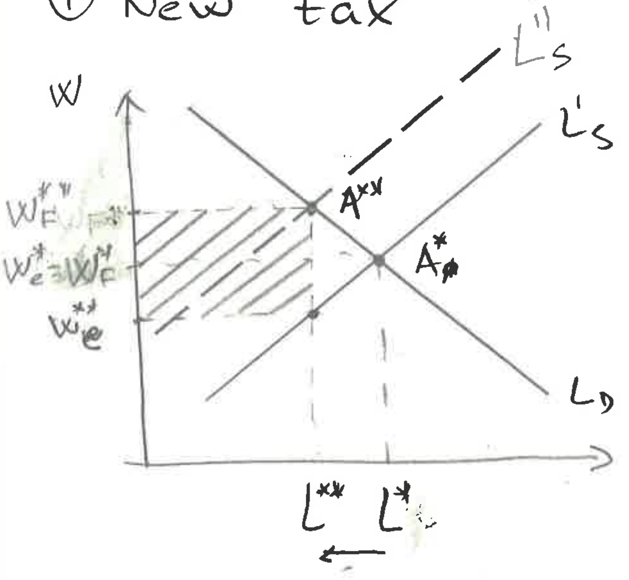
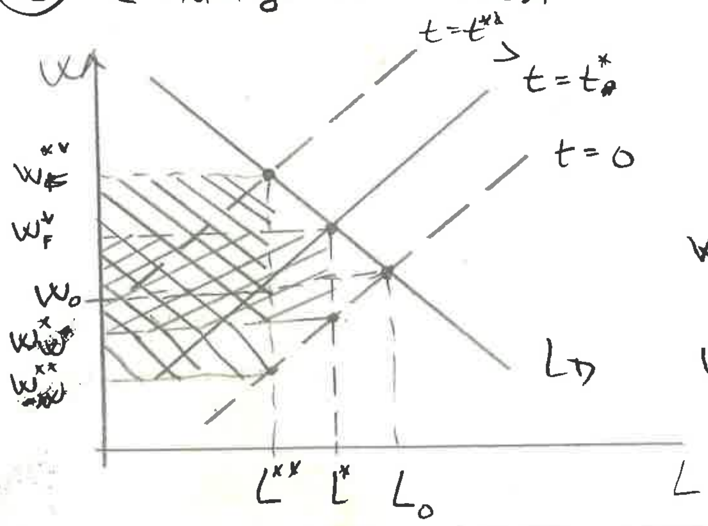
- CASE OF TAXATION OF LABOR

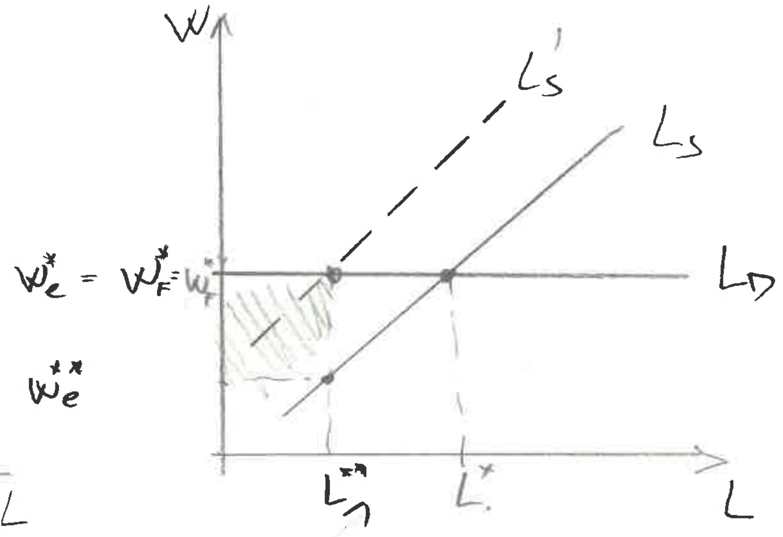
① New tax



$T = L^{**} w_F^{**} (t)$

② change in tax





Consider $\Delta t \nearrow \;\to\; \Delta T$

$\to$ "optimal" t ? max T ?

$T = t\, w_F\, L \qquad w_e = (1-t)\, w_F \quad \to \quad \ln w_e = \ln(1-t) + \ln w_F$

$$\frac{\partial \ln w_e}{\partial t} = -\frac{1}{1-t}$$

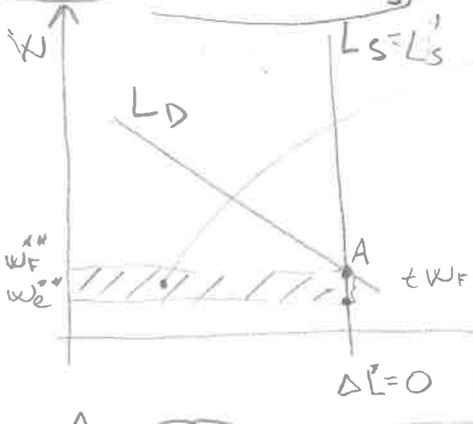
$$\frac{\partial T}{\partial t} = ? : \quad \frac{\partial \ln T}{\partial t} = \frac{\partial \ln t}{\partial t} + \frac{\partial \ln w_F}{\partial t} + \underbrace{\frac{\partial \ln L}{\partial \ln w_e}}_{\text{subst. eff}} \frac{\partial \ln w_e}{\partial t}$$

$$= \frac{1}{t} + 0 + \underbrace{\varepsilon_s}_{\geq 0} \cdot \left(-\frac{1}{1-t}\right)$$

for t_{OPT}: $\frac{\partial \ln T}{\partial t} = 0 \to \frac{1}{t} - \varepsilon_s \frac{1}{1-t} = 0$

$1 - t = t\varepsilon_s \to \boxed{t_{OPT} = \frac{1}{1+\varepsilon_s}} = \frac{1}{1+.3} = 0.7$

CASE Inelastic L_s



$\to T = t w_F L^* = (w_F^{**} - w_e^{**}) L^*$

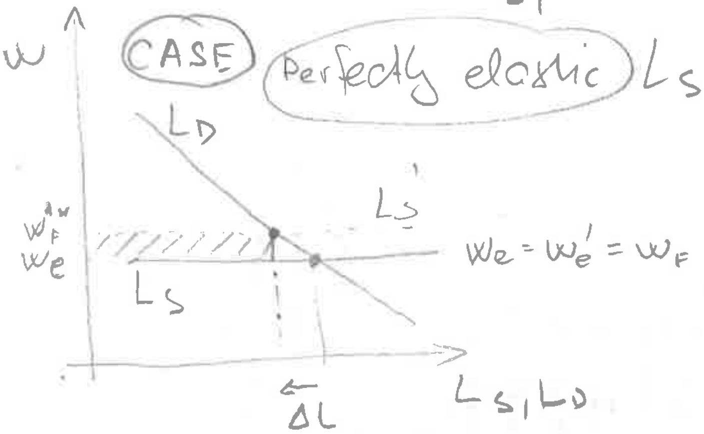
w_e^{**} → wage received ([redacted])

w_F^{**} → wage payed (gross)

$w_e^{**} = w_F^{**}(1-t)$

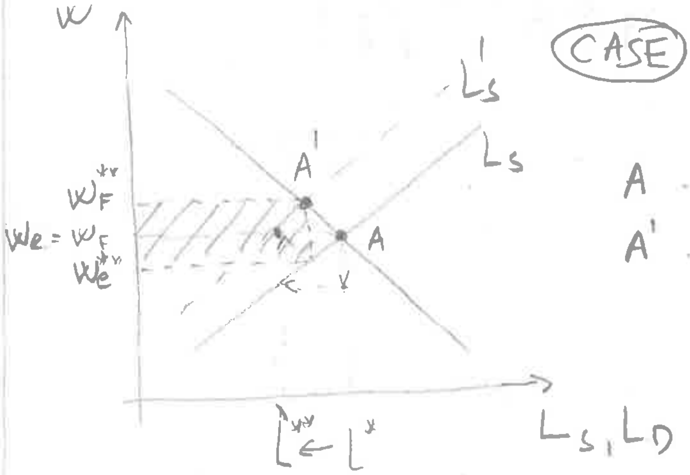
- Tax burden on employees

CASE Perfectly elastic L_S



- Tax burden on firms
- Some (ΔL) people will stop working

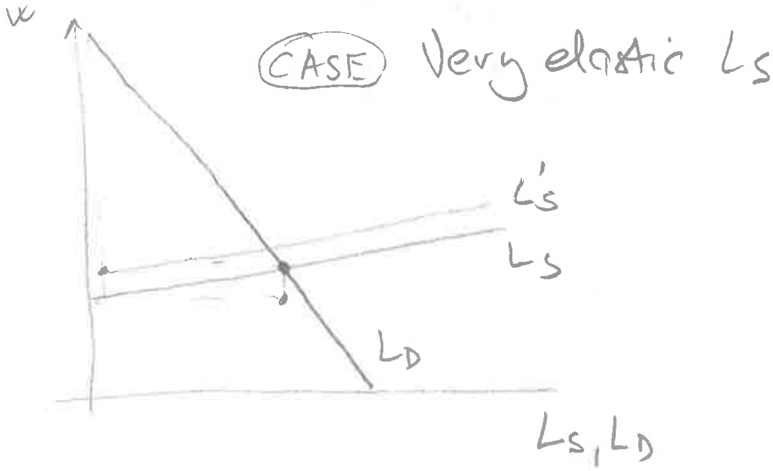
CASE General one



A ... initial equilibrium

A' ... new equilibrium

CASE Very elastic L_S



• INTRODUCING HOUSEHOL ECONOMY

Becker: "Not necessary change in preferences but Δ in the opportunity cost of time"

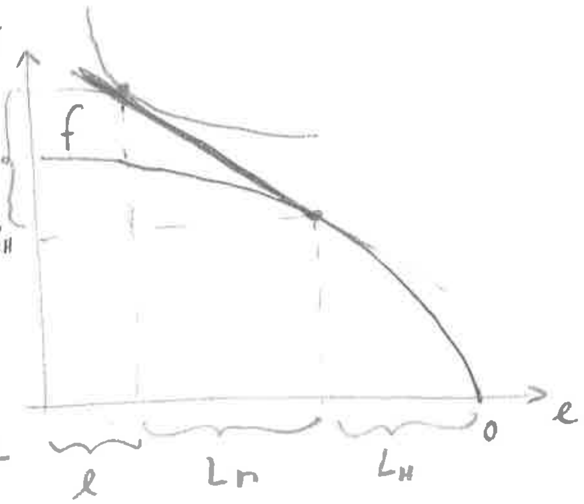
MODEL $\quad u = u(x, \ell)$

$x = X_H + x_m + X_0$, $p = 1$

$T = \ell + L_H + L_m \qquad \frac{\partial f}{\partial x_m} = 0$ assume

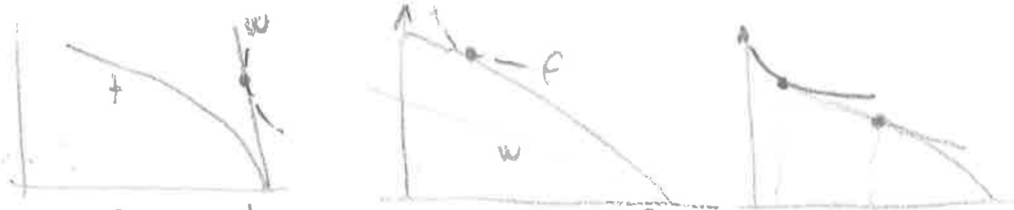
$X_H = f(L_H)$; $f' > 0$, $f'' < 0$

$X_M = \ldots + wL_m$; x_m & X_H perfect subst.



what affects participation on the L_m?

$f' \gtreqless w \longrightarrow$



$f < w$!L (1) $\qquad f > w$!L (2) $\qquad f = w$ (3)

FONC in CASE (3)

$$\boxed{\frac{\partial u/\partial \ell}{\partial u/\partial x} = w = \frac{\partial f}{\partial L_H} = \frac{\partial u/\partial L_m}{\partial u/\partial x} = \frac{\partial u/\partial L_H}{\partial u/\partial x}}$$

R~~EADINGS~~

$$\mathcal{L}(x, \ell, \mu, \lambda) = u(x, \ell) + \lambda[x_0 + wL_m + f(L_H) - x] + \mu[T - \ell - L_m - L_H]$$

$$\left.\begin{array}{l} u_x - \lambda = 0 \\ u_\ell - \mu = 0 \end{array}\right\} \quad \boxed{\frac{u_\ell}{u_x} = \frac{\mu}{\lambda} = f' = w}$$

$$\left.\begin{array}{l} \lambda w - \mu = 0 \\ \lambda f' - \mu = 0 \end{array}\right\} \quad \frac{w}{f'} = 1 \rightarrow w = f'$$

$$f' = \frac{\mu}{\lambda}$$

You have 1 unit of time Δt to be used in three ways: l, L_H, L_M

leisure: $\Delta t \to \Delta l \to \Delta U^l = \frac{\partial U}{\partial l} \Delta t$ (i)

X home: $\Delta t \to \Delta L_H \to \Delta U^H = \frac{\partial U}{\partial X}\frac{\partial X}{\partial L_H} \Delta t = \frac{\partial U}{\partial X} f' \Delta t$ (ii)

X mkt: $\Delta t \to \Delta L_M \to \Delta U^M = \frac{\partial U}{\partial X} w \Delta t$ (iii)

(i) & (ii): $\frac{\frac{\partial U}{\partial l}}{\frac{\partial U}{\partial X}} = f'$

(i) & (iii): $\frac{\frac{\partial U}{\partial l}}{\frac{\partial U}{\partial X}} = MRS_{l,X} = w$

(ii) & (iii): $f' = w \; /p$