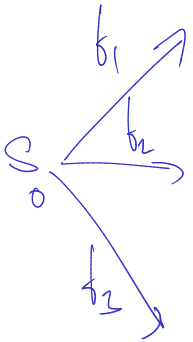

$$\sum \tilde{f}_i = 1$$

$$\sum \tilde{f}_i f_i = 1 + r$$

} 2 Eq, 3 unknowns

Rule of thumb :

(1) # unknowns = # eq : unique sol

(2) # unknowns > # eq : ∞ many sol

(3) # unknowns < # eq : ~~unique sol~~ no solutions

$$X_0 = 0 = \underbrace{\Delta_0 S_0}_{\text{stock}} + \underbrace{\Gamma_0 V_0}_{\text{call opt}} - \underbrace{(\Delta_0 S_0 + \Gamma_0 V_0)}_{\text{cash}}.$$

Want $X_1 \geq 0$ on all walls

$$X_1 = \Delta_0 S_1 + \Gamma_0 (S_1 - 1)^+ - (1+r)(\Delta_0 + \Gamma_0 V_0).$$