the best of our stocks for the week, losing twenty-eight and twenty-six cents per share respectively.

Stock	Price (May 30-Close)[12]	Shares	Price (June 6-Close)[12]	Price Gain/Loss	Gain/Loss
CFC	$5.26	4030	$5.03	($0.23)	($926.90)
CIT	$10.00	818	N/A	N/A	N/A
CTX	$18.84	766	$16.06	($2.78)	($2,129.48)
DHI	$12.60	707	$11.64	($0.96)	($678.72)
EK	N/A	524	$14.21	N/A	N/A
FHN	$9.59	2017	$9.36	($0.23)	($463.91)
JNY	$16.82	585	$15.80	($1.02)	($596.70)
MTG	$12.02	769	$11.33	($0.69)	($530.61)

Table 4.3.6: Stock Prices at End of Week 3

The downward trends continued into the fourth week, and we were forced to sell three stocks. CTX was sold on June 10th at a price of $15.62 per share, with 766 shares sold minus the commission creating $11,954.92. 711 shares of KEY were bought at $16.86 per share at a cost of $11,997.46. On June 12th, MTG fell to under eighty percent of its initial price, and was sold for $9.07 per share. The 769 shares sold netted $6,964.83. We replaced MTG with LEN in our portfolio, purchasing 466 shares of LEN at a price of $14.98 per share, at a cost of $6,990.68. Finally, on June 13th, KEY suffered a large drop in price, and we were forced to sell. The sale of KEY totaled $8,507.78 after selling the 711 shares at $11.98 per share. LIZ replaced KEY at a total cost of $8,946.40 after 544 shares were bought at $15.60 per share. After these transactions, $82,445.80 was invested in total, with $186.12 remaining in capital.

Date	Stock	Action	Price[12]	Shares	Cost/Proceed	Gain/Loss
10-Jun-08	CTX	Sell	$15.62	766	$11,954.92	($3,030.38)
10-Jun-08	KEY	Buy	$16.86	711	$11,997.46	N/A
12-Jun-08	MTG	Sell	$9.07	769	$6,964.83	($3,034.48)
12-Jun-08	LEN	Buy	$14.98	466	$6,990.68	N/A
13-Jun-08	KEY	Sell	$11.98	711	$8,507.78	($3,489.68)
13-Jun-08	LIZ	Buy	$15.60	544	$8,496.40	N/A
	Total Invested				$82,445.80	
	Remaining Capital				$186.12	

Table 4.3.7: Transactions for Week 4

Only DHI increased in stock price over the fourth week, going up by about a quarter of a dollar per share. Both EK and FHN suffer a loss of over a dollar, while CFC and JNY also decreased in price over the week. It seems like the portfolio cannot break out of the downward trend.

Stock	Price (June 6-Close)[12]	Shares	Price (June 13-Close)[12]	Price Gain/Loss	Gain/Loss
CFC	$5.03	4030	$4.84	($0.19)	($765.70)
CTX	$16.06	766	N/A	N/A	N/A
DHI	$11.64	707	11.9	$0.26	$183.82
EK	$14.21	524	12.83	($1.38)	($723.12)
FHN	$9.36	2017	8.35	($1.01)	($2,037.17)
JNY	$15.80	585	15.33	($0.47)	($274.95)
MTG	$11.33	769	N/A	N/A	N/A
KEY	N/A	711	N/A	N/A	N/A
LEN	N/A	466	$15.35	N/A	N/A
LIZ	N/A	544	$16.33	N/A	N/A

Table 4.3.8: Stock Prices at End of Week 4

Once again, the only stock that went up in price during the fifth week of the simulation was DHI, rising by over a quarter of a dollar per share. The losses for the other stocks were not massive, but steady. No company in our portfolio saw its shares fall by more than $0.52 per share, but the fact that six out of seven stocks declined in price still hurts. In addition, EK is coming close to being sold as its fast fall continues.

Stock	Price (June 13-Close)[12]	Shares	Price (June 20-Close)[12]	Price Gain/Loss	Gain/Loss
CFC	$4.84	4030	$4.73	($0.11)	($443.30)
DHI	$11.90	707	$12.20	$0.30	$212.10
EK	$12.83	524	$12.41	($0.42)	($220.08)
FHN	$8.35	2017	$7.83	($0.52)	($1,048.84)
JNY	$15.33	585	$14.96	($0.37)	($216.45)
LEN	$15.35	466	$15.23	($0.12)	($55.92)
LIZ	$16.33	544	$15.99	($0.34)	($184.96)

Table 4.3.9: Stock Prices at End of Week 5

Kodak made a huge recovery during the sixth week, rising in price by $2.10 per share. This was more than offset by the huge decline in LEN however, as the company fell by $2.61, and is very close to being sold now. LIZ also suffered a loss of over a dollar, while the other stocks dropped in price as well. Even DHI, the most consistently good performer in our portfolio, suffered a setback.

Stock	Price (June 20-Close)[12]	Shares	Price (June 27-Close)[12]	Price Gain/Loss	Gain/Loss
CFC	$4.73	4030	$4.42	($0.31)	($1,249.30)
DHI	$12.20	707	$11.58	($0.62)	($438.34)
EK	$12.41	524	$14.51	$2.10	$1,100.40
FHN	$7.83	2017	$7.62	($0.21)	($423.57)
JNY	$14.96	585	$14.52	($0.44)	($257.40)
LEN	$15.23	466	$12.62	($2.61)	($1,216.26)
LIZ	$15.99	544	$14.63	($1.36)	($739.84)

Table 4.3.10: Stock Prices at End of Week 6

On July 1, Countrywide Financial Group completed its merger with Bank of America, and we were forced to sell the stock for $4.26 per share, which generated $17,157.80 of capital to reinvest. We settled on MI, and we bought 1089 shares at $15.60 per share, for a cost of $16998.40. After these transactions, we still had $79,445.40 invested in our portfolio with $345.52 in remaining capital.

Date	Stock	Action	Price[12]	Shares	Cost/Proceed	Gain/Loss
1-Jul-08	CFC	Sell	$4.26	4030	$17,157.80	($2,841.00)
1-Jul-08	MI	Buy	$15.60	1089	$16,998.40	N/A
	Total Invested				$79,445.40	
	Remaining Capital				$345.52	

Table 4.3.11: Transactions for Week 7

In addition to being forced to sell CFC, the rest of the stocks in our portfolio lost money during the week. The greatest loser during the week was LEN, which lost $1.15 per share, while the smallest loser was FHN, which lost fifty-five cents per share.

Stock	Price (June 27-Close)[12]	Shares	Price (July 3-Close)[12]	Price Gain/Loss	Gain/Loss
CFC	$4.42	4030	N/A	N/A	N/A
DHI	$11.58	707	$10.55	($1.03)	($728.21)
EK	$14.51	524	$13.95	($0.56)	($293.44)
FHN	$7.62	2017	$7.07	($0.55)	($1,109.35)
JNY	$14.52	585	$13.38	($1.14)	($666.90)
LEN	$12.62	466	$11.47	($1.15)	($535.90)
LIZ	$14.63	544	$13.61	($1.02)	($554.88)
MI	N/A	1089	$14.14	N/A	N/A

Table 4.3.12: Stock Prices at End of Week 7

Every stock in our portfolio declined in price over the last week of the simulation, with LIZ falling $2.17, which was the most for any stock. LEN and MI also fell over a dollar per share for the week. The week started off well, with every stock experience a large jump in price by the close of Tuesday's trading. However, by the end of Thursday every stock had not only come back to their prices at the beginning of the week, but had also dipped below those levels.

Stock	Price (July 3-Close)[12]	Shares	Price (July 11-Close)[12]	Price Gain/Loss	Gain/Loss
DHI	$10.55	707	$9.62	($0.93)	($657.51)
EK	$13.95	524	$13.50	($0.45)	($235.80)
FHN	$7.07	2017	$6.70	($0.37)	($746.29)
JNY	$13.38	585	$12.88	($0.50)	($292.50)
LEN	$11.47	466	$10.31	($1.16)	($540.56)
LIZ	$13.61	544	$11.44	($2.17)	($1,180.48)
MI	$14.14	1089	$12.84	($1.30)	($1,415.70)

Table 4.3.13: Stock Prices at End of Simulation

The outline of the method makes it clear that any trade during the simulation is considered bad because trading only occurs when there is a huge loss. The fact that there were seven transactions would signify that our portfolio suffered a huge loss, which it did.

Upon the sale of all shares that were invested, we were left with $60210.14, for an overall loss of $39789.86. EK was the top performer of all of our stocks, losing barely less than one thousand dollars. All other stocks lost at least two thousand dollars, with many of the stocks losing that much because of the terrible eighth week of the simulation. FHN was the greatest loser, falling over $6000 because of the last two weeks of the simulation.

Date	Stock	Action	Price[12]	Shares	Cost/Proceed	Gain/Loss
11-Jul-08	DHI	Sell	$9.62	707	$6,791.34	($2,194.63)
11-Jul-08	EK	Sell	$13.50	524	$7,064.00	($921.38)
11-Jul-08	FHN	Sell	$6.70	2017	$13,503.90	($6,494.57)
11-Jul-08	JNY	Sell	$12.88	585	$7,524.80	($2,465.30)
11-Jul-08	LEN	Sell	$10.31	466	$4,794.46	($2,196.22)
11-Jul-08	LIZ	Sell	$11.44	544	$6,213.36	($2,283.04)
11-Jul-08	MI	Sell	$12.84	1089	$13,972.76	($3,025.64)
	Remaining Capital				$345.52	
	Total Money				$60,210.14	
	Total Profit/Loss				($39,789.86)	

Table 4.3.14: Final Transactions

4.3.4 Comparison to Market

The market itself also did not fare very well, however it was better than our portfolio. The S&P 500 fell by 13.03%, beginning the simulation at $1425.28 per share on May 19th, and finished at $1239.49 per share on July 11th. Only two of the eleven stocks selected managed to outperform the S&P 500, and not by much. BSC had lost only 6.28% before it was bought out, while Kodak fell 11.30% before we sold it. Every other stock fell by at least fourteen percent, and it seemed like once a stock was chosen the bottom would fall out of it. Normally when practicing the Contrarian investing method, trading would never happen, as the investor would be content to hold onto the stock during periods of decline. But for the entire simulation, about every time a stock experienced an increase in price over consecutive days, it was immediately followed by a sharp decline in price. The guideline to sell a stock after it fell below eighty percent of its original value was supposed to protect against a couple stocks at most failing to turn around their fortunes. However, every one of our original stocks either fell by more than 20% or merged with other companies.

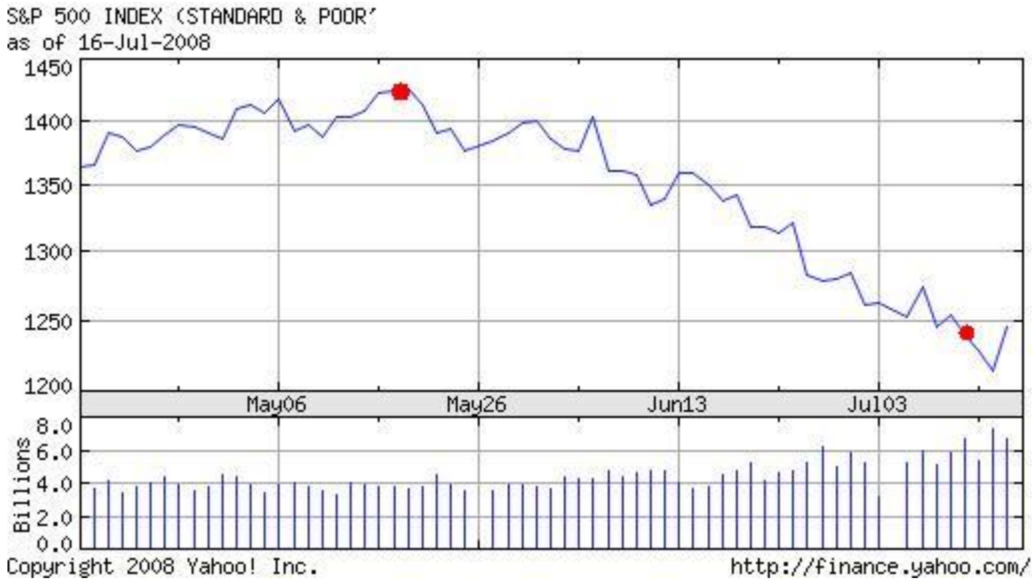

Figure 4.3.13: Change in S&P 500 Price During Simulation[12]

5. Conclusion

Overall, the first simulation was unsuccessful in terms of making money. Fortunately, the sole objective was not making money; we also wanted to learn concepts to make us more knowledgeable investors for the future. We believe this simulation enabled us to become more comfortable in selecting stocks for a buy and hold strategy, and have a reasonable idea of which markets are performing well and which stocks will outperform the market their in.

The three individual penny stock simulations had resulted in significant success. The conservative method followed a buy/sell price of +/-5%, the semi-conservative and aggressive method followed a +\-10% and 15%, respectively. eight biotechnology related penny stocks were chosen for their potential for success by researching their products and their application to the scientific community. Over the eight week period, all chosen stocks resulted in a decreasing trend in stock price. But regardless of this trend, stocks were traded within the spontaneous changes in stock price during each day. This generally allowed for stocks to be bought at low and sold for high.

The conservative method resulted in a gain of $28,374.04, a +28.3% increase in proceeds from the starting $100,000. (See table 4.1.1) The semi-conservative and the aggressive method both resulted in a gain of $13,997.25, a +13.9% gain. (See table 4.1.2 and 4.1.3) In terms of potential, the conservative method had a period at which it had reached a $70,472.14 gain, or a +70.4% gain from initial proceeds invested. (See table 4.1.1) In terms of potential losses, the conservative method had experienced an all time low of $72,430.36, a loss of -26.6%. (See table 4.1.1)

The conservative (5%) penny stock method proved to be a superior method than the semi-conservative and aggressive method due to the low selling price, resulting in more frequent and increased number of transactions. Overall, given the eight week period time frame, the penny stock method is a good method and could also be applied over an extended period of time as the results show positive gain over time.

The third simulation was not a success with regards to making money, similarly to the first simulation. A large amount of money was lost as each stock that was traded consistently underperformed. We did learn that the amount of analysis put into selecting each stock was not enough, and either by analyzing more numbers or researching more news into the company better decision may possibly be made. Or it could be the case right now with the market declining so much right now that a Contrarian philosophy may not be adequate. But at the least we have learned from our mistakes.

Because the market is declining, it would seem that a more aggressive strategy would produce greater gains than a passive strategy. Our simulations show the trend as well, as the aggressive penny stock trading method produced profits while the passive buy and hold strategies lost money. To go even further, one may be able to short sell stocks with great effectiveness because the majority of the stocks have been falling consistently recently.

This project has led us to insight into different trading methods and the risks and gains involved in trading stocks. The project has also allowed us to experience and experiment different strategies in trading, preparing us for future stock trading in the near future. From this project we feel more acquainted with the stock market and allowed us to realize the complexity and excitement of the market for it potential of making money.

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