

# Collapse

$$z_i = \begin{bmatrix} 0 & y_{i1} & y_{i2} & \dots & y_{iT-2} \\ 0 & 0 & y_{i1} & \dots & y_{iT-3} \\ 0 & 0 & 0 & y_{iT-2} & y_{iT-4} \\ \vdots & & & \ddots & \\ 0 & 0 & 0 & & y_{i1} \end{bmatrix} \cdot \begin{bmatrix} 0 \\ \Delta \varepsilon_{i3} \\ \Delta \varepsilon_{i4} \\ \vdots \\ \Delta \varepsilon_{iT} \end{bmatrix}$$

$\Delta y_{i2} \quad \Delta y_{i3} \quad \dots \quad \Delta y_{iT-1}$

## Moment Condition

$$\downarrow$$

$$E[y_{i1} \Delta \varepsilon_{i3} + y_{i2} \Delta \varepsilon_{i4} + \dots + y_{iT-2} \Delta \varepsilon_{iT}] = 0$$

$$E[y_{i1} \Delta \varepsilon_{i4} + \dots + y_{iT-3} \Delta \varepsilon_{iT}] = 0$$

$$\vdots$$

$$E[y_{i1} \Delta \varepsilon_{iT}] = 0$$

IV 太多: xtabond2.

①  $\frac{(T-1)(T-2)}{2}$ , 回归变量多于观测数, 广义逆

② Hansen p 值太高, 比如  $p=1$

③ inconsistency.