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Technical Trading Techniques with Statistical Profitability Back-Testing Analysis

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Acceptance of Senior Honors Thesis

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Abstract

Technical analysis is a category of securities trading that utilizes mathematical formulas in order to signal buying and selling points. This paper will evaluate the profitability of various technical methods over a five-year period starting January 1, 2003, with securities in the Dow Jones Industrial Average (DJIA). The technical strategies evaluated in this paper will be explained conceptually as well. Computer software will be used to complete the actual back testing. Computer back testing will be used via TD Ameritrade's StrategyDesk trading platform software. The back testing will utilize a base value of $100,000 per trade, neglecting trading transaction fees and short-term capital gains taxes. The results section of the paper will evaluate each method on a statistical and profitability basis as compared to a "buy and hold" strategy.

Technical Trading Techniques
with Statistical Profitability Back-Testing Analysis

Security analysts, investors, and other participants in the financial markets have been debating over the century over methodologies that yield the largest returns on investments. Accordingly, several schools of thought have evolved over the years to account for differing styles and strategies. All of these thoughts can be classified as either one of two basic strategies: Fundamental or Technical. These two ideologies are normally diametrically opposed and postulate different criteria on which to trade securities.

Fundamental analysis is the typical "buy and hold" strategy. Fundamental analysis is basically concerned with the financial health and prospects of a publically traded company. The main weapons in the arsenal of fundamental analysis are audited financial statements, economic analysis, and prudent decision making on future trends and opportunities. Succinctly, fundamental analysis proposes to buy equities (stocks) based on the company's current and future prospects of growth, earnings, and share appreciation.

On the other hand, technical analysis is more concerned with mathematical tools, charting patterns, and disparities in pricing due to market psychology. Moreover, the technical analysts purport that mathematical indicators, volume, and momentum are paramount to equity selection.

The question concerning which methodology to espouse is dependent on the view of market efficiency. Market efficiency is the degree to which a stock's price fairly represents the true value of the investment. In a truly efficient market, a stock's price is representative of all the information disseminated in the world and the aggregate of the consensus of market participants (bullish and bearish). The fullest and strongest form of market efficiency is known as the Strong

Form Market Efficiency Model (Malkiel, 1999). Based on this model, the hypothesis asserts that it is impossible to beat the market on a repetitive basis.

The Strong Form Market Efficiency market would be highly plausible, if not purely true in a financial system in which participants were constantly prudent, efficient, rational and emotionless. However, this is far from the financial system in which we participate. Therefore, where the Strong Form may have theoretical merit, it lacks pure practicality.

There are other forms of market efficiency that arise in financial theory. The theories range in their degree of market efficiency—Strong-Form being the highest form of efficiency and Weak-Form being the least efficient (Malkiel, 1999). Weak-Form theory purports that current prices do not reflect true fair value and is only representative of previous movements and financial fundamentals.

Now since a background has been laid to some of the theoretical framework in which the financial markets operate, technical analysis can be evaluated. Technical analysis is akin to weather forecasting. Technical analysts forecast future price movements based on previous price movements. Technical analysis does not purport to give exact predictions of prices and movements but rather what is likely to happen based on historical data analysis. One of the biggest factors of technical analysis is the function of price to supply and demand. Therefore, technical analysis can be used for any financial instrument in which their price is a function of supply and demand. Hence, technical analysis is frequently used for individual stocks, indices, futures, options, commodities, etc. Also, the time frame is interchangeable. Day traders use technical analysis on short intervals such as seconds to minutes while swing and momentum traders may use time frames from a few days to weeks. Even long-term traders can use technical analysis to identify long-term trends and therefore trade accordingly.

The origins of technical analysis are clear. At the turn of the 20th century, Charles Dow formulated his famous theory of patterns in broad stock indexes (Greiner & Whitcomb, 1969). His writings were not disseminated in one pronouncement of financial theory but rather collected over several years and fine-tuned by those who followed him. The historical progression of Dow Theory is beyond the scope of this thesis but is important in understanding the evolution of technical analysis.

Procedures & Methods

The proceeding section explains the various technical strategies that are evaluated. Figures and exhibits show how the technical indicators appear in trading platforms. Also, buy and sell signals are shown on various figures as indicated by green and red arrows, respectively. The strategies were backtested starting on January 1, 2003 and will cease on December 31, 2007. The trading-universe for backtesting are the 30 stocks that comprise the Dow Jones Industrial Average (DJIA). Backtesting was performed by TD Ameritrade's Strategy Desk (Version 2.2) trading platform. Also, the in-text figures are also taken from the Strategy Desk software. It is important to note that charts and illustrations used throughout this paper are not of the same security, nor over the same time period. Chart selection was based on the ability to convey the technical indicator in the clearest manner possible. A summary table of the actual backtesting results is displayed in the respective appendix.

Positive/Negative Directional Indicators

Developed by J. Welles Wilder, the Positive Direction Indicator (+DI) and the Negative Direction Indicator (-DI) measure price "forces" (Jobman, 1995). The +DI measures the force of upward price movements whereas the –DI measures the force of downward price movements. The default period setting for these directional indicators is 14 periods (Jobman, 1995).

+DI/-DI crosses indicate the basic trading strategy for Wilder's directional indicators. A buy signal[1] is signaled when the +DI moves above the –DI. Conversely, sell signals are generated when the –DI moves above the +DI.

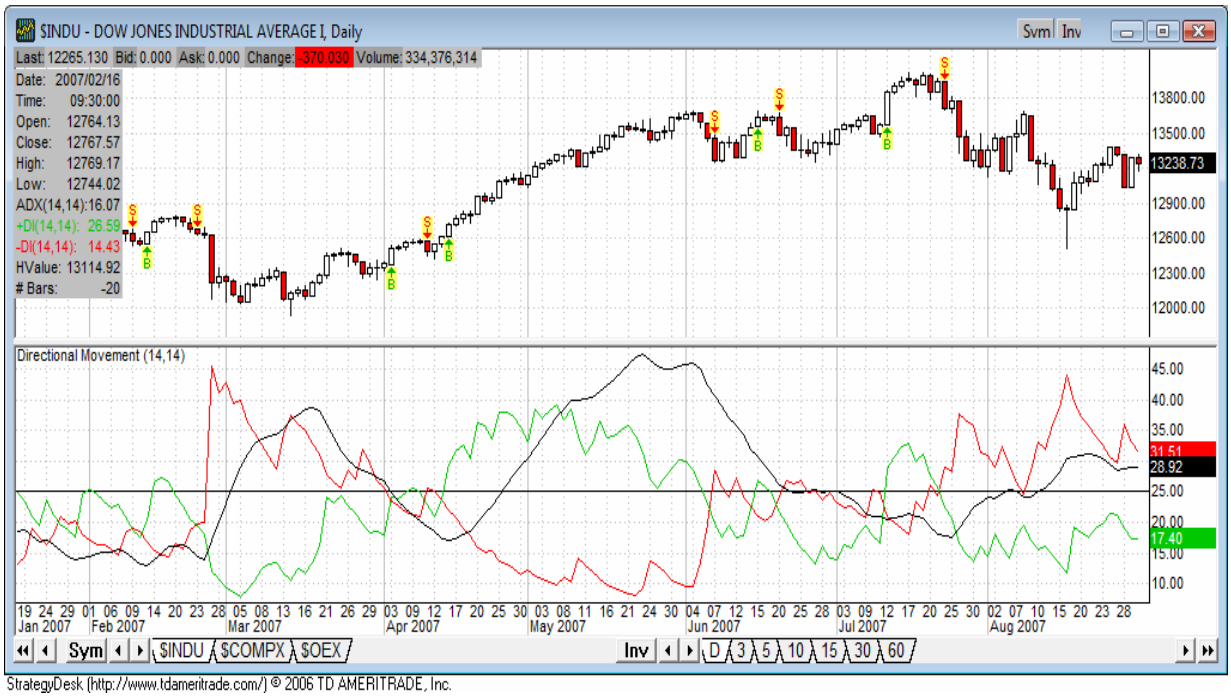

Figure 1. +DI/-DI Crossovers

Figure 1. illustrates the use of a direction index crossover. The chart shows the Dow Jones Industrial Average with DI crossovers highlighted with buy and sell signals. Buying and selling signals are triggered when the directional indexes crossover one another.

Average Direction Index (ADX)

The developer of the Average Direction Index was J. Welles Wilder. The purported purpose of the ADX is to evaluate the strength of a current trend. The ADX is an oscillator that ranges from 0 to 100 (Kirkpatrick & Dahlquist, 2007). Figure 2. shows what the ADX appears in

[1] Some charts will have arrows with a green "B", and red arrows with a "S", these refer to buying and selling signals respectively

practice. The red and green lines are the +DI and –DI respectively, while the black line (ADX) is the composite of the two.

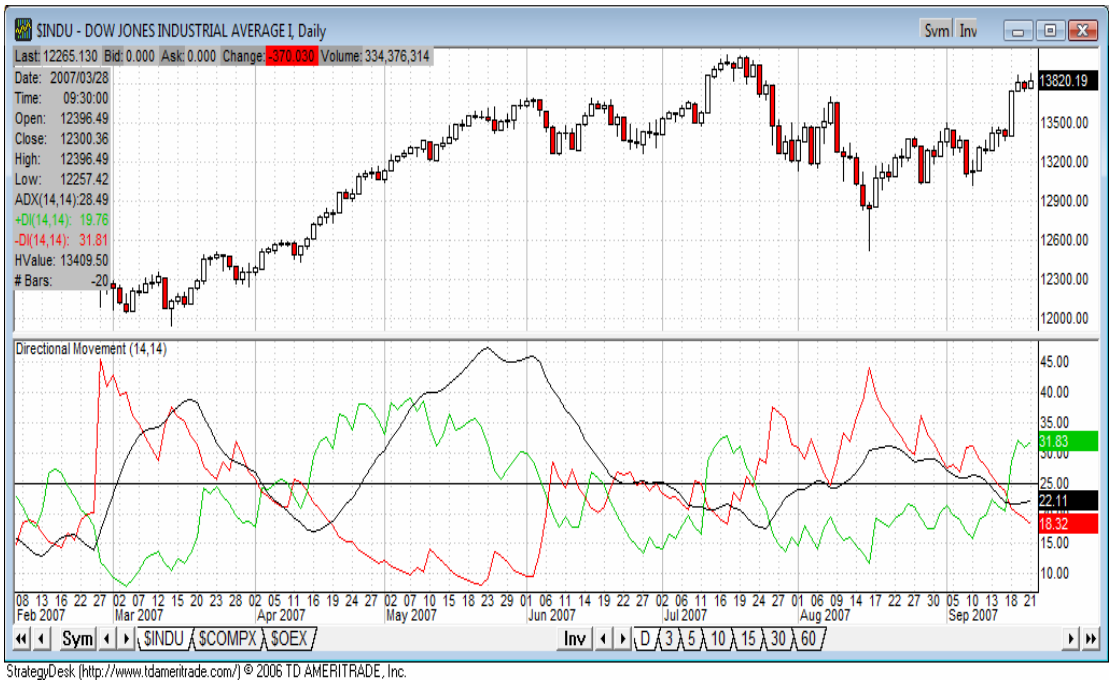

Figure 2. ADX

It is important to note that ADX values above 60 are rare. Registered ADX values of below 20 indicate a weak market trend and ADX values above 40 suggest a strong trend (Kirkpatrick & Dahlquist, 2007). Moreover, it is paramount to note that the ADX does not indicate a bullish or bearish movement but trend in general. The ADX is also used to identify possible points of inflection for trends. In other words, the ADX can point to the market changing from a non-trend to a trending session and vice-versa. The ADX is a composite of two other indicators smoothed by a moving average. These two indicators are discussed below.

Bollinger Bands

Bollinger Bands are one of the most commonly used trading indicators for technical traders. Bollinger Bands were devised by John Bollinger to compare volatility and relative price

levels of a period (Murphy, 1999). As shown in the figure below, the indicator is comprised of three bands designed to encapsulate the relative price range of the security.

(1) A simple moving average is the middle band (normally a 20-unit time period)

(2) An upper band is the Simple Moving Average (SMA) plus two standard deviations[2]

(3) A lower band is the SMA minus two standard deviations

Figure 3. Bollinger Bands

Moreover, Bollinger recommended 10-day simple moving average for short-term time frame, 20-day for intermediate, and 50-day for the long-term movement.

One of the basic methods for trading with Bollinger Bands is to sell short when the price crosses the upper limit and then buy to cover after a given percentage gain with a stop loss in place. This strategy is shown in the figure below.

[2] Standard deviation describes how the values are dispersed around an average value (Murphy, 1999)

Figure 4. Bollinger Bands with Stop & Loss Triggers

Simple Moving Average (SMA)

Simple moving averages are one of the most basic trading tools. Moving averages in general are often the base mechanism for more sophisticated trading strategies (Murphy, 1999). The moving average is a smoothing mechanism. In other words, moving averages take averages of price action for a time period, which reduces fluctuations, and tend to point out trends (Murphy, 1999). The simple average is calculated by computing the mean of a price over a specified number of periods. Most commonly, moving averages are calculated using the closing price of a security. However, some strategies implement other methods of price action for calculating moving averages. For instance, some traders take the midpoint values, daily trading range, open price and high prices (Jobman, 1995). It is important to note that moving averages are lagging indicators.

Figure 5. 10-Day Simple Moving Average

There is a distinct difference in the changes in the SMA for the time period defined. Figure 6. shows several SMAs with varying time period averages:

Figure 6. Multiple SMAs

Shorter the defined time period, the more likely the moving averages will fluctuate which will generate more trading signals (Jobman, 1995). One common strategy is to buy when the price

closes above the 10-day SMA and to sell when the price closes beneath the 10-day SMA (Murphy).

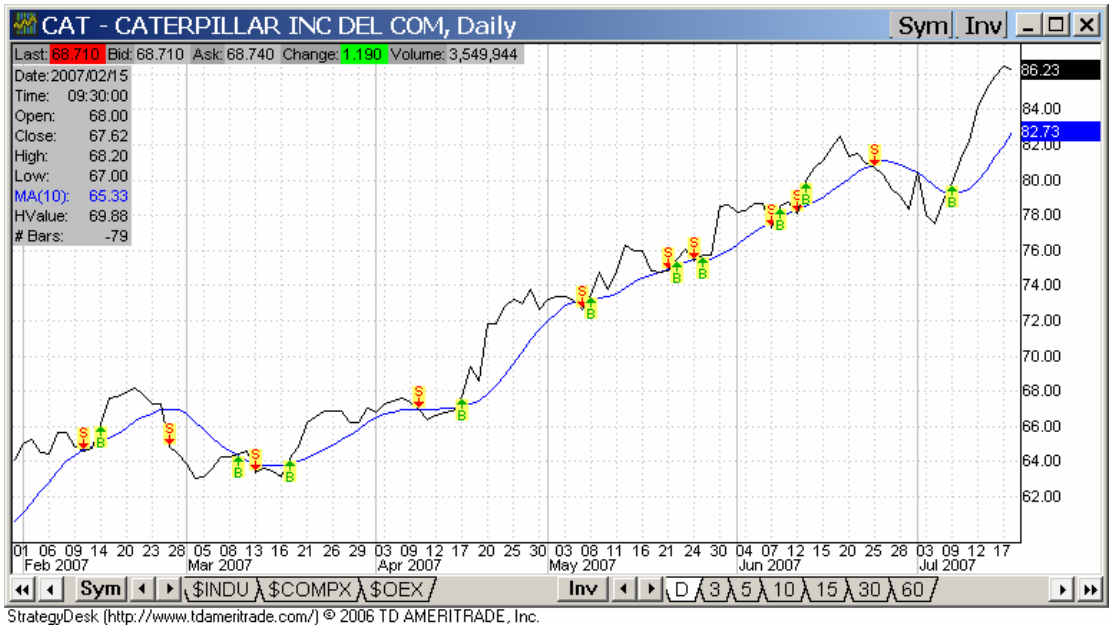

Figure 7. 10-day SMA Strategy

Exponential Moving Average

The exponential moving average (EMA) aims to preclude some of the lag-time from the simple moving average. The EMA mitigates lag by applying more weight to recent price levels as compared to older prices (Jobman, 1995). Even though the EMA automatically assigns weightings, come programs allow traders to modify the individual weightings for the time period (Murphy, 1999). Figure 8. shows Caterpillar Inc. with both a ten-day EMA and SMA charted. The green EMA line reacts more quickly to price movements due to the weighting of more recent prices as compared to a basic SMA.

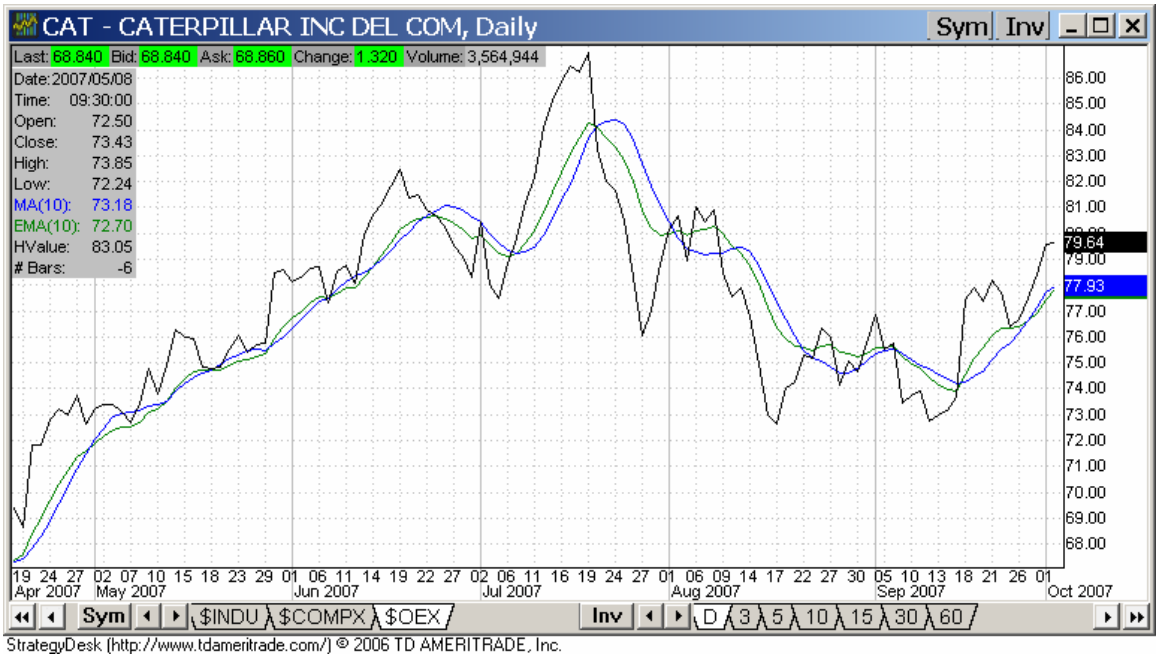

Figure 8. SMA & EMA

A common EMA strategy is to buy when the price crosses and then closes above the 15-day EMA and then to sell when the price retreats to cross below the 15-day EMA.

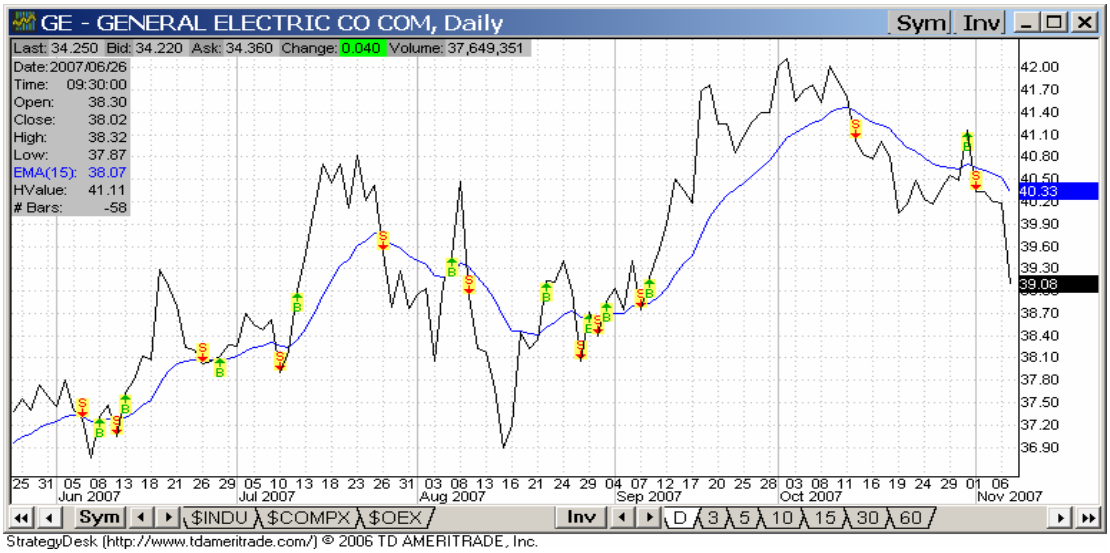

Figure 9. 15-Day EMA Strategy

Another Moving Average strategy is dubbed the "Double Crossover Method" (Murphy, 1999). In this method, a buy signal is produced when the shorter average crosses the longer and

vice-versa for selling points (i.e., when the shorter average dips below the longer average) (Murphy). A common form of this technique is to utilize a six and ten day moving average.

Moving Average Envelopes

Traders believe that single moving averages may be enhanced by surrounding them by envelopes (Murphy, 1999). Moving average envelopes are parallel lines to the simple moving average separated by a user-defined percentage (Kirkpatrick & Dahlquist, 2007). Many short-term traders elect a three-percent deviation for moving average envelopes pegged to the 20-day simple moving average. Figure 10. shows moving average envelopes in practice.

Figure 10. Moving Average Envelopes

Parabolic SAR

The Parabolic SAR (stop and reversal) was devised by Welles Wilder, also the creator of the RSI and DMI, which will be discussed later (Murphy, 1999). The Parabolic SAR is traditionally used to set trailing price stops for both long and short positions. Wilder also espoused that the Parabolic SAR is a trend following strategy and attested that tradable trends are only in the market about 30% of the time (Murphy, 1999). Wilder recommended using other

various technical techniques to establish the current primary trend then to utilize the Parabolic SAR in the direction of the trend.

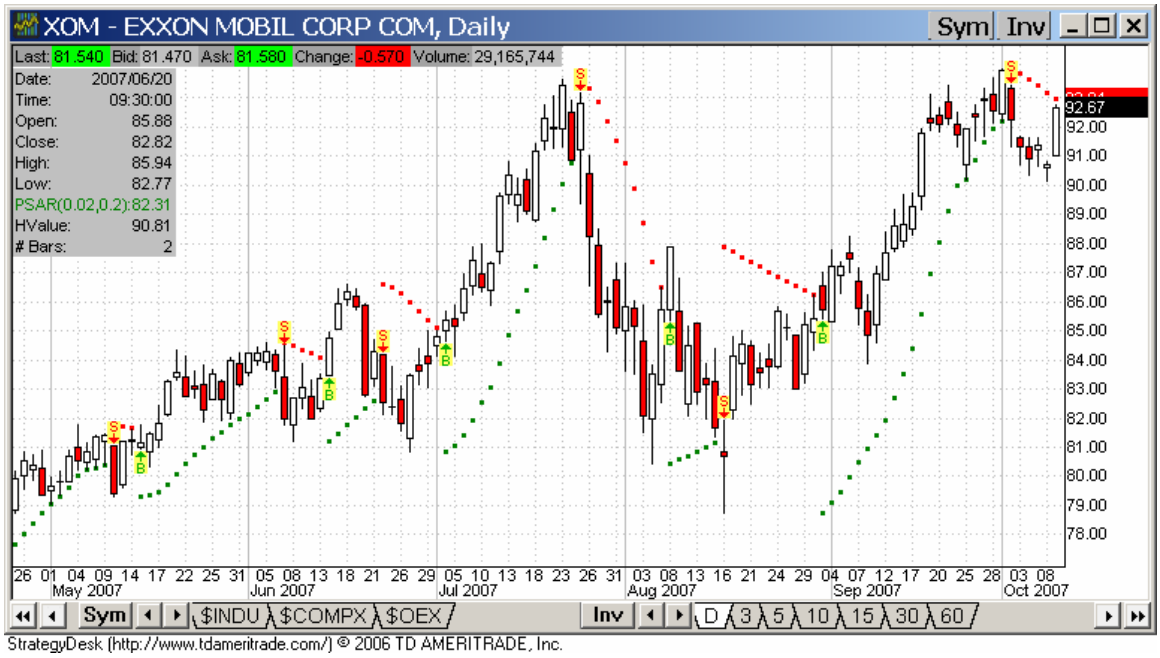

Figure 11. Parabolic SAR

Stochastic Oscillator (Fast, Slow, and Full)

George Lane developed the stochastic oscillator in the middle of the 20th century (Jobman, 1995). The stochastic oscillator is a momentum indicator that shows the location of the current close relative to the high/low range over a defined set of periods. Lane empirically found that, "…as prices increase, closing prices tend to be closer to the upper end of the price range. Conversely, in downtrends, the closing prices tend to be near the lower end of the range" (Murphy, 1999, p. 246). The indicator is comprised of three components: %K, %D, and (n). The two lines, %K and %D are usually plotted on the same chart--%D acts like a trigger.

Figure 12. Stochastic Overlay

There are three types of stochastic indicators—fast, slow, and full (Kirkpatrick & Dahlquist, 2007). The fast stochastic indicator is very volatile and after its inception produces many whipsaws[3] and false signals; hence the need for the slow stochastic. The slow stochastic utilizes a smoothing technique of the %K in order to smooth out minimal fluctuations. The components of the slow stochastic are identical to the fast stochastic except that the %K(slow) is actually a 3-period moving average smoothing of %K(fast)—in other words, %K(slow) is equivalent to %D (fast). In order to find %D (slow) the same smoothing process is used and a three-period moving average is applied to %K(slow). Many traders utilize the slow stochastic over the fast stochastic due to more reliable signals (Murphy, 1999).

The full stochastic is a hybrid of the slow and fast stochastics. The full stochastic utilizes the same %K and %D as the fast stochastic but implements one more line that is a SMA of the original %K line. Stochastic readings of below 20 signal oversold conditions and readings above

[3] A false signal due to rapid market movements

80 are signal overbought conditions (Kirkpatrick & Dahlquist, 2007). However, Lane did not mean to imply bearish or bullish implications via the stochastic reading. He elaborated that major price movement can still happen once the stochastic reached these levels.

The common stochastic strategies are:

Buy when %K(Fast or slow) crosses above 20, Sell when %K(Fast or slow) crosses below 80

Buy when %K crosses above %D, Sell when %K crosses below %D

Relative Strength Index (RSI)

Another indicator from J. Welles Wilder in his book, *New Concepts in Technical Trading*, is the Relative Strength Index (RSI) (Murphy, 1999). The RSI is one of the most popular momentum oscillators. The indicator compares a security's recent gains to its recent losses and is converted into an integer that ranges from 0 to 100. The RSI only contains one user-defined variable, which is the number of periods.

RSI Calculation:

RSI = 100 – [100 / (1 + RS)]

RS = Average Gain / Average Loss →over the defined period

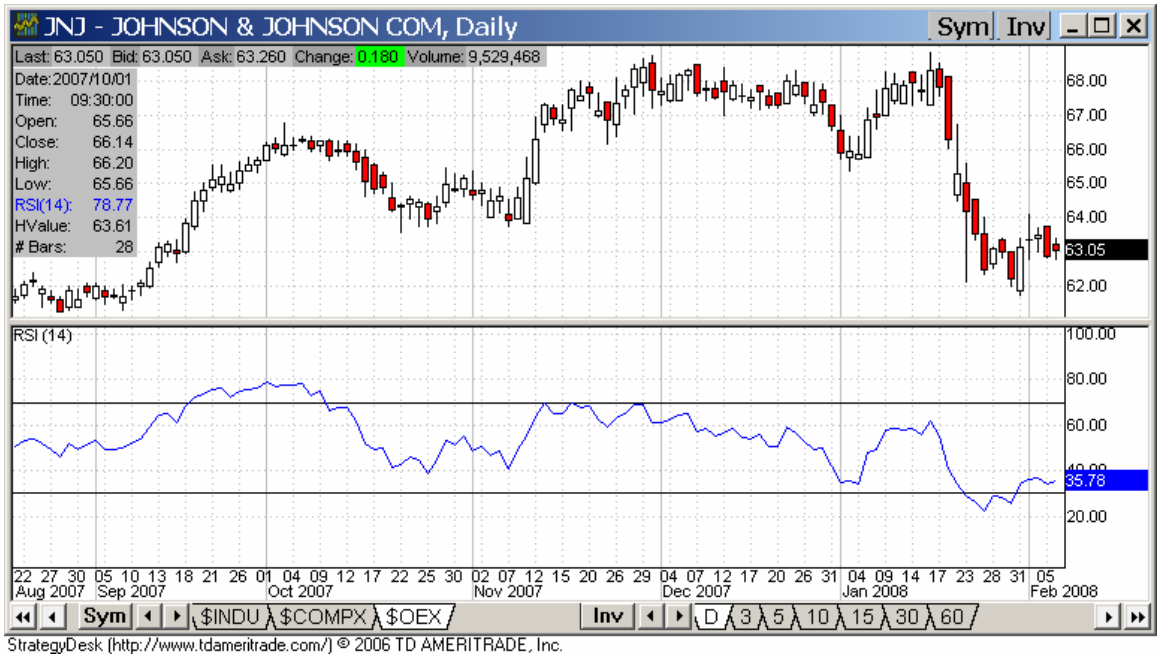

Figure 13. Relative Strength Index

Wilder originally employed periods of 14 for calculation. It is important to note that the shorter the time period, the more sensitive the oscillator becomes, hence wider amplitude (Murphy, 1999). Wilder recommended using 70 and 30 for overbought and oversold thresholds respectively. If the RSI crosses above 30 that is considered bullish and conversely if it crosses below 70 it points to a bearish movement (Murphy, 1999). A common usage for the RSI is once the long-term trend has been established by some other technical strategy, to utilize the RSI as potential market entry and exit points (Kirkpatrick & Dahlquist, 2007). The RSI also contains a centerline of a value of 50. Traders also use this centerline as a confirmation of the upper and lower boundaries. For example, if the RSI falls below 70, traders will wait until it continues to drop below 50 before acting on the signal and vice-versa for bullish movements.

Ultimate Oscillator

The Ultimate Oscillator was devised by Larry Williams in the mid 1980s and combines a stock's price movement during three different time periods into one oscillator (Kirkpatrick &

Dahlquist, 2007). This oscillator also ranges from 0-100. The Ultimate Oscillator also utilizes three lines, 30, 50, and 70 indicating oversold, centerline, and overbought respectively. The three time frames most commonly used are 7-periods, 14-periods, and 28-periods—these are exclusive periods but overlap each other. This overlapping implies that the result is weighted insofar as the most recent time period (7-periods) is used three times in the calculation and therefore has the most influence.

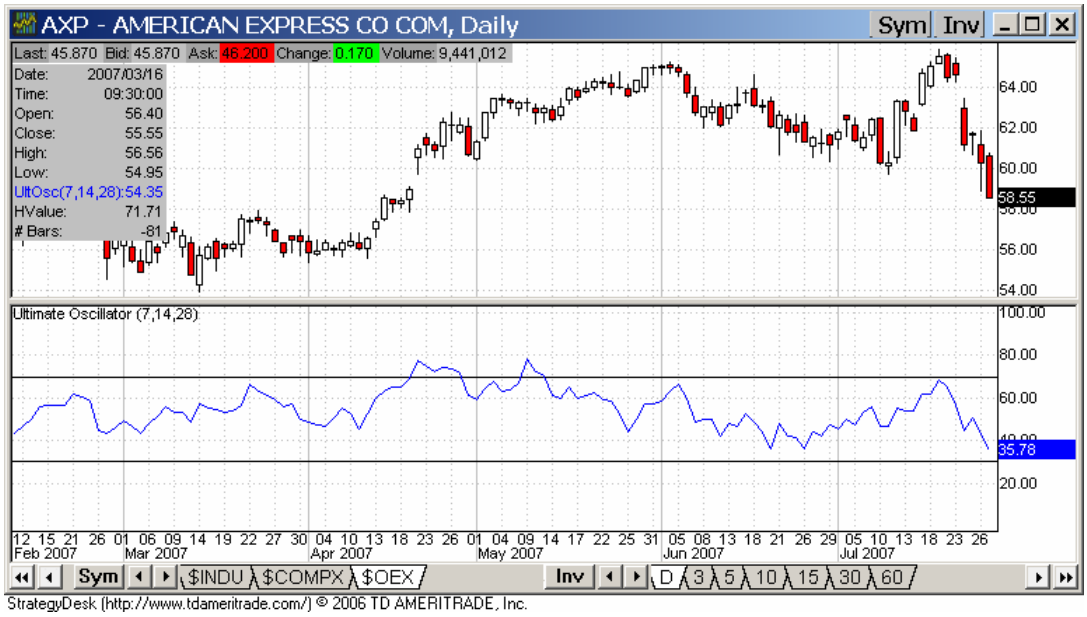

Figure 14. Ultimate Oscillator

The basic trading strategy for the Ultimate Oscillator is similar to the RSI, that is to buy when the oscillator breaks the 30 line and then to sell when it crosses below the 70 line.

Aroon Indicator and Aroon Oscillator

Tushar Chande devised the Aroon indicator in order to determine whether or not a stock is trending, and if so, how strong the current trend. The Aroon system consists of a two line system—the Aroon(up) and Aroon(down). The Aroon(up) line defines the amount of time, in a percentage form, that has elapsed between the start of the time period and the highest achieved

price during that period. For example, if the stock closes at a new high for the defined period, the Aroon(up) measurement would read +100. The derivation for Aroon(up) is:

[(# of periods) – (# of periods since the highest period price) / (# of periods)] x 100

The Aroon(down) is conceived in a converse matter. The Aroon(down) seeks out new lows rather than new highs for the time period. When a new low is achieved during the time period, the Aroon(down) will register +100. The formula for Aroon(down) is:

[(# of periods) – (# of periods since lowest period price) / (# of periods)] x 100

The Aroon Oscillator is formed by subtracting the Aroon(down) from Aroon(up). The range of the Aroon Oscillator is -100 to +100 with zero as the centerline.

Figure 15. Aroon Oscillator

According to Chande, when Aroon(up) dips below 50, it indicates that the current trend has lost its upward momentum. Conversely, when the Aroon(down) drops below 50, it indicates that the current trend has lost is downward momentum. A value of 70 in either direction indicates a strong trend.

The greater amount that the Aroon Oscillator is from zero the stronger the trend. This applies in both upward and downward directions. The farther positive the Aroon Oscillator registers, the stronger the upward trend. Conversely, the more negative that oscillator registers, the stronger the downward trend.

Moving Average Convergence/Divergence (MACD)

Developed by Gerald Appel, the Moving Average Convergence Divergence (MACD) is a lagging oscillator that incorporates two exponential moving averages (Murphy, 1999). The standard MACD measures the difference between a 26-day and a 12-day EMA. The user may define shorter moving averages to respond more quickly to market movements but they [shorter moving averages] will be more prone to false signals. On the other hand, the user may define longer moving average periods in order to reduce false signals and rely more upon primary trends. In practice, a 9-day smoothing of the MACD using an exponential model is used to indicate trigger points. A bullish signal (buy) occurs when the MACD moves above its 9-day EMA. Naturally, a bearish signal (sell) is indicated when the MACD drops below its 9-day EMA (Murphy, 1999).

One popular way to manipulate the MACD is to implement a histogram of the difference between the actual MACD and the 9-day EMA. The histogram is positive when the MACD is above the 9-day EMA and negative when the MACD is below the 9-day EMA. Figure 16. shows the a MACD histogram in practice.

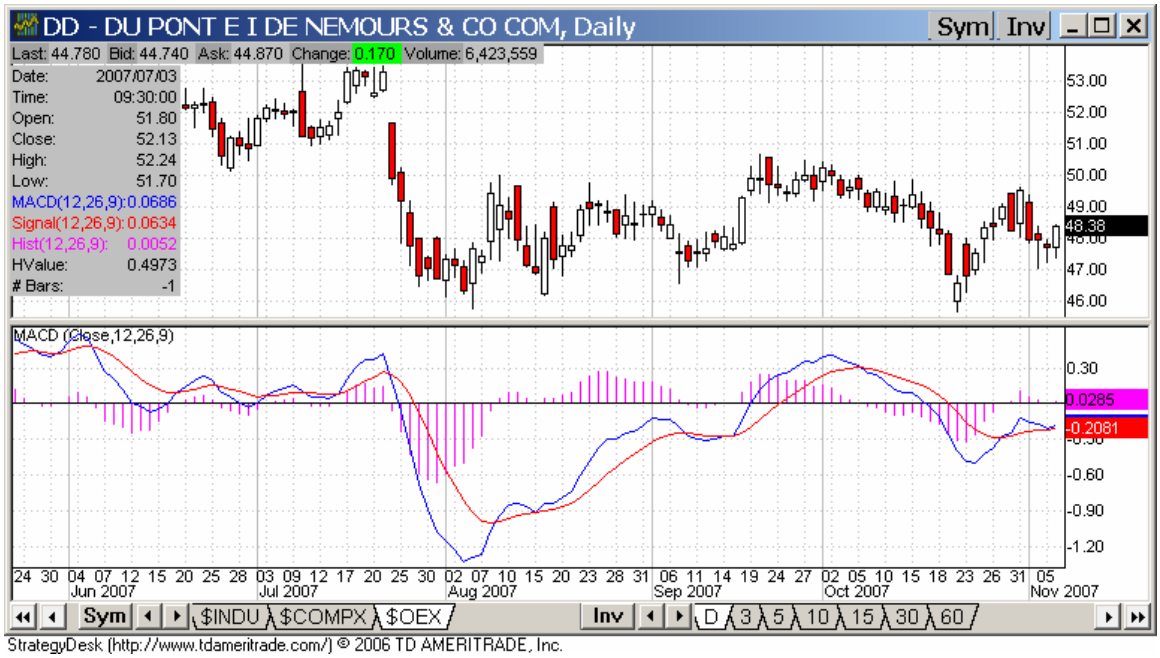

Figure 16. MACD Histogram

The MACD is a rate of change indicator. If the MACD histogram is positive and rising, it means that the gap between the 12-day EMA and the 26-day EMA is widening. This widening implies that positive momentum is increasing pointing to a bullish run for the stock. The converse is also true of declining and negative MACD indicates bearish runs.

The two common bullish signals are moving average crossovers and centerline crossovers. This happens when the MACD breaks above the 9-day EMA and when the MACD breaks into positive territory above the zero line respectively. The same applies for bearish signals but in the opposite directions. The biggest advantage for utilizing the histogram is a visualization of the growing momentum in the MACD spread (Murphy, 1999).

StochRSI

StochRSI is an oscillating indicator that measures the level of RSI relative to its range over the user-defined period. The oscillator may fluctuate between 0 and 1. Tushar Chande and Stanley Kroll developed the StochRSI in order to combat one prevalent shortcoming of the standard RSI—often times the RSI may register between .20 and .80 for extended times but never reach true oversold and overbought levels respectively. The two traders found that simply obeying the foundational tenets of RSI may leave the trader with very few pure trades based upon the fundamentals of standard RSI.

StochRSI = RSI(n) – RSI Lowest Low (n) / RSI Highest High(n) – RSI Lowest Low(n)

The StochRSI is a merging of the standard stochastic formula with RSI instead of price actions. The new reading of StochRSI implies that when the RSI records a new low for the period, the StochRSI will read zero. Accordingly, when the RSI registers a new high for the period, StochRSI will read 1.00.

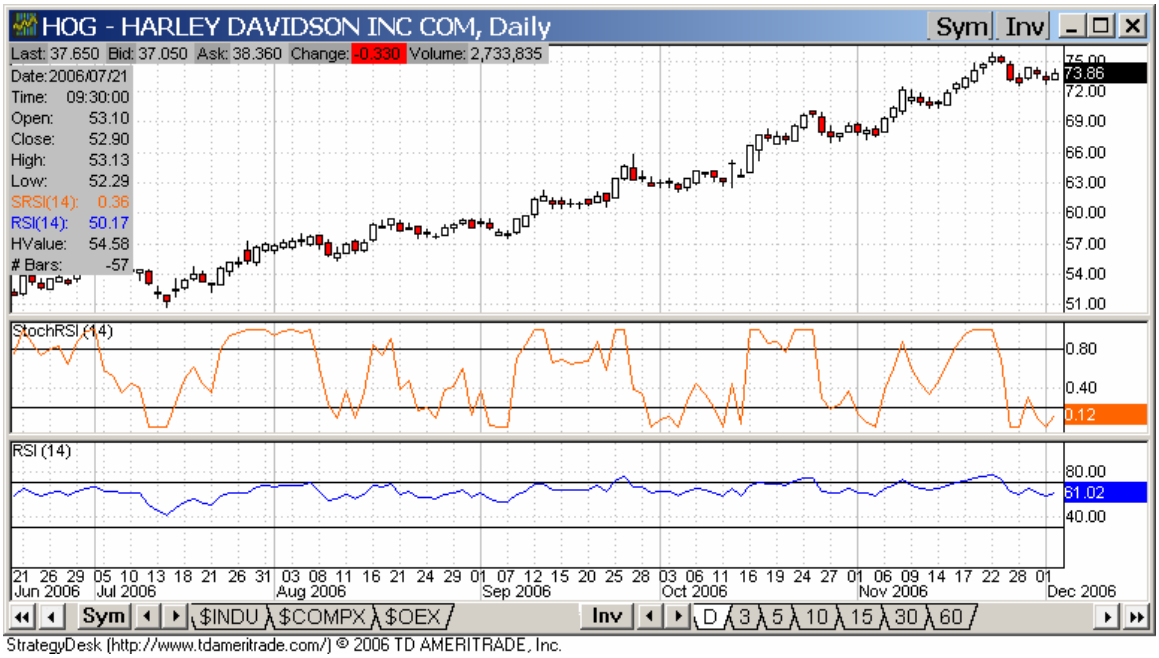

Figure 17. StochRSI

Therefore, a StochRSI of .30 translates into that the current RSI is 30% higher than the lowest RSI and 70% lower than the highest RSI reading for the period. The trading strategies for the StochRSI mimic those of the standard RSI. Accordingly, buy and sell signals are triggered at the 0.20 and 0.80 limits. Traders often wait until the StochRSI crosses one of these limits and then proceed in the same direction pass the 0.50 mark in order to reduce false signals.

Commodity Channel Index (CCI)

Originally developed by Donald Lambert to identify cyclical movements in commodities, the CCI has started to be used also indicate movements in equities. Lambert's underlying assumption was that commodities moved in cycles (Kirkpatrick & Dahlquist, 2007). The CCI calculation is four fold and includes finding the typical price (akin to the average price), taking a period-long simple moving average of the true price, calculating the mean deviation of the typical price and the true price SMA, and apply a constant (Lambert utilized a constant of 0.15). Lambert utilized this constant in order to keep the majority (70-80%) of CCI values fall between -100 and +100.

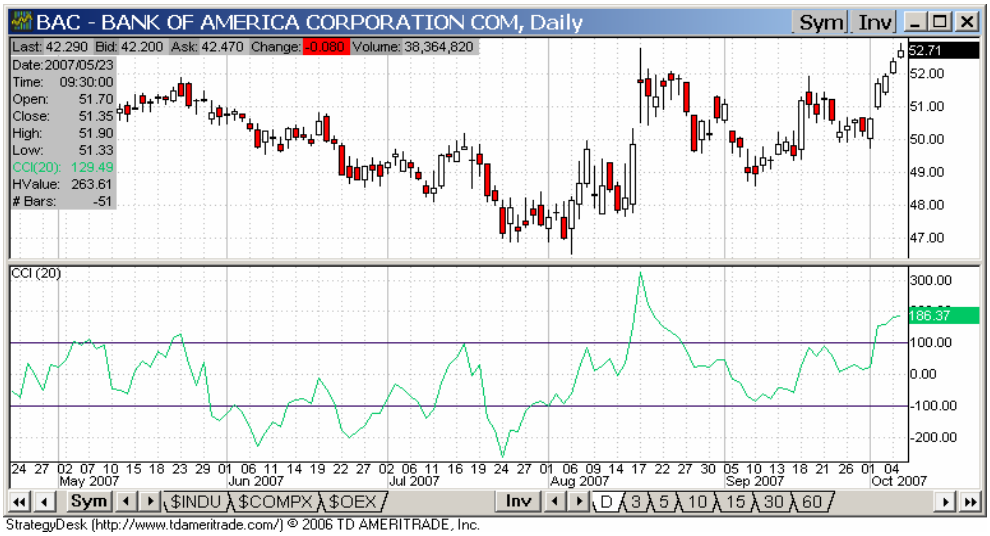

Figure 18. Commodity Channel Index

Lambert recommended utilizing movements above +100 and below -100 to signal buying and selling points. Since Lambert applied a constant factor that empirically placed the CCI between these values approximately 70-80% of the time, any movements above these values should be empirically 20-30% of the time. The CCI can be used for both long and short positions with the thresholds for entering and closing positions being +100 and -100 respectively (Kirkpatrick & Dahlquist, 2007). Traders today use CCI as another oscillator to determine levels of overbought and oversold, akin to RSI (Murphy, 1999).

Money Flow Index

The Money Flow Index (MFI) is another momentum indicator (Kirkpatrick & Dahlquist, 2007). The MFI is similar to the RSI but is more volume-weighted. The MFI is measured between 0 and 100 and commonly uses a 14-day period. The MFI uses a ratio of positive and negative money flow.

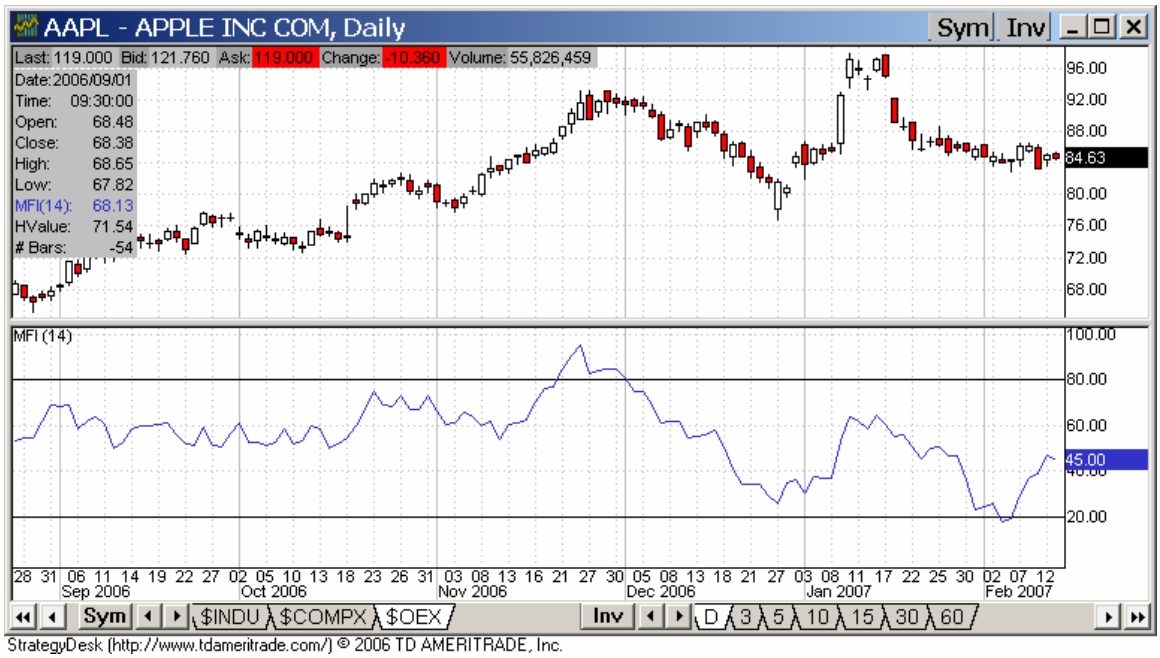

Figure 19. Money Flow Index (MFI)

These ratios are found by the following:

Typical Price = [(Day High + Day Low + Day Close) / 3]

Money Flow = (Typical Price) x (Volume)

Money flow is considered positive if the typical price is greater today than yesterday. Conversely, money flow is considered negative if the typical price is less today than yesterday. The totals for both positive and negative are averaged over a 14-day period and are input in the equation:

Money Ratio = (Aggregate Average Positive Money Flow / Aggregate Average Negative Money Flow)

Money Flow Index = 100 – [100 / (1 + Money Ratio)] (Kirkpatrick & Dahlquist, 2007)

Similar trading strategies are implemented with the MFI as with the RSI. Accordingly, a stock is considered overbought if the MFI reaches above 80 and oversold if below 20.

Kester Moving Average System

In his book, Quantitative Trading Strategies, Kester (2003) incorporates the popular moving average crossover system with a twist, in order to alleviate some of the whipsaws associated with intermittent market volatility. His proposed strategy uses the moving average of daily highs and lows, as compared to the traditional closing values. Buy signals are signaled when the price closes above the SMA of highs for the previous 20 periods; while sell signals are issued when the price crosses below the SMA of lows for the previous 20 periods. Also, the moving averages need to be higher or lower than their respective signals 20 periods ago for the signals to be triggered (Kester, 2003).

Results

Below is a comparison of the various strategies described in this paper.

Base Strategy	Difference vs. Buy & Hold
DI Crossover	(866.33)
CCI crosses -100/100	(935.20)
Kester Moving Average	(1,050.01)
StochRSI crosses .2/.8	(1,053.11)
RSI crosses 30 and 70	(1,094.74)
Money Flow Index crosses 20 and 80 (daily)	(1,118.33)
MACD crosses 0 (Daily)	(1,142.32)
Parabolic SAR (daily)	(1,151.13)
Aroon Oscillator crosses 0 (daily)	(1,209.36)
Ultimate Oscillator crosses 30 and 70	(1,244.60)
MACD Histogram crosses 0 (daily)	(1,298.66)
Price crosses Exp. Moving Average (Daily)	(1,309.21)
Price crosses Moving Average (10 days)	(1,332.77)
Price crosses Moving Average (10 days)	(1,332.77)
Stochastic %K crosses %D	(1,500.24)
Price crosses MA Envelope with P&L stops (daily)	(1,528.84)
6 EMA/10 MA Crossover	(1,799.85)
Bollinger Breakout (Short Sell)	(2,528.22)

Figure 20. Results

This figure lists all of the strategies that were backtested. The second column, Difference vs. Buy & Hold, is the difference between the aggregate return (in percent gain) of the strategy less the respective buy and hold return over the five-year time frame. For example, the DI crossover had a aggregate return of 1,068.91% (summing all the percent gains for each stock in the DJIA), less the buy and hold return of 1935.24% (the sum of all the buy and hold return for each DJIA stock) resulting in a difference of –866.33, indicating that the DI crossover was not as profitable as the buy and hold strategy.

The data clearly shows that a wide variety of traditional technical strategies failed to beat the broad market (i.e., buy and hold strategy) over the five-year period (1/1/2003 to 12/31/2007). However, many strategies execute many profitable trades. Moreover, only one strategy was overall unprofitable—the Bollinger Breakout strategy. Otherwise, all of the tested strategies were profitable (i.e., the strategies did not lose money over the time frame). As the above figure shows is that compared to a buy-and-hold strategy, those touted technical strategies performed dismally.

On a statistical breakdown, the mean gain per trade of all the strategies was 1.52%. Thousands of trades were made throughout the trading time frame and the fact that the mean was positive further indicates that the strategies as a whole were profitable.

The highest mean was 6.61, which was for the RSI strategy. The lowest mean per trade was –1.31 from the Bollinger Breakout strategy.

While conducting several thousands trades over a long-period of time, as is the goal with general technical strategies and day trading, the dispersion of variation relative to the means plays an important rule in gauging the efficacy of the strategy. For example, if the mean gain per trade of a strategy is 5%, one may immediately think that is an absolute gem of a strategy and implement it. However, if the variation of returns (i.e., the frequency of returns around the mean) fluctuate greatly or are not a standard normal distribution, the trader could run out of capital before he is able to reap any financial gain. Continuing with the above strategy of a 5% mean return with an illustrative standard deviation of 10 units [percent in this case] with a normal distribution would yield a return of –5 to +5 percent about 68% of the time. Further, the example strategy would produce returns of –10 to +10 about 95% of the time. Therefore, variation of return relative is paramount to the program traders[4]. The distinction of variation is important due to the fact that even if over a long period of time (five years in this paper) a strategy may be profitable, but if the variation is large enough, a trader could wipe out their trading funds before a strategy turned profitable over time. Therefore, technical traders need to focus on profitable strategies that have minimum variation of returns. The strategy that posted the smallest standard deviation was the stochastic strategy (2.22 standard deviation). However, the mean was marginally profitable (0.0546% per trade). In order to solve the low standard deviation with low

[4] Program traders are traders, who set technical or mathematical entry points via computer software and trade the same amounts per trade every time their trigger points are reached, regardless of the equity. They purport that by using such disciplined strategies they remove human error in the decision making process.

profit margin trade-off, evaluating the coefficient of variation[5] is warranted. Basically, the coefficient of variation measures the risk-benefit trade-off—the smaller the coefficient of variation, the better the risk-benefit trade-off. The strategy with the lowest coefficient of variation was the RSI strategy. The RSI strategy posted a mean gain of 6.61% per trade with a standard deviation of 10.61. Based on risk-benefit, this is the most efficient technical strategy tested. However, in terms of straight profit gains, buy and hold is still more profitable.

[5] Coefficient of variation is a measure of the standard deviation relative to the mean

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Appendix

EMA/SMA		Aroon		%Kabove%D		MACDcross		MACD Hist.		MAenvelope	
Mean	0.250986	Mean	0.529423778	Mean	0.054555	Mean	1.241049	Mean	0.406501	Mean	0.372807
Standard Error	0.086018	Standard Error	0.145019587	Standard Error	0.024898	Standard Error	0.325861	Standard Error	0.125486	Standard Error	0.119012
Median	-0.72	Median	-0.54	Median	-0.36	Median	-1.25	Median	-0.835	Median	-1.68
Mode	-1.41	Mode	-1.83	Mode	0	Mode	-2.26	Mode	-1.82	Mode	-1.83
Standard Deviation	4.052877	Standard Deviation	5.369642735	Standard Deviation	2.222927	Standard Deviation	8.237269	Standard Deviation	4.965816	Standard Deviation	3.929184
Sample Variance	16.42582	Sample Variance	28.8330631	Sample Variance	4.941403	Sample Variance	67.8526	Sample Variance	24.65933	Sample Variance	15.43848
Kurtosis	9.721123	Kurtosis	8.722187445	Kurtosis	10.6598	Kurtosis	11.63193	Kurtosis	9.091799	Kurtosis	0.114174
Skewness	1.902943	Skewness	2.03250709	Skewness	1.537092	Skewness	2.689518	Skewness	2.016071	Skewness	0.46794
Range	62.71	Range	61.64	Range	44.58	Range	80.94	Range	59.17	Range	34.86
Minimum	-26.78	Minimum	-14.62	Minimum	-25.78	Minimum	-14.37	Minimum	-16.65	Minimum	-14.09
Maximum	35.93	Maximum	47.02	Maximum	18.8	Maximum	66.57	Maximum	42.52	Maximum	20.77
Sum	557.19	Sum	725.84	Sum	434.86	Sum	793.03	Sum	636.58	Sum	406.36
Count	2220	Count	1371	Count	7971	Count	639	Count	1566	Count	1090
Coefficient of Var	1614.779	Coefficient of Var	1014.242834	Coefficient of Var	4074.633	Coefficient of Var	663.7346	Coefficient of var	1221.601	Coefficient of Var	1053.945
Confidence (95.0%)	0.168683	Confidence(95.0%)	0.284484665	Confidence(95.0%)	0.048807	Confidence(95.0%)	0.639891	Confidence(95.0%)	0.246138	Confidence(95.0%)	0.233518

Parabolic SAR		EMA		Bollinger BO		CCI		+/-DI		Ultimate	
Mean	0.438724	Mean	0.20574622	Mean	-1.350592	Mean	1.373681	Mean	0.611493	Mean	6.278455
Standard Error	0.111947	Standard Error	0.065636409	Standard Error	0.423904	Standard Error	0.215907	Standard Error	0.115735	Standard Error	1.295643
Median	-0.55	Median	-0.645	Median	-0.14	Median	1.48	Median	-0.58	Median	5.7
Mode	-2.08	Mode	-1.25	Mode	-1.35	Mode	0.17	Mode	-0.56	Mode	0
Standard Deviation	4.732315	Standard Deviation	3.620132067	Standard Deviation	8.881771	Standard Deviation	5.825494	Standard Deviation	4.838755	Standard Deviation	13.58882
Sample Variance	22.3948	Sample Variance	13.10535618	Sample Variance	78.88586	Sample Variance	33.93638	Sample Variance	23.41355	Sample Variance	184.6559
Kurtosis	5.878216	Kurtosis	25.34688949	Kurtosis	3.208993	Kurtosis	6.276794	Kurtosis	19.68246	Kurtosis	5.637971
Skewness	1.27838	Skewness	3.366939212	Skewness	-1.273299	Skewness	-0.886366	Skewness	3.439264	Skewness	0.529059
Range	61.87	Range	76.58	Range	65.85	Range	62.76	Range	63.58	Range	112.75
Minimum	-26.54	Minimum	-26.54	Minimum	-47.31	Minimum	-38.18	Minimum	-13.6	Minimum	-40.74
Maximum	35.33	Maximum	50.04	Maximum	18.54	Maximum	24.58	Maximum	49.98	Maximum	72.01
Sum	784	Sum	625.88	Sum	-592.91	Sum	1000.04	Sum	1068.89	Sum	690.63
Count	1787	Count	3042	Count	439	Count	728	Count	1748	Count	110
Coefficient of Var	1078.654	Coefficient of Var	1759.513285	Coefficient of Var	-657.6205	Coefficient of Var	424.079	Coefficient of Var	791.3016	Coefficient of Var	216.4357
Confidence(95.0%)	0.21956	Confidence(95.0%)	0.128696145	Confidence(95.0%)	0.833139	Confidence(95.0%)	0.423876	Confidence(95.0%)	0.226993	Confidence(95.0%)	2.56792

RSI		10 day SMA	
Mean	6.618661	Mean	0.175544872
Standard Error	0.941129	Standard Error	0.056353953
Median	7.55	Median	-0.65
Mode	11.74	Mode	-0.68
Standard Deviation	10.60599	Standard Deviation	3.301399047
Sample Variance	112.4869	Sample Variance	10.89923567
Kurtosis	3.036161	Kurtosis	15.05621968
Skewness	-1.086692	Skewness	2.253328758
Range	70.99	Range	63.29
Minimum	-36.38	Minimum	-26.54
Maximum	34.61	Maximum	36.75
Sum	840.57	Sum	602.47
Count	127	Count	3432
Coefficient of Var	160.2437	Coefficient of Var	1880.658212
Confidence(95.0%)	1.862466	Confidence(95.0%)	0.110490763

	HIGH		LOW	
Mean	6.61866	RSI	-1.3506	Bollinger BO
Standard Error	1.29564	Ultimate	0.0249	%Kabove%D
Median	7.55	RSI	-1.68	Maenvelope
Mode	11.74	RSI	-2.26	MACDcross
Standard Deviation	13.5888	Ultimate	2.22293	%Kabove%D
Sample Variance	184.656	Ultimate	4.9414	%Kabove%D
Kurtosis	25.3469	EMA	0.11417	Maenvelope
Skewness	3.43926	+/-DI	-1.2733	Bollinger BO
Range	112.75	Ultimate	34.86	Maenvelope
Minimum	-13.6	+/-DI	-47.31	Bollinger BO
Maximum	72.01	Ultimate	18.54	Ultimate
Sum	1068.89	+/-DI	-592.91	Bollinger BO
Count	7971	%Kabove%D	110	Ultimate
Coefficient of Var	4074.63		160.244	RSI
Confidence(95.0%)	2.56792	Ultimate	0.04881	%Kabove%D

Symbol	Strategy	Profit-Loss ($)	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	10 Day MA	3,875.92	4.23	27.43	(23.20)	28	56	45.02
AA	11 Day MA	65,621.73	65.62	55.20	10.42	37	61	52.58
AIG	12 Day MA	35,530.94	35.54	(3.32)	38.86	38	65	51.32
AXP	13 Day MA	(16,242.12)	(16.24)	61.87	(78.11)	39	84	54.61
BA	14 Day MA	57,656.59	57.67	158.15	(100.48)	32	79	55.41
C	15 Day MA	1,068.83	1.07	(19.01)	20.08	34	77	52.79
CAT	16 Day MA	91,327.46	91.34	203.92	(112.58)	38	68	57.23
DD	17 Day MA	16,546.92	16.55	1.50	15.05	35	73	53.12
DIS	18 Day MA	5,480.53	5.48	87.02	(81.54)	39	80	56.47
GE	19 Day MA	27,254.81	27.26	45.49	(18.23)	37	77	50.99
GM	20 Day MA	61,268.06	61.27	(36.10)	97.37	29	70	46.94
HD	21 Day MA	(11,044.88)	(11.04)	8.28	(19.32)	33	78	50.35
HON	22 Day MA	40,093.47	40.10	146.48	(106.38)	33	75	54.59
HPQ	23 Day MA	(14,650.98)	(14.66)	177.36	(192.02)	39	87	57.63
IBM	24 Day MA	22,874.95	22.88	34.17	(11.29)	33	76	52.65
INTC	25 Day MA	17,859.03	17.87	59.74	(41.87)	31	82	48.52
JNJ	26 Day MA	(14,893.09)	(14.90)	20.55	(35.45)	29	91	50.37
JPM	27 Day MA	32,632.56	32.63	71.58	(38.95)	32	75	56.31
KO	28 Day MA	45,085.44	45.10	36.83	8.27	36	62	54.32
MCD	29 Day MA	57,246.47	57.25	255.95	(198.70)	43	62	59.58
MMM	30 Day MA	19,110.42	19.13	33.05	(13.92)	38	72	53.06
MO	31 Day MA	67,222.28	67.23	87.31	(20.08)	38	66	59.42
MRK	32 Day MA	(24,523.32)	(24.54)	(0.24)	(24.30)	36	74	52.42
MSFT	33 Day MA	24,897.19	24.90	32.54	(7.64)	35	68	51.16
PFE	34 Day MA	(27,609.20)	(27.61)	(27.91)	0.30	30	76	46.28
PG	35 Day MA	(5,007.19)	(5.01)	67.22	(72.23)	38	85	57.52
T	36 Day MA	5,019.11	5.02	43.76	(38.74)	36	81	50.39
UTX	37 Day MA	10,678.88	10.68	141.41	(130.73)	37	89	57.29
VZ	38 Day MA	279.70	0.28	8.76	(8.48)	39	79	51.64
WMT	39 Day MA	(10,395.40)	(10.40)	(7.89)	(2.51)	31	78	47.61
XOM	40 Day MA	17,768.11	17.77	164.14	(146.37)	37	85	58.82

Symbol	Strategy	Profit-Loss ($)	Profit-Loss	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	6 EMA/10 I	13,810.74	15.17	27.43	(12.26)	6.00	5.00	26.23
AA	6 EMA/10 I	14,324.77	14.33	55.20	(40.87)	7.00	3.00	17.20
AIG	6 EMA/10 I	(4,495.83)	(4.50)	(3.32)	(1.18)	7.00	9.00	21.96
AXP	6 EMA/10 I	(9,664.37)	(9.66)	61.87	(71.53)	6.00	6.00	20.04
BA	6 EMA/10 I	11,032.57	11.04	158.15	(147.11)	5.00	5.00	16.60
C	6 EMA/10 I	(30,042.82)	(30.06)	(19.01)	(11.05)	7.00	8.00	24.21
CAT	6 EMA/10 I	(33,020.14)	(33.05)	203.92	(236.97)	3.00	5.00	14.24
DD	6 EMA/10 I	(5,036.99)	(5.04)	1.50	(6.54)	7.00	5.00	23.49
DIS	6 EMA/10 I	12,833.85	12.84	87.02	(74.18)	6.00	1.00	11.11
GE	6 EMA/10 I	11,908.30	11.91	45.49	(33.58)	6.00	8.00	23.71
GM	6 EMA/10 I	(9,744.73)	(9.75)	(36.10)	26.35	7.00	3.00	18.95
HD	6 EMA/10 I	(21,062.85)	(21.07)	8.28	(29.35)	5.00	7.00	19.21
HON	6 EMA/10 I	28,652.08	28.65	146.48	(117.83)	8.00	5.00	21.53
HPQ	6 EMA/10 I	13,361.29	13.36	177.36	(164.00)	8.00	4.00	18.35
IBM	6 EMA/10 I	(916.43)	(0.92)	34.17	(35.09)	5.00	8.00	19.60
INTC	6 EMA/10 I	(1,025.34)	(1.03)	59.74	(60.77)	5.00	5.00	21.75
JNJ	6 EMA/10 I	6,842.46	6.84	20.55	(13.71)	4.00	6.00	16.43
JPM	6 EMA/10 I	(17,660.10)	(17.66)	71.58	(89.24)	6.00	8.00	23.66
KO	6 EMA/10 I	6,659.39	6.66	36.83	(30.17)	6.00	5.00	14.67
MCD	6 EMA/10 I	20,727.61	20.73	255.95	(235.22)	6.00	5.00	17.85
MMM	6 EMA/10 I	6,868.80	6.87	33.05	(26.18)	7.00	5.00	15.88
MO	6 EMA/10 I	15,008.01	15.01	87.31	(72.30)	7.00	6.00	21.80
MRK	6 EMA/10 I	13,148.47	13.15	(0.24)	13.39	3.00	4.00	18.72
MSFT	6 EMA/10 I	(7,479.79)	(7.48)	32.54	(40.02)	7.00	8.00	12.32
PFE	6 EMA/10 I	(4,667.12)	(4.67)	(27.91)	23.24	6.00	5.00	17.75
PG	6 EMA/10 I	14,008.72	14.01	67.22	(53.21)	8.00	6.00	17.96
T	6 EMA/10 I	21,086.09	21.09	43.76	(22.67)	8.00	4.00	11.34
UTX	6 EMA/10 I	23,178.37	23.19	141.41	(118.22)	5.00	6.00	18.78
VZ	6 EMA/10 I	30,882.74	30.89	8.76	22.13	6.00	6.00	24.48
WMT	6 EMA/10 I	8,030.40	8.03	(7.89)	15.92	5.00	6.00	13.41
XOM	6 EMA/10 I	6,508.45	6.51	164.14	(157.63)	6.00	5.00	19.22

Symbol	Strategy	Profit-Loss ($)	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	15 EMA	2,781.86	2.96	27.43	(24.47)	27.00	47.00	45.57
AA	15 EMA	40,073.93	40.07	55.20	(15.13)	29.00	61.00	53.18
AIG	15 EMA	49,445.33	49.46	(3.32)	52.78	26.00	53.00	53.83
AXP	15 EMA	(11,434.36)	(11.44)	61.87	(73.31)	29.00	78.00	57.18
BA	15 EMA	61,258.80	61.27	158.15	(96.88)	30.00	57.00	60.02
C	15 EMA	109.59	0.11	(19.01)	19.12	32.00	68.00	54.98
CAT	15 EMA	86,718.07	86.75	203.92	(117.17)	28.00	58.00	59.31
DD	15 EMA	14,859.69	14.86	1.50	13.36	26.00	67.00	52.25
DIS	15 EMA	12,167.82	12.17	87.02	(74.85)	29.00	69.00	59.92
GE	15 EMA	27,957.70	27.96	45.49	(17.53)	36.00	77.00	53.51
GM	15 EMA	44,917.21	44.92	(36.10)	81.02	23.00	57.00	47.98
HD	15 EMA	21,671.90	21.68	8.28	13.40	25.00	61.00	50.34
HON	15 EMA	52,239.13	52.24	146.48	(94.24)	33.00	63.00	57.28
HPQ	15 EMA	(4,631.65)	(4.64)	177.36	(182.00)	36.00	74.00	59.65
IBM	15 EMA	10,217.39	10.22	34.17	(23.95)	27.00	70.00	52.54
INTC	15 EMA	42,489.98	42.50	59.74	(17.24)	28.00	62.00	49.63
JNJ	15 EMA	(4,774.37)	(4.78)	20.55	(25.33)	26.00	79.00	51.49
JPM	15 EMA	25,915.65	25.92	71.58	(45.66)	25.00	83.00	56.73
KO	15 EMA	26,304.09	26.31	36.83	(10.52)	31.00	69.00	57.56
MCD	15 EMA	66,223.81	66.23	255.95	(189.72)	32.00	68.00	64.07
MMM	15 EMA	8,471.89	8.48	33.05	(24.57)	25.00	72.00	57.34
MO	15 EMA	69,045.44	69.06	87.31	(18.25)	27.00	58.00	61.24
MRK	15 EMA	925.92	0.92	(0.24)	1.16	29.00	71.00	54.18
MSFT	15 EMA	(7,971.65)	(7.97)	32.54	(40.51)	23.00	79.00	51.60
PFE	15 EMA	(29,830.49)	(29.83)	(27.91)	(1.92)	23.00	74.00	46.77
PG	15 EMA	(33.06)	(0.03)	67.22	(67.25)	30.00	72.00	62.22
T	15 EMA	5,405.28	5.40	43.76	(38.36)	29.00	72.00	53.89
UTX	15 EMA	20,607.41	20.61	141.41	(120.80)	32.00	75.00	61.23
VZ	15 EMA	1,039.78	1.04	8.76	(7.72)	30.00	77.00	53.41
WMT	15 EMA	(20,664.62)	(20.67)	(7.89)	(12.78)	28.00	92.00	45.63
XOM	15 EMA	14,255.04	14.25	164.14	(149.89)	31.00	84.00	63.59

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
DD	Ultimate Oscillator (	(389.03)	(0.39)	1.50	(1.89)	1.00	1.00	29.79
AA	Ultimate Oscillator (	(21,692.54)	(21.70)	55.20	(76.90)	0.00	2.00	25.63
XOM	Ultimate Oscillator (	46,136.28	46.15	164.14	(117.99)	2.00	0.00	25.08
CAT	Ultimate Oscillator (	17,306.73	17.31	203.92	(186.61)	2.00	1.00	21.41
MRK	Ultimate Oscillator (	(26,587.27)	(26.59)	(0.24)	(26.35)	2.00	1.00	40.85
MO	Ultimate Oscillator (	75,833.94	75.84	87.31	(11.47)	4.00	0.00	37.57
JNJ	Ultimate Oscillator (	32,659.48	32.66	20.55	12.11	2.00	1.00	55.10
MSFT	Ultimate Oscillator (	63,016.57	63.03	32.54	30.49	5.00	3.00	53.22
JPM	Ultimate Oscillator (	76,818.23	76.82	71.58	5.24	2.00	1.00	29.57
HON	Ultimate Oscillator (	334.29	0.34	146.48	(146.14)	2.00	2.00	11.72
VZ	Ultimate Oscillator (	15,607.35	15.61	8.76	6.85	2.00	1.00	38.44
UTX	Ultimate Oscillator (	17,390.25	17.40	141.41	(124.01)	3.00	0.00	17.85
KO	Ultimate Oscillator (	29,209.45	29.21	36.83	(7.62)	3.00	0.00	56.24
INTC	Ultimate Oscillator (	31,623.58	31.63	59.74	(28.11)	4.00	2.00	36.20
HPQ	Ultimate Oscillator (	34,845.88	34.85	177.36	(142.51)	3.00	0.00	25.25
GM	Ultimate Oscillator (	(16,988.02)	(16.98)	(36.10)	19.12	3.00	2.00	36.36
AXP	Ultimate Oscillator (	26,220.02	26.23	61.87	(35.64)	3.00	1.00	31.32
$INDU	Ultimate Oscillator (	8,401.14	9.05	27.43	(18.38)	3.00	1.00	29.46
PG	Ultimate Oscillator (	17,789.96	17.80	67.22	(49.42)	3.00	0.00	11.28
WMT	Ultimate Oscillator (	12,404.14	12.40	(7.89)	20.29	3.00	1.00	63.41
MMM	Ultimate Oscillator (	37,148.19	37.16	33.05	4.11	4.00	0.00	54.87
MCD	Ultimate Oscillator (	39,319.67	39.33	255.95	(216.62)	3.00	0.00	17.58
DIS	Ultimate Oscillator (	40,746.77	40.75	87.02	(46.27)	5.00	0.00	34.23
PFE	Ultimate Oscillator (	(9,913.50)	(9.91)	(27.91)	18.00	2.00	1.00	57.34
AIG	Ultimate Oscillator (	82,693.73	82.72	(3.32)	86.04	4.00	1.00	36.59
HD	Ultimate Oscillator (	3,948.48	3.95	8.28	(4.33)	1.00	0.00	5.75
GE	Ultimate Oscillator (	25,471.15	25.47	45.49	(20.02)	4.00	2.00	49.45
T	Ultimate Oscillator (	780.02	0.78	43.76	(42.98)	1.00	1.00	13.69
IBM	Ultimate Oscillator (	(8,991.45)	(8.99)	34.17	(43.16)	1.00	2.00	26.99
C	Ultimate Oscillator (	15,009.38	15.01	(19.01)	34.02	2.00	2.00	42.88
BA	Ultimate Oscillator (	23,696.01	23.70	158.15	(134.45)	2.00	0.00	14.57
Total					(1,244.60)			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
DD	Aroon Oscillator (	29,508.00	29.51	1.50	28.01	23.00	24.00	50.99
AA	Aroon Oscillator (	(3,790.29)	(3.79)	55.20	(58.99)	17.00	26.00	52.37
XOM	Aroon Oscillator (	31,896.33	31.91	164.14	(132.23)	19.00	24.00	60.78
CAT	Aroon Oscillator (	55,661.68	55.67	203.92	(148.25)	22.00	24.00	56.24
MRK	Aroon Oscillator (	64,675.85	64.68	(0.24)	64.92	18.00	21.00	52.24
MO	Aroon Oscillator (	45,381.24	45.38	87.31	(41.93)	19.00	24.00	62.60
JNJ	Aroon Oscillator (	7,144.85	7.15	20.55	(13.40)	18.00	25.00	53.78
MSFT	Aroon Oscillator (	41,684.61	41.69	32.54	9.15	16.00	23.00	52.31
JPM	Aroon Oscillator (	25,910.97	25.91	71.58	(45.67)	18.00	31.00	55.36
HON	Aroon Oscillator (	7,743.50	7.74	146.48	(138.74)	19.00	32.00	55.31
VZ	Aroon Oscillator (	8,647.34	8.65	8.76	(0.11)	19.00	29.00	55.20
UTX	Aroon Oscillator (	14,288.20	14.29	141.41	(127.12)	19.00	25.00	58.60
KO	Aroon Oscillator (	21,506.22	21.51	36.83	(15.32)	26.00	21.00	59.69
INTC	Aroon Oscillator (	33,426.97	33.43	59.74	(26.31)	19.00	25.00	50.06
HPQ	Aroon Oscillator (	24,127.04	24.13	177.36	(153.23)	22.00	21.00	55.54
GM	Aroon Oscillator (	(9,856.51)	(9.85)	(36.10)	26.25	16.00	29.00	49.57
AXP	Aroon Oscillator (	(1,794.57)	(1.80)	61.87	(63.67)	26.00	24.00	58.00
$INDU	Aroon Oscillator (	7,711.73	8.69	27.43	(18.74)	11.00	18.00	44.80
PG	Aroon Oscillator (	10,718.60	10.72	67.22	(56.50)	20.00	25.00	59.86
WMT	Aroon Oscillator (	(18,342.83)	(18.36)	(7.89)	(10.47)	14.00	30.00	50.00
MMM	Aroon Oscillator (	32,035.44	32.05	33.05	(1.00)	23.00	16.00	59.09
MCD	Aroon Oscillator (	65,927.55	65.94	255.95	(190.01)	18.00	20.00	62.71
DIS	Aroon Oscillator (	37,956.30	37.96	87.02	(49.06)	25.00	22.00	54.76
PFE	Aroon Oscillator (	(11,424.57)	(11.43)	(27.91)	16.48	11.00	29.00	48.41
AIG	Aroon Oscillator (	21,099.45	21.11	(3.32)	24.43	16.00	27.00	53.95
HD	Aroon Oscillator (	3,669.44	3.66	8.28	(4.62)	19.00	30.00	46.84
GE	Aroon Oscillator (	16,526.98	16.53	45.49	(28.96)	20.00	32.00	51.48
T	Aroon Oscillator (	17,768.61	17.77	43.76	(25.99)	22.00	24.00	47.10
IBM	Aroon Oscillator (	39,557.64	39.57	34.17	5.40	20.00	21.00	53.95
C	Aroon Oscillator (	3,652.96	3.66	(19.01)	22.67	20.00	27.00	53.68
BA	Aroon Oscillator (	101,770.24	101.80	158.15	(56.35)	28.00	13.00	55.37
Total					(1,209.36)			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
DD	MACD crosses (	19,740.28	19.75	1.50	18.25	8.00	12.00	52.75
AA	MACD crosses (	24,928.40	24.93	55.20	(30.27)	7.00	13.00	54.88
XOM	MACD crosses (	40,630.09	40.64	164.14	(123.50)	13.00	9.00	68.78
CAT	MACD crosses (	81,304.06	81.31	203.92	(122.61)	7.00	11.00	61.99
MRK	MACD crosses (	32,129.89	32.13	(0.24)	32.37	5.00	12.00	48.64
MO	MACD crosses (	23,059.07	23.07	87.31	(64.24)	6.00	16.00	53.79
JNJ	MACD crosses (	(9,132.49)	(9.13)	20.55	(29.68)	7.00	20.00	51.03
MSFT	MACD crosses (	(14,918.62)	(14.92)	32.54	(47.46)	7.00	15.00	49.19
JPM	MACD crosses (	36,170.12	36.18	71.58	(35.40)	9.00	13.00	57.06
HON	MACD crosses (	30,427.95	30.43	146.48	(116.05)	8.00	14.00	66.27
VZ	MACD crosses (	11,250.69	11.25	8.76	2.49	8.00	9.00	49.18
UTX	MACD crosses (	28,171.78	28.18	141.41	(113.23)	9.00	16.00	68.29
KO	MACD crosses (	8,969.20	8.97	36.83	(27.86)	9.00	10.00	50.16
INTC	MACD crosses (	71,388.28	71.40	59.74	11.66	8.00	10.00	53.61
HPQ	MACD crosses (	42,122.34	42.13	177.36	(135.23)	11.00	11.00	63.36
GM	MACD crosses (	6,303.35	6.30	(36.10)	42.40	6.00	16.00	47.60
AXP	MACD crosses (	23,762.75	23.76	61.87	(38.11)	8.00	14.00	61.56
$INDU	MACD crosses (	4,123.72	5.26	27.43	(22.17)	6.00	10.00	44.58
PG	MACD crosses (	24,288.73	24.30	67.22	(42.92)	6.00	7.00	60.46
WMT	MACD crosses (	(16,535.96)	(16.54)	(7.89)	(8.65)	6.00	16.00	43.48
MMM	MACD crosses (	35,879.96	35.89	33.05	2.84	9.00	11.00	57.50
MCD	MACD crosses (	93,085.68	93.09	255.95	(162.86)	8.00	8.00	64.24
DIS	MACD crosses (	1,004.60	1.01	87.02	(86.01)	7.00	17.00	60.84
PFE	MACD crosses (	(6,338.38)	(6.34)	(27.91)	21.57	8.00	14.00	42.72
AIG	MACD crosses (	2,631.67	2.63	(3.32)	5.95	8.00	13.00	53.40
HD	MACD crosses (	33,442.73	33.45	8.28	25.17	7.00	12.00	54.93
GE	MACD crosses (	33,794.55	33.80	45.49	(11.69)	12.00	14.00	56.19
T	MACD crosses (	24,340.86	24.34	43.76	(19.42)	8.00	15.00	54.38
IBM	MACD crosses (	12,038.66	12.03	34.17	(22.14)	7.00	12.00	51.98
C	MACD crosses (	21,451.98	21.45	(19.01)	40.46	10.00	11.00	56.68
BA	MACD crosses (	72,144.04	72.17	158.15	(85.98)	9.00	10.00	67.14
Total					(1,142.32)			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	MACD Histogram (	12,799.52	13.75	27.43	(13.68)	16.00	21.00	36.92
AA	MACD Histogram (	46,076.42	46.08	55.20	(9.12)	22.00	27.00	50.88
AIG	MACD Histogram (	25,608.68	25.61	(3.32)	28.93	18.00	29.00	48.90
AXP	MACD Histogram (	(16,313.35)	(16.31)	61.87	(78.18)	23.00	28.00	50.99
BA	MACD Histogram (	67,015.55	67.03	158.15	(91.12)	25.00	26.00	49.01
C	MACD Histogram (	28,489.62	28.50	(19.01)	47.51	15.00	29.00	50.05
CAT	MACD Histogram (	53,251.99	53.26	203.92	(150.66)	23.00	31.00	50.82
DD	MACD Histogram (	8,559.14	8.56	1.50	7.06	20.00	31.00	53.68
DIS	MACD Histogram (	22,394.60	22.40	87.02	(64.62)	22.00	23.00	49.17
GE	MACD Histogram (	25,395.16	25.40	45.49	(20.09)	20.00	34.00	50.27
GM	MACD Histogram (	23,478.50	23.48	(36.10)	59.58	17.00	32.00	49.13
HD	MACD Histogram (	(39,010.88)	(39.02)	8.28	(47.30)	15.00	46.00	49.84
HON	MACD Histogram (	55,181.58	55.19	146.48	(91.29)	19.00	28.00	47.59
HPQ	MACD Histogram (	(12,142.93)	(12.16)	177.36	(189.52)	17.00	39.00	48.14
IBM	MACD Histogram (	16,840.94	16.85	34.17	(17.32)	17.00	31.00	49.12
INTC	MACD Histogram (	10,057.24	10.06	59.74	(49.68)	17.00	32.00	51.27
JNJ	MACD Histogram (	11,087.32	11.09	20.55	(9.46)	18.00	27.00	49.58
JPM	MACD Histogram (	15,335.58	15.34	71.58	(56.24)	16.00	39.00	47.69
KO	MACD Histogram (	22,502.24	22.51	36.83	(14.32)	21.00	30.00	51.32
MCD	MACD Histogram (	52,296.77	52.31	255.95	(203.64)	20.00	33.00	54.38
MMM	MACD Histogram (	28,792.36	28.81	33.05	(4.24)	19.00	29.00	53.12
MO	MACD Histogram (	78,872.30	78.88	87.31	(8.43)	21.00	25.00	52.29
MRK	MACD Histogram (	15,930.46	15.93	(0.24)	16.17	19.00	37.00	47.10
MSFT	MACD Histogram (	32,791.36	32.79	32.54	0.25	16.00	28.00	50.55
PFE	MACD Histogram (	(28,801.65)	(28.81)	(27.91)	(0.90)	16.00	31.00	46.33
PG	MACD Histogram (	(2,673.88)	(2.67)	67.22	(69.89)	23.00	39.00	48.75
T	MACD Histogram (	2,822.51	2.82	43.76	(40.94)	17.00	38.00	46.06
UTX	MACD Histogram (	27,497.45	27.51	141.41	(113.90)	24.00	32.00	50.77
VZ	MACD Histogram (	(9,313.21)	(9.32)	8.76	(18.08)	17.00	35.00	52.75
WMT	MACD Histogram (	11,191.95	11.19	(7.89)	19.08	15.00	30.00	50.77
XOM	MACD Histogram (	49,508.62	49.52	164.14	(114.62)	21.00	33.00	50.50
Total					(1,298.66)			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	StochRSI	20,054.27	20.85	27.43	(6.58)	24.00	11.00	36.63
AA	StochRSI	37,107.52	37.11	55.20	(18.09)	30.00	19.00	52.52
AIG	StochRSI	4,930.17	4.94	(3.32)	8.26	30.00	14.00	49.57
AXP	StochRSI	51,602.83	51.62	61.87	(10.25)	36.00	18.00	49.73
BA	StochRSI	13,563.86	13.57	158.15	(144.58)	26.00	15.00	52.24
C	StochRSI	(19,835.99)	(19.84)	(19.01)	(0.83)	29.00	17.00	47.81
CAT	StochRSI	132,003.92	132.04	203.92	(71.88)	37.00	14.00	54.33
DD	StochRSI	43,011.09	43.03	1.50	41.53	34.00	17.00	48.52
DIS	StochRSI	17,924.38	17.93	87.02	(69.09)	28.00	18.00	49.72
GE	StochRSI	18,681.58	18.68	45.49	(26.81)	27.00	21.00	50.71
GM	StochRSI	39,536.29	39.54	(36.10)	75.64	25.00	17.00	47.04
HD	StochRSI	15,373.97	15.37	8.28	7.09	30.00	21.00	49.29
HON	StochRSI	44,479.60	44.49	146.48	(101.99)	30.00	15.00	48.14
HPQ	StochRSI	73,374.52	73.39	177.36	(103.97)	33.00	18.00	57.06
IBM	StochRSI	19,166.09	19.16	34.17	(15.01)	25.00	21.00	53.29
INTC	StochRSI	12,938.27	12.94	59.74	(46.80)	27.00	24.00	54.65
JNJ	StochRSI	(3,221.56)	(3.22)	20.55	(23.77)	27.00	18.00	48.52
JPM	StochRSI	52,307.29	52.31	71.58	(19.27)	35.00	17.00	50.27
KO	StochRSI	49,665.64	49.68	36.83	12.85	33.00	16.00	47.21
MCD	StochRSI	77,215.80	77.23	255.95	(178.72)	38.00	11.00	47.09
MMM	StochRSI	(11,128.90)	(11.13)	33.05	(44.18)	25.00	18.00	52.57
MO	StochRSI	43,532.54	43.55	87.31	(43.76)	33.00	15.00	52.57
MRK	StochRSI	(42.62)	(0.04)	(0.24)	0.20	27.00	17.00	56.30
MSFT	StochRSI	5,123.64	5.12	32.54	(27.42)	23.00	25.00	48.13
PFE	StochRSI	(10,979.85)	(10.98)	(27.91)	16.93	21.00	24.00	53.06
PG	StochRSI	23,421.36	23.43	67.22	(43.79)	37.00	17.00	48.80
T	StochRSI	17,058.30	17.06	43.76	(26.70)	31.00	19.00	59.85
UTX	StochRSI	43,543.54	43.55	141.41	(97.86)	35.00	17.00	49.01
VZ	StochRSI	22,137.63	22.14	8.76	13.38	39.00	12.00	49.89
WMT	StochRSI	20,201.72	20.21	(7.89)	28.10	25.00	21.00	48.46
XOM	StochRSI	28,389.69	28.40	164.14	(135.74)	31.00	17.00	53.07
Total					(1,053.11)			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	CCI crosses -	14,671.64	15.65	27.43	(11.78)	12.00	6.00	32.97
AA	CCI crosses -	46,508.73	46.52	55.20	(8.68)	17.00	8.00	48.80
AIG	CCI crosses -	4,532.00	4.54	(3.32)	7.86	16.00	10.00	47.20
AXP	CCI crosses -	28,993.23	29.00	61.87	(32.87)	16.00	8.00	41.46
BA	CCI crosses -	64,231.08	64.26	158.15	(93.89)	18.00	3.00	36.04
C	CCI crosses -	11,019.66	11.02	(19.01)	30.03	16.00	8.00	47.70
CAT	CCI crosses -	81,128.65	81.15	203.92	(122.77)	16.00	7.00	41.84
DD	CCI crosses -	(514.70)	(0.51)	1.50	(2.01)	12.00	11.00	49.89
DIS	CCI crosses -	76,614.23	76.62	87.02	(10.40)	20.00	5.00	45.89
GE	CCI crosses -	2,195.72	2.20	45.49	(43.29)	12.00	8.00	40.85
GM	CCI crosses -	40,622.15	40.63	(36.10)	76.73	13.00	7.00	46.71
HD	CCI crosses -	9,540.11	9.55	8.28	1.27	14.00	10.00	49.34
HON	CCI crosses -	76,557.75	76.57	146.48	(69.91)	23.00	6.00	51.15
HPQ	CCI crosses -	106,951.28	106.96	177.36	(70.40)	21.00	7.00	41.35
IBM	CCI crosses -	23,475.23	23.48	34.17	(10.69)	20.00	6.00	46.28
INTC	CCI crosses -	24,938.25	24.94	59.74	(34.80)	15.00	7.00	50.88
JNJ	CCI crosses -	9,941.40	9.94	20.55	(10.61)	15.00	9.00	50.99
JPM	CCI crosses -	10,313.68	10.31	71.58	(61.27)	12.00	6.00	41.35
KO	CCI crosses -	23,536.06	23.54	36.83	(13.29)	17.00	9.00	42.00
MCD	CCI crosses -	39,476.94	39.48	255.95	(216.47)	18.00	4.00	31.98
MMM	CCI crosses -	7,826.79	7.84	33.05	(25.21)	15.00	9.00	43.04
MO	CCI crosses -	72,865.90	72.87	87.31	(14.44)	18.00	5.00	37.51
MRK	CCI crosses -	(13,339.66)	(13.34)	(0.24)	(13.10)	12.00	9.00	49.29
MSFT	CCI crosses -	7,382.75	7.38	32.54	(25.16)	14.00	8.00	44.85
PFE	CCI crosses -	(13,652.39)	(13.65)	(27.91)	14.26	11.00	12.00	52.52
PG	CCI crosses -	27,387.16	27.40	67.22	(39.82)	19.00	6.00	36.96
T	CCI crosses -	60,102.07	60.11	43.76	16.35	19.00	8.00	52.18
UTX	CCI crosses -	49,161.94	49.18	141.41	(92.23)	16.00	6.00	38.38
VZ	CCI crosses -	13,363.29	13.36	8.76	4.60	15.00	8.00	48.03
WMT	CCI crosses -	23,396.70	23.40	(7.89)	31.29	18.00	8.00	44.25
XOM	CCI crosses -	69,620.27	69.64	164.14	(94.50)	22.00	2.00	43.21
Total					(935.20)			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	Money Flow Index	1,740.69	1.84	27.43	(25.59)	1.00	0.00	12.49
AA	Money Flow Index	45,413.81	45.42	55.20	(9.78)	4.00	2.00	40.64
AIG	Money Flow Index	76,576.76	76.60	(3.32)	79.92	5.00	1.00	50.44
AXP	Money Flow Index	50,377.65	50.39	61.87	(11.48)	6.00	0.00	37.68
BA	Money Flow Index	28,628.82	28.63	158.15	(129.52)	2.00	0.00	10.79
C	Money Flow Index	50,754.67	50.76	(19.01)	69.77	4.00	1.00	24.37
CAT	Money Flow Index	723.95	0.72	203.92	(203.20)	1.00	2.00	11.23
DD	Money Flow Index	38,392.81	38.40	1.50	36.90	4.00	1.00	32.26
DIS	Money Flow Index	25,228.62	25.23	87.02	(61.79)	3.00	1.00	25.96
GE	Money Flow Index	25,667.52	25.67	45.49	(19.82)	5.00	0.00	22.84
GM	Money Flow Index	(22,276.20)	(22.29)	(36.10)	13.81	0.00	1.00	67.85
HD	Money Flow Index	23,846.13	23.85	8.28	15.57	3.00	1.00	34.72
HON	Money Flow Index	63,910.20	63.93	146.48	(82.55)	4.00	0.00	27.44
HPQ	Money Flow Index	15,303.68	15.31	177.36	(162.05)	2.00	0.00	17.80
IBM	Money Flow Index	18,817.07	18.82	34.17	(15.35)	3.00	1.00	26.51
INTC	Money Flow Index	(27,840.12)	(27.84)	59.74	(87.58)	1.00	3.00	32.37
JNJ	Money Flow Index	15,592.07	15.60	20.55	(4.95)	5.00	1.00	28.70
JPM	Money Flow Index	12,649.39	12.65	71.58	(58.93)	3.00	1.00	28.97
KO	Money Flow Index	39,475.17	39.48	36.83	2.65	4.00	1.00	41.40
MCD	Money Flow Index	87,073.13	87.08	255.95	(168.87)	4.00	0.00	37.73
MMM	Money Flow Index	35,305.71	35.32	33.05	2.27	5.00	0.00	28.31
MO	Money Flow Index	26,724.54	26.73	87.31	(60.58)	4.00	1.00	32.69
MRK	Money Flow Index	(18,852.30)	(18.87)	(0.24)	(18.63)	2.00	1.00	57.45
MSFT	Money Flow Index	29,712.45	29.72	32.54	(2.82)	4.00	1.00	55.59
PFE	Money Flow Index	(3,554.38)	(3.55)	(27.91)	24.36	1.00	3.00	36.97
PG	Money Flow Index	8,730.36	8.73	67.22	(58.49)	1.00	1.00	23.17
T	Money Flow Index	60,940.72	60.95	43.76	17.19	5.00	0.00	58.21
UTX	Money Flow Index	53,952.75	53.97	141.41	(87.44)	4.00	0.00	56.74
VZ	Money Flow Index	11,176.62	11.18	8.76	2.42	4.00	1.00	57.01
WMT	Money Flow Index	4,659.22	4.66	(7.89)	12.55	2.00	1.00	48.47
XOM	Money Flow Index	37,813.15	37.82	164.14	(126.32)	3.00	0.00	18.95
Total					(1,118.33)			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
AA	Kester Moving Average	34,433.87	34.43	55.20	(20.77)	1.00	2.00	31.82
AXP	Kester Moving Average	41,099.83	41.11	61.87	(20.76)	2.00	4.00	76.18
$INDU	Kester Moving Average	(2,143.13)	(2.26)	27.43	(29.69)	1.00	2.00	40.14
AIG	Kester Moving Average	40,162.47	40.17	(3.32)	43.49	3.00	0.00	68.62
C	Kester Moving Average	(3,626.08)	(3.63)	(19.01)	15.38	3.00	3.00	48.47
BA	Kester Moving Average	94,442.50	94.46	158.15	(63.69)	3.00	0.00	49.29
CAT	Kester Moving Average	79,268.43	79.27	203.92	(124.65)	2.00	2.00	62.10
DD	Kester Moving Average	9,360.80	9.36	1.50	7.86	3.00	3.00	63.91
DIS	Kester Moving Average	42,525.12	42.53	87.02	(44.49)	4.00	3.00	43.70
GE	Kester Moving Average	48,186.91	48.19	45.49	2.70	5.00	4.00	71.63
GM	Kester Moving Average	(14,735.09)	(14.73)	(36.10)	21.37	2.00	3.00	66.21
HD	Kester Moving Average	(4,880.30)	(4.88)	8.28	(13.16)	3.00	2.00	19.82
HON	Kester Moving Average	70,373.59	70.38	146.48	(76.10)	4.00	2.00	54.05
HPQ	Kester Moving Average	48,416.43	48.43	177.36	(128.93)	4.00	4.00	44.91
IBM	Kester Moving Average	23,991.72	24.02	34.17	(10.15)	1.00	2.00	69.55
INTC	Kester Moving Average	(15,982.95)	(15.98)	59.74	(75.72)	1.00	2.00	34.56
JNJ	Kester Moving Average	(7,400.82)	(7.40)	20.55	(27.95)	1.00	5.00	69.17
JPM	Kester Moving Average	28,152.64	28.16	71.58	(43.42)	3.00	2.00	50.32
KO	Kester Moving Average	(12,406.32)	(12.41)	36.83	(49.24)	1.00	2.00	40.64
MCD	Kester Moving Average	64,780.00	64.79	255.95	(191.16)	6.00	1.00	56.41
MMM	Kester Moving Average	45,838.93	45.86	33.05	12.81	3.00	0.00	68.40
MO	Kester Moving Average	77,036.90	77.04	87.31	(10.27)	3.00	3.00	46.55
MRK	Kester Moving Average	(32,362.04)	(32.37)	(0.24)	(32.13)	1.00	5.00	47.75
MSFT	Kester Moving Average	1,388.77	1.39	32.54	(31.15)	3.00	5.00	26.40
PFE	Kester Moving Average	(6,642.12)	(6.64)	(27.91)	21.27	1.00	1.00	42.66
PG	Kester Moving Average	35,073.31	35.08	67.22	(32.14)	2.00	1.00	82.53
T	Kester Moving Average	60,835.50	60.85	43.76	17.09	4.00	3.00	71.63
UTX	Kester Moving Average	68,910.09	68.92	141.41	(72.49)	7.00	4.00	67.20
VZ	Kester Moving Average	(3,929.42)	(3.93)	8.76	(12.69)	1.00	3.00	39.21
WMT	Kester Moving Average	11,979.23	11.98	(7.89)	19.87	3.00	2.00	49.18
XOM	Kester Moving Average	63,016.81	63.04	164.14	(101.10)	3.00	1.00	64.90
Total					(1,050.01)			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	Bollinger Breakout	(49,276.00)	(3.81)	27.43	(31.24)	6	5	40.80
AA	Bollinger Breakout	938.00	19.48	55.20	(35.72)	9	7	56.36
AIG	Bollinger Breakout	(1,143.00)	(22.21)	(3.32)	(18.89)	5	7	49.40
AXP	Bollinger Breakout	94.63	(7.74)	61.87	(69.61)	8	8	58.93
BA	Bollinger Breakout	(2,705.00)	(67.91)	158.15	(226.06)	6	10	59.91
C	Bollinger Breakout	(370.00)	(12.57)	(19.01)	6.44	7	8	48.53
CAT	Bollinger Breakout	(2,656.50)	(70.30)	203.92	(274.22)	7	7	63.80
DD	Bollinger Breakout	(1,629.00)	(41.56)	1.50	(43.06)	5	6	48.85
DIS	Bollinger Breakout	578.00	25.61	87.02	(61.41)	15	5	48.80
GE	Bollinger Breakout	(1,071.00)	(38.58)	45.49	(84.07)	4	8	54.55
GM	Bollinger Breakout	(536.00)	(24.80)	(36.10)	11.30	7	7	47.38
HD	Bollinger Breakout	(561.00)	(33.32)	8.28	(41.60)	5	7	57.18
HON	Bollinger Breakout	(1,484.00)	(48.89)	146.48	(195.37)	6	6	52.90
HPQ	Bollinger Breakout	(634.00)	(10.94)	177.36	(188.30)	6	10	64.58
IBM	Bollinger Breakout	(4,418.00)	(51.02)	34.17	(85.19)	2	9	55.54
INTC	Bollinger Breakout	557.69	8.67	59.74	(51.07)	11	6	60.36
JNJ	Bollinger Breakout	733.00	12.41	20.55	(8.14)	8	9	58.05
JPM	Bollinger Breakout	(1,085.00)	(36.16)	71.58	(107.74)	7	6	58.16
KO	Bollinger Breakout	(787.00)	(15.79)	36.83	(52.62)	7	8	57.30
MCD	Bollinger Breakout	(862.00)	(51.64)	255.95	(307.59)	7	8	54.22
MMM	Bollinger Breakout	(629.00)	(12.93)	33.05	(45.98)	9	6	53.95
MO	Bollinger Breakout	(466.00)	(17.37)	87.31	(104.68)	11	7	53.95
MRK	Bollinger Breakout	(1,090.00)	(37.46)	(0.24)	(37.22)	5	8	48.35
MSFT	Bollinger Breakout	17.01	(4.64)	32.54	(37.18)	7	4	57.67
PFE	Bollinger Breakout	(41.00)	(5.86)	(27.91)	22.05	7	6	42.66
PG	Bollinger Breakout	(625.50)	(14.75)	67.22	(81.97)	5	6	60.63
T	Bollinger Breakout	488.00	10.23	43.76	(33.53)	8	7	47.32
UTX	Bollinger Breakout	(1,362.00)	(37.67)	141.41	(179.08)	5	10	61.06
VZ	Bollinger Breakout	1,047.00	23.20	8.76	14.44	6	8	37.57
WMT	Bollinger Breakout	1,067.00	18.97	(7.89)	26.86	10	5	52.96
XOM	Bollinger Breakout	(2,167.58)	(43.63)	164.14	(207.77)	6	8	63.14

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
AA	Kester Moving Average	34,433.87	34.43	55.20	(20.77)	1.00	2.00	31.82
AXP	Kester Moving Average	41,099.83	41.11	61.87	(20.76)	2.00	4.00	76.18
$INDU	Kester Moving Average	(2,143.13)	(2.26)	27.43	(29.69)	1.00	2.00	40.14
AIG	Kester Moving Average	40,162.47	40.17	(3.32)	43.49	3.00	0.00	68.62
C	Kester Moving Average	(3,626.08)	(3.63)	(19.01)	15.38	3.00	3.00	48.47
BA	Kester Moving Average	94,442.50	94.46	158.15	(63.69)	3.00	0.00	49.29
CAT	Kester Moving Average	79,268.43	79.27	203.92	(124.65)	2.00	2.00	62.10
DD	Kester Moving Average	9,360.80	9.36	1.50	7.86	3.00	3.00	63.91
DIS	Kester Moving Average	42,525.12	42.53	87.02	(44.49)	4.00	3.00	43.70
GE	Kester Moving Average	48,186.91	48.19	45.49	2.70	5.00	4.00	71.63
GM	Kester Moving Average	(14,735.09)	(14.73)	(36.10)	21.37	2.00	3.00	66.21
HD	Kester Moving Average	(4,880.30)	(4.88)	8.28	(13.16)	3.00	2.00	19.82
HON	Kester Moving Average	70,373.59	70.38	146.48	(76.10)	4.00	2.00	54.05
HPQ	Kester Moving Average	48,416.43	48.43	177.36	(128.93)	4.00	4.00	44.91
IBM	Kester Moving Average	23,991.72	24.02	34.17	(10.15)	1.00	2.00	69.55
INTC	Kester Moving Average	(15,982.95)	(15.98)	59.74	(75.72)	1.00	2.00	34.56
JNJ	Kester Moving Average	(7,400.82)	(7.40)	20.55	(27.95)	1.00	5.00	69.17
JPM	Kester Moving Average	28,152.64	28.16	71.58	(43.42)	3.00	2.00	50.32
KO	Kester Moving Average	(12,406.32)	(12.41)	36.83	(49.24)	1.00	2.00	40.64
MCD	Kester Moving Average	64,780.00	64.79	255.95	(191.16)	6.00	1.00	56.41
MMM	Kester Moving Average	45,838.93	45.86	33.05	12.81	3.00	0.00	68.40
MO	Kester Moving Average	77,036.90	77.04	87.31	(10.27)	3.00	3.00	46.55
MRK	Kester Moving Average	(32,362.04)	(32.37)	(0.24)	(32.13)	1.00	5.00	47.75
MSFT	Kester Moving Average	1,388.77	1.39	32.54	(31.15)	3.00	5.00	26.40
PFE	Kester Moving Average	(6,642.12)	(6.64)	(27.91)	21.27	1.00	1.00	42.66
PG	Kester Moving Average	35,073.31	35.08	67.22	(32.14)	2.00	1.00	82.53
T	Kester Moving Average	60,835.50	60.85	43.76	17.09	4.00	3.00	71.63
UTX	Kester Moving Average	68,910.09	68.92	141.41	(72.49)	7.00	4.00	67.20
VZ	Kester Moving Average	(3,929.42)	(3.93)	8.76	(12.69)	1.00	3.00	39.21
WMT	Kester Moving Average	11,979.23	11.98	(7.89)	19.87	3.00	2.00	49.18
XOM	Kester Moving Average	63,016.81	63.04	164.14	(101.10)	3.00	1.00	64.90
Total					(1,050.01)			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	DI Crossover	12,270.85	12.92	27.43	(14.51)	13	24	39.65
AA	DI Crossover	50,186.53	50.19	55.20	(5.01)	18	32	53.51
AIG	DI Crossover	47,959.41	47.98	(3.32)	51.30	16	25	50.07
AXP	DI Crossover	(659.32)	(0.66)	61.87	(62.53)	14	40	58.88
BA	DI Crossover	100,634.88	100.66	158.15	(57.49)	25	20	59.48
C	DI Crossover	28,806.61	28.81	(19.01)	47.82	22	34	54.94
CAT	DI Crossover	94,622.55	94.66	203.92	(109.26)	22	26	58.54
DD	DI Crossover	32,666.48	32.68	1.50	31.18	18	38	50.66
DIS	DI Crossover	16,878.85	16.88	87.02	(70.14)	17	41	56.59
GE	DI Crossover	23,089.32	23.09	45.49	(22.40)	21	39	53.44
GM	DI Crossover	31,545.81	31.55	(36.10)	67.65	13	38	50.44
HD	DI Crossover	34,039.15	34.05	8.28	25.77	18	39	50.61
HON	DI Crossover	25,311.19	25.32	146.48	(121.16)	24	44	51.26
HPQ	DI Crossover	18,157.53	18.16	177.36	(159.20)	22	47	62.38
IBM	DI Crossover	26,360.85	26.37	34.17	(7.80)	23	36	51.21
INTC	DI Crossover	43,100.42	43.11	59.74	(16.63)	25	36	50.94
JNJ	DI Crossover	(1,711.35)	(1.71)	20.55	(22.26)	20	43	55.53
JPM	DI Crossover	49,298.86	49.30	71.58	(22.28)	19	35	54.49
KO	DI Crossover	36,777.78	36.79	36.83	(0.04)	22	31	57.06
MCD	DI Crossover	84,815.00	84.82	255.95	(171.13)	25	33	63.26
MMM	DI Crossover	46,206.79	46.24	33.05	13.19	15	30	53.46
MO	DI Crossover	70,062.26	70.08	87.31	(17.23)	18	33	54.66
MRK	DI Crossover	47,221.75	47.23	(0.24)	47.47	23	31	49.50
MSFT	DI Crossover	16,710.31	16.71	32.54	(15.83)	18	41	53.51
PFE	DI Crossover	982.65	0.98	(27.91)	28.89	16	36	42.38
PG	DI Crossover	31,121.75	31.13	67.22	(36.09)	24	31	58.77
T	DI Crossover	18,079.47	18.08	43.76	(25.68)	16	38	53.46
UTX	DI Crossover	18,746.09	18.76	141.41	(122.65)	27	49	63.81
VZ	DI Crossover	20,402.72	20.41	8.76	11.65	18	46	51.09
WMT	DI Crossover	307.97	0.30	(7.89)	8.19	20	46	43.31
XOM	DI Crossover	44,004.89	44.02	164.14	(120.12)	27	38	59.69

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	MA Envl	17,556.74	19.07	27.43	(8.36)	7.00	6.00	15.01
AA	MA Envl	57,289.45	57.29	55.20	2.09	24.00	29.00	22.39
AIG	MA Envl	(12,730.47)	(12.74)	(3.32)	(9.42)	13.00	27.00	18.17
AXP	MA Envl	3,047.20	3.05	61.87	(58.82)	12.00	22.00	19.22
BA	MA Envl	51,220.25	51.23	158.15	(106.92)	19.00	22.00	17.97
C	MA Envl	19,047.62	19.06	(19.01)	38.07	12.00	16.00	20.86
CAT	MA Envl	27,831.47	27.84	203.92	(176.08)	16.00	21.00	15.77
DD	MA Envl	7,852.03	7.86	1.50	6.36	13.00	22.00	22.18
DIS	MA Envl	(15,836.39)	(15.84)	87.02	(102.86)	11.00	30.00	23.27
GE	MA Envl	12,204.36	12.20	45.49	(33.29)	10.00	18.00	21.42
GM	MA Envl	32,629.65	32.64	(36.10)	68.74	17.00	28.00	13.20
HD	MA Envl	(29,941.18)	(29.94)	8.28	(38.22)	14.00	35.00	20.71
HON	MA Envl	28,601.61	28.60	146.48	(117.88)	17.00	22.00	21.74
HPQ	MA Envl	10,105.16	10.11	177.36	(167.25)	18.00	29.00	14.95
IBM	MA Envl	29,642.75	29.65	34.17	(4.52)	14.00	19.00	26.72
INTC	MA Envl	(22,945.44)	(22.95)	59.74	(82.69)	20.00	50.00	20.54
JNJ	MA Envl	12,470.32	12.48	20.55	(8.07)	8.00	11.00	18.84
JPM	MA Envl	13,919.76	13.92	71.58	(57.66)	12.00	20.00	23.70
KO	MA Envl	2,194.40	2.19	36.83	(34.64)	5.00	11.00	12.37
MCD	MA Envl	17,817.76	17.82	255.95	(238.13)	13.00	18.00	15.60
MMM	MA Envl	11,962.08	11.97	33.05	(21.08)	9.00	16.00	21.24
MO	MA Envl	26,339.30	26.34	87.31	(60.97)	12.00	14.00	20.26
MRK	MA Envl	5,231.29	5.24	(0.24)	5.48	14.00	27.00	21.74
MSFT	MA Envl	29,451.77	29.46	32.54	(3.08)	14.00	19.00	25.30
PFE	MA Envl	(492.63)	(0.49)	(27.91)	27.42	16.00	36.00	28.60
PG	MA Envl	14,307.38	14.31	67.22	(52.91)	7.00	9.00	13.86
T	MA Envl	29,233.04	29.24	43.76	(14.52)	15.00	25.00	21.63
UTX	MA Envl	8,180.11	8.18	141.41	(133.23)	9.00	15.00	15.50
VZ	MA Envl	28,566.67	28.57	8.76	19.81	16.00	20.00	22.51
WMT	MA Envl	(2,749.26)	(2.75)	(7.89)	5.14	10.00	24.00	21.63
XOM	MA Envl	(7,201.02)	(7.21)	164.14	(171.35)	11.00	21.00	13.31
Total					(1,528.84)			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	Parabolic SAR (	13,979.56	14.90	27.43	(12.53)	27.00	23.00	44.64
AA	Parabolic SAR (	43,815.80	43.82	55.20	(11.38)	28.00	30.00	53.09
AIG	Parabolic SAR (	5,131.74	5.13	(3.32)	8.45	24.00	32.00	54.22
AXP	Parabolic SAR (	16,861.42	16.86	61.87	(45.01)	25.00	32.00	54.50
BA	Parabolic SAR (	91,306.26	91.33	158.15	(66.82)	29.00	24.00	56.08
C	Parabolic SAR (	(19,559.20)	(19.55)	(19.01)	(0.54)	22.00	42.00	53.40
CAT	Parabolic SAR (	76,080.60	76.10	203.92	(127.82)	27.00	28.00	55.70
DD	Parabolic SAR (	12,851.27	12.85	1.50	11.35	21.00	36.00	50.94
DIS	Parabolic SAR (	18,723.78	18.73	87.02	(68.29)	31.00	33.00	57.90
GE	Parabolic SAR (	24,044.97	24.05	45.49	(21.44)	32.00	29.00	51.04
GM	Parabolic SAR (	69,659.91	69.67	(36.10)	105.77	20.00	30.00	49.95
HD	Parabolic SAR (	(2,272.03)	(2.27)	8.28	(10.55)	22.00	37.00	50.12
HON	Parabolic SAR (	35,089.50	35.09	146.48	(111.39)	22.00	36.00	58.05
HPQ	Parabolic SAR (	16,976.53	16.98	177.36	(160.38)	26.00	30.00	54.33
IBM	Parabolic SAR (	30,801.35	30.82	34.17	(3.35)	26.00	32.00	54.33
INTC	Parabolic SAR (	10,917.18	10.92	59.74	(48.82)	24.00	39.00	47.05
JNJ	Parabolic SAR (	(27,245.46)	(27.25)	20.55	(47.80)	20.00	43.00	51.37
JPM	Parabolic SAR (	17,383.35	17.39	71.58	(54.19)	20.00	38.00	56.52
KO	Parabolic SAR (	32,620.33	32.63	36.83	(4.20)	30.00	33.00	55.75
MCD	Parabolic SAR (	63,611.54	63.62	255.95	(192.33)	28.00	29.00	57.69
MMM	Parabolic SAR (	30,539.87	30.56	33.05	(2.49)	26.00	29.00	54.77
MO	Parabolic SAR (	67,842.32	67.85	87.31	(19.46)	31.00	23.00	56.79
MRK	Parabolic SAR (	8,059.28	8.06	(0.24)	8.30	22.00	30.00	52.46
MSFT	Parabolic SAR (	27,889.24	27.90	32.54	(4.64)	26.00	30.00	52.79
PFE	Parabolic SAR (	(16,429.58)	(16.43)	(27.91)	11.48	25.00	30.00	45.18
PG	Parabolic SAR (	14,717.21	14.72	67.22	(52.50)	24.00	37.00	55.71
T	Parabolic SAR (	13,418.34	13.42	43.76	(30.34)	24.00	32.00	49.78
UTX	Parabolic SAR (	44,929.49	44.95	141.41	(96.46)	30.00	29.00	53.84
VZ	Parabolic SAR (	16,760.59	16.77	8.76	8.01	24.00	33.00	51.65
WMT	Parabolic SAR (	(1,393.87)	(1.40)	(7.89)	6.49	26.00	33.00	49.01
XOM	Parabolic SAR (	45,882.84	45.89	164.14	(118.25)	29.00	32.00	55.65
Total					(1,151.13)			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	Difference	# Winners	# Losers	% Time in Market
$INDU	Stochastic %K c	(16,289.80)	(17.06)	27.43	(44.49)	85.00	119.00	39.54
AA	Stochastic %K c	92,789.81	92.80	55.20	37.60	104.00	145.00	51.68
AIG	Stochastic %K c	16,500.11	16.50	(3.32)	19.82	101.00	149.00	48.69
AXP	Stochastic %K c	(7,625.25)	(7.62)	61.87	(69.49)	105.00	160.00	48.08
BA	Stochastic %K c	(30,276.19)	(30.28)	158.15	(188.43)	88.00	192.00	47.58
C	Stochastic %K c	(37,869.16)	(37.88)	(19.01)	(18.87)	91.00	177.00	49.39
CAT	Stochastic %K c	119,763.22	119.80	203.92	(84.12)	117.00	127.00	48.46
DD	Stochastic %K c	(9,452.20)	(9.46)	1.50	(10.96)	95.00	158.00	51.67
DIS	Stochastic %K c	1,715.16	1.71	87.02	(85.31)	99.00	161.00	49.22
GE	Stochastic %K c	3,242.34	3.24	45.49	(42.25)	91.00	168.00	47.20
GM	Stochastic %K c	88,597.89	88.60	(36.10)	124.70	96.00	152.00	48.51
HD	Stochastic %K c	31,306.44	31.31	8.28	23.03	99.00	137.00	48.32
HON	Stochastic %K c	18,898.41	18.90	146.48	(127.58)	95.00	159.00	49.22
HPQ	Stochastic %K c	55,161.77	55.17	177.36	(122.19)	103.00	154.00	48.68
IBM	Stochastic %K c	18,203.89	18.21	34.17	(15.96)	106.00	148.00	48.10
INTC	Stochastic %K c	40,961.70	40.97	59.74	(18.77)	102.00	147.00	48.20
JNJ	Stochastic %K c	(22,080.42)	(22.09)	20.55	(42.64)	96.00	157.00	47.86
JPM	Stochastic %K c	21,695.06	21.69	71.58	(49.89)	104.00	154.00	47.22
KO	Stochastic %K c	11,427.23	11.44	36.83	(25.39)	98.00	152.00	47.18
MCD	Stochastic %K c	44,934.80	44.93	255.95	(211.02)	115.00	152.00	50.09
MMM	Stochastic %K c	(43,270.20)	(43.28)	33.05	(76.33)	89.00	175.00	48.30
MO	Stochastic %K c	37,231.73	37.24	87.31	(50.07)	96.00	148.00	47.97
MRK	Stochastic %K c	(7,479.67)	(7.48)	(0.24)	(7.24)	100.00	167.00	49.45
MSFT	Stochastic %K c	(26,137.45)	(26.14)	32.54	(58.68)	94.00	185.00	46.66
PFE	Stochastic %K c	(23,163.87)	(23.17)	(27.91)	4.74	79.00	171.00	50.60
PG	Stochastic %K c	(6,648.03)	(6.65)	67.22	(73.87)	98.00	162.00	49.90
T	Stochastic %K c	14,877.38	14.88	43.76	(28.88)	107.00	150.00	49.16
UTX	Stochastic %K c	26,679.16	26.69	141.41	(114.72)	103.00	156.00	47.54
VZ	Stochastic %K c	1,218.72	1.22	8.76	(7.54)	103.00	155.00	49.11
WMT	Stochastic %K c	22,657.62	22.66	(7.89)	30.55	104.00	147.00	47.64
XOM	Stochastic %K c	(1,853.62)	(1.85)	164.14	(165.99)	117.00	156.00	51.91
Total					**(1,500.24)**			

Symbol	Strategy	Profit-Loss	Profit-Loss %	Buy&Hold Return	**Difference**	**# Winners**	**# Losers**	**% Time in Market**
$INDU	RSI crosses	30,534.16	31.61	27.43	4.18	4.00	0.00	29.14
AA	RSI crosses	1,743.24	1.74	55.20	(53.46)	1.00	1.00	24.81
AIG	RSI crosses	19,409.41	19.42	(3.32)	22.74	3.00	3.00	36.31
AXP	RSI crosses	21,353.82	21.36	61.87	(40.51)	3.00	0.00	18.94
BA	RSI crosses	54,853.20	54.86	158.15	(103.29)	4.00	0.00	15.44
C	RSI crosses	48,465.77	48.47	(19.01)	67.48	4.00	0.00	34.45
CAT	RSI crosses	43,662.27	43.67	203.92	(160.25)	3.00	1.00	21.36
DD	RSI crosses	21,427.09	21.43	1.50	19.93	5.00	1.00	41.62
DIS	RSI crosses	5,541.30	5.54	87.02	(81.48)	1.00	1.00	16.27
GE	RSI crosses	40,960.76	40.97	45.49	(4.52)	5.00	0.00	32.09
GM	RSI crosses	22,365.40	22.37	(36.10)	58.47	4.00	2.00	62.86
HD	RSI crosses	36,464.85	36.47	8.28	28.19	4.00	0.00	28.09
HON	RSI crosses	76,243.95	76.26	146.48	(70.22)	5.00	0.00	28.43
HPQ	RSI crosses	39,329.15	39.34	177.36	(138.02)	3.00	1.00	23.88
IBM	RSI crosses	1,850.25	1.84	34.17	(32.33)	3.00	1.00	30.66
INTC	RSI crosses	16,151.36	16.15	59.74	(43.59)	2.00	2.00	23.66
JNJ	RSI crosses	(1,005.18)	(1.01)	20.55	(21.56)	2.00	1.00	19.71
JPM	RSI crosses	41,392.26	41.40	71.58	(30.18)	4.00	1.00	29.51
KO	RSI crosses	27,675.16	27.68	36.83	(9.15)	4.00	1.00	47.92
MCD	RSI crosses	80,985.00	80.99	255.95	(174.96)	5.00	0.00	24.97
MMM	RSI crosses	30,435.48	30.45	33.05	(2.60)	3.00	1.00	39.76
MO	RSI crosses	52,275.03	52.28	87.31	(35.03)	5.00	1.00	33.95
MRK	RSI crosses	(34,128.13)	(34.14)	(0.24)	(33.90)	1.00	3.00	39.49
MSFT	RSI crosses	23,270.10	23.27	32.54	(9.27)	4.00	1.00	31.92
PFE	RSI crosses	(6,093.85)	(6.09)	(27.91)	21.82	3.00	1.00	48.30
PG	RSI crosses	26,355.01	26.36	67.22	(40.86)	3.00	0.00	42.82
T	RSI crosses	26,039.87	26.04	43.76	(17.72)	2.00	1.00	30.61
UTX	RSI crosses	34,278.96	34.29	141.41	(107.12)	3.00	0.00	13.80
VZ	RSI crosses	6,437.03	6.43	8.76	(2.33)	2.00	1.00	47.59
WMT	RSI crosses	18,334.09	18.34	(7.89)	26.23	4.00	1.00	34.67
XOM	RSI crosses	32,703.63	32.71	164.14	(131.43)	2.00	0.00	11.66
Total					(1,094.74)			