

Chapter Thirteen: *The Sand-pile*

by Nathan Polackwich

Man's mind cannot grasp the causes of events in their completeness but the desire to find the causes is implanted in man's soul.

— Leo Tolstoy, *War and Peace*

Extrapolation is just a fancy word for the human propensity to seek patterns. In most of mankind's endeavors this trait has been beneficial. Consider how Isaac Newton's observation of an apple falling from a tree helped him see that some force, which he called "gravitas," acted upon the apple. Newton then reasoned that the force probably extended to the moon, explaining its orbit around the earth as well as the orbits of other planetary bodies around the sun. Newton's discovery of gravity's "pattern" ultimately led to his theory of universal gravitation, which combined with his three laws of motion, formed the basis of classical mechanics. All this from an apple!

But trouble can arise when people seek patterns where none exist. After the bursting of the Internet Bubble, *The Economist* noted that while looking for patterns in something like lottery numbers is harmless, as it has no effect on the numbers actually drawn, "the same is not necessarily true of the stock market. When many traders think they see the same pattern, they may respond in the same way. They may thus, collectively, create a real pattern. And not only real, but unstable. For, paradoxically, the more orderly a market appears, the less stable it is."

Consider the analogy of a row of dominoes. When the dominoes are all lined up, the fall of one can cause a chain reaction where they all fall down. But if the dominoes face different directions and are scattered randomly about, one domino's fall is unlikely to affect most of the other dominoes.

Disorder, then, can actually be more stable than order. A government where constituents have the right to voice their disparate opinions will be far more stable in the long-run than a dictatorship where people are forced conform their beliefs. On the surface the dictatorship may appear more orderly, but the order masks the explosive potential of a disaffected populace.

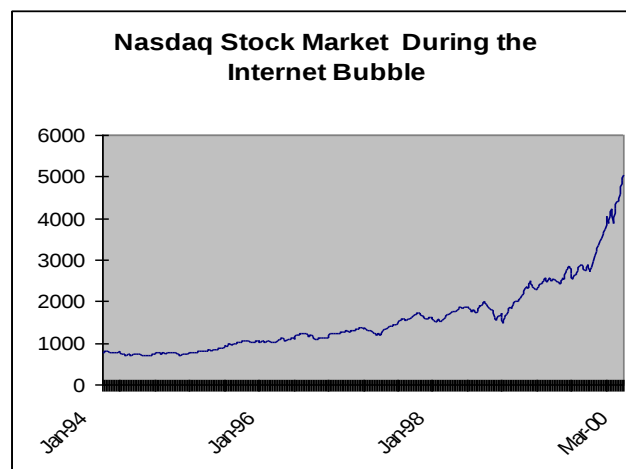
Just as the chaos of democracy is its strength, diversity of opinion is what gives the stock market its wisdom. But if the stock market is dominated by traders who act solely because of trends they perceive in stock prices, its wisdom will be impaired. Traders add nothing to the stock market's wisdom because their decisions aren't based on the underlying companies' fundamentals. Rather, they just piggyback on everyone else's information. As James Surowiecki noted in *The Wisdom of Crowds* (referring to Keynes's comparison of stock investing to a beauty contest): "The beauty contest only has a hope of picking the prettiest girl...if some of the people in it really are thinking about which girl is prettiest."

The instability of a stock market with too many traders is analogous to the Bak-Tang-Wiesenfeld “sand-pile” model in physics.¹ The Bak-Tang-Wiesenfeld sand-pile is built by randomly dropping single grains of sand on a flat table. The sand begins to form a small-pile. As the pile grows its slope becomes steeper. Eventually the pile can grow no higher as each additional sand grain merely rolls down its slope. The sand-pile is now at a “critical state,” where adding a single grain could potentially start an avalanche. Should an avalanche occur, unstable grains fall knocking loose other unstable grains they happen to hit. The avalanche may be small if only a few unstable grains are involved, but the potential for a catastrophic collapse also exists.

The stock market can behave similarly. A rising stock price creates a trend that attracts traders like flies to honey. As more traders pile on the price rises and fundamental investors begin to sell. Eventually the stock is owned by people with little or no information concerning the fundamentals of the underlying companies. There’s an old expression in the stock market for owners like this: *weak hands*. And the weaker the hands, the more dangerous the market because traders will be just as quick to abandon ship as they were to hop on board.

Unfortunately, there’s no way to know either the specific ratio of traders to fundamentalists in the stock market or the point at which the ratio reaches a critical state prone to collapse. Joe Kennedy famously sold all of his stocks just months before the 1929 stock market crash after a shoeshine boy offered him a stock tip. If even shoeshine boys were playing the stock market, he reasoned, the lunatics had clearly taken over the asylum. Similarly, as the real estate market boomed in the summer of 2005, it seemed as if half the people I knew were real estate brokers or in the process of getting their license. And *everyone* was talking about how much their house was worth. These turned out to be pretty good “tells” that the end of the U.S. real estate bubble was nigh.

The progression of financial bubbles often (though not always) even visually resembles that of a sand-pile.



¹ Named, not coincidentally, for the physicists, Per Bak, Chao Tang and Kurt Wiesenfeld, who discovered the model.

Just like a sand pile, the danger of a catastrophic collapse grows as stock prices rise at an accelerating rate and the slope steepens. Does that mean the timing of bubbles and crashes is predictable? No, and it's foolish to make large bets directly against them² because, as Keynes once observed, "the market can stay irrational longer than you can stay solvent." Professional investors can substitute the word "employed" for "solvent."

Buy Indifference

Successful play of the Winner's Game is as much a function of what you don't buy as what you do. Beware investments that have had a multi-year period of exceptional returns that the professional investment community *now* touts as "prudent." Beware "hot" investments with stories supported by powerful imagery. Beware investments that everyone is talking about. If your lawn guy is breathlessly telling you about all the money he's making in Internet stocks, for instance, it's a good idea to avoid that area.

Finally, and somewhat counter-intuitively, you should even be wary of once hot investments that everyone now loathes. Investors have thousands of stocks from which they can choose. As a result, they tend to buy stocks that come to their attention either through the news or because they have performed exceptionally well or poorly (making the daily new highs or new lows lists). Traders tend to buy the stocks that have done well. We know how unstable their weak hands can make a stock. However, value investors are also drawn to stocks in the news – specifically those enduring extremely negative news. This can actually cause unnaturally high buying interest in companies with well known troubles.

Shortly after the U.S. housing market peaked in 2005, the homebuilding companies' stocks, which had experienced a stupendous (and accelerating) price increase over the preceding decade, began to drop precipitously. By the summer of 2007 the housing market collapse was front page news and the stocks of large homebuilders like KB Home had lost 2/3rds of their value.

As an investor with a contrarian/value-oriented inclination, my interest was piqued. I wasn't the only one, either, as a number of well known fundamental investors like Bill Miller had already begun acquiring the homebuilders' stocks. But ultimately I passed. Mainly, I feared that the negative publicity surrounding the housing market was perversely increasing the amount of money flowing into the stocks. This may or may not have been the case, but the stocks proceeded to lose another 50% of their value over the subsequent year.

decline of a stock is likely to be lengthy when the reasons behind it smack "of a currently sensitive subject such as insider trading, ecological problems, health scares, options back-dating, etc." Clearly the housing market was (and remains) a highly sensitive subject. Cassidy reasoned that with so many stocks trading in global markets, it takes a long time for investors to come back and give tainted stocks a second chance. But I would argue that the stocks' declines may

²There are a number of ways to directly bet against a stock market bubble, but the simplest and most dangerous is selling certain stocks or the stock market itself short. Shorting entails borrowing someone else's stock, selling it at the current price, and buying it back for the unlucky owner should the price drop while pocketing the difference. The trouble with shorting is that losses are potentially *infinite* should the stock continue to rise. Thus, while buying one share of a \$100 stock means your potential loss is limited to \$100, shorting one share of a \$100 stock could potentially lead to thousands of dollars in losses and possibly more in the event that the stock keeps going up.

be more drawn out than they otherwise would be because bottom-fishing value investors buy them all the way down.

So what's a contrarian to do? There's a saying that the opposite of love isn't hate, it's indifference. This is consistent. In his book *It's When You Sell that Counts*, Donald Cassidy contends that the price with legendary mutual fund manager Peter Lynch's counsel that

The true contrarian is not the investor who takes the opposite side of a popular hot issue (i.e., shorting a stock that everyone else is buying). The true contrarian waits for things to cool down and buys stocks that nobody cares about, and especially those that make Wall Street yawn.

And in fact there exists a great deal of evidence in support of the notion that slower growing, "boring" stocks usually outperform over the long-run. Research by finance professor Jeremy Siegel, for instance, found that

1. On average, the stocks added to the S&P 500 index since 1957 have underperformed relative to the stocks they replaced. While the earnings of the new index members did indeed grow faster, their stock prices didn't perform as well because they began with too optimistic (i.e. high) a price. Thus, investors would have been better off if they'd simply stuck with the original 500 stocks rather than buying the new, sexier stocks added to the index at inflated prices.
2. Stocks with the highest dividend yields and lowest P/Es in the S&P 500 outperformed the index by three percent a year. Conversely, those with the lowest yields and highest P/Es underperformed by 2 percent.
3. The stocks of companies in high growth industries such as finance have underperformed the S&P 500 over the past 50 years. Meanwhile, stocks in shrinking industries such as railroads outperformed.
4. The stocks of companies in the fastest growing countries also delivered sub-par stock returns over the long term while more mature but slower growing economies tended to outperform.³

How do the slower growing turtles ultimately outperform the hyper-growth hares? The turtles' stocks started out and *stayed* cheaper. Thus, investors in the turtles usually received higher dividend yields, which they then reinvested at attractive prices. By contrast, investors in hares didn't get much in the way of yield. Worse, if they reinvested their measly dividends they overpaid for their hares' pricey stocks. Ultimately the turtles' relentless combination of high dividends reinvested at low stock prices catches even the speediest hares.

³ The negative correlation between relative economic growth and long-term stock market returns was also found by Dimson, Marsh, and Staunton, in their seminal work on long-term global investment returns, *Triumph of the Optimists*.

So why do investors continually overpay for hot stocks in hot industries? As Jeremy Grantham bluntly put it.

Growth companies seem impressive as well as exciting. They seem so reasonable to own that they carry little career risk. Accordingly, they have underperformed for the past 50 years.

Buy Good Businesses

The bulk of the billions in Berkshire Hathaway have come from the better businesses...Over the long term, it's hard for a stock to earn a much better return than the business which underlies it earns. If the business earns 6% on capital over 40 years and you hold it for that 40 years, you're not going to make much different than a 6% return even if you originally buy it at a huge discount. Conversely, if a business earns 18% on capital over 20 or 30 years, even if you pay an expensive looking price, you'll end up with a fine result. So the trick is getting into better businesses.

— Charlie Munger, “The Art of Stock Picking”

It's far better to buy a wonderful company at a fair price than a fair company at a wonderful price.

— Warren Buffett

In theory Munger and Buffett's above statements are easily disproved by working through Munger's example:

Company A has \$1 million in equity (the value of its assets minus its debts), earns a 6% annual return on that equity (\$60,000 a year in profits), and doesn't pay a dividend over a 40 year period. In year 41, it begins paying out all of its profits as dividends while continuing to earn 6% on equity.

Company A's profits and equity⁴ will grow 6% a year for 40 years. In year 41, because management starts paying out all profits as dividends, its equity no longer grows. And since Company A continues to earn just 6% on equity, profits also stay constant.

In a world where investors demand a 10% annual return on their stocks, Company A is worth just \$195,000, or 3.3 times its current level of profits.⁵ In other words, an investor must pay \$195,000 or less for Company A if he wants to earn a 10% or better annual return.

What if we keep all of our assumptions unchanged except that Company A now earns a much more impressive 15% return on equity (\$150,000 in profits in year 1)? Because Company A doesn't pay a dividend, this means Company A's equity and profits will grow 15% a year for 40

⁴ Profits not paid out as dividends are added to equity.

⁵ Based on the most basic of stock valuation models, the dividend discount model or DDM.

years. In this case, Company A is worth \$12.7 million, or 85 times current profits! Again, as long as an investor pays \$12.7 million or less for Company A, he will earn a 10% or better annual return.

So in theory Munger and Buffett are wrong. Assuming you pay a fair price, you can earn the same return on a terrible company as you can on an excellent company. In practice, however, they're right. The reason is that most companies trade at relatively similar multiples of earnings. Very, very few companies ever trade at 3 times profits, and only in the rarest (and usually the dumbest) of instances do companies trade at 85 times profits.

To be clear, companies that earn just 6% on equity over a decade or more tend not to survive. And very, very few (if any) grow 15% a year for forty years. But what if we assume Company A grows at a more reasonable 9.75% annual rate by achieving a 15% return on equity and paying out 35% of its earnings as dividends?⁶ To make 10% or more on a stock like this, you could pay up to 26.4 times current profits, or \$3.96 million

Note the importance, however, of the duration of a company's growth. If the company growing 9.75% annually runs out of expansion opportunities in 15 years rather than 40, it's worth just 14.5 times current profits, or \$2.175 million.

The point is that companies that can maintain a high return on equity and good growth rates over multiple decades are worth A LOT relative to their earnings. Those that don't are worth very little.

Which companies have historically been the best performers over the very long-term? In *The Future for Investors* Jeremy Siegel found that two industries in particular dominated the U.S. stock market over the past 50 years: pharmaceuticals like Johnson & Johnson and Abbott Labs and well known consumer brand companies like Pepsi and Procter & Gamble. These companies developed wide competitive advantages through economies of scale and brand name recognition. They also successfully grew their businesses internationally.

At any moment in time these stalwarts were unlikely to be the fastest growing companies. Critically, however, they were able to maintain above-average growth rates over the longest time period. And despite the persistent strength of their businesses, their average valuations (relative to their profits) were usually about the same or only slightly above that of other stocks. So here again we find that powerful combination of dividends being reinvested in undervalued stocks year after year after year.

Will the firms in these industries be the best performers over the next 50 years? I think there's a good chance. However, there are also undoubtedly companies in other, newer industries building great businesses with competitive advantages that will also withstand the test of time. Always keep an open mind.

⁶ A 65% retention rate (1 – the dividend payout) multiplied by a 15% return on equity equals 9.75% annual profit and equity growth

If you really want to try to hit the ball out of the park, however, you can approach the Winner's Game as Buffett and Munger did: wait for those rare moments in history when other investors are indifferent about great companies' stocks and bet the farm. In 1987, for instance, the equity portion of their investments was almost entirely concentrated in just three stocks! You don't get to be the richest person in the world, as Warren Buffett is, by keeping your investments nicely diversified.

But is the Winner's Game even worth the trouble? Unless it's your profession I'd say no. Trying to beat the stock market is an emotionally wrenching endeavor that involves two of life's most sensitive subjects: namely, your ego and your pocketbook. Furthermore, as the great economist, investor, and author Peter Bernstein counseled in his 85th year of life,

In general, survival is the only road to riches. Let me say that again: Survival is the only road to riches. You should try to maximize return only if losses would not threaten your survival and if you have a compelling future need for the extra gains you might earn.

If all you seek is happiness and a general satisfaction with life, the Loser's Game is for you.