



Technical Analysis - Part 4 Irrational Exuberance

This is a journey back in History. Although examples in this Whitepaper date back to the late 1990s and 2000s, Shiller's key points about Irrational Exuberance remain relevant in 2025.

In Irrational Exuberance, Robert Shiller argues that high stock market valuations in 2000 and 2005 were unjustified. The book starts with historic valuations based on PE ratios. Shiller shows that valuations in these two periods were well above those at prior peaks in 1901, 1929, and 1966. This book, however, is not about valuation. Instead, the author identifies a series of factors that brought about these speculative excesses. The meat of the book lists 12 factors that helped big market moves from 1995 to 2000 and from 2002 to 2005. Shiller then goes on to explain the mechanisms that amplified these factors. The book also covers cultural and psychological influences that contribute to irrational investment decision-making. After explaining our attempts to rationalize this behavior, Shiller offers some solutions to prevent future speculative bubbles.

Cultural and psychological influences contribute to irrational decision-making when it comes to making investments



Taking its title from Alan Greenspan's famous description of the stock market in 1996, *Irrational Exuberance* was first published in 2000 and coincided with the NASDAQ peak that same year. Needless to say, the timing was most prophetic. The second edition was published in 2005, with the S&P 500 up by some 50% from its 2002 low. This advance continued another 30% before the fiscal crisis triggered a massive decline in 2008.



Ties with Technical Analysis

Many of the theories put forth in this book fall in the realm of behavioral finance or behavioral economics. Behavioral finance is considered a branch of technical analysis. In fact, *Irrational Exuberance* was required reading for the Chartered Market Technician (CMT) exam in 2011. Behavioral finance is an attempt to understand the behavior of investors and institutions when investing in stocks, bonds, real estate, tulips, or other securities. What prompts individuals to buy or sell a security? How do investors handle risk or loss? Why do speculative bubbles appear and then burst? Is there such a thing as dumb money and smart money? Shiller highlights the investing process by highlighting the key factors that led to Irrational Exuberance in the late 1990s.

Why do speculative bubbles appear and then burst?
Is there such a thing as dumb money and smart money?

Structural Factors

Shiller identifies 12 structural factors that contributed to the unprecedented rise in stock prices from 1995 to 2000. Even after the significant decline into the 2002 lows, valuations were again elevated a few years later.

1. The capitalist explosion and the ownership society encouraged stock investing. Societies built on communism and socialism opened up to capitalistic ways. Russia and China come to mind over the last 20 years. George W. Bush promoted the ownership of society by advocating property and stocks for all. Corporate downsizing and the decline of labor unions

prompted people to take their destiny into their own hands and spawned the entrepreneurial spirit. Corporations tied salaries to performance with stock options.

2. Cultural and political changes favor business success. There has been a significant rise in materialistic values over the years. Shiller reports that more people viewed money as crucial to success in the mid-90s than in the mid-70s. Society viewed successful executives more favorably than scientists or artists. The 1995 Republican Congress proposed cutting the capital gains tax, which was cut in 1997. Further cuts were proposed soon thereafter. These tax cuts and the anticipation of future capital gains tax cuts provided incentives to buy stocks.

3. New information technology suggested a new era. The first cell phones appeared in the early 1980s when the great bull market started. The Internet came of age in the mid-1990s and grew rapidly over the next five years. Investors viewed this Internet revolution as a game changer that justified the stock market boom.

4. Monetary policy and Greenspan removed perceived risk from the equation. The Fed did nothing to stop the surging stock market from 1995 to 1999, and interest rates did not increase until August 1999. In addition to letting the bubble grow, the Fed indicated it would pick up the pieces should anything go wrong, just like in 1987 and 1998. Having the Fed on standby in a market crash was like owning a put option.

5. The perceived effects of the baby boomer generation. There was indeed a baby boom after World War II, which resulted in many people aged 35-55 in 2000. However, Shiller argues with data that there is no correlation between a baby boom and a surging stock market. Instead, Shiller argues that, as with the Internet, the public perceptions of the baby boom influence helped inflate the stock market.

6. The 1990s surge in business media undoubtedly contributed to interest in the stock market. Not much explanation is needed here. Newspapers created big glossy business sections to attract readers. Good stories replaced hard news. Increased media exposure led to more advertising, feeding the public's appetite for stocks. The media continues to pour it in, with Mad Money debuting in 2005.

7. Analysts' estimates were routinely overoptimistic in the last 1990's. Shiller notes that Zachs reported sell recommendations on 9.1% of stocks in 1989 and just 1% in late 1999. Analysts hesitated to issue sell recommendations because many firms also had investment banking ties with the company. Analysts also did not want to offend the company because they might then be cut off from earnings guidance or key information.

8. Defined-contribution pension Plans grew and replaced many Defined-Benefit Plans. Among other things, the decline in unions and big manufacturing industries (autos) contributed to this trend. More people also wanted control over their retirement funds. Those with Defined-Benefit Plans must make their own investment choices, which increases their exposure to stocks.

9. The number of mutual funds surged. From 1982 to 1998, mutual funds grew tenfold (340 to 3513). At one point, more mutual funds were listed on the NYSE than stocks. Mutual funds became a regular part of 401 Ks. Money moving into these mutual funds from 401 Ks and individual investors found its way into the stock market to feed the bubble. Shiller also notes that widespread advertising compounded this growth and increased public awareness to new levels.

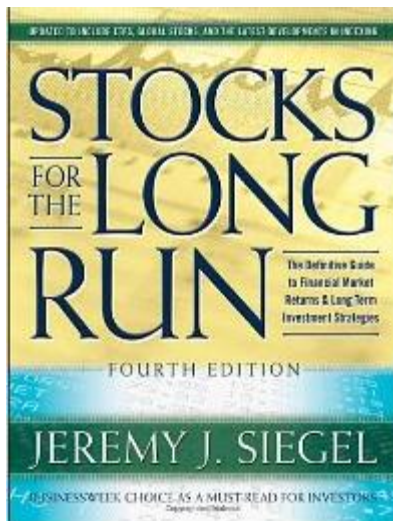
10. Benign inflation created the illusion of wealth and prosperity. After runaway inflation in the 70s, the inflation outlook steadily improved from 1982. Shiller's research found that the public associates inflation with economic prosperity and social welfare. Such perceptions promote positive expectations for the economy and the stock market.

11. The explosion of trading volume kept the bid in the bubble. Increased interest in the stock market and a dramatic decline in commissions facilitated a surge in trading volume on the exchanges. The growth in online trading also facilitated increased interest and made trading more frequently easier.

12. Gambling has increased over the years. Government-sanctioned gambling (lotteries) and commercial gambling have grown in popularity. Poker players have become stars. Lottery jackpots are heavily promoted. Slick adverts portray gambling as sophisticated and increase one's propensity to take risks. Online gambling has also facilitated growth.

Amplification Mechanisms

As if the structural factors listed above were not enough, Shiller argues that amplification mechanisms intensified the effects. First, there was a change in investor attitudes towards stocks. By the late 1990s, stocks were considered a long-term investment that could not go wrong. Jeremy Siegel first published *Stocks for the Long Run* in 1994. Subsequent editions appeared in 1998, 2002, and 2007. Stocks performed well from 1995 until 2000, when the S&P 500 peaked around 1550. The S&P 500 then went on with 10 years of underperformance. The S&P 500 was trading below its 2000 level in early 2011. This means 11 years of negative returns for buy-and-hold investors that bought in 2000.



Second, as inferred above, Shiller asserts that public attention to the stock market hit new levels in the 1990's. This heightened awareness made more money available for stocks. The media fed this infatuation with increased coverage. Dinner party conversations invariably turned to the stock market. Stock tips and advice were also readily shared among acquaintances.

Third, the consistent rise in stock prices provided a feedback loop that kept public attention on stocks. As the media reported the rise in the stock market, new money found its way into the stock market and pushed prices even higher. Higher prices led to more news, and more news led to more investment money. Feedback loops evolved where price increases fed more price increases. Shiller calls these mechanisms naturally occurring Ponzi schemes because they feed on the perception of prior success.

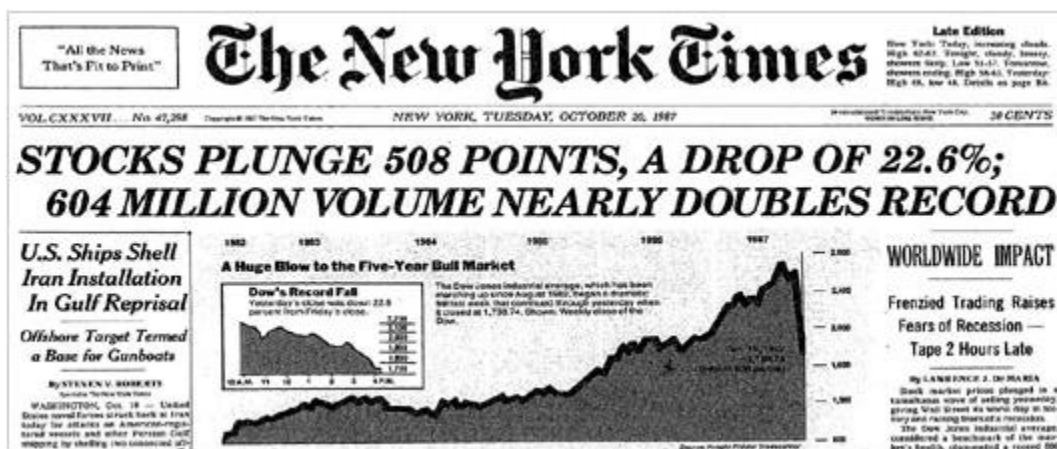
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Cultural Factors

Shiller cites the news media and new-era thinking as cultural factors. Yes, the media seems to keep popping up in the book. Maybe that is why technical analysts only look at price charts!

The speculative bubble was aided and abetted by the news media.

The speculative bubble was aided and abetted by the news media. Newspapers, television, radio, and Internet media compete for public attention. Sensational stories with sound bites attract attention more than drab analyses with numbers and facts. Despite an inattention to detail, the news media was always there with specific reasons for a stock market move. The media always found the perfect excuse or news event to justify the move - after the fact. It is kind of like a solution in search of a problem.



Shiller notes that news of price changes is influential on investor behavior. In his survey after the crash on October 19th, 1987, Shiller listed all the relevant news events and asked respondents to rate the stories. News of the October 14th price decline was also included in this list. At the time, this was the single most significant one-day point decline in the Dow Industrials. Surprisingly, the stories about past price declines were deemed the most significant news events. As Shiller states:

Thus, it appears that the stock market crash had substantially to do with a psychological feedback loop among the general investing public from price declines to selling and thus to further price declines along the lines of a negative bubble. The crash had nothing to do with any news story other than the crash itself but instead with theories about other investors' reasons for selling and their psychology.

New-era economic thinking is a cultural factor that contributes to stock market bubbles.

Shiller also cited new-era economic thinking as a cultural factor contributing to the stock market bubble. New-era thinking is not new. Stock market advances in the late 1800s, 1920s, and 1960s were also facilitated by new-era thinking. At the 1901 peak, a new era of thinking centered around railroads, big industrial trusts, and the age of optimism. The electrical age marked the roaring 20s for prominent cities and the widening use of autos. A baby boom, the proliferation of television, and low inflation punctuated in the 1960s. Finally, the 1990s saw the Internet boom, low inflation, the new economy, and the alleged end of the business cycle.

Psychological Factors

Shiller asserts that there is a human tendency towards "overconfidence in one's beliefs." Moreover, people often rely on intuition when making investment decisions. The decision process is not based on carefully considered facts backed by numbers and evidence. Instead, investors make investment decisions based on the opinions of others. This stems from the need to conform. Investors make decisions based on "good stories" or logical stories. Because people get their information from the same sources, there is little or no evidence of independent behavior. Instead, individuals getting the same information react similarly to producing a herd mentality.

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International Herald Tribune, October 27, 1989.
Kal, Cartoonists and Writers Syndicate, 1989.

Conclusion and Critiques

Shiller identified several credible factors that influenced investment decisions during the bubble years. Many of these factors exist today, and his analysis provides food for thought when considering behavioral finance. Not all factors or influences are listed in this article. Shiller offers more factors and detailed evidence in the book. After examining efficient markets, random walks, bubbles, and investor attitudes, Shiller also offers several remedies to contain "speculative volatility in a free society."

Behavior finance can help us understand what is happening, but understanding may not help us make money in the stock market. While the first edition coincided with the stock market peak in 2000, the stock market rose another 30% after the second edition was published in February 2005. There is an argument to be made for historical valuations, but markets can remain irrational much longer than traders can remain solvent.

Markets can remain irrational a lot longer than traders can remain solvent.

In other words, one would have left much money on the table by selling in early 2005 or gone broke by shorting stocks in early 2005. To his credit, Shiller does provide evidence of past mispricing in the stock market. It can and does happen.

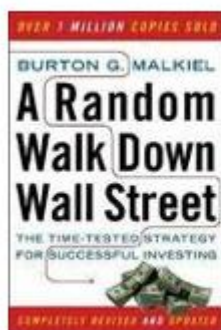
Furthermore, who is to say how much a stock is worth? The value of any asset is only what someone is willing to pay for it. Valuations are set every day as stocks change hands on Wall Street. Just as prices trend, valuations also trend from overvaluation to undervaluation. Sometimes, these trends get extreme on both sides. Stocks were severely overvalued in early 2000 and severely undervalued in March 2009. Some timing mechanisms are needed to avoid significant declines and participate in big advances. Hmm..., it sounds like **technical analysis!**

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Random Versus Non-Random

Introduction

The great debate continues between random walkers and non-random walkers. Two competing books best represent these theories. Originally written by Burton Malkiel in 1973, *A Random Walk Down Wall Street* has become a classic in investment literature. The book has been revised numerous times, with new editions as recently as 2007. Malkiel, a Princeton Economist, argues that price movements are essentially random and that investors cannot outperform the major indices.



VS



Written by Andrew W. Lo and A. Craig MacKinlay in 2001, the appropriately entitled [A Non-Random Walk Down Wall Street](#) provides the counterargument. Lo, an MIT Finance professor, and MacKinlay, a Wharton Finance professor, argue that price movements are not particularly random and that predictable components exist. Let the battle begin!

Random Walk Theory

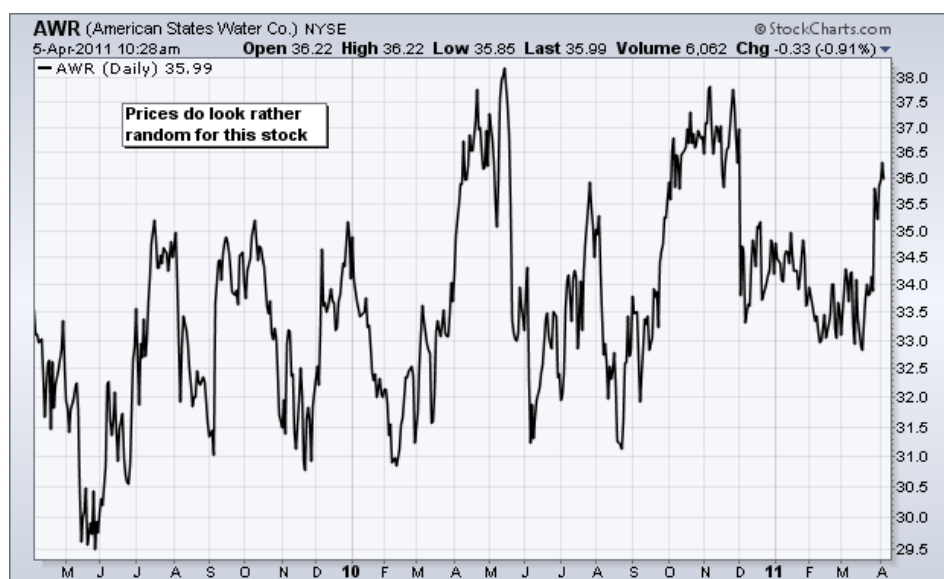
With "random walk," Malkiel asserts that price movements in securities are unpredictable. Because of this random walk, investors cannot consistently outperform the market as a whole. Applying fundamental analysis or technical analysis to time the market wastes time and will simply lead to underperformance. Investors would be better off buying and holding an index fund.

Malkiel offers two popular investment theories that correspond to fundamental and technical analysis. On the fundamental side, the "Firm-Foundation Theory" argues that stocks have an intrinsic value that can be ascertained by discounting future cash flows (earnings). Investors can also use valuation techniques to ascertain the true value of a security or market. Based on these valuations, investors decide when to buy or sell.

On the technical side, the "Castle-in-the-Air Theory" assumes that successful investing depends on behavioral finance. Investors must determine the mood of the market - bull or bear. Valuations are unimportant because security is only worth what someone is willing to pay.

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The random walk theory jibes with the semi-strong efficient hypothesis, asserting that it is impossible to outperform the market consistently. This theory argues that stock prices are efficient because they reflect all known information (earnings, expectations, and dividends). Prices quickly adjust to new information, and it is virtually impossible to act on this information. Furthermore, prices move only with the advent of new information, and this information is random and unpredictable.



In short, Malkiel attributes any outperformance success to "Lady Luck." If enough people try, some are bound to outperform the market, but most are still likely to underperform.

Non-Random Walk Theory

A Non-Random Walk Down Wall Street is a collection of essays offering empirical evidence that valuable information can be extracted from security prices. Lo and MacKinlay used powerful computers and advanced econometric analysis to evaluate the randomness of security prices. Although this book is a heavy read, the findings should interest technical analysts and chartists. In short, this book documents the presence of predictable components in stock prices.

Just before this book, Andrew Lo authored a paper for the Journal of Finance in 2000: *Foundations of Technical Analysis: Computational Algorithms, Statistical Inference, and Empirical Implementation*. Harry Mamaysky and Jiang Wang also contributed. The paper's opening remarks say it all:

"Technical analysis, also known as charting, has been part of financial practice for many decades. However, this discipline has not received the same academic scrutiny and acceptance as more traditional approaches such as fundamental analysis.

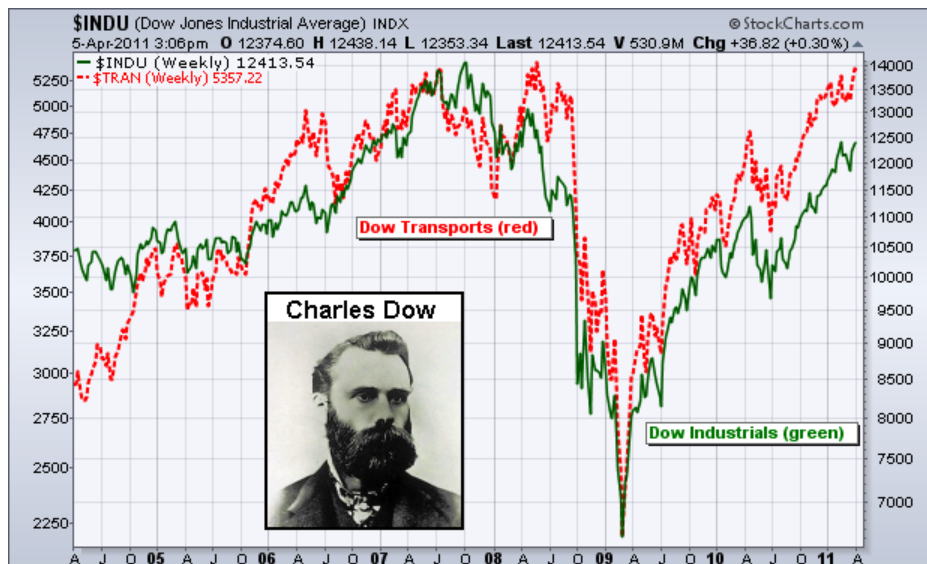
One of the main obstacles is the highly subjective nature of technical analysis. The presence of geometric shapes in historical price charts is often in the eyes of the beholder. In this paper, we propose a systematic and automatic approach to technical pattern recognition using nonparametric kernel regression and apply this method to many U.S. stocks from 1962 to 1996 to evaluate the effectiveness of technical analysis. By comparing the unconditional empirical distribution of daily stock returns to the conditional distribution conditioned on specific technical indicators, such as [head-and-shoulders](#) or [double-bottoms](#), we find that over the 31-year sample period, several technical indicators do provide incremental information and may have some practical value." This paper can be found at www.nber.org



Dow Theory

There is also proof that one of the oldest systems can outperform the market and reduce risk. [Dow Theory](#) seeks to buy when both the Dow Transports and the Dow Industrials record new reaction highs and sell or move into Treasuries when both record new reaction lows. The move out of stocks and into Treasuries significantly reduces risk because one is not exposed to riskier stocks. There have been a few big bad bear markets over the years, and preserving capital is one of the keys to investment success.

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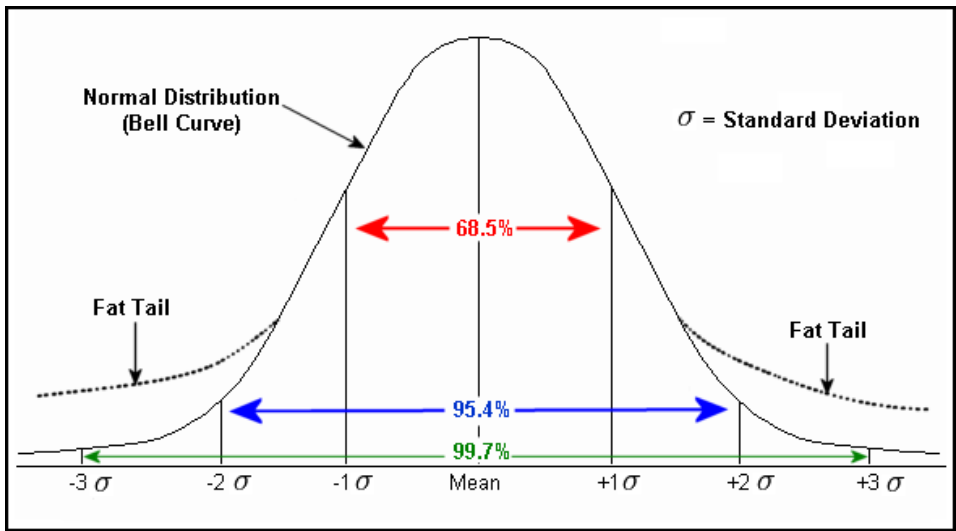
Stephen Brown of New York University, William Goetzmann of Yale, and Alok Kumar of the University of Notre Dame published a study on Dow Theory in the [Journal of Finance](#). The Dow Theory system was tested against buy-and-hold from 1929 to 1998. Over the 70 years, it outperformed a buy-and-hold strategy by about 2% per year.

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In addition, the portfolio carried significantly less risk. If compared to risk-adjusted returns, the margin of outperformance would be even more significant. Over the 18 years from 1980 to 1998, the Dow Theory system underperformed the market by about 2.6% per year. However, when adjusted for risk, the Dow Theory system significantly outperformed buy-and-hold over this timeframe. Remember that 18 years is not a long time in the market's history, and this period was during one of the most significant bull markets in history (1982 to 2000).

Fat Tails and Trends

Historic stock returns are not normally distributed. What does this mean? If one were to measure the height of 1000 people and plot the distribution, this distribution would form the classic bell curve. The most recurring height (value) would be in the middle, and the remaining heights would be equally distributed on either side. Furthermore, 68.5% of all values would fall within ± 1 standard deviation of the mean, 95.4% would fall within ± 2 standard deviations, and 99.7% would fall within ± 3 standard deviations. The solid black line shows a typical bell curve with a normal distribution.



Statisticians have found that the distribution of stock returns forms a curve with "fat tails." For example, this could be a distribution of the 1000 weekly returns for a basket of stocks. In a normal distribution, 99.7% of all these returns would be within ± 3 standard deviations of the mean. This, however, is not the case for stock returns. Instead, the distribution has fat tails (black dotted lines). This means a relatively high number of returns fall outside the normal distribution. Some are lower, and some are higher. These abnormal returns provide evidence of extended moves, outsized moves, or trends. Note that the image above is just a hypothetical example to illustrate a point.

Visual Evidence

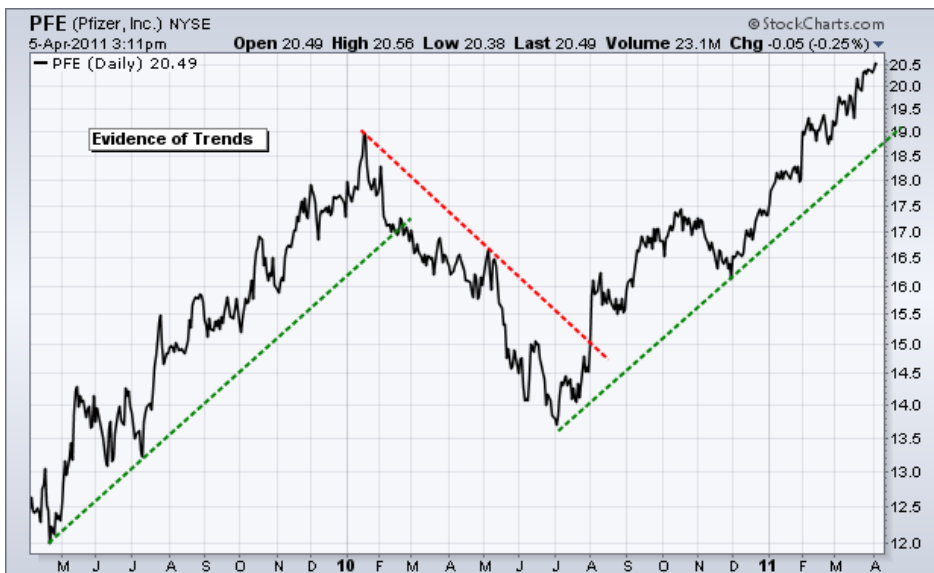
Anyone following the stock market realizes that trends can and will take hold. To be fair, not all stock trends last forever. However, there are enough asset classes, major indices, sectors, industry groups, or stocks out there to ensure that something is trending at some point. The challenge, as always, is to find that trend and ride it. The following three charts show some individual stocks with clear signals and trends. Identifying a simple double top and getting out of Citigroup (C) would have avoided much pain. The same can be said for Enron, Worldcom, and other debacles.



ExxonMobil (XOM) was choppy in 2009, down the first half of 2010 and then up sharply from July 2010 to February 2011. Catching this big trend would have made up for several losses.



Pfizer (PFE) shows an example of three sizable trends emerging over two years. The stock was up over 50% in 2009, down around 25% in the first half of 2010, and up around 50% from July 2010 to March 2011.



Conclusions

To be perfectly fair, the financial markets have both random and non-random aspects. Stocks sometimes trend and react well to patterns or indicators. Stocks sometimes trade choppy and ignore pattern setups or indicator signals. It is the job of the technical analyst or chartist to separate the wheat from the chaff. Chartists must also be able to adapt to ever-changing conditions. Andrew Lo notes that beating the market is challenging to maintain. Lo likens the pursuit of above-average returns to that of a company trying to maintain its competitive advantage. After introducing a hot new product, a company cannot just sit back and wait for the money to roll in. In order to remain above the competition, management must be flexible and look for ways to improve and innovate continuously; otherwise, the competition will overtake them. Money managers, traders, and investors who find ways to outperform the market must remain flexible and innovative. **Just because a method works today does not mean it will work tomorrow.** In an interview with [Technical Analysis of Stocks and Commodities](#), Lo sums it up by stating:

"The more creativity you bring to the investment process, the more rewarding it will be. However, the only way to maintain ongoing success is to innovate constantly. That is much the same in all endeavors. The only way to continue making money, growing, and keeping your profit margins healthy is to develop new ideas constantly."

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