

## CENTRE FOR FINANCIAL MANAGEMENT

### CFM QUARTERLY IN FINANCE

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### CONTENTS

#### PART A: ARTICLES/CASES

1. BUBBLES

#### PART B: SNIPPETS

1. A SURVEY OF CORPORATE FINANCE PRACTICES
2. WHY INVESTMENT SUCCESS BREEDS FAILURE
3. RAGHURAM RAJAN'S PRESENTATION

#### PART C: WIT AND WISDOM

1. HUMOUR
2. WISE SAWS

#### PART A: ARTICLES/CASES

##### BUBBLES

**Dr. Prasanna Chandra**

In general, the stock market is remarkably efficient in pricing stocks in terms of their growth prospects and risk attributes. Investment professionals commonly use price-earnings ratio to judge how richly a stock is valued. If a stock sells for 66 and its earning per share is 3, it is said to have a price-earnings ratio (or multiple) of 22. A stock commands a high price-earnings multiple, if it has superior growth prospects and risk attributes. On the other hand, a stock commands a low price-earnings multiple, if it has inferior growth prospects and risk attributes.

Although the stock market is generally efficient, it is prone to commit mistakes, given the extraordinary difficulties in divining the future. As an investor you should be aware that occasionally the market displays high irrationality causing a substantial discrepancy between intrinsic value and market price. In market parlance it is called bubble time.

Perhaps the word bubble is used carelessly. Eugene Fama, the most important proponent of the "efficient markets hypothesis" certainly thinks so. In an interview with

John Cassidy for The New Yorker, he said, "I don't even know what a bubble means. These words have become popular. I don't think they have any meaning."

In the second edition of his path-breaking book *Irrational Exuberance*, Robert Shiller, tried to define a bubble. He wrote, "A speculative bubble is a situation in which news of price increases spurs investor enthusiasm, which spreads by psychological contagion from person to person, in the process amplifying stories that might justify the price increase." He continued, "This attracts a larger and larger class of investors, who, despite doubts about the real value of the investment, are drawn to it partly through envy of other's successes and partly through a gambler's excitement."

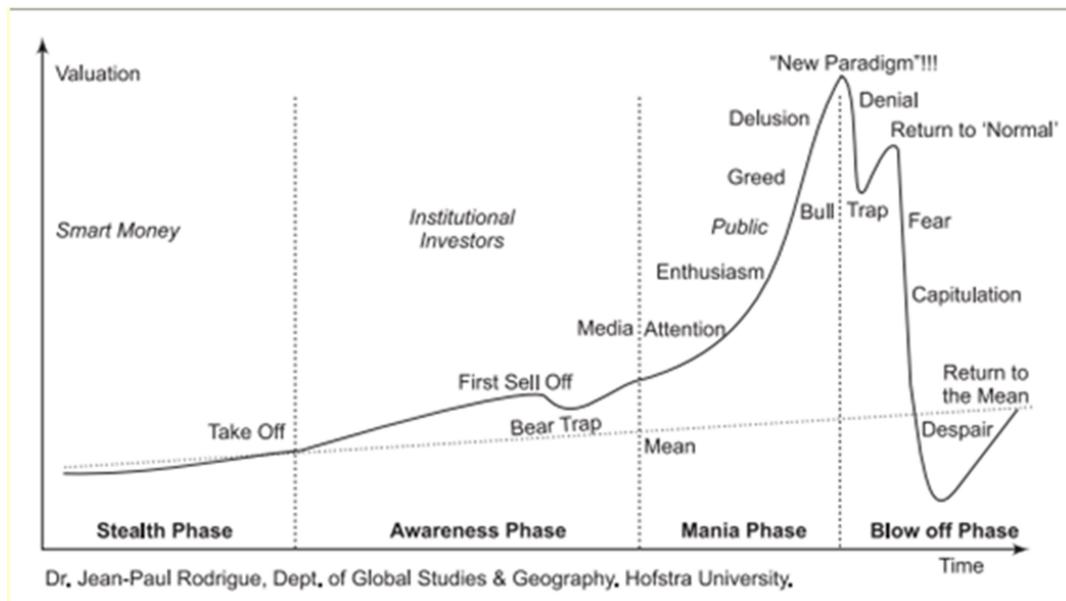
One problem with the world bubble is that it conjures up a mental picture of an expanding soap bubble that eventually pops. Speculative bubbles, however, don't end so easily. Indeed, they deflate considerably, as the story changes, and then reflate.

Bubbles are often associated with the development of an exciting new technology or the emergence of a new business opportunity. As Shiller noted, a bubble forms when there is a 'positive feedback loop.' A rise in the price of an asset encourages more people to buy it which, in turn, fuels further price rise and induces more and more people to join the bandwagon. The mechanism resembles a Ponzi mechanism, where more and more gullible (foolish) investors must be found to buy the assets from those who joined the game earlier. Eventually, however, the bubbles burst as one runs out of fools.

### The Four Stages of a Bubble

According to Jean-Paul Rodrigue, there are four stages of a bubble as shown in Exhibit 1

**Exhibit 1 Four Stages of a Bubble**



**Stealth Phase** During this stage the “smart money” enters the market quietly, causing a very modest – almost imperceptible price rise.

**Awareness Phase** In this stage, institutional money flows into the market, leading to a perceptible take off in prices.

**Mania Phase** As the price momentum builds up and the activities of institutional investors receive media attention, the general investing public participates enthusiastically, leading to a self-reinforcing upward movement.

**Blowoff Phase** The irrational exuberance at the end of the mania phase is followed by a return to sanity when prices decline. The price fall, however, triggers fear and sets in motion a downward spiral. A Guide to Spotting Bubb

### **A Guide to Spotting Bubbles**

Benjamin Graham said that every investor should “have an adequate idea of stock market history, in terms particularly of major fluctuations. With this background he may be in a position to form some worthwhile judgment of the attractiveness or dangers ... of the market.” It behooves an investor to understand the dynamics of bubbles. In 1867, John Stuart Mill, a multi-faceted genius, wrote a paper that provides a useful framework for thinking about bubbles. His model has been utilised by luminaries like Hyman Minsky, an exceptionally perceptive economist, and Charles Kindleberger, the eminent chronicler of financial manias. According to Mill, the rise and fall of a bubble can be broken down into five phases as shown below:

Displacement → Credit creation → Euphoria → Critical stage/ Financial distress → Revulsion

**Displacement** An exogenous shock creates profit opportunities in some sectors, while eroding profitability in other sectors. The opportunities created are greater than those that are being destroyed. As a result, the seeds of a boom are sown. As Mill put it, “a new confidence begins to germinate in this period, but its growth is slow.”

**Credit creation** Just as oxygen is required for fire, credit is needed for a boom to flourish. According to Minsky, monetary expansion and credit creation, largely endogenous to the system, feed the boom. During this phase, as Mill noted, “The rate of interest (is) almost uniformly low....Credit... continues to grow more robust, enterprise to increase and profits to enlarge.”

**Euphoria** A wave of over-optimism and overconfidence pervades. Everyone starts to buy into the new era and hence prices spiral upwards. Traditional valuation standards are supplanted by new valuation metrics to justify the high prices as investors believe “This time is different.”

According to Mill, “There is a morbid excess of belief...healthy confidence...has degenerated into the disease of a too facile faith. The crowd of..investors.. do not, in their excited mood, think of pertinent questions, whether their capital will become quickly productive, and whether their commitment is out of proportion to their means... Unfortunately, however, in the absence of adequate foresight and self-control, the tendency is for speculation to attain its most rapid growth exactly when its growth is most dangerous.”

**Critical stage-Financial distress** This is the stage when insiders cash out, financial distress occurs on account of excessive leverage built up in the boom stage, and frauds emerge.

The excessive leverage can easily lead to fire sales. As Mill noted, “The... trader who employs, in addition to his own means, a proportion of borrowed capital has found, in the moment of crisis, the conjuring power of his name utterly vanished, and has been compelled to provide for inexorably maturing obligations by the forced sale of goods or produce at such prices as would tempt forth reluctant capital.”

**Revulsion** Revulsion is the final stage in the life cycle of a bubble. Mortified by their experience, investors withdraw from the market, causing bargain basement asset prices. As Mill wrote, “As a rule, panics do not destroy capital; they merely reveal the extent to which it has been previously destroyed by its betrayal into hopelessly unproductive works. The failure of great banks... and mercantile firms... are the symptoms incident to the disease, not the disease itself.”

Mill recognised the prolonged nature of recovery after the bubble burst. He wrote: “Economy, enforced on great numbers of people by losses from failures and from depreciated investments restricts their purchasing power. Profits are kept down to the stunted proportions of demand. Time alone can steady the shattered nerves, and form a healthy cicatrice over wounds so deep.”

### **Are Bubbles Black Swans**

Some people think that bubbles are somehow “black swans.” In the words of Nassim Taleb: “A black swan has three attributes: 1. It is an outlier, as it lies outside the realm of regular expectations. 2. It carries an extreme impact. 3. The human nature makes us concoct explanations for its occurrence after the fact, making it explainable and predictable.”

If bubbles are black swans we can absolve ourselves from our behaviour. Such a belief has found support at the highest policy levels—both Alan Greenspan and Ben Bernanke have held it. But such a view is untenable, a mere attempt to abdicate responsibility

Bubbles are not black swans, but “predictable surprises.” In the words of James Montier, “Predictable surprises also have three defining characteristics: 1. At least some people are aware of the problem. 2. The problem gets worse over time. 3. Eventually the problem explodes into a crisis, much to the shock of most.”

What prevents people from seeing predictable surprises? According to James Montier, the following psychological hurdles hamper us:

- **Over-optimism** The tendency to look at things through rose-colored lenses blinds us to the dangers posed by predictable surprises.
- **Illusion of control** The belief that we can influence the outcome of uncontrollable events lulls us into complacency.
- **Self-serving bias** People tend to interpret information in ways that support their self-interests. As Montier put it, “Wherever lots of people are making lots of money, it is unlikely that they will take a step back and point out the obvious flaws in their action.”
- **Myopia** Obsessed with the short run, people tend to ignore the long-term consequences of their action. As Montier put it, “Myopia can be summed up via Saint Augustine’s plea, ‘Lord, make me chaste, but not yet’-one more good year, one more good bonus, and then I promise to go and do something worthwhile with my life, rather than working in finance!”
- **Inattentional blindness** A final barrier to spotting predictable surprises is inattentional blindness: we are not likely to see what we are not looking for.

### **John Kenneth Galbraith on Speculative Bubbles**

John Kenneth Galbraith, an eminent Harvard economist, was a pioneer in studying the origins of housing and real estate bubbles. He wrote: “... there is a basic and recurrent process. It comes with rising prices, whether of stocks, real estate, and works of art, or anything else. This increase attracts attention and buyers, which produces the further effect of even higher prices. Expectations are thus justified by the very action that sends prices up. The process continues; optimism with its market effect is the order of the day. Prices go up even more. Then, for reasons that will endlessly be debated, comes that end. The descent is always more sudden than the increase; a balloon that has been punctured does not deflate in an orderly way.”

### **Some Well-known Bubbles**

Market bubbles followed by crashes are examples of market inefficiency. There are many examples in history of bubbles in stock, bond, and commodity markets. The process of bubble formation may be illustrated with four well-known speculative bubbles, the Tulip bubble, the South Sea bubble, the Japanese stock market bubble, and the Internet bubble.

**Tulip Bubble** The tulip bubble was not a stock market bubble but an egregious mania involving tulip bulbs. The frenzy erupted when some tulip bulbs, infected by non-fatal virus, acquired bizarre contrasting coloured stripes and caught the fascination of Dutch people. They prized these infected bulbs and a speculative mania was set into motion. In his book *Extraordinary Popular Delusions and the Madness of Crowds*, Charles Mackay observed, ‘Nobles, citizens, farmers, mechanics, seamen, footmen, maid-servants, even chimney sweepers and old clothes women dabbled in tulip.’ At the peak of the bubble,

in early 1637, a unique bulb fetched a price equal to that of a noble-man's castle. Eventually, selling pressure built and in no time tulip bulb prices went down and down until most bulbs became practically worthless, bankrupting thousands of mindless speculators.

**The South Sea Bubble** The seeds of the South Sea bubble were sown in 1711 when the South Sea Company of Great Britain was granted monopoly by the government to trade to the South Seas. As investors became enthusiastic about the profits the company would potentially make, the stock of the South Sea Company rose nearly ten-fold.

Since the South Sea Company could not satiate the demands of investors, the investors looked for other new ventures. Just as speculators look for the next Infosys today, they looked for the next South Sea Company in England in the 1700s. Unscrupulous promoters obliged by inventing weird proposals, from importing jackasses from Spain (although England had an abundant supply of its own) to making machine-guns that would revolutionise the art of war. One promoter even started 'A company for carrying on an undertaking of great advantage, but nobody to know what it is.'

Eventually, the bubble burst and many investors suffered grievous losses in most of the issues of the period. One of the biggest losers was Isaac Newton, who confessed, 'I can calculate the motions of heavenly bodies, but not the madness of people.' Commenting on Isaac Newton's experience, Warren Buffett wrote: 'If he had not been traumatised by his loss, Sir Isaac might well have gone on to discover the Fourth Law of Motion: For investors as a whole, returns decrease as motion increases.'

**The Japanese Stock Market Bubble** On January 2, 1985, Japan's Nikkei 225 index stood at 11,543. In the following five years, it soared relentlessly and reached a level of 38,916 on December 29, 1989. The phenomenal gain of 237.1 per cent over a five-year period tantamount to a stunning 27.5 per cent compound annual rate of return. Then the bubble deflated over the following year. In December 2004, fifteen years after the Japanese market peaked the Nikkei stood at 10,796. This means that over this period it fell by 72.3 per cent from its 1989 peak and was even below the level at which was at the beginning of 1985.

**The Internet Bubble** The big daddy of all the bubbles in human history, the Internet bubble was spawned by a new technology and new business opportunities. It triggered the largest creation and the largest destruction of wealth ever-by the end of 2002 more than \$7 trillion of market value was decimated.

Many believed that the Internet heralded the New Economy and its drum majors, such as Amazon.com and Priceline.com, soared to dizzy heights. The obsession with Internet-enabled companies to double their price by merely changing their name to suggest some web orientation (such as .com or .net).

Investors lapped new issues enthusiastically, even when the company had neither profits, nor even revenues. Some IPOs rose 500 per cent. For example, VA Linux climbed

over 730 per cent on its first trading day to nearly \$200 per share. In 2002, the same share fell below \$1. Investment bankers, analysts, and media contributed to the hot air inflating the Internet bubble which finally burst as sanity returned to the market.

### Experimental Bubble Markets

A number of experiments have improved our understanding of financial decision-making. Experimental asset markets have provided fresh insights into how markets work. A very perplexing finding of this research is the tendency of prices to rise significantly above fundamental value and then subsequently crash.

In a typical bubbles market design, participants are asked to trade an asset at fixed intervals over a period of time. The asset earns a dividend at the end of each trading period, according to a known probability distribution. The prices at which the trades take place are noted to determine how they behave over time.

To illustrate, let us consider an experiment in which the participants are asked to trade an asset over 12 five minutes, determined at the end of each trading period (5 minutes), as per the following probability distribution.

<i>Dividend (₹)</i>	<i>Probability</i>
1.00	0.40
2.00	0.40
3.00	0.20

The expected value of the dividend for each period is:

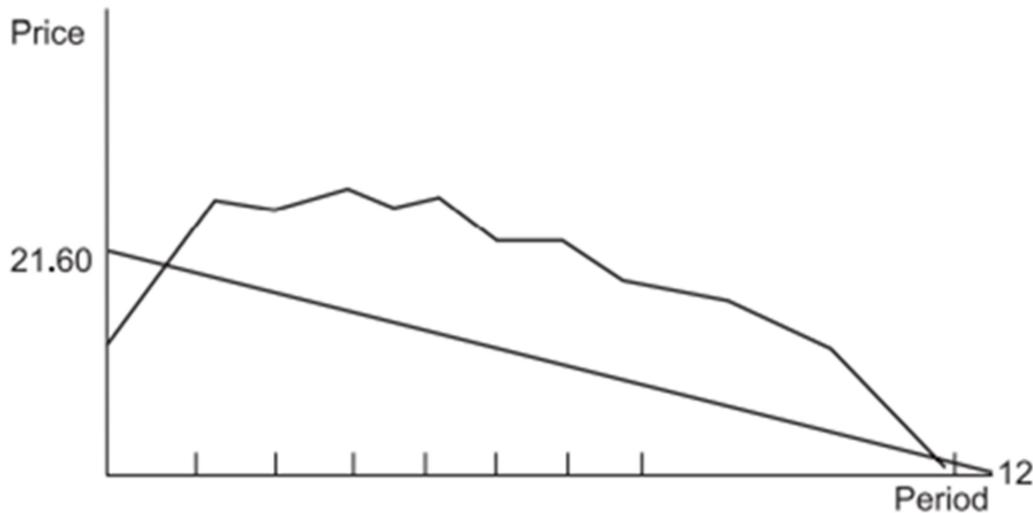
$$1.00 (0.40) + 2.00 (0.40) + 3.00 (0.20) = 1.80$$

How much would a participant pay for the asset in Period 1? If he is risk-neutral, he would pay the expected dividend per period ( 1.80) times 12 periods, or 21.60. This represents the fundamental value of the asset in period 1. The fundamental value of the asset in all subsequent periods can be determined by multiplying the number of periods remaining times the expected dividend of 1.80. For a risk-averse participant, however, the fundamental value of the asset would be lower.

Exhibit 2 shows the typical price pattern in an experimental bubbles market. The solid line reflects the fundamental value each period—it begins with 21.60 and falls by 1.80 each period. The dashed line reflects the median transactions prices. Typically, the median transaction, price is less than the fundamental value in Period 1. This may be because the participants are initially risk-averse as they trade in an unfamiliar environment. However, the median transaction price quickly rises above the fundamental value suggesting bubble formation, shown by the dashed line. The bubble

persists for a while and then deflates. Finally, the price converges to the fundamental value.

### Exhibit 1 Bubbles in Experimental Market



### What Lessons Do These Experiments Provide

Research in experimental markets provides several lessons:

- When traders are knowledgeable about financial markets and have prior experience in experimental bubble markets, bubbles tend to be more moderate and deflate faster.
- A great deal of cash in a market fuels speculation and bubbles. This is similar to the house money effect.
- In experiments where participants are allowed to trade a lottery asset (an asset that has a negligible probability of a high payoff) and a standard asset (whose payoff has a probability distribution of the kind described earlier), both having the same expected payoff, participants are willing to pay more for the lottery asset. This may be because people overweight low probabilities (as suggested by prospect theory) or become more risk-prone when they are caught up in the excitement of trading.
- Bubble formation is abetted, if there are restrictions on short-selling. This happens because in the presence of restrictions on short-selling, prices are driven by traders who have a more optimistic view of the asset value.

## PART B: SNIPPETS

### 1. A SURVEY OF CORPORATE FINANCE PRACTICES

**John R. Graham and Campbell R. Harvey surveyed 392 CFOs about the cost of capital, capital budgeting, and capital structure. Here are their main findings:**

- Large firms rely on present value techniques and the CAPM, while small firms tend to use the payback criterion.
- For evaluating new investments a surprising number of firms use firm risk rather than project risk.
- When issuing debt, firms are concerned about credit ratings and financial flexibility; when issuing equity firms are concerned about EPS dilution and stock price appreciation.
- There is some support for the pecking order and trade off capital structure hypothesis.

## **2. WHY INVESTMENT SUCCESS BREEDS FAILURE**

According to Warren Buffett, there are three connected realities that cause investing success to breed failure. As Warren Buffett explains: “First, a good record quickly attracts a torrent of money. Second, huge sums invariably act as an anchor on investment performance: What is easy with million, struggles with billions (sob!). Third, most money managers will nevertheless seek new money because of their personal equation- namely, the more funds they have under management, the more their fees.”

## **3. RAGHURAM RAJAN’S PRESENTATION**

In 2005, at the Jackson Hole conference Raghuram Rajan gave a provocatively titled presentation, “Has Financial Development Made the World Riskier?” He argued that the new developments in the financial environment has changed the nature of financial risk. He said, “While the system now exploits the risk- bearing capacity of the economy better by allocating risks more widely, it also takes on more risks than before. Moreover, the linkages between markets and between markets and institutions are now more pronounced. While this helps the system diversify across small shocks, it also exposes the system to large systemic systematic shocks- large shifts in asset prices or changes in aggregate liquidity.”

In the aftermath of the global financial crisis, Rajan’s words seem incredibly prescient. However, Larry Summers who led the general discussion afterward, called Rajan as “misguided and slightly Luddite.”

## **PART C: WIT AND WISDOM**

### **1. HUMOUR**

- Teacher: Construct a sentence that starts with an “I.” Student: I is the .....- Teacher: After an “I” you should always put “am.”- Student: Fine. I am the ninth letter of the alphabet

- A manager attended a “Job Enrichment” seminar in which the key message was that employees must be empowered to motivate them. After he returned from the seminar he wanted satisfiers to be introduced into the jobs of his subordinates. He called all of them and said, “Hereafter you will be allowed to plan and control your work.” One subordinate asked, “Will I get more money if I did that.” The manager said, “No. But you need to understand the motivation theory. So you read this book and we will discuss tomorrow.” The subordinate said, “If I read this book and discuss tomorrow, will I get more money.”

## 2. WISE SAWS

- One of the virtues of being very young is that you don’t let the facts get in the way of your imagination. :Sain Levensun.
- The best things in life are the simplest and the least appreciated, because we take them for granted.