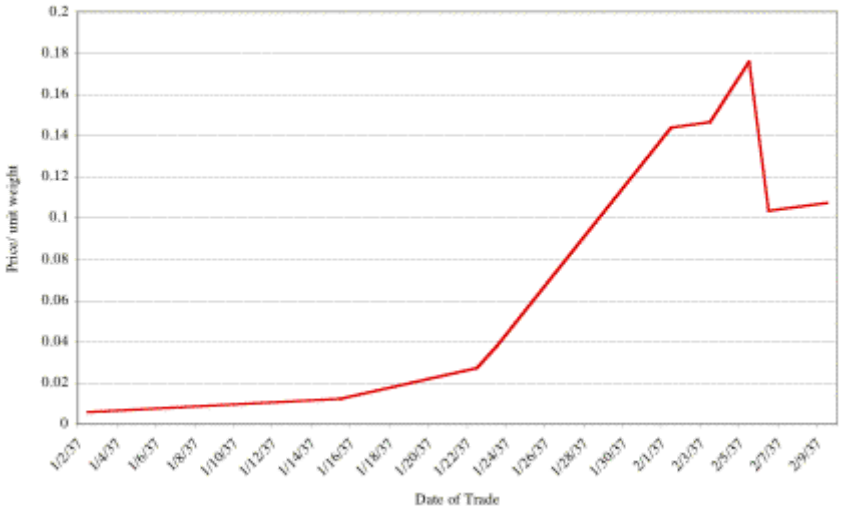
Market Bubbles

Proponents of market irrationality have pointed to market bubbles as a primary exhibit in their case against efficient markets. Through the centuries, markets have boomed and busted, and in the aftermath of every bust, irrational investors have been blamed for the crash. As we will see in this section, it is not that simple. You can have bubbles in markets with only rational investors, and assessing whether a bubble is due to irrational investors is significantly more difficult than it looks from the outside.

A Short History of Bubbles

As long as there have been markets, there have been bubbles. Two of the earliest bubbles to be chronicled occurred in the 1600s in Europe. One was the amazing boom in prices of tulip bulbs in Holland that began in 1634. A single Tulip bulb (Semper Augustus was one variety) sold for more than 5000 guilders (the equivalent of more than $ 60000 today) at the peak of the market. Stories abound, though many of them may have been concocted after the fact, of investors selling their houses and investing the money in tulip bulbs. As new investors entered the market in 1636, the frenzy pushed up bulb prices even more until the price peaked in early February. Figure 7.11 presents the price of one type of bulb (Switzers) in January and February of 1637.[1]

Figure 7.11: Price of a Tulip Bulb (Switser) - January - February 1637



Note that the price peaked on February 5, 1637, but an investor who bought tulip bulbs at the beginning of the year would have seen his or her investment increase almost 30 fold over the next few weeks.

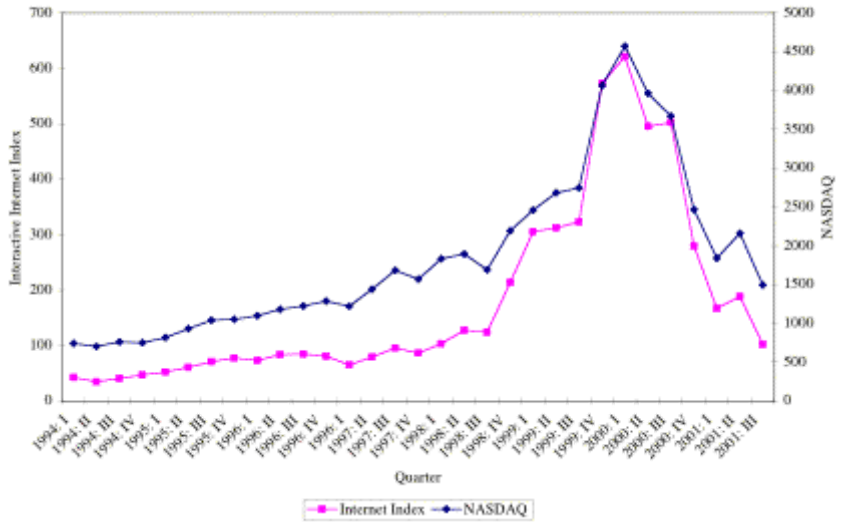
A little later in England, a far more conventional bubble was created in securities of a firm called the South Seas Corporation, a firm with no assets that claimed to have the license to mint untold riches in the South Seas. The stock price was bid up over the years before the price plummeted. The crash, which is described in vivid detail in Charles Mackay's classic book titled "Extraordinary Delusions and the Popular Madness of Crowds", left many investors in England poorer.[2]

Through the 1800s, there were several episodes of boom and bust in the financial markets in the United States and many of these were accompanied by banking panics.[3] As markets became broader and more liquid in the 1900s, there was a renewed hope that liquidity and more savvy investors would make bubbles a phenomenon of the past, but it was not to be. In 1907, J.P. Morgan had to intervene in financial markets to prevent panic selling, a feat that made his reputation as the financier of the world. The 1920s saw a sustained boom in U.S. equities and this boom was fed by a number of intermediaries ranging from stockbrokers to commercial banks and sustained by lax regulation. The crash of 1929 precipitated the great depression, and created perhaps the largest raft of regulatory changes in the United States, ranging from restrictions on banks (the Glass-Steagall Act) to the creation of a Securities Exchange Commission.

The period after the second world war ushered in a long period of stability for the United States, and while there was an extended period of stock market malaise in the 1970s, the bubbles in asset prices tended to be tame relative to past crashes. In emerging markets, though, bubbles continued to form and burst. In the late 1970s, speculation and attempts by some in the United States to corner the precious metals markets did create a brief boom and bust in gold and silver prices. By the mid-1980s, there were some investors who were willing to

consign market bubbles to history. On October 19, 1987, the U.S. equities market lost more than 20% of their value in one day, the worst single day in market history, suggesting that investors, notwithstanding technological improvements and more liquidity, still shared a great deal with their counterparts in the 1600s. In the 1990s, we witnessed the latest in this cycle of market bubbles in the dramatic rise and fall of the dot-com sector. New technology companies with limited revenues and large operating losses went public at staggering prices (given their fundamentals) and kept increasing. After peaking with a market value of $ 1.4 trillion in early 2000, this market too ran out of steam and lost almost all of this value in the subsequent year or two. Figure 7.12 summarizes the Internet index and the NASDAQ from 1994 to 2001:

Figure 7.12: The Tech Boom

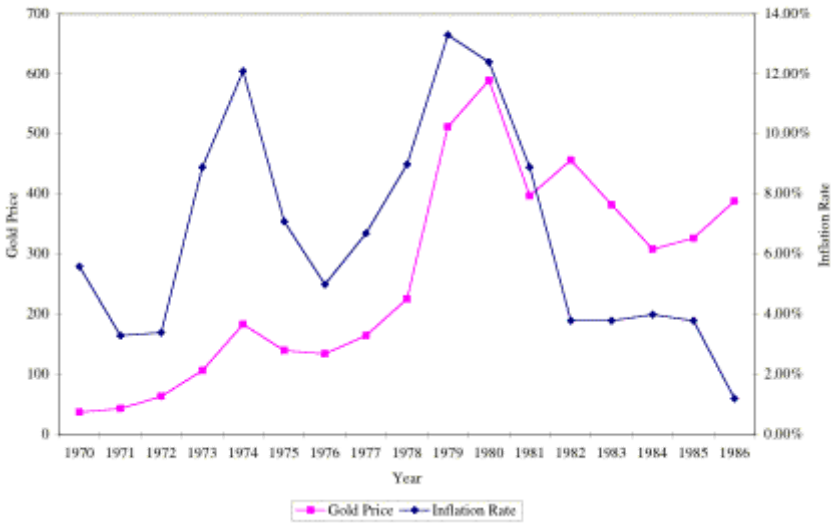


The chart again has the makings of a bubble, as the value of the index internet index increased almost ten fold over the period, dragging the tech-heavy NASDAQ up with it.

Rational Bubbles?

A rational bubble sounds like an oxymoron, but it is well within the realms of possibility. Perhaps the simplest way to think of a rational bubble is to consider a series of coin tosses, with a head indicating a plus day and a tail a minus day. You would conceivably get a series of plus days pushing the stock price above the fair value, and the eventual correction is nothing more than a reversion back to a reasonable value. Note too that it is difficult to tell a bubble from a blunder. Investors in making their assessments for the future can make mistakes in pricing individual assets, either because they have poor information or because the actual outcomes (in terms of growth and returns) do not match expected values. If this is the case, you would expect to see a surge in prices followed by an adjustment to a fair value. In fact, consider what happened to gold prices in the late 1970s. As inflation increased, many investors assumed (incorrectly in hindsight) that high inflation was here to stay and pushed up gold prices accordingly. Figure 7.13, which graphs gold prices from 1970 to 1986, looks very much like a classic bubble, but may just indicate our tendencies to look at things in the rear view mirror, after they happen.

Figure 7.13: Gold Prices: 1970-86



Note that the surge in gold prices closely followed the increase in inflation in the late 1970s, reflecting its value as a hedge against inflation. As inflation declined in the 1980s, gold prices followed. It is an open question, therefore, whether this should be even considered a bubble.

Bubble or Blunder: Tests

There are some researchers who argue that you can separate bubbles from blunders by looking at how prices build up over time. Santoni and Dwyer (1990), for instance, argue that you need positive two elements for a bubble – positive serial correlation in returns and a delinking of prices and fundamentals as the bubble forms. They test the periods prior to 1929 and 1987 crashes to examine whether there is evidence of bubbles forming in those periods. Based upon their analysis, there is no evidence of positive serial correlation in returns or of a reduction in the correlation between prices and fundamentals (which they define as dividends) in either period. Therefore, they argue that neither period can be used as an example of a bubble.

While there is truth to the underlying premise, these tests may be too weak to capture bubbles that form over long periods. For instance, Santoni and Dwyer's conclusion of no serial correlation seems to be sensitive to both the time periods examined and the return interval used. In addition, detecting a delinking of prices and fundamentals statistically may be difficult to do if it happens gradually over time. In short, these may be useful indicators but they are not conclusive.

Bubbles: From Inception to Crash

One or the more fascinating questions in economics examines how and why bubbles form and what precipitates their bursting. While each bubble has its own characteristics, there seem to four phases to every bubble.

Phase 1: The Birth of the Bubble

Most bubbles have their genesis in a kernel of truth. In other words, at the heart of most bubbles is a perfectly sensible story. Consider, for instance, the dot.com bubble. At its center was a reasonable argument that as more and more individuals and businesses gained online access, they would also be buying more goods and services online. The bubble builds as the market provides positive reinforcement to some investors and businesses for irrational or ill-thought out actions. Using the dot.com phenomenon again, you could point to the numerous start-up companies with half-baked ideas for e-commerce that were able to go public with untenable market capitalizations and the investors who made profits along the way.

A critical component of bubbles building is the propagation of the news of the success to other investors in the market, who on hearing the news, also try to partake in the bubble. In the process, they push prices up and provide even more success stories that can be used to attract more investors, thus providing the basis for a self-fulfilling prophecy. In the days of the tulip bulb craze, this would have had to be word of mouth, as successful investors spread the word, with the success being exaggerated in each retelling of the story. Even in this century,

until very recently, the news of the success would have reached investors through newspapers, financial newsmagazines and the occasional business show on television. In the dot.com bubble, we saw two additional phenomena that allowed news and rumors to spread even more quickly. The first was the internet itself, where chat rooms and web sites allowed investors to tell their success stories (or make them up as they went along). The second was the creation of cable stations such as CNBC, where analysts and money managers could present their views to millions of investors.

Phase 2: The Sustenance of the Bubble

Once a bubble forms, it needs sustenance. Part of the sustenance is provided by the institutional parasites that make money of the bubble and develop vested interests in preserving and expanding the bubbles. Among these parasites, you could include:

- Investment banks: Bubbles in financial markets bring with them a number of benefits to investment banks, starting with a surge in initial public offerings of firms but expanding to include further security issues and restructurings on the part of established firms that do not want to be shut out of the party.
- Brokers and analysts: A bubble generates opportunities for brokers and analysts selling assets related to the bubble. In fact, the ease with which investors make money as asset prices go up, often with no substantial reason, relegates analysis to the backburner.
- Portfolio Managers: As a bubble forms, portfolio managers initially watch in disdain as investors they view as na�ve push up asset prices. At some point, though,, even the most prudent of portfolio managers seem to get caught up in the craze and partake of the bubble, partly out of greed and partly out of fear.
- Media: Bubbles make for exciting business news and avid investors. While this is especially noticeable in the dot.com bubble, with new books, television shows and magazines directly aimed at investors in these stocks, even the earliest bubbles had their own versions of CNBC.

In addition to the institutional support that is provided for bubbles to grow, intellectual support is usually also forthcoming. There are both academics and practitioners who argue, when confronted with evidence of over pricing, that the old rules no longer apply. New paradigms are presented justifying the high prices, and those who disagree are disparaged as old fashioned and out of step with reality.

Phase 3: The Bursting of the Bubble

All bubbles eventually burst, though there seems to be no single precipitating event that causes the reassessment. Instead, there is a confluence of factors that seem to lead to the price implosion. The first is that bubbles need ever more new investors (or at least new investment money) flowing in for sustenance. At some point, you run out of suckers as the investors who are the best targets for the sales pitch become fully invested. The second is that each new entrant into the bubble is more outrageous than the previous one. Consider, for instance, the dot.com bubble. While the initial entrants like America Online and even Amazon.com might have had a possibility of reaching their stated goals, the new dot.com companies that were listed in the late 1990s were often idea companies with no vision of how to generate commercial success. As these new firms flood the market, even those who are apologists for high prices find themselves exhausted trying to explain the unexplainable.

The first hint of doubt among the true believers turns quickly to panic as reality sets in. Well devised exit strategies break down as everyone heads for the exit doors at the same time. The same forces that created the bubble cause its demise and the speed and magnitude of the crash mirror the formation of the bubble in the first place.

Phase 4: The Aftermath

In the aftermath of the bursting of the bubble, you initially find investors in complete denial. In fact, one of the amazing features of post-bubble markets is the difficulty of finding investors who lost money in the bubble. Investors either claim that they were one of the prudent ones who never invested in the bubble in the first place or that they were one of the smart ones who saw the correction coming and got out in time.

As time passes and the investment losses from the bursting of the bubble become too large to ignore, the search for scapegoats begins. Investors point fingers at brokers, investment banks and the intellectuals who nurtured the bubble, arguing that they were mislead.

Finally, investors draw lessons that they swear they will adhere to from this point on. "I will never invest in a tulip bulb again" or "I will never invest in a dot.com company again" becomes the refrain you hear. Given these resolutions, you may wonder why price bubbles show up over and over. The reason is simple. No two bubbles look alike. Thus, investors, wary about repeating past mistakes, make new ones, which in turn

create new bubbles in new asset classes.

Upside versus Downside bubbles

Note that most investors think of bubbles in terms of asset prices rising well above fair value and then crashing. In fact, all of the bubbles we have referenced from the tulip bulb craze to the dot-com phenomenon were upside bubbles. But can asset prices fall well below fair market value and keep falling? In other words, can you have bubbles on the downside? In theory, there is no reason why you could not, and this makes the absence of downside bubbles, at least in the popular literature, surprising. One reason may be that investors are more likely to blame external forces the bubble, for instance for the money they lose when they buy assets at the peak of an upside bubble and more likely to claim the returns they make when they buy stocks when they are at the bottom of a downside bubble as evidence of their investment prowess.

Another may be that it is far easier to create investment strategies to take advantage of under priced assets (in a downside bubble) than it is to take advantage of over priced assets. With the former, you can always buy the asset and hold until the market rebounds. With the latter, your choices are both more limited and more likely to be time limited. You can borrow the asset and sell it (short the asset), but not for as long as you want most short selling is for a few months. If there are options traded on the asset, you may be able to buy puts on the asset though, until recently, only of a few months duration. In fact, there is a regulatory bias in most markets against such investors who are often likely to be categorized as speculators. As a consequence of these restrictions on betting against overpriced assets, bubbles on the upside are more likely to persist and become bigger over time, whereas bargain hunters operate as a floor for downside bubbles.

A Closing Assessment

Based upon our reading of history, it seems reasonable to conclude that there are bubbles in asset prices, though only some of them can be attributed to market irrationality. Whether investors can take advantage of bubbles to make money seems to be a more difficult question to answer. Part of the reason for the failure to exploit bubbles seems to stem from greed even investors who believe that assets are over priced want to make money of the bubble and part of the reason is the difficulty of determining when a bubble will burst. Over valued assets may get even more over valued and these overvaluations can stretch over years, thus imperiling the financial well being of any investor who has bet against the bubble. There is also an institutional interest on the part of investment banks, the media and portfolio managers, all of whom feed of the bubble, to perpetuate the bubble.

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[1] This graph is based upon data provided by Garber(1990) in Crashes and Panics: The lessons of History, Dow Jones Irwin. It should be pointed out that he does not believe that the pricing of tulip bulbs was irrational for much of the period.

[2] To get a flavor of financial markets in England at the time of the South Sea bubble, you should look at Conspiracy of Lies, a novel set in the era by David Liss. Edward Chancellor's Devil takes the hindmost provides historical perspective on the bubble.

[3] The crash of 1873 was precipitated by the failure of firm called Jay Cooke, a financial-service firm in Philadelphia. The New York Stock Exchange was closed for ten days and several banks closed their doors in the aftermath.