NPTEL

Course Name: Security Analysis and Portfolio Management

Department: VGSOM, IIT Kharagpur

Instructors: Dr. Chandra Sekhar Mishra & Dr. Jitendra Mahakud

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Session 8: Testing Market Efficiency

1. Explain Weak-Form of efficient market hypothesis (EMH) test.

Ans.

- Current prices reflect all security-market information, including the historical sequence of prices, rates of return, trading volume data, and other market-generated information. This implies that past rates of return and other market data should have no relationship with future rates of return

Tests of Weak-Form EMH: Statistical tests of independence between rates of return

- Autocorrelation tests: price change in one period is correlated with the price change in some other period
- Runs tests: To test a series of price changes for independence, the number of runs in that series is compared to see whether it is statistically different from the number of runs in a purely random series of the same size.
- Filter Rules Test: A filter rule is a trading rule regarding the actions to be taken when shares rise or fall in value by *x*%. Filter rules should not work if markets are weak form efficient.

2. How to explain "Tests of Trading Rules"?

Ans.

- More trading in a security should promote the market efficiency.
- Most popular trading technique is Filter Rule i.e. an investor trades a stock when the price change exceeds a filter value set for it (Buy-and-Hold Strategy).
- If the behaviour of the stock price changes is random, filter rules should not outperform a simple buy-and-hold strategy.

3. How to tests the Semi strong Form of Market Efficiency?

Ans.

Semi strong form efficiency states that security prices reflect all publicly available information.

Semi strong Form of Market Efficiency Test takes care of the following approaches:

I. Event studies: That examine how fast stock prices adjust to specific significant economic events

- Identify the event to be studied and pin point the date on which the event was announced
- Collect returns data around the announcement date
- Calculate the excess returns by period around the announcement date for each firm in the sample

- Compute the average excess returns across all firms
- Assess whether the excess returns around the announcement date are different from zero

II. Portfolio Study or Return Prediction Study: That examines the possibility of earning superior risk-adjusted returns by trading on an observable characteristic of a firm like P/E ratio, dividend yield etc.

- Define the variable (characteristic) on which firms will be classified
- Classify firms into portfolios based upon the magnitude of the variable
- Compute the returns for each portfolio
- Calculate the excess returns for each portfolio
- Assess whether the average excess returns are different across the portfolios

4. What do you mean by the size effect?

Ans.

- Several studies have examined the impact of size on the risk-adjusted rates of return
- The studies indicate that risk-adjusted returns for extended periods indicate that the small firms consistently experienced significantly larger risk-adjusted returns than large firms
- Firm size is a major efficient market anomaly
- Attempts to explain the size anomaly in terms of superior risk measurements, transactions costs, analysts attention, trading activity, and differential information have not succeeded

The P/E studies and size studies are dual tests of the EMH and the CAPM

- Abnormal returns could occur because either : markets are inefficient or market model is not properly specified and provides incorrect estimates of risk and expected returns
- Size and Ratio of Book Value of a firm's Equity to Market Value of its equity (BV/MV) dominate other ratios such as E/P ratio or leverage

5. What are the other evidences against strong form of Market Efficiency?
   Ans.

   Strong-Form Efficient Market Hypothesis:

- Strong-form EMH contends that stock prices fully reflect all information, both public and private
- This implies that no group of investors has access to private information that will allow them to consistently earn above-average profits

Evidences towards Strong Form Market Efficiency

- Mixed results, but much support

- Tests for corporate insiders and stock exchange specialists do not support the hypothesis (Both groups seem to have monopolistic access to important information and use it to derive above-average returns)

Contradictory Evidence in the form of various stock market anomalies resulting above average return:

- The Low PE Effect
- Low-Priced Stocks
- The Small Firm and Neglected Firm Effects
- Market Overreaction
- The January Effect
- The Weekend Effect
- The Persistence of Technical Analysis