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Project Number: 28005 IQP DZT-0109 - 49

Stock Market Investment Strategies

An Interactive Qualifying Project Report
Submitted to the Faculty of
WORCESTER POLYTECHNIC INSTITUTE
In partial fulfillment of the requirements for the
Degree of Bachelor of Science
By

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Date: February 25, 2002

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3/8/02

Abstract

This project is an introduction to three common approaches to investing in the stock market. Each method (Psychology, Fundamentals, Technical Analysis) contains a portfolio of stocks that was chosen and managed based upon the method. The period of our simulation followed the market dip after the events of September 11th, and the recovery rally right after. Records of the trades, analysis and conclusions are presented. The project can be used as a guide to the novice investor.

Acknowledgements

Special thanks to our advisor Dalin Tang
for providing us with his market insight.

Thanks to Yahoo Finance, BigCharts,
and the Wall Street Journal for their
data, commentary, and charts.

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Chapter 1. Introduction

1.1 Introduction

This IQP is an objective study on 3 different approaches to investing in the stock market. The timeframe for our investments (October 22nd -> December 21st) marked an interesting bullish time in our stock markets history after a sharp decline which followed the tragic events of September 11th. Our methods include: fundamental investing, psychological investing, and investments based upon technical analysis.

The methods used in this study were intended to introduce the group members to the major investment philosophies which exist. A knowledge of how other investors may be thinking can provide insight on when to act in the market. Investments are risky by nature, but the stock market is an overly complex machine, and if you understand the way the machine works, you can use it to your advantage.

1.2 Overview

In this report, three investment strategies are defined in detail and tested. A psychological strategy, a hard facts strategy, and a technical analysis strategy were analyzed.

To introduce each section we defined some of the major terms and market conditions which exist to give the reader a frame of reference if they are not knowledgeable about the stock market philosophies.

We will make our investment picks and comment on why we feel the companies are a good candidate for investments. Companies broad goals and initiatives which impact the future success of the companies will be referenced.

Our data was collected through the use of free online tools, such as Yahoo!'s Finance portal. Many other online investment sources were researched during our literature review. The Wall St Journal offered an interesting freeware application called WSJ MarketView, it provided in depth market(charts) for analyis and customization.

Each method had different ways of determining when to sell a stock, the timeframe for this investment was during a small bullish period, and all methods came out positive on the cash flow. The current market has a lot of uncertainty for the future, with a hurting economy and market, but these fluctuations in stock prices can make you money if you know how beat them.

1.3 Methodology

An investment strategy based on psychology rests on the idea that the price a person is willing to pay for stock in a company doesn't have all that much to do with any hard facts such as, that companies Price to Earnings ratios or their Return on Sales, but rather the worth of that company depends only on how its worth is percieved by investors. For example, strong investor confidence in the future of a certain company could cause the stock price to soar even though the company hasn't yet earned a single profit.

The hard facts investment strategy is based on the theory that a company's future performance can be estimated based on various aspects of the company's past performance. For this strategy, widely available data such as Price to Earnings (P/E) ratios and Return on Sales was used in order to characterize companies in terms of their market foothold as well as their effectiveness in bringing a product to market. Management issues as well as problems inherent in developing various products can all effect these aspects of a company. In order to perform a trial of this investment strategy, many companies were characterized by their past history and those that were estimated to be profitable organizations were considered in the investment. Seven companies were chosen and the performance of these stocks over a 2 month trial period was analyzed.

The basis of technical analysis is discussed within section 2.3. The system requires a stage to be assigned with a given stock, using the market indices to determine bear/bull markets. A stock is purchased after a market decline which is usually followed by a pullback rally. This rally will end at the next level of resistance and can be considered the trading range. Stocks which break the top of the trading range can be considered as possible buy (breakout) candidates; stocks which break the bottom floor of resistance will be sold short, and may be repurchased at a lower level of upper resistance.

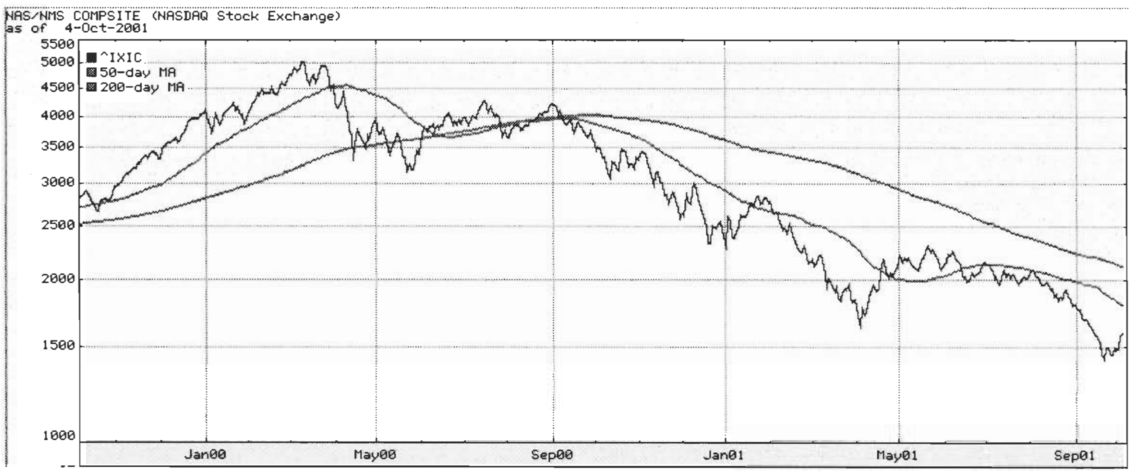
1.4 Look at Past & Present Markets

Market History

NASDAQ History

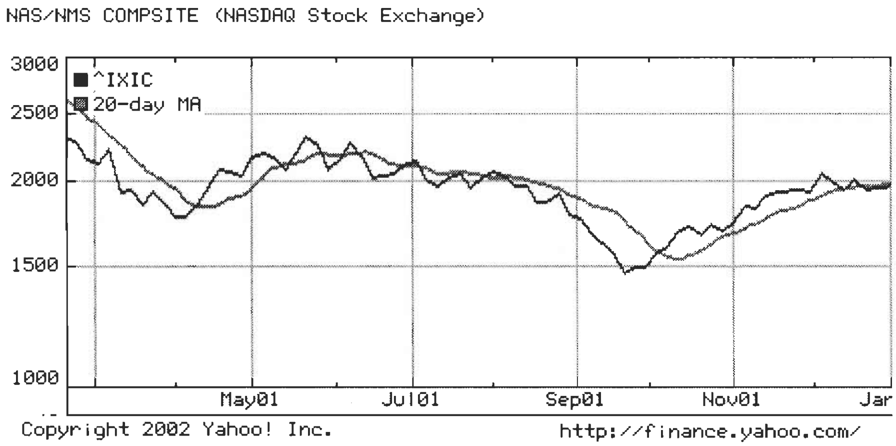
The NASDAQ market has been a Bull market since roughly before 1985, while between 1997 and 2000 technology stock prices soared. Technology giants like Microsoft and Dell Computer were very profitable during these times. Tech IPO's generally exploded and would fizzle out very quickly. Largely due to the impact the internet is having on investors and businesses, but many other factors helped to drive the economy even further. On March 10^{th} 2000 the stocks began to fall, investors' over-hyped prices for technology stocks began to drop. Panic was in the air, and people were selling. Investors began to look into older firms that were implementing these new technologies effectively. On September 11th, terrorist attacks on NYC and Washington closed the market for 4 days. After the market re-opening the first week of trading brought the NASDAQ to a new recent low. After that week the market rallied until late December, the market correction had begun..

A market which is home to many technology companies within the U.S., the NASDAQ is a market of volatility -- high risk, with chances for high returns, or losing your shirt.



This is a picture of the market condition prior to our investments. The last dip marks the week following September 11th decline.

When the NASDAQ reaches a low point in the recent past, I'm going to study how companies with solid business models and proven results do within the short-term after this low. I'm going to set a price percentage gain, based upon a few factors, and if the stock price reaches the desired percentage (+10-20%)



The NASDAQ Moving Average

The Moving average is another useful tool for identify shifts in the Market. As the slope of the line approaches a flat line, historically it appears to be a good time to sell. Initial observations accurately depict the markets downturn in March 00, the question which needs the most research is trying to determine when low is low. Both markets currently show positive signs of growth. This period of growth lasted threw January when the market began its decline correction again.

Chapter 2. Investment Strategies

2.1 Psychology

2.1.1 Introduction

"A conventional valuation which is established as the outcome of the mass psychology of a large number of ignorant individuals is liable to change violently as the result of a sudden fluctuation of opinion due to factors which do not really make much difference to the prospective yield; since there will be no strong roots of conviction to hold it steady. In abnormal times in particular, when the hypothesis of an indefinite continuance of the existing state of affairs is less plausible than usual even though there are no express grounds to anticipate a definite change, the market will be subject to waves of optimistic and pessimistic sentiment, which are unreasoning and yet in a sense legitimate where no solid basis exists for a reasonable calculation."

John Maynard Keynes

Throughout the years, two major approaches to analyzing the stock market have developed. The method most investors are familiar with is fundamental analysis. The lesser-known approach is known as technical analysis. The analyst who studies fundamentals delves into a company's financial statements-mainly the balance sheet, the income statement, and the statement of cash flows. From this data and with the use of various models, the analyst attempts to forecast the future earnings of a company and determine if a stock is overvalued, undervalued, or fairly valued. It can take many hours to wade through the masses of financial data for just one company.

Conversely, technical analysis assumes that all known information - financial, political, and emotional - is already priced into the stock. The technician's objective is to seek out repeating chart patterns and trends, which occur due to the consistent emotional responses of investors. In my opinion, technical analysis is somewhat of a misnomer. The layman, upon hearing this title, may conjure up thoughts of advanced mathematical and statistical models. While such equations are utilized, the premise behind technical analysis is one of human psychology.

2.1.2 Investor Psychology

2.1.2.1 Rumor vs. News

Not all investors obtain corporate information simultaneously. There are some investors that are much closer to a company than others (i.e., directors, officers, employees, analysts, friends or relatives, employees of other corporations, attorneys, and printers) and who will learn about corporate information first. For our purposes, we shall refer to corporate information as news or rumor, depending upon whether it is officially announced or not.

Often, when insiders hear a significant rumor about a company, they will trade in the stock. In the case of a favorable rumor, the insiders will buy the stock – causing the price either to rise or to be unexpectedly firm. When the favorable information is actually announced the stock's price usually will either rise less than expected or decline. This is because the insiders will have either failed to buy (because they already have done so) or they will sell if the price has subsequently increased.

Most investors are not aware of the rumor period of information dissemination and are bewildered by the price behavior of just described; they simply view the market as irrational. On the other hand, those investors who are aware of this period hold the theory which is commonly called contrary analysis (they are called contrarians). They believe that if "everyone" agrees that a stock is a good buy, it can't be: if "everyone" believes this, they probably have already acted on it, and there will be no new buyers to drive the price higher. Hence, the saying "buy on (favorable) rumor, sell on (favorable) news."

Of course, the nature of some corporation information allows it to become available to all (indiscriminately); in this case there is no rumor, just news. In such instances, the price will behave as most investors expect; it will rise and fall in proportion to the quality of the news. In this case, investors view the market as rational.

Not all rumors are true, and some that are true fail to become fact; this is especially true of acquisition rumors. Acquisition rumors usually cause prices to rise even though the acquisition may not be beneficial. It is even sometimes wise to sell after news about an acquisition because enthusiasm and price can wane.

2.1.2.2 What is Price?

Price is a psychological event – a momentary balance of opinion between buyers and sellers. The price of a stock is not what the last person paid for it. Price is instead the price at which the next person will pay for the stock.

The price of stock has very little to do with the company that it represents. For example, the price of IBM stock has very little to do with IBM. IBM is still probably making the same cash flow that they did yesterday, they've probably got the same book value, and the same assets, yet the price of IBM stock went down 2 dollars today (Dec. 13, 2001). Price is simply the intersection of supply and demand curves.

2.1.2.3 What is the Market?

Basically, the market is nothing more than a huge mass of people. A huge mass of people trying to take money away from each other by outguessing them on the probable direction of the market. In the beginning, markets were small. The New York Stock Exchange was formed in 1792 as a club of two-dozen brokers. Thanks to modern telecommunications the world is becoming smaller even though the markets are growing in size. The euphoria of London flows to New York, and the gloom of Tokyo infects Hong Kong. Members of the financial crowd watch the same quotes on their terminals, read the same articles and financial media, and get similar pitches from brokers. These commonalities unite us as members of the market crowd even if we are thousands of miles away from the exchange. Therefore, when one analyzes the market, they are analyzing crowd behavior. Crowds behave alike in different cultures on all continents. Therefore, a good trader must realize that the market is a huge crowd of people all trying to take money away from other members by outsmarting them. A good trader must understand this and he/she must also understand how market crowds influence his mind.

2.1.3 Mass Psychology

2.1.3.1 Crowd Mentality

Humans have a primitive urge to join the crowd and to "act like everybody else." A successful trader must think independently. He must be strong enough to analyze the market alone. Crowds have the power to create trends. If a trend is up you should only buy or stand aside. Never argue with the crowd. You do not have to run with the crowd – but you should never run against it.

The market is a loosely organized crowd whose members bet that prices will rise or fall. Each price represents the consensus of the crowd at the moment of transaction. Therefore, all traders are in effect betting on the future mood of the crowd that swings from indifference to optimism or pessimism and from hope to fear. Most people do not follow their own trading plans because they let the crowd influence their feelings, thoughts and actions. However, one must remember that he/she cannot control the markets; He/she can only decide whether and when to enter or exit trades.

People change when they join crowds. They become more impulsive, anxiously search for a leader, and react to emotions instead of using their intellect. American social psychologists did experiments in the 1950s that prove people think differently in groups than they do alone. For example, an individual can easily tell which of two lines on a piece of paper are longer. However, he loses this ability when he is put into a group whose other members deliberately give wrong answers. Basically, people believe a group of strangers more than they believe their own eyes.

2.1.3.2 Tulip Mania

In Holland in 1634 there was a bull market in tulip bulbs. The long bull market convinced the Dutch that tulips would continue to appreciate. Many of the prosperous Dutch abandoned their businesses to grow tulips, trade them, or become tulip brokers. Banks even accepted tulips as collateral. Eventually the price of tulips grew too high and there were waves of panic selling, leaving many people destitute and the country shocked. This story, one will notice, bears striking resemblance to what happened with online companies in January of 2001 in the United States.

2.1.3.3 Why Do Stock Prices Rise?

When the trend is up, bulls feel optimistic and do not mind paying a little extra. They buy high because they expect prices to rise even higher. Bears feel tense in an uptrend, and they agree to sell only at a higher price. When greedy and optimistic bulls meet fearful and defensive bears, the market rallies. The rally ends when many bulls lose their enthusiasm.

2.1.3.4 Why Do Stock Prices Fall?

Once many bulls lose their enthusiasm, prices slide. Bears feel optimistic and do not quibble about selling short at lower prices. Bulls are fearful and agree to buy only at a discount. As long as bears feel like winners, they continue to sell at lower prices, and the downtrend continues. It ends when bears start feeling cautious and refuse to sell at lower prices.

2.1.3.5 Rallies and Declines

Markets rise because of greed among buyers and fear among short sellers. Bulls normally like to buy on the cheap. When they turn very bullish, they become more concerned with not missing the rally than with getting a cheap price. A rally continues as long as bulls are greedy enough to meet sellers' demands.

The sharpness of a rally depends on how traders feel. If buyers feel just a little stronger than sellers, the market rises slowly. When they feel much stronger than sellers, the market rises fast.

Short sellers feel trapped by rising markets since their profits melt and turn into losses. When short sellers rush to cover, a rally becomes nearly vertical. Fear is a stronger emotion than greed, and rallies driven by short covering are especially sharp.

Markets fall because of greed among bears and fear among bulls. Normally bears prefer to sell short on rallies, but if they expect to make a lot of money on a decline, they don't mind shorting on the way down. Fearful buyers agree to buy only below the market. As long as short sellers are willing to meet those demands and sell at a bid, the decline continues.

As bulls' profits melt and turn into losses, they panic and sell at almost any price. They are so eager to get out that they hit the bids under the market. Markets can fall very fast when hit by panic selling.

2.1.3.6 Price Leads the Market

In a book entitled, Forecasting Financial Markets – The Truth Behind Technical Analysis author, Tony Plummer shows that price itself functions as the leader of the market crowd since most traders focus their attention on price.

When the trend is up, bulls feel rewarded and the longer an uptrend lasts, the more confident they feel. Since the bulls' behavior is being rewarded they will continue with that behavior. When bulls make money they add to long positions and new bulls enter the market. Bears feel that they are being punished for selling short. Many of them cover shorts, go long, and join the bulls.

Buying by happy bulls and covering by fearful bears pushes the uptrends higher. Buyers feel rewarded while sellers feel punished. Both buyers and sellers feel emotionally involved, but few traders realize that they are creating the uptrend, creating their own leader.

Eventually a major sale hits the market, and there are not enough buyers to absorb it. The uptrend takes a dive. Bulls feel mistreated while bears feel encouraged. This price shock plants the seeds of an uptrend's reversal. Even if the market recovers and reaches a new high, bulls feel more skittish and bears become bolder. This lack of cohesion in the dominant group and optimism among its opponents makes the uptrend ready to reverse.

Several technical indicators identify tops by tracing a pattern called bearish divergence. It occurs when prices reach a new high but the indicator reaches a lower high than it did on a previous rally. Bearish divergences mark the best shorting opportunities.

When the trend is down, bears feel rewarded. They feel increasingly confident, add to their positions, and the downtrend continues. New bears come into the market. Bulls lose money in downtrends, and that makes them feel bad. Bulls dump their positions, and many switch sides to join bears. Their selling pushes markets lower.

After a while, bears grow confident and bulls feel demoralized. Suddenly, a price shock occurs. A cluster of buy orders soaks up all available sell orders and lifts the market. Bears feel mistreated.

A price shock plants the seeds of a downtrend's eventual reversal because bears become more fearful and bulls grow bolder. Even if bears recover and prices fall to a new low, several technical indicators identify their weaknesses by tracing a pattern called a bullish divergence. It occurs when prices fall to a new low but an indicator traces a more shallow bottom than during the previous decline. Bullish divergences identify the best buying opportunities.

2.1.4 Chart Analysis/Technical Indicators

2.1.4.1 The Meaning of a Bar Chart

Each bar on a chart reflects the battle between bulls and bears. Each price reflects action or lack of action by all traders in the market. Therefore, charts are a window into mass psychology. When a person analyses charts they are analyzing the behavior of trends. Technical indicators help make this analysis more objective. Technical analysis aims to recognize trends and changes in crowd behavior in order to make intelligent trading decisions.

Chart patterns reflect the tides of greed and fear among traders. Each price is a momentary consensus of value of all market participants expressed in action. Each bar provides several pieces of information about the balance of power between bulls and bears.

The opening price of a daily or a weekly bar usually reflects the amateur's opinion of value. They read morning papers, find out what happened the day before, and call their brokers with orders before going to work. Amateurs are especially active early in the day and early in the week.

Traders who researched the relationship between opening and closing prices for several decades found that opening prices most often occur near the high or the low of the daily bars. Buying or selling by amateurs early in the day creates an emotional extreme from which prices recoil later in the day.

In bull markets, prices often make their low for the week on Monday or Tuesday on profit taking by amateurs, then rally to a new high on Thursday or Friday. In bear markets, the high for the week is often set on Monday or Tuesday, with a new low towards the end of the week, on Thursday or Friday.

The closing prices of daily and weekly bars tend to reflect the actions of professional traders. They watch the markets throughout the day, respond to changes, and become especially active near the close. Many of them take profits at that time to avoid carrying trades overnight.

Professionals as a group usually trade against the amateurs. They tend to buy lower openings, sell short higher openings, and unwind their positions as the day goes on. The relationship between opening and closing prices is important. If prices closed higher than they opened, then market professionals were probably more bullish than amateurs. If prices closed lower than they opened, then market professionals were probably more bearish than amateurs.

Ultimately, the more one knows about psychology, the deeper he/she will be able to understand why fluctuations in the stock market occur, and the better he/she will be at predicting future fluctuations.

2.2 Fundamental / Hard Facts Investment Strategy

In this section a technique for investing using a Hard Facts investment strategy will be developed and examined in detail.

2.2.1 Introduction

The definitions listed in Section 2.2.2 describe factors that can contribute to a company's success or failure. These factors do not take into account the value of an idea or concept; they simply represent the past success of the business as well as the value of everything the business owns.

In recent years the technology sector has seen tremendous rises in investments. In this industry, it is not always necessary for a company to own millions of dollars of equipment to launch million dollar ideas. Concepts that have a large effect on the entire industry can be implemented with fewer overheads than any other industry. For example, if two boat building companies were in competition, an investor could research the assets attributed to each company. Certainly if one company had more equipment in a larger factory, they could produce more boats. The investor would likely choose the larger factory, as they own more profit-generating equipment. Another example would be a private individual with a novel approach to boat building. Without a large initial investment, the individual would not have the equipment necessary to produce enough boats to gain a share of the market.

In the technology industry, a product is often times simply digital content such as a computer program. In this case, the production costs are extremely low and are scalable to the extent where relatively little money can be used to generate an enormous amount of product. For this reason, often times a novel approach to providing a computer-based product can be implemented with little initial investment. In this industry, an asset-based interpretation of a company's profitability does not apply as well as it does in the boat building example. Another interesting note is that investors have often fallen into a trap created by the technology industry. These investors have ignored the fact that a certain company had almost no assets other than an initial investment by venture capitalists. They bet that the idea the company had would be profitable, and invested money into them. In some cases this proved to be very profitable. In other cases, the idea did not prove to be profitable. With no other source of income and virtually no tangible assets, the investors were left with virtually nothing. Companies have even noticed this trend and used it to their advantage. "Vaporware" is a term for a product whose functionality has been released but never successfully implemented. Some shrewd businessmen have described a concept in order to get venture capital but never actually implemented it, nor had any real intention to ever do so. This is possible because it is unnecessary to have a large amount of assets as proof of the validity of a technology based business plan. In this way the company can get investments for their vaporware.

Without being technically savvy and essentially doing all of the market research necessary to validate an idea's profitability, investing in the technology sector can be very dangerous. More generally, investing in any idea that lacks a strong financial backing can cause an investor to fall much harder if the idea is not a success. For this reason, many investors choose what they feel is a more secure route. Although the return on an investment in a company that starts with negligible assets can prove to be much higher than those normally seen in other more stable industries, many feel the safer route is to invest in a company that has the strength to have ideas fail and still survive.

The purpose of this study on the "Hard Facts" investment strategy is to test this theory. By looking at the assets, efficiency, and past profits of companies, an overall idea of their strength can be acquired. Companies that have had these values researched and seem to represent a strong place in their market will be added to the simulated portfolio for this strategy. By performing this simulated investment, data can be gathered and analyzed in order to determine how successful such an investment scheme can be.

2.2.2 Financial Definitions

Prospective Earnings Growth (PEG) Ratio:

This value is based on predictions of a company's earnings. Current earnings are subtracted from predicted earnings, and this number is divided by the current earnings (to form a ratio of earnings growth to current earnings) This is important to investors because it represents the potential a company has to provide a return on an investment.

Business Plan and Future Vision:

This is a broad value that is difficult to quantify. A company's business plan will ultimately determine whether or not any ideas will become profitable. Future vision, also broad, describes a company's plan to cope with an ever-changing marketplace.

Book Value:

Quantifies a company's total assets. This does not include intangible assets, liabilities, and debt. For this reason, it is a sound indicator of the true value of a company. However, by not including intangible assets, intellectual property, patents, and copyrights are ignored and in many cases, especially in technology stocks, these values are important. These values represent "ideas" and although they have no inherent value, they could generate profit.

Return on Equity:

This value represents a company's profitability. The net income over a year is divided by common stockholder equity. Stockholder equity is the book value of ownership in a corporation. This provides a sound description of how a company uses the money investors have given them.

Return on Assets:

Also a profitability indicator, this value is found by dividing a year's net income over total assets.

Stockholder's Report:

A report generated annually to inform shareholders on many of the topics listed here.

Return on Sales:

Taking a company's profits and dividing by the net sales determine this value. This is used to measure efficiency of the company.

Return on Investment:

This displays book income as a proportion of net book value.

Market Share:

This value is the percentage of an industry that a company has control over. This value is important as it relates directly to the profitability of products sold by the company. A company with a large market share is more likely to be able to sell a large amount of product than a company with a smaller market share.

2.2.3 Factors that will be Examined

The topic of investing on hard facts encompasses a broad range of investment strategies. The primary subjects are tangible assets, past performance, and business plan. While it is true that these subjects include the majority of company data available to the hard facts investor, their individual complexity makes reaching a nearly complete characterization of the inherent value of a company a monumental task.

For this reason it is necessary to accept that limitations will exist in any such description and to develop a model that estimates which factors are the most important. The strategy proposed stresses a company's assets as well as past growth as indicators of investment soundness. This model includes the following factors.

Business Plan and Future Vision:

This factor is inherently qualitative and interpreting this data is somewhat different in it's interpretation as compared with the rest of the factors included in this model. Purely numerical values can be interpreted with a model that defines strict acceptance ranges and as a result the interpretation, as defined by the investment strategy, is quite clear. Interpreting a business plan and a company's future vision is much less cut and dry, and therefore this particular analysis will involve a thoughtful estimate made by the investor that attributes a numerical value describing the company's strength of a business plan. For different market sectors, this analysis will be completed with different methods.

Book Value:

This value is often presented as a per-share value of the tangible assets maintained by a company. By comparing this value to the selling price of a stock, a numerical value can be attained that quantifies the relationship of inherent value of a stock and the market value. Interpretation of this data will be completed by defining acceptable ranges for this value. In an investment strategy based primarily on a company's assets, a low ratio of market value to book value is preferable as this characterizes a stock that is not inflated by an estimation of the success of an intangible asset.

Return on Assets:

Interpretation of this value will be completed by defining acceptable ranges. A previous high return on assets signifies good profit potential in relation to a company's assets. In this model this will be an indicator of a company's use of their assets. A higher return on assets will therefore increase the significance of a company's assets and will be attributed to a good hard-facts investment.

Debt to Equity Ratio:

A large debt to equity ratio will signify that a company's listed assets are an inaccurate description of the company's overall value, simply because the debts will eventually be paid and will mean a decrease in company assets. In this investment strategy a small debt to equity ratio will be most desirable.

Price to Earnings Ratio:

A large price to earnings ratio will be interpreted as an indicator that an investment in the company will continue to yield less profit than an investment in a company with a smaller ratio. In this analysis, a small price to earnings ratio will be preferable.

Return on Sales (Net Profit Margin):

Since this value is determined by dividing a company's income over a period of time by the total revenue over the same time, it is interpreted as an indicator of a company's profit making potential. A smaller profit margin indicates that although a company may have many sales, the overhead associated with these sales diminishes the profit made. A large profit margin will be desired as it signifies a company that can bring a product to market efficiently.

Sales:

This value will be interpreted as representing a company's presence in a market. A large amount of sales as compared to other company's in the same sector will indicate a large market share.

Share Price Change:

This value is generally presented as the difference between current share price and the share price of a year before. The market as a whole, however, often experiences rises and falls. As a result a company's strength in a market may be misinterpreted by using this value if the market as a whole has experienced a fall. To account for this, a share price change relative to the change of the entire market is often used instead. An increase in share price as compared to the rest of the market's growth will represent a sound investment.

2.2.4 Value Analysis of the Factors.

In order to understand the factors listed in Section 2.2.4, companies were examined that were estimated to represent a strong investment as well as a weak investment. By examining each factor of these companies, the estimate can be extended to define acceptable ranges for each factor. Broker recommendations are also used in determining the performance of certain companies in order to interpret their factor values as strong or weak. Note that these companies are used in order to obtain a range of strong and weak values of each factor included in this investment model, and are not to be confused with the stocks selected for investment.

Dell Computers is estimated to be a low risk, low chance of growth investment. A drop in price that began in June 2000 paralleled the overall drop in the NASDAQ, however, looking only at the last year the stock has maintained a price of around $25. A large fall following the September 11 tragedy was quickly recovered signifying a stability in the market. Being another company that must have the infrastructure to meet the needs of the market, the factors examined in this particular strategy are relevant. The data of this company is included and represents a neutral success.

McDonald's has recently been upgraded from a buy to a strong buy by various analysts. Being in the food service industry, McDonald's is also a company that depends on assets in order to fund the constant purchasing of precursors to their product. However, over the last year the company has seen a drop in share value from roughly $30/share to $27/share. McDonalds has had neutral success in recent history.

Ford Motor Company has experienced a substantial fall in share value over the third quarter of 2001. From April to September the company has seen a fall from about $30/share to about $17/share. Although every year for the past three the company has seen a large drop after April, the recovery in the 4th and 1st quarters has been consistently decreasing. April has consistently marked a high point of Ford share price relative to the rest of the year. The April 1999 share price of $63/share compared to the April 2001 share price of about $30/share (both high points of the year) indicates a steady decline of stock in Ford. This company is evaluated due to its reliance on tangible assets in order to meet the needs of the market and maintain market share. The share prices of the last year indicate an unsuccessful purchase for investors.

In the last year Applied Industrial Technologies (NYSE:AIT) experienced a rise and fall that has stabilized in the last six months to about a $1.50 or roughly 9% overall increase. It has maintained a "hold" status among various analysts signifying a tentative potential for profit. The company designs and fabricates systems for industrial applications and distributes other industrial products not created in-house. AIT data is examined as representing a minorly successful investment.

Donna Karan(NYSE:DK) designs, creates, and retails clothing goods. The company saw a large growth in the last year, from around $5.5 in October 2000 to almost $11 in October 2001. The large increase has remained stable over the last 6 months, and immediately recovered from the slight dip after September 11th. The factors for Donna Karan are used to characterize a minorly successful investment.

One of the most popular suggested buys from many analysts is the McDATA Corporation. McDATA produces storage-area network equipment and the data recorded is used to characterize a successful business.

	Brokers Recommendation	Mkt/Bk	ROA	D/E	P/E	ROS	Sales	Price Change*
Ford Motor Company	Sell	2.46	.83%	12.66	14.28	1.4	167.4B	-12%
McDonalds	Neutral	4.11	8.53%	.93	21.57	12.5	14.6B	+28.6%
Dell	Neutral	12.70	11.04	.10	45.39	4.5%	32.6B	+11.1%
AIT	Hold	1.06	4.72%	.36	11.97	1.7%	1.63B	+28.6%
DK	Hold	1.57	4.21%	.34	17.62	2.0%	0.66B	+139.2%
McDATA	Buy	3.42	7.57%	.01	53.05	10.4%	0.31B	-24.7%

*Price change is relative to the S&P 500 as this normalized value represents company growth as opposed to growth of the industry as a whole.

These companies have been evaluated using techniques other than the hard-facts investment strategy in order to determine their success in the past year. These evaluations are listed under the headings "Broker Recommendation" and "Price Change". Growth and broker recommendations were used to find stocks that represent failures, small failures, successes, and strong successes to those who invested in them in the last year. In other words, the stocks listed were evaluated based on broker's recommendations as well as their performance over the last year. This data was used to develop a description, in terms of the data used in the hard facts strategy, of profitable and unprofitable companies.

The data recorded allows a range of acceptable values to be determined. From this data set, an estimate can be made that the Return on Assets (ROA), the Debt to Equity ratio (D/E), and the Return on Sales (ROS, or Profit Margin) are most important to a company's success. In this model, these values are weighted the most. Note that this is a generalization that is based on data from past success of businesses as well as broker recommendations. It is the goal of this project to test the viability of such a generalization. For the remainder of this section, strengths and weaknesses are described only in terms of this particular investment strategy.

For the Market to Book Value ratio, a value of around 1.00 is strongest, while a value of 2 to 3 is somewhat neutral. A value of 3 or greater will represent an increasingly weak Market(mkt)/Book ratio.

The Return on Assets is recorded as about 4% for companies that represent a safe but unprofitable investment. This is contradicted by the 11.04% ROA reported for Dell Computers, however, Dell's large Mkt/Book ratio as well as a low return on sales accounts for the mediocre performance of the company. A value of 6% and above will represent an increasingly strong ROA value.

Debt to Earnings ratio is very important in a company's status as a potential investment, and the most successful company listed above has a D/E of only .01. The least successful company, Ford Motor Company, has a D/E ratio of 12.66, representing debts that far exceed earnings. A value of 1 will be considered neutral, and values approaching 0 will represent strong investment potential.

The P/E Ratio for the data collected serves only to diminish its importance in this model. It is important to view the P/E ratio in terms of other factors, for example, the 53.05 P/E ratio of McDATA is quite high and is considered very weak, but the strengths of the other factors have served to offset this weakness. Safe investments with small profit potential have a P/E ratio in the range of 10 to 20; this will be considered a neutral value. Values less than 10 will be considered strong.

Return on Sales, or profit margin, contributes a great deal to the success of a business. Values of 5% and above will be considered strong, with a preference for values at 10% and above.

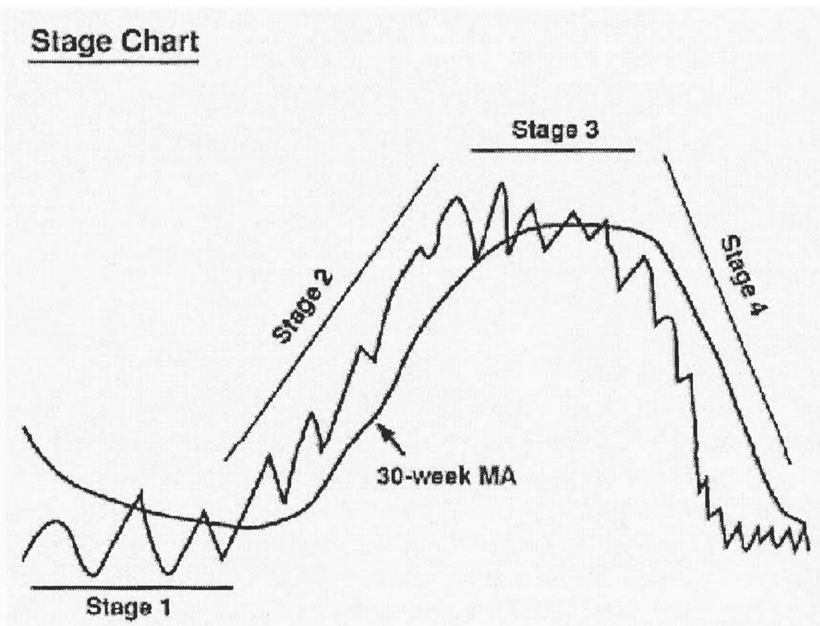
The Sales value is used for normalizing the previously mentioned values in order to compare companies of different sizes. This *absolute* value therefore cannot be used to compare different companies however it is useful in getting an idea about the foothold a certain company has in a market. The price change listed in the table is used to show growth in relation to the rest of the market. Positive growth is ideal, however losses in the last year will not be interpreted as the most important indication of a company's profit potential.

2.3 Technical Analysis

2.3.1 Focus on Market Lows/Highs

Overview

Stock history can be classified as four different stages. A basing stage where a stock tends to hover around the same trading range, the bottom points of the stock are considered its level of support.



This basing stage can also be considered the stock floor. The ideal time for an investor to buy is right after a base has been established and the stock breaks the top of the trading range. Once this resistance has been broken, a start of a rally may begin. A stock might pullback towards its previous top level of resistance after an initial rally, this gives an investor a chance to still buy before a major rally, but pulls back from its recent high price. The strength of the pullback is also an indicator of the strength of the next rally. If the pullback is minimal, the stock should be considered. If the pullback is strong and breaks the moving average line, the rally may be short-winded. A stock which is rallying consistently (or for the majority of the time) is considered in the advancing phase. This uptrend is the ideal time to be holding the stocks as their value is increasing the most rapidly at this point in the market. A rally will often lose steam and begin to top out. When the moving average of the stock starts to flatten, this is a sign that the stock has topped out or reached a new level of resistance. At this point in time a sell decision is a good option if adequate profits have been made. Greed, is one of an investors worst enemies, but fortunately it can be controlled. By disciplining yourself to stick to a method, such as selling half of your shares when the moving average flattens, you avoid letting greed enter your equation for success. After a stock has topped out, it starts to decline until it reaches a new level of resistance and forms a base again. This downward trend is the worst time to hold stocks, and chances that a stock might come back up to a desired value within a small timeframe are low at this point in time. It is best to sell towards tops of small peaks, and buy again later once a stock shows signs of basing.

Here's a description of some of the terms I'll be using:

Basing
If the bottom of the support level is broken (the stock moves negatively further)

Advancing
Each new peak is higher than the last, each new correction is higher than the last.

Top/New Level of support
A stock faces a level of resistance, this period is the opportune time to sell. How do you identify if it is a new support level or a market top?

Decline
The stage of a stock which has each successive low, lower than the last.

Summary

Determining which phase each of my stocks is in will be a process engraved into my daily routine of researching past performance. Using a rule I call the 'magic ruler', I am able to make sound investment decisions. The 'ruler' connects major peaks and bottoms of a stock to help determine which phase a stock is in. If the ruler passes through 3 points, the trend line is significant and considered the trend for future growth/decline. Generally a moving average which is flat will correspond to a completely horizontal ruler, and up/down trends can easily be identified by connecting the points. It is important to use a large (6 month+) scale when using the ruler theory as it doesn't work well when comparing small intra-day or weekly movement.

2.3.2 Breakouts

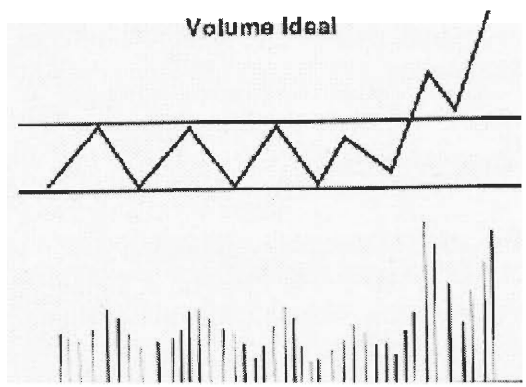
A Breakout is when a stock breaks the top of the trading range, above the level of resistance. After that upper level of resistance is broken, the stock can rally until it reaches a new level of resistance.

Given that the breakout point can be a risky entrance point if you enter at the wrong time, there are ways to identify rallying breakouts. If the volume is very strong, (compared to previous peaks) and the price is rising, this is positive reinforcement that you have entered the position correctly. After a stock breaks its resistance level, it may temporarily pullback towards its previous ceiling level, the amount that this stock pulls back is an indicator of the next rallies strength. If the stock pulls back below the ceiling, this has negative implications, while a stock which pulls back only momentarily shows signs of further bullishness.

Why is a breakout point a good time to buy? The time value of money concept applies to this situation, where money tied up in stagnant investments could be used for other shorter term breakout plays. If you purchase a stock too early in its cycle (during the basing phase) It may remain hovering over the same values for an indefinite point of time. This is what makes the breakouts one of the best ways to trade based on technical analysis.

2.3.3 Reading the curve

There are ways to identify a potential rally from a breakout situation. As this example shows, if the upper bound of the trading range is broken and trading volume is abnormally high. This is the ideal pattern for the rallying stock, after it breaks the trading range, the amount it pulls back down towards the top of the trading range is an indicator of the rally's strength.



2.3.4 Stock Screening

When comparing a group of companies in your potential portfolio, it is wise to try and isolate the leaders and underdogs of your industries. While technical analysis is usually based upon the stocks previous performance, I think its important to invest in sound, financially strong companies which show the signs mentioned earlier. An investor needs to know its markets well, and know others within the target markets to discover current industry trends. Increases in market-share over an annual timeframe is a positive sign that the company is doing something right to gain its competitors business.

Intelligent or proven management is another key that I think greatly affects the valuation and future price of a stock.

The process of finding which stocks to consider has become easier now that we have more tools available to us. The internet has given us information, although its not always the information which is truly valuable. My favorite indicator of a company's success is change in market share, if a company is increasing its market share percentages in an industry of growth, it is doing something correct because customers are buying its products. These type of companies are the most attractive investments. As an example, I read about NVDIA's latest chipset and how it was being used in Microsoft's new gaming console the X-box. After picking up a PC magazine and looking at the reviews for the best 10 graphic cards, I noticed something a bit odd, NVDIA's chipset was found in each of the 10 best 'rated' cards. NVDIA at the time, had a strong competitive advantage over all its competitors. NVDIA happened to be the biggest winner on the NASDAQ for 2001.

Often investment portals (websites) offer stock screening utilities which allow you to isolate stocks based upon common fundamental criteria. One of the few criteria I typically consider for technical analysis is cash on hand, I feel this is a strong indicator of a companies management and future success. Another criteria is volume, alone, volume is not interesting, but looking at surges/lows in volume which correspond to a strong movement in stock price are looked at closely.

Some stock screening websites:

http://finance.yahoo.com

http://moneycentral.com

2.3.5 Trend lines

Connect the top/bottom points of a stocks movement, this is a trend line. A trend line tells you the slope (degree of increase) in a stocks performance over time. A trend is significant if it touches 3 major points on the line.

If you miss the buy on the breakout, It is wise to try and wait and invest when the stock price is closer to the bottom trend line.

2.3.6 Online Advice

Just like some of the best restaurants in town are often small hole-in-the-wall specialty restaurants, some of the best resources for online trading are also small community based websites. Some websites offer a place for professional investors to go and share insight and lessons learned from mistakes. Some successful money-managers, and investors who have already made their winnings offer their advice (for a price) but I feel that if you can find some reliable sources of data – the money saved by making the right investment decisions, is well worth the price of the advice.

Another alternative for receiving advice online is to join an investment club. An investment club is usually a group of friends or associates which share a common portfolio and make trade decisions based upon the majority vote. The benefits of joining an investment club are the shared lower-commission price per trade, the increased amount of market research and understanding of the market from each individual opinion contributing towards the vote. Other benefits such as serving as a meeting place for investors which want to learn more from each others mistakes make an investment club an attractive opportunity for the inexperienced investor.

The mass-market free stock advice websites seem to be of the least value, offering merely a scratch of trying to make sense of the market. When initially researching this project topic, I theorized that the amount of people reading the same advice/news could make the market more volatile than its been in the past. After studying the market for a term and adopting methods of technical analysis, I now think differently about the market and its future. As Fama stated in his Efficient Market Hypothesis , 'at any given time, the prices of all securities fully reflect all available information about those securities', in other words, maybe the news affects the market, but by the time you hear or read the story – the market price has already been adjusted to accommodate the news. 'In a world of computers and instant communication, the financial markets respond to the latest news long before you read or hear about it in the press' (Weinstein)

2.3.7 Refining A winning method

It is important to practice how you play, and refining a winning method is a key to beating the stock market. To do this you must diversify your portfolio, but wisely, if you are not educated enough about the sector, invest in the indexes. Know when to cut losses early, as losing money is not bad, if you can beat your losses with your wins.

I am currently refining my method of investment, I am currently looking at the following criteria.

-What is the change in the companies market share from year to year?

-On the long-term, wait until it breaks out above resistance and is above its 30 Moving Average.

-On the short-term, the stock has entered a new trading range and pulls back close to the moving average, then breaks above resistance.

-The longer a stock has been in a trading range, the more significant the breaking of that trend will be.

-Look for strong volume after a breakout has occurred.

-Cut losses early.

Don't buy and sell on a weekly basis, a short-term play should be between 2-4 months to 1 year investments.

Some tips offered from Stan Weinstein's book, suggest to win, a consistent method of determining the correct times to buy and sell is needed, and to control greed and fear. He says, 'be consistent! stick with method that regularly beats the market. When using a market index as a base for comparison, keep yourself on the same frame of reference, and don't use one index to compare something one week and another a next. Other tips suggest you to archive your decisions and charts in a sort of logbook, learn from mistakes/loss' – not many lessons are learnt from profiting, many from the mistakes. The technical train of thought is the worse the news, better the future potential (good time to buy stocks).

A few of Stan's keys for Technical Basis

1. Examine stocks chart
2. Don't buy on good news
3. Don't buy on a downtrend, or after a large decline --
4. Never hold on a downtrend.
5. Consistency --

Chapter 3. Portfolio

3.1 Portfolio for Psychology Strategy

A portfolio was created to ascertain how well an investment strategy based on investor psychology would perform. The portfolio was developed with the intention of specifically answering the question:

How well do the psychological indicators – Williams %R, volume, and On-Balance Volume – function as tools for identifying trends and turning points?

3.1.1 Development of Portfolio

In developing the portfolio, the first thing that was done was to focus on four different market sectors: Transportation/Airline, Conglomerates, Healthcare/Biotechnology and Drugs, and Services/Retail (Department & Discount). The reason for doing this was two-fold. First, choosing stocks from four very different market sectors ensured that any findings that I arrived at concerning the functionality of a psychology-based investment strategy could be applied to the entire stock market rather than a single industry. Secondly, choosing one stock from each of the four market sectors was necessary to make my stock search feasible. For example, it was a lot easier to wade through and compare information on companies in a single market in order to assess which ones looked to have the greatest chance of growth than it would be to compare all stocks in the market.

The next step in the development of the portfolio was to use the investment tools – Williams %R, volume, and On-Balance Volume – to assess what company from each of the four market sectors looked to have the greatest chance of growth.

The last step in the development of the portfolio was to use the investment tools – Williams %R, volume, and On-Balance Volume – to ascertain whether a trend reversal looked likely for any of the four stocks that I chose to follow at anytime during the trading period (Oct. 22 – Dec. 21).

3.1.2 Psychological Indicators

Technical indicators are divided into two main groups. Trend-following indicators help identify trends. Oscillators help find turning points. In order to asses when to buy and when to sell the stocks in my potfolio I will be using a oscillator, Williams %R, and two trend-following indicator, volume and On-Balance Volume.

Williams %R (Wm%R) is a simple but effective oscillator. It measures the capacity of bulls and bears to close prices each day near the edge of the recent range. Wm%R confirms trends and warns of their upcoming reversals.

$$\text{Wm\%R} = 100 \bullet \frac{Hr - C}{Hr - Lr}$$

Where r = the time window selected by a trader, such as 7 days

Hr = the highest high of the selected period (i.e., a 7-day high)

Lr = the lowest low of the selected period (i.e., a 7-day low)

C = the latest close

Wm%R measures the placement of each closing price in relation to the recent high-low range. It expresses the distance from the highest high to the lowest low in its time window as 100 percent. It expresses the distance from the latest closing price to the top of that window as a percentage of the range in its window.

Wm%R is designed to fluctuate between 0 and 100 percent. It equals 0 (plotted at the top of the chart) when bulls reach the peak of their power and close prices at the top of the range. It reaches 100 percent when bears are at the peak of their power and close prices at the bottom of the recent range.

Horizontal reference lines for Wm%R are drawn at 10 percent and 90 percent levels. When Wm%R closes above its upper reference line, it shows that bulls are strong but the market is overbought. When Wm%R closes below its lower reference line, it shows that bears are strong but the market is oversold.

Basically, Wm%R measures the balance of power between bulls and bears at closing time – the crucial money-counting time in the market. Wm%R shows which group is capable of closing the market in its favor. If bulls cannot close the market near the top during a rally, they are weaker than they seem. This is an indication to sell. If bears cannot close the market near the lows during a decline, they are weaker than they appear. This is a buying opportunity.

Wm%R gives three types of trading signals: bullish or bearish divergences, failure swings, and overbought – oversold readings.

Divergences between prices and Wm%R rarely occur. When they do, they identify the best trading opportunities. When Wm%R rises above its upper reference line, falls, and then cannot rise above that line during the next rally, it creates a bearish divergence. It shows that bulls are losing their power and the market is likely to fall. A bullish divergence occurs when Wm%R falls below its lower reference line, rallies, and then cannot decline below that line when prices slide again. So basically, there are two things one has to remember concerning divergences between price and Wm%R:

1. When a bullish divergence is identified, go long and place a protective stop below the recent price low.
2. When a bearish divergence is identified, go short and place a protective stop above the recent price high.

Crowds tend to swing from one extreme to another and as a result Wm%R seldom reverses in the middle of its range. When it does, a failure swing occurs. A failure swing occurs when Wm%R fails to rise above its upper reference line during a rally or fall below its lower reference line during a decline. There are two things that one has to remember concerning failure swings:

1. When Wm%R stops rising in the middle of a rally and turns down without reaching its upper reference line, it produces a failure swing. This shows that bulls are weak and gives a sell signal.
2. When Wm%R stops falling in the middle of a decline and turns up without reaching its lower reference line, that is a failure swing. It shows that bears are weak and gives a buy signal.

When prices close near the upper edge of their range, Wm%R reaches its top and becomes overbought. When prices close near the bottom of their recent range, Wm%R falls and becomes oversold. Neither bulls or bears are all-powerful and thus they seldom can close prices near the extreme of the recent range for too many days in a row. There are two things to keep in mind.

1. When Wm%R rises above its upper reference line, it marks a potential market top and gives a sell signal.
2. When Wm%R falls below its lower reference line, it marks a potential market bottom and gives a buy signal.

Something to note however, is that these overbought and oversold signals only work well during flat trading ranges. They become premature when the market enters a trend. For example, Wm%R can stay near the top for a week or longer during a strong rally. Therefore, overbought and oversold readings of Wm%R should be used only after the major trend is identified.

Volume reflects the degree of emotional involvement in the market. Whenever prices move, about half the traders are hurting. When prices rise, bears are in pain, and when prices fall, bulls suffer. The greater the increase in volume, the more pain in the market. The crowds react strangely to losses. If a sudden price change hits traders, they freak out and liquidate losing positions. However, the same losers can be very patient if their losses increase gradually.

When shorts give up during a rally, they buy to cover and push the market higher. Prices rise, flush out even more shorts, and the rally feeds on itself. The opposite is also true. When longs give up during a decline, they sell and push the market lower. Falling prices flush out even more longs and the downward trend continues. A trend that moves on steady volume is likely to continue. Steady volume shows that new losers replace those who wash out.

Falling volume shows that the supply of losers is running low and a trend is ready to reverse. What happens is that enough losers catch on to how wrong they are. Old losers keep bailing out, but fewer new losers come in. Falling volume gives a sign that the trend is about to reverse.

A burst of extremely high volume also gives a signal that a trend is nearing its end. It shows that masses of losers are bailing out. The pain becomes intolerable and the losers bail out, the trend reverses and the market goes the way that they had expected, but without them. This happens because most amateurs react to stress similarly and bail out at about the same time.

Volume usually stays low in trading ranges since there is relatively little pain. People feel comfortable with small price changes, and trendless markets seem to drag on forever. A breakout is often marked by a dramatic increase in volume because losers bail out. A breakout on low volume shows little emotional commitment to a new trend. It indicates that prices are likely to return to their trading range.

Rising volume during a rally shows that more buyers and short sellers are pouring in. Buyers are eager to buy even if they have to pay up, and shorts are eager to sell to them. Rising volume shows that losers who leave are being replaced by a new crop of losers.

When volume shrinks during a rally, it shows that bulls are becoming less eager, while bears are no longer running for cover. Falling volume shows that the uptrend is losing steam and is ready to reverse. The reverse is also true; falling volume during a decline identifies an area in which a downtrend is likely to reverse.

This reasoning applies to long and short timeframes. As a general rule, if today's volume is higher than yesterday's volume, then today's trend id likely to continue. In summary, there are basically four things to keep in mind regarding volume:

1. High volume confirms trends. If prices rise to a new peak and volume reaches a new high, then prices are likely to retest or exceed that peak.
2. If the market falls to a new low and the volume reaches a new high, that bottom is likely to be retested or exceeded. A "climax bottom" is almost always retested on low volume, offering an excellent buying opportunity.
3. If volume shrinks while a trend continues, that trend is ready for a reversal. When a market rises to a new peak on lower volume than its previous peak, look for a shorting opportunity.
4. Watch volume during reactions against the trend. When an uptrend is punctuated by a decline, volume often picks up due to profit taking. When the dip continues but volume shrinks, it shows that bulls are no longer running or that selling pressure is spent. When volume dries up, it shows

that the reaction is nearing an end and the uptrend is ready to resume. This identifies a good buying opportunity. Major downtrends are often punctuated by rallies which begin on heavy volume. Once weak bears have been flushed out, the volume shrinks and gives a signal to sell short.

On-Balance Volume (OBV) is a leading indicator of the stock market. OBV is a running total of volume. It rises or falls each day, depending on whether prices close higher or lower than the previous day. When a stock closes higher, it shows that bulls won the day's battle; its volume on that day is added to OBV. When a stock closes lower, it shows that bears won the day, and that day's volume is subtracted from OBV. If prices close unchanged, OBV stays unchanged. On-Balance Volume often rises or falls before prices – it acts as a leading indicator.

Prices represent the consensus of value. Volume represents the emotions of investors. Volume reflects the intensity of trader's financial and emotional commitments, as well as pain among losers. OBV is a running total of volume; it tracks changes in trader's involvement in the market and the intensity of their pain.

A new high in OBV shows that bulls are powerful, bears are hurting, and prices are likely to rise. A new low in OBV shows that bears are powerful, bears are hurting and prices are likely to fall. When the pattern of OBV deviates from the pattern of prices, it shows that mass emotions are not in gear with mass consensus. A crowd is more likely to follow its heart than its mind. This is the reason why changes in volume often precede changes in price.

When OBV rises or falls together with prices, the trend is confirmed. It is safer to trade in the direction of a trend that is confirmed by OBV. In summary:

1. When OBV reaches a new high, it confirms the power of bulls, indicates that prices are likely to rise even higher, and gives a buy signal. When OBV reaches a new low, it confirms the power of bears, calls for lower prices ahead, and gives a signal to sell short.
2. OBV gives its strongest buy and sell signals when it diverges from prices. If prices rally, sell off, and then rise to a new high, but OBV rallies to a lower high, it creates a bearish divergence and gives a strong sell signal. If prices decline, rebound, and then fall to a new low, but OBV falls to a more shallow bottom, it traces a bullish divergence and gives a strong buy signal. Long-term divergences (over the course of several weeks) give stronger signals than those that last only a few days.
3. When prices are in a trading range and OBV breaks out to a new high, it gives a buy signal. When prices are in a trading range and OBV breaks down and falls to a new low, it gives a signal to sell short.

In theory, these stock market indicators sound pretty straight-forward and fairly easy to utilize. However, in order to assess how well these indicators work it is necessary to put them to work.

3.1.2 Details of Investments

COLES MYER LTD (CM)

Based on my indicators, COLES MYER LTD is a smart buy. The Williams %R shows a recent failure swing. Wm%R stopped falling in the middle of a decline and turned upwards without reaching its lower reference line. This shows that bears are very weak and gives a buy signal. Volume and On-Balance Volume (OBV) don't give any conclusive signals.

10/22/01 – Bought 167 shares @ $30.00 = - $5010

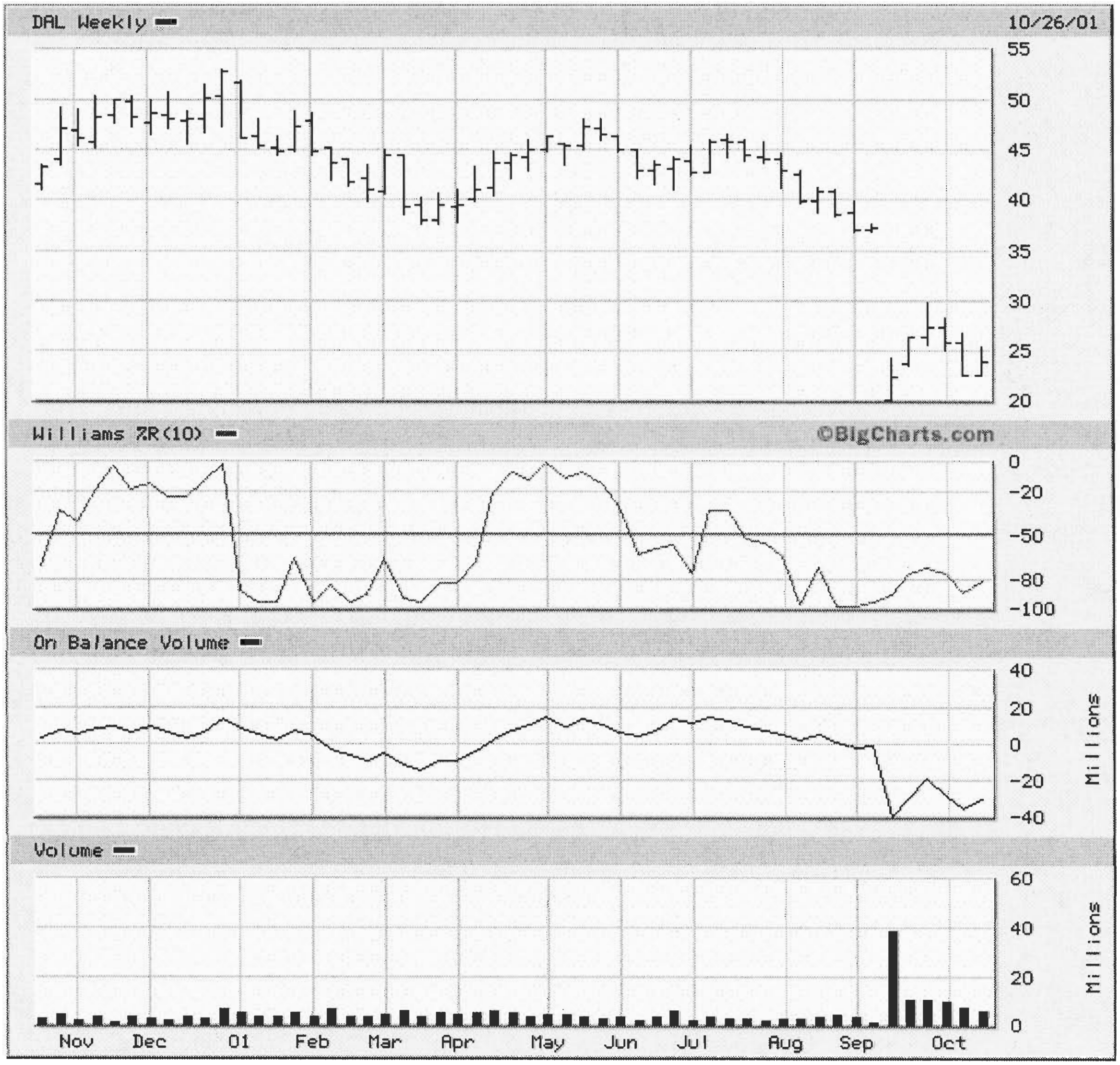
11/26/01 – Bought 158 shares @ $31.50 = - $4979

The previous day Wm%R had fallen below its lower reference line, marking a potential bottom and signaling a buy. Also, OBV traces a bullish divergence signaling a strong buy.

12/07/01 – Sold 325 shares @ $35.80 = +$11635 Net Profit = +$1646

Wm%R rises above its upper reference line, marking a potential top and gives a sell signal. Also, volume has been shrinking as the trend has continued which is a signal that the trend is ready to reverse. Also, this is a good time to do some profit taking.

DELTA AIRLINES INC (DAL)



Based on the On-Balance Volume indicator, Delta Airlines is another smart buy. Prices have recently declined, rebounded, and then fallen to a new low, while OBV has fallen to a more shallow bottom. This points to a bullish divergence and gives a strong buy signal.

10/22/01 – Bought 210 shares @ $23.81 = -$5000.10

11/13/01 – Bought 202 shares @ 24.68 = -$4985.36

Wm%R stopped falling in the middle of a decline and turned up without reaching its lower reference line. This is a failure swing. It shows that bears are very weak and gives a buy signal.

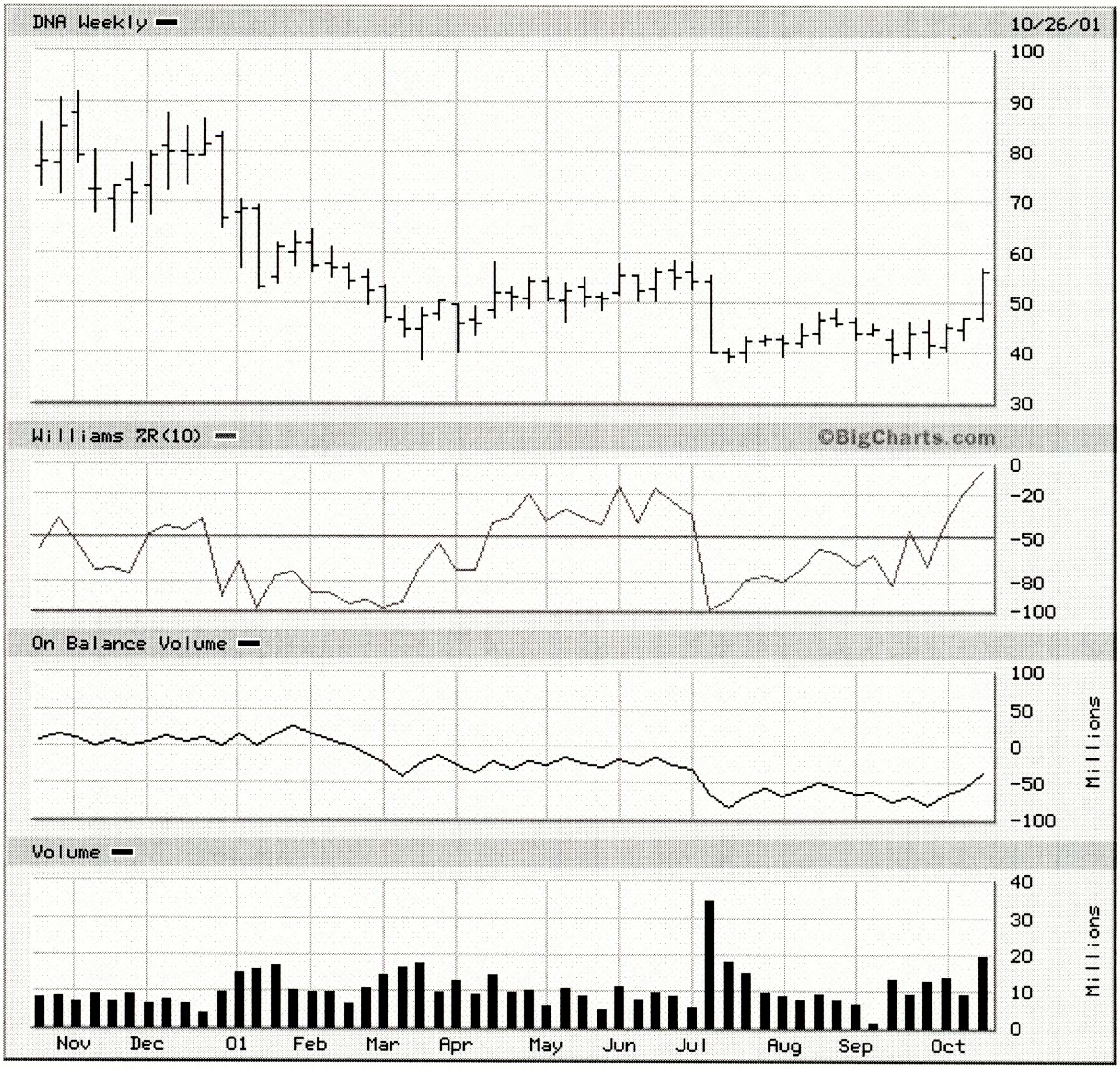
11/15/01 – Sold 206 shares @ $27.25 = +$5613.50

Wm%R rose above its upper reference line, marking a potential market top and giving a sell signal.

12/14/01 – Sold 206 shares @ $30.25 = +$6231.50 Net Profit = +$1859.54

Prices have recently rallied, leveled off, and then rose to a new high today, while OBV rallied to a lower high. This is a bearish divergence and gives a strong sell signal.

GENENTECH INC (DNA)



The volume indicators suggest that Genentech Inc. is a good purchase. OBV has reached a new high, confirming the power of bulls and indicating that prices are likely to rise even higher.

10/22/01 – Bought 100 shares @ $49.95 = -$4995

11/06/01 – Sold 100 shares @ $53.49 = +$5349

I think that I've identified a bearish divergence; Wm%R has risen above its upper reference line, fallen, and now it can't rise above that line during this current rally. This shows that bulls are losing power and the stock price is likely to fall.

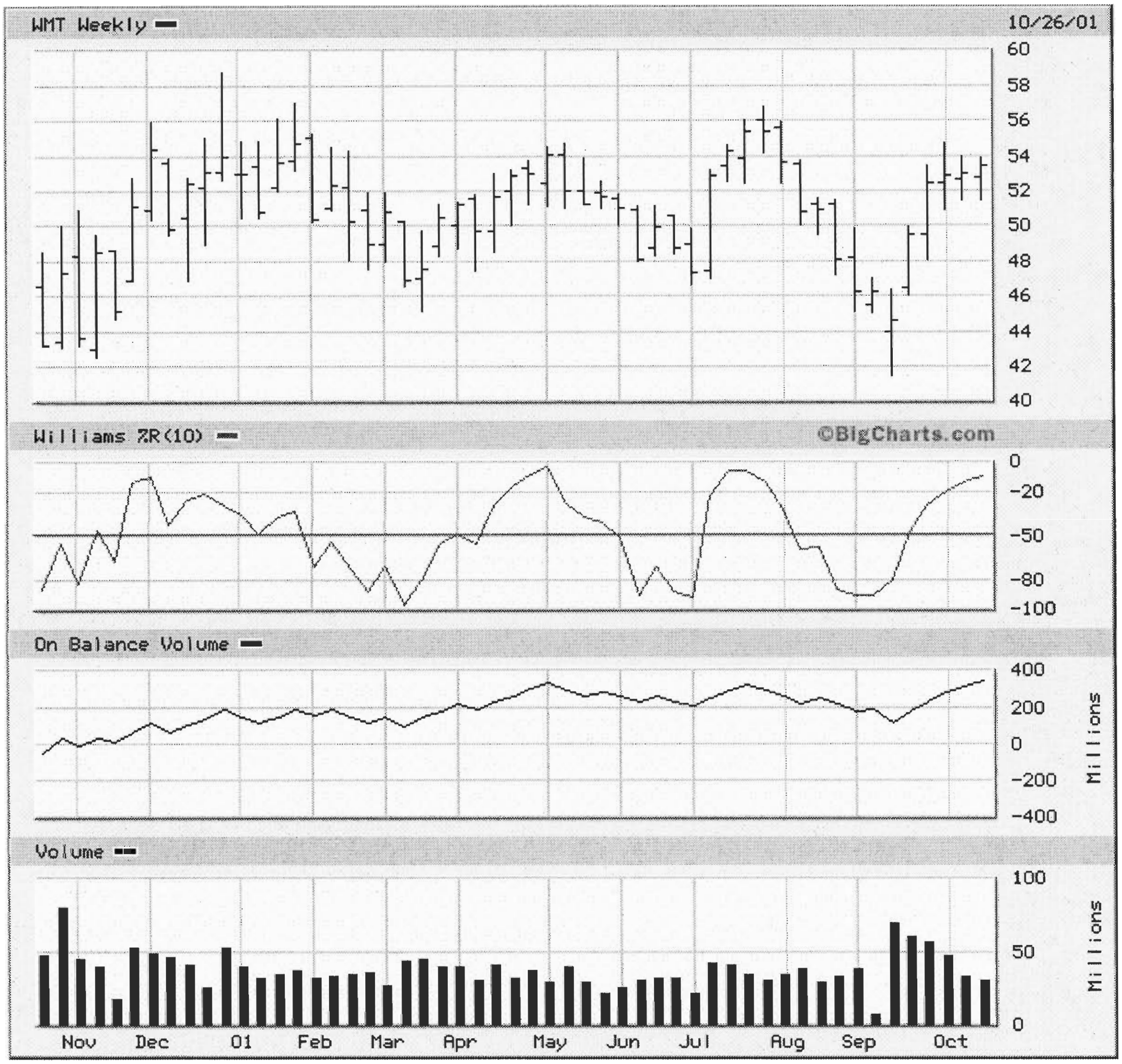
11/09/01 – Bought 187 shares @ $53.33 = -$9972.71

This seems like a good time to purchase this stock back. Wm%R has failed to fall below its lower reference line during a decline. This is a failure swing and gives a buy signal. Also, the volume has dried up showing that the reaction against the trend is nearing an end and the uptrend is ready to resume.

12/10/01 – Sold 187 shares @ $54.74 = +10236.38 Net Profit = $617.67

OBV has fallen to a new low while prices are in a trading range. This gives a signal to sell. This is also a good time for profit taking.

WAL MART STORES INC (WMT)



On-Balance Volume is showing a bullish divergence and thus gives a strong buy signal.

10/22/01 – Bought 188 shares @ $53.04 = - $9971.52

12/21/01 – Sold 188 shares @ $57.57 = +$10823.16 Net Profit = $851.64

Neither the volume indicators nor Wm%R gave any clear buy or sell indications throughout the trading period. However, prices are high and it is a good time for profit taking.

3.2 Portfolio for Fundamental/Hard Facts Strategy

3.2.1 Development of Portfolio

The portfolio was developed by using online tools to view summaries of particular company's profiles. This was largely done by guesswork, and only those stocks that were adequate were accepted. The following section discusses those particular stocks.

3.2.2 Evaluation of Potential Investments

Johnson & Johnson was included due to a relatively strong return on assets (16%) and a strong profit margin of 17.4%. A large number of sales in the last year totally over $32 billion, when related to the high profit margin, represents a strong possibility of continuing to profit. A debt/equity ratio of 0.15 is indicative of a company that has performed well without the need to incur large amounts of debt in order to bring products to market. A diversified business plan reaching several markets including consumer, pharmaceutical, and professional markets will hopefully allow the company to survive any fall in the demands from a particular market.

Minnesota Mining and Manufacturing (3M) researches, manufactures, and markets various industrial materials as well as electronic and telecommunications products to be used in consumer applications. The primary technology of surface adhesives has a number of applications including abrasives, dry adhesives, roofing granules, and reflective sheeting. Such applications reach a broad number of markets including technical, manufacturing, building, automotive, and office supplies. For this reason a slump in a particular target market will not necessarily cause the company to become unprofitable. Such technology is also unlikely to become obsolete; therefore long-term investments in 3M should be successful. The high return on assets and relatively small debt as compared to total company equity also indicates a profitable company.

United Technologies is involved in the manufacturing, installation, and servicing of such products as elevators, escalators, heating, and air conditioning systems. The company also produces aviation and military aircraft engines and helicopters. The company is composed of four operating segments, Otis, Carrier, Pratt & Whitney, and Flight Systems, which produce the aforementioned systems. Diversification throughout markets buffers the company from market-centric drops, and the large number of sales coupled with the safe profit margin of 7.7% will hopefully cause the company to remain profitable.

Merck is a pharmaceutical company that develops and manufactures health care products including those for animals. Through joint ventures Merck also provides managed care service for pharmaceuticals. Sales have risen 22% in the last year. With a low debt/equity ratio and a strong return on assets, Merck seems to be capable of efficiently supplying products to the market. With a profit margin of 15.4% compared to the over $46.6 billon in sales last year, Merck exhibits strong profitability in its various markets.

Exxon Mobile discovers, extracts, refines, and produces crude oil and natural gas. The primary market for these products is the United States. Although the company□fs future plans are unknown, the use of crude oil derived products is expected to continue its growth for several years to come. In such a company large available assets are necessary to efficiently distribute the large amount of product associated with the fuel industry. A return on assets of 11%, return on equity of over 24%, and a debt representing less than 15% of the company□fs tangible assets indicates that Exxon Mobile continues to be an effective and profitable company. A Price/Book ratio of 3.71 demonstrates that the stock is not over inflated in value, which is common in many large-volume product to market strategies. Tremendously large sales of over $230 billion in relation to an effective profit margin of over 7% also indicate a profitable business. Being in the market longer than most companies demonstrates a long-term stability.

Hewlett-Packard provides computing solutions to homes and a various range of businesses. Data server markets as well as imaging markets are included in this range. Products include computer systems, printers, scanners, video equipment, network hardware and software solutions, fax machines, and visualization software. The company is diverse in the office technology industry. Last year the company□fs performance was poor and HP had a loss of over 63% in stock price. The entire technology industry suffered losses in this time, however, and during this time HP managed to maintain operations without incurring large amounts of debts, as indicated by the sound debt/equity ratio of 0.40. The company is estimated to be undervalued at this time, with a price/book value of roughly 2.0. Once the technology market stabilizes again, HP will continue to increase in value is it is a profitable operation.

The Home Depot, Inc. is a large-scale retailer of home improvement products. Although most retail operations are completed through large warehouse □gsuperstores□h, the company is also testing smaller retail stores focusing on minor home improvement products. In this way the company is attempting to widen its footing in the home improvement market as a whole. Return on Equity of 17.65% and return on assets of 12% are products of efficient retailing underscoring the usefulness of this company. A 5.5% profit margin is reasonable when compared to other companies in the retail industry; by nature such an industry will have smaller profit margins than others. The profitability is maintained by the fact that the company moves a large volume of products, with sales of almost $50 billion in the last year.

3.3 Portfolio for Trend Analysis and Computer/Internet Tools Strategy

A well-balanced stock portfolio will minimize the total risk of investing in the stock market. Although as a young investor, my knowledge of various sectors of the market is minimal and will be focusing my efforts on a sector which I am knowledgeable. To balance this lack of experience, I would invest in market index funds which represent the different sectors. The portfolio created for this project is weighted heavily in technology stocks, following the tragic events of the 11th – technology stocks seemed to have taken the largest losses and were thought to have bottomed out. Technology stocks where also picked because of my personal experience with companies in the sector.

The internet has provided another channel for sales and company growth. The ways which it is improving communication among family, friends, and co-workers will have an immediate impact on the business's which are adapting to fill this need. Companies which I chose for this portfolio are a fundamental part of building the communication and data systems of tomorrow.

3.3.1 Development of Portfolio

The amount of day traders is growing at an exponential rate. The increased amount of investors, and availability of information and tools to the investors has increased volatility within the market. A stocks price history was used to identify possible trends which help determine the future of the stock, and hints of a companies future can be hidden within signs of today's market. Determining scenarios which consistently win is part of the learning process to find the best times to enter/leave the market.

Investments can be made which lower risk, and improve returns through becoming aware of the different market conditions.

Due to time constraints in this project I based my trades on a known (Weinstein 72) weekly trading cycle. I made trade decisions based upon the past history of the stock(chart), volume, moving averages and sound business fundamentals.

Weekly schedule:

Mon/Tues: Buy

Weds: Research

Thurs/Fridays: Sell

Weekend Research

I will be using various trend analysis methods to help to set my target values for a stock. These methods include identification of common trends found within past leaders (Cup/Saucer with handle, Double bottom, and Flat base). I will be cutting my losses quickly, any stock which reaches 7% below the price which I purchased the stock at will be sold. By minimizing losses, I am able to hopefully cover the loss with the remaining winner's profits. To determine the selling point, I will be making assumptions based upon trend lines and the current price versus my target or 'actual' price. I expect stocks to move in similar fashion to the overall market, and will be using the market index as a baseline for comparison. To determine buying points, I will look for stocks which show signs of growth – ones which currently may be undervalued. When purchasing stocks I will be buying in 1000$ sets. All sales will be made with the assumptions of 0$

commission rate and 0$ tax penalty (income). The stocks targeted have share price of greater than $15, as often shares valued less than 15$ are considered more risky, and the percentages set for the sell point would be distorted.

Why did I pick 7% as the value to consider selling a stock? Traditionally the large money market accounts will do so at 8% and you want to have your sell order in before these large accounts prevent you from selling at the desired point. The stop-limit order approach will be used where if the market hits the specified price, the order will be processed, and if the price is still within limits at execution time the trade is executed.

By comparing/contrasting various scenarios, it was determined that most stocks on an upward trend tend to go down less than 7%, those on a downward trend can be identified after moving more than 7% down. The given percentage is very small and the slightest volatility spike may incorrectly trigger a sell, it is wise to keep orders as GTC (Good Till Canceled) so that market correction mistakes can be manually avoided, although finding a method that works and sticking with the terms in the long run will be more profitable than switching methods by the week, and trading based upon impulse.

3.3.2 Portfolio Companies, Background, & Reasons for Investment

IBM- International Business Machines Corporation (IBM) uses advanced information technology to provide customer solutions. The Company operates using several segments that create value by offering a variety of solutions, including, either singularly or in some combination, technologies, systems, products, services, software and financing.' (Yahoo! Finance)

IBM made a big move to support open source development and use some of the Linux momentum to its advantage. I see its move from various mainframe and server operating systems to Linux as an attractive point for customers. If anyone can make Linux an industrial strength commercial OS, its IBM. IBM also has a well established Enterprise Services group which is well trained in UNIX and will be adjust to the Linux switch easier than some of the other Intel based leaders (Dell, HP, Compaq).

NVDA- NVIDIA Corporation designs, develops and markets graphics processors and related software for personal computers and digital entertainment platforms. NVIDIA provides a "top-to-bottom" family of performance 3D graphics processors and graphics processing units that, in the Company's opinion, has set the standard for performance, quality and features for a broad range of desktop PCs, from professional workstations to low-cost PCs, and mobile PCs, from performance laptops to thin-and-light notebooks.' (Yahoo! Finance)

NVDA has propelled itself into the #1 graphics manufacturer for mass consumers while leaving many of its competitors in the dust. With further involvement in Microsoft's Xbox product, NVDA looks like a very attractive investment. NVDA is a company with a strong work ethic, and excellent products – two keys for fueling future success.

SUNW- Sun Microsystems, Inc. (Sun) is a worldwide provider of products, services and support solutions for building and maintaining network computing environments. Sun sells scalable computer and storage systems, high-speed microprocessors, and a comprehensive line of high-performance software for operating network computing equipment. The Company also provides a broad range of services, including support, professional services and education. The Company's products are used for many commercial and technical applications in various industries including telecommunications, financial services, manufacturing, government, education and research, retail, health care, digital media and entertainment. Sun utilizes open industry standards, the Solaris Operating Environment and the UltraSPARC (Ultra Scalable Processor Architecture) microprocessor architecture. (Yahoo! Finance)

Sun Microsystems has been a leader in creating the networked economy, and will continue to be a strong part of building information infrastructure for fortune 500 companies in the future. Sun's Java technology has seen a lot of attention this year, as an open alternative to Microsoft's strategy, Sun continues to offer the UNIX community alternatives which can be applied to various systems through the use of web technologies. Sun leads the vision for industry network computing, and will power many of the mission critical network applications of tomorrow.

NOK- Nokia Corporation is a mobile phone manufacturer and a supplier of mobile, fixed and Internet protocol (IP) networks and related services, as well as multimedia terminals. Nokia has two business groups, Nokia Networks and Nokia Mobile Phones, and also includes the Nokia Ventures Organization and the Nokia Research Center. Nokia Networks is a supplier of mobile, broadband, IP network infrastructure and related services. It also develops mobile Internet applications and solutions for operators and Internet service providers. Nokia Mobile Phones is a worldwide mobile phone manufacturer. Nokia Ventures Organization develops new ideas for the home environment and the corporate world, expanding the Company's business scope. (Yahoo! Finance)

Cell phones are the area of technology which is currently receiving the most attention, the growth of cell-phone usage is greater than any other technology. This growth is fueled by the need for people to communicate and the decrease in product price/pricing plans. With 3rd generation cellular networks on the horizon, bringing the power of the web to the individual cellular user will soon become very useful and an essential ingredient of working productively.

JNPR- Juniper Networks, Inc. is a provider of purpose-built Internet infrastructure solutions that meet the scalability, performance, density and compatibility requirements of rapidly evolving, optically enabled Internet Protocol networks. Unlike conventional routers, originally developed for enterprise applications, the Company's products are specifically designed, or purpose-built, for service provider networks and to accommodate the size and scope of the Internet. The Company's next-generation Internet backbone routers offer customers increased reliability, performance, scalability, interoperability and flexibility. The Company's products combine high-performance, ASIC-based packet-forwarding technology, the features of the JUNOS Internet software and an Internet-optimized architecture into a purpose-built solution for the service provider market. Courtesy of Yahoo! Finance.

Juniper Networks is ahead of the competition in this field, perhaps a bit too far ahead though. Its next generation products are aimed at the Service Provider, a form of business which has yet to evolve. Java based web-applications are moving towards a service model where the user interacts with a 'service' rather than an application. Services are a key to B2B applications of the future where companies can seamlessly exchange the data relevant to their organizations. Juniper has been an overhyped stock during the tech-bubble, but now that the price has been cut so drastically, it could be a great long term investment once the technology hits the mainstream markets.

MIPS- 'MIPS Technologies, Inc. is a designer of high-performance and low power consumption processors, cores and related intellectual property for use in a wide variety of increasingly sophisticated consumer and business products. The Company's industry standard designs are based on its 32- and 64-bit reduced instruction set computing (RISC) architectures. The Company licenses its designs and related intellectual property to semiconductor companies and system original equipment manufacturers (OEMs). Together with its licensees, the Company offers a broad variety of high-performance processors in standard, custom, semi-custom and application-specific products. MIPS Technologies currently has more than 50 licenses in place with companies around the world.' Courtesy of Yahoo! Finance.

MIPS small processors are embedded in numerous small devices, appliances, and products. These small processors show strong promise to allow communication between various devices. The growth for smaller processors vs PC processors shows stronger production of the smaller processors for devices like cellular and personal assistants.

CSCO- 'Cisco Systems Inc. is engaged in networking for the Internet. Cisco Internet Protocol (IP)-based networking solutions are installed at corporations, public institutions and telecommunication companies, and are found in a growing number of medium-sized commercial enterprises. The Company provides a broad line of solutions for transporting data, voice and video within buildings, across campuses or around the world. Cisco solutions are designed to allow networks, both public and private, to operate with flexibility, security, and performance' Courtesy of Yahoo! Finance.

If the internet is going to grow, the infrastructure to build it must be there. This is why I chose Cisco Systems as an investment for tomorrow. With strong brand loyalty and recognition, Cisco will continue to provide business networking equipment to meet the demand, Foreign markets are highly undeveloped in the areas of physical networking/improvement and Cisco might see increasing revenues from overseas clientele.

PHTN- 'Photon Dynamics, Inc. is a provider of yield management solutions to the flat panel display (FPD) industry. The Company also offers yield management solutions for the printed circuit board (PCB) assembly and advanced semiconductor packaging industries and the cathode ray tube (CRT) display and CRT glass and auto glass industries. The Company's test, repair and inspection systems are used by manufacturers to collect data, analyze product quality and identify and repair product defects at critical steps in the manufacturing process.' Courtesy of Yahoo! Finance.

Photon Dynamics is a random technology stock I picked up, as I saw the stocks past history was interesting. The company does produce products which test Flat Panel monitors, the new standard of computer monitors. If it excels in what it does, and is the leader in FPD industry – It will see increased revenues as more and more consumers move towards the Flat Panel display.

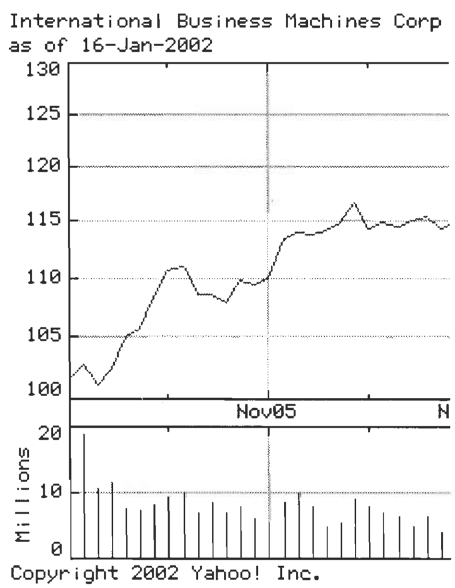
3.3.3 Details of Investments

International Business Machines - IBM - www.ibm.com

Sept 21- December 20

Friday Sept 21st, Buy IBM @90.5

Reason: The NASDAQ has been in a steady decline for a few months, after terrorism strikes Wall St., the market plunged even further today was the first day the NASDAQ first moved up – may have hit a bottom. IBM is a strong market leader.

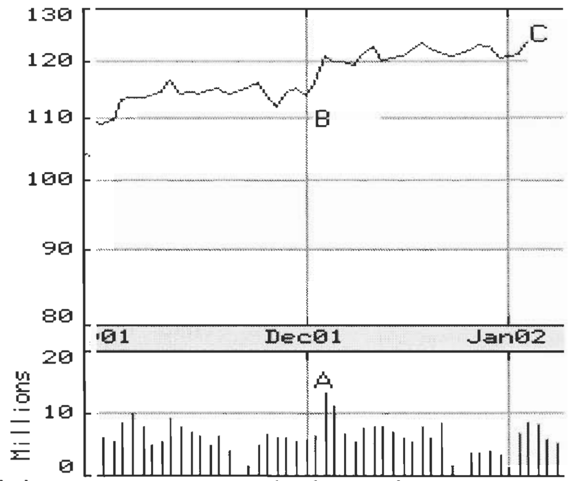


11 Shares $995.50

Friday Nov 2nd, Sell IBM @110.00 Reason: Reached previous peak (Oct 26th) This action was taken due to the investments small timeframe, otherwise a sell wouldn't be made until it breaks its a bottom of a new level of resistance.

6 Shares $660.00

Friday Nov 23rd, Sell IBM @115.00



Reason: Volume declining appears to reached a resistance zone, will reconsider after it breaks $116 resistance. 5 Shares $575.00

IBM ended up breaking resistance of 116 around December 3rd at point B, the volume amount did surge at point A, so a rally was expected after this breakout. The new trend line suggested the rally was short lived, and a wise exit point would be C.

Total: $1,235.00

-Investment 995.50

Profit: $240

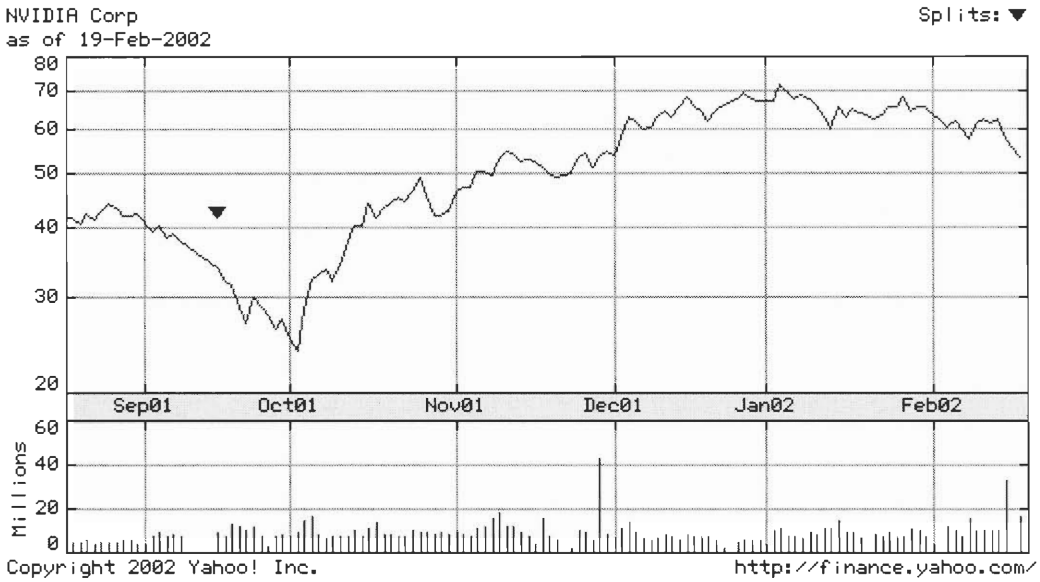
N-Vidia - NVDA – www.nvdia.com

Friday Sept 21st, Buy NVDA @26.875 Reason: NASDAQ first move up – May have hit a bottom. Market Leader.

Friday Oct 19th, Sold NVDA @ 44.00 Reason: Reached previous peak (Oct 17th). Excellent gains on the stock, quit while ahead.

Friday Nov 30th, Sold NVDA @ Reason: Trading term complete, signs of topping out.

152% Growth



Sun Microsystems – SUNW - www.sun.com

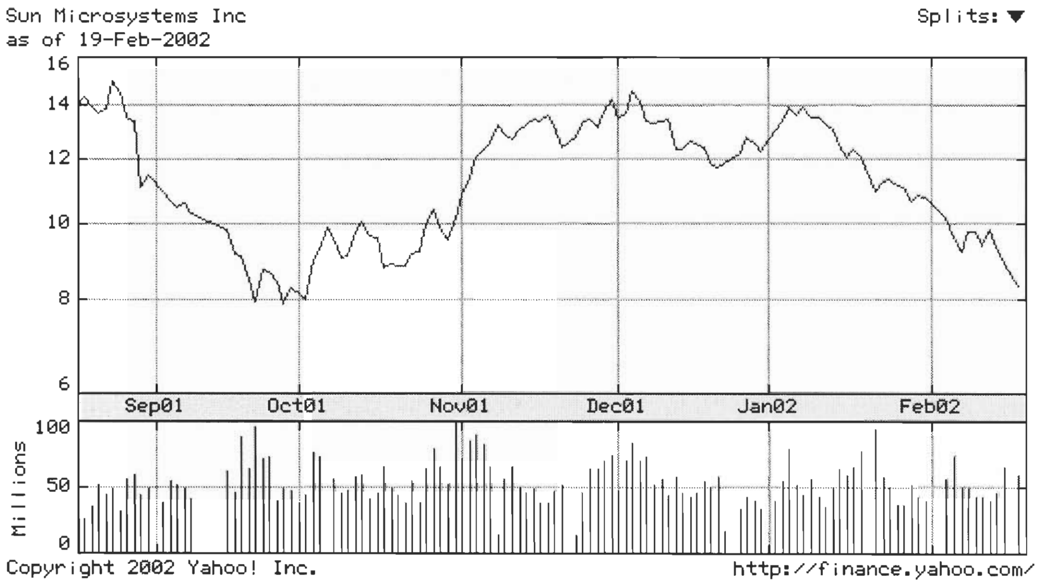
Friday Sept 21st, Buy SUNW @ 8 Reason: NASDAQ first move up – May have hit a bottom. Market Leader.

125 Shares : $1000

Friday Nov 2nd, Sold SUN @ 11.25 Reason: Reached previous peak (Oct 27th), Trend-line across last 3 peaks.

Strong leader, strong confidence, good analyst reviews -- Half of shares sold.

60 Shares $675



Thursday Nov 8th, Sold SUNW @ 13.75 Reason: First signs of decline, stock has been rallying, out of steam.

65 Shares $893.75

Total: $1568.75

-Investment: $1000

Gain: $568.75

Nov 24th, Buy SUNW @ 13.00 Reason: At previous low, looks like it may break resistance level, Market Leader.

76 Shares $988

X, Sold SUNW @ 14

76 $1064

Nokia – www.nokia.com

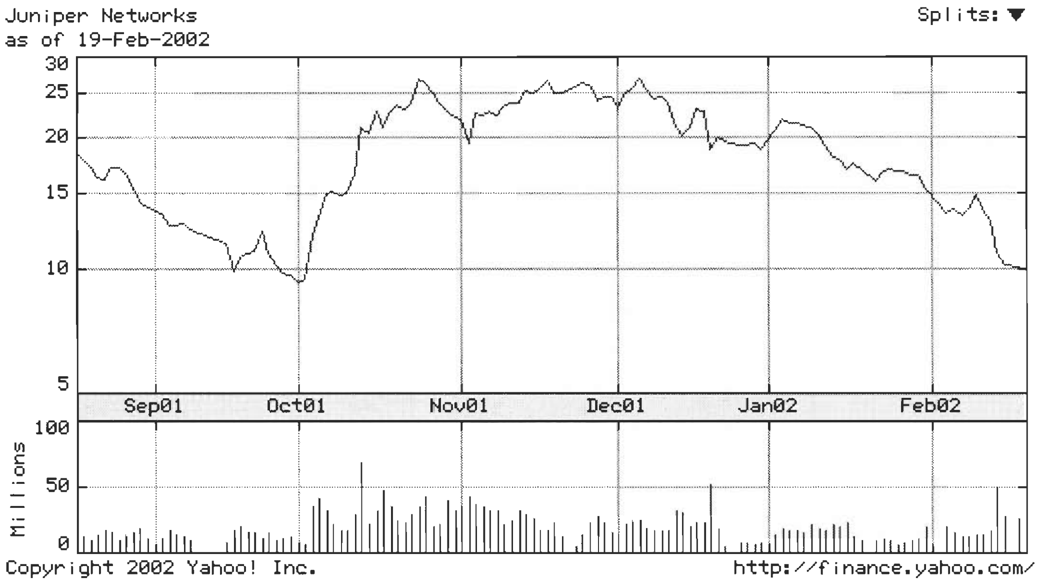
Monday Oct 15th, Buy NOK @ 18.5 May break $18 resistance.

Friday Dec ,Sold NOK @ 25   Looks like topping out.

Juniper Networks

Wednesday Oct 3rd, Buy JNPR @ 10 Reason: Reached previous low. Looks like might breakout(volume surged)

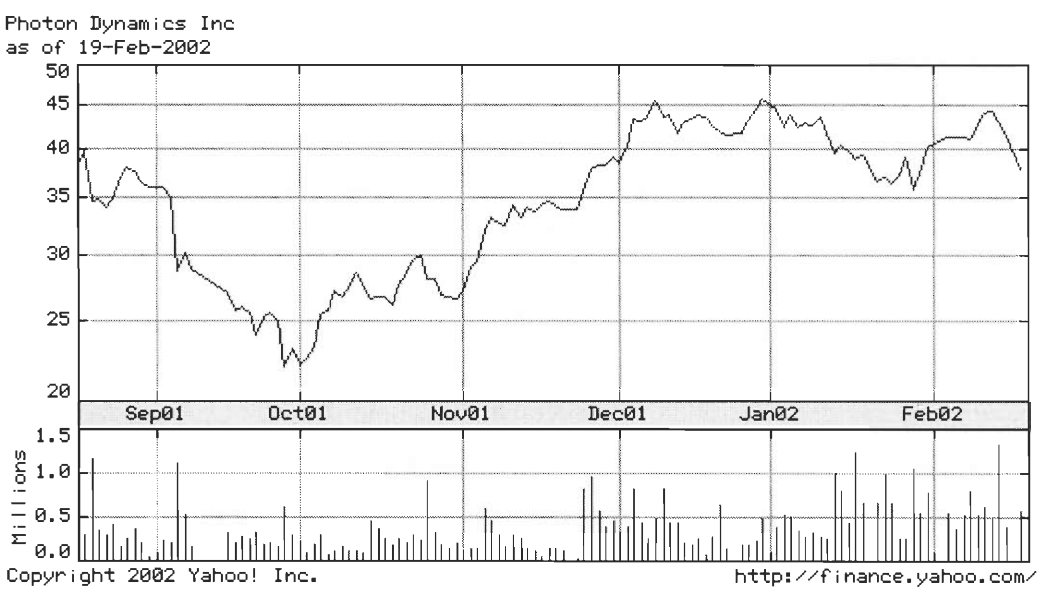
Friday Nov 23th, Sold JNPR @ 24 Reason: Reached previous peak (Oct 24th) (volume low)



Photon Dynamics

Wednesday Oct 3rd, Buy PHTN @ 24 Reason: Risky Sporadic stock, but seems to cycle on set period. Looks to be a good short term investment.

Friday Nov 9th, Sold @ 32.55 Reason: Reached previous peak, Growth 20%.



Cisco Systems

Tuesday Oct 23rd,, Buy CSCO @ 16.41 Reason: Stock Looks like it may break resistance level.

Thursday Nov 8th, Sold CSCO @ 19.50 Reason: 15% growth.

MIPS – Integrated/Embedded Processors

Tuesday Nov 13th, Buy MIPS @ 8.80

Chapter 4 Analysis

4.1 Analysis of Psychology-Based Investment Strategy

In this section the performance of each psychology-based investment will be analyzed. Attention will be paid to profits and losses, but more importantly, how well the psychological indicators, Williams %R, volume, and On-Balance Volume, were able to determine trends and signal reversals in trends.

Coles Myer Ltd saw a fair amount of growth throughout the trading period. Wm%R was very effective in predicting trend reversals. A net profit of $1646 was achieved. However, the possibility of much greater profits existed. Wm%R and the volume indicators were successful in helping me to spot trends and trend reversals, however they seemed to always be a little late; I missed out on selling at the highest peaks or selling at the deepest bottoms.

Delta Airlines was the most lucrative stock in the psychology-based trading portfolio. Delta Airlines Inc netted a profit of $1859.54. On-Balance Volume served as a great indicator for the price changes of this stock. Delta Airlines stock had the greatest fluctuations in volume compared to the other stocks in my portfolio. Similar to the trading experience that I had with the Coles Myer stock, Delta stock peaked to highs and lows that I wasn't able to profit from. However, I may be being greedy in thinking that my psychology-based indicators should work perfectly for every stock in every market at every time.

Again, Wm%R and the volume-based indicators were successful in making me money in my trading transactions with Genentech stock. Overall, a net profit of $617.67

was achieved. This happened to be my smallest gain. Coincidentally, Genentech stock was the stock in the psychology-based trading portfolio that had the most trend reversals.

The psychology-based indicators were somewhat successful in making money on Wal Mart stock. Overall, a net profit of $851.64 was achieved. On-Balance Volume showed Wal Mart stock to be a smart purchase; prices were low and a rally was predicted to occur. Prices did rise. Wm%R as well as the volume-based indicators gave no clear buy or sell signals after the initial buy signal. Without any real guidance from the psychology-based indicators I simply held onto the stock and hoped for the best; a fairly cautious strategy in a bull market.

Overall, I would say that the psychology-based investment strategy was successful and fairly sound. However, like any investment strategy, it wasn't without its shortcomings. Some trend reversals were missed and some large profits were left by the wayside, but an overall profit of $4974.85 was achieved.

4.2 Analysis of Hard Facts Investment Strategy

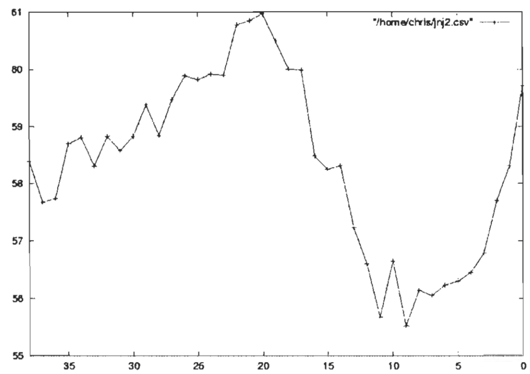
In this section the performance of each "hard facts" investment will be analyzed and related to the factors that were examined in this strategy. The graphs that follow represent the stock price of each individual company included in the experiment's portfolio. As shown, several stocks performed quite well over the time period that the investment took place, however, some performed with less success. This section will attempt to relate each stock's performance to the factors taken into account in the development of the portfolio.

The following table summarizes the factors examined in this experiment for each company. The continuing sections examine on a case by case basis the possible reasons for a stock's performance as it relates to the factors in this table. Correlations between performance and factors are made through the use of news articles collected during times at which the stock's performance changed.

	Mkt/Book	ROA	D/E	P/E	ROS	Sales	(Price Change previous year)
JNJ	7.83	16%	0.15	32.80	17.4	32B	(58.0%)
HWP	2.50	4.18	.40	25.83	2.9%	47B	(-48.9%)
MMM	7.05	10.10	.49	30.33	9.3%	16.4B	(+46.7%)
UTX	3.29	8.3	.59	14.32	7.7%	27.7B	(5.9%)
MRK	10.18	17.98	.64	21.40	15.4	46.6B	(-6.6%)
XOM	3.87	11.68	.15	16.53	7.5	230.6B	(+17.1%)
HD	5.65	12.02	.08	35.53	5.5	48.8B	(27.8%)

Case 1: Johnson and Johnson

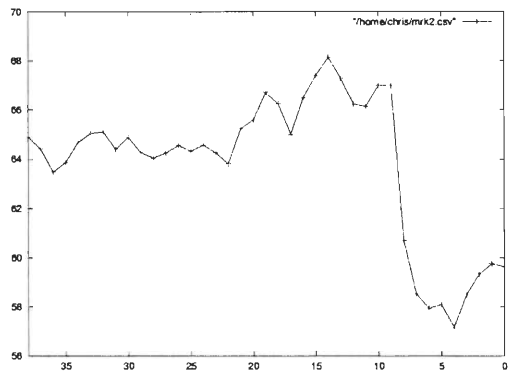
Growth: 2.2%



Johnson and Johnson performed well immediately following the events on September 11th. The release of a quarterly report with expectations below those of investors caused the stock to plummet for a short period, with a full rebound following this event. The company has a strong ability to effectively bring products to market, however a stock price representing 7 times its total assets, coupled with a price to earnings ratio of over 32, indicates that this stock has reached an accurate valuation range. This will limit the upward movement of the price before any large changes are made in Johnson and Johnson markets.

Case 2: Merck

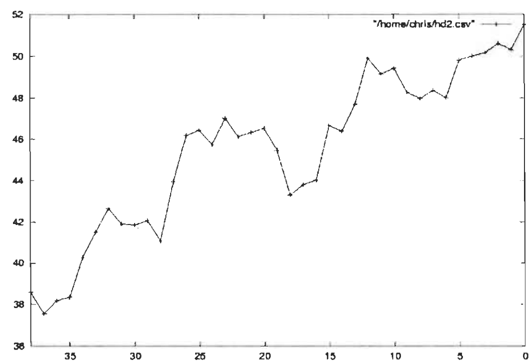
Growth: -8.0%



Merck's strongest point is the high return on sales of 15.4%. However, the company has incurred an amount of debt reaching over 50% of its total assets, and the price of a share in the stock is over ten times the book value of that share in the company. Therefore the attractiveness of this investment varies greatly when the market for Merck's pharmaceutical products changes. For this reason, Merck's announcement in early December that earnings would be substantially less than previously expected caused the stock price to fall a great deal. The high earnings are necessary to compensate for the large debt accrued in the course of running the company, and when the earnings are not there, the inflated stock price will certainly tumble.

Case 3: Home Depot

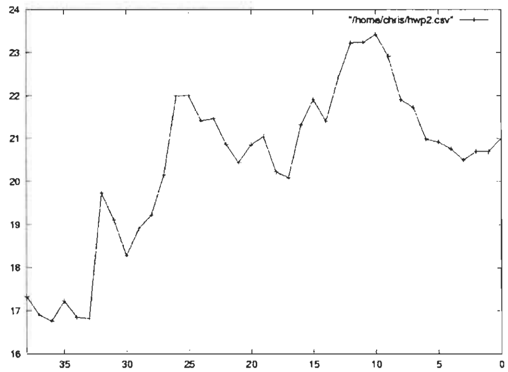
Growth: 33.7%



Home Depot has, over the course of last year, completed $48.8 Billion in sales while incurring almost no debt whatsoever. A steady but low return on sales is still appreciable as the process of generating this return does not leave the company in debt. This data indicates that the Home Depot is able to execute a large number of sales efficiently. The stock's performance over the investment period can therefore be attributed to the rising number of sales during the holiday months, where the retail industry sores as a result of increased consumer activity.

Case 4: Hewlett-Packard

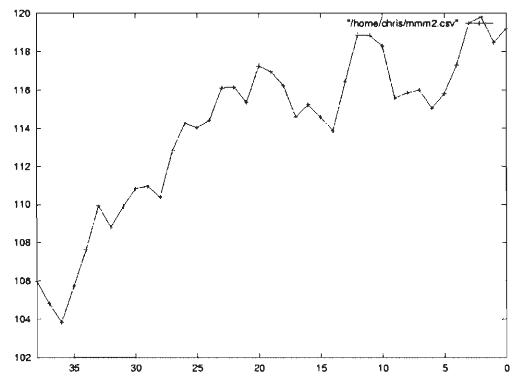
Growth: 21.4%



Hewlett-Packard's large sale volume of $47 Billion is perhaps the most important factor in describing the stock success over the investment period. The relatively low return on assets and sales figures demonstrate that the company does not efficiently bring products to market, and this perhaps explains the reorganization plans announced prior to the proposed merger with Compaq. For this reason investors were uninterested in Hewlett-Packard and felt the Compaq merger would not be financially successful. Incurring debt equal to half the value of the company's assets while bringing profiting only 2.9% from sales does not inspire confidence in investors. However when the holiday season approached consumers began purchasing many more personal computers than previous months. Hewlett-Packard's strong market presence was demonstrated as the company profited greatly by leading in the desktop computing sales during this period. The price began to rebound as a result of this, despite the inefficient return on these sales.

Case 5: 3M

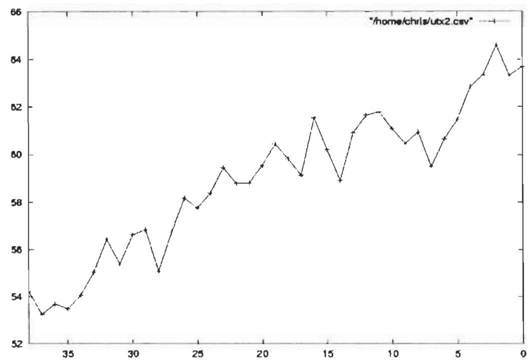
Growth: 12.5%



Minnesota Mining and Manufacturing experienced a large fall directly following September 11th, however, the stock quickly recovered and maintained values in the steady range following the fall. 3M conducts a large volume of sales while maintaining a small market to book ratio. The stock is therefore not highly inflated when compared to the total tangible assets held by the company. Further investigation demonstrates that the company has incurred substantial debt representing about 50% of the value of its total assets. This coupled with a steady but otherwise mediocre overhead in conducting its business (demonstrated by a mid-range return on assets and return on sales) causes an investor to recognize this stock as a steady long term investment that is safe to hold on to but will most likely not grow a great deal in the short term.

Case 6: United Technologies

Growth: 17.5%

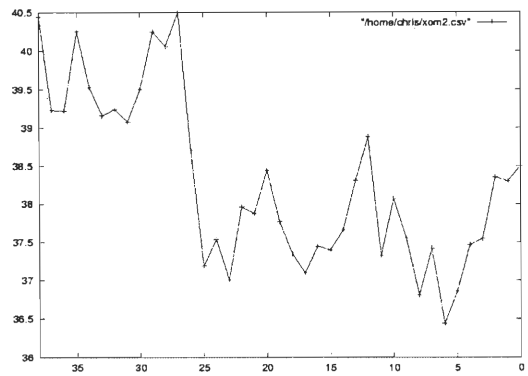


By maintaining a debt to equity ratio of .59 while conducting an enormous amount of sales in the amount of $27.7 billion, has demonstrated a strong ability to bring products to market both effectively and efficiently. Therefore, when UTX announces a new product line, investors are more willing to bank on it's success than if a similar product line was announced by a company that had no evidence of it's ability to bring an idea to fruition effectively.

Following September 11th, many stock prices plummeted but were restored in the following month. UTX's stock performance did not just recover, however. The stock price has been rising over the entire investment period. This can be explained by UTX's November announcement of a successful Fuel-Cell installation in China. The fuel cell technology is intended to power large farming regions, and will eventually run on hog-waste, a renewable energy source. The previous success of UTX to bring an idea to market efficiently, coupled with the announcement of a new technology that will provide power to farms using a fuel that is produced as waste on many farms can certainly explain the increase in price of UTX stock.

Case 7: Exxon-Mobile

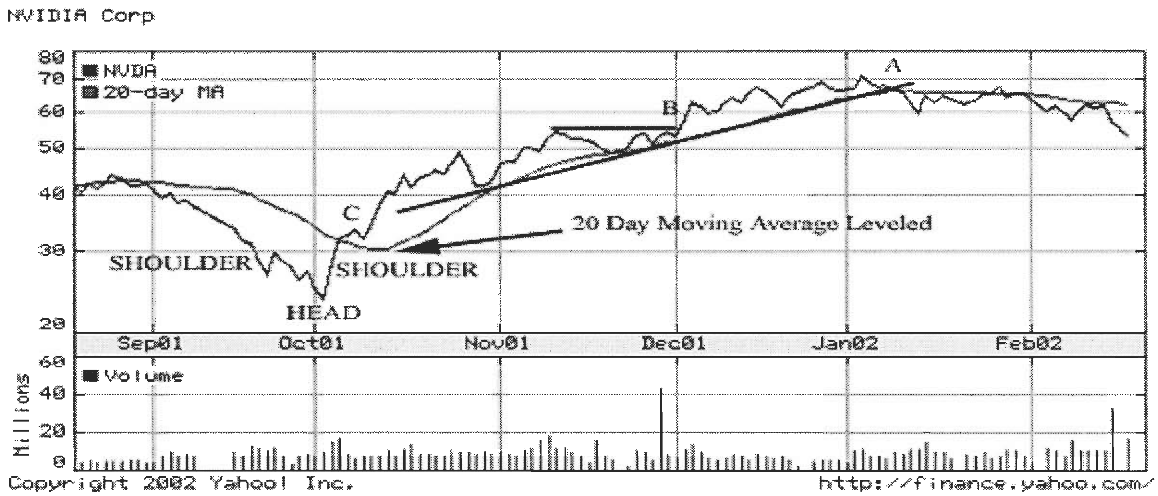
Growth: -4.7%



Exxon Mobile conducts an enormous number of sales that reached $230 Billion last year. By incurring only a small amount of debt while gaining a return of 7.5% on sales, Exxon Mobile appears to be a solid investment. The drawback, however, is that the sales are based primarily on natural resources used as fuel. The large stake in crude oil forces the otherwise profitable organization to rely entirely on the many variables in this market. Conflicts in the regions where the crude oil is extracted have effects on both the cost of transporting the oil as well as on the market itself. This in turn causes the performance and attractiveness of a share in Exxon to change dramatically. The business plan also lacks any sort of future vision and if alternative energy sources replace crude oil in the market, Exxon-Mobile will no longer be an attractive investment.

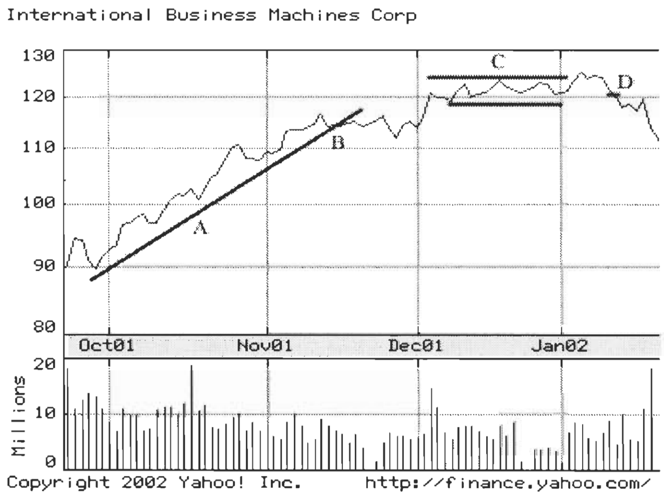
4.3 Analysis of Trends/Internet Tools Portfolio

NVDA

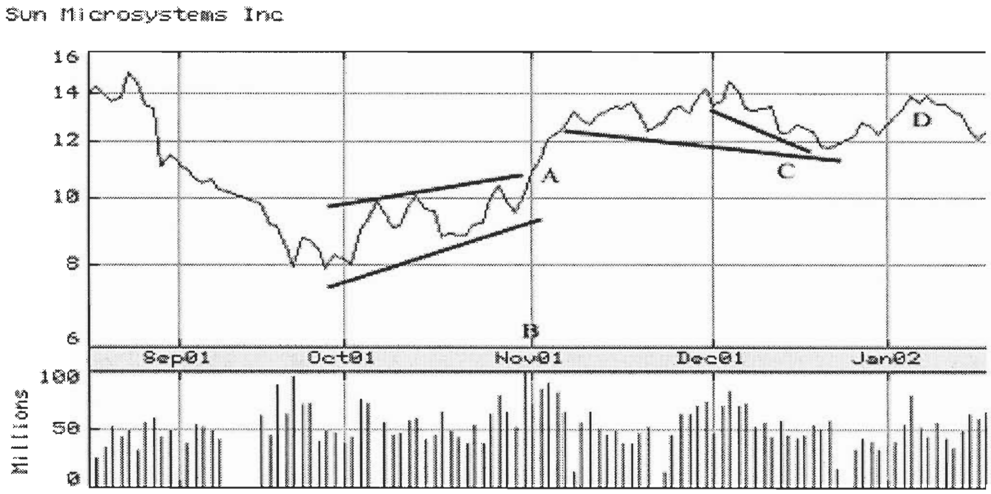


NVDA was a very attractive investment after the October decline, as a dominant leader in the computer graphics field NVDA was leaving its competitors in the dust, and its stock performance corresponded to this success in the market. At point C would be the best time to enter in this risky market, or you could wait until the next correction to see the strength of the rally, but it could be too late by that point. The level of resistance marked by B offer a level to set buy stops at. Once the level B was broken, the stock continued to rally until early January where it fell beneath the significant trendline and the 20 day moving average (A).

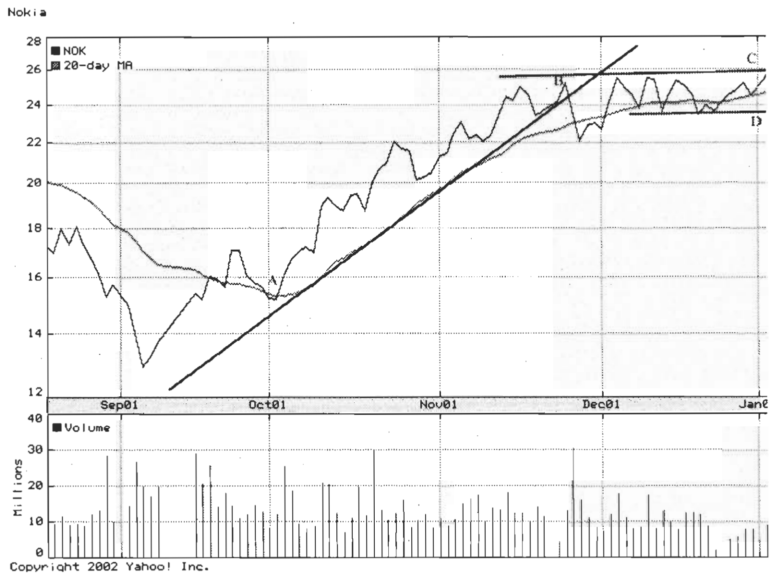
IBM



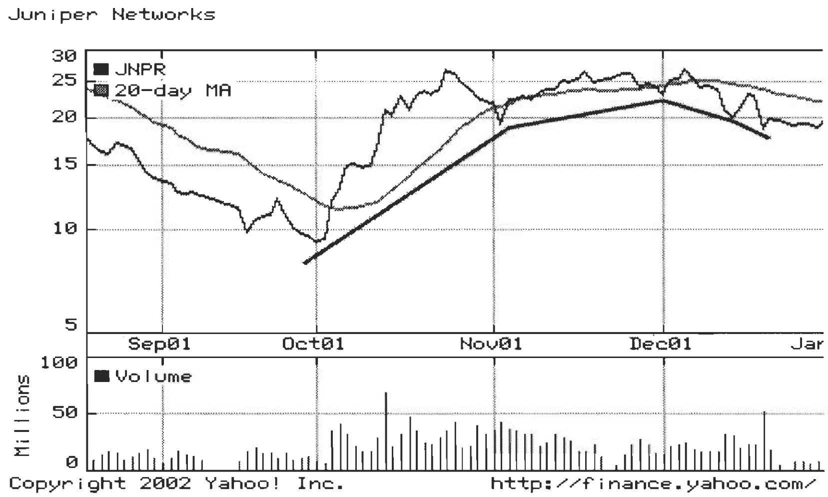
IBM is a strong financial behemoth which was going to come out of the shakedown alive. Multiple entry points for IBM existed and a clear significant trend line was established (A). The trend line was broken at point B, and volume decreased signifying the rallies weaknesses. The trading range varied between 119-124 for the month of December, but declining volume was not a positive sign for IBM. At point (D) the bottom of the trading zone was broken, and any stocks which are still being held should be sold.



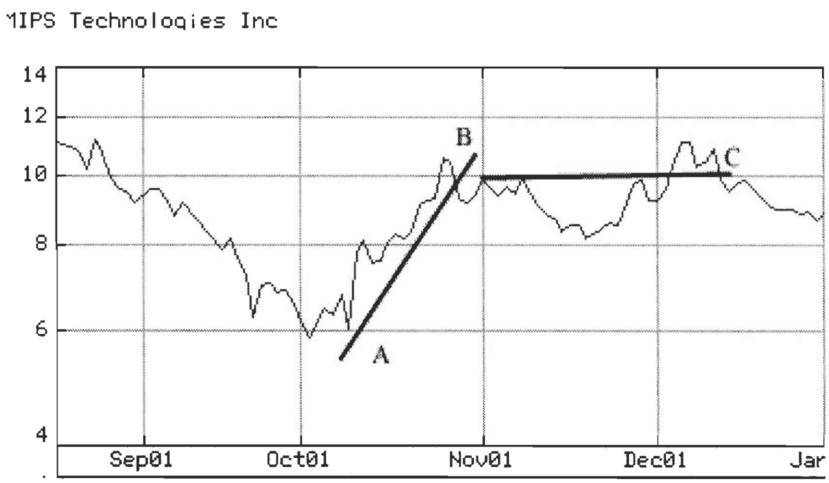
Looking at Sun's stock chart over the last few months, around point (A) when the stock breaks out of its resistance level around 11. The significant volume at point B signifies the strength of the rally, and there was no immediate pullback which represents an even more bullish rally. The stock did rally but started to show two negative trend lines (C) which raised concern for the future of the stock. Point D represents the best time to exit given the market conditions.



Nokia showed a strong growth pattern through the months of October and November, an attractive entry point is (A) where the stock pulls back and touches the 20 day moving average. At point (B) the stock should be looked at as the first major trend line is broken. The stock trades between the (C) and (D) ranges and if stocks were not all sold at point B, they should be sold at any point along (C), or if it breaks the lower bottom of (D). Volume was also declining during the (C-D) trading range, as it suggests the strength of the rally has been exhausted.



JNPR is currently over hyped and risky, but rallied strong from 10->25



MIPS offered a rally opportunity, but quickly was exhausted, and if stop levels were not set correctly, It may have been hard to exit correctly. If patient, and a sell was not made at point (B) , stop orders should be put at level (C) where the bottom of the stocks resistance may break again.

CISCO

Cisco stocks volume surged in early October, this was a strong sign that CSCO was going to rally. A significant trend line can be drawn which represents the growth of the stock, but as this trend line is broken at point (B) it is a wise time to sell the stock.

Photon Dynamics

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Photon Dynamics witnessed strong signs of growth during the A period, the trading range around B marked a possible breakout at 35. The volume did surge at point B, and would have been a wise entry point. The stock showed signs of lost momentum in the D stage and would have been an appropriate time to sell the stock.

Chapter 5. Conclusions

5.1 Remarks on Psychology Investment Strategy

The psychology-based investment strategy was successful; the portfolio's performance was fairly lucrative with an overall net profit of \$4974.85. However, the trading period for this portfolio coincided with a fairly stable bull market. Therefore, it is safe to deduce that a psychology-based investment strategy can be successful in a bull market, however anything more than that wasn't proven. Also, a psychology-based investment strategy is not for everyone however. In order to be successful using a psychology-based investment strategy one has to be willing to put in a lot of time and a lot of work.

5.2 Remarks on Hard Facts Investment Strategy

The "Hard Facts" investment strategy was ultimately a success. The portfolio's performance was quite good, however, this may be due in part to the rebound experienced by many stocks following the tragedy on September 11th. Although the experiment was initiated over a month afterwards, some stocks had still not entirely returned to the range they were in prior to September 11th. However, by looking at the results of various new reports regarding each company, investor reaction could in every case be described by reviewing the news in the context of the factors examined in this strategy. The largest lesson was that companies indeed require efficient management and development procedures in order to bring products to market successfully. Companies that were evaluated to have problems in bringing products to market did not respond greatly to news of new product developments. In contrast, companies that had in the past brought products to market efficiently experienced a strong investor reaction when new products were announced.

5.3 Remarks on Technical Analysis Strategy

The stock chart history line is a record of investors' opinions of the perceived value of the company. Since stocks are traded on the futures of companies, reading the trends and determining stages of the stock provide a way to make decisions less based upon impulse and more upon certain market signs. The technical analysis approach can be refined to certain criteria which the observer finds true. As a method is refined, which not necessarily always wins, but more so wins more than loses is a successful portfolio. The correct way to sell stocks short, is based upon cutting losses early, and by minimizing your losses, your few winning positions can offset them. By having a basic knowledge of technical analysis signs the investor is able to avoid long-term losses caused by people bottom guessing a downward trend.

5.4 Summary

Each investment strategy had its successes and failures. By choosing a specific method for evaluating stock performance, the investor makes the decision to ignore a great deal of data. For example, the hard facts investment strategy does not take into account market psychology or mathematical trends in stock prices. Since this project investigated three distinctly different strategies and all had some degree of success, the importance of each was validated. Following one of these strategies overlooks all data analyzed in the other strategies. Therefore, situations will arise where a strategy will fail on account of information that was actually taken into account in another strategy. For this reason it can be concluded that a diverse investment paradigm that takes into account a variety of investment strategies will generally be more successful than one that does not. This project was our first experience with the stock market and proved to be a powerful learning experience.

Glossary of Terms

Resistance zone - Top of the trading range.
Resistance Level - If a stock price has been 'hovering' between a high/low a trend line can be drawn trough the center. This level is the resistance level.
Support Area- Bottom of the trading range. A temporary 'floor'. If a stock goes beneath its level of support, it has very negative implications.
Trading range - Zone where a stock price hovers back and forth.
Breakdown- When a stock breaks the bottom of the trading range, below the level of support.
Pullback- A temporary correction in the opposite direction of the last rally.
Breakout- When a stock breaks the top of the trading range, above the level of resistance.
Breakout – After staying around its resistance level, a stocks chart may look like it is about to break its level of resistance. This is usually a good point in time to enter the market.
Downtrend - A period of time where each min peak is priced less than the last.
Uptrend- A period of time where each max peak is priced higher than the last.
Moving Average – Smoothes out the major trend so the day-to-day movements become easier to understand. The 30-week moving average is good for long-term investors, while a 10-week MA is good for short-term investments. Stocks trading below their 30 week MA should not be considered, especially if the MA is declining. Those trading above the 30 week MA should not be considered for short selling.
Target- The price set to sell a given stock.
Big-Cap Stock: A stock with a large number of shares outstanding. Microsoft, IBM, and AT&T are considered big-cap stocks.
Small-Cap Stocks: Companies that have a relatively small number of shares of common stock outstanding.
Swing Trading - Traders who take advantage of the markets trends by trading intraweek. The short term investor who invests longer than a few days, but is not investing for long term gains.
Money Manager- Professional investors and institutions, ones who's trades affects the markets price incrementally. Often many share similar strategies which result in possible manipulation of stop prices.
Volume – The quantity of a given stock traded in a set period of time.
Volatility- The amount of variance of a stock price as a percentage of the whole value.

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