Research Inquiry

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1 model

$$U = (1 - \lambda_h - \lambda w)log(c_t^f) + \lambda_h(logc_t^h + vlogl_t^h) + \lambda_w(logc_t^w + \phi logl_t^w) \tag{1}$$

$$c_t^f = a_t^f(k_t^f)^\theta(n_t^{hf} + n_t^{wf})^{1-\theta} = y_t^f \tag{2}$$

$$y_t^m = a_t^m(k_t^m)^\alpha(n_t^{hm} + n_t^{wm})^{1-\alpha} \tag{3}$$

$$k_{t+1} = y_t^m - c_t^h - c_t^w + (1 - \delta)k_t \tag{4}$$

$$k_t = k_t^m + k_t^f \tag{5}$$

$$\begin{cases} l_t^h + n_t^{hf} + n_t^{hm} = 1 \\ l_t^w + n_t^{wf} + n_t^{wm} = 1 \end{cases} \tag{6}$$

$$i_t = y_t^m - c_t^h - c_t^w \tag{7}$$

$$\begin{cases} r_t^{kf} = \theta a_t^f(k_t^f)^{\theta-1}(n_t^{hf} + n_t^{wf})^{1-\theta} \\ r_t^{km} = \alpha a_t^m(k_t^m)^{\alpha-1}(n_t^{hm} + n_t^{wm})^{1-\alpha} \end{cases} \tag{8}$$

$$\begin{cases} w_t^{wf} = w_t^{hf} = (1 - \theta)a_t^f(k_t^f)^\theta(n_t^{hf} + n_t^{wf})^{-\theta} \\ w_t^{wm} = w_t^{hm} = (1 - \alpha)a_t^m(k_t^m)^{\alpha-1}(n_t^{hm} + n_t^{wm})^{-\alpha} \end{cases} \tag{9}$$

2 solution

$$Max \quad E_0 \sum_{t=0}^{\infty} \beta^t (1-\lambda_h-\lambda w) log(c_t^f) + \lambda_h (logc_t^h + vlogl_t^h) + \lambda_w (logc_t^w + \phi logl_t^w)$$

$$s.t \quad c_t^f = a_t^f (k_t^f)^\theta (n_t^{hf} + n_t^{wf})^{1-\theta}$$

$$k_{t+1} = y_t^m - c_t^h - c_t^w + (1-\delta)k_t$$

$$L = (1-\lambda_h-\lambda w) log(c_t^f) + \lambda_h (logc_t^h + vlogl_t^h) + \lambda_w (logc_t^w + \phi logl_t^w) + \mu_t (a_t^f (k_t^f)^\theta (n_t^{hf} + n_t^{wf})^{1-\theta} - c_t^f) + \eta_t (y_t^m - c_t^h - c_t^w + (1-\delta)k_t - k_{t+1}) \tag{10}$$

2.1 F.O.C

$$\frac{1-\lambda_h-\lambda w}{c_t^f} = \mu_t \tag{11}$$

$$\frac{\lambda_h}{c_t^h} = \eta_t \tag{12}$$

$$\frac{\lambda_w}{c_t^w} = \eta_t \tag{13}$$

$$\frac{\lambda_h v}{l_t^h} = \mu_t w_t^{hf} \tag{14}$$

$$\frac{\lambda_w \phi}{l_t^w} = \mu_t w_t^{wf} \tag{15}$$

$$\frac{\lambda_h v}{l_t^h} = \eta_t w_t^{hm} \tag{16}$$

$$\frac{\lambda_w \phi}{l_t^w} = \eta_t w_t^{wm} \tag{17}$$

$$\eta_t = \beta E_t \mu_{t+1} r_t^{kf} + \beta E_t \eta_{t+1} (1-\delta) \tag{18}$$

$$\eta_t = \beta E_t \eta_{t+1} (r_t^{km} + 1 - \delta) \tag{19}$$