BEAR STEARNS

Equity Research

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Investment Strategy

Asset Bubbles: A Look at Past and Future Manias

Avoiding the Pitfalls and/or Profiting from the Next Financial Bubble

- **ASSET BUBBLES REPEAT THROUGHOUT HISTORY.** There are enough similarities between bubble episodes to gain insights into the birth, maturation, and demise of bubbles, and to answer the question of why investors continue to get caught in market manias and their subsequent collapses.

- **BUBBLE-PRONE ENVIRONMENTS SHARE MANY COMMONALITIES.** Armed with the knowledge of the repeating signals that occur in a bubble environment, investors should be better able to profit from and to avoid future bubbles.

- **WE WILL LIKELY EXPERIENCE AT LEAST ONE MORE BUBBLE EPISODE IN THE NEXT DECADE OR SO.** The current economic landscape is exhibiting about eight-and-a-half of the ten typical characteristics we see in a bubble-prone environment, suggesting that the backdrop could be ripe for an asset bubble to burst.

- **FOUR AREAS WORTH CONSIDERING AS POTENTIAL FUTURE BUBBLES ARE IN REAL ESTATE, CHINA, HEDGE FUNDS, AND NANOTECHNOLOGY.** These are four areas in the market that could experience a bubble episode in our lifetime.

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Table of Contents **Page**

All pricing is as of the market close on June 6, 2005, unless otherwise indicated.

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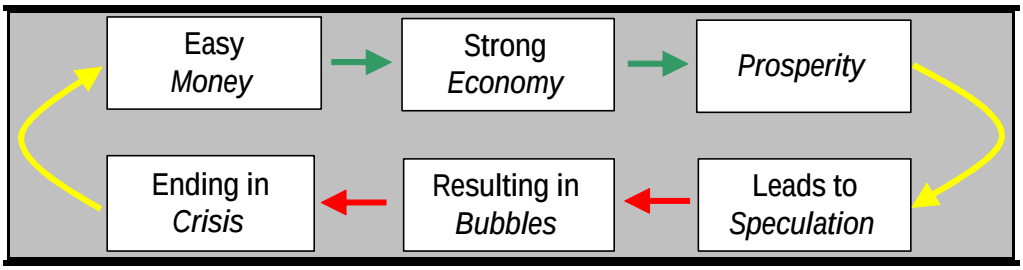
Executive Summary

Financial bubbles are a phenomenon that continue to garner significant attention among financial circles. As such, we wanted to explore why these episodes occur repeatedly and why investors continue to be fooled by the next "new thing." In particular, we revisit some of history's better-known asset manias, starting with the 17th century's "Dutch Tulip" bubble, and including the 1720s' South Sea mania, the 19th century's railroads mania, and, most recently, the tech bubble of the late 1990s.

Using U.S. economic data from the past 150 years, we have discovered enough similarities between past bubble episodes to develop a framework to help identify future asset bubbles and bubble-prone environments. First, we found that a specific set of economic conditions usually accompanies bubble environments. In short, ample financial liquidity fosters a prosperous economic backdrop, eventually leading increasingly optimistic investors to assume ever-increasing financial risk and engage in speculation. Speculation then evolves into an asset bubble, which subsequently bursts, often bringing devastating consequences for the broader financial landscape.

Evolution of a Financial Bubble



Source: Bear, Stearns & Co. Inc.

Next, we suggest that there are four typical types of asset bubbles that can form: life-changing manias, scarce commodity manias, thematic manias, and government-fueled manias. Bubbles can be placed into one or more of these mania types.

Classifying Asset Bubbles

1)	Life-Changing:	Innovation expected to dramatically impact business landscape.
2)	Scarcity:	Rare commodity creates mania.
3)	Thematic:	Particular asset theme becomes popular.
4)	Government:	Government fuels popularity by providing capital, monopoly, or security.

Source: Bear, Stearns & Co. Inc.

Our framework of bubble similarities suggests that the current economic landscape is experiencing eight-and-a-half out of ten characteristics we typically see in a bubble-prone environment. As such, we thought it would be useful to hypothesize as to where the next asset bubbles could be brewing. We look at four such potential hot spots (real estate, China, hedge funds, and nanotechnology) and identify where the potential pitfalls and opportunities could lie. The most important thing to remember, in our opinion, is that asset bubbles typically start out as a localized phenomenon (for example, the tech bubble started merely with Internet stocks, and ended up shaving about 50% off of the broader market and helped trigger a recession). Hopefully, with an idea of what to look for in a bubble-prone environment, investors will be able to identify high-risk environments and avoid being swept away by the next mania's tide.

Introduction: Recalling History's Most Recent Bubble

Think back to a well-known bubble. It was the year a "New Era" was supposedly upon us. The premise of the "new economics" age was the elimination of the business cycle, since new technologies and innovations were dramatically changing the business landscape forever. Better corporate management improved productivity and inventory control. Financiers argued that prospects for peace and free trade brought about an "industrial renaissance" in the United States. The President declared in his acceptance speech that the end of poverty was in sight, thanks to the "new era" optimism that prevailed.[i] Corporate taxes were low and consumer credit surged. Interest rates remained low and financial liquidity was ample. Stocks flourished and shares soared to levels equal to 30x income. In fact, share prices had risen three times faster than corporate earnings. Former valuation metrics were replaced by the discounting of future earnings. It was widely believed that this New Era economy would not only lead to the end of the boom/bust cycle, but also promote steady growth in wealth and savings, and lead to continuously rising stock prices.[ii]

SAME STORY . . . DIFFERENT ERA!

Two years before the market peak, when speculation reached worrisomely high levels, and stock market margin debt was at an all-time high, the Fed lowered interest rates when it should have been raising them. This was largely in response to the trouble foreign economies were facing. Indeed, hard currency was leaving these countries at an alarming rate, and with the currencies pegged to the dollar, a devaluation seemed imminent. To avert a worldwide financial crisis, the Fed lowered interest rates, resulting in a sharp increase in liquidity, stock market margin debt, and financial asset prices that drove the stock market higher for another two years.

If the story sounds familiar, it's because it brings back memories of the exuberance we saw in the go-go days of the late 1990s. Actually, the scenario described above refers to 1928-29, just before the greatest crash in stock market history!

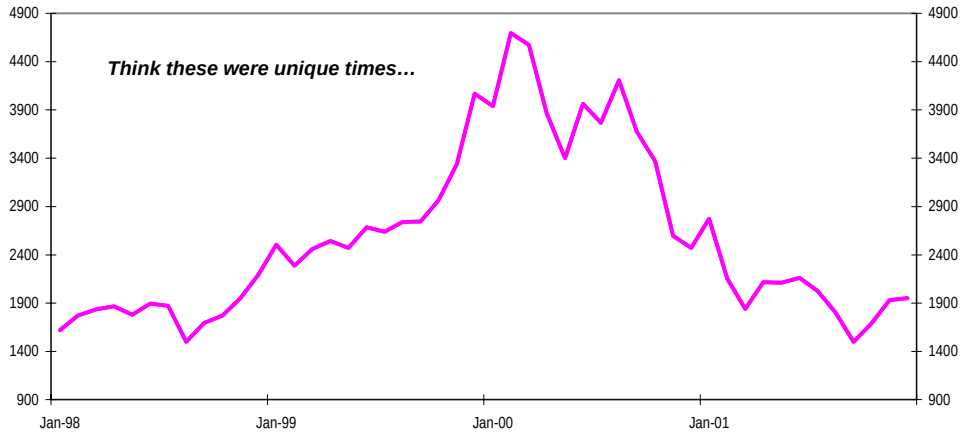
History Repeats Itself

The momentum that carried the stock market up to never-before-seen highs and the panic that sent it tumbling to new lows in the late 1990s was nothing new for the financial markets. This same type of boom/bust cycle occurred back in the 1600s with the tulip mania in the Netherlands, gold in the 1700s, railroads in the 1800s, and the Japanese equity bubble of the 1980s. The most vivid example for modern day investors is, of course, the Internet bubble of 1999 because it affected so many people — from teenagers to grandparents, from retail investors to institutions, from the folks living in the financial center of New York City to those inhabiting the plains of Iowa. Most importantly, though, we start here because it is still fresh in many investors' minds — a stark reminder of the impact financial bubbles have on all of us.

Like the 1920s, the 1990s brought about discussions of a "New Era" information age. Again, there was low inflation, low interest rates, ample financial liquidity, job growth, low unemployment, and consumer optimism. Again, publications claimed that America was entering a new era of prosperity. Again, pundits claimed that the "New Era" economy would lead to the end of the boom/bust cycle, that it would promote growth in wealth and savings, and that it would lead to continuously rising

stock prices. Just like in 1927 (two years before the market peak), the Fed lowered interest rates to avert an international financial crisis in 1998, as stock market debt reached all-time highs.

History's Most Recent Bubble: Nasdaq in 2000



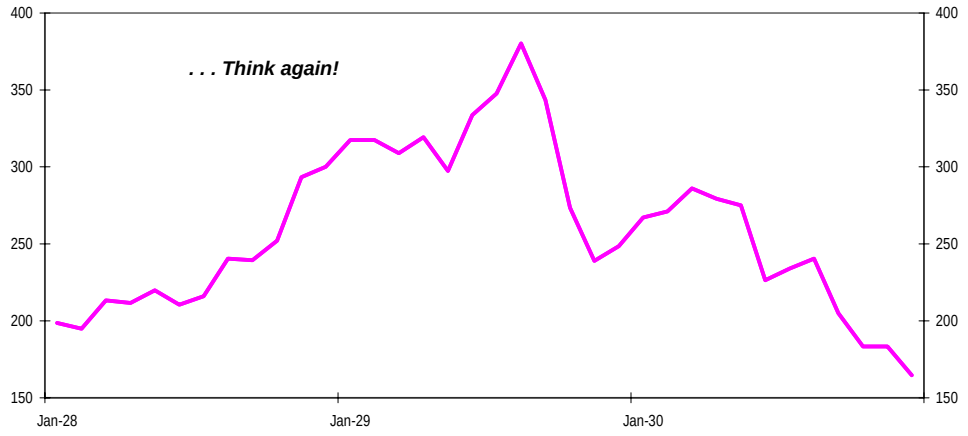
Source: Haver Analytics; Bear, Stearns & Co. Inc.

IS THIS A CASE OF DÉJÀ VU?

Two Well-Known Bubbles Compared

The 1920s	The 1990s
"New Era"	"New Era"
High productivity and ample financial liquidity	High productivity and ample financial liquidity
Low inflation + job growth = optimism	Low inflation + job growth = optimism
Fed cuts interest rates to avert worldwide financial crisis	Fed cuts interest rates to avert worldwide financial crisis
Stock market reaches new all-time high	Stock market reaches new all-time high

History's Forgotten Bubble: S&P 500 in 1929



Source: Haver Analytics; Standard & Poor's; Bear, Stearns & Co. Inc.

This time, Asia and Latin America were in trouble. Capital was leaving both regions at an alarming rate, and many currencies pegged to the dollar were under siege, causing devaluations. The Fed cut interest rates to prevent a financial crisis, resulting in a sharp spike in liquidity, stock market debt, and financial asset prices. Once again, the ample financial liquidity sent the equity market higher for two more years.

Recalling the Internet Daze

The beginnings of the Internet boom can be traced back to 1995 with Netscape's IPO. Foreshadowing the dot-com explosion, the Netscape IPO generated a lot of buzz and no corporate earnings! From there followed Yahoo!, eBay, and a host of other dot-coms like Infospace, Priceline.com, Pets.com, and Drugstore.com. Metrics such as "eyeballs" and "page views" superseded earnings as justifications for stock price run-ups and wildly high P/"no E" multiples. Many analysts devised innovative ways to value companies because of this.

Many Wall Street pundits actually recognized that a bubble was forming, but claimed that this time it was "different." They suggested that the market was stronger than ever and that the life-changing potential of the Internet warranted the exorbitant prices many of the Internet stocks were fetching in the market. These same folks warned that the biggest risk surrounding these stocks was not losing money, but rather the potential of missing out on the upside![iii]

Welcome to the E-World

NAME THAT DOT-COM!

The 1990s saw an explosion of companies and products, many of which had names preceded by the letter "E." The fascination with e-mail multiplied into e-commerce, e-trade, e-stamps, e-toys. A rush-to-market mentality encouraged investors to dump huge amounts into companies that would supposedly change the way consumers transacted, communicated, and conducted their lives. Investors were swept away by the notion that everything would be conducted on-line — commerce, trip-planning, information exchange, you name it. The Internet was treated like a new dimension that housed real estate, communities, buyers, and sellers. Companies were valued based on how many visitors clicked on a site; growth rates referred to "eyeball" growth, rather than earnings growth! Advertisers leased e-real estate on sites based on "click-thru rates" generated by various sites. Outrageous ideas, dreamed up by both high school kids and Stanford-educated engineers, transformed into actual companies, which received significant capital from established venture capital and investment banking firms. Think back to Pets.com, Excite@Home, Keen.com — companies that were invested in solely for their potential. In early 2000, the CEO of Infospace (an online portal) predicted that Infospace would be the first company ever to have a one-trillion-dollar market cap![iv]

Remember the Dow 36,000?

In late 1999, the Nasdaq broke through 4,000 as tech stocks climbed higher. In September 1999, James Glassman and Kevin Hassett published *Dow 36,000*, claiming the intrinsic value of equities and their ability to generate cash would lead stocks even higher. In fact, at the time, they argued that investors could expect a dramatic onetime upward adjustment in stock prices during the next few years, and that the decade-long undervaluation of the Dow would cause it to rise as high as 36,000 by 2005! On March 10, 2000, the day of the peak, Prudential's technical analyst forecasted that the Nasdaq could surpass 6,000 in the next year.

Money, Money, Money . . .

Blame is often passed around in an attempt to lessen the foolishness many investors (retail and institutional alike) felt for buying extremely overvalued stocks that generated no earnings and then getting caught in the spiral when they eventually tumbled. Aside from loose rules, some immoral corporate managements, and structural issues such as IPO lockups stifling liquidity and driving up demand, in the end it was speculation that really drove the market to exorbitant levels in 1999-2000. Excess liquidity, of course, helped to fuel the hot air balloon, but individuals essentially got caught up in the momentum of enthusiasm, greed, and loss of reality — in other words, in a typical speculative mania — in effect driving the mania higher. As we will see, this is the stuff of typical bubbles, nothing unique to the Internet boom!

A STROLL DOWN MEMORY LANE

Remembering the Nasdaq in the 1990s . . .

Source: Haver Analytics; Bear, Stearns & Co. Inc.

The most recent stock market bubble seemed to be the most logical place to start. In the following pages, chapter one shows that history is littered with manias and that the 1990s bubble was not so unusual. Indeed, chapter one will investigate the conditions surrounding asset bubbles, i.e., what structural and exogenous dynamics gave rise to specific bubbles. Chapter two offers a framework to help understand and identify the different types of asset bubbles and why they occur. Chapter three assesses how the current environment measures up to past bubble-prone environments to determine if the backdrop is ripe for another asset bubble any time soon. Finally, using the established frameworks, chapter four explores where the next bubbles are likely to occur. Here, we hypothesize about which asset classes and countries will most likely experience manias. Finally, we will try to explain how to identify bubbles as they unfold so as not to get caught in another boom/bust cycle.

Note: While we believe that investors will find all four chapters interesting, those looking specifically for the benchmark indicators of a bubble environment should concentrate on chapter two, while those looking for clues as to where current and future bubbles could blow should turn to chapter four.

The Internet bubble was by no means the first bubble to form in financial market history. Each century has seen its fair share of asset bubbles, and signs of new bubbles appear all the time. Indeed, we all notice fads that catch on like wildfires in various areas of life, from fashion to foods to technological gadgets. If we stop and look around during our daily routines, we can spot nonscientific indicators of financial bubbles right before our eyes, since they are somewhat of a cultural phenomenon of human behavior. In fact, one of the best indicators of a bubble can be found at the local strip mall. A trip to the business and economics section of the nearest Barnes & Noble can provide a very good indication of where bubbles are forming in financial markets. In 1999 and 2000, it was not uncommon to see more than one-third of the business book shelves devoted to titles peddling the merits of dot-com/technology investing — this at a time when the Nasdaq was already well along its way to 5,000. Today, an investor browsing the same aisles can't help but be amazed by the number of titles encouraging real estate investing and home buying.

Tracking Bubbles Throughout History

1600s		1700s		1800s		1900s		2000s
1630s	Tulip Mania	1720s	Canals (UK)	1820s	South American Mining Companies (UK)	1900s	Conglomerates Railroads	Real Estate China
1690s	East India Company	1790s	South Sea Company	1840s	Railroads (UK)	1910s	War Companies	Hedge Funds
				1850s	Railroads	1920s	Florida Land Speculation Motor Cars and Radio	Nanotechnology
				1860s	Gold Mining Stocks		Crash of 1929	
				1870s	Railroads	1950s	Bowling and Vending Stocks	
				1880s	Railroads	1960s	Electronics and Conglomerates	
				1890s	Railroads	1970s	Nifty-Fifty Oil Companies Gold Bullion	
						1980s	Japanese Market Junk Bonds LBOs Housing Biotech	
						1990s	Internet Biotech	

Source: Bear, Stearns & Co. Inc.

Similarly, a look at the types of publications that are written during various bubble episodes is another interesting indicator. For instance, during the tech bubble, scores of periodicals emerged, focusing on different aspects of the industry — e.g., *The Red Herring*, *Business 2.0*, *Wired Magazine*, *CNE*. Such fanfare in the media world has existed throughout past bubbles, too. Railroad publications proliferated in the 1840s, including *The Railway Express*, *The Railway Examiner*, *The Railway Globe*, *The Railway Standard, The Railway Mail,* and *The Railway Register*.[v]

Some investors are familiar with past bubbles, such as the notorious tulip mania in the 1600s, railroad stocks in the 1800s, and the Great Crash of 1929, to name just a few. But it is important to acknowledge that these are just the major ones — history is actually littered with financial manias, and the most recent episode in the 1990s was no exception. In fact, each century has seen its fair share of manias and asset

bubbles. We believe it is worthwhile to review a few of the more well-known bubble episodes through the centuries to get a sense of how these situations occur and the impact they can have on the markets. This chapter will cover the Dutch tulip bubble in the 17th century, the South Sea bubble of the 18th century, the railroad bubble in the 19th century, and the bowling mania in the 20th century.

A BUBBLE BLOSSOMS IN HOLLAND

17th Century Bubble: Tulip-Mania

Like so many environments preceding a large asset bubble, optimism abounded in the Netherlands in the 1630s. In fact, the Dutch Republic was experiencing a Golden Age — a period in which the Netherlands enjoyed commercial supremacy and the highest incomes in Europe, which, unsurprisingly, fueled a highly consumer-oriented nation. From the time the tulip was introduced by the Turkish ambassador to a famous Dutch botanist, tulips became a symbol of wealth and luxury. Indeed, the tulip quickly caught on as a colorful way to decorate small gardens and brighten an otherwise dreary landscape. The tulip fever ignited, and soon these flowers were the most sought-after object of status.[vi]

Ownership of desirable tulip strains quickly progressed to speculation in tulip bulbs since the actual colors of the flower were not known until the tulip actually bloomed. Since any bulb could become a *Semper Augustus*, the most valuable of tulip strains, a great deal of money could be made on this trade. By 1634, stories of rising tulip bulb prices spread to other countries, including France. Soon, foreigners were traveling to Amsterdam to partake in the tulip craze. Out of this, a tulip market was created.

Price Comparison Guide During 17th Century Tulip Market

Cost of one Dutch ton of herring	13 guilders
40 gallons of French brandy	60 guilders
A thousand pounds of cheese	120 guilders
Two tons of butter	192 guilders
Eight fat pigs	240 guilders
Annual earnings of a carpenter	250 guilders
Small town house	300 guilders
Four fat oxen	480 guilders
A ship	500 guilders
48 tons of rye	558 guilders
Typical salary of a middle-ranking merchant	1500 guilders
Rembrandt's fee for his greatest masterpiece, *The Night Watch*	1600 guilders
Typical salary of a well-off merchant	3000 guilders
Highest reliably attested price paid for a tulip bulb (1637)	5200 guilders

Source: Edward Chancellor, *Devil Take the Hindmost*, p.18; Peter M. Garber, *Famous First Bubbles*, p. 82; Bear, Stearns & Co. Inc.

The folks who couldn't afford to buy the expensive shares of what were the publicly traded companies of the day, could instead place wagers on tulip bulbs. Tulips were numbered, and records were kept surrounding the trading activity on the individual bulbs. At the height of the tulip boom in late 1636, a market in tulip futures emerged. Essentially, sellers promised to deliver a certain type of bulb by the following spring.

As the interest in tulips grew and the amount of buyers increased, so did prices of bulbs. By the end of 1634, prices had risen sharply. This acceleration in prices continued through 1635, and by the winter of 1636, the value of some bulbs could

practically double in little more than a week. The mania climaxed in December 1636 and January 1637. The rush of capital that poured in during this time drove prices even higher, and novices threw all they had into the market. The volume traded reached never-before-seen heights. It was reported that at the height of the boom, bulbs were changing hands up to ten times a day, with the price rising with each transaction. So, while a tulip bulb was still beneath the ground, its ownership could have changed hands ten times in one day, and it come out of the soil with a value more than 5.0x-10.0x that when it was planted![vii]

The tulip marked crashed suddenly on February 3, 1637. There was no obvious trigger for the panic, except that spring was around the corner, when delivery would occur. Rumors began to spread that there were no more buyers, and tulips became unsellable. Essentially, contracts could not be fulfilled and defaults began to unfold one after another. No economic crisis ensued, but litigation carried on for years.[viii]

Post-Collapse Bulb Prices in Guilders

Bulb Name	1637 Price	1642-43 Price	Peak to Trough Decline
Witte Croonen	1668	37.5	97.8%
English Admiral	700	210	70.0%
Admirael van der Eyck	1345	220	83.6%
General Rotgans	805	138	82.9%

Source: Peter M. Garber, *Famous First Bubbles,* p. 64.; Bear, Stearns & Co. Inc.

Investors were able to recover some money on some of the rarer breeds, since, within a few years, the price of these bulbs returned to levels at which they could be purchased before the boom. The more common varieties never recovered. As is common in the aftermath of many bubbles, tulip-mania transformed into "tulipophobia"[ix] — sentiment completely reversed toward tulips to the point that individuals loathed anything tulip-related.

A BUBBLE BLOWS OFF THE SOUTH SEA

18th Century Bubble: The South Sea Company

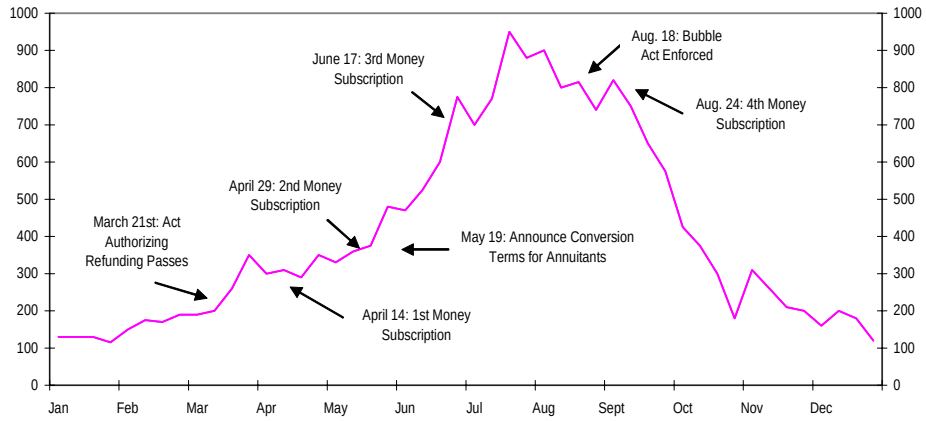
In 1711, the South Sea Company was formed to assume a portion of British government debt, which it "converted" into its own company shares and sold to the public. At the time, England was flourishing. Interest rates were low, and optimism prevailed (sound familiar?). The South Sea Company sought to profit from the government's annual interest payment as well as a monopoly on various trade routes with the Spanish colonies of South America, granted by the English government. Essentially, the debt conversion program transferred high interest, un-tradable debt into low interest, easily marketable shares of the South Sea Company. The financing scheme was similar to that of the French Mississippi Company started by financier John Law.

The scheme depended on the notion of a rising stock price. Indeed, a higher share price meant the company could pocket the difference between the conversion price and the trading price, so it was in the company's best interest to have as high a stock price as possible. What's more, a number of Parliament members accepted bribes in return for passing the act that gave the South Sea Company authorization to refund the government debt in the first place — i.e., they received an allocation of shares,

which were issued at a small premium to the current market price. No deposit was required. Essentially the shares were like options — if the price rose, the shares could be redeemed and profits collected; if not, nothing was lost. Therefore, members of Parliament also had a vested interest in seeing South Sea share prices rise. The company undertook a total of four cash subscriptions, which all witnessed a significant rise in the stock price.

The excitement surrounding the South Sea mania sparked a series of upswings in other companies' stock prices as well as a string of new "bubble companies." By mid-summer, directors of the South Sea Company feared that competition from the "bubble companies" could threaten their company's stock price. In an attempt to dampen the competition, the head of the South Sea Company persuaded his friends in Parliament to pass the "Bubble Act," which prohibited any new companies from being formed without parliamentary permission.

South Sea Share Price in 1720



Source: Peter M. Garber, *Famous First Bubbles*, p. 116; Bear, Stearns & Co. Inc.

The South Sea directors then requested an indictment against three bubble companies that had entered into business areas not outlined in their charters. A few days later, the South Sea Company announced a 30% dividend for that year and guaranteed a 50% dividend for the next 12 years!

The culmination of these three events (the Bubble Act, the prosecution of the three bubble companies, and the generous dividend) was intended to secure the South Sea share price, which had peaked that month at a price of nearly £1,000 (it had multiplied by 8.0x in about six months!). However, the effect of these three events backfired and ended up triggering a panic in the market. Within a few weeks, one of the indicted companies saw its share price collapse to £30 from £305. Speculators who had purchased "bubble company" shares had to sell South Sea shares to pay off losses elsewhere. The 50% dividend was called a bluff, and the share price tumbled. By September of 1711, the stock traded below £800, and tumbled to £600 two weeks later. By the end of the month, the stock was below £200 — a decline of 75% in just four weeks! Essentially, the same word-of-mouth that bid the stock to its highs quickly squelched the mania.

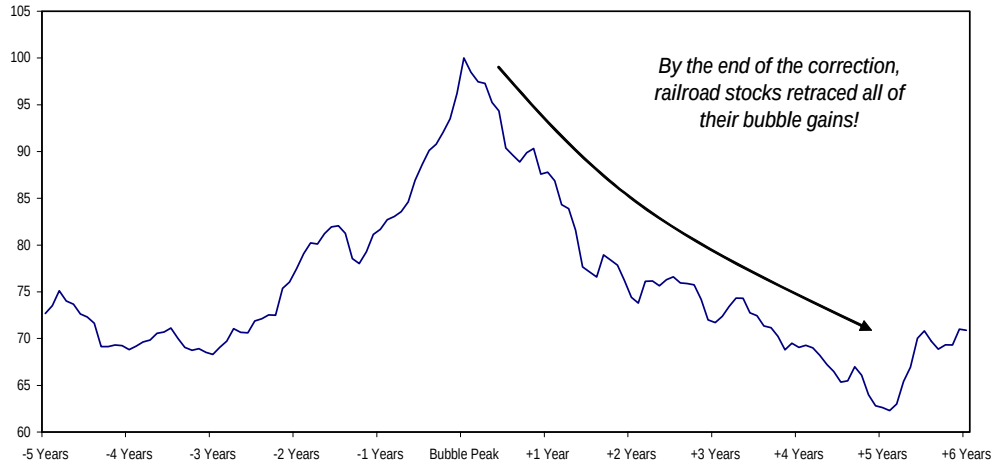
A BUBBLE THAT RAILROADED INVESTORS AGAIN AND AGAIN

19th Century Bubble: Railroads

The railroad was undoubtedly the 19th century's greatest technological invention, providing a viaduct for commercial trade and a catalyst for economic expansion. It also facilitated the movement of labor and capital to different parts of the United States. The railroad was arguably the most life-changing event in decades. Unsurprisingly, railroad stocks garnered much attention in the 19th century, culminating in a speculative mania with a series of boom/bust episodes.

The first railroad stock was listed on the New York Stock Exchange in 1830, when there were only 73 miles of track throughout the United States. Ten years later, in the 1840s, there were about 6,000 miles of track and about 13 railroad stocks listed. By 1852, track mileage had doubled to 12,000 miles; by 1860, there were 30,000 miles of railroad track built; and by 1880, 93,000 miles of track existed. By 1857, one billion dollars had been invested in railroads, and lines mushroomed across the United States.[x] "Railroad fever" spread through many communities, providing jobs for immigrants and creating an optimistic era of prosperity.

A Composite of the Major Railroad Bubbles



Note: Composite derived from railroad prices during speculative periods in the1830s, 1850s, 1870s, 1880s, 1890s, and 1900s.

Source: *Fluctuations in American Business: 1790 to 1860*; National Bureau of Economic Research; Bear, Stearns & Co. Inc.

When discussing the proliferation of railroad infrastructure, it is difficult to ignore the role the government played. Indeed, states bought stock in transportation companies or facilitated the sale of stock in the companies. They granted monopolies to the railroad companies and subsidized their development, by granting federal land for the use of tracks. Furthermore, the government created lending entities that provided credit necessary for the capital-intensive railroad construction process. Capital was readily available.

The railroad bubbles are especially interesting because they were actually a series of consecutive boom/bust periods. Indeed, the first wave of railroad speculation came to a halt in 1837, with the onset of the 1837 Crisis. Speculation then ensued once more, coming to an end in 1857, when the "Panic of 1857" set in, bankrupting several railroad companies and deflating the overvalued stock prices. Expansion commenced again during the 1860s, preceding the Civil War, ending in one of history's worst depressions in the 1870s and early 1880s. Indeed, in 1873, unbridled railroad

speculation, combined with overextended credit, had severely weakened the U.S. financial structure. When the leading American banking company suddenly declared bankruptcy, the stock market plummeted. In that year alone, 5,183 businesses failed.[xi] The nation suffered a heavy depression that lasted until 1877.

Following that economic downturn, the market launched into another bull market expansion. Once again, the pattern of events causing the bubble and then deflating it sound similar. The major technological innovation of the railroad facilitated an economic surge, which increased living standards and set the groundwork for the Industrial Revolution. Unsurprisingly, this period of optimism led to financial speculation and over-expansion of capacity. This boom/bust cycle in railroad repeated itself several times throughout the 19th century, creating a serial bubble in railroad stocks. The railroad industry is one of the few industries that has experienced a repetitive bubble in the same asset class.

Railroad Era Crisis and Bear Markets

Railroad Era Crisis and Bear Markets

Historical Railroad Period	Decline From Index Peak	Historical Railroad Period	Decline From Index Peak
Crisis of 1837	-75.3%	Crisis of 1884	-35.4%
Crisis of 1857	-63.1%	Crisis of 1893	-32.7%
Crisis of 1873	-47.8%	Crisis of 1907	-34.7%

Source: *Fluctuations in American Business: 1790 to 1860*; National Bureau of Economic Research; Bear, Stearns & Co. Inc.

The serial nature of railroad bubbles is not unusual given the size of the United States. While the first railroad bubbles occurred in companies formed to link waterways (canals, rivers, and oceans) to nearby cities, later bubbles occurred in more developed railroad companies building lines between major cities and across the continent. Eventually, though, the sheer size of U.S. railroad operations began to outweigh the nation's ability to support them. In its final bubbles, the growth and maturation of railroads, and the enormous importance of their securities in equity markets, moved into a manipulation phase in which owners of railroad companies essentially traded away the companies' financial future for their own personal gain. In the future, we could see serial bubbles occur again (e.g., a second wave of Internet companies), but it is unlikely they will ever again unfold over the course of a century.

INVESTORS BOWLED OVER BY A BOWLING BUBBLE

20th Century Bubble: Bowling Mania (One Among Many!)

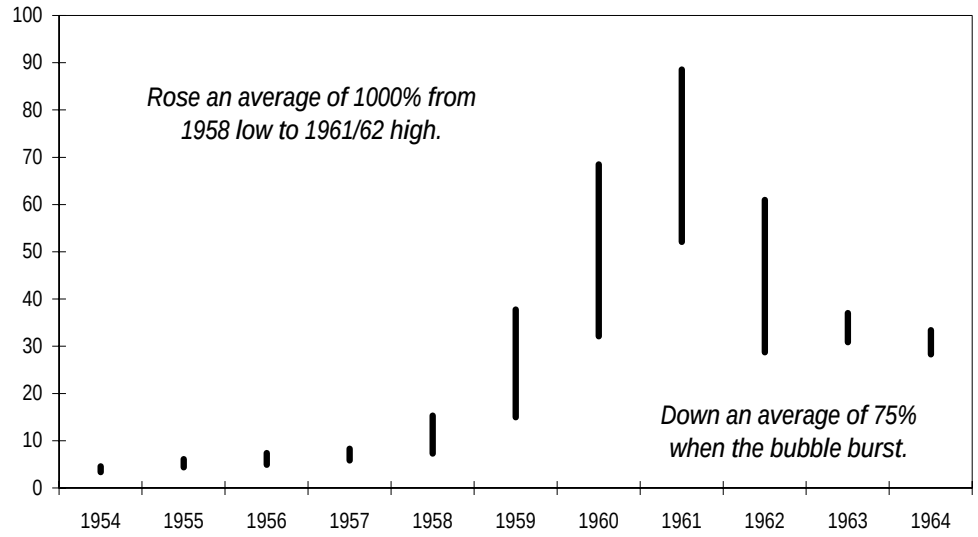
The 20th century has seen more financial bubbles than any of the previous centuries. This is not overly surprising since the past 100 years have once again exhibited many periods of prosperity, coupled with an explosive information age. Indeed, in the last century, financial markets have witnessed manias in the following instances: the Florida land boom, conglomerate and war companies, the great crash of 1929, the Nifty-Fifty, oil, gold bullion, Japan, junk bonds, biotech, and, of course, the Internet. These bubbles have, at times, been pervasive, while at other times quite localized.

One localized mania that we find particularly fascinating (and that is little discussed in financial circles) is the bowling and vending stock mania of the late 1950s and early 1960s. A technological breakthrough in the 1950s set the stage for an explosion

of bowling alleys. In 1951, American Machine and Foundry Company (AMF) purchased the patents to Gottfried Schmidt's "automatic pin-spotter," which enabled the automatic pin and ball retrieval we know today. This development eliminated the "pin-boys" many bowling alleys employed.[xii]

In the 1950s, bowling caught the attention of television broadcasters, causing the sport's popularity to grow exponentially. By the 1960s, bowling had become a huge fad, and, consequently, bowling stocks took off in the stock market, as even investors sought to own a piece of the bowling mania. Vending stocks also caught fire with investors during this time, as these machines appeared throughout the country.

Bowling and Vending Stocks, 1954-1964



Source: Moody's Stock Reports; Bear, Stearns & Co. Inc.

The chart above illustrates a composite of bowling and vending stocks during the 1950s and early 1960s. Since frequent pricing data are not available for many of these companies, we simply took each stock's high and low spread for the year to demonstrate volatility trends during the period for a basket of bowling and vending stocks. As the chart demonstrates, volatility picked up in these stocks gradually throughout the late 1950s and early 1960s. Ultimately, trading volatility peaked in 1961, and dropped off significantly the following year (1962), which is not overly surprising considering that this was the year the stock market entered a bear market episode. Consequently, volatility then tapered off, and share prices collapsed as the overall equity backdrop weighed on stocks, but more importantly, as the fad in bowling and vending stocks lost steam.

Between 1958 and the 1960-61 peak in bowling and vending stocks, many stocks in both industries saw their stock prices climb as much as 1,700%! In fact, the average bowling and vending stock posted a gain of 1,036% — not bad for a two-year return!

As we have now seen, such enormous appreciations in stock prices and subsequent collapses are by no means unique to financial history. Indeed, our survey of prior centuries illustrates that these episodes tend to repeat with some periodicity. In the next section, we attempt to understand why such behavior occurs again and again.

CREATING BUBBLES IN THE LABORATORY

Back to the Future . . .

It should be clear at this point that history is littered with financial bubbles. Seeing as the old cliché is that history tends to repeat itself, we would not be surprised to see more asset bubbles in the future. However, the question really is why do people not learn from their experiences to avoid bubble situations? To help answer this question, we now turn toward academia to help shed some light on why market participants are unable to avoid what in hindsight was a predictably precarious situation.

Vernon Smith is one of the best-known academic expert on the topic of experimental economics, i.e., the study of the nature of economic interactions. In fact, Mr. Smith was the joint winner of the 2002 Nobel Prize in economics for his work in the experimental economics field, explaining why markets work the way they do.

Among a multitude of other experimental economic studies, Mr. Smith and his collaborators have produced a significant amount of work on the study of laboratory-induced stock market bubbles. The experiments tend to consist of a laboratory-created stock market, during which Mr. Smith and his team look for patterns that emerge from the participants' trading activities. In their 1988 series of experiments, articulated in "Bubbles, Crashes and Endogenous Expectations in Experimental Spot Asset Markets," *Econometrica,* 56 (1988), pp. 1119-1151, Mr. Smith et al made an interesting discovery surrounding the idea of repetition or prior experience in avoiding bubbles and crashes.

Indeed, in 14 of 22 experiments, price bubbles occurred, followed by crashes. What's more, Mr. Smith and his associates found that when inexperienced traders were involved in the simulation, dramatic price bubbles occurred, in which stock prices rose far above fundamental values, and then crashed back to their fundamental values some time late in the stock's lifetime. On the other hand, as participants become more experienced with trading in this market, the bubbles tended to be reduced. Indeed, they found that "when traders are experienced, this reduces, but does not eliminate, the probability of a bubble."[xiii]

In short, Mr. Smith finds that experience is the only way to avoid bubbles. The first experiment creates a bubble and a crash. This scenario is then replicated. By the third time, market participants realize where they went wrong previously, and they move the market toward a more fundamental pricing structure. At first glance, these results may offer some comfort to those who believe that market fundamentals drive prices. However, we must keep in mind that new participants are entering financial markets all the time and that what Mr. Smith calls "experience" with financial bubbles usually takes a longer time to unfold than the lifespan of typical Wall Street career.

Indeed, history is no stranger to financial bubbles. As Mr. Smith's behavioral economic studies demonstrate, experience can go a long way toward preventing future bubbles. However, the trouble is that, as we have seen, most bubbles occur with a significant time lapse between them, implying that by the time the next generation experiences one, there are a brand new group of market "participants." In the next chapter, we attempt to provide a framework that suggests that although bubbles are easier to identify with hindsight, there are certain clues that the economy offers in a bubble-prone environment.

Chapter Two: Making Sense of Bubble Environments

As we saw in the last chapter, history has seen a great number of bubble episodes during which asset prices move beyond what fundamentals would seem to justify. In this chapter we revisit historical financial manias in an attempt to offer the sort of "experience" that Vernon Smith suggests is crucial. Indeed, in this chapter we suggest a framework for identifying bubbles so that investors can hopefully be better equipped to deal with potential manias in the future. Each century has seen its fair share of financial manias and subsequent panics, and identifying them while they are in progress is a difficult task for even the most astute market observer.

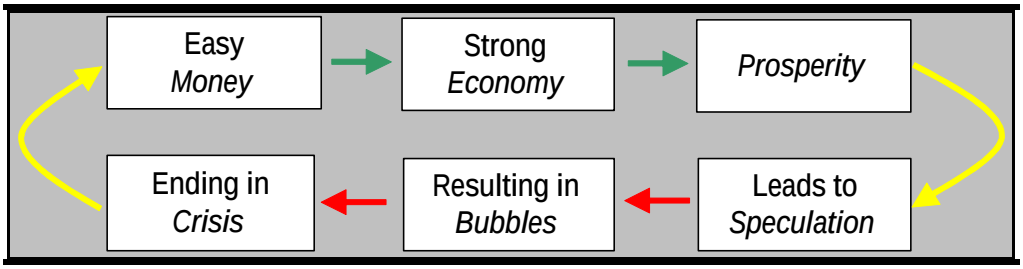
Fed Chairman Alan Greenspan has argued that it is impossible to know an asset price bubble has developed until after it has burst.[xiv] While we agree that it is certainly easier to identify bubbles after the fact, we have found that there are enough commonalities between past bubble episodes to enable us to identify recurring themes in the period leading up to a bubble environment. That is, similar economic circumstances seem to precede many asset bubbles, suggesting that there is nothing completely random about a bubble itself. Unfortunately, when these signs appear, the vast majority of individuals are completely unaware of the mounting danger. With some foreknowledge as to what clues to look for, we hope to shed some light on how to identify a bubble environment as it is unfolding, rather than merely in hindsight, after the damage has occurred.

WHERE IS THE BIRTHPLACE OF AN ASSET BUBBLE ?

The Evolution of the Bubble-Producing Environment

It is not uncommon to see bubbles materialize in a single asset class (such as gold in the 1880s and real estate in the early 20th century), or simultaneously across a number of asset classes. Bubbles can blow quietly in specific business segments (e.g., bowling stocks in the 1960s, or biotech stocks in the 1990s), or grow to encompass an entire theme of stocks (for example, the Nifty-50 stocks of the 1970s and tech/dot-coms in the 1990s). In its worst form, a bubble can become all-encompassing, invading the normally prudent halls of the financial industry and intoxicating the consumer, drawing in new investment flows in a vicious cycle (such as the Great U.S. Bubble of 1929 and the massive Japanese Bubble of the late 1980s).

Evolution of a Financial Bubble



Source: Bear, Stearns & Co. Inc.

So, why are bubbles often opaque to the general participant? The answer is simply that the environment that fosters the bubble psychology is one of optimism — i.e., economic expansion, general prosperity, and predictable banking and financial liquidity. The idea that a financial disaster could occur at any moment is too far-fetched for individuals to imagine during times of such heightened exuberance. With

that in mind, it should come as no surprise that some of the most outrageous cases of bubble psychology over the last 400 years have occurred in countries undergoing major industrial or technological revolutions, and, at the same time, enjoying dominance in trade and financial markets. A technological or industrial revolution that increases mobility, improves quality of life, and brings with it the opportunity to increase employment and wealth-making opportunities is just the catalyst necessary to ignite a bubble psychology phenomenon.

Like a perfect storm, these three bubble characteristics (economic expansion, general prosperity, and predictable banking and financial liquidity) can converge to create a psychology of endless prosperity. This is why the term "New Era" is a common rallying cry during each of the major bubble events. The "New Era" psychology brings with it a change in the perception of risk and a chorus of believers proclaiming that it will be different this time and that new models must be created to monitor asset values. In the end, however, it becomes painfully obvious that there is no such thing as a "New Era."

The common thread of speculation is that it almost always occurs in an environment marked by prosperity. When "prosperity think" drives the price of a speculative asset far beyond the discounted value of its future cash flows, a bubble mania is evident. Bubbles can be brought on by a dislocation in the supply/demand balance of a specific asset and generally occur in periods of economic prosperity. Typically, they occur when a dominant variable, such as inflation or very low interest rates, causes a singular flow of money into a specific financial asset. The degree to which the bubble has been fostered by excessive financial lending to businesses and consumers will in the end determine to what degree the economy is affected when the bubble bursts, and to what extent the financial sector is affected.

THE LIFE OF A BUBBLE: BIRTH, RIPENS, AND BURSTS

The Three Phases of the Bubble Environment

The typical bubble environment can be separated into three phases. The first phase can be characterized as the "pre-bubble phase." This is the environment leading up to the bubble, where we typically see signs of a strong and prosperous economy, with ample financial liquidity. At this stage, we generally see pricing pressures start to build. These are the early signs that a bubble is brewing.

The Three Phases of the Bubble Environment and the Important Benchmarks to Watch

Pre-Bubble Environment	Bubble Peak	Post-Bubble Environment
1) Easy Money	5) Speculation	11) Asset Prices Collapse
2) Strong Economic Growth	6) Yield Spreads Widen	12) Recession Ensues
3) Prosperity	7) Pricing Pressures Accelerate	
4) Pricing Pressures Build	8) Short Rates Rise	
	9) Yield Curve Flattens	
	10) Business Activity Slows	

Source: Bear, Stearns & Co. Inc.

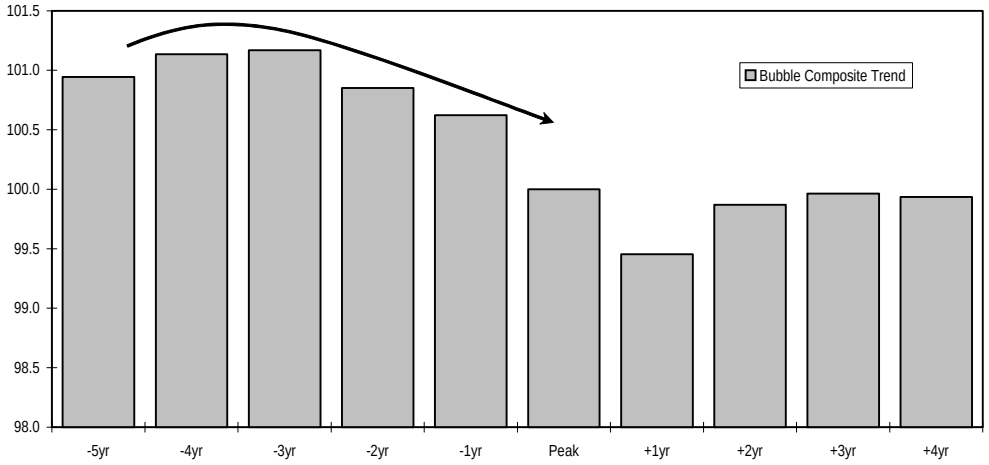
It is during the second phase that the asset bubble peak typically occurs. What characterizes a bubble peak is when there is ample evidence of speculation in either an asset class or across an industry. Other signals we have found include a widening of high yield spreads, accelerated pricing pressures, rising short-term interest rates, and a flattening of the yield curve. At this point, we also typically see the beginning of a slowdown in business activity. By this time, we have entered the third and final phase of the bubble evolution cycle, when the bubble usually bursts and asset prices collapse. Often after such a shakeup, a recession ensues. This is what we refer to as the post-bubble phase.

PHASE I: A BUBBLE IS BORN

The Pre-Bubble Environment

The pre-bubble environment is characterized by an expansive backdrop that essentially sets the stage for economic prosperity and optimism. Indeed, the first phase preceding a bubble environment is one of particularly easy money. The following charts are comprised of composites from speculative/panic periods during last 150 years. The chart below shows that a typical asset bubble is preceded by several years of ample financial liquidity. Indeed, the amount of money in circulation tends to reach its high tide of momentum about three years prior to a speculative peak. Then, the rate of growth in monetary aggregates tends to wind down in the few years before the bubble peak is reached.

Benchmark 1: Easy Money — Ten-Year CAGR of Money in Circulation



Note: Composite derived from money in circulation in speculative periods around 1857, 1873, 1884, 1893, 1907, and 1929, and money supply in the late 1960s/early 1970s and late 1990s/early 2000s periods.

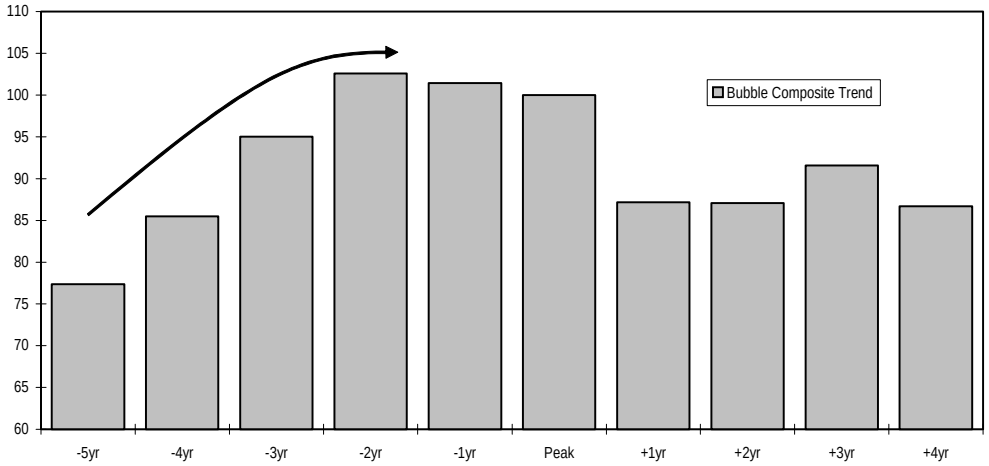
Source: National Bureau of Economic Research (NBER); Federal Reserve; Bear, Stearns & Co. Inc.

From here, we typically observe that an increase in money supply eventually results in strong economic growth. This, of course, helps characterize the next phase of the bubble-prone environment, since easy money typically helps foster economic growth. Ample liquidity, of course, fuels consumer and business spending alike, by increasing access to capital. This, in turn, provides the fuel necessary for the economy to fire on all available cylinders.

The chart below illustrates the nonresidential building activity across many different business cycles. Indeed, the composite includes data from periods spanning all the way back to the 1800s! In fact, we have found that building activity is a great proxy

for economic activity. This composite shows that the value of building permits tends to increase sharply in the pre-bubble environment and then peak a couple of years before the crest in the asset bubble.

Benchmark 2a: Nonresidential Building Activity Suggests Strong Economic Growth

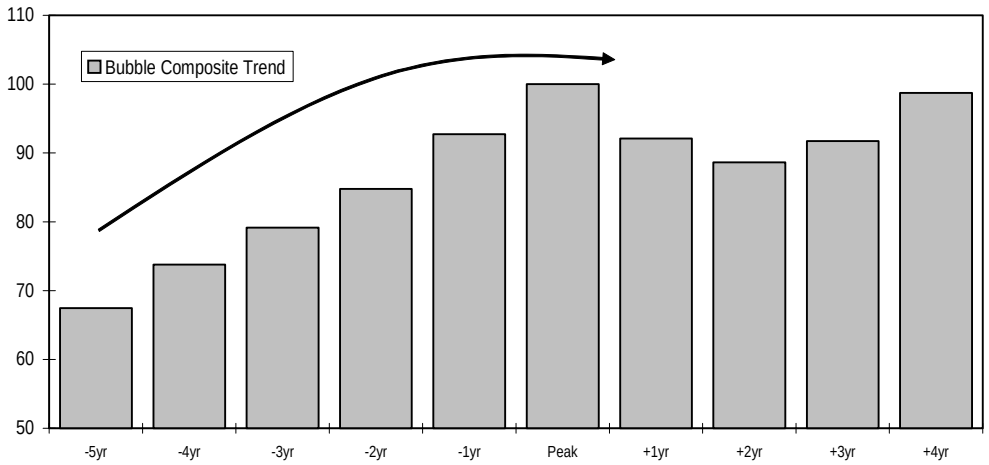


Note: Composite derived from nonresidential building activity in speculative periods around 1857, 1873, 1884, 1893, 1907, and 1929, and private nonresidential construction in the late 1960s/early 1970s and late 1990s/early 2000s periods.

Source: NBER; Census Bureau; Bear, Stearns & Co. Inc.

The strength of the economy can also be demonstrated by looking at trends in foreign trade. Indeed, the chart below is comprised of the aggregate of import and export trends leading up to a bubble peak. Interestingly, this economic indicator tends to be more coincident with trends in the market. That is, foreign trade typically accelerates in the four years leading up to a financial bubble, peaking simultaneously with the top of the bubble.

Benchmark 2b: International Trade (Exports Plus Imports) Suggests Strong Economic Growth



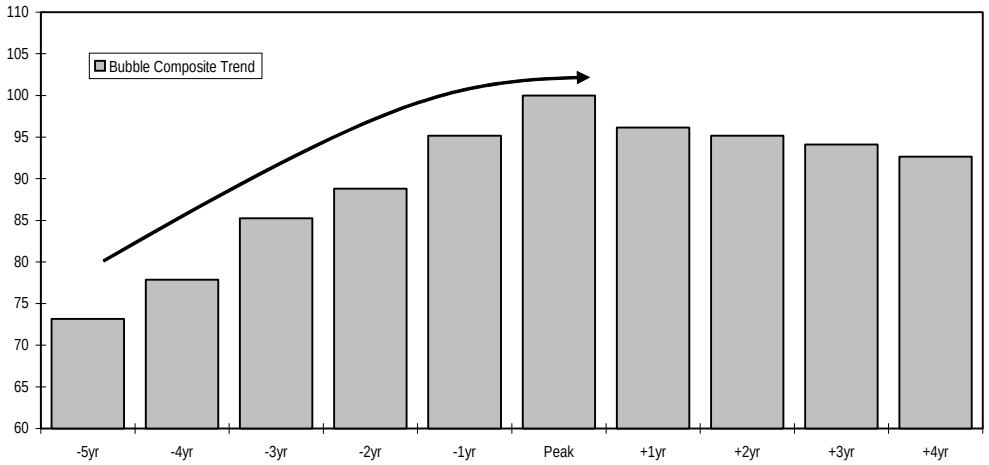
Note: Composite derived from merchandise import and exports in speculative periods around 1857, 1874, 1884, 1893, 1907, and 1929, and goods and services imports and exports in the late 1960s/early 1970s and late 1990s/early 2000s periods.

Source: U.S. Department of Commerce; Bureau of Economic Analysis; Bear, Stearns & Co. Inc.

One consequence of strong economic growth is the expansion of wealth. Indeed, abounding prosperity and the proliferation of personal wealth is a very common signal in a pre-bubble environment. Using the value of real estate as a barometer for

personal wealth across the centuries, we see that the value typically swells incrementally during the bubble appreciation phase. The composite below is derived from the value of Manhattan real estate surrounding several speculative periods dating back to the 1800s.

Benchmark 3: Rising Real Estate Values as a Measure of Increased Prosperity

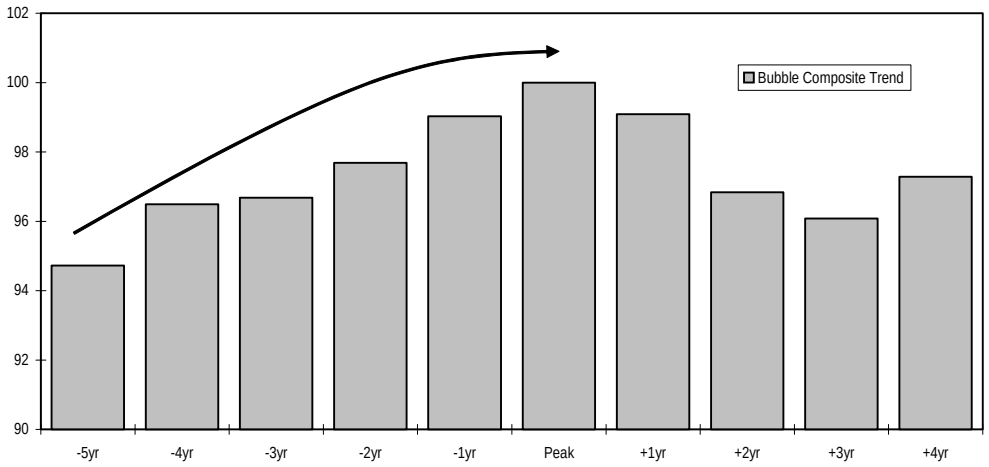


Note: Composite derived from the value of Manhattan Island land and buildings in speculative periods around 1857, 1873, 1884, 1893, 1907, and 1929, and holding gains on real estate in the late 1960s/early 1970s and late 1990s/early 2000s periods.

Source: U.S. Department of Commerce; Federal Reserve; Bear, Stearns & Co. Inc.

At this point, while the economy is generally growing and prosperity is widespread, pricing pressures often begin to build. In fact, as the chart below illustrates, pricing pressures, as measured here by a composite of CPI trends surrounding past bubble peaks, gradually climb during the three years or so leading up to the bubble peak.

Benchmark 4: Pricing Pressures Gradually Building



Note: Composite derived from the cost of living index in speculative periods around 1857, 1874, 1884, 1893, 1907, and 1929, and the Consumer Price Index in the late 1960s/early 1970s and late 1990s/early 2000s periods.

Source: U.S. Department of Commerce; Bureau of Labor Statistics; Index; Bear, Stearns & Co. Inc.

PHASE II: THE BUBBLE RIPENS

The Bubble Peak Phase

As we have seen in our study of historical asset bubbles, prosperity is often the direct precursor to a speculative environment. Indeed, prosperity generally leads to a greater

tolerance for risk-taking, and "prosperity think" ultimately enforces a false sense of security that everything is rosy and should continue to be so. At times like these, investors often become myopic, allowing themselves to be easily swept away by the illusion of continued successes. Indeed, at this point, investors are often willing to pay a greater premium than fundamentals justify, whereas it is precisely at this moment that they should be looking to seal in a profit! This is how a classic bubble episode usually arises.

Benchmark 5: Financial Asset Appreciation Showing Signs of Speculation

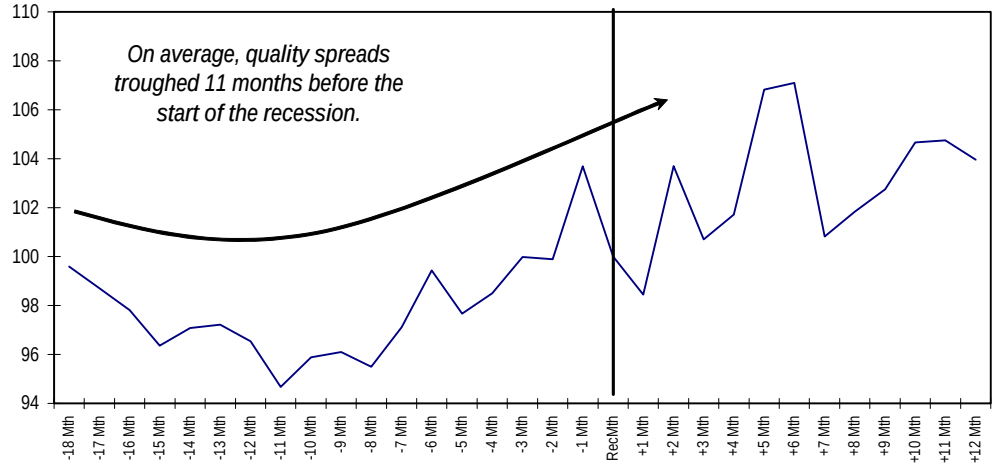
Classic Bubble Markets

Market Measure	Bull Market High Date	Bull Market High Close	Bull Cycle Rally	Bull Cycle Duration
Railroad Index	5/1835	27.80	116.3%	6.0
Railroad Index	12/1852	24.95	263.0%	10.8
Railroad Index	4/1872	45.20	390.5%	14.4
S&P Composite	9/7/29	31.92	192.0%	3.4
Nasdaq	3/10/00	5048.62	255.8%	1.4
Gold	1/1980	760.00	482.4%	3.0
Nikkei 225	12/29/89	38915.87	301.1%	5.4
Biotechnology	1/10/92	246.41	430.2%	1.2
Conglomerates	1968	37.73	402.4%	3.9
Electronics	1961	282.90	382.4%	1.2
Nifty-50 Cos.	12/1972	194.18	136.0%	2.5
Bowling & Vending	1960/61	88.55	1114.8%	2.0
Oil Stocks	11/26/80	392.20	171.4%	2.8

Source: NBER; Standard & Poor's; Moody's Handbook; Haver Analytics; Bear, Stearns & Co. Inc.

The bull market peak is typically a precursor of an economic slowdown to come. Often, in a bubble-prone environment, the first sign that trouble is looming on the horizon for the economy is a widening of high yield spreads. In fact, even going back to the railroad era of the late 1800s, we have found that a widening in spreads was typical preceding a bubble-induced recession. The chart below reflects a proxy for high yield spreads. It shows that quality spreads typically trough a year or so before the start of a recession.

Benchmark 6: Expanding Yield Spreads Suggest Falling Risk Tolerance

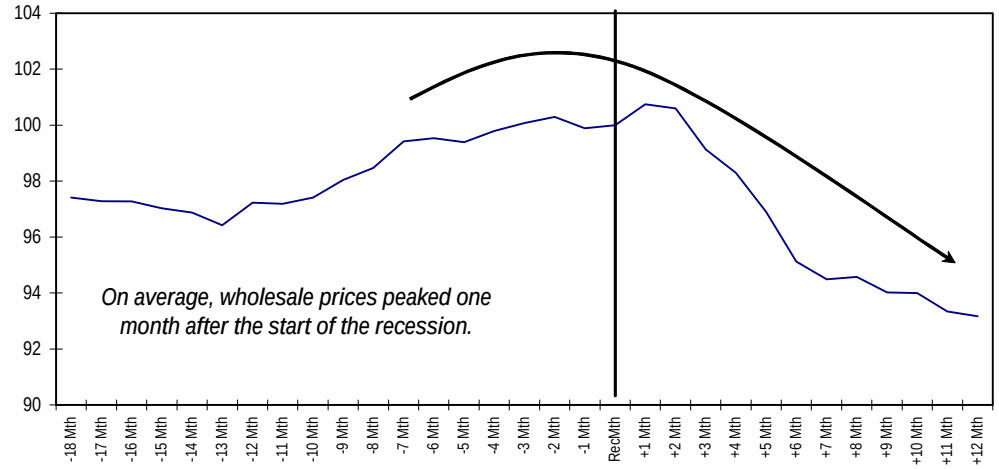


Note: Derived from the spread between high-grade and all railroad bond yields during speculative periods around 1857, 1873, 1884, 1893, 1907, and 1929, and between the Moody's Baa Corporate and ten-year Treasury yield in the late 1960s/early 1970s and late 1990s/early 2000s periods.

Source: NBER; Federal Reserve; Bear, Stearns & Co. Inc.

At this point in the cycle, the pricing pressures we saw begin to build earlier in the cycle tend to accelerate until they reach a pinnacle. Indeed, wholesale prices typically peak a few months past the start of the bubble-induced recession. Thereafter, the typical pattern is one of deflation as prices tend to embark on a steep decline.

Benchmark 7: Accelerating Wholesale Prices Indicative of Excess Demand

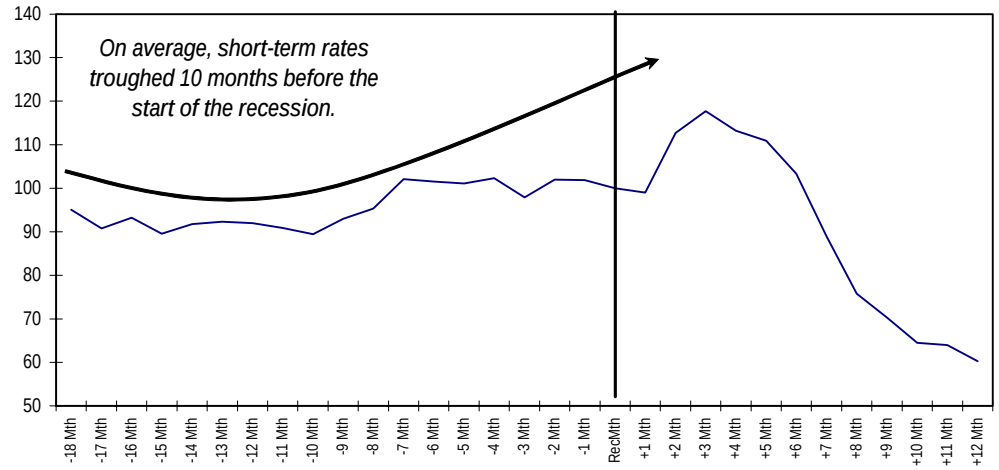


Note: Derived from wholesale prices other than farm and food during speculative periods around 1857, 1873, 1884, 1893, 1907, and 1929, and the PPI for finished goods in the late 1960s/early 1970s and late 1990s/early 2000s periods.

Source: NBER; Bureau of Labor Statistics; Bear, Stearns & Co. Inc.

At the same time, short-term interest rates have usually seen their lows for the cycle by this point and have begun to rise again. In fact, we have found that short rates, such as commercial paper rates, tend to experience their lowest point about ten months before the bubble-induced recession begins. The typical pattern from there is a continued rise in short-term rates for a few months before a significant decline ensues, often taking short-term rates to lower levels than those seen during the bubble years.

Benchmark 8: Rising Prices and Expanding Business Activity Begin to Push Short Rates Higher

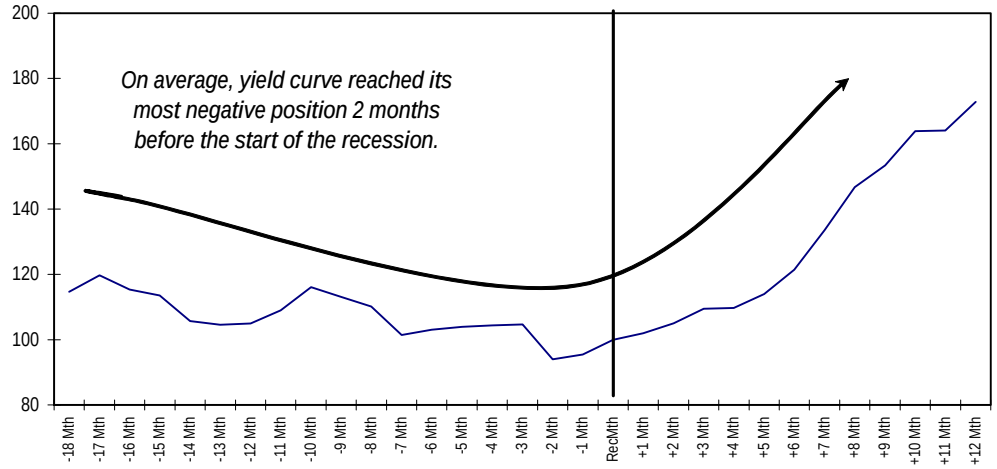


Note: Derived from commercial paper rates during speculative periods around 1857, 1873, 1884, 1893, 1907, and 1929, and nonfinancial commercial paper rates in the late 1960s/early 1970s and late 1990s/early 2000s periods.

Source: NBER; Leonard P. Ayers, *Turning Points in Business Cycles*; Federal Reserve; Bear, Stearns & Co. Inc.

Meanwhile, in the months leading up to the beginning of the bubble-induced recession, the yield curve tends to continuously narrow. In fact, it typically reaches its flattest levels a few months or so before the economy loses significant momentum, and steepens significantly thereafter.

Benchmark 9: Liquidity Squeezed as the Yield Curve Flattens

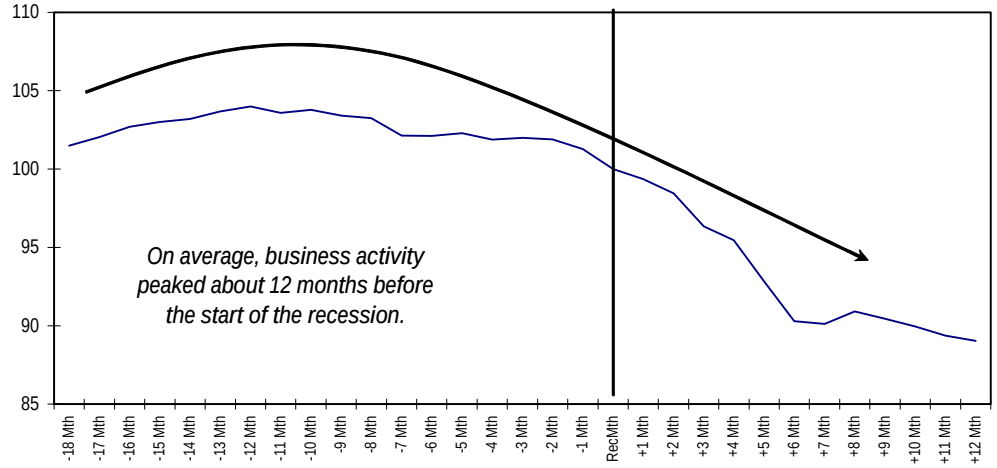


Note: Derived from the ratio of high-grade railroad bonds yields to commercial paper rates during speculative periods around 1857, 1873, 1884, 1893, 1907, and 1929, and the ratio of ten-year Treasury note yields to three-month Treasury bill rates in the late 1960s/early 1970s and late 1990s/early 2000s periods.

Source: NBER; Leonard P. Ayers, *Turning Points in Business Cycles*; Federal Reserve; Bear, Stearns & Co. Inc.

All of these circumstances inevitably lead to a sharp slowdown in business activity. Indeed, as the chart below illustrates, business activity usually remains high during the year before the recession begins. About a month or two before the recession kicks in, business activity tends to taper off slowly. Then, once the recession is in full gear, business activity usually decelerates quite rapidly.

Benchmark 10: Business Activity Slow as Liquidity Pressures Rise



Note: Derived from the Index of American Business Activity during speculative periods around 1857, 1873, 1884, 1893, 1907, and 1929, and the Index of Leading Economic Indicators in the late 1960s/early 1970s and late 1990s/early 2000s periods.

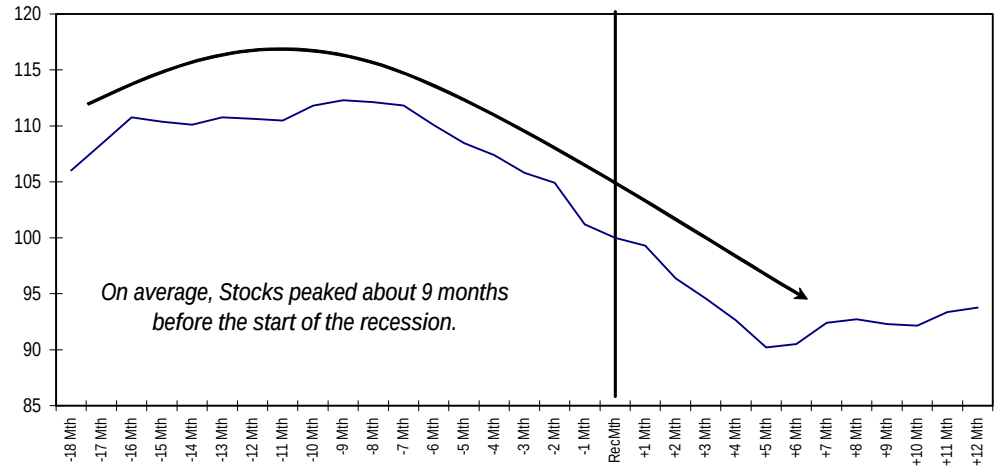
Source: NBER; Leonard P. Ayers, *Turning Points in Business Cycles*; The Conference Board; Bear, Stearns & Co. Inc.

PHASE III: THE BUBBLE BURSTS!

The Post-Bubble Aftermath

The stock market has already lost momentum by the time a recession begins, and the initial decline trims almost 20% from the equity market. Of course, this is but the beginning of the post-bubble bear market. Indeed, the typical asset deflation phase last several years and a takes almost 50% off of headline indices.

Benchmark 11a: Cat's Out of the Bag . . . Equity Prices Collapse



Note: Derived from railroad stock prices during speculative periods around 1857, 1873, 1884, 1893, 1907, and 1929, and the S&P 500 Index in the late 1960s/early 1970s and late 1990s/early 2000s periods.

Source: NBER; Leonard P. Ayers, *Turning Points in Business Cycles*; Standard & Poor's; Bear, Stearns & Co. Inc.

As the table below illustrates, taking a survey of some of the most notorious post-bubble market declines, equities have deflated anywhere from 35% to more than 86% in the years following a bubble peak. Of course, as discussed above, these bear markets are typically associated with severe economic recessions.

Benchmark 11b: History Repeats Itself . . . Post-Bubble Bear Markets

Broad Market Bears

Market Measure	Bull Market High Date	Bull Market High Close	Bear Market Low Date	Bear Market Low Close	Bear Market Decline
Railroad Index	5/1835	27.80	6/1837	6.87	-75.3%
Railroad Index	12/1852	24.95	10/1857	9.21	-63.1%
Railroad Index	4/1872	45.20	6/1877	23.59	-47.8%
Railroad Index	6/1881	59.00	1/1885	38.12	-35.4%
Dow Jones	1/19/1906	103.00	11/15/1907	53.00	-48.5%
Dow Jones	11/3/1919	119.62	8/24/1921	63.90	-46.6%
S&P Composite	9/7/1929	31.92	6/1/1932	4.40	-86.2%
S&P 500	1/11/1973	120.24	10/3/1974	62.28	-48.2%
S&P 500	3/24/2000	1527.46	10/9/2002	776.76	-49.1%

Source: NBER; Standard and Poor's; Haver Analytics; Bear, Stearns & Co. Inc.

ALL BUBBLES ARE *NOT* CREATED EQUALLY

Different Types of Bubbles

We have already demonstrated that bubbles are common in financial markets and that they tend to occur in specific types of economic environments. Now it is time to classify them, i.e., to think of the different catalysts or magnets for speculative behavior. Indeed, we have found four categories that we believe all bubbles can be classified by: 1) life-changing innovations, 2) scarcity-driven, 3) thematic-driven, and

4) government-driven. Interestingly, each of the bubbles mentioned in chapter one fall into one of these four categories.

Classifying Asset Bubbles

1)	Life-Changing:	Innovation expected to dramatically impact business landscape.
2)	Scarcity:	Rare commodity creates mania.
3)	Thematic:	Particular asset theme becomes popular.
4)	Government:	Government fuels popularity by providing capital, monopoly, or security.

Source: Bear, Stearns & Co. Inc.

Life-Changing Innovations

Life-changing innovations often generate speculative bubbles because these are new technologies or infrastructures that have the ability to radically change a business landscape or world dynamic. As such, the new development drums up tremendous excitement, and its life-changing potential can often attract the willingness of investors to pay a premium in order to own a piece of the potential. Examples of these bubbles include canals and railroads, cars and radios, electronics, health care/biotech, and the Internet.

Railroads are a very good example of a life-changing innovation because of their ability to transform the way business was conducted in the 19th century. The railroads allowed goods to travel over distances and terrains that would have seemed profitably impossible in the decades before it. New communities sprang up between railroad lines, and the major cities connected by the lines flourished. As these cities grew larger, they in turn specialized, and major centers of agriculture, finance, and business were born.

Scarcity-Driven Manias

Scarcity-driven manias, on the other hand, drum up enthusiasm and garner a premium from investors because the commodity in question is believed to be limited in supply. Importantly, it is the perception of scarcity that drives these types of bubbles. Some examples of scarcity-driven manias include the tulip bubble, the hyacinth bubble, oil, gold, and the Florida land boom in the early 1900s.

Indeed, the tulip bubble epitomizes a scarcity mania, since tulips were a rare flower when introduced to the Netherlands in the 1600s. Their novelty and rarity drove the flowers to become sought-after objects, and since they were hard to come by, they commanded prices that far exceeded any fundamental value.

Thematic-Driven Bubbles

Thematic-driven bubbles occur when a particular asset theme becomes popular, and crowd mentality promotes ownership in the group. Examples of these manias are bowling stocks in the 1960s, war supplies companies, the Nifty-50 stocks in the 1970s, junk bonds and conglomerates in the 1960s, and real estate in the 1980s.

As we saw in the last chapter, bowling stocks became popular as the sport gained visibility throughout the country — i.e., as more and more bowling alleys appeared,

as technology enhanced the sport, and as television coverage enabled the sport to become a household word. As excitement for the activity grew, the fad caught fire, and investors were persuaded to own the stocks, which were eventually bid up to exorbitant price levels.

Government-Driven Bubbles

Government-driven bubbles come about when the government provides capital and regulatory favors to secure the rise of a certain asset. The Mississippi bubble, the East-India and South Sea companies, as well as the 1980s Japanese market, are all example of times when the government got overly involved by either sponsoring the corporation by providing liquidity or by guaranteeing monopolies. As we saw in the South Sea Company bubble episode, when government is at the mercy of a corporation's interest, either because of personal gain (as in the case of many members of England's Parliament) or by granting special rights (such as the trade monopoly and the Bubble Act), a bubble can be artificially inflated for some time. Such practices were not unique to the South Sea Company episode — the same sort of government involvement occurred during the railroad manias and again in Japan. Unfortunately, when these bubble episodes unravel, they can be the most destructive because of the toll it takes on the entire financial system as a result.

Framework for Mania Analysis

Surveying financial history proves that asset bubbles are by no means uncommon. In fact, every generation has lived through its fair share of manias. While they are certainly easier to pinpoint after they have played out, hindsight is not mandatory for identifying bubble environments, in our opinion. Rather, we believe that there are tangible characteristics that are common to bubble-prone environments, that make the process of identifying bubbles easier. As mentioned, liquidity and economic prosperity often lead to speculation, which culminates in a bubble and then a deflation. Along the way, there are identifiable changes in economic metrics that can signal a bubble episode. Of course, unique catalysts often set the mania in motion, but being able to identify where we are in the economic framework facilitates the ability to identify potential mania situations. In the next chapter, we assess where these economic gauges currently stand and where potential asset bubbles could likely occur next.

Chapter Three: Surveying the Current Environment for Bubbles

Now that we have established a framework for identifying trends in economic environments prone to asset bubbles, we can apply these findings to the current backdrop to assess whether or not it is conducive to creating bubbles. Indeed, by taking stock of where the various bubble phase benchmarks currently sit, we can try to determine in which bubble phase we might be and in what context the next bubbles could potentially occur.

Dissecting the Phases of the Bubble Evolution

Pre-Bubble Environment	Bubble Peak	Post-Bubble Environment
1) Easy Money	5) Speculation	11) Asset Prices Collapse
2) Strong Economic Growth	6) Yield Spreads Widen	12) Recession Ensues
3) Prosperity	7) Pricing Pressures Accelerate	
4) Pricing Pressures Build	8) Short Rates Rise	
	9) Yield Curve Flattens	
	10) Business Activity Slows	

Source: Bear, Stearns & Co. Inc.

Using the framework for identifying a bubble-prone environment that we put forth in the last chapter, we thought it would be helpful to take a quick inventory of where we are now in the cycle. That is, we will revisit the criteria delineated above and determine where economic aggregates currently stand. Looking at the last few years, we will assess recent trends and the current status of the indicators mentioned above.

Summing Up the Phase I and Phase II Bubble Benchmarks

	Has this occurred?		Has this occurred?
1) Easy Money	1/2 √	5) Speculation	√
2) Strong Economic Growth	√	6) Yield Spreads Widen	X
3) Prosperity	√	7) Pricing Pressures Accelerate	√
4) Pricing Pressures Build	√	8) Short Rates Rise	√
		9) Yield Curve Flattens	√
		10) Business Activity Slows	√
Score:	3.5/4		5/6

Source: Bear, Stearns & Co. Inc.

Surveying the criteria we have suggested for identifying a bubble-prone environment, it appears that the current landscape currently meets eight-and-a-half of the ten prerequisites typical of a bubble-prone environment. Indeed, the recent past has witnessed three-and-a-half out of the four conditions typically seen prior to a bubble: easy money, strong economic growth, prosperity, and a pickup in pricing pressures. What's more, five out of six of the criteria we generally see at the time of a bubble peak are telling us that conditions could be ripe for a bubble to burst. In the next few pages, we show how current conditions line up with those seen in the periods surrounding past bubble environments.

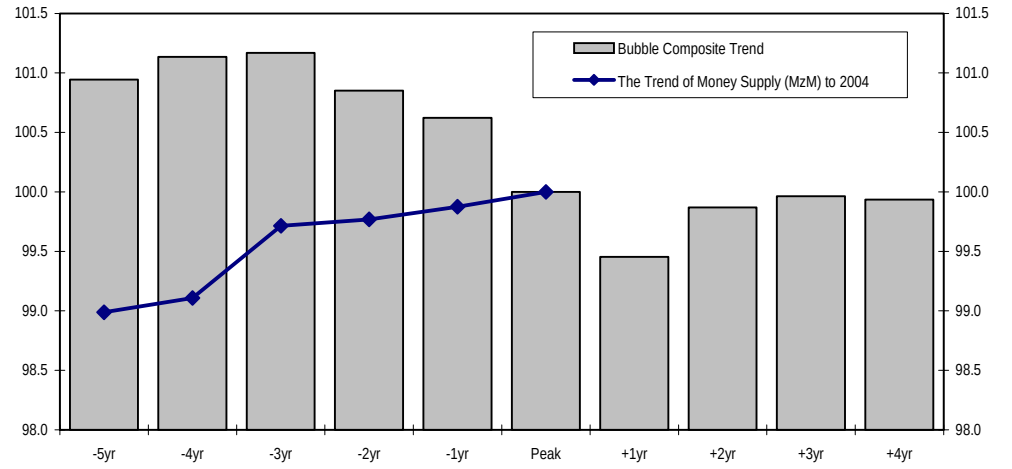
ARE WE CURRENTLY IN A BUBBLE-PRONE ENVIRONMENT?

The Current Environment Looks Similar to That of Prior Bubbles

The current economic environment seems to be exhibiting about three-and-a-half out of the four characteristics we typically see in the early stages of a bubble-prone backdrop. Indeed, the first phase preceding a bubble environment is one of economic expansion and easy money. The chart below shows that the recent trend in money circulation has been increasing steadily in the past few years. However, we only give this measure half a check mark because we have not yet seen money growth start to wind down as we typically do in a bubble-prone environment. The takeaway is that money growth continues to be strong, which has helped foster economic growth.

1/2 ✓

Benchmark 1: Easy Money — Ten-Year CAGR of Money in Circulation

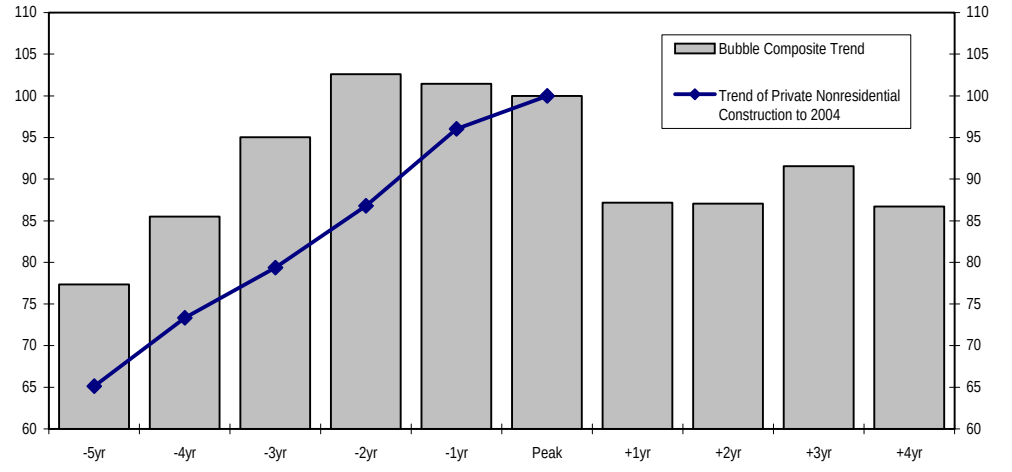


Source: NBER; Federal Reserve; Bear, Stearns & Co. Inc.

Indeed, we have certainly seen evidence of strong economic growth in the past several years as the following two charts suggest. Without a doubt, the value of building permits, shown on a per capita basis below, has accelerated very sharply in recent years, and at this point sits at a recent record high.

✓

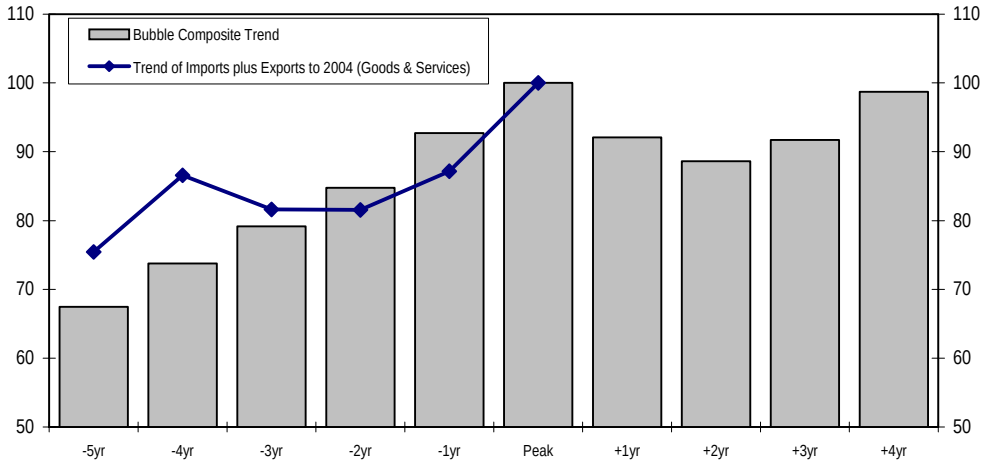
Benchmark 2a: Nonresidential Building Activity Suggests Strong Economic Growth



Source: NBER; Census Bureau; Bear, Stearns & Co. Inc.

Trends in foreign trade in recent years also demonstrate just how strong the economy's growth has been lately. The aggregate of import and export trends charted below shows just how impressive this growth has been during the last few years. The indicator is currently sitting at a five-year high, which would correspond with trends we've seen during past financial bubble episodes.

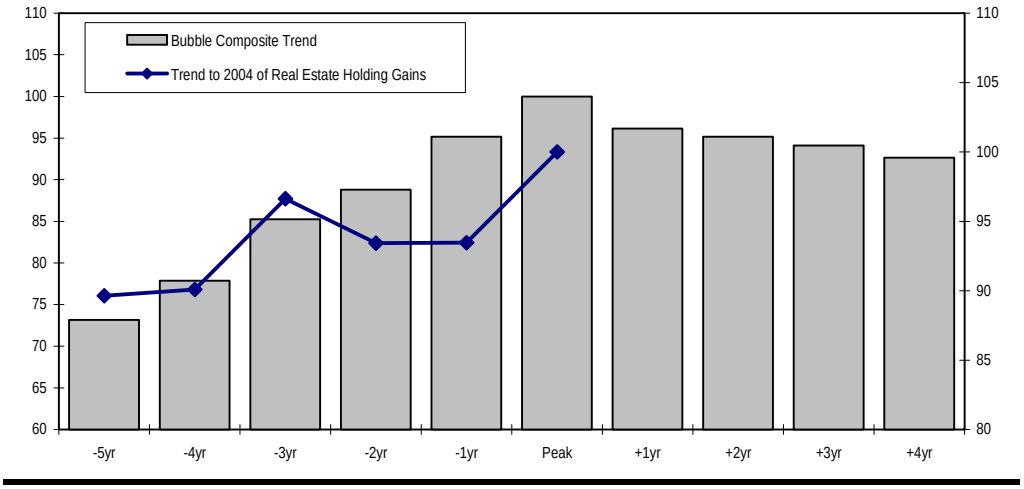
Benchmark 2b: Total Foreign Trade Suggests Strong Economic Growth



Source: U.S. Department of Commerce; Bureau of Economic Analysis; Bear, Stearns & Co. Inc.

With such strong economic growth experienced in recent years, it is not overly surprising that we have seen evidence of extensive prosperity abound. Indeed, once again, looking at the value of Manhattan real estate as a barometer for personal wealth, we see that the indicator is sitting at a six-year high. As we can see, this trend is right in line with how personal wealth typically evolves during a bubble appreciation phase.

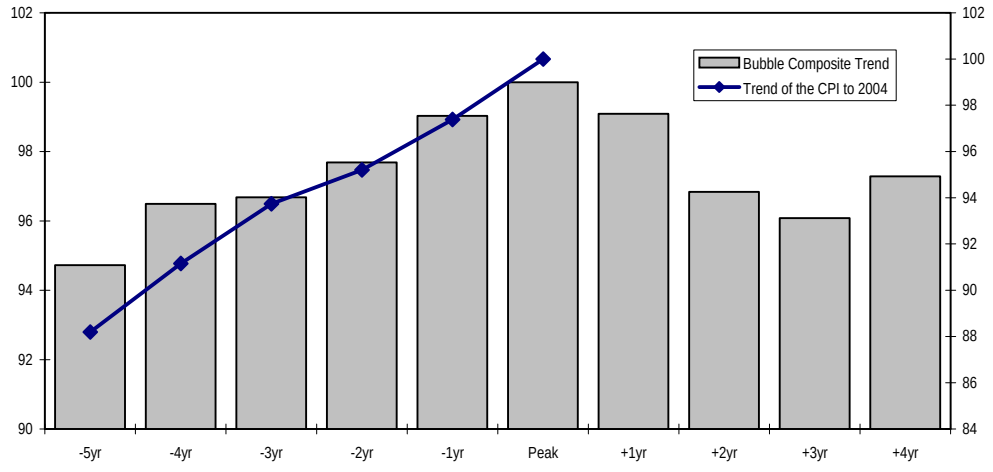
Benchmark 3: Rising Real Estate Values as a Measure of Increased Prosperity



Source: U.S. Department of Commerce; Federal Reserve; Bear, Stearns & Co. Inc.

Furthermore, we have witnessed pricing pressures build steadily over the last few years, which is quite typical of the period leading up to a bubble peak. In fact, as the chart below illustrates, pricing pressures, as measured here by a composite of CPI trends, have made considerable gains for the last few years.

Benchmark 4: Pricing Pressures Gradually Building

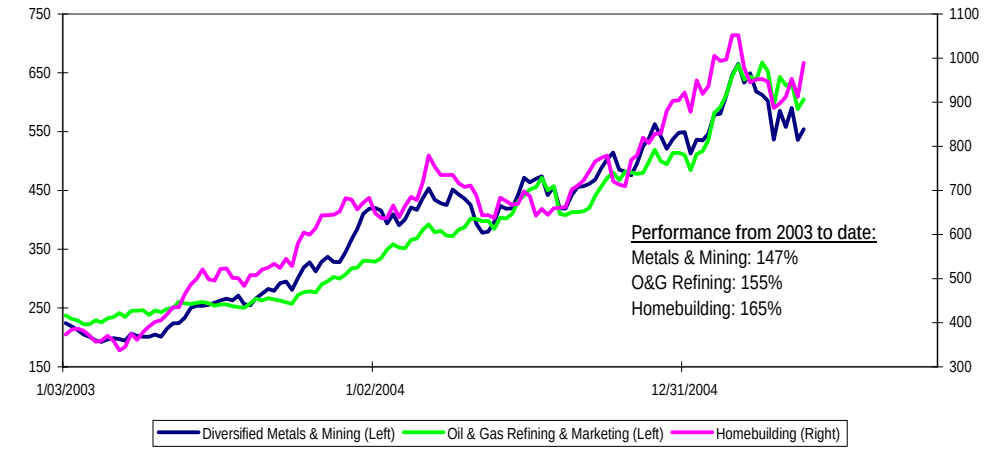


Source: U.S. Department of Commerce; Bureau of Labor Statistics; Index; Bear, Stearns & Co. Inc.

The Current Environment Exhibits Many Bubble-Peak Tendencies

We have pointed out that prosperity is often the direct precursor to a speculative environment. As such, it is not too surprising that we have seen some major appreciation in different asset classes and stock market industries in recent years. The chart below shows some of the industries that have experienced the most significant equity run-ups in the last couple of years. Note that the metals & mining, oil & gas refining & marketing, and homebuilding segments have all seen their stocks post more than 100% gains! By definition, speculative activity and froth are commonplace in bubble markets, and it is typical to see other asset classes rise simultaneously.

Benchmark 5: Financial Asset Appreciation Showing Signs of Speculation

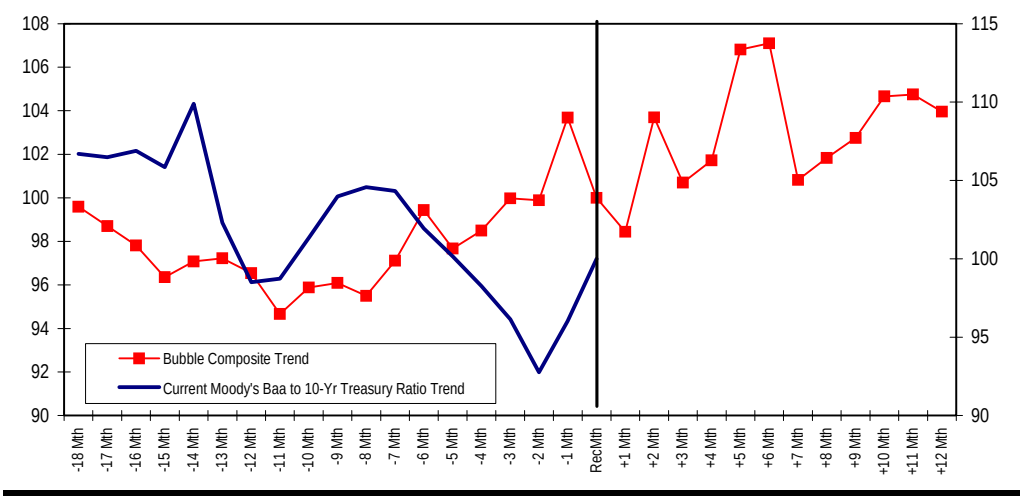


Source: FactSet Research Systems Inc.; Bear, Stearns & Co. Inc.

However, one sign that trouble lies ahead for the economy that we haven't really seen yet in the current cycle is a widening of high yield spreads. As mentioned, a widening of yield spreads typically precedes a bubble-induced recession. In the current cycle, high yield spreads have only recently begun to widen slightly from extremely low levels. Since quality spreads typically trough about a year or so before the start of a

recession, we suggest keeping an eye on this indicator should spreads continue to widen from here!

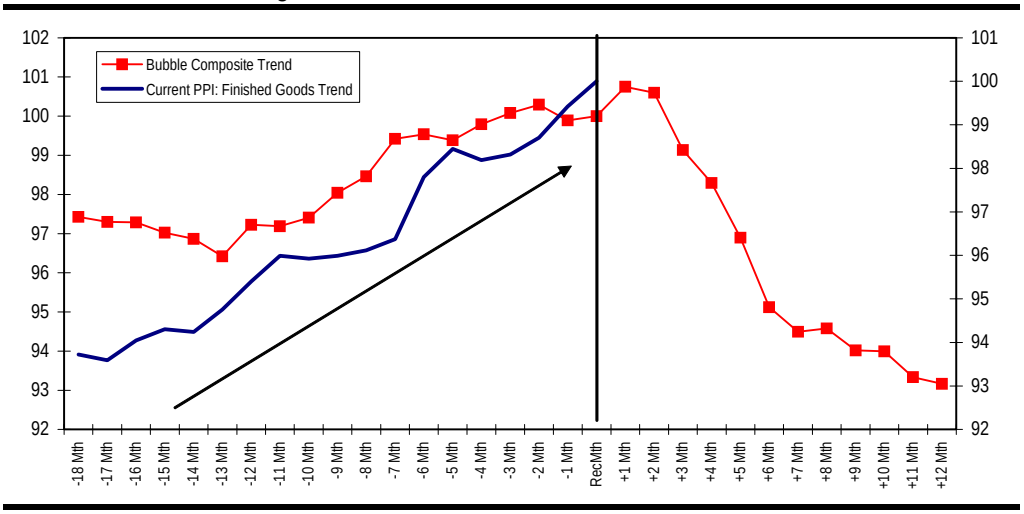
Benchmark 6: Yield Spreads Are Not Yet Suggesting Falling Risk Tolerance



Source: NBER; Federal Reserve; Bear, Stearns & Co. Inc.

On the other hand, wholesale pricing pressures have certainly accelerated in the last year. As we have pointed out, pricing momentum tends to peak a few months past the start of a bubble-induced recession. If the latest CPI report is any indication, pricing pressures may be approaching their highs for the cycle.

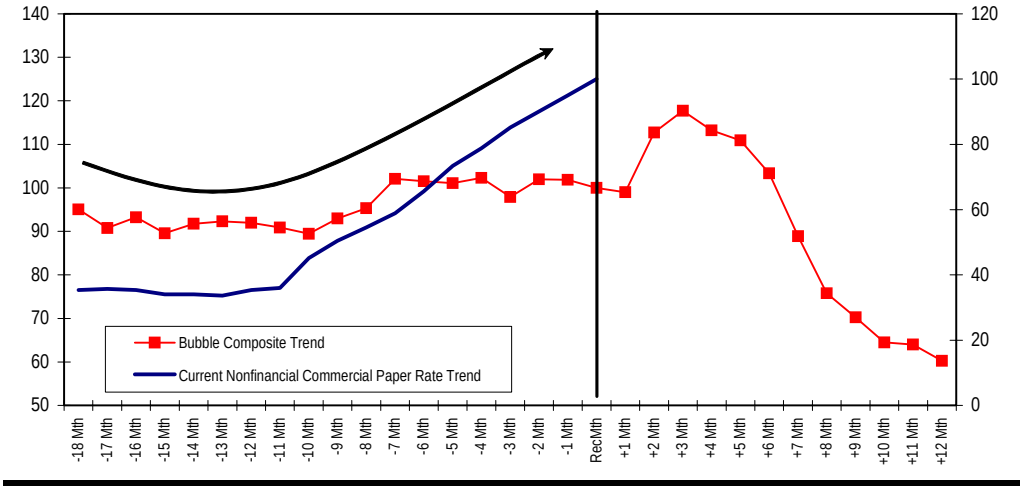
Benchmark 7: Accelerating Wholesale Prices Indicative of Excess Demand



Source: NBER; Bureau of Labor Statistics; Bear, Stearns & Co. Inc.

Another indicator that has been playing out on cue with what we would expect to see in a bubble-prone environment is a rise in short-term interest rates. Indeed, short rates tend to experience their lowest point about ten months before a bubble-induced recession begins. At this point in the cycle, we have seen short rates increase steadily during the past year.

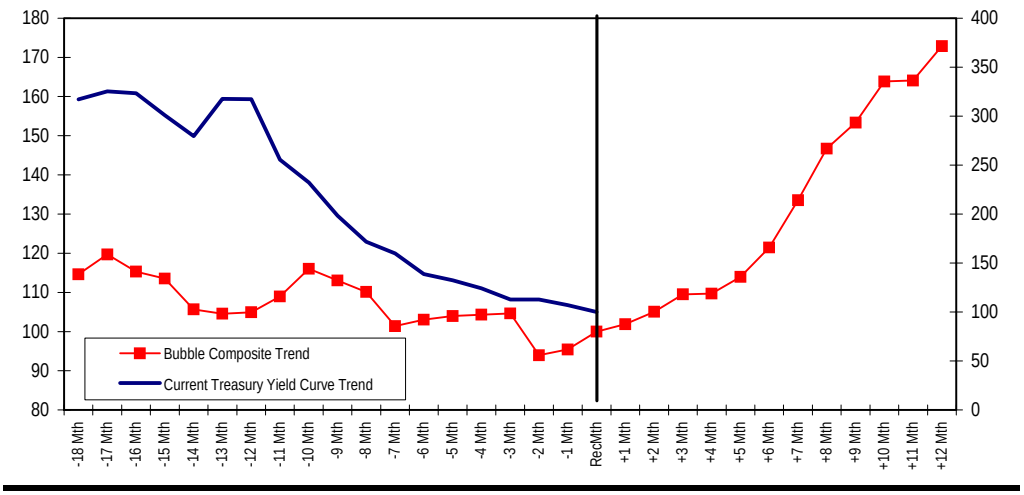
Benchmark 8: Rising Prices and Expanding Business Are Beginning to Push Short Rates Higher



Source: NBER; Leonard P. Ayers, *Turning Points in Business Cycles*; Federal Reserve; Bear, Stearns & Co. Inc.

In addition, in a bubble-prone environment, we typically see the yield curve flatten significantly. Historically, the yield curve tends to reach its flattest levels in the few months before the economy loses significant momentum. The current trend has certainly experienced a sharp decline in the yield curve, as the Fed has been raising rates steadily for a year now, and the ten-year Treasury yield has barely budged in the same time frame.

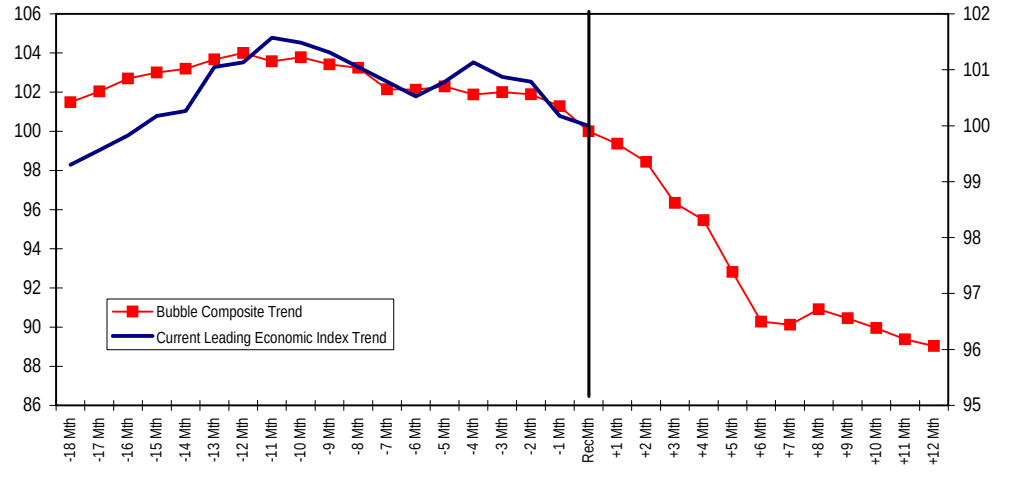
Benchmark 9: Liquidity Squeezed as the Yield Curve Flattens



Source: NBER; *Turning Points in Business Cycles*, Ayers, Leonard P.; Federal Reserve; Bear, Stearns & Co. Inc.

Furthermore, the current trend in business activity is also following what we would typically see in a bubble-prone environment. That is, historically we tend to see very strong business activity in the year before a bubble-induced recession occurs, and then it tapers off about a month or two before the recession kicks in. Looking at the current trend, it appears as if business activity may have seen its high about nine months ago, since which time it has slowly begun to come off the boil.

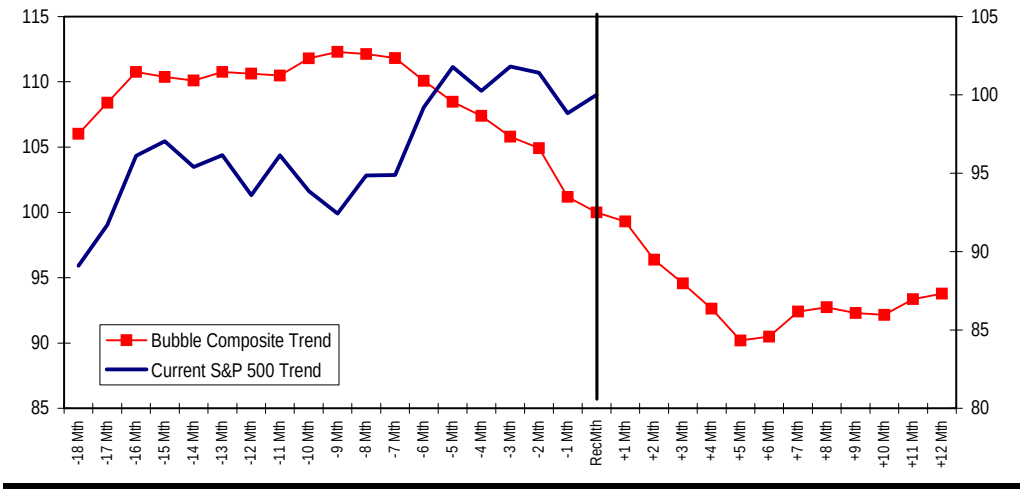
Benchmark 10: Indicators of Business Activity Slow as Liquidity Pressures Rise



Source: NBER; Leonard P. Ayers, *Turning Points in Business Cycles*; The Conference Board; Bear, Stearns & Co. Inc.

As we have seen, once the recession ensues, the stock market has usually already lost momentum and has typically experienced a 20% decline. At this point in the cycle, we have certainly not seen this type of a fallout, although it is worth noting that equities have failed to make any significant headway in the past year or so (with the exception of some brief gains in December 2004).

Benchmark 11: Equity Prices Have Not Collapsed



Source: NBER; Leonard P. Ayers, *Turning Points in Business Cycles*; Standard & Poor's; Bear, Stearns & Co. Inc.

So, using our most conservative assessment of the current economic environment, we suggest that the landscape currently meets 8.5 of the ten criteria we use to classify a bubble-prone environment. In our opinion, this finding should hopefully make investors consider their risk exposure, rather than create alarm. The purpose of this chapter was to suggest that we are currently experiencing a good number of the characteristics typically seen in a bubble-prone environment. This does not mean that we are necessarily heading for a recession or a bear market, but we would not be surprised to see some sort of a fallout in one industry or another in the coming years. As such, in the next section, we attempt to hypothesize as to where these sort of shakeups could likely occur next.

Since we have illustrated that we are likely in the midst of an environment that is susceptible to asset bubbles, we thought it would be helpful to explore where the likeliest hot spots for bubbles are in the marketplace. We highlight four potential areas where we could see major froth and/or a correction in the coming years: real estate, China, hedge funds, and nanotechnology.

Future Bubbles

Asset Bubble	Likely Horizon
Real Estate	Near term
China	
Hedge Funds	
Nanotechnology	Long term

Source: Bear, Stearns & Co. Inc. estimates.

We present the potential asset bubbles in this order because, in our opinion, this is the hierarchy in which investors should consider a meltdown as likely to occur (i.e., real estate being the most imminent correction and nanotechnology being the most distant). Indeed, real estate already shows clear signs of frothiness, while nanotechnology has yet to even make a splash in the marketplace. With this in mind, since nanotechnology as a life-changing event is still only in its infancy, this is one area where investors could still benefit from a boom. Indeed, since it is only just becoming a household word, nanotechnology could provide an interesting opportunity for investors looking to profit from a life-changing technology. While we highlight these four areas as ones to keep an eye on, it is important to remember that a correction could occur in a single industry (say metals), like they occurred in tech stocks in the 1990s, and still have major ramifications for the financial system as a whole.

A REAL ASSESSMENT OF A REAL ESTATE BUBBLE

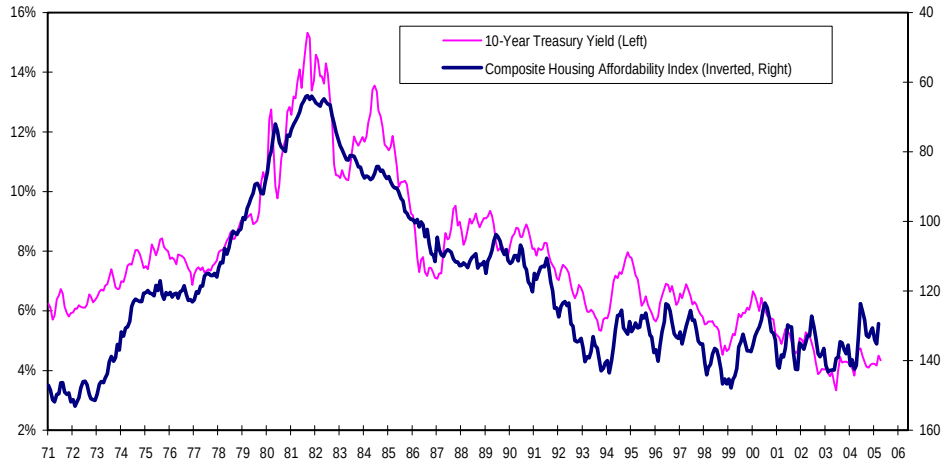
Real Estate: The Next Scarcity Bubble?

The last few years have brought favorable conditions for real estate. Indeed, the 20-year decline in interest rates has created a fertile environment for real estate investing. As the chart below illustrates, housing affordability has closely followed the trend in the ten-year Treasury bond yield — i.e., lower interest rates led to greater housing affordability. Furthermore, the steepness in the yield curve, which is basically a measure of banks' ability to lend profitably, coupled with a huge diversification in mortgage offerings, has culminated in a frenzy of activity in mortgage lending in recent years. With interest rates at 40-year lows, and the yield curve flattening, lending conditions will likely become more difficult, removing one of real estate's most significant tailwinds.

Undoubtedly, low interest rates and a very steep yield curve have helped to fuel the demand for real estate. This favorable environment has led to a sharp rise in homeownership in recent years, as homebuyers have also enjoyed ready access to capital. In addition to low interest rates facilitating borrowing and a steep yield curve enticing banks to lend more, we have seen an expansion of mortgage lending vehicles. In fact, as the table below illustrates, banks and bank equivalents are no

longer the only providers of mortgage financing. Rather, the funds provided by non-bank mortgage providers have grown substantially over the last 15 years.

Housing Affordability Driven by Long-Term Interest Rates



Source: National Association of Realtors; Federal Reserve; Bear, Stearns & Co. Inc.

With that in mind, it should come as no surprise that we have seen a frenzy of real estate activity and speculation in recent years. Interestingly, a number of people have tried to explain the recent real estate environment as simply the result of a demographic shift — e.g., they suggest that immigration and the echo-boomer trends have played a hand in the growth in the housing boom. However, we believe this is overstating the story and misses the fundamental link to capital access, which has been driven by the secular interest rate story.

A Plethora of Borrowing Opportunities

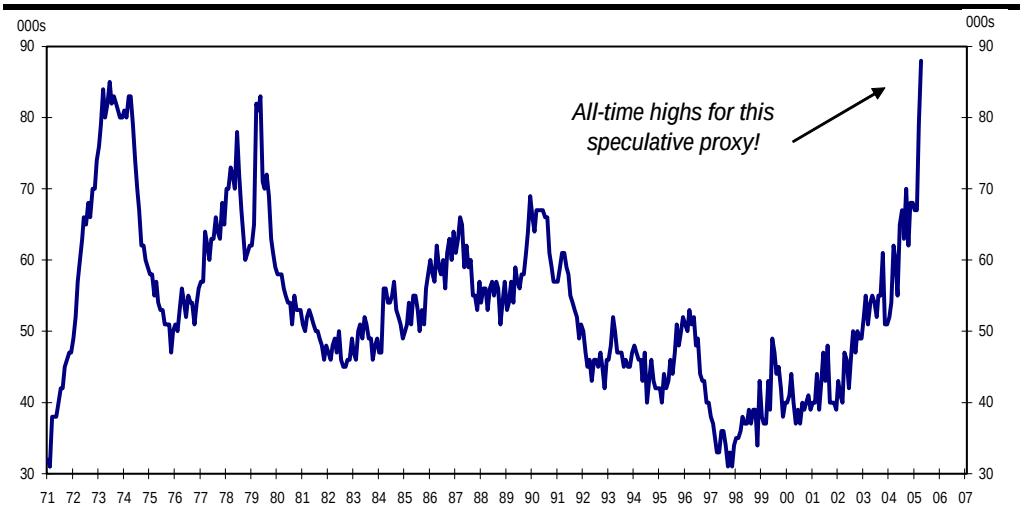
Percentage of Total Mortgage Debt Outstanding	4Q90	4Q95	4Q00	4Q04
Mortgage Holdings: GSEs; Mortgage Pools and ABS Issuers	44.4%	56.4%	59.6%	60.2%
Excluding Home Equity Debt	48.7%	60.8%	65.7%	67.2%
Mortgage Holdings: Comm'l. Banks, Savings Inst. and Credit Unions	41.2%	34.5%	32.9%	32.9%
Excluding Home Equity Debt	37.1%	30.6%	28.8%	27.6%

Source: Federal Reserve; Bear, Stearns & Co. Inc.

Indeed, the backdrop has stirred up quite a frothiness in the real estate market in the past few years. The chart below provides a very good proxy for speculation in real estate. The series consists of the number of new houses for sale for which construction has not yet begun. A look at this series over time drives the point home that real estate speculation has never been this high. As we shall see next, this is a particularly precarious situation at this juncture since homeowners' ability to meet their mortgage obligations is alarmingly stretched.

REAL ESTATE MARKETS ARE FROTHY!

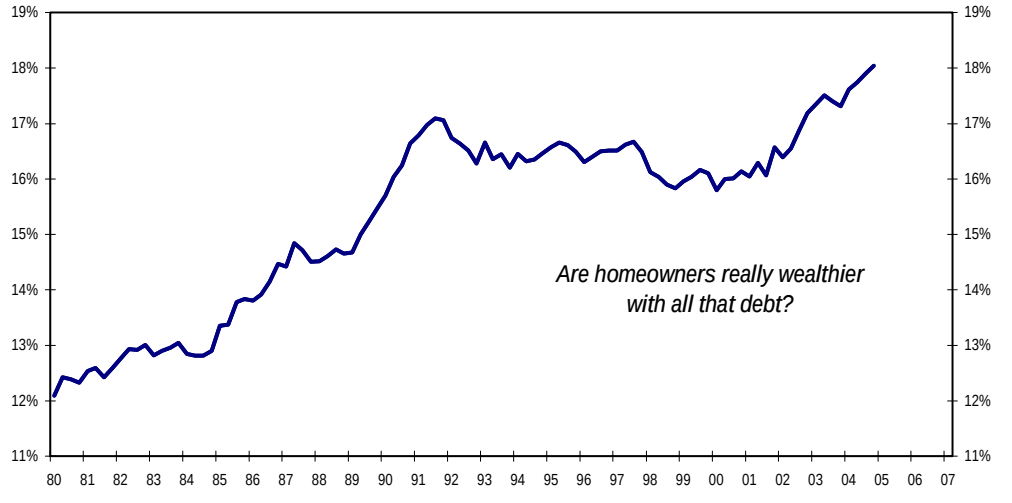
New Houses for Sale — Units Not Started



Source: Census Bureau; Bear, Stearns & Co. Inc.

In fact, homeowners have never been this leveraged, as far as we can determine. The chart below presents a ratio of household mortgage financial obligation percentage to the percentage of owners' equity. At a 25-year high, this barometer of household mortgage risk should be of some concern. In other words, as a hugely supportive secular tailwind is likely about to shift directions and wind down at the same time as households are financially leveraged, we cannot help but point out that real estate investors may be due for a major correction sooner or later.

Household Mortgage Financial Obligation Percentage to Owners' Equity Percentage



Source: Federal Reserve Board; Bear, Stearns & Co. Inc.

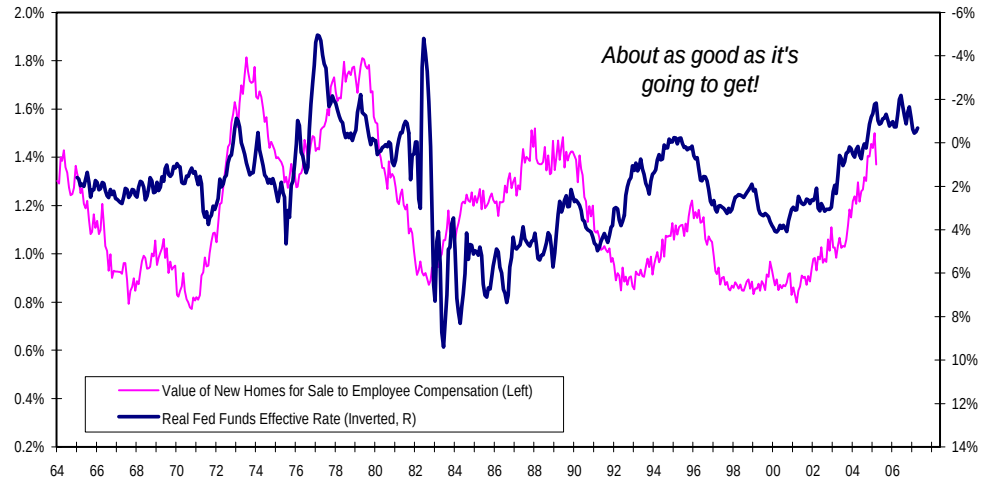
SPECULATION + POTENTIAL SUPPLY/DEMAND IMBALANCE = TROUBLE?

Speculation is typically characterized by a move in asset prices beyond what fundamentals would otherwise dictate. We have seen speculation in real estate increase sharply in the last few years as historically low interest rates, coupled with a steep yield curve, have facilitated homeownership. We mentioned earlier that this could lead to potential problems down the road since homeowners, by several measures, are more leveraged than they've ever been. More worrisome, perhaps, is that frothiness and leverage are occurring at a time when the potential for a serious

supply/demand imbalance is building. Indeed, we believe there is a changing dynamic on the horizon for the supply and demand of real estate in the coming years.

The chart below shows the ratio of the value of new homes for sale relative to employee compensation. This series can be thought of as a proxy for real estate speculation since it measures a ratio of valuation to means. The chart exhibits how this typically follows trends in the real fed funds rate (inverted) by about two years. As such, there's no need to rush for the exits just yet — i.e., real estate, unlike stocks, is a slow-moving asset and none of this will unfold overnight.

Real Estate Meets the Speculative Criteria: A Move Beyond Fundamentals



Note: New homes for sale times median price of a new home sale ($ in billions) divided by employee compensation (SAAR, $ in billions).

Source: Census Bureau; Bureau of Economic Analysis; Bureau of Labor Statistics; Federal Reserve Board; Bear, Stearns & Co. Inc.

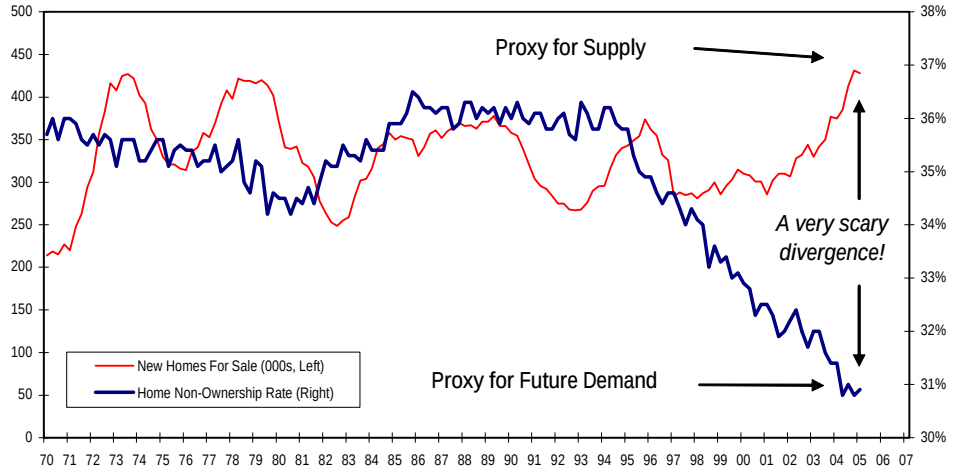
Still, the ratio demonstrates that the value of new homes has been increasing at a much faster rate than compensation in recent years. This development alone epitomizes a speculative environment (i.e., prices are not in synch with fundamentals, or the ability to support them). Furthermore, the chart makes the point that the speculation we've recently witnessed in real estate should come as no surprise, since conditions for real estate have rarely been this favorable (real fed funds rate this low for this long). In other words, low interest rates and a steep yield curve have created a backdrop that is just about as good as it gets for real estate pricing!

Leaving aside the speculative angle, our analysis suggests that there could very well be a supply/demand imbalance looming on the horizon, one that would further challenge real estate. Indeed, supply, as depicted by the amount of new homes for sale, seems to be increasing at the same time as the home non-ownership rate (a proxy for future consumption) seems to be near all-time lows and still declining. Essentially, we are approaching a situation where there will be more homes being built than there are prospective homeowners. This divergence creates a precarious disparity for the real estate backdrop. In short, a changing supply/demand landscape, coupled with a shifting interest rate environment and over-leveraged homeowners, creates a very poor risk/reward trade-off for real estate investing — one that appears to be more risky than we can remember seeing in a very long time. Indeed, we

encourage investors who are either involved in or looking for opportunities in real estate investments to carefully consider the risk/reward profile at this time.

The chart below shows just how strong the increase in housing supply has been in recent years — in fact, we haven't seen such a potential supply/demand disparity since the 1970s and very early 1980s. The difference this time around is that the rate of home non-ownership has declined sharply in recent years. This is particularly worrisome since the rate of non-ownership is essentially a proxy for future consumption. We suggest investors pay attention to this growing imbalance!

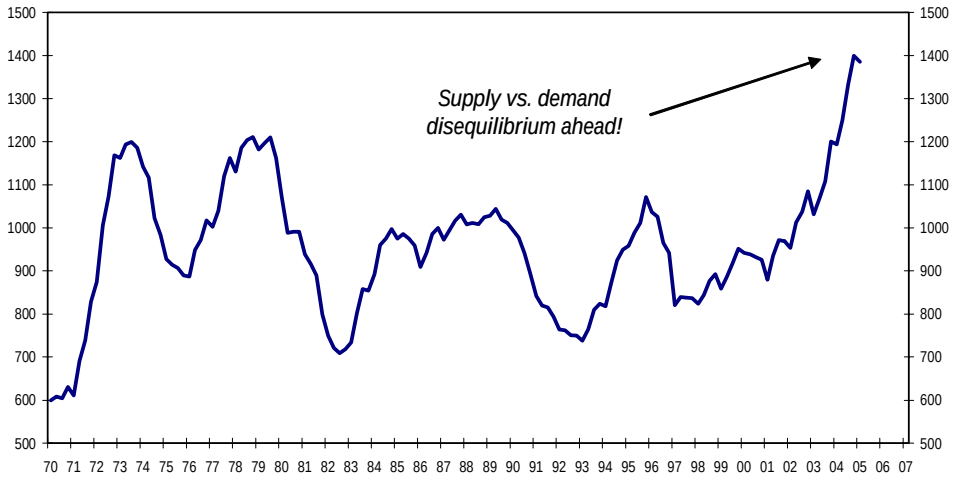
Increasing Supply + Shrinking Demand = Eventual Imbalance!



Source: Census Bureau; Bear, Stearns & Co. Inc

The chart below shows just how significant the imbalance described above has become. Indeed, the series consists of the ratio of new homes for sale divided by the home non-ownership rate. Importantly, this ratio is currently sitting at a 35-year high. In our opinion, this extreme supply/demand imbalance is signaling an important warning to investors about the risk/reward profile for real estate investing at this time. Remember, a macro imbalance, coupled with a changing capital-borrowing landscape, is worrisome for real estate investors!

New Homes for Sale (Supply) Divided by the Home Non-Ownership Rate (Demand)

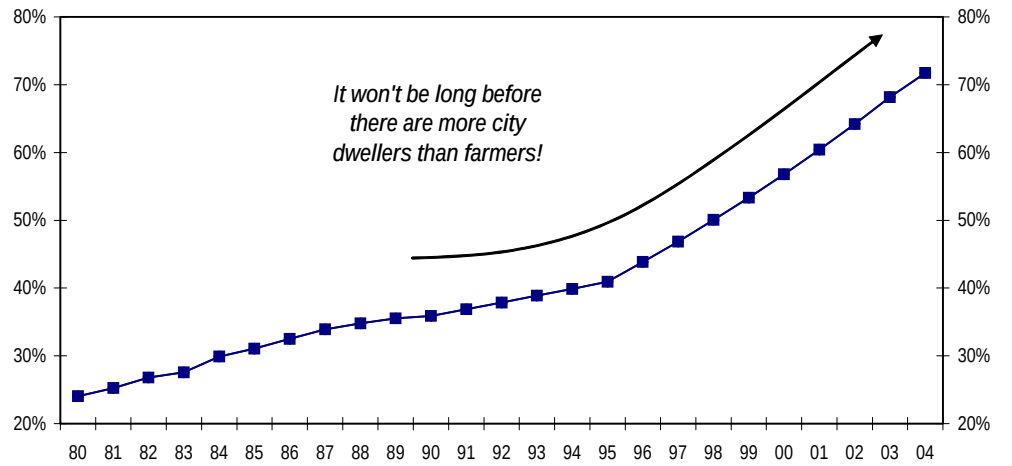


Source: Census Bureau; Bear, Stearns & Co. Inc.

China: The Next Government-Driven Bubble?

China is an interesting case in bubble history in that the worst of the bubble is not occurring in a specific asset class. Typically, a bubble environment revolves around and makes itself most evident in a specific asset class such as real estate, commodities, and/or claims on property (stocks, bonds, etc.). As the asset rises in value, risk tolerances ease on both the demand (investor) and supply (financial intermediary) sides of the fence, and oftentimes creates a self-fulfilling prophesy that persists until a greater fool no longer can be found.

China Demographics: Urban Dwellers as a Percentage of Rural Dwellers



Source: China National Bureau of Statistics; Bear, Stearns & Co. Inc.

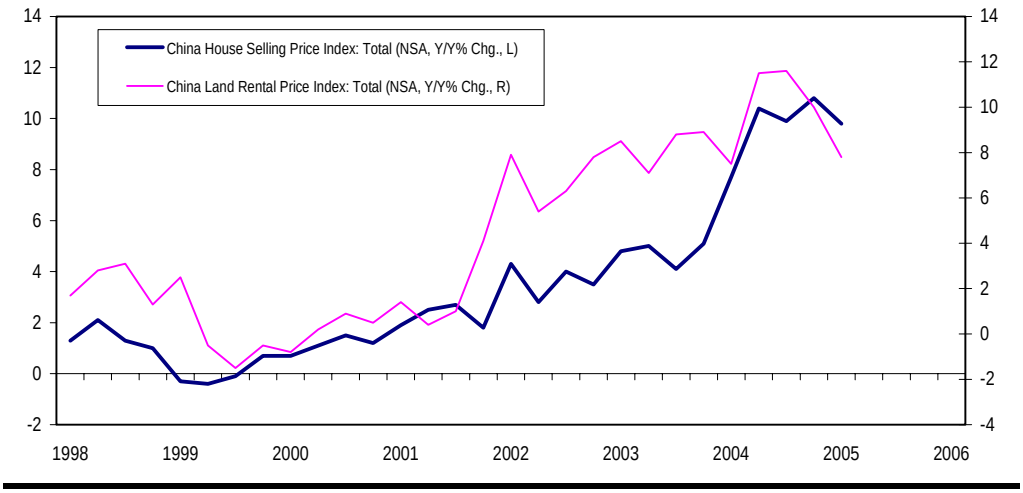
That is not to say that there is no evidence of a bubble environment in China, but only that this bubble does not fit the typical mold. The China bubble is being generated from outside of the country due to unavoidable factors within the country. China's overriding need to provide the basic necessities of both employment and shelter to the swelling ranks of the rural underclass that enter its cities creates the need for government policies that keep China's economy moving, and ward off the potential for a major civil problem. At the center of it all is the Yuan peg.

A SELF-FULFILLING PROPHECY?

The ample supply of cheap labor and the currently undervalued Yuan have kept the China export engine churning away, drawing a wave of foreign funds toward China. Viewed from this angle, China itself is the bubble. Investment and speculative money flows into the country, and the Chinese government either sterilizes it or recycles it into foreign bonds. The whole process is an increasing challenge for the Chinese government and places a growing strain upon the financial system. To sop up the flow of Yuan that is entering China from the outside, the government issues bonds to the banking system. To maintain the peg against a wave of foreign investors looking to buy into China, the government is exchanging Yuan for foreign currencies that inevitably end up in foreign bonds such as U.S. Treasuries and government agency securities — a likely contributing factor to the so called "Greenspan Conundrum." So, in this case, the avalanche of incoming funds that so often accompanies an asset-style bubble is instead inflating an entire country and creating financial dislocations around the world.

The demographic need to maintain the value of the Yuan at current levels has not gone unnoticed by a growing number of speculators who are betting that it can't stay at current levels much longer. To many, an upward adjustment to the value of the Yuan is no longer a question of if; it is a question of when and by how much. While we feel a bit odd in this bubble report to admit that we agree with the "majority," this one-sided consensus has fueled speculation on both sides of China's borders.

China's Real Estate Price Inflation



Source: China National Bureau of Statistics; Bear, Stearns & Co. Inc.

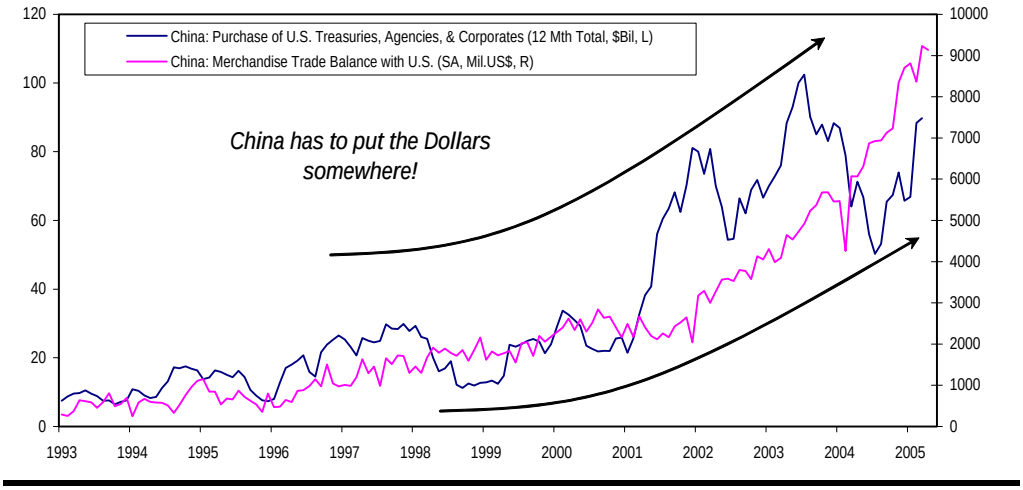
Individuals inside China are borrowing from foreign banks to buy assets abroad, believing that an increase in the value of the Yuan will lower their borrowing and financing costs. Meanwhile, individuals outside China are investing in assets within China hoping that the higher Yuan will create a onetime sizable capital gain. The scary part of this is that the longer the Yuan stays at current levels, the greater the chances that this bubble will end very badly.

While many seem to be focused solely upon the money-making opportunities of speculating on Yuan appreciation, few seem to be considering the possibility that this upward revaluation could lead to downward pressure on the Yuan. For example, if a rise in the Yuan prompts a sell-off in speculative asset holdings by the fast money crowd, the Yuan could come under pressure as foreign speculators attempt to lock in profits. Don't forget: bubbles expand over years, but often unwind over months.

More importantly, investors should not lose sight of the fact that the Yuan/U.S. dollar peg is a contributing factor in persistently low interest rates in the United States. The recycling of trade-surplus dollars back into our fixed-income instruments has helped to keep interest rates in the U.S. low. In turn, lower rates have eased our burden of servicing consumer credit and created refinancing opportunities that have released vast amounts of home equity into current consumption — of goods from China, that is.

This circular dependency is a double-edged sword, however, and it may take little more than a minor slowdown in China's economic growth for both China and the U.S. to see its other, darker side. Even without a recession, a higher Yuan would pressure corporate profit margins at Chinese corporations.

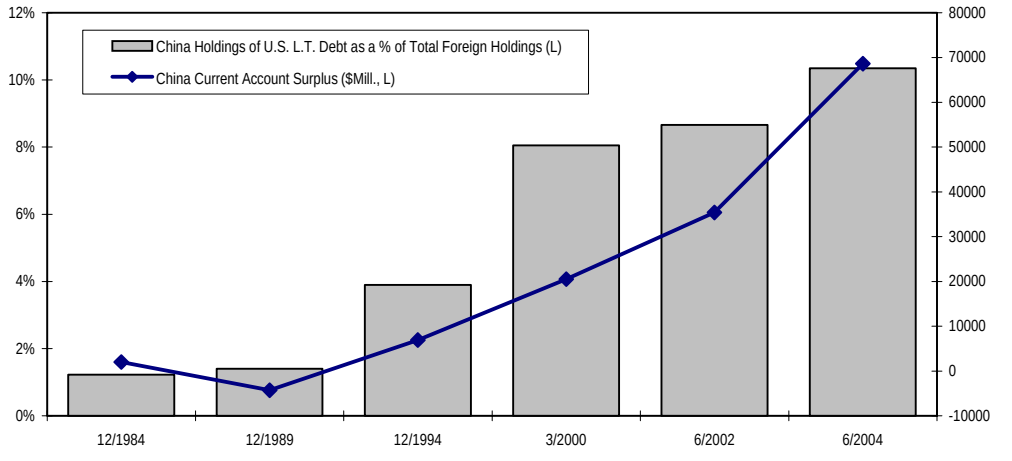
A Circular Dependency — Dollars Come in, and Dollars Go Back



Source: China National Bureau of Statistics; Bear, Stearns & Co. Inc.

This decline in profitability could result in bankruptcies that put pressure on China's already weakened banking system. In that scenario, China could very well attempt to lower the Yuan's value to support trade. This could lead to a panic as foreign holders of depreciating China assets try to get out all at once. Furthermore, the holders of foreign-denominated debt inside China could quickly find themselves with an appreciating debt burden. In turn, economic and financial problems within China would diminish its appetite for U.S. securities, which could drive interest rates higher and crimp the U.S. consumers' appetite for China's products. If that happens, the circular dependency between China and the U.S. will begin feed on itself, making a bad situation worse.

China's Debt Holdings Are Rising Rapidly



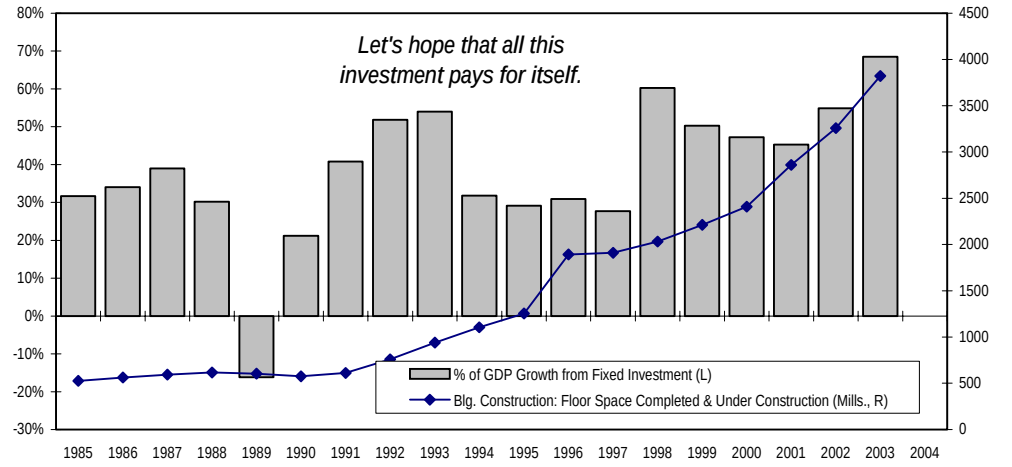
Source: State Administration of Foreign Exchange; U. S. Treasury Department; Bear, Stearns & Co. Inc.

While many experts will try to quantify what the downward pressure could look like based on econometric models, we believe it is impossible to quantify the impact that speculators such as hedge funds could have on the Yuan, or to what extreme investor psychology will deteriorate if concern turns into panic. If speculators believe they can profit from by wrecking China financially and economically, they will do it, and continue to do it until there is no profit left to be made.

THE CHINA BUBBLE BEGINS WITH A DEMOGRAPHIC CONUNDRUM

While it shares many of the same excessive demand and credit characteristics of historical bubbles, the China bubble is unique in that, at its root, the catalyst is demographics. The China bubble has arisen from the basic desire to gather wealth and rise beyond one's current social position. The problem with China is that we have never seen as many people rushing to achieve it simultaneously. As millions leave the agrarian lifestyle of their parents to stake a claim in the affluence growing out of China's newly industrialized cities, the government of China has found itself trying to maintain strong economic growth in the hope that it can withstand the strain of so many individuals seeking jobs and shelter in its cities.

Investment Spending Is a Major Driver of Economic Growth



Source: China National Bureau of Statistics.

China's reluctance to allow the Yuan to appreciate despite growing criticism within the U.S. government has more to do with demographics than a lack of Chinese cooperation. If they allow the Yuan appreciate, the cost of goods flowing out of China will become more expensive, negatively impacting their export engine of growth. If instead they lower export prices to maintain market share, a more likely outcome from a stronger Yuan, Chinese corporations could find themselves losing money — and money-losing enterprises cut jobs, or, worse, go out of business, which would exacerbate the demographic problem. Furthermore, failing businesses would default on bank debt, putting further pressure on China's already fragile state-run banking system. Finally, if banks found themselves unable to lend, or, worse, in a position where they are forced to call in loans from their least creditworthy borrowers, a vicious downward cycle could quickly evolve.

A demographic bubble of this type is not without its own red flags, such as the growing wealth gap between newly rich industrialists and low-income families. Another demographic bubble indicator evident in China is the ease with which credit is being made available for certain construction and business purposes. A simple way to produce jobs and create shelter is to build roads, bridges, dams, housing, etc. (i.e., think New Deal). And with so many people flooding out of farms and into the cities, housing is a necessity. It is interesting that the actions taken by the Chinese government to diminish the availability of credit have been influenced by the demographic problem. China continues to spend on infrastructure and housing, while at the same time curbing "wealthy" related spending projects. All in all, however,

credit conditions fail to improve, and government capital infusions into the banking system go on.

THE CHINA BUBBLE: IS THERE A TECH-BUBBLE ANALOGY ?

If you think of China as corporation, the current operating environment bears an eerie resemblance to that which surrounded many technology and telecommunications companies during the U.S. technology stock bubble of the late 1990s. At that time, many big tech companies booked tremendous revenues by selling products to business customers to which they provided the credit to do so. These big companies saw their profits and net worth (i.e., shareholders' equity) grow, and their stock prices surge. In response to this stellar performance, many financial institutions were more than happy to provide big tech companies with the funds to continue to offer their customers the means to buy even more tech products. This process continued until it was recognized that the final consumer of these tech products would never achieve profitability. Accordingly, the big tech companies began to see the buyers of their products fail. Faced with avalanche of defaulting customers, the large companies took massive write-offs, and their net worth disappeared along with the paper profits of stock investors who believed in them. In the end, a decade-long miracle of prosperity that took in so many believers was wiped out in about two years.

If we take this analogy and apply it to China, the situation is not very different. China sells products to the U.S. while at the same time providing us with the means to continue doing so by purchasing our debt and lowering our cost of credit. In return, China has enjoyed a tremendous increase in net trade (i.e., revenues), and its claims on foreign financial assets (i.e., net worth) have surged. This has created an illusion of prosperity. Meanwhile, China's banking system continues to provide ample liquidity for continued capital investment projects to satiate the overseas demand that they have themselves created by driving interest rates lower for their customers (i.e., the U.S.). Furthermore, the demographic conundrum requires that they maintain both sales and investment levels to provide jobs for the people, regardless of the fact that all this debt-supported capacity may not produce its hoped-for return on investment. This demographic bubble situation is not sustainable over the long term. There will come a time when the twin deficits of the U.S. eventually drive interest rates higher, or a recession diminishes the appetite of the U.S. consumer to buy foreign goods. As demand ebbs, China will find itself posting losses in both its business and financial sectors, which could consume the financial rewards that it has accumulated over many years of illusional prosperity.

THE CHINA BUBBLE: A LINK TO THE THIRD WORLD U.S. IN THE 1820S AND 1830S

While the massive scope of China's demographic conundrum, combined with the challenges of its evolving socialist system, make it nearly impossible to find an exact historical precedent, there have been times in history when the interplay of demographic, economic, and government factors created similarly spectacular and equally unstable environments — one such period was the late 1820s and 1830s in the United States.

Like China today, the U.S. was undergoing a shift in governing philosophies in the late 1820s and the 1830s. During the first two decades of the 1800s, Jeffersonian democracy was the leading governing philosophy. Based upon the beliefs of President Thomas Jefferson, it championed selection of the "most able" leaders by the common people. Unfortunately, too often the most qualified leaders came from what was viewed as the elite class. While still believing in democracy and

championing of the common man, President Andrew Jackson (1829-1837) believed any institution that was controlled by an aristocratic class should be dissolved. The problem, as in the case of China, was that this governing philosophy began to compromise the financial system.

Chartered in 1816, the Second Bank of the United States was formed to create a more centralized bank for the country. Criticized for its conservative banking policies, it was blamed by some for the Panic of 1819, but mostly lauded for the financial stability it provided the nation for more than a decade. Unfortunately, its success was its undoing. As the economy prospered, the U.S. government by the time of the Jackson administration had reached a point where it was nearly debt-free, and revenues were exceeding expenses by a extraordinary margin, resulting in a growing government surplus. Intimate with the common man's difficulty of trying to hack a living out of the expanding frontier from his early years, President Jackson felt that the Second Bank was not doing enough to assist the common man in rising above his current position. He believed that this government surplus should be lent out to those willing and able to develop and extend the boundaries of the country. After great efforts to discredit the Second Bank, he succeeded in dispersing government funds held there to his pet banks for lending. Hoping to get a chunk of these funds, the number of banks expanded rapidly. Unfortunately, many of the owners of the banks either borrowed the monies for their own reckless consumption, or lent it out to investors that used it in highly speculative real estate and business ventures. The net result was surging real estate and commodity prices, rapid inflation, and, finally, the Panic of 1837 as the entire credit bubble imploded.

While it is not the perfect comparison, the U.S. in the 1820s and 1830s shares many similarities with today's China. At the time, the U.S. was a newly industrializing country that was wrestling with competing political ideologies. While still a Communist nation, China is doing its best to morph into a more capitalistic model. But in so doing, a wealthy (i.e., aristocratic) class seems to emerging, which could lead to social problems. The financial system in the U.S. of the 1820s and 1830s was compromised by ideological and demographic factors brought on by President Jackson's interpretation of the best way to champion the common man. In China, the financial system is being compromised in order to address China's demographic challenges. Finally, the lack of a clear government philosophy in the United States of the 1820-30s, and the impact that competing ideologies had on the financial system, eventually led to poor financial policies that promoted wild speculation, and later financial and economic chaos.

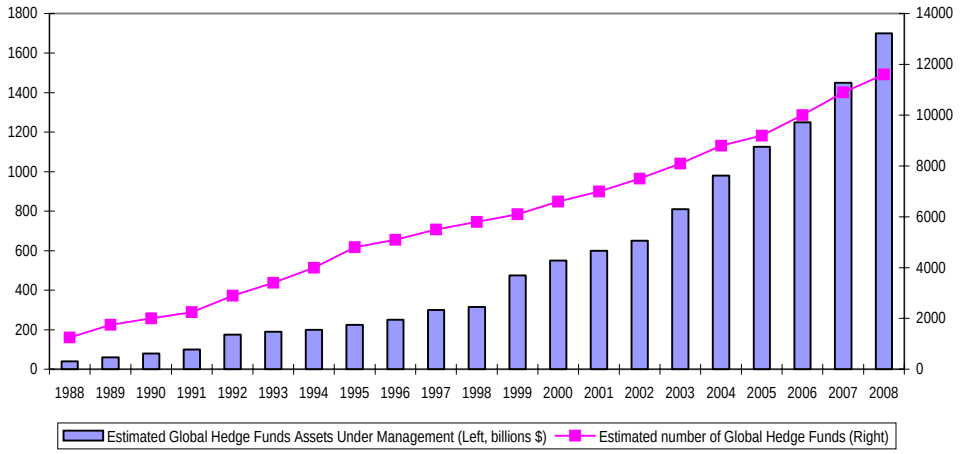
China's sometimes opaque and unusual fiscal and monetary policies make sense in light of the demographic and ideological strains. Whether or not you believe that a bubble in the purest sense really exists in China, the current situation could certainly end in a financial panic, and red flags of excess and financial dislocations are evident. Taking a lesson from the business and financial record of the United States from 1790 to 1900, one can clearly see that the road to prosperity is filled with economic and financial potholes. The path to prosperity for China will not follow a straight line. You can count on that!

Hedge Funds: The Next Thematic Bubble?

One investment area that has recently become extraordinarily popular in financial circles is the hedge funds arena. Indeed, an enormous amount of capital has flowed into these investment vehicles during the last few years. Like other manias we've seen throughout history, there has been a mammoth surge in wealth among hedge fund participants in a relatively short period of time.

Indeed, the optimistic prospect of making a quick fortune has lured people away from traditional investment firms in search of greener pastures. Hedge funds have also had unprecedented access to capital in recent years. Indeed, capital has been ample for hedge funds, as more institutional as well as retail clients are clamoring to outperform the market indices by investing in hedge funds.

Estimated Growth for Hedge Funds: Still Looking Steep!

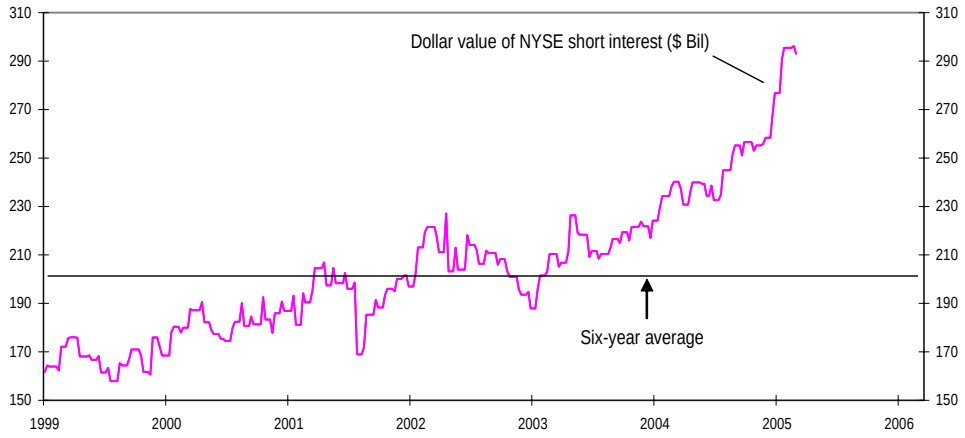


Source: VAN Hedge Fund Advisors International; Bear, Stearns & Co. Inc. estimates.

While we are not suggesting that hedge funds are currently in a bubble per se, we think there is evidence to suggest that the industry is currently in a bubble-prone environment. Indeed, hedge funds have garnered tremendous attention from investors in recent years and are an undeniable force in today's financial landscape.

The current infatuation with hedge funds recalls the sentiment toward venture capital firms and dot-coms in the late 1990s, when professionals, both young and old, jumped ship for the potential of landing a fortune. The reason we call it a potential bubble is that hedge funds have become powerful enough that even the slightest pause for concern can send ripples throughout the market (think about the performance of GM in recent weeks).

Short Interest as a Proxy for Hedge Fund Trading



Source: Ned Davis Research; Bear, Stearns & Co. Inc.

Indeed, we estimate that about 20% of trading volume on the New York Stock Exchange is currently comprised of short interest. It is difficult to estimate how much of all trading activity can be attributed to hedge funds — we hear anything from 30% to 50% is the typical breakdown lately. Regardless of the exact figure, it is easy to imagine how a fallout among the hedge fund community would have significant ramifications for the equity market. If the Long-Term Capital Management (LTCM) shakeup taught us anything, it is that the activity of one hedge fund can certainly send ripples throughout the marketplace. LTCM, of course, was the $100 billion hedge fund that made a wrong call in 1998, triggering a worldwide panic that required Federal Reserve intervention.

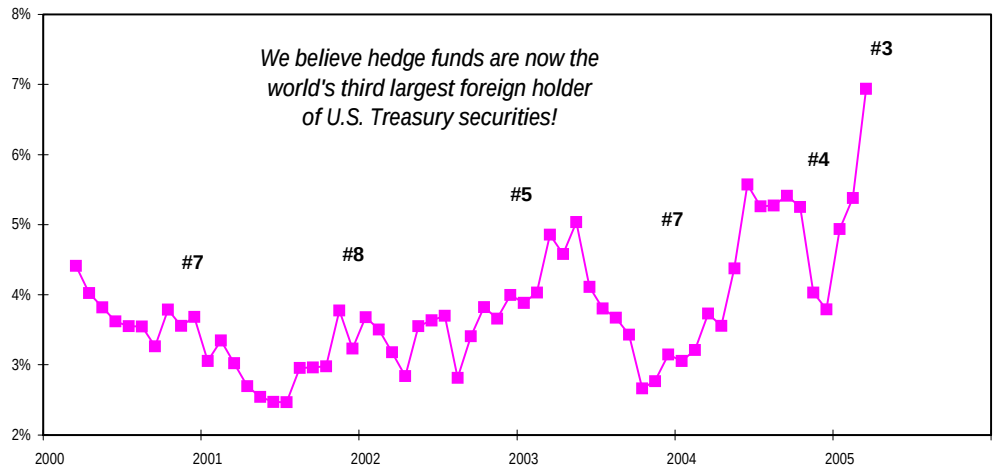
DID SOMEONE SAY LTCM?

What's more, LTCM's management included Wall Street veterans as well as Nobel Prize winners. It is not difficult to imagine that with the multitude of hedge funds today and with the inexperienced management teams that have accompanied their rapid emergence, there is even more risk in the financial system (in fact, a recent report found that only 5%-10% of hedge fund managers today are "exceptionally skilled").[xv] What's to stop the fallout among funds with inexperienced management, when investors decide that the extraordinary fees they are paying are not worth measly returns? We could expect to see stragglers fade away in a survival-of-the fittest shakeout.

With hedge funds playing an expanding role in the financial markets these days, such a shakeout could send ripples throughout the marketplace. As an example of their growing influence, we have found evidence that suggests that hedge funds are currently the third-largest foreign holder of U.S. Treasury securities. While calling hedge funds a foreign holder might sound strange at first, many investors should be aware that many financial management organizations such as hedge funds incorporate in the Caribbean Banking Region (Bahamas, Bermuda, Cayman Islands, Netherlands Antilles, and Panama). Since the Caribbean certainly doesn't carry the trade power of the two largest U.S. Treasury holders (Japan and Mainland China), the financial wherewithal to hold $137 billion in U.S. Treasuries has to be coming from somewhere else; we think it is the hedge funds. Thus, if a steep attrition occurs among funds, more and more funds could begin to unwind their positions ahead of

investors seeking to pull out their investments. If the move is large enough, we could see a compression in liquidity.

Foreign Holders of U.S. Treasures: Caribbean Banking Center Holdings as a % of Total Foreign



Source: Department of the Treasury; Bear, Stearns & Co. Inc. estimates.

Furthermore, the amount of leverage currently assumed by hedge funds makes the market vulnerable to an event that rattles the system. Some pundits argue that, technically, a bubble cannot exist in hedge funds because bubbles take place in a specific asset class, whereas hedge funds cross over many different classes. However, we have found that since such a significant portion of the leverage that exists in the financial system can be attributed to hedge funds, the market is more vulnerable to a hedge fund blowup than ever. Moreover, a large portion of the money in hedge funds is "hot money," which can be removed rapidly from a fund since investors are given periodic withdrawal opportunities, unlike closed-end funds or private equity funds, which give no withdrawal option other than liquidation after a certain point. As such, at the first sign of worry, investors can pull out, triggering an increase in volatility.

A Look at the Leverage Assumed by Hedge Funds

Type of Hedge Fund	High Leverage Use (greater than 2:1, %)	Low Leverage Use (less than 2:1, %)	% With No Leverage
Aggressive Growth	14.3	55.0	30.7
Distressed Securities	11.1	42.6	46.3
Emerging Markets	19.5	40.9	39.5
Income	28.2	31.8	40.0
Macro	54.5	29.3	16.2
Market Neutral - Arbitrage	60.0	19.5	20.5
Market Neutral - Hedging	45.4	26.1	28.6
Market Timing	38.7	24.3	36.9
Opportunistic	31.6	45.5	22.9
Multi-Strategies	32.5	38.3	29.2
Short Selling	22.7	45.5	31.8
Special Situations	20.2	57.6	22.2
Value	17.6	52.3	30.1
Average	30.5	39.1	30.4

Source: VAN Hedge Fund Advisors International; Bear, Stearns & Co. Inc.

Indeed, as the chart above illustrates, as of 2003, only one-third of hedge funds did *not* use leverage, meaning that we can assume the amount of leverage used among hedge funds has expanded even more today. Add to leverage the risk of under-regulation, lack of transparency, potential conflicts of interest, liquidity issues, and the impact of short selling, and one wrong move among hedge funds could trigger a series of disruptions in the financial market. So, while the bubble potential is not necessarily in the prices of hedge funds as an asset class, the imbalance is more in the overall industry — an abundance of money flowing in, exuberance toward expected returns, an oversupply of funds, and excessive leverage.

THE NEXT BIG THING SPELLS OPPORTUNITY

Nanotechnology: The Next Life-Changing Bubble?

Another area that we foresee garnering more attention from investors in the future is nanotechnology, which refers to an area of science that involves the making and manipulation of complex devices with the ability to work at the microscopic level. It is not a single industry, but rather a science that offers possibilities for many different industries, across a wide array of materials and products. Nanotechnology gets its name from the nanometer — the tiniest unit of measurement, which is equivalent to a billionth of a meter, or 100,000 times as thin as a human hair.[xvi] Atoms exist in the nanosphere, as do things like microchips, as well as organisms and viruses. Nanotechnology is catching on in the marketplace because its commercial potential is limitless, with the ability to impact nearly every single sector — from health care to manufacturing. Many think it could be the "next big thing," leading us to think that one day it could be the next "life-changing bubble." Since it is a concept that has only recently reached the marketplace, it is an area that has not yet peaked.

Nanotechnology Crosses the Industry Lines

Industries	Life-Changing Potential
Manufacturing	Efficient production, reduce waste and pollution from manufacturing process, real-time monitoring with nanosensors
Health Care	Improve medical testing, medicines, health care equipment and medical devices
Energy	Alternative fuels, improve storage, clean energy, improved performance in power lines, solar cells, next-generation energy, hydrogen-powered fuel cells, detect environmental leaks
Materials	At the molecular level, nanotech can help create materials that will change the performance of sports equipment (tennis rackets, golf clubs and balls, skis), as well as improve sturdiness in objects like automobiles, airplanes, boats, appliances
Electronics	Chips, smaller and more powerful computers, phones, home appliances, improve electrical conductivity

Source: Bear, Stearns & Co. Inc.

EVEN THE PRESIDENT LIKES NANOTECH!

In 2002, the NanoBusiness Alliance, a nanotech industry association, reported that the industry was worth $45.5 billion at the time, and could grow to $700 billion by 2008. More recently, the National Science Foundation estimated that the market for

nano-products could reach $1 trillion by 2015. Furthermore, nanotechnology research was one of the largest beneficiaries of President George W. Bush's fiscal 2003 science budget. At the end of 2003, the President signed into law the "21st Century Nanotechnology Research and Development Act," which authorizes funding for nanotech R&D over four years, starting in fiscal 2005. In fiscal 2004, the President requested $849 million for nanotech R&D across ten federal agencies (a 10% increase from the amount requested in fiscal 2003). According to the White House, overall funding research for nanotechnology has increased by 83% since 2001.

While nano-stocks themselves have yet to make a big splash in the market, the idea that this technology will transform businesses as we know them is circulating among financial circles. Indeed, business periodicals are beginning to whisper about which industries and corporations will likely be the beneficiaries of a nanotechnology boom. So, while we are by no means suggesting that a bubble is brewing for nanotech stocks, the life-changing capacity of this science is reminiscent of other life-changing events that caused bubbles (e.g., railroads, radio, television, electronics, dot-coms!). The promise of delivering life-changing results without delivering any earnings (or even products!) reminds us of the Internet days.

What's more, there are several funds that have begun to appear, focusing primarily on nanotech stocks. Reminiscent of the Internet funds that evolved in the 1990s and the biotech funds of the 1980s, nano funds are in a very early phase. Nevertheless, we thought it would be interesting to list the ones we were able to track down.

A Sample of Some Publicly Traded Nanotechnology Funds

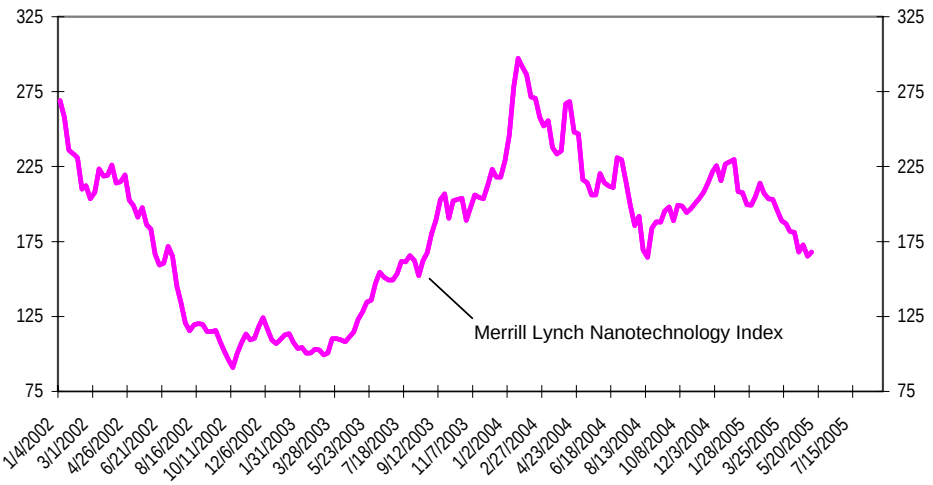
Fund Name	Ticker	Description
Activest NanoTech	ACNATCH	Open-end investment fund with objective of long-term capital appreciation. Invests primarily in equities of companies whose products and services are preferred by younger generations.
Nanoscience Opportunities	NANOOPP	Open-end investment fund with objective of growth and income. Invests in global equity securities excluding emerging markets.
DAC Nanotech Funds	HANNANO	Open-end investment fund with objective of growth through global investments in nanotech company eqiuities. Includes companies in the development and servicing of nanotechnology.
First Trust 824 - Nanotechnology Portfolio Series	FTNATX	Unit Investment Trust focusing on nanotech companies. Termination date: 12/9/2008
First Trust 947 - Nanotechnology Portfolio Series	FTNAMX	Unit Investment Trust focusing on nanotech companies. Termination date: 3/9/2010
Nanocap Offshore Fund	NANOFFS	Open-end investment fund with objective to deliver superior investment returns over a long market cycle. Consists primarily of US securities, both long and short positions, with opportunistic investments in Asia and other regions.

Source: Bloomberg; Bear, Stearns & Co. Inc.

In addition, there are two nanotechnology indices that are currently publicly traded: the Merrill Lynch Index (NNZ), which consists of 27 companies and trades on the American Stock Exchange, and the Lux Nanotech (LUXNI). The Merrill index consists mainly of micro-cap stocks — i.e., most have market caps under $1 billion, with a good portion less than $250 million. Obviously, such small-capitalization

structures, coupled with unconfirmed business models, make nanotech stocks a very risky venture at this point, in our opinion.

Nanotech Stocks: The Next Life-Changing Bubble?



Note: Stocks included in the index are CMBX, ACCL, ALTI, ACO, ARWR, BPA, CBT, FEIC, FLML, TINY, HW, IMMC, JMAR, KOPN, LMRA, MTSC, NGEN, NANX, NVAX, NVEC, PSDV, SKYE, SMMX, TGAL, UTEK, VECO, WEDX.

Source: Merrill Lynch; Bloomberg; Bear, Stearns & Co. Inc.

Twenty-three of the 27 stocks in the index above are currently covered by analysts, while the average is covered by about five analysts. As the screen below illustrates, the average market cap for a typical stock in the index is about $370 million, and only three of the stocks offer a dividend.

A Closer Look at Nanotech Stocks

Symbol	Company Name	EPS 2006E	P/E 2006E	Dividend Yield	# of Analysts Covering	Market Cap ($ Mil.)	Closing Price 6/6/05
CBMX	Acacia Research Corp. -CombiMatrix	-0.43	NM	0.0	0	79.87	2.75
ACCL	Accelrys Inc.	-0.54	NM	0.0	3	136.10	5.11
ALTI	Altair Nanotechnologies Inc.	0.00	NM	0.0	2	165.20	2.84
ACO	AMCOL International Corp.	1.31	14.8	1.9	3	571.62	19.25
ARWR	Arrowhead Research Corp.	N/A	NM	0.0	0	37.78	2.45
BPA	BioSante Pharmaceuticals Inc.	-0.80	NM	0.0	3	70.90	3.82
CBT	Cabot Corp.	2.16	13.5	2.2	4	1,834.22	29.06
FEIC	FEI Co.	1.00	22.0	0.0	13	737.96	21.70
FLML	Flamel Technologies S.A.	-0.08	NM	0.0	3	392.22	19.18
TINY	Harris & Harris Group Inc.	0.25	47.7	0.0	4	205.78	12.29
HW	Headwaters Inc.	2.46	14.1	0.0	5	1,433.02	34.33
IMMC	Immunicon Corp.	-0.61	NM	0.0	4	95.32	4.16
JMAR	JMAR Technologies Inc.	N/A	NM	0.0	2	44.33	1.28
KOPN	Kopin Corp.	0.07	51.1	0.0	8	263.96	3.65
LMRA	Lumera Corp.	N/A	NM	0.0	5	84.37	5.20
MTSC	MTS Systems Corp.	1.70	19.0	1.0	5	637.80	32.00
NGEN	Nanogen Inc.	-0.33	NM	0.0	2	171.02	3.69
NANX	Nanophase Technologies Corp.	-0.17	NM	0.0	2	114.46	6.13
NVAX	Novavax Inc.	-0.33	NM	0.0	3	59.71	1.31
NVEC	NVE Corp.	0.40	45.2	0.0	4	82.63	18.25
PSDV	pSivida Ltd. (ADS)	N/A	NM	0.0	0	143.43	6.84
SKYE	SkyePharma PLC	N/A	NM	0.0	2	609.98	9.59
SMMX	Symyx Technologies Inc.	0.59	43.8	0.0	8	836.42	26.17
TGAL	Tegal Corp.	N/A	NM	0.0	0	55.02	1.06
UTEK	Ultratech Inc.	0.85	20.6	0.0	12	417.64	17.56
VECO	Veeco Instruments Inc.	0.84	18.2	0.0	13	457.13	15.45
WEDX	Westaim Corp.	N/A	NM	0.0	2	247.85	2.67

Source: FactSet Research Systems Inc.; First Call; Bloomberg; Bear, Stearns & Co. Inc.

We raise the idea of nanotechnology for investors to keep in mind as a life-changing innovation that is in a very early stage of development. If we apply “Moore’s Law” to nanotechnology, the growth could be substantial if nanotech catches on anywhere near the way semiconductors did in the past 40 years. Moore’s Law refers to Gordon Moore’s, co-founder of Intel, observation in 1965 that the growth in the number of transistors per integrated circuit would be exponential. In fact, the number of transistors has continued to double every couple of years since the integrated circuit was invented in 1961. If nanotechnology growth mushrooms in a similar manner, we can expect the enthusiasm surrounding it to be significant, providing a potential opportunity for investors.

At this time, there are four arenas in which we could imagine assets bubbles forming down the road. It is important to remember that the catalyst for a major mania correction can be unsuspecting and unforeseen. Hopefully, the framework offered in this study will help investors remain vigilant and informed as to how bubble environments evolve, so they are not caught up in the “next big thing!”

Conclusions

Hopefully, investors will come away from this study persuaded that financial bubbles are by no means a rare occurrence, but rather a phenomenon that seems to reappear time and again throughout history. Indeed, the most recent mania in the 1990s proved that "prosperity think" and a claim of "new era" economics are by no means a new way of thinking, but a repeated cycle in which economic prosperity leads to over-optimism and speculation. Our review of history's well-known bubbles was designed to show that market manias and subsequent shakeups have plagued each century. The point we wanted to make was that even with the perspective of hindsight and financial history books, investors continue to get caught up in market manias because they allow themselves to fall for the "it's different this time" fallacy.

The work of economic behaviorist Vernon Smith demonstrated that with some experience, market participants can learn to avoid bubble pitfalls. In this regard, we attempted to provide an economic framework to help identify some of the economic conditions that commonly surround bubble episodes, so investors can be better equipped to avoid falling into a market mania trap in the future. Indeed, we offered a look at how various economic aggregates typically behave leading up to a bubble-prone environment, what happens at the time of the peak, and what usually ensues in the bubble's aftermath. Furthermore, we characterized the four different types of asset bubbles that tend to reoccur: life-changing, scarcity, government, and thematic.

As Fed Chairman Greenspan has suggested, it is certainly easier to identify asset bubbles after the fact. While we agree, our work is designed to equip investors with the tools necessary to identify bubble-prone environments before they burst, so they can avoid the ramifications a boom/bust environment brings for market participants. We then tried to assess today's current economic landscape to see how likely it is that an asset bubble will soon appear, and we found that the current backdrop does indeed meet many of the conditions that are typically ripe for asset bubbles.

With this in mind, we sought to explore possible arenas in which future asset bubbles might occur. Four likely bubble scenarios, in our opinion, are real estate, China, hedge funds, and, eventually, nanotechnology. What's more, we think the proximity of these bubbles unfolding could be in that order (i.e., the likeliest near-term bubble being real estate, while the nanotechnology bubble is still very far off). As such, real estate poses the greatest investment risk at this point, while nanotechnology is still an opportunity. Another thing to keep in mind is the possibility of a serial bubble reoccurring, like we saw during the railroad era — i.e., what if the late 1990s Internet bubble was only the first in a series of reappearing bubbles, in which the first wave of speculation wipes out the feeble companies, leaving the stronger ones to attract speculative investors again (think Google and Amazon today!).

The most important takeaway from this analysis, in our opinion, is that an asset bubble can form in a localized arena (think dot-com stocks in the 1990s and Florida land in the 1920s) and then seep into other areas. In other words, investors should be vigilant when they hear news of a bubble, even if it's in an area in which they are not involved, because these localized events often carry severe implications for the broader financial landscape and the entire economy.

Footnotes

[i] Edward Chancellor, *Devil Take the Hindmost*, p. 191-199.

[ii] Ibid.

[iii] "Blodget and Amazon: A Long History," *CNet News.com*, July 27, 2000.

[iv] Andy Kessler, *Wall Street Meat*, p. 191.

[v] Chancellor, p. 126.

[vi] Chancellor, p. 15.

[vii] Chancellor, p. 19.

[viii] Chancellor, p. 20.

[ix] Ibid.

[x] Donald J. Mabry, "Economy, 1843-1857," Historical Text Archive. www.historicaltextarchive.com/sections.php?op=viewarticle&artid=669/.

[xi] www.workingforchange.com/article.cfm?ItemID=17576.

[xii] Ibid.

[xiii] "Bubbles, Crashes, and Endogenous Expectations in Experimental Spot Asset Markets," Vernon L. Smith, Gerry L. Suchanek, and Arlington W. Williams, *Econometric,*

[xiv] John M. Berry, "Home Prices Won't Directly Affect Fed Rates," Bloomberg News, April 7, 2005.

[xv] Lawrence C. Strauss, "For Hedge Funds, Is the Party Over?" *Barron's*, May 27, 2005.

[xvi] Peter Conley, CNBC.com, April 1, 2004, www.moneycentral.msn.com/content/CNBCTV/Articles/StockPicks/P79917.asp

Addendum

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