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Stock Market Simulation

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Abstract

A ten-week stock simulation was conducted to learn basic investment principles, perform quantitative analyses, explore qualitative analyses on investment securities, and gain real world experience with common investment techniques and investment vehicles. Research was performed to identify investment styles that would maximize profits while minimizing risk. Topics examined included sector research, company profitability, P/E comparisons to accepted standards, effects of investor impressions, and the effect of seasonal conditions on specific sectors.

Chapter 1 Introduction

1.1 Goals & Plan of Actions

The objective of this project is to better understand the stock market. It will be broken down into four major goals. Loosely these can be categorized as initial research, quantitative analysis, real world experience, and post investment evaluation.

The first goal is to build a general knowledge of the stock market, investment securities, security trading, and develop a comprehensive list of investment terms and acronym definitions. Additionally there will be an immersion into ongoing financial events. Knowledge of the different trading platforms for different securities will be explored including a step by step process of what transpires during a market trade. This goal will be accomplished through research on the internet, reading financial newspapers and watching financial news, and will be ongoing throughout the entire course of this project.

The second goal is to learn and to gain confidence with various quantitative analyses as well as to ascertain the generally accepted accuracy of these techniques. Techniques of note will be highlighted and explored further with tests during goal three. This goal will require further research from all available sources as well as research of specific companies' financial records. To simplify matters I first will target my research on the Healthcare sector. After building up a confidence of expected trends within the Healthcare sector I will branch into other sectors.

The third goal is to gain real world experience with different techniques. Four accounts have been set up on an online simulated stock market program. Two will focus on short term trading, one solely within the Healthcare Sector and one not limited to a single sector. The goal of these accounts will be to locate stocks that are trading below their true market value according to the price to earnings ratio. Stocks will also be selected based on their current trading price in relation to their 52 week range. The Healthcare Sector has been highlighted as its high volatility can be a boon when buying and selling frequently. From research it has been determined that investors often overreact to poor news therefore companies with recent negative events will be targeted. Two other accounts will focus on long term trading strategies. One long term accounts will examine mutual funds and the other long term account will be limited to individual stocks. These accounts will look to invest in industries expected to grow during the next three months (any larger time is infeasible for this project). Research has shown that energy stocks, specifically gasoline based companies, show increased profits over the summer months. Therefore, these accounts will hold 2-3 stocks (or mutual funds) primarily in the energy sector.

The fourth goal is to analyze the results of different investing practices utilized in goal three. In order to achieve a realistic baseline, two passive accounts have been set up. From research it appears there are two commonly used instruments for comparison to match or beat. The first is the safest investment vehicle, US Treasury Bonds. The second is a stock that matches the market average. I've selected an index stock of the Standard & Poors 500. The US Treasury account will hold only US Treasury Bills (91 days to cover the project length), and the market average account will hold shares of

Vanguard's S&P 500 Index stock. Performance of the actively traded accounts will be benchmarked against these two passive accounts.

Chapter 2 Research

2.1 *General Stock Market Research*

The first question many people have when learning of the stock market is "Why would someone want to invest their hard earned money in the stock market?" A simple answer to that question is "because that's where the money is." Research and trends have concluded that money has the potential to grow faster when invested than when it is socked away in a bank, or worse, stored under the mattress. Research has also brought to light an interesting fact. The wealthiest individuals do not earn their money from the toils of their own labor, but from their investment securities. And what exactly are investment securities? They are primarily stocks and bonds (although other investment vehicles exist). Simply put stocks represent an ownership in a company, and bonds are a loan to a company. This brings us to our next topic: the stock market.

Mentions of the stock market evokes images of people clustered around on a floor shouting "Buy!" and "Sell!" while making obscure hand signals and writing on little sheets of paper. While the stock market has changed with the advent of the internet (although the New York Stock Exchange still utilizes physical contact) the basic concept still remains the same. In real terms, buys and sells are not initiated solely by the customers themselves. Stocks are bought and sold in an exchange (also called a market), through a brokerage, with each playing their own special part. Exchanges exist to facilitate trading by creating a forum where buyers and sellers can meet. In return for this service they take a nominal fee (known as the spread). The brokerage mediates on behalf

of the buyer or seller with the exchange, organizes (brokers) the trade, and informs the customer of the result. For their role the brokerage also takes a fee [1]. Both electronic based exchanges (NASDAQ) and in-person exchanges (NYSE) operate on these principals.

At its core security trading and ownership is a way for people to take their wealth and make more of it. But it is also a gamble. The standard model of security trading works on the principal of risk versus reward. The higher the risk the greater the potential for rewards and the greater the chance of loss. While some concepts and strategies can be used to mitigate risks, risks will always be present. Commonly the first step in investment trading is to determine what level of risk you are comfortable with. Bonds are generally considered safer than stocks. This is due to the fact that if a company has to shut down, the bond holders have the first shot at getting their money back while general stock holders are paid after everyone else (of course there are some exceptions to the rule). This brings up the first baseline commonly used in investment practices. The safest investment is with the United States of America. It is generally accepted that the US government will still exist when the bond's amount is due, and that the government will be capable of repaying the debt. As such this group of securities is considered the least risky investment and is commonly used as a minimum to how well your investment can perform. Stocks on the other hand have the greatest chance of loosing their value but they also can return the highest gain. One must decide for themselves how much risk they can tolerate.

Much of the reading available online exists in two forms: general education, and beating the market average. Beating the average brings up a new baseline, namely how do you determine how well the market is performing. One method of determining how well a market is doing is to compare it to other similar markets. If the stocks in the US market increase in value and the stocks in Japan market decrease in value, then you can say the US market is doing better than the Japan market. Similarly, since currency is a direct valuation of purchasing power, you can compare the relative strength of each nation's currency. An increase in a currency's valuation results in the ability to buy more things (primarily, although there can be other reasons), and therefore a strengthening of the economy. However, there are many variables that can affect different nations' economies, which often makes a purely global comparison difficult or misleading. And as our companies become more and more global, these numbers have less significance. A more simple evaluation is to select a series of individual stocks that one feels represents the economy as a whole. Several such selections have been set up and are called indices. An index is created when a group selects stocks it feels properly represents the market (or a subset of the market) and adds the current selling price of these stocks to get a single value. Therefore, market performance can be gauge by how this conglomerate number changes. One example of an index is the Standard & Poors 500. Another example that just about everyone is familiar with is the Dow Jones Industrial Average. When gauging how well your stock is performing against the average it is common to compare your stock to the S&P 500 or the Dow.

One important thing to remember with stock trading is that these are all real live human beings. Furthermore there exists a small number of big volume and big money

traders that often control a very large portion of the market. Despite their experience and responsibilities, these people are still human beings and are subject to human emotions and reactions. Furthermore, these people are often under the stress of putting up large numbers and outperforming the market average. Therefore as the market gets tighter their stress increases, and the chance of an overreaction to an insignificant event grows. While it is known to be very difficult to associate a quantifiable number to a human emotion, several methods have been tried. One method that has had reasonable success of measuring the average consumer's view of the market is the Consumer Confidence Index (CCI). This index attempts to gauge how confident the average person is in the market's continuing ability to perform.

One more thing to remember is that investing is similar to betting on certain companies to perform well. And the primary goal of any company is to be profitable. Therefore, especially in long term investing, a profitable company will have a better chance of performing better than an unprofitable company. Often investment advisors go one step further. They encourage people to invest in companies that make sense. Simple, almost common sense predictions can lead towards very profitable sectors and companies. For example, if you find that the world's population is drastically increasing, it would be reasonable to assume that more food would be needed in the world. Therefore, investing in companies that produce food could be profitable. Inventions that markedly improve the quality of life tend to make a company very profitable. The key concept here is that there are predictable indicators that exist all around us that can be used to find that next hot sector or company.

Finally, research has shown that while there are many methods and reasons for choosing where and how much of your money, two common ideas stand out in their usage. These are value investing and growth investing. Value investing is a style of investment strategy from the so-called "Graham & Dodd" School. Followers of this style, known as value investors, generally buy companies whose shares appear underpriced by some forms of fundamental analysis; these may include shares that are trading at, for example, high dividend yields or low price-to-earning or price-to-book ratios. The main proponents of value investing, such as Benjamin Graham and Warren Buffett, have argued that the essence of value investing is buying stocks at less than their intrinsic value. The discount of the market price to the intrinsic value is what Benjamin Graham called the "margin of safety". The intrinsic value is the discounted value of all future distributions. However, the future distributions and the appropriate discount rate can only be assumptions. Warren Buffett has taken the value investing concept even further as his thinking has evolved to where for the last 25 years or so his focus has been on "finding an outstanding company at a sensible price" rather than generic companies at a bargain price [3]. Growth investing is a strategy whereby an investor seeks out stocks with what they deem good growth potential. In most cases a growth stock is defined as a company whose earnings are expected to grow at an above-average rate than its industry or the overall market. Growth investors often call growth investing a capital growth strategy, since investors seek to maximize their capital gains. Although it is often said that growth investing and value investing are diametrically opposed, a better way to view these two strategies is to consider a quote by Warren Buffett: "growth and value investing are joined at the hip" [4].

2.2 Sector Research

Initial research was focused on the healthcare sector. This sector was selected for many reasons. First and foremost a common desire of many people is to live longer and better. Healthcare promises this with its possibilities of preventing and treating ailments. And with the retirement of baby boomers in the not too distant future, there will be a large segment of the population entering into their later years and soon may be in greater need for healthcare. As an added bonus there is a large amount of speculation in this area. Past research has shown that this sector is highly prone to large gains and losses in relatively short time periods. The Major Drug Manufacturer and Biotechnology sub-sectors were selected to reduce the overall scope of the project. Two hundred eighty companies selected from Yahoo!® Finance's indices for these subgroups. Initial evaluation was geared towards identifying average earnings per share in the hope that EPS could be used to locate undervalued stocks. Unfortunately 86% of the companies posted losses as of their most recent earning statements. It was decided that EPS could not be used to solely identify undervalued stocks. The group was reevaluated based on EBITDA, EPS, relation to their 52 week low, and having market capitalizations over \$150 million. 40 of these stocks will be selected for closer examination and will be considered for the short term trading accounts. As a final added bonus, the biotechnology industry was hit very hard during the subprime housing crisis that struck prior to this project in February 2007.

Secondary research proceeded on the energy sector, specifically in the Oil & Gas subgroups. It is a widely held theory that gas prices increase over the summer months

[5], leading to greater profits for gasoline refiners, purifiers, and distributors. Combined with the continuing disturbance in the Middle East it appears that gas production related stocks will do well during the course of this IQP (the next 3 months).

Lastly research was performed in the financial sector. This sector was hit hard during the recent subprime housing “meltdown.” Furthermore as this project progressed, the sector performed increasingly worse as subprime lenders declared bankruptcy and prime lenders took a hit. Once again, this is a large sector so it was narrowed down to the following: Credit Services, Diversified Investments, Money Center Banks, Mortgage Investment, Savings & Loans, and Regional banks. In all 952 companies were selected and evaluated. The average P/E ratios ranged from 16.15x to 31.29x depending on the specific industry. This industry was also doing better on average with over 85% of the companies posting a positive EPS (a reverse of the healthcare sub-sectors). To maintain a similar comparison to the healthcare account, stocks will be selected that have near 52 week lows and a market capitalization over \$150 million.

2.3 Understanding Company Financials

Understanding company financials is a key part to determining if a company is a solid investment. Even if the company has the best ideas in the world, if it cannot create a profit it is doomed to fail and will take your money with it. Luckily all public companies must submit a series of reports to the Securities Exchange Commission (SEC) which includes their key financial data. These forms can be submitted yearly (like the Annual Report and Form 10K) or quarterly (like the Form 10Q). These forms are

designed to give guidance as to how a company has been performing in the past and often times what they expect for the future. Within these forms are 3 very special statements: the Balance Sheet, the Income Statement, and the Cash Flow Statement. Together these three statements provide a snapshot of a company's financial situation. Understanding each of these items is the key to understanding a company's profitability and can give some insight into how well a company can weather future hardships.

Balance Sheet

The Balance Sheet, among other things, shows you the value of the assets the company owns, the amount of debt, how much inventory is in the corporate warehouse, and how much money the business has to work with in the short term [6]. The structure of the Balance Sheet is broken into 3 major areas: Assets, Liabilities and Shareholder Equity. Every balance sheet must "balance". This means that the total value of all assets must be equal to the combined value of the all liabilities and shareholder equity. Assets and Liabilities are broken down into Current and Long Term. Current applies to items that can be turned into cash or will be owed in a short period of time (usually within a year or less) [6]. Short term assets are important to review because these are the funds the company has available to pay for its day to day operations. Comparing short term assets and short term liabilities, a term called Working Capital, lets us know if the company can financially survive in the near term or if loans will be needed to sustain the company. Long term Assets and Liabilities primarily applies to items that are held longer than one year and therefore can not be used to fund day to day operations.

Within the Current Assets grouping you have several common lines and sometimes a few lines used in special circumstances. Primarily there are Cash and Cash Equivalents, Short Term Investments, Receivables, Inventories, and Prepaid Expenses. Cash and Cash Equivalents is the amount of money the company has in bank accounts, savings bonds, certificates of deposit, and money market funds. Short Term Investments are investments that the company plans to sell shortly or can be sold to provide cash. Short term investments aren't as readily available as money in a checking account, but they provide added cushion if some immediate need were to arise [8]. Receivables are money that is owed to the company by its customers for inventory sold or services performed [9]. Inventory consists of merchandise a business owns but has not sold. It is classified as current assets because investors assume that inventory can be sold in the near future, turning it into cash [10]. Prepaid expenses are exactly what you would expect them to be, namely future expected expenses (like rent or utility bills) that the company paid before it was due. Other possible line items do exist, however they occur with much less frequency than the five already listed.

Current Liabilities are made up of Accounts Payable, Accrued Benefits/Payroll, Short Term and Current Long Term Debt, and Other Liabilities. As with Current Assets, some nonstandard line items can also exist however the listed categories are common on all Balance Sheets. Accounts Payable occurs when the company receives a product or service before the company pays for it. Accrued Benefits/Payroll is money owed to employees as salary and bonuses that the company has not yet paid. Short Term and Current Long Term Debt, also referred to as Notes Payable, are most often bank loans. Depending on the company, you will see various other current liabilities listed.

Normally, you can find a detailed listing of what these Other Liabilities are buried somewhere in the annual report or 10k [11].

Long Term Assets are broken down into Long Term Investments, Property, Plant and Equipment, Intangible Assets, Goodwill, and Other Assets. Long Term Investments are investments the company intends to hold for more than one year. They can consist of stocks and bonds of other companies, real estate, and cash that have been set aside for a specific purpose or project. In addition to investments a company plans to hold for an extended period of time, Long Term Investments also consist of the stock in a company's affiliates and subsidiaries [12]. Property, Plant and Equipment, also referred to as fixed assets, are the corporation's real estate, buildings, office furniture, telephones, cafeteria trays, brooms, factories, etc. They are the physical assets the company owns but can't quickly convert to cash [13]. Intangible Assets are things of value that cannot be touched, felt, or seen. These consist of patents, trademarks, brand names, and franchises [14]. Goodwill, in the accounting sense, can be thought of as a "premium" for buying a business [15]. Other Assets are as the name implies, various long term unaccounted for assets held for more than a year.

Long Term Liabilities is often separated into Long Term Debt, Minority Interest and Other Liabilities. Long Term Debt is a crucial figure that refers to the money the company owes and doesn't expect to pay off in the next year. Long term debt consists of things such as mortgages on corporate buildings and / or land, as well as business loans [16]. Minority Interest refers to the equity of the minority shareholders in a company's subsidiaries. Like the few "other" parts of the balance sheet, Other Liabilities is a catch-

all category where companies can consolidate their miscellaneous debt. You can normally find an explanation of what makes up these other liabilities somewhere in the financial reports [17].

The final part of a Balance Sheet is the Shareholder Equity. Shareholder Equity is the net worth of a company. It represents the stockholders' claim to a business's assets after all creditors and debts have been paid. Shareholder equity is also referred to as Owner's or Stockholders' Equity. It can be calculated by taking the total assets and subtracting the total liabilities [18]. Shareholder equity usually comes from two places. The first is cash paid in by investors when the company sold stock; the second is retained earnings, which are the accumulated profits a business has held on to and not paid out to its shareholders as dividends. Because these are the two ways a company generally creates shareholders' equity, the balance sheet is organized to show each part's contribution [18].

Shareholder Equity is made up of Common and Preferred Stock, Capital Surplus, Treasury Stock, Retained Earnings, and Other Stockholder Equity. Common and Preferred Stock reflect the par value of the company's stock and / or when there is no par value assigned to the stock, the amount investors paid when the company issued shares [19]. Capital Surplus is the difference between the total par value of the stock outstanding and the shareholder equity and Proprietorship Reserves. Treasury Stock is shares a company has issued and somehow reacquired either through share repurchase programs or donations [20]. Retained Earnings are earnings that have been kept by the company (as opposed to being issued through a dividend) for reinvestment into the

company. Once again, Other Stockholder Equity is a catchall phrase for anything that wasn't already covered.

Income Statement

The Income Statement is a collection of line items that sum up the company's revenues, expenses, and their end result on the company stock over a specified time period. Income Statements provide a quick overview of how well a company is performing. However, Income Statement analysis can reveal much more than a company's earnings. It provides important insights into how effectively management is controlling expenses, the amount of interest income and expense, and the taxes paid. Investors can use income statement analysis to calculate financial ratios that will reveal the rate of return the business is earning on the shareholders' retained earnings and assets; they can also compare a company's profits to its competitors by examining various profit margins such as the gross profit margin, operating profit margin, and net profit margin [21]. The Income Statement can loosely be thought of as attempting to reach 5 different values: Profit, Operating Profit, Net Income from Continuing Operations, Net Income, and Net Income Applicable to Common Shares. It should be noted that companies often use different terminology for same concept. I will try to stay consistent with my usage.

The Gross Profit section contains Total Revenues, Cost of Goods Sold, and Gross Profit. The first line on any income statement is the entry for Total Revenue. This figure is the amount of money a business brought in during the time period covered by the

income statement [22]. Cost of Goods Sold is the expense a company incurred in order to manufacture, create, or sell a product. It includes the purchase price of the raw material as well as the expenses of turning it into a product. Finally, Gross Profit is the total revenue subtracted by the cost of generating that revenue. It tells you how much money a business would have made if it didn't pay any other expenses such as salary, income taxes, etc [23]

The next section, Operating Profit, focuses on the operating expenses that arise during the ordinary course of running a business. Operating expense consists of Employee Salaries, Research and Development Costs, and Other Miscellaneous Charges that must be subtracted from the company's income [24]. Employee Salaries, also listed as Selling, General, and Administrative Expenses, consist of the combined payroll costs (salaries, commissions, and travel expenses of executives, sales people and employees), and advertising expenses a company incurs. Research and Development Costs are expenses from nonproduct development. Other Miscellaneous Charges can include such things as Goodwill and other intangible asset amortization charges. Finally Operating Profit is derived from subtracting all of the operating expenses from the gross profit. This can be used to gauge the general health of the core business.

Net Income from Continuing Operations contains several key items in it. Interest Expense and Income, Depreciation, Income Tax, and Minority Interest all exist in this section. Interest Income and Expense is interest owed to or paid by the company for outstanding loans and investments. Depreciation is the process by which a company gradually records the loss in value of a fixed asset. The purpose of recording depreciation

as an expense over a period is to spread the initial purchase price of the fixed asset over its useful life [25]. Income Tax is the total amount paid by the company to the government. Minority Interest is profit gained from owning shares of stock in another company that posts profits. Net Income from Continuing Operations is obtained by subtracting each of these key items from the Operating Profit.

Finally, we derive the Net Income. Net Income is the total profit made by a business before any required dividend payments on the company's preferred stock. We obtain this value by subtracting nonregular expenses from the Net Income from Continuing Operations. There are a wide variety of these expenses and a wide variety of reasons for their existence. The Annual Report should give some guidance for the reason of their application.

The final section, Net Income Applicable to Common Shares, determines the final effect on the common stock. It is derived from subtracting the Preferred Stock Dividend from the Net Income. Preferred stock is a mix between common stock and a bond. Each share of preferred stock is normally paid a guaranteed, relatively high dividend and has first dibs over common stock at the company's assets in the event of bankruptcy. In exchange for the higher income and safety, preferred shareholders miss out on large potential capital gains (or losses) [26]. With the Preferred Stock Dividend removed, we are now left with the Net Income Applicable to Common Shares. This is the bottom line of the company. This number divided by the total number of shares outstanding yield the Earnings per Share.

Cash Flow Statement

The Cash Flow Statement is exactly as the name implies the movement of cash into and out of the company. By itself the Cash Flow Statement cannot tell you if a business is thriving or barely surviving. However, all businesses need cash to pay for services and any raw materials needed and a business without cash cannot survive for very long. The Cash Flow Statement is organized into three parts. The first, cash from operating activities, can alert one to future declines in sales and earnings by signaling when a company is having trouble selling inventory or collecting cash it is owed, among other things. The second, cash from investing activities, gives the reader information on how much the company earned in the stock market to whether it's cutting back on capital expenditures. The third part, cash from financing activities, indicates whether a company receives cash infusions from outsiders, such as banks or shareholders [28]. While it may sound like the Cash Flow Statement would be an exact copy of the Income Statement there is a slight difference that is very important. The Income Statement is based on the accrual method of accounting which takes into account noncash items such as property while the Cash Flow Statement deals strictly with cash.

Cash flow from operating activities measures the cash used or provided by a company's normal operations. It shows the company's ability to generate consistently positive cash flow from operations. Think of "normal operations" as the core business of the company. For example, Microsoft's normal operating activity is selling software [27].

Cash flows from investing activities list all the cash used or provided by the purchase and sale of income-producing assets. If Microsoft bought or sold companies for

a profit or loss, the resulting figures would be included in this section of the cash flow statement [27].

Cash flows from financing activities measure the flow of cash between a firm and its owners and creditors. Negative numbers can mean the company is servicing debt but can also mean the company is making dividend payments and stock repurchases, which investors might be glad to see [27].

2.4 Useful Financial Sheet Formulas

There are literally thousands of different combinations of values you can derive from a business's financial statements. However, many of these are tell little or no information that will be important when making decisions on what constitutes a viable investment. What follows is a selection of a few useful calculations you can perform on the Balance Sheet, Income Statement, and Cash Flow Statement. Unfortunately, to make matters complicated, many of these ratios are drastically different between separate industries and possibly even within the same industry. Therefore it is best to use this information loosely when comparing to an industry and with the ultimate desire to be used for comparison amongst competitors.

Receivable Turns

Common sense tells you the faster a company collects its receivables, the better. The sooner customers pay their bills the sooner a company can put the cash in the bank, pay down debt, or start making new products. There is also a smaller chance of losing money to delinquent accounts. Fortunately, there is a way to calculate the number of days it takes for a business to collect its receivables. The formula looks like this:

$$\text{Receivable Turns} = \frac{\text{Credit Sales}}{\text{Average Receivables}}$$

Using this formula, we can also calculate the Average Age of Receivables. Simply divide the number of Receivable Turns by 365. This gives us an idea of how quickly the average receivable is being paid off. When this is compared to the company's average invoice due date time frame we can determine how efficiently the company is with bringing in money owed to them.

Inventory Turns

A large number of companies exist by selling a physical product to a customer. Before you invest, you are going to have to make an informed decision about how much you think the inventory is really worth. A major part of this decision should be based on how fast the inventory is "turned" (or sold). Two competing companies may each have \$20 million sitting in inventory, but if one can sell it all every 30 days, and the other takes 41 days, you have less of a risk of inventory loss with the 30 day company.

$$\text{Inventory Turns} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

Once again, we can take this formula one setup further and figure out the Number of Days for Inventory Turns. As with the previous formula, we simply divide the Inventory Turns by 365. This tells us on average how many days it takes to sell the entire inventory.

Inventory to Current Assets Ratio

When analyzing a balance sheet, you also want to look at the percentage of current assets inventory represents. If 70% of a company's current assets are tied up in

inventory and the business does not have a relatively low turn rate (less than 30 days), it may be a signal that something is seriously wrong and an inventory write-down is unavoidable [29].

$$\text{Inventory to Current Assets Ratio} = \frac{\text{Average Inventory}}{\text{Current Assets}}$$

Working Capital

Arguably the number one reason most people look at a balance sheet is to find out a company's working capital (or "current") position. It reveals more about the financial condition of a business than almost any other calculation. It tells you what would be left if a company raised all of its short term resources, and used them to pay off its short term liabilities. The more working capital, the less financial strain a company experiences [30].

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

A company that makes heavy machinery and a grocer will have completely varying Working Capital amounts and suffer from different sources of risk. Because the heavy machinery manufacturer is selling expensive items on a long-term payment basis, they can't raise cash as quickly. Since the inventory on their balance sheet is normally ordered months in advance, it can rarely be sold fast enough to raise money for short-term financial crises (by the time it is sold, it may be too late). It's easy to see why companies such as this must keep enough working capital on hand to get through any unforeseen difficulties [30]. You can, as usual, determine a guideline depending on how

a company's competitors operate. This brings us to our next formula, Working Capital per Dollar of Sales.

$$\text{Working Capital per Dollar of Sales} = \frac{\text{Working Capital}}{\text{Total Sales}}$$

Current Ratio

The current ratio is another test of a company's financial strength. It calculates how many dollars in assets are likely to be converted to cash within one year in order to pay debts that come due during the same year [31]. This ratio is useful when determining if a company will be required to take on more long term debt or sell long term assets to survive during the next 12 months.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Quick Test Ratio

The Quick Test Ratio (also called the Acid Test or Liquidity Ratio) is the most excessive and difficult test of a company's financial strength and liquidity. It compares the amount of cash you have immediately available to your current liabilities. This test is useful in determining if a company can survive the upcoming year without selling any inventory.

$$\text{Quick Test Ratio} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$$

Debt to Equity Ratio

The Debt to Equity Ratio measures how much money a company should safely be able to borrow over long periods of time. It does this by comparing the company's total debt (including short term and long term obligations) to the company's equity. This ratio is useful in determining if a company has taken out too many loans while building little assets.

$$\text{Debt to Equity Ratio} = \frac{\text{Total Assets}}{\text{Total Liabilities}}$$

Gross Profit Margin

Gross Profit Margin is a measurement of a company's manufacturing and distribution efficiency during the production process. The gross profit tells an investor the percentage of revenue / sales left after subtracting the cost of goods sold. A company that boasts a higher gross profit margin than its competitors and industry is more efficient. Investors tend to pay more for businesses that have higher efficiency ratings than their competitors, as these businesses should be able to make a decent profit as long as overhead costs are controlled (overhead refers to rent, utilities, etc) [32].

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Total Revenue}}$$

Operating Margin

The operating margin is another measurement of management's efficiency. It compares the quality of a company's operations to its competitors. A business that has a higher operating margin than its industry's average tends to have lower fixed costs and a better gross margin, which gives management more flexibility in determining prices. This pricing flexibility provides an added measure of safety during tough economic times [33].

$$\text{Operating Margin} = \frac{\text{Operating Income}}{\text{Total Revenue}}$$

Interest Coverage Ratio

The interest coverage ratio is a measurement of the number of times a company could make its interest payments with its earnings before interest and taxes; the lower the ratio, the higher the company's debt burden [34].

$$\text{Interest Coverage Ratio} = \frac{\text{Earnings Before Interest \& Taxes}}{\text{Interest Expense}}$$

Net Profit Margin

The profit margin tells you how much profit a company makes for every \$1 it generates in revenue. Profit margins vary by industry, but all else being equal, the higher a company's profit margin compared to its competitors, the better off the company is.

$$\text{Net Profit Margin} = \frac{\text{Net Income After Taxes}}{\text{Total Revenue}}$$

Return on Equity

Return on equity reveals how much profit a company earned in comparison to the total amount of shareholder equity found on the balance sheet. A business that has a high return on equity is more likely to be one that is capable of generating cash internally [34].

$$\text{Return on Equity} = \frac{\text{Net Profit}}{\text{Avg Shareholder Equity}}$$

Asset Turnover

The asset turnover ratio calculates the total sales [revenue] for every dollar of assets a company owns.

$$\text{Asset Turnover} = \frac{\text{Total Revenue}}{\text{Avg Assets for the Period}}$$

Return on Assets

Where asset turnover tells an investor the total sales for each \$1 of assets, return on assets [or ROA for short] tells an investor how much profit a company generated for each \$1 in assets. The return on assets figure is also a sure-fire way to gauge the asset intensity of a business [35].

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Avg Assets for the Period}}$$

Operating Cash Flow Ratio

A measure of how well current liabilities are covered by the cash flow generated from a company's operations [2].

$$\text{Operating Cash Flow Ratio} = \frac{\text{Cash Flow from Operations}}{\text{Current Liabilities}}$$

2.5 Specific Company Research

Unless otherwise mentioned, descriptions are taken from Yahoo!® Finance page with some personal notes added in for my reference.

Affymax Inc ([AFFY](#))

A biopharmaceutical company, engages in the development of peptide-based drug candidates to enhance the treatment of serious and life-threatening conditions. It's long term 90 day prospects are not good as it is still years away from developing a drug. Earnings loss over the past year has dropped the stock price by 75% as well, putting it marginally over its lowest price in the past year. Short term prospects seem hopeful as the healthcare sector continues its recovery.

Idenix Pharmaceuticals ([IDIX](#))

A biopharmaceutical company, engages in the discovery, development, and commercialization of drugs for the treatment of human viral and other infectious diseases in the United States and Europe. Similar in respects to Affymax Inc. Poor long term prospects, earnings loss and stock price at near 52 week low.

Osiris Therapeutics, Inc. ([OSIR](#))

A biotechnology company, commercializes stem cell products from adult bone marrow in the United States. Similar criteria as Affymax Inc.

Cambrex Corporation ([CBM](#))

Provides various products and services that enable the development and commercialization of branded and generic small molecule therapeutics. Unlike other selected Biotechnology stocks, this stock is actually profitable and produces various

active pharmaceutical ingredients. Poor earnings in May have caused this stock to plummet to a very low level.

BioCryst Pharmaceuticals Inc. ([BCRX](#))

Engages in the design, optimization, and development of novel drugs that block key enzymes involved in cancer, cardiovascular diseases, autoimmune diseases, and viral infections. Sluggish market recovery has made this stock a prime candidate for some recovery in the near term.

Chevron Corp. ([CVX](#))

Operates as an integrated energy company worldwide. Overall the energy industry has done well in the past few months, and future prospects look good.

Exxon Mobil Corp. ([XOM](#))

Engages in the exploration, production, transportation, and sale of crude oil and natural gas. In the recent past Exxon Mobil has posted the largest revenues of any public company. Future plans appear to be in the same line.

PetroChina Co. Ltd. ([PTR](#))

Together with its subsidiaries, engages in petroleum and natural gas related activities in the People's Republic of China. With China's petroleum requirements increasing faster than any other nation, oil prices on the rise, and reserves being reduced, oil company profit in China appears to be the closest to a "sure thing."

Emergent BioSystems, Inc ([EBS](#))

A biopharmaceutical company focused on the development, manufacture, and commercialization of immunobiotics primarily in the United States. This has been highly undervalued, as it is one of the few profitable biotechs. Reasons for this undervaluation could be a recent missed earnings estimate.



Figure 2.5-1 Emergent BioSolutions Chart

Genetech Inc ([DNA](#))

Genentech, Inc. engages in the discovery, development, manufacture, and commercialization of biotherapeutics in the United States. Shares have not recovered since the Biotech downturn earlier this year.

AstraZeneca plc ([AZN](#))

AstraZeneca PLC discovers, develops, manufactures, and markets prescription pharmaceuticals in the areas of cardiovascular, gastrointestinal, neuroscience,

oncology, respiratory and inflammation, and infection worldwide. Shares of AstraZeneca have also not recovered from the recent downturn.



Figure 2.5-2 AstraZeneca 1 Year Chart

Sanofi-Aventis ([SNY](#))

Sanofi-Aventis engages in the research, development, manufacture, and marketing of healthcare products worldwide. They just released a press release stating that their obesity drug has to be pulled from the market.

Aspreva Pharmaceutical Corp ([ASPV](#))

Aspreva Pharmaceuticals Corporation engages in the identification, development, and commercialization of approved drugs and drug candidates for new indications. They've just been down graded by several analysts after a failed drug trial.

Hancock Holdings Co ([HBHC](#))

Hancock Holding Company, a financial holding company, provides a range of financial and banking products and services in Mississippi, Louisiana, and Florida.

Astoria Financial Corp ([AF](#))

Astoria Financial Corporation operates as the holding company of Astoria Federal Savings and Loan Association that provides various banking services in the United States.



Figure 2.5-3 Astoria Financial 5 Day Chart

Virginia Commerce Bancorp Inc. ([VCBI](#))

Virginia Commerce Bancorp, Inc. operates as the holding company for Virginia Commerce Bank that provides various business and consumer banking products and services.



Figure 2.5-4 Virginia Commerce Bancorp 1 Year Chart

Hudson City Bancorp Inc. ([HCBK](#))

Hudson City Bancorp operates as the holding company for Hudson City Savings Bank, which provides various retail banking services in the states of New Jersey, New York, and Connecticut. Hudson City Bancorp is currently near a 1 year low despite posting higher than expected profits from new branches.



Figure 2.5-5 Hudson City Bancorp Inc 1 Year Chart

Keryx Biopharmaceuticals Inc. ([KERX](#))

Keryx Biopharmaceuticals, Inc., a biopharmaceutical company, engages in the acquisition, development, and commercialization of pharmaceutical products for the treatment of diabetes and cancer.

Trimeris Inc. ([TRMS](#))

Trimeris, Inc., a biopharmaceutical company, engages in the discovery, development, and commercialization of therapeutic agents for the treatment of viral disease in the United States and Canada.

ZymoGenetics, Inc. ([ZGEN](#))

ZymoGenetics, Inc. engages in the discovery, development, manufacture, and commercialization of therapeutic proteins for the treatment of human diseases in the areas of hemostasis, inflammatory and autoimmune diseases, cancer, and viral infections.



Figure 2.5-6 ZymoGenetics 1 Year Chart

Chapter 3 Application

3.1 Benchmarks

The benchmark of 91 day US Treasury Bills were purchased on 5/23/2007. A total of 101 bills were purchased. The bills carried a discount rate of 4.775% and an investment rate of 4.914%. These bills were based off of a recent sale (CUSIP 912795ZW4) sold on TreasuryDirect.gov. This bill had the same start period and time till completion as this project, and a similar discount and investment rate as other 91 day T-bills. It is believed that this security will represent the minimum alternative when comparing security performance.

The benchmark of Vanguard S&P 500 Index (VFINX) was purchased on 5/23/2007 at 10:32:10 AM. 710 shares were purchased at \$140.67 a share. It is believed that this security will represent the market average.

All positions were closed out on July 27th, 2007. Shares of Vanguard S&P Index fund ended at \$134.49 resulting in a 4.41% loss over the course of the project. Treasury bonds ended with a 0.87% gain over the project.

3.2 Short Term Trading

Short term accounts set up their initial stocks on June 7th, 2007. The Healthcare stock account purchased 2,740 shares of Osiris Therapeutics (OSIR) at \$12.14 a share. Additional purchases were made on Cambrex Corporation (CBM) of 2,664 shares at \$12.51 a share and BioCryst Pharmaceuticals Inc of 4,282 shares at \$7.78 a share. The Intersector short term account made its initial purchases as well. Idenix Pharmaceuticals (IDIX) was purchased at \$7.10 for 7,040 shares and Affymax (AFFY) was purchased at \$31.69 for 1,657 shares.

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$100,000.00	\$100,000.00
6/7/2007	OSIR	Buy	\$12.14	2,740	\$33,270.60		\$66,729.40	\$100,000.00
6/7/2007	CBM	Buy	\$12.51	2,664	\$33,333.64		\$33,395.76	\$100,000.00
6/7/2007	BCRX	Buy	\$7.78	4,282	\$33,320.96		\$74.80	\$100,000.00

Table 3.2-1 Week 3 Healthcare Account

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$100,000.00	\$100,000.00
6/7/2007	IDIX	Buy	\$7.10	7,040	\$49,991.00		\$50,009.00	\$100,000.00
6/7/2007	AFFY	Buy	\$30.17	1,657	\$49,998.69		\$10.31	\$100,000.00

Table 3.2-2 Week 3 Intrasector (Finance) Account

Additional trading occurred in the week ending June 15th, 2007. 2,740 shares of Osiris Therapeutics were sold at \$12.80 a share (for a 5.4% gain). The money

immediately turned around and was used to purchase 4,070 shares of Emergent BioSolutions, Inc at \$8.61.

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$74.80	\$100,000.00
6/13/2007	OSIR	Sell	\$12.80	2,740	(\$35,065.00)	\$1,794.40	\$35,139.80	\$101,794.40
6/13/2007	EBS	Buy	\$8.61	4,070	\$35,049.70		\$90.10	\$101,794.40

Table 3.2-3 Week 4 Healthcare Account

More trading occurred during the week of June 22nd, 2007. 4,070 shares of Emergent BioSolutions were sold at \$10.09 per share (for a 17.15% gain). This situation is a prime example of the potential of locating undervalued stocks, holding for a few days, and quickly selling the security off for a profit (see figure below). 2,664 shares of Cambrex Corporation were also sold at \$13.38 per share (for a 6.91% gain). The profits were plowed into two very well known Biotechs who have been trading sluggish lately. 512 shares of Genetech were purchased at \$74.93 apiece, and 745 shares of AstraZeneca plc were purchased at \$51.11. The Intrasector short term trading account was forced to take a big hit while dumping shares of Affymetrix (1,657 shares sold at \$28.14 for a 6.76% loss) and Idenix Pharmaceuticals (7,040 shares sold at \$6.18 for a 12.98% loss). Enough time had been wasted waiting for these stocks to recover to a positive level. The remaining balance was moved into finance stocks IberiaBank Corp (IBKC), Community Bancorp (CBON), and Community Trust Bancorp Inc (CTBI). These stocks have shown positive earnings reports, yet are still trading within 10% of 1 year lows (see figure for IBKC below). 602 shares of IberiaBank Corp were purchased at \$49.87, 1,066 shares of

Community Bancorp were purchased at \$28.17 and 940 shares of Community Trust Bancorp Inc were purchased at \$31.74.

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$90.10	\$101,794.40
6/18/2007	EBS	Sell	\$10.09	4,070	(\$41,059.30)	\$6,009.60	\$41,149.40	\$107,804.00
6/22/2007	CBM	Sell	\$13.38	2,664	(\$35,637.32)	\$2,303.68	\$76,786.72	\$110,107.68
6/22/2007	DNA	Buy	\$74.93	512	\$38,371.16		\$38,415.56	\$110,107.68
6/22/2007	AZN	Buy	\$51.11	745	\$38,083.95		\$331.61	\$110,107.68

Table 3.2-4 Week 5 Healthcare Account

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$10.31	\$100,000.00
6/22/2007	AFFY	Sell	\$28.14	1,657	(\$46,620.98)	(\$3,377.71)	\$46,631.29	\$96,622.29
6/22/2007	IDIX	Sell	\$6.18	7,040	(\$43,500.20)	(\$6,490.80)	\$90,131.49	\$90,131.49
6/22/2007	IBKC	Buy	\$49.87	602	\$30,028.74		\$60,102.75	\$90,131.49
6/22/2007	CBON	Buy	\$28.17	1,066	\$30,036.22		\$30,066.53	\$90,131.49
6/22/2007	CTBI	Buy	\$31.72	940	\$29,823.80		\$242.73	\$90,131.49

Table 3.2-5 Week 5 Intrasector (Finance) Account



Figure 3.2-1 IberiaBank Corp Chart

Short term trading was positive for the week of June 29th, 2007. The healthcare account sold shares of Genentech (512 shares sold at \$75.49 for a 0.71% gain) and shares of AstraZeneca (745 shares sold at \$53.54 for a 4.72% gain). The money was moved into Sanofi-Aventis (SNY, 975 shares at \$40.29) and Aspreva Pharmaceutical Company (ASPV, 2,300 shares at \$17.12). Short term finance trading for the week was mixed. Gains were recorded on sales however stocks dipped after purchases resulting in an overall loss during the week. Shares of Community Trust Bancorp (940 shares sold at \$32.95 for a 3.83% gain) and shares of Community Bancorp (1,066 shares sold at \$28.42 for a 0.84% gain). The proceeds were moved into Hancock Holding Co (HBHC, 800 shares at \$38.35) and Astoria Financial Corp (AF, 1,220 shares at \$25.09).

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$331.61	\$110,107.68
6/29/2007	AZN	Sell	\$53.54	745	(\$39,880.30)	\$1,796.35	\$40,211.91	\$111,904.03
6/29/2007	DNA	Sell	\$75.49	512	(\$38,643.88)	\$272.72	\$78,855.79	\$112,176.75
6/29/2007	SNY	Buy	\$40.29	975	\$39,289.75		\$39,566.04	\$112,176.75
6/29/2007	ASPV	Buy	\$17.12	2,300	\$39,383.00		\$183.04	\$112,176.75

Table 3.2-6 Week 6 Healthcare Account

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$242.73	\$90,131.49
6/29/2007	CTBI	Sell	\$32.95	940	(\$30,966.00)	\$1,142.20	\$31,208.73	\$91,273.69
6/29/2007	CBON	Sell	\$28.42	1,066	(\$30,288.72)	\$252.50	\$61,497.45	\$91,526.19
6/29/2007	AF	Buy	\$25.09	1,220	\$30,616.80		\$30,880.65	\$91,526.19
6/29/2007	HBHC	Buy	\$38.35	800	\$30,687.00		\$193.65	\$91,526.19

Table 3.2-7 Week 6 Intrasector (Finance) Account

Growth in the short term Healthcare sector for the week of July 6th, 2007 was positive. Recent sellings of Aspreva (2,300 shares sold at \$18.79 for a 9.72% gain), BioCryst Pharmaceuticals (4,282 shares sold at \$7.82 for a 0.47% gain) and Sanofi-Aventis (975 shares sold at \$41.82 for a 3.76% gain) netted a 5.07% overall gain. The proceeds were used to purchase shares of Keryx Biopharmaceuticals (KERX, 3,993

shares at \$9.81), Trimeris Inc (TRMS, 5,979 shares at \$6.54), and ZymoGenetics (ZGEN, 2,760 shares at \$14.19). All are small cap companies near their 52 week low and all happen to have changed a chief officer and / or a director recently. Short term finance trading profit was obtained from selling shares of Astoria Financial Corp (1,220 shares sold at \$25.34 for a 0.95% gain) and shares of IberiaBank Corp (602 shares sold at \$49.95 for a 0.11% gain). Proceeds were moved into Virginia Commerce Bancorp Inc (VCBI, 1,865 shares at \$16.33) and Hudson City Bancorp Inc (HCBK, 2,495 shares at \$12.24). These are a mix of small and large cap companies near their 52 week low.



Figure 3.2-2 Aspreva & Sanofi-Aventis 1 Week Gains

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$183.04	\$112,176.75
7/6/2007	ASPV	Sell	\$18.79	2,300	(\$43,210.00)	\$3,827.00	\$43,393.04	\$116,003.75
7/6/2007	BCRX	Sell	\$7.82	4,282	(\$33,478.24)	\$157.28	\$76,871.28	\$116,161.03
7/6/2007	SNY	Sell	\$41.82	975	(\$40,767.50)	\$1,477.75	\$117,638.78	\$117,638.78
7/6/2007	KERX	Buy	\$9.81	3,993	\$39,178.33		\$78,460.45	\$117,638.78
7/6/2007	TRMS	Buy	\$6.54	5,979	\$39,109.66		\$39,350.79	\$117,638.78
7/6/2007	ZGEN	Buy	\$14.19	2,760	\$39,171.40		\$179.39	\$117,638.78

Table 3.2-8 Week 7 Healthcare Account

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$193.65	\$91,526.19
7/6/2007	AF	Sell	\$25.34	1,220	(\$30,907.80)	\$291.00	\$31,101.45	\$91,817.19
7/6/2007	IBKC	Sell	\$49.95	602	(\$30,062.90)	\$34.16	\$61,164.35	\$91,851.35
7/6/2007	HCBK	Buy	\$12.24	2,495	\$30,545.80		\$30,618.55	\$91,851.35
7/6/2007	VCBI	Buy	\$16.33	1,865	\$30,462.45		\$156.10	\$91,851.35

Table 3.2-9 Week 7 Intrasector (Finance) Account

Trading in the healthcare sector for the week of July 13th, 2007 was light. While the majority of the market posted gains, the healthcare sector was hit fairly hard. Never the less shares of Trimeris Inc (5,979 shares sold at \$6.74 for a 3.01% gain) were sold for a positive gain. No shares were purchased. No trading in the financial sector occurred. The down trodden stocks that were chosen seem to fair worse as the market improved.

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$179.39	\$117,638.78
7/13/2007	TRMS	Sell	\$6.74	5,979	(\$40,291.46)	\$1,181.80	\$40,470.85	\$118,820.58

Table 3.2-10 Week 8 Healthcare Account

Trading within the healthcare sector was heavy for the week ending July 20th, 2007. Stocks that had remained negative were closed out, however gains late in the week helped offset the losses somewhat. Shares of Keryx Biopharmaceuticals (3,993 shares sold at \$9.01 for an 8.15% loss) and ZymoGenetics (2,760 shares sold at \$13.96 for a 1.62% loss) gave the healthcare account its first week posting a loss to date. Proceeds were moved into AstraZeneca (AZN, 696 shares at \$55.05), Amgen (AMGM, 690 shares at \$55.52) and Momenta Pharmaceuticals Inc (MNTA, 3,670 shares at \$10.41). Trading in the financial sector was equally heavy. The account put up slight positive postings after sales of Virginia Commerce Bancorp (1,865 shares sold at \$17.00 for a 4.10% gain), Hancock Holding Co. (800 shares sold at \$39.01 for a 1.72% gain) and Hudson City Bancorp Inc (2,495 shares sold at \$11.69 for a 4.49% loss). Purchases were made in BankAtlantic Bancorp Inc (BBX, 4,060 shares at \$7.57), Franklin Bank Corp (FBTX, 2,300 shares at \$13.17) and Webster Financial Corp (WBS, 760 shares at \$40.81).

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$40,470.85	\$118,820.58
7/17/2007	KERX	Sell	\$9.01	3,993	(\$35,983.93)	(\$3,194.40)	\$76,454.78	\$115,626.18
7/17/2007	ZGEN	Sell	\$13.96	2,760	(\$38,536.60)	(\$634.80)	\$114,991.38	\$114,991.38
7/18/2007	AZN	Buy	\$55.05	696	\$38,321.80		\$76669.58	\$114,991.38
7/18/2007	AMGN	Buy	\$55.52	690	\$38,315.80		\$38353.78	\$114,991.38
7/18/2007	MNTA	Buy	\$10.41	3,670	\$38,211.70		\$142.08	\$114,991.38

Table 3.2-11 Week 9 Healthcare Account

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$156.10	\$91,851.35
7/18/2007	VCBI	Sell	\$17.00	1,865	(\$31,712.00)	\$1,249.55	\$31,868.10	\$93,100.90
7/19/2007	HBHC	Sell	\$39.01	800	(\$31,215.00)	\$528.00	\$63,083.10	\$93,628.90
7/19/2007	HCBK	Sell	\$11.69	2,495	(\$29,173.55)	(\$1,372.25)	\$92,256.65	\$92,256.65
7/20/2007	BBX	Buy	\$7.57	4,060	\$30,741.20		\$61,515.45	\$92,256.65
7/20/2007	FBTX	Buy	\$13.17	2,300	\$30,298.00		\$31,217.45	\$92,256.65
7/20/2007	WBS	Buy	\$40.81	760	\$31,022.60		\$194.85	\$92,256.65

Table 3.2-12 Week 9 Intrasector (Finance) Account

Active trading ended on July 27th, 2007. All existing securities were sold by the end of the final trading day. In the healthcare account, shares of AstraZeneca (696 shares sold at \$53.07 for a 3.63% loss), Amgen (690 shares sold at \$56.52 for a 1.76% gain), and Momenta Pharmaceuticals Inc (3,670 shares sold at \$9.81 for a 5.80% loss) were

sold resulting in a net loss of 2.46% for the week. In the finance account, shares of BankAtlantic Bancorp Inc (4,060 shares sold at \$8.21 for an 8.41% gain), Franklin Bank Corp (2,300 shares sold at \$11.66 for an 11.51% loss), and Webster Financial Corp (760 shares sold at \$43.46 for a 6.44% gain) were sold for a 1.52% gain on the week. This concluded the trading portion of this project.

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$142.08	\$114,991.38
7/26/2007	AZN	Sell	\$53.07	696	(\$36,929.72)	(\$1,392.08)	\$37,071.80	\$113,599.30
7/26/2007	AMGN	Sell	\$56.52	690	(\$38,991.80)	\$676.00	\$76,063.60	\$114,275.30
7/26/2007	MNTA	Sell	\$9.81	3,670	(\$35,995.70)	(\$2,216.00)	\$112,059.30	\$112,059.30

Table 3.2-13 Week 10 Healthcare Account

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
Start							\$194.85	\$92,256.65
7/27/2007	BBX	Sell	\$8.21	4,060	(\$33,325.60)	\$2,584.40	\$33,520.45	\$94,841.05
7/27/2007	FBTX	Sell	\$11.66	2,300	(\$26,811.00)	(\$3,487.00)	\$60,331.45	\$91,354.05
7/27/2007	WBS	Sell	\$43.46	760	(\$33,022.60)	\$2,000.00	\$93,354.05	\$93,354.05

Table 3.2-14 Week 10 Intrasector (Finance) Account

3.3 Long Term Trading

The long term mutual funds account set up the initial mutual funds during the week of June 7, 2007. Franklin Balance Sheet Investment Adv (FBSAX) was purchased on 6/7/2007 at 3:23:08 PM. 447 shares were purchased at \$74.59 a share. If past performance is any indication of future performance then this mutual fund stands at slightly beating the market. BlackRock Equity Dividend A (MDDVX) was purchased on 6/7/2007 at 3:22:23 PM. 1,650 shares were purchased at \$20.14 a share. Rainier Mid Cap Equity I (RAIMX) was purchased on 6/7/2007 at 3:21:24 PM. 776 shares were purchased at \$42.94 a share.

The long term stock account also purchased its initial funds. 412 shares of Chevron Corporation (CVX), 404 shares of Exxon Mobil (XOM), and 251 shares of PetroChina (PTR) were purchased on 6/7/2007. Their prices were \$80.60, \$82.37, and \$132.86 respectively.

Long term single stocks were “sold” using the closing cost on the last day of the project, July 27th, 2007. Chevron Corporation (412 shares sold at \$85.20 for a 5.66% gain), Exxon Mobile (404 shares sold at \$85.59 for a 3.87% gain), and PetroChina (251 shares sold at \$147.34 for a 10.85% gain) were sold ending with a net gain across the project of 6.79%. Long term mutual funds were sold using the same method. Franklin Balance Sheet Investment Adv (447 shares sold at \$68.57 for a 8.11% loss), BlackRock Equity Dividend A (1,650 shares sold at \$19.49 for a 3.27% loss), and Rainier Mid Cap Equity I (776 shares sold at \$42.61 for a 0.81% loss) were sold resulting in a 4.06% loss over the project. This closes out all existing long term trading accounts.

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
5/23/2007							\$146.46	\$100,000.00
7/27/2007	CVX	Sell	\$85.20	412	(\$35,095.40)	\$1,881.20	\$35,241.86	\$101,881.20
7/27/2007	XOM	Sell	\$85.59	404	(\$34,571.36)	\$1,286.88	\$69,813.22	\$103,168.08
7/27/2007	PTR	Sell	\$147.34	251	(\$36,975.34)	\$3,620.48	\$106,788.56	\$106,788.56

Table 3.3-1 Long Term Single Stock Trading

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
5/23/2007							\$84.83	\$100,000.00
7/27/2007	FBSAX	Sell	\$68.57	447	(\$30,643.79)	(\$2,704.94)	\$30,728.62	\$97,295.06
7/27/2007	MDDVX	Sell	\$19.49	1,650	(\$32,151.50)	(\$1086.50)	\$62,880.12	\$96,208.56
7/27/2007	RAIMX	Sell	\$42.61	776	(\$33,058.36)	(\$270.08)	\$95,938.48	\$95,938.48

Table 3.3-2 Mutual Funds Trading

Chapter 4 Results

Trading was concluded on July 27th, 2007. All transactions for the shortterm accounts are summarized in the following two tables.

Table 1 - Short Term Healthcare Account

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
5/23/2007							\$100,000.00	\$100,000.00
6/7/2007	OSIR	Buy	\$12.14	2,740	\$33,270.60		\$66,729.40	\$100,000.00
6/7/2007	CBM	Buy	\$12.51	2,664	\$33,333.64		\$33,395.76	\$100,000.00
6/7/2007	BCRX	Buy	\$7.78	4,282	\$33,320.96		\$74.80	\$100,000.00
6/13/2007	OSIR	Sell	\$12.80	2,740	(\$35,065.00)	\$1,794.40	\$35,139.80	\$101,794.40
6/13/2007	EBS	Buy	\$8.61	4,070	\$35,049.70		\$90.10	\$101,794.40
6/18/2007	EBS	Sell	\$10.09	4,070	(\$41,059.30)	\$6,009.60	\$41,149.40	\$107,804.00
6/22/2007	CBM	Sell	\$13.38	2,664	(\$35,637.32)	\$2,303.68	\$76,786.72	\$110,107.68
6/22/2007	DNA	Buy	\$74.93	512	\$38,371.16		\$38,415.56	\$110,107.68
6/22/2007	AZN	Buy	\$51.11	745	\$38,083.95		\$331.61	\$110,107.68
6/29/2007	AZN	Sell	\$53.54	745	(\$39,880.30)	\$1,796.35	\$40,211.91	\$111,904.03
6/29/2007	DNA	Sell	\$75.49	512	(\$38,643.88)	\$272.72	\$78,855.79	\$112,176.75
6/29/2007	SNY	Buy	\$40.29	975	\$39,289.75		\$39,566.04	\$112,176.75
6/29/2007	ASPV	Buy	\$17.12	2,300	\$39,383.00		\$183.04	\$112,176.75
7/6/2007	ASPV	Sell	\$18.79	2,300	(\$43,210.00)	\$3,827.00	\$43,393.04	\$116,003.75
7/6/2007	BCRX	Sell	\$7.82	4,282	(\$33,478.24)	\$157.28	\$76,871.28	\$116,161.03
7/6/2007	SNY	Sell	\$41.82	975	(\$40,767.50)	\$1,477.75	\$117,638.78	\$117,638.78
7/6/2007	KERX	Buy	\$9.81	3,993	\$39,178.33		\$78,460.45	\$117,638.78

7/6/2007	TRMS	Buy	\$6.54	5,979	\$39,109.66		\$39,350.79	\$117,638.78
7/6/2007	ZGEN	Buy	\$14.19	2,760	\$39,171.40		\$179.39	\$117,638.78
7/13/2007	TRMS	Sell	\$6.74	5,979	(\$40,291.46)	\$1,181.80	\$40,470.85	\$118,820.58
7/17/2007	KERX	Sell	\$9.01	3,993	(\$35,983.93)	(\$3,194.40)	\$76,454.78	\$115,626.18
7/17/2007	ZGEN	Sell	\$13.96	2,760	(\$38,536.60)	(\$634.80)	\$114,991.38	\$114,991.38
7/18/2007	AZN	Buy	\$55.05	696	\$38,321.80		\$76669.58	\$114,991.38
7/18/2007	AMGN	Buy	\$55.52	690	\$38,315.80		\$38353.78	\$114,991.38
7/18/2007	MNTA	Buy	\$10.41	3,670	\$38,211.70		\$142.08	\$114,991.38
7/26/2007	AZN	Sell	\$53.07	696	(\$36,929.72)	(\$1,392.08)	\$37,071.80	\$113,599.30
7/26/2007	AMGN	Sell	\$56.52	690	(\$38,991.80)	\$676.00	\$76,063.60	\$114,275.30
7/26/2007	MNTA	Sell	\$9.81	3,670	(\$35,995.70)	(\$2,216.00)	\$112,059.30	\$112,059.30

Table 2 - Short Term Intersector (Finance) Account

Date	Ticker	Buy / Sell	Price	Shares	Cost Basis / (Proceeds)	Profit / (Loss)	Total Cash	Total Assets
5/24/2007							\$100,000.00	\$100,000.00
6/7/2007	IDIX	Buy	\$7.10	7,040	\$49,991.00		\$50,009.00	\$100,000.00
6/7/2007	AFFY	Buy	\$30.17	1,657	\$49,998.69		\$10.31	\$100,000.00
6/22/2007	AFFY	Sell	\$28.14	1,657	(\$46,620.98)	(\$3,377.71)	\$46,631.29	\$96,622.29
6/22/2007	IDIX	Sell	\$6.18	7,040	(\$43,500.20)	(\$6,490.80)	\$90,131.49	\$90,131.49
6/22/2007	IBKC	Buy	\$49.87	602	\$30,028.74		\$60,102.75	\$90,131.49
6/22/2007	CBON	Buy	\$28.17	1,066	\$30,036.22		\$30,066.53	\$90,131.49
6/22/2007	CTBI	Buy	\$31.72	940	\$29,823.80		\$242.73	\$90,131.49
6/29/2007	CTBI	Sell	\$32.95	940	(\$30,966.00)	\$1,142.20	\$31,208.73	\$91,273.69

6/29/2007	CBON	Sell	\$28.42	1,066	(\$30,288.72)	\$252.50	\$61,497.45	\$91,526.19
6/29/2007	AF	Buy	\$25.09	1,220	\$30,616.80		\$30,880.65	\$91,526.19
6/29/2007	HBHC	Buy	\$38.35	800	\$30,687.00		\$193.65	\$91,526.19
7/6/2007	AF	Sell	\$25.34	1,220	(\$30,907.80)	\$291.00	\$31,101.45	\$91,817.19
7/6/2007	IBKC	Sell	\$49.95	602	(\$30,062.90)	\$34.16	\$61,164.35	\$91,851.35
7/6/2007	HCBK	Buy	\$12.24	2,495	\$30,545.80		\$30,618.55	\$91,851.35
7/6/2007	VCBI	Buy	\$16.33	1,865	\$30,462.45		\$156.10	\$91,851.35
7/18/2007	VCBI	Sell	\$17.00	1,865	(\$31,712.00)	\$1,249.55	\$31,868.10	\$93,100.90
7/19/2007	HBHC	Sell	\$39.01	800	(\$31,215.00)	\$528.00	\$63,083.10	\$93,628.90
7/19/2007	HCBK	Sell	\$11.69	2,495	(\$29,173.55)	(\$1,372.25)	\$92,256.65	\$92,256.65
7/20/2007	BBX	Buy	\$7.57	4,060	\$30,741.20		\$61,515.45	\$92,256.65
7/20/2007	FBTX	Buy	\$13.17	2,300	\$30,298.00		\$31,217.45	\$92,256.65
7/20/2007	WBS	Buy	\$40.81	760	\$31,022.60		\$194.85	\$92,256.65
7/27/2007	BBX	Sell	\$8.21	4,060	(\$33,325.60)	\$2,584.40	\$33,520.45	\$94,841.05
7/27/2007	FBTX	Sell	\$11.66	2,300	(\$26,811.00)	(\$3,487.00)	\$60,331.45	\$91,354.05
7/27/2007	WBS	Sell	\$43.46	760	(\$33,022.60)	\$2,000.00	\$93,354.05	\$93,354.05

Any other open investments were liquidated at July 27th's closing price. The results were tallied in the table below:

	Start	Finish	% Gain
Healthcare (short)	\$100,000.00	\$112,031.30	12.03%
Financial (short)	\$100,000.00	\$93,312.05	-6.69%
Energy (long)	\$100,000.00	\$106,788.56	6.79%
Mutual Funds	\$100,000.00	\$95,938.48	-4.06%
S&P Index	\$100,000.00	\$95,598.20	-4.40%
Treasury (bonds)	\$100,000.00	\$100,870.77	0.87%

Table 3.3-1 Final Results Table

As can be seen, the short term healthcare and long term single stock accounts performed the best. The next best performer was expectedly the least risky investment of all, the US Treasury Bonds. The short term financial, mutual funds, and the index fund all closed with a loss. The final result is somewhat misleading, as several of these groups took a dip right before the completion of this project. It is the belief of the tester that these were only momentary drops resulting from a further decline housing sector, and that the market would have corrected itself in the following week. This is illustrated in the following chart:

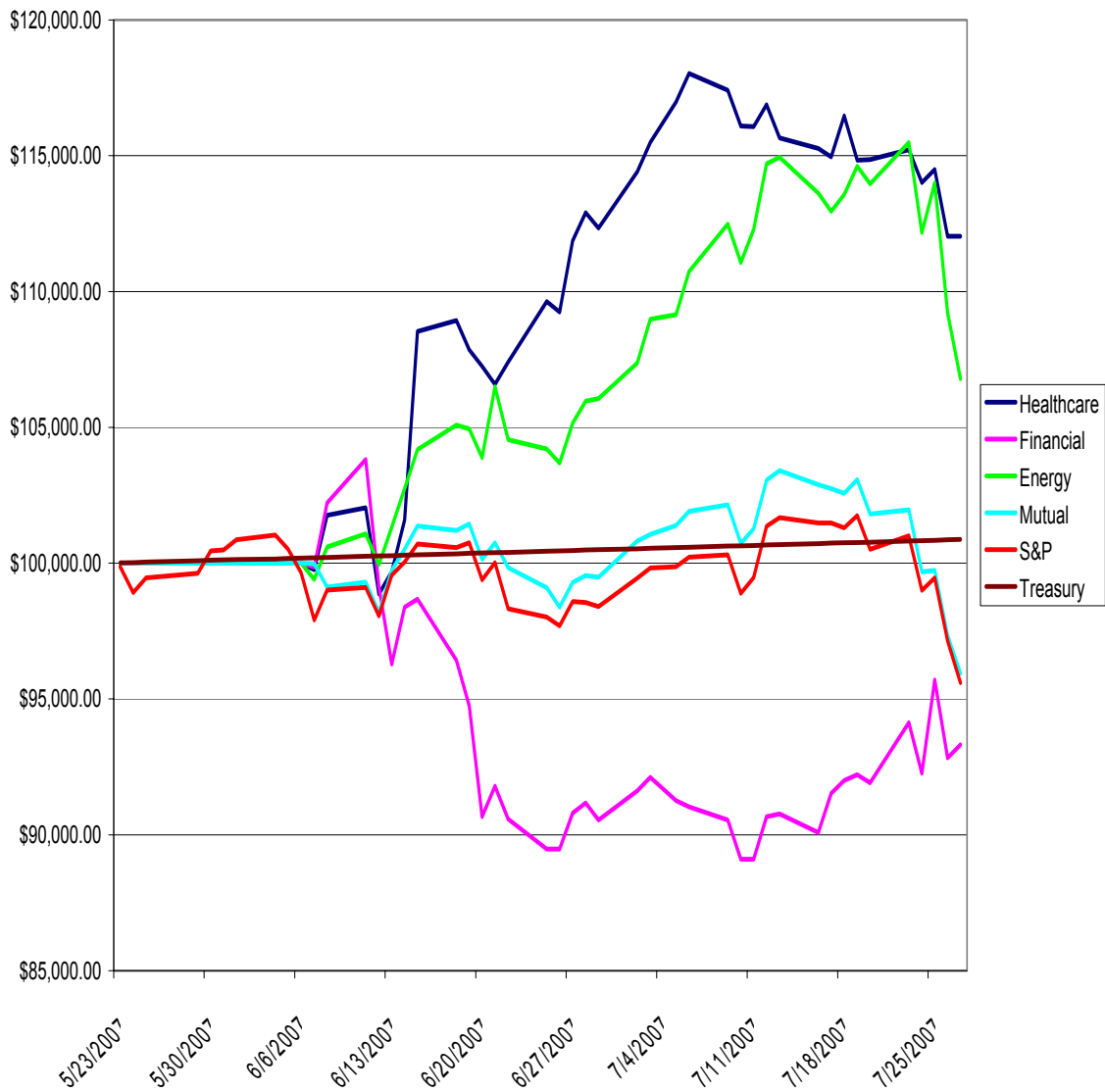


Chart 3.3-2 Day By Day Account Values

Clearly the mutual funds, index fund, and even the energy stocks were heavily affected by the market during the final week. Interesting enough, the S&P index fund at its highest point barely produced a profit over this time frame. In percentage terms, the healthcare account outperformed the treasury account by 11.16% and the S&P index fund by 16.43%. The finance account underperformed the treasury account by 7.56% and the

S&P index fund by 2.29%. The long term energy account outperformed them by 5.92% and 11.19%. And the mutual funds account underperformed the treasury account by 4.93% and outperformed the S&P fund by 0.34%.

From these results the Healthcare account method was definitively the superior investment method. At an annualized rate, the Healthcare account would gain 48% while the Finance account would lose 27%. The selection of the down trodden Healthcare industry was successfully entered as stocks were beginning to rebound. Furthermore, the relatively quick hopping allowed gains to be realized from several different stocks, and the analysis to find the stocks within 10% of their one year lows helped isolate the next stock to jump. The exact opposite was realized with the finance account. With the mortgage market pulling the whole industry to new lows, selected stocks were often not about to enter a period of recovery. The result was the ability to pick a new set of “losers” and resulting in the worst performance of any account.

Long term investments are somewhat harder to ascertain. The initial prediction was that oil stocks would do well during the summer months, and this appears fairly accurate. It appears that some past trends can be used to predict future performance. Mutual funds were also close to what was predicted. They stayed very close with the market, slightly outperforming it throughout the project. The association with many stocks within the mutual funds does seem to limit the growth from the biotech group and the losses from the finance group.

The market itself did not do very well during this time period, spending 26 of 46 trading days below the starting point. This is very surprising, as the market average is

expected to rise anywhere between seven and ten percent annually. To have a decline during 25% of the available trading days that this project represents means that the market has to perform even higher to reach that seven percent baseline. All this leads to the idea that the market will perform worse this year than it has during the past 5 years. Furthermore, during the time period of this project the market was very erratic in terms of great gains and great losses. The best description would define the time as uneasy in terms of investor confidence. On a side note, the US Treasury Bonds definitely gave a less stressful experience. While they did beat the market average during this short term test, it is fairly certain that it will under perform the market in the long run.

Chapter 5 Conclusion

In the end all the goals of the project were met. Initial research was performed and familiarity with company financials was gained. Research online, in news, and in print were initiated and continued throughout the project. Evaluations of company SEC filings were performed, examination of earnings per share was utilized, and sector wide trends were created. Concepts such as EBTIDA and market capitalization were examined to locate key stocks. And final analysis of the investment styles was completed.

The final conclusions are somewhat mixed. Biotechnology stocks which had taken a hit and were expected to recover, did in fact recover. Market research appeared to be able to point out these companies with reasonable accuracy. Energy stocks did increase in value over this time period as well, which lends some credence to the idea that we use more gasoline during these summer months. However, many online investment sites predict that index funds will perform most reliably over the long term, yet information gathered from this study seems to point in a different direction. It should be noted that true decisions on these matters cannot be completely rendered as this was a short term project.

What is apparent is that troubles in some industries, namely the housing market, can quickly pull down the entire market. During the time frame of this project we had troubles with Ford, the selling of Chrysler, American Home Mortgages declaring bankruptcy, and an increase in subprime mortgages defaulting. At the same time, we had

record profits from Amazon, the release of the much anticipated iPhone, and the bid for the *Wall Street Journal* by Rupert Murdoch. Foreign markets also affected the US as was seen by the market correction in China. In connection with this short term investment strategies appear to be all about timing. The healthcare account took advantage of a market recovery. The finance account got taken advantage by a market failure. There were no differences in their investment styles. Both looked for profitable, low to mid cap companies who were at a low relative stock price. Many of them had recently announced bad news. Yet the healthcare account performed astoundingly, and the finance account tanked. This best describes the hit or miss mentality of single stock investing.

One research concept that was proven was the determination of one's own personal ability to deal with the security of one's investments. Day to day balance changes in the short term accounts caused much more stress than the completely stress free US Treasury bonds. Anyone who doesn't want to obsess and watch over a stock daily (or minute to minute) certainly should not become a day trader. However, there appears to be a definite bonus to having more interaction than the buy-it-and-forget-it mentality of bonds, as bonds are often considered a bottom baseline. Mutual funds represent a mix in terms of risk and could be purchased and forgotten, at least for a few months. That feeling of security doesn't seem to exist for any single stock investment style. And mutual funds appear to perform around the market average to boot. This gives some insight into the popularity of mutual funds. Finally, single stocks investors should not be careless and carefree. The consequences are apparent with American Home Mortgage losing 52% of its value in one day, and 97.7% year to date as of the beginning of August. Overall, finding your level of resilience to gains and losses seems

to be one of the best first steps towards investing with your own money. After all, if you worry yourself into an early grave, what benefit does having a fortune in the market serve you?

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Figures

Figure 2.3.1 Emergent BioSolutions Technical Chart May 23 2007 to Present. 5 June 2007 <<http://finance.yahoo.com/q/bc?s=EBS&t=1y&l=on&z=m&q=l&c=>>

Figure 2.3-2 AstraZeneca 1 Year Technical Chart. 5 June 2007
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Figure 2.3-3 Astoria Financial 5 Day Chart 5 July 2007
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Figure 2.3-4 Virginia Commerce Bancorp 1 Year Chart 8 July 2007
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Figure 2.3-5 Hudson City Bancorp Inc 1 Year Chart 8 July 2007
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Figure 2.3-6 ZymoGenetics 1 Year Chart 8 July 2007
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Figure 3.2-1 IberiaBank Corp Chart 5 July 2007
<<http://finance.yahoo.com/q/bc?s=IBKC&t=1d>>

Figure 3.2-2 Aspreva & Sanofi-Aventis 1 Week Gains 5 July 2007
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Appendix

Time Table

Week	Activity
1 st (May 21 st – May 27 th)	Write initial project, perform beginning research. S&P stock and Treasury Bills “purchased”
2 nd (May 28 th – June 3 rd)	Basic investment research and glossary complete. First stocks selected and purchased.
3 rd (June 4 th – June 10 th)	2-3 stocks traded per week for short term accounts
4 th (June 11 th – June 17 th)	2-3 stocks traded per week for short term accounts
5 th (June 18 th – June 26 th)	2-3 stocks traded per week for short term accounts
6 th (June 27 th – July 1 st)	2-3 stocks traded per week for short term accounts
7 th (July 2 nd – July 8 th)	2-3 stocks traded per week for short term accounts
8 th (July 9 th – July 15 th)	2-3 stocks traded per week for short term accounts
9 th (July 16 th – July 22 nd)	2-3 stocks traded per week for short term accounts
10 th (July 23 rd – July 29 th)	Investment portion complete. Project wrap up begins
11 th (July 30 th – August 5 th)	Project wrap up complete. Final report submitted
12 th (August 6 th – August 12 th)	Additional time used as required
13 th (August 13 th – August 19 th)	Additional time used as required

Glossary

Asset - are anything that have value. Your house, car, checking account, and the antique china set your grandma gave you are all assets. Companies figure up the dollar value of everything they own and put it under the asset side of the balance sheet.

Bond - A loan given by you to another entity

Consumer Confidence Index (CCI) - The consumer confidence index is released each month by the Conference Board, an independent business research organization. It measures how a representative sample of 5,000 US households feel about the current state of the economy, and what they anticipate the future will bring. The survey focuses specifically on the participants' impressions of business conditions and the job market. Economic observers follow the index because when consumer attitudes are positive they are more likely to spend money, contributing to the very economic growth they anticipate. But if consumers are worried about their jobs, they may spend less, contributing to an economic slowdown.

Discounted Operations - Profit or loss in an Income Statement from a group which won't be part of the company for very much longer

Goodwill - can be thought of as a "premium" for buying a business. When one company buys another, the amount they pay is called the purchase price. Accountants

take the purchase price and subtract it by a company's book value. The difference is called Goodwill.

Liabilities - are the opposite of assets. They are anything that cost a company money.

Liabilities include monthly rent payments, utility bills, the mortgage on the building, corporate credit card debt, and any bonds the company has issued.

Limit Order – A market order to buy or sell a stock once it hits a certain price

Liquidity - How easy it is to turn an asset into cash

Market Order - An order to buy or sell a security at the current market price

Profitable Borrowing - When a business can earn a higher rate of return than the interest rate at which it borrows, it becomes profitable for the business to borrow money.

Proprietorship Reserves - An amount of money set aside for a specific purpose such as purchasing a new factory.

Retained Earnings - the accumulated profits a business has held on to and not paid out to its shareholders as dividends.

Security - An instrument that signifies an ownership position in a corporation (a stock), a creditor relationship with a corporation or governmental body (a bond), or rights to ownership such as those represented by an option.

Shareholder Equity - The difference between assets and liability; it tells you the "book value", or what is left for the stockholders after all the debt has been paid.

Spread – Difference between the buy and sell share price of a stock. The spread is the fee that the exchange takes for organizing the trade between the buyers and sellers. Some stocks are not as liquid as other stocks and the order must be held for a longer time, increasing the risk that the stock cannot be sold. The end result is that the exchange charges a larger fee depending on the liquidity of a stock.

Stock - A representation of partial ownership of a company

Stop Loss Order – A market order to sell a stock if it falls below a certain price. Stop loss orders are used as a form of insurance to prevent a large loss.

Subsidiary - Is a company controlled by another company through ownership of at least a majority of the voting stock

Trailing Stop - A market order similar to a Stop Loss to protect profit on a security.