MAHATMA GANDHI CENTRAL UNIVERSITY

ECON3020: Financial Economics
Course Code: ECON3028

Random walk theory

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Random walk theory

- The random walk theory or the random walk hypothesis is a mathematical model of the stock market.
- Proponents of the theory believe that the price of the security in the stock market evolve according to random walk.
- Random walk theory believes it’s impossible to outperform the market without assuming additional risk because its variable follows no discernible trend and moves seemingly at random.

Conti………

- The random walk theory as applied to trading most clearly laid out by **Burton Malkiel** an economics professor at **Princeton University** posits that the price of securities moves randomly therefore any attempt to predict future price movement either through fundamental or technical analysis is futile .

Basic assumption of the random walk theory

- The random walk theory assumes that the price of each security in the stock market follow a random walk.

- The random walk theory also assumes that movement in the price of one security is independent of the movement in the price of another security.

History of the random walk theory

- In 1863, a French mathematician turned stock Jules Ragnault published a book titled "The study of chance and the philosophy of exchange".
- Regnault's work is considered one of the first attempts at the use of advanced mathematics in the analysis of the stock market.

Conti…..

- Influenced by regnaults work , Louis Bachelier another French mathematician published a paper titled “Theory of speculation”.

- This paper is credited with establishing the ground rules that would be key to the use of mathematics and statistics in the stock market.

Conti…….

- In 1964, American financial economist Paul Coother published a book entitled " The random character of stock market price" considered a classic text in the field of financial economics it inspired other works such as " a random walk down wall street" by Buston Malkiel and " random walks in stock market prices" by Eugene Farma.

Implication of the random walk theory

- The random walk theory posits that it is impossible to predict the movement of stock prices , it is also impossible for a stock market investor to outperform or “beat” the market in the long run .
- This implies that it is impossible for an investor to outperform the market without taking on large amount of additional risk .
- As such, the best strategy available to an investor is to invest in the market portfolio , i,e a portfolio that bears a resemblance to the total stock market and whose price reflects perfectly the movement of the prices of every security in the market.

Key takeaways

- Random walk theory suggests that changes in stock prices have the same distribution and are independent of each other.
- Random walk theory believable its impossible to outperform the market without assuming addition risk.
- Random walk theory considers fundamental analysis undependable due to the often poor quality of information collected and its ability to be misinterpreted.
- Random walk theory claims that **investment advisors** add little or no value to an investor's portfolio.

Criticism of the random walk theory

- One of the main criticism of the random walk theory is that the stock market consists of a large number of investors and the amount of time each investor spends in the market is different.
- Thus, it is possible for trends to emerge in the prices of securities in the short run.
- such other critics argue that the entire basis of the random walk theory is flawed and that stock prices do follow patterns or trends, even the long run.

Thank you