



Chapter 13, Market Efficiency

Financing Decisions/Efficient Markets

Up until now, we have assumed that markets correctly price investments.

This leads to the idea of Efficient Markets.

Recall our definition: A market is efficient if 'all information' is incorporated into the price of an asset.

Three forms of efficiency

- Weak Form
 - Prices reflect only past prices (and dividends)
- Semi-Strong
 - Prices reflect all publicly knowable information
- Strong
 - Prices reflect ***all*** information

Arbitrage: (or a similar idea)

- One process that makes markets efficient is arbitrage.
- This arbitrage will move the market in a way that will incorporate the knowledgeable arbitrageur's information into the stock price
- Charlie Plott, Information experiment.

An aside about Random Walks

Random Walks:

- Each term in the sequence is equal to the previous term *plus* an 'error' term
- These error terms have an expected value of 0.
- They are independent of any other term.

Example: Flipping a coin, and counting the number of heads minus the number of tails.

Implications of Random Walks

The random walk can be written as

$$P_{j+1} = P_j + \varepsilon_{j+1}$$

Thus

$$E[P_{j+1}] = E[P_j] = P_j$$

or,
$$P_{j+1} = E[P_{j+1}] + \varepsilon_{j+1}$$

The Efficient Market Hypothesis implies that the error term ε_{j+1} is unpredictable.

Weak Form Efficiency

Consider a stock of Ford which pays dividends of 1, 2, 1, 2, ... starting one year hence. We will assume a discount factor of 10% throughout. What is this stock's price?

This is the sum of two perpetuities, one that pays 1 every year, and one that pays 1 every other year. The value of the first perpetuity is $\$1/0.1 = \10 . The second perpetuity is worth $\$1/0.21 = \4.76 .

Tests of Weak Form Efficiency

Trading rules based upon the past prices—if a stock rises by $x\%$ buy it until it has lost $x\%$ from its subsequent high.

Fama and Blume (1966) showed that no value of x could beat a buy and hold strategy (after commissions).

Tests of Weak Form II

Serial Correlations—the correlation between P_t and P_{t+1} can be calculated. If the Weak Form Efficiency Hypothesis holds, the correlation should be 0.

Studies of daily returns usually show a small positive correlation, but it is too small of which to take advantage.

The conclusion is that the market is efficient in the weak form.

Some people don't agree...

Chartists and technical analysts who try to 'see' where the market is going based upon past prices.

But I don't know many successful day traders or chartists! In fact, a major trading house (Smith Barney) recently (a few year ago) released it's entire technical analysis division

Semi-Strong Efficiency

Tests for this form efficiency look at timing of stock price adjustments with respect to events.

For instance, when earnings are announced, new information is available about the price of the stock. Almost the full adjustment (90% for increased earnings, 76% for decreased earnings) takes place in the first three hours of the announcement.

RWJ has more tests of this sort.

Mutual Funds

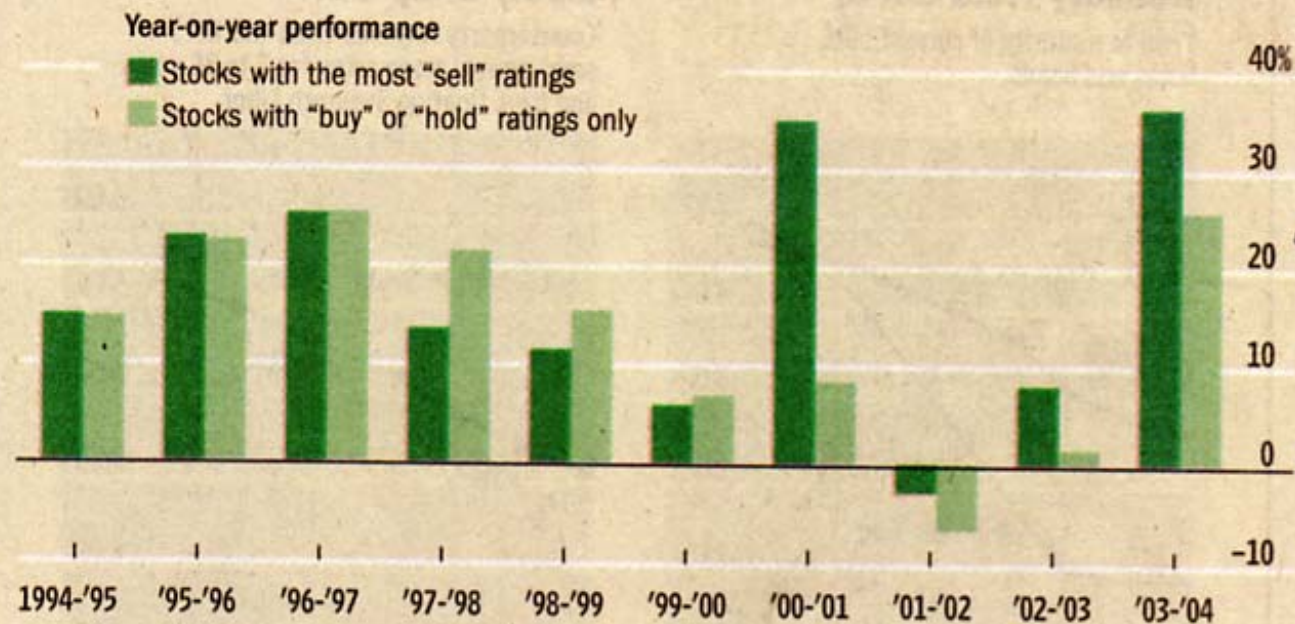
Mutual funds do not outperform the market consistently, even though they have immense resources to look through all publicly available information. This supports semi-strong form efficiency.

So why do we hear about (mostly) good mutual funds?

Sell Ratings on Stocks

Buy the Sells

Stocks with the most “sell” ratings from analysts often perform better than those with only “buy” or “hold” ratings—especially in recent years.



Note: Based on stocks in the S&P 500 followed by at least five analysts. Performance measured over one year; rebalanced monthly

Source: Zacks Investment Research

Wall Street Journal, Monday, April 11 2005, C1

Strong Form Efficiency

- Strong Form Efficiency implies that *ALL* possible information about a stock is reflected in its price.
- This is too extreme to hold in practice.

Implications of Efficient Markets

- Markets have no memory
- There are no financial illusions
- Trust market prices
- Can't time markets

This means that trying to time issuing debt or IPOs cannot create value.

Some (small?) anomalies

- Size (Market Cap)
- Value (Book versus Market)
- Seasonal Patterns
- January Effect
- Day of the week Effect