

**Financial Economics: Common Models**

### 1. Asset Pricing

**1. Discounting**  
 $V(W) > 0$ ,  $V'(W) > 0$ ,  $V''(W) < 0$   
 $\pi = \frac{1}{2} \sigma^2 \frac{V''(W)}{V'(W)}$   
 $U(W - \pi) = E[U(W - \pi)]$   
 $U(W - \pi) = E[U(W - \pi)]$   
 $U(W - \pi) = E[U(W - \pi)]$

**2. No arbitrage**  
 $P^1 > P^2 \Rightarrow P^1 > P^2$   
 $P^1 > P^2 \Rightarrow P^1 > P^2$   
 $P^1 > P^2 \Rightarrow P^1 > P^2$

**3. Methods**  
 $J(W, t) = \max_{C_t, \{W_t\}} U(C_t, t) + E_t[J(W_{t+1}, t+1)]$   
 $J(W, t) = \max_{C_t, \{W_t\}} U(C_t, t) + E_t[J(W_{t+1}, t+1)]$   
 $J(W, t) = \max_{C_t, \{W_t\}} U(C_t, t) + E_t[J(W_{t+1}, t+1)]$

### 2. Investor Utility

**1. Asset**  
 $U(W) = E[U(W)]$   
 $U(W) = E[U(W)]$   
 $U(W) = E[U(W)]$

**2. Investor**  
 $U(W) = E[U(W)]$   
 $U(W) = E[U(W)]$   
 $U(W) = E[U(W)]$

### 3. Lucas

**1. Lucas**  
 $V_t = U(C_t, t) = E_t[U(C_{t+1}, t+1)]$   
 $V_t = U(C_t, t) = E_t[U(C_{t+1}, t+1)]$   
 $V_t = U(C_t, t) = E_t[U(C_{t+1}, t+1)]$

**2. Lucas**  
 $V_t = U(C_t, t) = E_t[U(C_{t+1}, t+1)]$   
 $V_t = U(C_t, t) = E_t[U(C_{t+1}, t+1)]$   
 $V_t = U(C_t, t) = E_t[U(C_{t+1}, t+1)]$

### 4. CAPM, APT

**1. CAPM**  
 $R_M = \sum_{j=1}^N w_j R_j$   
 $R_M = \sum_{j=1}^N w_j R_j$   
 $R_M = \sum_{j=1}^N w_j R_j$

**2. APT**  
 $R_i = a_i + \sum_{j=1}^K \beta_{ij} F_j + \epsilon_i$   
 $R_i = a_i + \sum_{j=1}^K \beta_{ij} F_j + \epsilon_i$   
 $R_i = a_i + \sum_{j=1}^K \beta_{ij} F_j + \epsilon_i$

### 5. Arrow-Debreu Securities

**1. Arrow-Debreu Securities**  
 $P_i = \frac{1}{R_f} \frac{U'(C_i)}{U'(C_0)}$   
 $P_i = \frac{1}{R_f} \frac{U'(C_i)}{U'(C_0)}$   
 $P_i = \frac{1}{R_f} \frac{U'(C_i)}{U'(C_0)}$

**2. Arrow-Debreu Securities**  
 $P_i = \frac{1}{R_f} \frac{U'(C_i)}{U'(C_0)}$   
 $P_i = \frac{1}{R_f} \frac{U'(C_i)}{U'(C_0)}$   
 $P_i = \frac{1}{R_f} \frac{U'(C_i)}{U'(C_0)}$

### 6. Binomial

**1. Binomial**  
 $S_t = W_t + C_t$   
 $S_t = W_t + C_t$   
 $S_t = W_t + C_t$

**2. Binomial**  
 $S_t = W_t + C_t$   
 $S_t = W_t + C_t$   
 $S_t = W_t + C_t$

### 7. Valuation - Two-Stage Example

**1. Valuation - Two-Stage Example**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

**2. Valuation - Two-Stage Example**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

### 8. Consumption-Saving

**1. Consumption-Saving**  
 $U(C_0) + \delta E[U(C_1)]$   
 $U(C_0) + \delta E[U(C_1)]$   
 $U(C_0) + \delta E[U(C_1)]$

**2. Consumption-Saving**  
 $U(C_0) + \delta E[U(C_1)]$   
 $U(C_0) + \delta E[U(C_1)]$   
 $U(C_0) + \delta E[U(C_1)]$

### 9. Real Options

**1. Real Options**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

**2. Real Options**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

### 10. Call Options

**1. Call Options**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

**2. Call Options**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

### 11. Put Options

**1. Put Options**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

**2. Put Options**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

### 12. Call and Put Parity

**1. Call and Put Parity**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

**2. Call and Put Parity**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

### 13. Call and Put Parity

**1. Call and Put Parity**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

**2. Call and Put Parity**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

### 14. Call and Put Parity

**1. Call and Put Parity**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

**2. Call and Put Parity**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

### 15. Call and Put Parity

**1. Call and Put Parity**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

**2. Call and Put Parity**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

### 16. Call and Put Parity

**1. Call and Put Parity**  
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$   
 $P_0 = \sum_{t=1}^T \pi_t X_{0,t} + \frac{P_T}{R_f^T}$

**2. Call and Put Parity**  
 $P_0 = \sum_{t=1}^T \pi_t$