

WHY LAGGED DEPENDENT VARIABLE?

$$C_t^* = \alpha_0 + \alpha_1 Y_t + \alpha_2 R_t$$

$$C_t - C_{t-1} = \lambda (C_t^* - C_{t-1}) + u_t$$

$$C_t = (1-\lambda)C_{t-1} + \lambda\alpha_0 + \lambda\alpha_1 Y_t + \lambda\alpha_2 R_t + u_t$$

2SLS

$$C_t = \alpha_0 + \alpha_1 Y_t + \alpha_2 C_{t-1} + \alpha_3 X_t + u_t$$

$$Y_t = C_t + \frac{I_t + G_t + EX_t - IM_t}{Z_t} = C_t + Z_t$$

$$Y_t = \alpha_0 + \alpha_1 Y_t + \alpha_2 C_{t-1} + \alpha_3 X_t + Z_t + u_t$$

$$Y_t = \frac{\alpha_0}{1-\alpha_1} + \frac{\alpha_2}{1-\alpha_1} C_{t-1} + \frac{\alpha_3}{1-\alpha_1} X_t + \frac{1}{1-\alpha_1} Z_t + \frac{1}{1-\alpha_1} u_t$$

$$= \pi_0 + \pi_1 C_{t-1} + \pi_2 X_t + \pi_3 Z_t + V_t$$

1st stage Regress Y_t on C_{t-1}, X_t, Z_t . Get \hat{Y}_t , so $Y_t = \hat{Y}_t + \hat{V}_t$

second
stage

$$C_t = \alpha_0 + \alpha_1 \hat{Y}_t + \alpha_2 C_{t-1} + \alpha_3 X_t + u_t + \alpha_1 \hat{V}_t$$

Why is $\hat{\alpha}_1$ consistent?