MarketPsych Report: Our Age of Market Manias & Making Sense of Chinese and Biotech Stocks
May 4, 2015

Latest News

April 28, 2015 - We’ll be presenting at the 5th annual "Behavioural Models & Sentiment Analysis Applied to Finance" conference in London on July 15-16, 2015, which is consistently an excellent conference.

Recent Press

April 27, 2015 - Hopkins research finds Twitter mood predicts success of IPOs -- Lorraine Mirabella Bloomberg Business

April 24, 2015 - Emotional Arbitrage -- Chris Hall The Trade

Silver Fever

Evidence of bubbles has accelerated since the [2007-2009 financial] crisis.

The celebrated author and humorist Samuel Clemens (pen name Mark Twain) documented his experiences in the Nevada mining stock bubble, and his writings are one of the earliest (and certainly the most humorous) firsthand accounts of involvement in a speculative mania.

After a brief stint as a Confederate militiaman during the beginning of the U.S. Civil
War, Clemens purchased stagecoach passage west, to Nevada, where his brother had been appointed Secretary of the Territory. In Nevada, Clemens began working as a reporter in Virginia City, in one of Nevada’s most productive silver- and gold-mining regions. He enviously watched prospecting parties departing into the wilderness, and he quickly became “smitten with the silver fever.”

Clemens and two friends soon went out in search of silver veins in the mountains. As Clemens tells it, they rapidly discovered and laid claim to a rich vein of silver called the Wide West mine. The night after they established their ownership, they were restless and unable to sleep, visited by fantasies of extravagant wealth: “No one can be so thoughtless as to suppose that we slept, that night. Higbie and I went to bed at midnight, but it was only to lie broad awake and think, dream, scheme.”

Clemens reported that in the excitement and confusion of the days following their discovery, he and his two partners failed to begin mining their claim. Under Nevada state law, a claim could be usurped if not worked within 10 days. As they scrambled, they didn’t start working, and they lost their claim to the mine. His dreams of sudden wealth were momentarily set back.

But Clemens had a keen ear for rumors and new opportunities. Some prospectors who found rich ore veins were selling stock in New York City to raise capital for mining operations. In 1863, Clemens accumulated stocks in several such silver mines, sometimes as payment for working as a journalist. In order to lock in his anticipated gains from the stocks, he made a plan to sell his silver shares either when they reached $100,000 in total value or when Nevada voters approved a state constitution (which he thought would erode their long-term value).
In 1863, funded by his substantial (paper) stock wealth, Clemens retired from journalism. He traveled west to San Francisco to live the high life. He watched his silver mine stock price quotes in the newspaper, and he felt rich: "I lived at the best hotel, exhibited my clothes in the most conspicuous places, infested the opera. . . . I had longed to be a butterfly, and I was one at last."

Yet after Nevada became a state, Clemens continued to hold on to his stocks, contrary to his plan. Suddenly, the gambling mania on silver stocks ended, and without warning, Clemens found himself virtually broke.

"I, the cheerful idiot that had been squandering money like water, and thought myself beyond the reach of misfortune, had not now as much as fifty dollars when I gathered together my various debts and paid them."
Clemens was forced to return to journalism to pay his expenses. He lived on meager pay over the next several years. Even after his great literary and lecture-circuit success in the late nineteenth century, he continued to have difficulty investing wisely. In later life he had very public and large debts, and he was forced to work, often much harder than he wanted, to make ends meet for his family.

Clemens had made a plan to sell his silver stock shares when Nevada became a state. His rapid and large gains stoked a sense of invincibility. Soon he deviated from his stock sales plan, stopped paying attention to the market fundamentals, and found himself virtually broke.

Clemens was by no means the first or last person to succumb to mining stock excitement. The World's Work, an investment periodical published decades later, in the early 1900s, was beset by letters from investors asking for advice on mining stocks. The magazine’s response to these letters was straightforward: "Emotion plays too large a part in the business of mining stocks. Enthusiasm, lust for gain, gullibility are the real bases of this trading. The sober common sense of the intelligent businessman has no part in such investment." (from Meir Statman)

While the focus of market manias changes - mining, biotech, Chinese stocks, housing, etc… - the outline of a speculative bubbles remains remarkably similar over the centuries. Today's newsletter examines the latest research into speculative bubbles and looks at how we can apply that knowledge, with examples of the recent booms (bubbles?) in Chinese stocks and Biotech. This newsletter is much longer than usual letter, in part because the topic is both complex and important. Skip ahead to the end for the Chinese and Biotech conclusions. A more thorough treatment of bubbles is in my next book, coming out in late 2015.

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**A Brief History of Bubbles and Busts**

*A situation in which prices for securities, especially stocks, rise far above their actual value.*

~Definition of a Speculative Bubble, Farlex Financial Dictionary

The history of bubbles starts with the Dutch Tulip Mania of 1637, and the occurrence of bubbles has accelerated, especially in the past 20 years. Among others we had the Dot-com bubble of 1996-2000, the housing bubbles of 2004-2006, the Chinese stock market bubble of 2006, and the Bitcoin bubble of 2013. As markets, information, and the trade of assets has expanded, bubbles have become a frequent characteristic of modern markets (note the two bubbles apparent on the Chinese stock chart at the end of this newsletter).
In order to deeply understand the mechanics of bubbles, the Nobel-laureate Vernon Smith developed the most widely cited experimental model to elicit bubbles among laboratory participants. Smith and his co-authors designed a set of experiments in which a trade-able asset gives a dividend with the expected value of $0.24 at the end of each of 15 periods. Within each round, the market is open for trading shares. At the end of each round, each share pays a dividend. The dividend per round is one of $0, $0.08, $0.28 or $0.60 cents with equal probability. At the end of the experiment, after 15 rounds, the assets are worthless.

Classical economics would predict that the asset would start trading near $3.60 (15 times $0.24) and decline by 24 cents each period. Smith and his co-authors found instead that prices started traded well below the fundamental value and subsequently rose far above it in later periods. The average transaction price peaks around periods 9 to 11 and it crashes from periods 13 to 15. This experiment has been repeated hundreds of times in labs around the world with similar results.

Experimental bubbles emerge despite various manipulations to the experimental model, including allowing short-selling, margin buying, and insider trading. Even when uncertainty about payoffs and asset values is eliminated, bubbles persist. Bubbles arise regardless of whether participants are business students, managers, or professional traders.

Given the predictability of these valuation bubbles despite various experimental manipulations, it’s apparent that a psychological element - as yet unquantified - is a defining feature. That psychological aspect is evident in everyday descriptions of bubbles, in which words such as “mania” and “irrational exuberance” are used. To describe the process of a bubble’s crash, terms such as “fear” and “panic” are employed. Research examining the impact of such emotions during a Smith’s classic experimental market finds that positive excitement among participants generates larger pricing bubbles (references at end), positive facial expressions of investors correlate with larger bubbles, and investor fear induces early sell-offs in bubbles. Results from (Andrade, Lin and Odean; 2014), who induced various emotions in bubble participants using movie clips, is visible below:
We may be in the midst of several bubbles currently: a bond bubble, a biotech (and social media) bubble, and a Chinese stock bubble. *May be* is the key phrase. If a bubble is defined as market valuations widely exceeding fundamental valuations, then hindsight is the only real evidence (after the crash). But as investors, we don’t have the luxury of hindsight.

Since there is both a massive creation and destruction of wealth during bubbles, the three questions of interest to most investors are:

1. How do I identify where and when a bubble will occur?
2. How do I identify when a bubble is underway?
3. How can I know when a bubble will go bust?

We will superficially pursue these questions in this letter. To answer the first question, we need to understand the preconditions for the emergence of a bubble. To answer the second question, we will explore how fundamentals, investor psychology, media attention, and price action interact to form bubbles. For the third question we will examine bubble peaks and the signs of convincing deflation. The third question is by far the most difficult, and not having a clear plan has led to many investors - like Samuel Clemens - participating in both the ride up and the ride down.
Irrational Exuberance

Before economist Robert Shiller shared the 2013 Nobel prize in economics, he was best known for research on speculative bubbles popularized in his book “Irrational Exuberance.” In the first two editions of his book he accurately predicted the tops of the U.S. stock market bubble in 2000 and the U.S. housing market bubble in 2007, respectively. In his latest edition, published in 2015, Shiller outlined several preconditions and characteristics of speculative bubbles (chapter summaries here). Shiller suggests that bubbles are increasingly commonplace across global stock markets, which makes understanding them especially urgent.

Shiller’s book is a fascinating journey through past bubbles, his thoughts about how bubbles form, and ideas on current asset price valuations. I’ll distill out the main themes in this section, and I’ll add a few examples and clarifications to make his descriptions - in my opinion - more precise.

Precipitating factors for bubbles include positive price movement (by definition), media attention (story-telling, compelling memes), psychological factors (beliefs, emotions, social pressures), and amplification mechanisms (positive feedback loops). As the media shares compelling stories, positive price action reinforces positive media messages. Investors revise their expectations upwards, and new participants enter the bubbling market.

Bubble Spotting

But before we begin assuming that the market is revealing some truth about this new era, it behooves us to reflect on the real determinants of market moves... Many of these real determinants are in our minds.

~Robert Shiller

Bubbles often reflect uncertainty about valuations driven by a technological or fundamental breakthrough. The Gartner Hype Cycle describes how new technologies are absorbed into the marketplace, with a peak of inflated expectations following a technological trigger. New technologies cannot easily be valued using traditional metrics, leading to greater emotional input into the valuation process. As an extreme example, how would we value a consistently unprofitable biotech company which claims to have developed a cure for aging?

In the following image of a speculative bubble (the Nasdaq 1996-2002 bubble), we see fundamentals improving (grey line), psychology turning bullish (moving from optimism to greed), and prices rising (blue line). Media coverage and the introduction of amateurs into the market was evident in the launch of dedicated financial news TV channels and magazines, and enthusiastic TV commercials for stock brokerages.
These four factors: fundamental triggers, individual psychology, media encouragement, and amateurs entering the market interact in a positive feedback loop: “As prices continue to rise, the level of exuberance is enhanced by the price rise itself” (Shiller, 2015).

Bubbles eventually end when there is no new money available to enter the market, the price trend peters out, the media coverage becomes more critical, and prices begin to fall, reversing the feedback loop. Negative price action saturates the media and accelerates the decline.

**Bubble Diagnostics**

Understanding how bubbles arise and propagate is important, but it isn’t adequate for investors. We need to know where we are in the bubble so we can ascertain if it is safe to enter and the optimal time to exit (or reverse). To diagnose the stage of an active bubble, the following questions in the table below are helpful, where Stage 1 corresponds to Reasoned Optimism in the above chart, Stage 2 corresponds to Greed and Overconfidence, Stage 3 corresponds to Discord, and Stage 4 corresponds to Panic and Pessimism. (This is still a work-in-progress - feel free to send suggestions).
Let's now turn this model to Biotech and Chinese stocks, both of which have undergone tremendous rallies recently.

### Biotech Breakthroughs

The value of the Biotech ETF (IBB) is up more than 5-fold since 2010 on the heels of a wave of progress in biotech drug discovery and other factors. Yet current valuations are not necessarily overdone for established biotechs. According to the Economist (May 2, 2015), several biotech companies have created new medicines with blockbuster potential including “Celgene, [who] told investors that its earnings would increase by 23% a year all the way to 2020.” But for smaller companies, the story changes. The rate of small biotech start-ups raising venture capital is expanding quickly, and Janet Yellen referred to overstretched valuations in biotech (and social media stocks) in July 2014. (But like Greenspan’s “Irrational Exuberance” comment in December 1996, she was clearly early, with a 50% rally since her comments).

On a psychological level, our Thomson Reuters MarketPsych Index of news and social media...
Optimism has been high for the biotech industry for the past 2-3 years, with a notable decline recently. As you can see in the below chart, sharp turns in optimism sometimes predict future downturns in price, but the relationship is not perfect. Pink shading indicates short-term optimism is dropping faster than longer term in the media, while green shading indicates short-term optimism is rising faster than long-term optimism.

Other measures of positive sentiment, including the amount of news reporting about positive price movement has been exceptionally high over the past 2 years. But social media (where amateur entrants are expected to come from) has remained relatively sober. Most of the cheerleading has come from news media, while social media has remained less enthusiastic (although still positive).
So on our bubble checklist, where does the biotech rally stand? It looks to me to be slightly past Stage 2, at about a 2.2. We are in a valuation bubble, but we have not quite hit the top. It’s likely that prices will ultimately be lower than where we stand now after a future wash-out, but a crash is not imminent despite faltering prices over the past month. There is still room for another leg up.

### Chinese Stock Rally

Chinese stocks (the Shanghai A-shares specifically) are up 100% in the past 12 months. For the country with the world's 2nd largest market capitalization this is obviously a large appreciation of capital.

What was the fundamental trigger for the rally? It appears to include multiple factors: government cheer-leading, monetary stimulus, the Shanghai-Hong Kong Connect stimulating internal and external interest in Chinese markets, and the near-vertical price rise (e.g., in April the Shanghai Composite was up 19%). From a valuation perspective, the market does not appear bubbly, with Shanghai stocks trading at 17 times forward 12-month earnings, less than most other G-10 markets. The Chinese government may not want equity market valuations to go higher, lest the subsequent crash create unrest. Excessive speculation may be dampened by reducing margin allowances or allowing additional IPOs (as Chinese regulators are doing in May), thus reducing liquidity.

Psychologically, the new Chinese investors jumping into the market are fairly naïve, which predisposes the market to significant volatility. New stock brokerage accounts are opening at a rate of 1 million per week, and the interest of domestic investors has been accelerating. Many professionals seem to believe there is a Chinese stock bubble, and there has been an increase in short-interest.

In terms of our checklist, in what stage is Shanghai’s market? Solidly in Stage 2.

As one can see in the below chart, the fundamental trigger of loose Monetary and Fiscal policy is accelerating, which is adding liquidity to the system (some of which flows into equities).
Optimism has ranged greatly for Chinese equities since 1998, as can be seen in this moving average crossover plot of Optimism. Pink shading indicates short-term Optimism is dropping faster than longer term in the media, while green shading indicates short-term Optimism is rising faster than long-term Optimism.
A faster moving average in the past two years shows sentiment peaking in a small way, as often happens. This peak does not reflect the immense price rally we've seen so far.
As one may be able to see in these charts, the peaks in optimism followed by declines often precede price downtrends, but the current peak is relatively minor given the massive rally.

Bottom line about Chinese stocks is similar to "Don't Fight the Fed." If the Chinese government wants equities to rally, then they will rally. When they turn off the stimulus, then they will fall. Given the slowness of amateur investors to act, investors who act quickly when the stimulus is going to be turned off may keep a good portion of their gains from this bubble.

What will be very interesting to watch is whether the optimism of Chinese stock and global
Biotech (and Tech) investors seeps into other asset prices. In the era of low interest rates, bubbles are more and more likely.

Closing

Please contact us if you'd like to see into the mind of the market using our ThomsonReuters MarketPsych Indices to monitor market psychology and macroeconomic trends for 30 currencies, 50 commodities, 130 countries, 50 equity sectors and indexes, and 8,000 global equities extracted in real-time from millions of social and news media articles daily.

We love to chat with our readers about their experience with psychology in the markets. Please send us feedback on what you'd like to hear more about in this area.

Happy Investing!
Richard L. Peterson, M.D. and the MarketPsych Team

References (In Order of Appearance)


Andrade E., S. Lin, and T. Odean, 2014, "Bubbling with Excitement: An Experiment", working paper, University of California at Berkeley
