



# RAMA UNIVERSITY

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**FACULTY OF COMMERCE AND MANAGEMENT**

**COURSE: BBA (DM)**

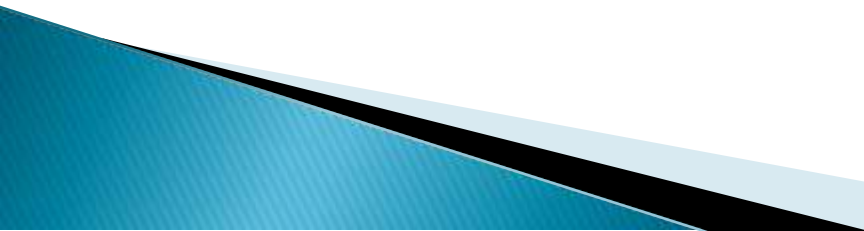
**SUBJECT: SECURITY AND PORTFOLIO MANAGEMENT**

**SUBJECT CODE: BBA (DM) 602**

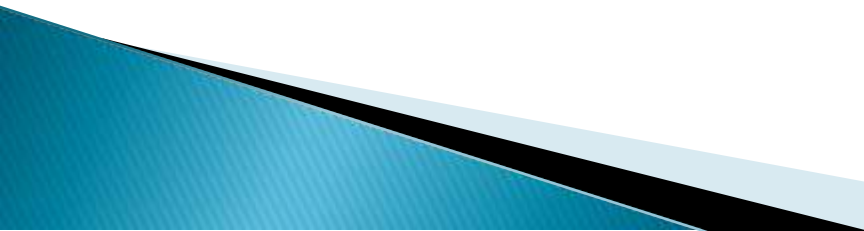
**LECTURE: 17**

**NAME OF FACULTY: DR. NITIN GUPTA**

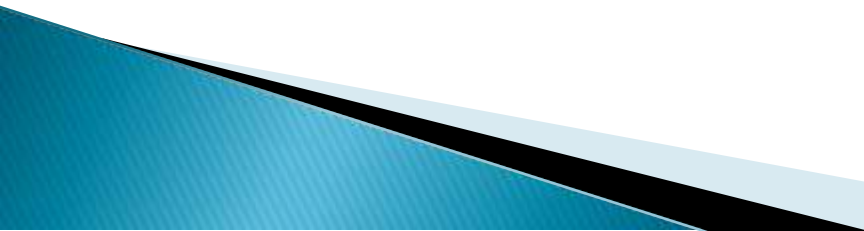
# EXPECTED RETURN IN CAPM

- Risk-free rate plus a premium for systematic risk based on beta
  - The premium of market portfolio, also referred to as reward, depends on the level of risk-free return and return on market portfolio
  - Information related to the following 3 aspects are needed to apply CAPM: risk-free rate, risk premium on market portfolio and beta
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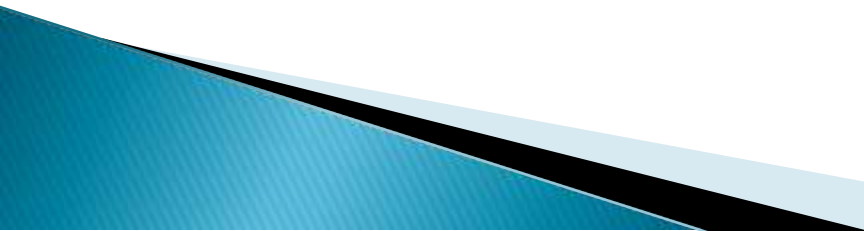
# RISK-FREE RATE

- Rate of return available on assets like T-bills, money market
  - ▶ funds or bank deposits is taken as proxy for risk-free rate
  - The maturity period of T-bills and bank deposits is taken to be less than one year, usually 364 days
  - Such assets have very low or virtually negligible default risk
  - ▶ and interest rate risk
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# RISK-PREMIUM ON MARKET PORTFOLIO

- It is the difference between the expected return on market portfolio and risk-free rate of return
  - CAPM holds that in equilibrium, the market portfolio is unanimously desirable risky portfolio
  - It contains all securities in exactly the same proportion in which they are supplied, that is, each security is held in proportion to its market value
  - It is an efficient portfolio, which entails neither lending nor borrowing
  - It is proportional to its risk ( $\sigma^2$ ) and degree of risk aversion of average investor
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# BETA

- It measures risk(volatility) of an individual asset relative to market portfolio
  - Assets with beta less than one are called defensive assets
  - Assets with beta greater than one are called aggressive assets
  - Risk free assets have a beta equal to zero
  - Beta is covariance of asset's return with the market portfolio's return, divided by variance of market portfolio
  - Beta of a portfolio is the weighted average of betas of assets included in portfolio
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# CAPM EQUATION

$$K_j = R_f + bB_j + t D_j - R_f$$

Where  $R_f$  = required rate of return on security j

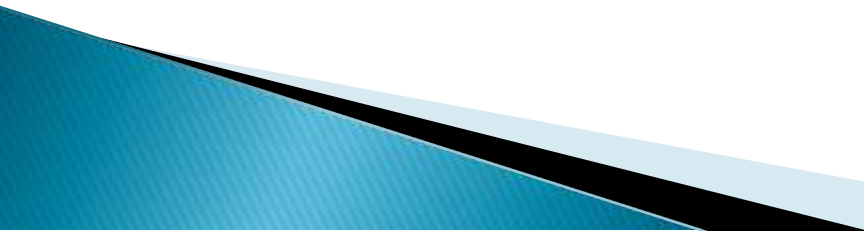
b = coefficient showing relative importance of beta

$B_j$  = beta of security j

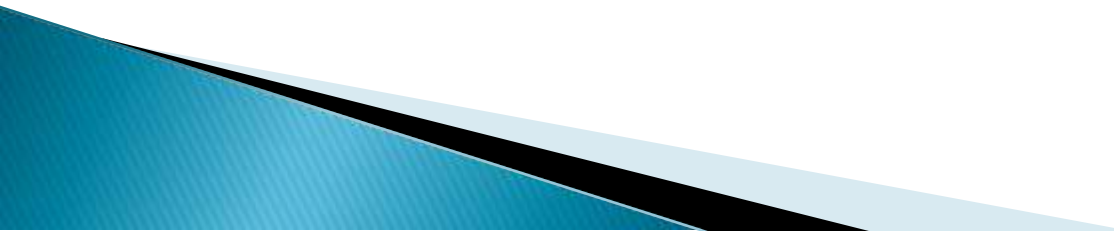
t = coefficient showing relative importance of tax effect

$D_j$  = dividend yield on security j

# POPULARITY OF CAPM

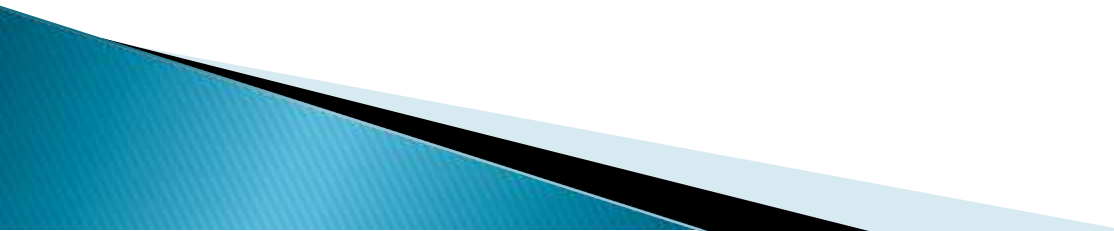
- Risk-return trade off – the direct proportional relationship between the two – has a distinct intuitive appeal
  - Transition from Capital Market Line (CML) to Security Market Line (SML) shows that undiversifiable nature of the
    - Beta, the measure of systematic risk, is easy to compute and use
    - The model shows that investors are content to put their money in a limited number of portfolios, namely, a risk-free asset like T-bills and a risky asset like a market-index fund
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# PROBLEMS WITH CAPM

- One of this relates to the maturity of the risk-free asset, namely, interest rate on a short term government security like a T-bill or a long-term rate like that on a treasury bond or an intermediate term-rate like that on a 3 year treasury securities
  - Whether market premium should be the expected or historical
  - Use of an appropriate market index
  - If beta is appropriate risk measure
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# VARIABLES IN CAPM

- Taxes
  - Inflation
  - Liquidity
  - Market capitalization size
  - Price-earnings and market-to-book value ratios
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# ARBITRAGE PRICING THEORY (APT)

- APT is based on concept of arbitrage
  - It was developed in 1970 by Ross
  - In the context of pricing of (return from) securities, arbitrage implies finding/availability of two securities which are essentially the same (having different prices/returns)
  - APT has markets equilibrating across securities through arbitrage driving out mispricing
  - Arbitrage will ensure that riskless assets(or securities) provide the same expected return in competitive financial markets
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