R&D Model

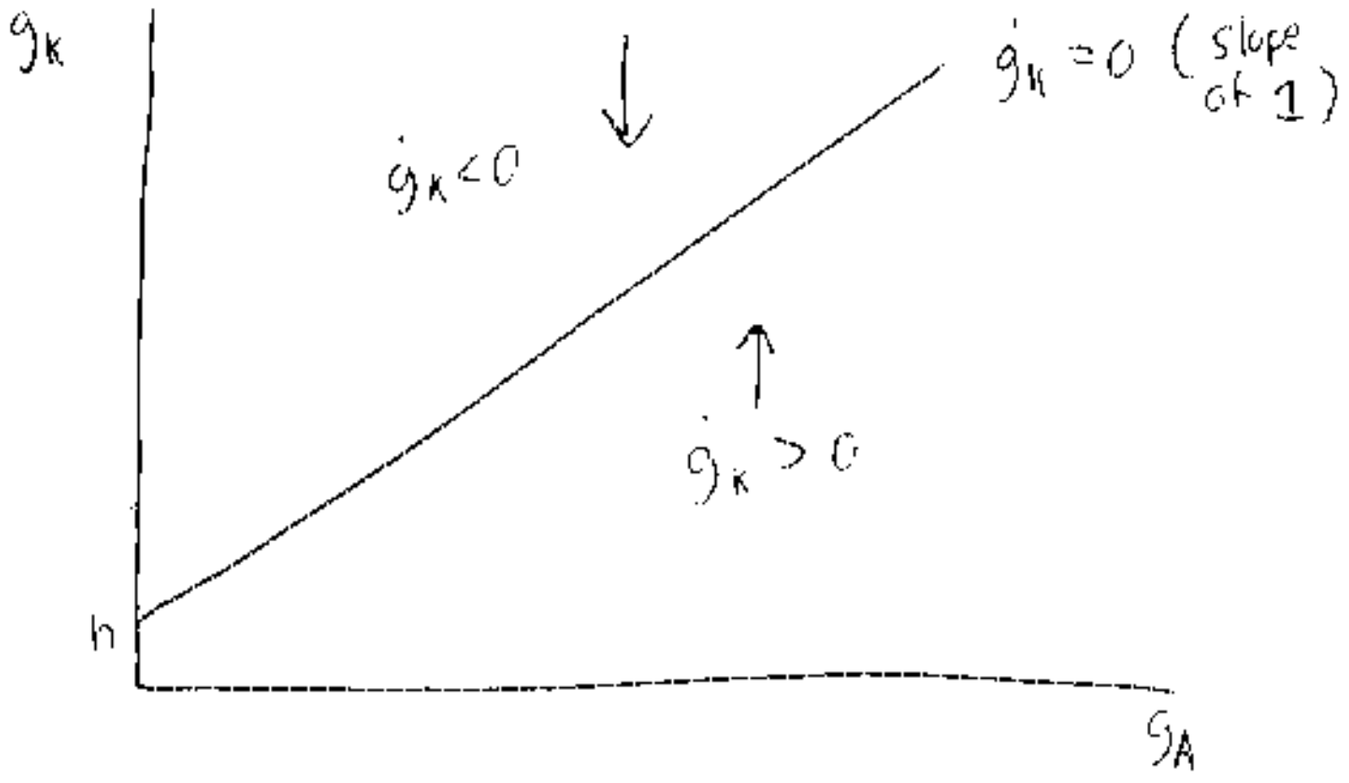
$$Y(t) = [(1-a_K)K(t)]^{\alpha}[A(t)(1-a_L)L(t)]^{1-\alpha} \quad 0<\alpha<1$$

$$\dot{A}(t) = \beta[a_K K(t)]^{\beta}[a_L L(t)]^{\gamma} A(t)^{\theta} \quad \beta,\beta,\gamma>0$$

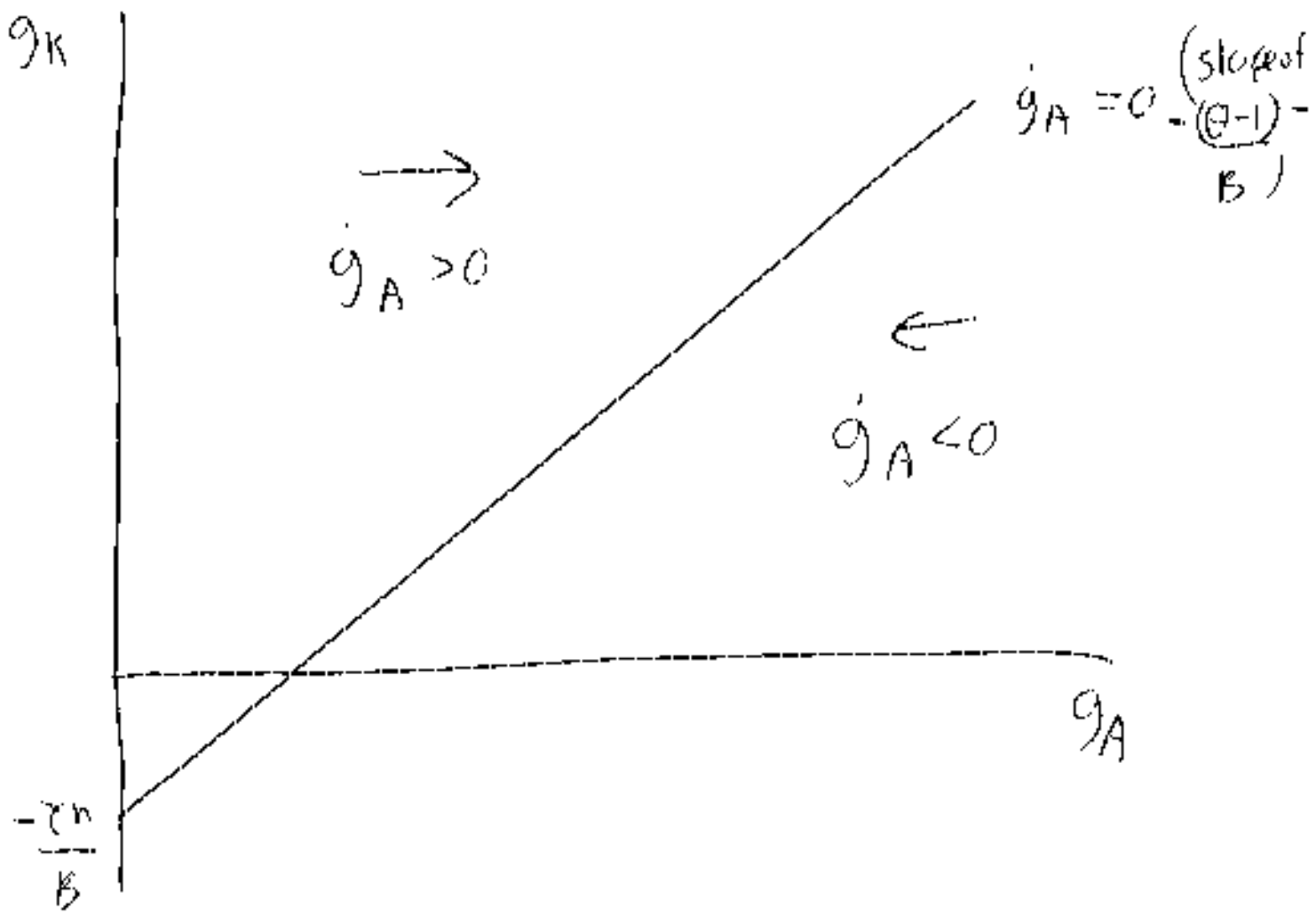
$$\dot{K}(t) = s\,Y(t)$$

$$\dot{L}(t) = n\,L(t)$$

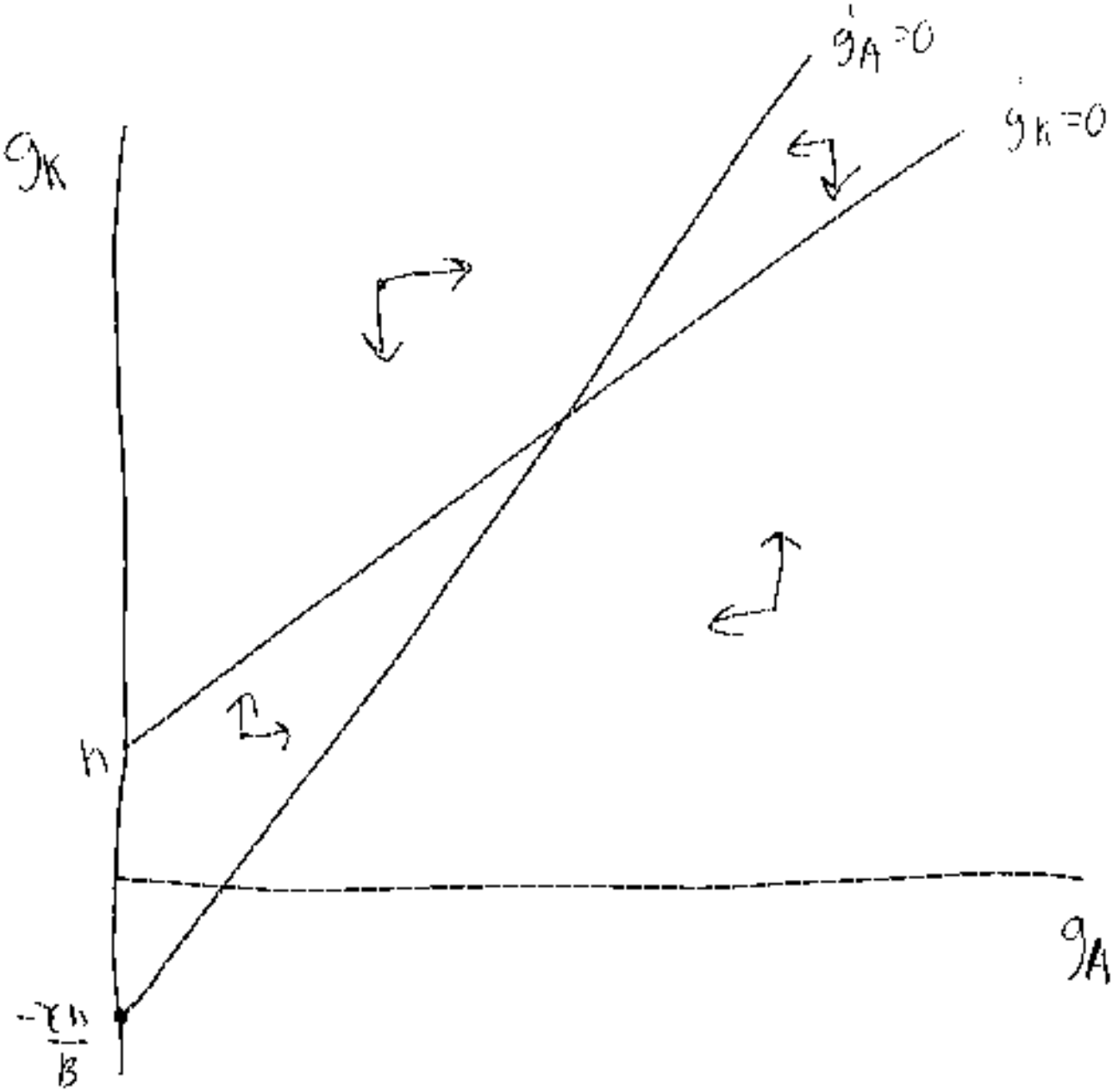
$$\frac{\dot{g}_K(t)}{g_K(t)} = (1-\alpha)\left[g_A(t) + n - g_K(t)\right]$$



$$\frac{\dot{g}_A(t)}{g_A(t)} = \beta\, g_K(t) + \gamma n + (\theta - 1)\, g_A(t)$$

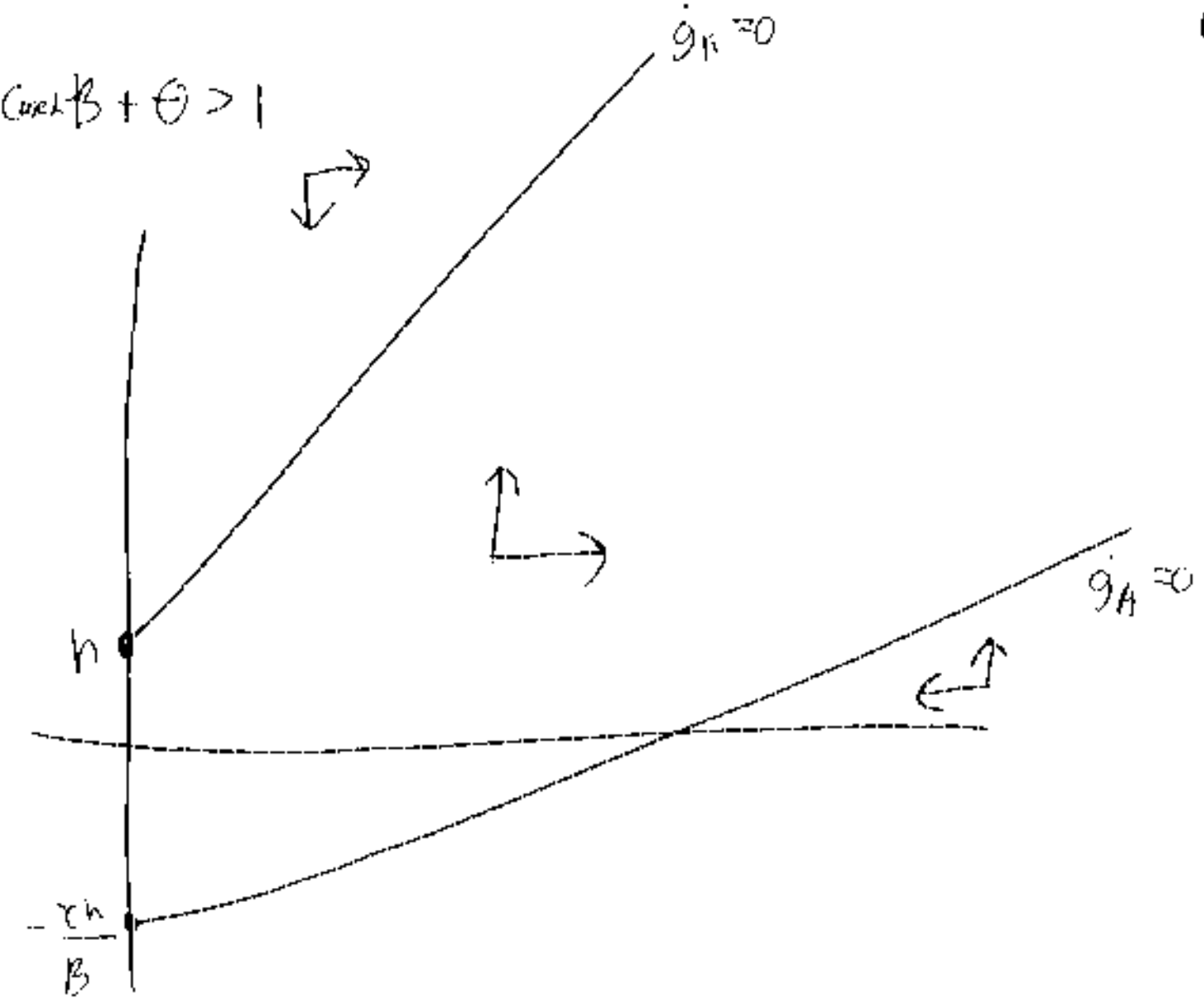


Case 1 - $\beta + \theta < 1$



$$g_A^* = \frac{\beta + \gamma}{1 - (\theta + \beta)} h \qquad g_K^* = g_A^* + h$$

Case $\beta + \theta > 1$



Case - $\beta + \theta = 1$