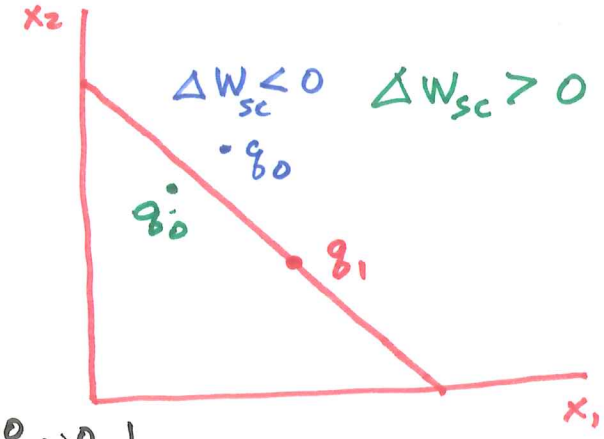
$$\Delta W_{CV} = E(p', u') - E(p', u^0)$$

$$\Delta W_{SC} = C(p', q') - C(p', q^0)$$

$\Delta W_{SC} > 0 \rightarrow C(p', q') > C(p', q^0)$

$\Delta W_{SC} < 0 \rightarrow$

$C(p', q') < C(p', q^0)$



$$\Delta W_{EV} = E(p^0, u') - E(p^0, u^0)$$

$$\Delta W_{SE} = C(p^0, q') - C(p^0, q^0)$$

$\Delta W_{SE} < 0 \rightarrow$ worse off now

$\Delta W_{SE} > 0 \rightarrow$?

Price Indexes

$$PI = \frac{P_1}{P_0}$$

$$PI = \frac{C(P_1, q)}{C(P_0, q)}$$

$$PI_{Laspeyre} = \frac{C(P_1, q_0)}{C(P_0, q_0)}$$

$$PI_{Paasche} = \frac{C(P_1, q_1)}{C(P_0, q_1)}$$

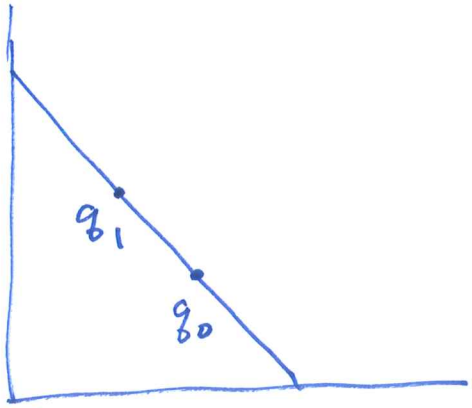
$$\frac{C(P_1, q_1)}{C(P_0, q_0)} = \frac{I_1}{I_0} > \frac{C(P_1, q_0)}{C(P_0, q_0)} \Rightarrow C(P_1, q_1) > C(P_1, q_0)$$

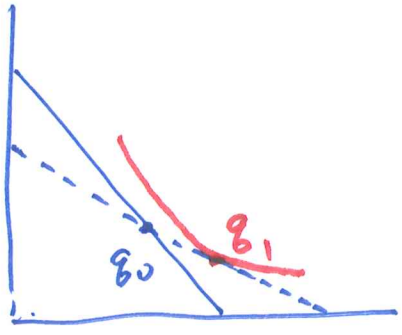
Better off ✓

$$< \Rightarrow C(P_1, q_1) < C(P_1, q_0)$$

Worse off ?

$$\frac{I_1}{I_0} = \frac{C(P_1, q_0)}{C(P_0, q_0)}$$





"True" Price Index.

$$TPI_L = \frac{E(P_1, U_0)}{E(P_0, U_0)}$$

$$TPI_P = \frac{E(P_1, U_1)}{E(P_0, U_1)}$$

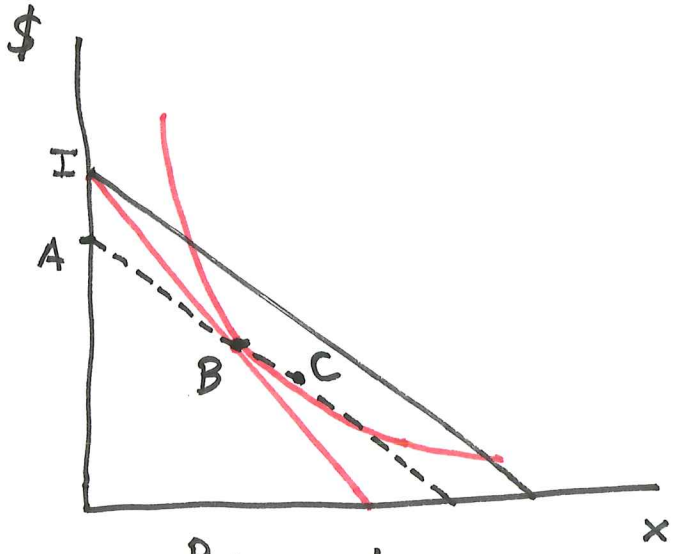
If $\frac{I_1}{I_0} \geq \frac{E(P_1, U_0)}{E(P_0, U_0)} \Rightarrow E(P_1, U_1) \geq E(P_1, U_0)$

Lump Sum vs Commodity Taxes

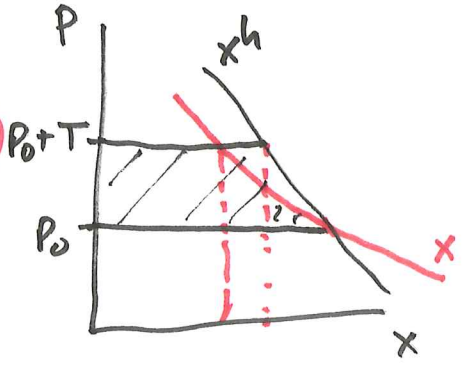
Shephard's Lemma

$$\frac{\partial E}{\partial P} = x^h$$

$$\Delta E = \int_{P_0}^{P_0+T} x^h(P) \cdot dP$$



$x^h(P_0+T) > x(P_0+T)$

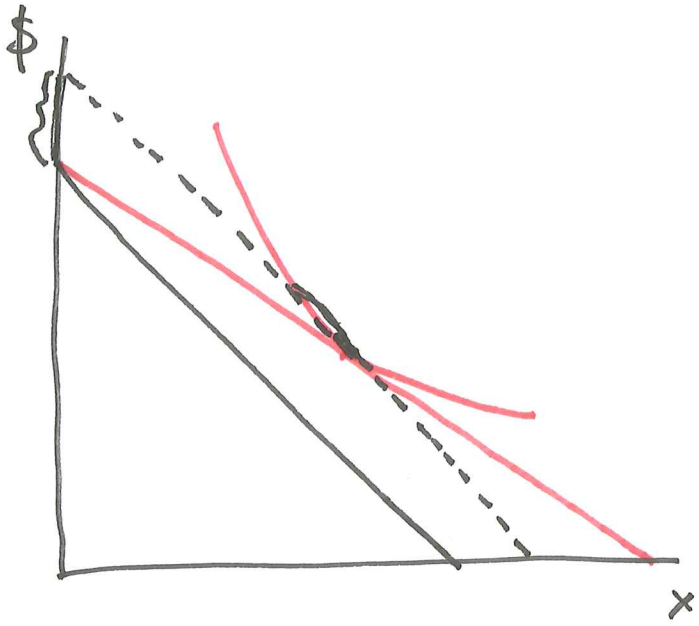


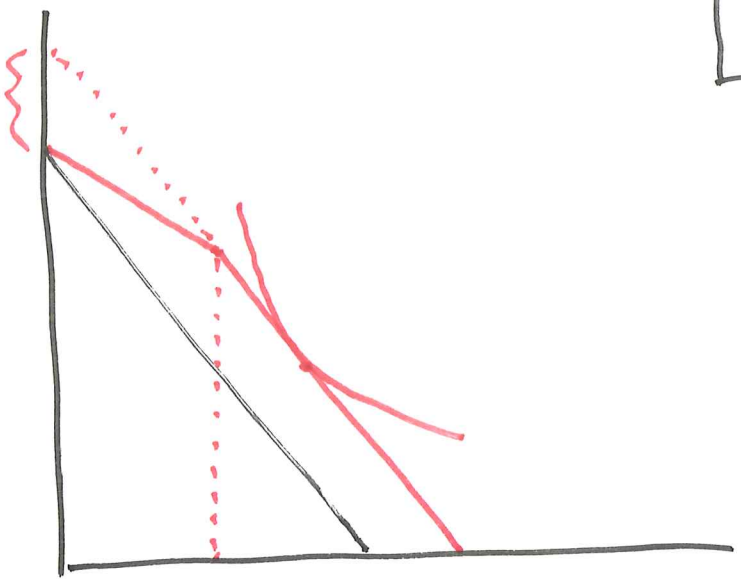
$\Delta E > T \cdot x^h(P_0+T) > T \cdot x(P_0+T)$

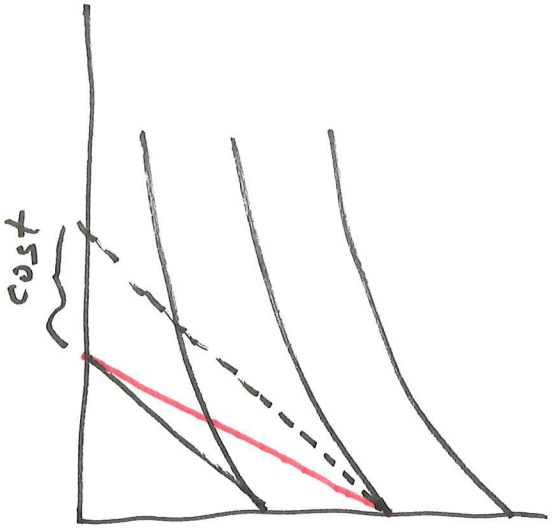
$\Delta E > T \cdot x(P_0+T)$

Welf. Loss — Tax Rev

Subsidies







Labor Supply Decision

Endowment: Time

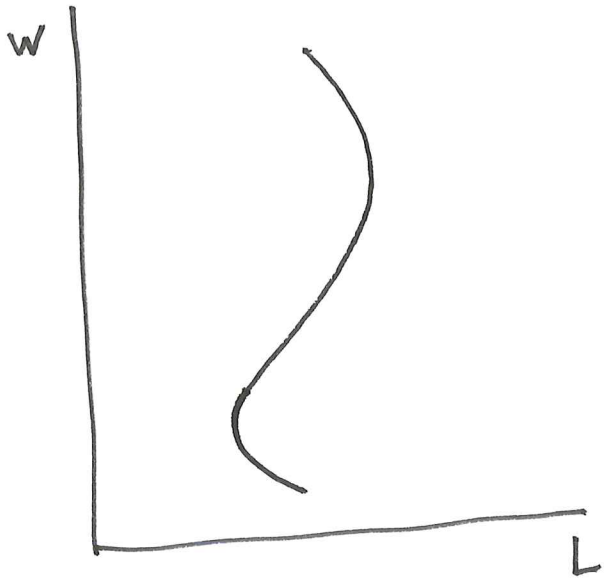
$$\text{Max } U(C, H)$$

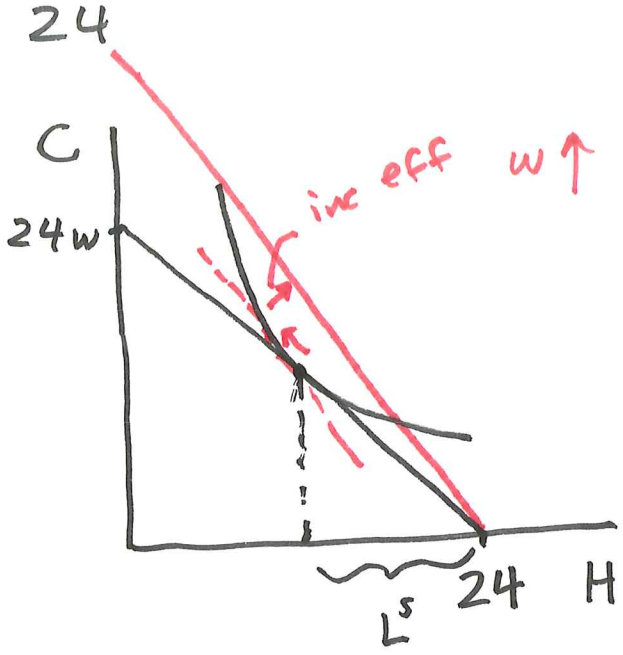
$$\text{s.t. } H + L = 24$$

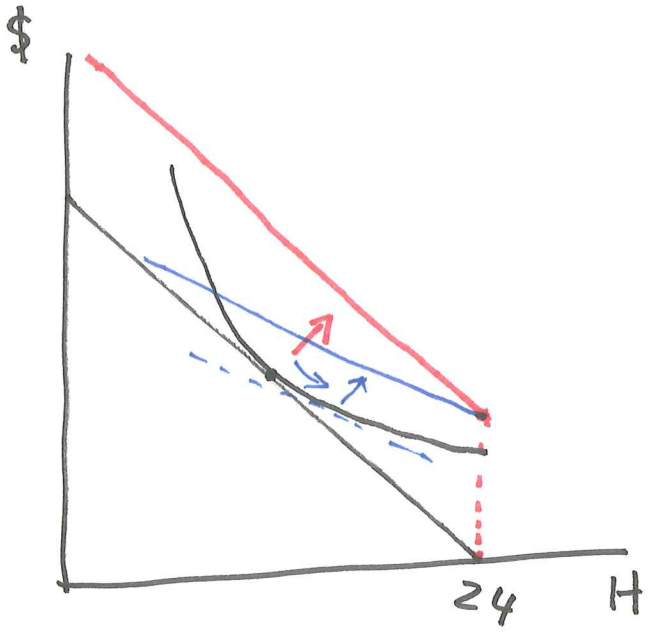
$$C = wL \quad \text{where } w: \text{wage rate}$$

$$L = \frac{C}{w}$$

$$H + \frac{C}{w} = 24$$






$
24
H