$Q = \alpha_1 P + \alpha_2 Y + \alpha_3 TR$ (1)

$P = \beta_1 Q + \beta_2 RF + \beta_3 POP$ (2)

Order condition

(1) # endo incl − 1 # excl exog

$2 - 1$ 2

$1 < 2$

⇒ over-identification

(2) # endo incl − 1 # excl exog

$2 - 1$ 2

$1 < 2$

⇒ over-identification

To get reduced form:

$$Q = \alpha_1(\beta_1 Q + \beta_2 RF + \beta_3 POP) + \alpha_2 Y + \alpha_3 TR$$

$$= \alpha_1 \beta_1 Q + \alpha_1\beta_2 RF + \alpha_1 \beta_3 POP + \alpha_2 Y + \alpha_3 TR$$

$$Q = \frac{\alpha_1 \beta_2}{1-\alpha_1\beta_1} RF + \frac{\alpha_1\beta_3}{1-\alpha_1\beta_1} POP + \frac{\alpha_2}{1-\alpha_1\beta_1} Y + \frac{\alpha_3}{1-\alpha_1\beta_1} TR$$

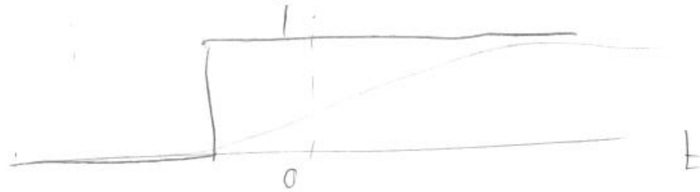
$$P = \frac{\beta_1\alpha_1\beta_2}{1-\alpha_1\beta_1} RF + \frac{\beta_1\alpha_1\beta_3}{1-\alpha_1\beta_2} POP + \frac{\beta_1\alpha_2}{1-\alpha_1\beta_1} Y + \frac{\beta_1\alpha_3}{1-\alpha_1\beta_1} TR$$

$$+ \frac{\beta_2(1-\alpha_1\beta_1)}{1-\alpha_1\beta_1} RF + \frac{\beta_3(1-\alpha_1\beta_2)}{1-\alpha_1\beta_1} POP$$

$$= \frac{\beta_2}{1-\alpha_1\beta_1} RF + \frac{\beta_3}{1-\alpha_1\beta_1} POP + \frac{\beta_1\alpha_2}{1-\alpha_1\beta} Y + \frac{\beta_1\alpha_3}{1-\alpha_1\beta_1} TR$$

Logit/Probit

There will always be heteroskedasticity with linear probability models. Thus, you would use robust standard errors.



Logit: $\dfrac{\exp\{\alpha+\beta x\}}{1+\exp\{\alpha+\beta x\}}$

Probit: $\Phi(\alpha+\beta x)$