Specific applications of multifactor model	**1. Passive management** : construct a tracking portfolio → match same set of factor with a predetermined benchmark **2. Active management** : make a specific bet on desired factors while hedging on other factors - Factor portfolio : sensitivity of a specific risk factor = 1 ; sensitivities of remaining factors = 0 **3. Ruled-based or algorithmic active management (alternative indices)** : use rules to change factor exposures when constructing portfolios → introduce biases in the portfolio relative to value-weighted benchmark indices
Carhart model	$E(R) = R_f + \beta_1 \times RMRF + \beta_2 \times SMB + \beta_3 \times HML + \beta_4 \times WML$ RMRF = Return on value weighted equity index - Risk-free rate SMB = Avg. return on small cap stocks - Avg. return on large cap stocks HML = Avg. return on high book-to-market stocks - Avg. return on low book-to-market stocks WML = Avg. return on past winners - Avg. return on past losers
Potential benefits of multifactor model	- Enable investors to zero on risks that they have comparative advantage in bearing , and avoild risk that they are incapable of absorbing - If the actual asset returns are better described by multifactor models → help investors to select more efficient portfolios

Taylor rule	Central bank set policy rate to: (1) maintain price stability, and (2) achieve max sustainable level of employement Taylor rule link central bank policy rate to economic condition Central bank can: - Making appropriate changes to policy rate → moderate the business cycle - Not making appropriate changes to policy rate → magnify the cycle $r = R_n + 0.5 \times (\pi - \pi^*) + 0.5 \times (y - y^*)$ Which: $R_n = neutral\ real\ policy\ interest\ rate$ $\pi = current\ inflation\ rate$ $\pi^* = central\ bank's\ target\ inflation\ rate$ $y = log.of\ current\ level\ of\ output$ $y^* = log.of\ central\ bank's\ target\ sustainable\ output$
Business cycle and yield curve slope	- Recession → low policy rate - Economy come out of recession → improve expectation about GDP growth and inflation → higher long-term rate → positive sloped yield curve - Expectation of decline in GDP growth → lower long-term rate → negative sloped yield curve (inverted yield curve)
Factors that affect yield spread between non-inflation-adjusted and inflation-adjusted indexed bonds	Break-even inflation (BEI) = yield on non-inflation-indexed bond - yield on inflation-indexed bond = expected inflation (π) + inflation uncertainty (θ)
Affect of product market on credit quality	- Credit spread differ among sectors and over time - Differences in credit spread are due to difference in product industry and financial leverage - Credit spreads forissuers in cyclical sector increase significantly during economic downturns compared to issuers in non-cyclical sector
Effects of business cycle on ST and LT eanings and growth expectations	Cyclical industries → more sensitive to business cycle phase → revenue and earnings rise and fall with rate of economic growth Defensive & Non-cyclical industries → not sensitive to business cyce phase → stable earnings and revenue thoughout business cycle
Cyclical effects o valuation multiples	- Increase in expected future earnings growht → increase price multiple (P/E, P/B) : - Decrease in components of required rate of return (real risk free rate, expected inflation, risk premium) → increase in price multiple
Different investmetn strategies	**1a. Growth stocks :** - High P/E, low dividend yields - Immature market, high growth prospects - Perform well during expansion **1b. Value stocks :** - Low P/E, high dividend yields - Mature market, stable earnings - Perform well during recession **2a. Small-cap stocks** : Higher volatility **2b. Large-cap stocks** : Lower volatility
Use of economic analysis in sector rotation strategies	There are periods during which 1 sector outperforms the other → Generate superior returns if able to rotate out underperforming sector and into better performing sector right before the change in performance Economic analysis help in understanding and forecasting the relationship between equity market performance of different sectors and business cycle→ enhance sector rotation strategy