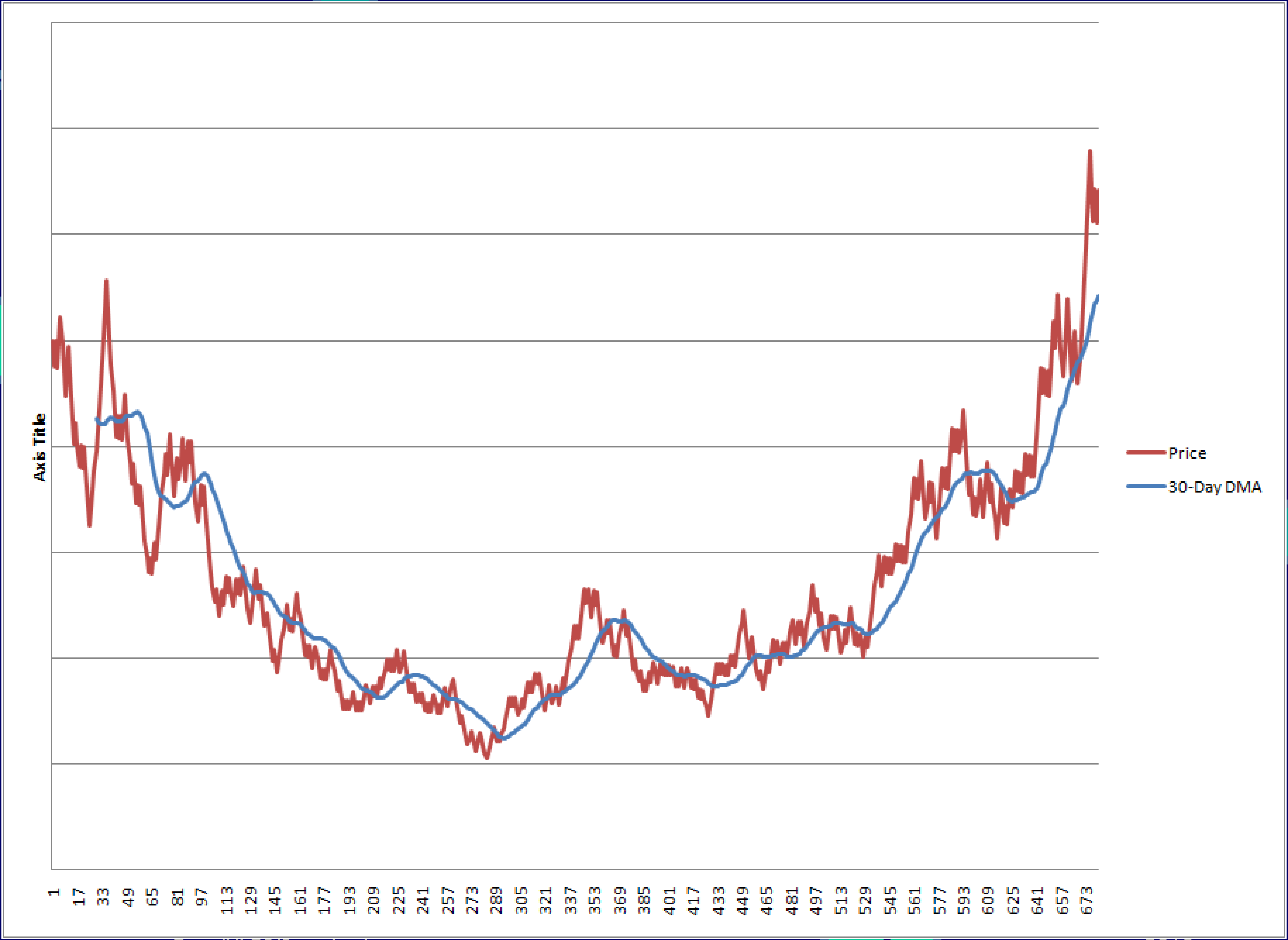
Capital Markets & its Efficiency

Ram Kumar Kakani



Axis Title
Price
30-Day DMA
1
17
33
49
65
81
97
113
129
145
161
177
193
209
225
241
257
273
289
305
321
337
353
369
385
401
417
433
449
465
481
497
513
529
545
561
577
593
609
625
641
657
673

1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
50m
25m
J J A S O N D 1 F M A M J J A S O N D 2 F M A M J J A S O N D 3 F M A M J J A S O N D 4 F M A M J J A S O N D 5 F M A M J J A S O N D 6 F M A M J J A S O N D 7 F M A M
Zoom In
Zoom Out
All

Market Efficiency

- We always mean informational efficiency i.e., how well the prices reflect available information
- In other words …
- The idea is that intense competition in the capital market leads to fair pricing of debt and equity securities

Technical Analysis

- Forecast stock prices based on watching the fluctuations in historical prices
- They look for trends and cycles and make profits from them

Technical Analysis

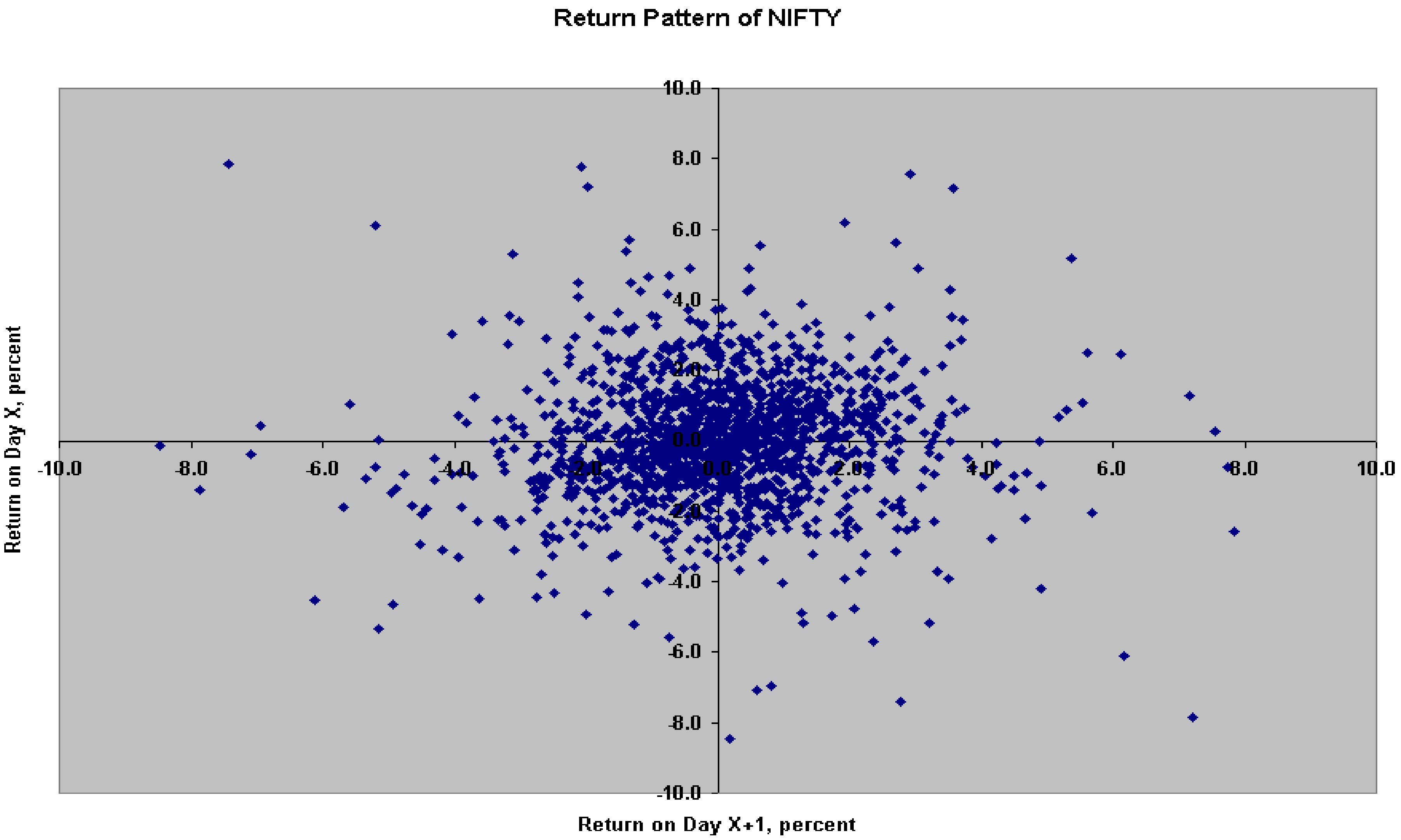
Kilburn Chemical, listed in BSE, 13 years price chart, monthly data with 23 months moving average

Moving Average
28
Refresh
View latest announcements
95
96
97
98
99
1
2
3
4
5
6
7
Zoom In
Zoom Out

Random Walk Theory

- The movement of stock prices from day to day DO NOT reflect any pattern
- Statistically speaking, the movement of stock prices is random
- If there is a pattern, then investors would be able to earn huge profits by exploiting the pattern

Random Walk Theory



Efficient Market Theory

- Weak Form Efficiency

→ Market prices reflect all historical information

- Semi-Strong Form Efficiency

→ Market prices reflect all publicly available information

- Strong Form Efficiency

→ Market prices reflect all information, both public and private

Implications of Efficient Market

- Using this information cannot generate above normal profits in the long run
- Weak Form Efficiency

→ Technical analysis fails

- Semi-Strong Form Efficiency

→ Fundamental analysis fails

- Strong Form Efficiency

→ Insider info also do not give any profits

Efficient Capital Markets … Implications …

- The EMH has implications for investors and firms.
  - Since information is reflected in security prices quickly, knowing information *when it is released* does an investor little good.
  - Firms should expect to receive the fair value for securities that they sell. Firms cannot profit from fooling investors in an efficient market.

Implications of Efficient Market

- But if prices always fully reflect that information, investors have no incentive to incur the cost of analysis.

→ Limits of market efficiency are set by the cost of obtaining information

- Similarly in technical analysis – cycles and trends will self destruct as soon as investors recognize them

Efficient Market Theory

- So, if there is a takeover attempt for Hero Honda then what happens …

→ It would be fully reflected in the stock price on the announcement day.

- What happens to the mutual funds …
- Will they underperform or overperform the market …
- They will underperform in approximately half the years

Foundations of Market Efficiency

- Investor Rationality
- Independence of events
- Arbitrage

Efficient Market Theory

- So, what happens to the markets when there is a global financial crisis …
- There will be a change in growth perception which will change the index value dramatically
- So, what happens to the markets when Satyam & Raju's revealed their true colors
- Stock (and Index?) crashed …
- The quantity and quality of 'under reaction' or 'over reaction' of the same would depend on – *Representativenes* and *Conservatism*

What the EMH Does and Does NOT Say

- Investors can throw darts to select stocks.
  - This is almost, but not quite, true.
  - An investor must still decide how risky a portfolio he wants based on risk aversion and expected return.
- Prices are random or uncaused.
  - Prices reflect information.
  - The price CHANGE is driven by *new* information, which by definition arrives randomly.
  - Therefore, financial managers cannot “time” stock and bond sales.

The Evidence

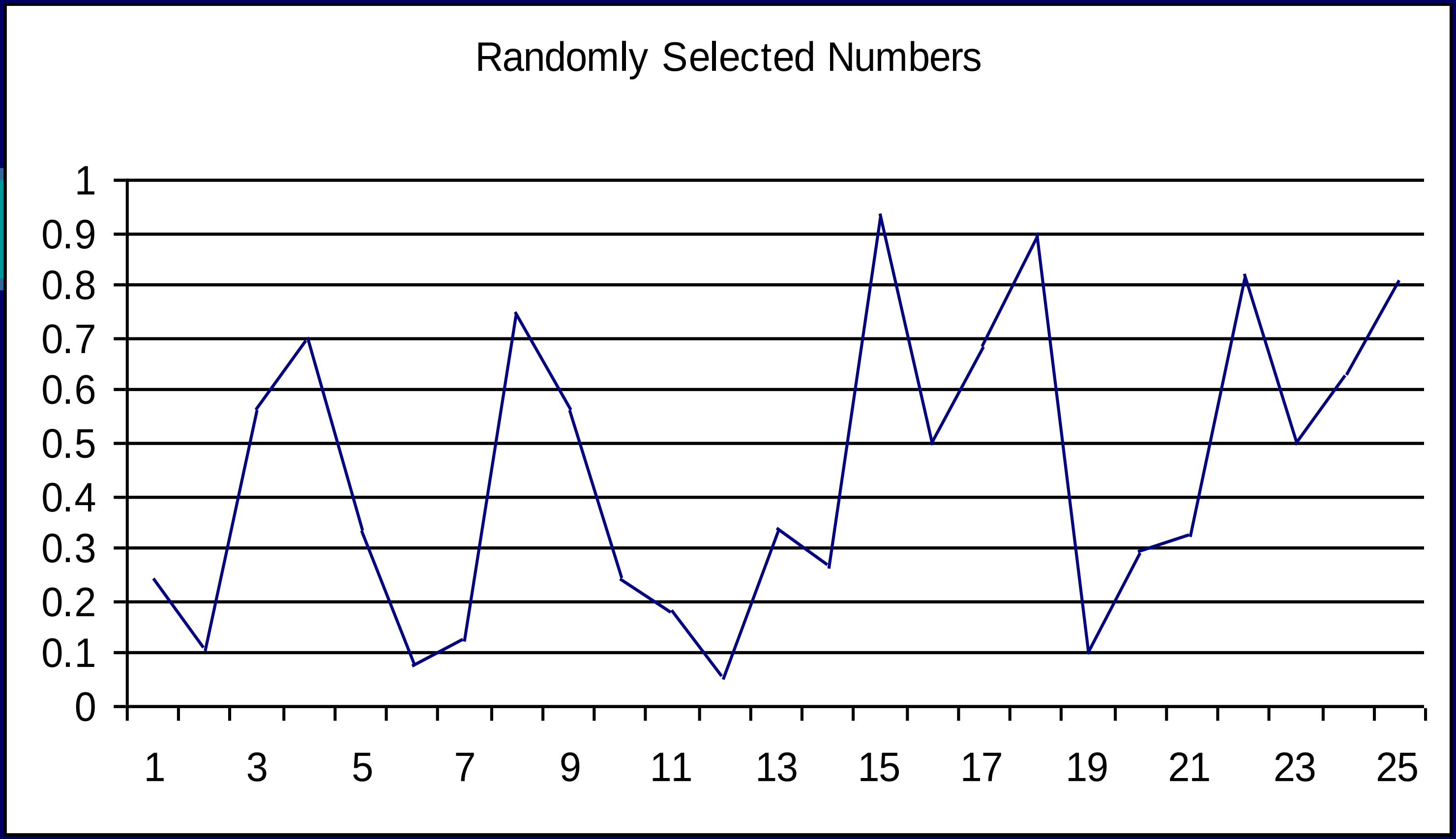
- The record on the EMH is extensive, and, in large measure, it is reassuring to advocates of the efficiency of markets.
- Studies fall into three broad categories:

1. Are changes in stock prices random? Are there profitable “trading rules?”
2. Event studies: does the market quickly and accurately respond to new information?
3. The record of professionally managed investment firms.

Are Changes in Stock Prices Random?

- Can we really tell?
  - Many psychologists and statisticians believe that most people want to see patterns even when faced with pure randomness.
  - People claiming to see patterns in stock price movements are probably seeing optical illusions.
- A matter of degree
  - Even if we can spot patterns, we need to have returns that beat our transactions costs.
- Random stock price changes support weak form efficiency.

What Pattern Do You See?



Event Studies

- Event Studies are one type of test of the semi strong form of market efficiency.
  - ✓ Recall, this form of the EMH implies that prices should reflect all publicly available information.
- To test this, event studies examine prices and returns over time—particularly around the arrival of new information.
- Test for evidence of under reaction, overreaction, early reaction, or delayed reaction around the event.

Event Studies

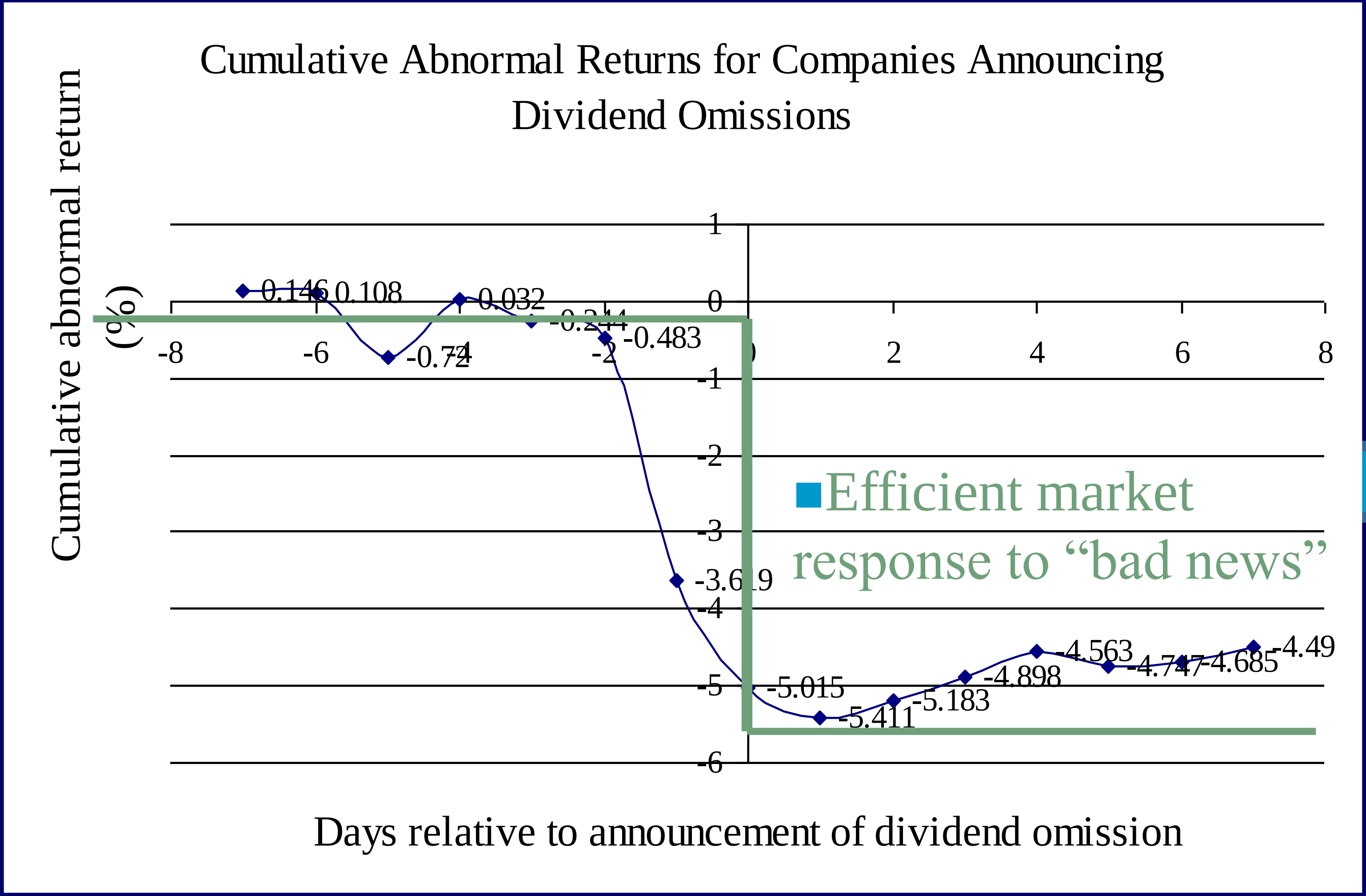
- Returns are adjusted to determine if they are *abnormal* by taking into account what the rest of the market did that day.
- The *Abnormal Return* on a given stock for a particular day can be calculated by subtracting the market's return on the same day (R_M) from the actual return (R) on the stock for that day:

$$AR = R - R_M$$

- The abnormal return can be calculated using the Market Model approach:

$$AR = R - (\alpha + \beta R_M)$$

Event Studies: Dividend Omissions



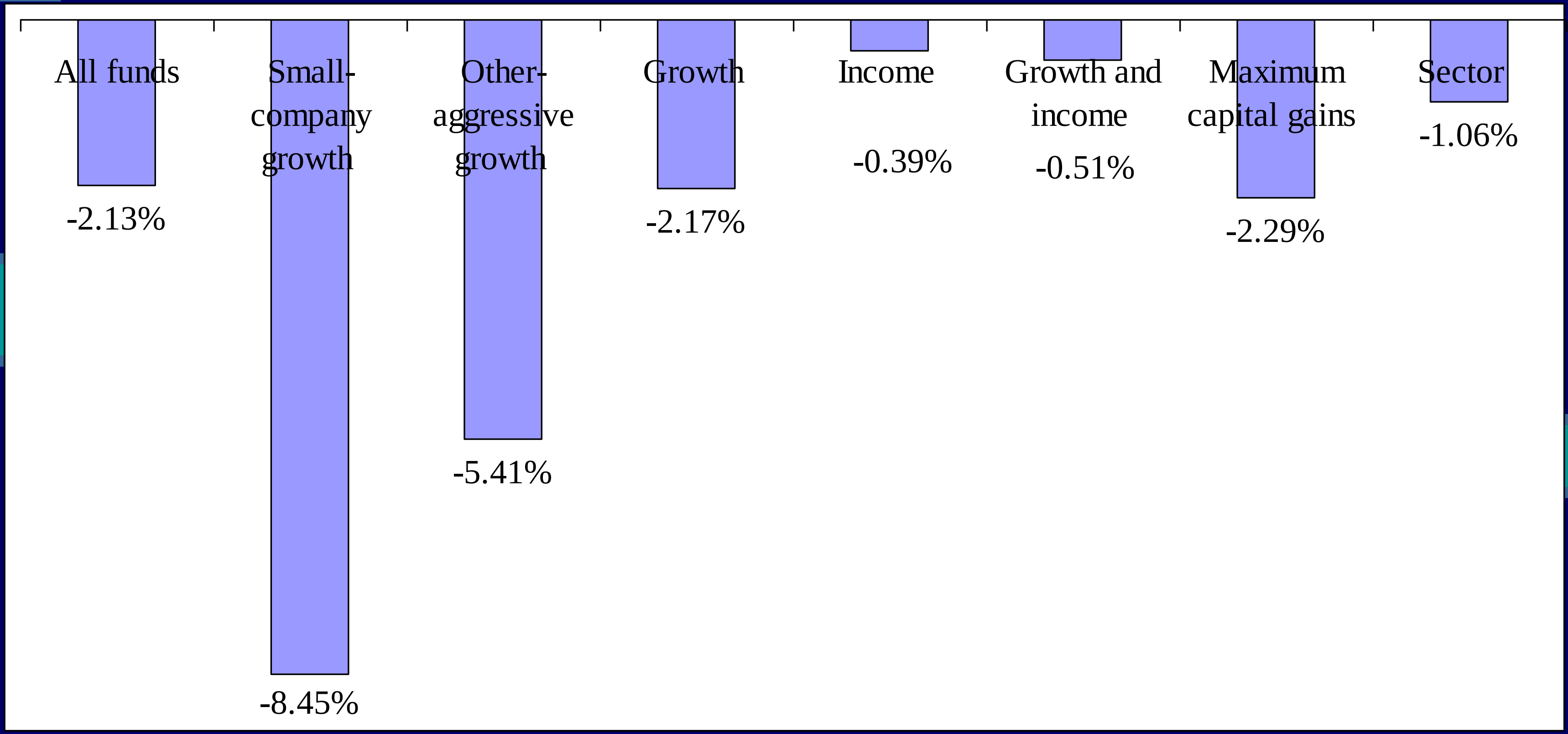
Event Study Results

- Over the years, event study methodology has been applied to a large number of events including:
  - Dividend increases and decreases
  - Earnings announcements
  - Mergers
  - Capital Spending
  - New Issues of Stock
- The studies in US generally support the view that the market is semistrong form efficient.
- Studies suggest that markets may even have some foresight into the future, i.e., news tends to leak out in advance of public announcements.

The Record of Mutual Funds

- If the market is semi strong form efficient, then no matter what publicly available information mutual fund managers rely on to pick stocks, their average returns should be the same as those of the average investor in the market as a whole.
- We can test efficiency by comparing the performance of professionally managed mutual funds with the performance of a market index.

The Record of Mutual Funds



- Taken from Lubos Pastor and Robert F. Stambaugh, “Mutual Fund Performance and Seemingly Unrelated Assets,” *Journal of Financial Exonomics,* 63 (2002).

The Strong Form of the EMH

- One group of studies of strong form market efficiency investigates insider trading.
- A number of studies support the view that insider trading is abnormally profitable.
- Thus, strong form efficiency does not seem to be substantiated by the evidence.

The Behavioral Challenge

- Rationality
  - People are not always rational.
  - Many investors fail to diversify, trade too much, and seem to try to maximize taxes by selling winners and holding losers.

The Behavioral Challenge

- Independent Deviations from Rationality
  - Psychologists argue that people deviate from rationality in predictable ways:
    - Representativeness: drawing conclusions from too little data
      - This can lead to bubbles in security prices.
    - Conservativism: people are too slow in adjusting their beliefs to new information.
      - Security prices seem to respond too slowly to earnings surprises.

The Behavioral Challenge

- Arbitrage
  - Suppose that your superior, rational, analysis shows that Lawreshwar Polymers is underpriced.
  - Arbitrage would suggest that you should buy the shares.
  - After the rest of the investors come to their senses, you make money because you were smart enough
- But what if the rest of the investment community does not come to their senses in time for you to cover your short position?
  - This makes arbitrage risky.

Empirical Challenges

- Limits to Arbitrage
  - “Markets can stay irrational longer than you can stay insolvent.” *John Maynard Keynes*
- Earnings Surprises
  - Stock prices adjust slowly to earnings announcements.
  - Behavioralists claim that investors exhibit *conservatism*.
- Size
  - Small cap stocks seem to outperform large cap stocks.
- Value versus Growth
  - High book value-to-stock price stocks and/or high E/P stocks outperform growth stocks.

Reviewing the Differences

- Financial Economists have sorted themselves into three camps:
  1. Market efficiency
  2. Behavioral finance
  3. Those that admit that they do not know
- This is perhaps the most contentious area in the field.

Implications for Corporate Finance

- Because information is reflected in security prices quickly, investors should only expect to obtain a normal rate of return.
  - Awareness of information when it is released does an investor little good. The price adjusts before the investor has time to act on it.
- Firms should expect to receive the fair value for securities that they sell.
  - *Fair* means that the price they receive for the securities they issue is the present value.
  - Thus, valuable financing opportunities that arise from fooling investors are unavailable in efficient markets.

Implications for Corporate Finance

- The EMH has three implications for corporate finance:
  1. The price of a company's stock cannot be affected by a change in accounting.
  2. Financial managers cannot "time" issues of stocks and bonds using publicly available information.
  3. A firm can sell as many shares of stocks or bonds as it desires without depressing prices.
- There is conflicting empirical evidence on all three points.

Why Doesn't Everybody Believe?

- There are optical illusions, mirages, and apparent patterns in charts of stock market returns.
- The truth is less interesting.
- There is some evidence against market efficiency:
  - Seasonality
  - Small versus large stocks
  - Value versus growth stocks
- The tests of market efficiency are weak.

Indian Capital Markets …

- Are they efficient … if so to what level?
- Are there any measures comparing Indian capital markets with some international capital markets

Indian Capital Markets …

- If that is the case then why do scams take place …
- Because of systemic errors … failures
- Harshad Mehta Scam
- Ketan Parekh Scam

Fundamental Analysis

- Research the value of securities using various valuation methods and uncover the value of stock
- Keep track of all possible (usually public) information/events/news about the company (incl. its industry, relevant economy, etc.)