

CAPITAL MARKET EFFICIENCY

IN THIS LECTURE WE WILL DISCUSS:

Efficient Capital Markets:

- A. Price Behavior
- B. The Hypothesis
- C. Forms of Market Efficiency
- D. Common Misconceptions about Efficient Capital Markets.

We will take a **RANDOM WALK** down Wall Street and discuss: Fundamental Analysis, Technical Analysis, Chartists, Momentum Players & Contrarians

We will then discuss the evidence on efficient capital markets.

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1.0 CAPITAL MARKET EFFICIENCY

Efficient Capital Market - A market in which current market prices fully reflect available information. That is, one in which costless trading rules do not consistently beat the market.

A. Price Behavior in an Efficient Market

Stock price reaction in efficient and inefficient markets: NEARLY INSTANTANEOUS

B. The Efficient Market Hypothesis

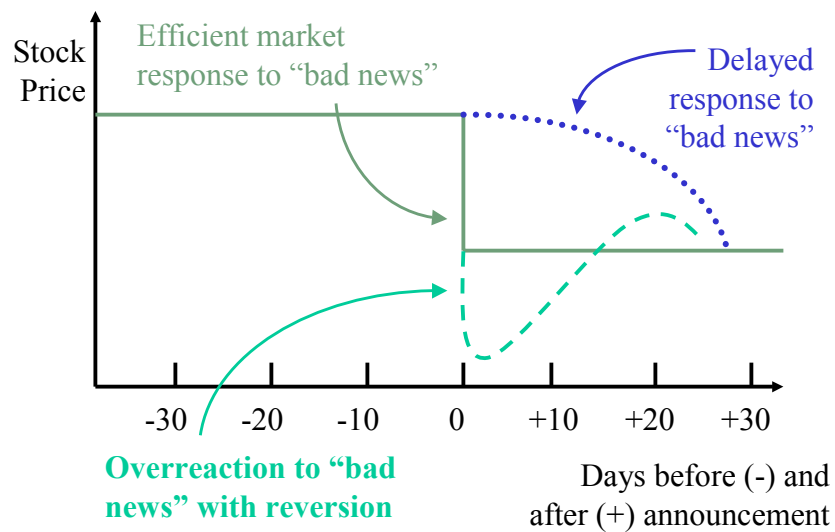
Efficient Market Hypothesis (EMH) - asserts that modern U.S. stock markets are, as a practical matter, efficient.

- The important implication of the EMH is securities represent zero NPV investments - meaning that they are expected to return just exactly their risk-adjusted rate.

Why Efficient? Competition among investors and traders makes a market efficient.

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Reaction of Stock Price to New Information in Efficient and Inefficient Markets



C. The Forms of Market Efficiency

1. **Weak Form Efficiency** - A form of the theory that suggests you can't beat the market by knowing past prices.
2. **Semi-strong Efficiency** - Perhaps the most controversial form of the theory, it suggests you can't consistently beat the market using publicly available information. That is, you can't win knowing what everyone else knows - annual reports etc.
3. **Strong Form Efficiency** - The form of the theory that states **no** information of any kind can be used to beat the market. Evidence shows this form does not hold.

Capital market history and the EMH:

1. Prices respond very rapidly to new information.
2. Future prices changes are difficult to predict.
3. Mispriced stocks (those whose future price level can be predicted accurately) are difficult to identify and exploit.

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D. Some Common Misconceptions about the EMH

- Market efficiency does not mean
it doesn't make a difference how you invest, since the risk/return trade-off still applies, but
rather that you can't expect to consistently "beat the market" on a risk-adjusted basis using costless trading strategies.
- Stock price fluctuations are evidence that the market is efficient since new information is constantly arriving - prices that don't change are evidence of inefficiency.
- The EMH doesn't say prices are random,
but that price changes in an efficient market are random and independent. That is, they can't be predicted before they happen.

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2.0 A RANDOM WALK DOWN WALL STREET

(STRONG FORM OF MARKET EFFICIENCY DOES NOT HOLD)

A. FUNDAMENTAL ANALYSIS: Important Factors (OR FIRM FOUNDATION THEORY)

1. EXPECTED GROWTH RATE OF EARNINGS
 - Longer growth rate \implies higher price
 - Growth does not go on forever
2. EXPECTED DIVIDEND PAYOUT
 - Higher price the more paid out.
 - Stock splits: Why? Small shareholders
3. DEGREE OF RISK
 - Higher price the less risky
4. LEVEL OF INTEREST RATES
 - Higher price the lower the interest rates

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CAVEATS / PROBLEMS:

1. EXPECTATIONS
2. PRECISE Calculations cannot be made from imprecise decisions-
Don't Justify buy or sell decisions.
3. Information / Analysis may be incorrect
4. Market may not converge to "true value"

Premiums change over time: Growth, Risk etc.

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B. TECHNICAL ANALYSIS: MARKET IS INEFFICIENT!!!

CASTLES IN THE AIR:

- Tulip bulb craze in 1634
- South sea trade in 1711
- 1929 stock price valuation: INVESTMENT POOLS
- Growth stocks in 1961
- NIFTY 50 in 1972
- Internet stocks in 2000-2001

==> Can we predict the start of stopping of the above
“castles”? Stick to your fundamentals

Technical analysts do not adhere exclusively to the view that prices reflect fundamental values. Adopt the view that prices are driven by prevailing sentiments.

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C. SOME OF THE MIS-INFORMATION

1. CHARTISTS: PREDICT PRICE FROM PAST PRICES.

Special class of mechanical trading rules:

/Filters /Head and Shoulders/flags, pennants, support and resistance
Levels, accumulation levels, corrections, waves, and
breakthroughs.

SLOGANS

"Hold the winners, sell the losers"

"Switch into 'Strong' stocks

"Don't fight the tape"

COMPUTERS JAZZ THIS "ANALYSIS" UP.

The technician relies on prices and, perhaps, volume to reveal
information.

Presuming that prices react slowly over long periods of time to new
information or changes in investor sentiment.

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2. MOMENTUM PLAYERS:

==> SELL THE LOSERS, KEEP THE WINNERS -

Past trends up or down will continue as the information is slowly absorbed by the market, or as the wave of optimism or pessimism spreads through the market.

This suggests that the series of returns should show positive autocorrelation. Price increases should tend to be followed by price increases, and price decreases should tend to be followed by price decreases.

EVIDENCE: Shows that this is not the case in the long run. Some evidence that within the year momentum strategies produce profits Jegadeesh and Titman (Journal of Finance, 1993) (the losers are where it holds – perhaps reluctance to recognize losses, overconfidence..

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3. CONTRARIANS

Some technical analysts argue investors overreact to good and bad news.

Advice is to buy on bad news and sell on good news.

This implies that returns should exhibit negative serial dependence because price reversals are more likely than continuances of price changes.

We do not observe this statistically.

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3.0 EVIDENCE ON THE EMH

Which forms, if any, are supported by examination of the data?

Remember the **two adjustments** that need to be made:

1. Risk adjustment
Concomitant problem of incorrect risk adjustment.
2. Transaction costs
Need to subtract costs from dollar returns.

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A. Evidence on EMH: Weak form

Technical Analysis

vs. THE RANDOM WALK: Market is Semi-strong efficient

RANDOM WALK: Price changes should be uncorrelated and prices should look like a random walk.

EVIDENCE: PLOTS/CORRELATIONS

NO evidence in support of Technical Analysis

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B. Semi-Strong form, evidence

CAN WE MAKE RISK ADJUSTED PROFITS FROM PUBLIC INFO?

Accounting changes:

Should we buy firm that announces change of accounting policy **or** based on their choice of choice of LIFO versus FIFO

If prices (inflation) are rising, LIFO accounting leads to higher cash flows because of lower taxes.

But it produces lower net income.

Are investors fooled by accounting changes? **Not this one.**

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Stock splits

Should you buy the stock of firm that has just split?

NO: Plot of stock returns before and after **show** that could only make excess returns by being able to predict beforehand what stocks will split.

Stock repurchases

Should you buy stock of firm that announces share repurchases by tender offers? **NO** - Again need to be able to have information beforehand.

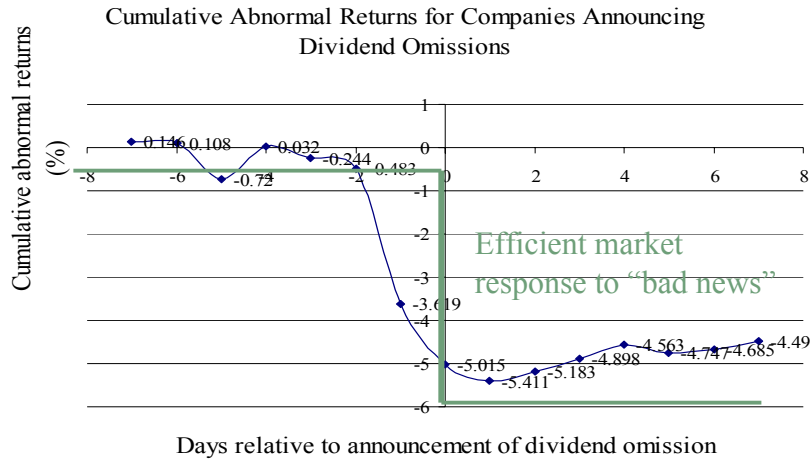
Dividend changes (see next slide for omissions)

Should you buy stock of firm that makes Announcements of changes in firm's dividend policy, I.e. buy on dividend increase or sell if decrease/cut dividend.

NO evidence of violation of semi-strong form.

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Event Studies: Dividend Omissions



S.H. Szewczyk, G.P. Tsetsekos, and Z. Santout "Do Dividend Omissions Signal Future Earnings or Past Earnings?" *Journal of Investing* (Spring 1997)

Value Line reclassifications

Should you buy stock of firm after Value line Announcement of reclassification of firms into higher or lower Value Line group.
Highest rank is 1 (buy recommendation); lowest rank is 5 (sell recommendation).

==> **NO** - Again need to be able to have information beforehand.

Earnings announcements

Should we buy stock of firm who "surprises the market" with stronger than expected earnings? or sell with weaker than expected?

Look at return versus amount of unexpected earnings change.
Classified into portfolios on basis on magnitude of earnings "surprise."

YES - It appears that excess returns are possible here even many days after announcement.

C. Strong form, evidence

Mutual funds (SEE graph next slide)

Do mutual funds earn excess returns because fund managers are either better at picking stocks than most people? or because fund managers have access to private information?

After adjusting for risk and transaction costs, answer seems to be that fund managers are **NOT** better at picking stocks on average.

Insider trading

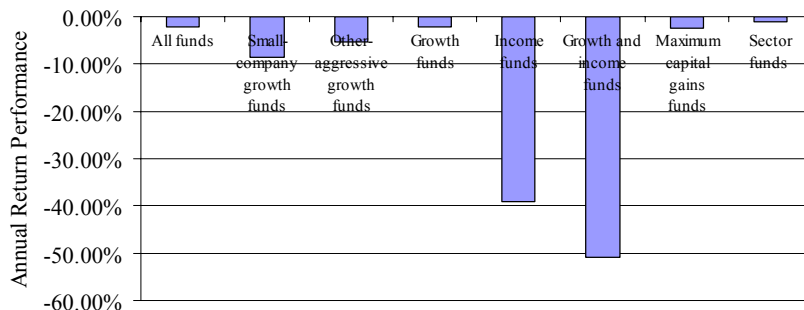
Do insiders earn excess returns?

Yes, if returns are calculated from time of purchase or sale rather than from time of announcement of purchase or sale.

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The Record of Mutual Funds

Annual Return Performance of Different Types of U.S. Mutual Funds Relative to a Broad-Based Market Index (1963-1998)



Taken from Lubos Pastor and Robert F. Stambaugh, "Evaluating and Investing in Equity Mutual Funds," unpublished paper, Graduate School of Business, University of Chicago (March 2000).

CONCLUSIONS

Evidence supports weak and semi-strong forms of market efficiency but not strong form.

Implication: to make excess profits

Need information no one else has

or

Ability to process available information **much** better

There are anomalies:

Little evidence that they produce large dollar profits consistently after adjustments for risk and transaction costs. (Short-run momentum is one possible exception – depends on transaction costs.)

Implications

DIVERSIFY, GET THE INFORMATION FIRST,

Avoid transaction costs, MINIMIZE TAXES

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