

# COMPENSATING WAGE THE THEORY OF EQUALIZING DIFFERENCES

- WAGE DIFFERENTIALS DUE NONMONETARY ADVANTAGES AMONG WORK ACTIVITIES AND TASTES DIFFERENTIALS

REF A. Smith: Wealth of Nations

- Differentials:

working conditions - working place  
risk of life and health  
exposure to pollution

location - " - - climate  
crime  
pollution

job characteristics - shift work  
- flexible schedules  
- visit of layoffs  
- pay package  
- vacations  
- pensions

- WE HAVE WORKERS - fixed characteristics (tastes)

FIRMS (jobs) - \_\_\_\_\_ (

match occurs if it is the best alternative  
for both sides (feasible choices)

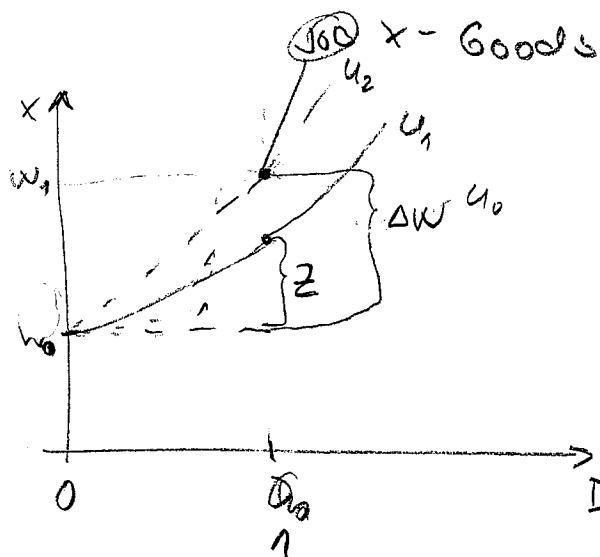
EQUILIBRIUM - MARKET CLEARING THROUGH  
EQUALIZING DIFFERENCES.

• LABOR SUPPLY SIDE

Assume: - perfect information (no search cost & time)

↓  
LONG-TERM

- observable quality of working environment
- D - Disamenity (dirty dust) 0, 1



~~FRS Δw~~ →

- $w_1 - w_0 \rightarrow$  market equalizing difference
- worker chooses D to max utility
- $D=1$  if  $u(\Delta w + w_0, 1) > u(w_0, 0)$
- $D=0$  if  $\dots < \dots$
- indifferent

USING z ~ reservation price

~ compensating variation for z

$D=1$  if  $z < \Delta w$

$D=0$  if  $z > \Delta w$

• Labor Supply

$\Delta w$  represents the market

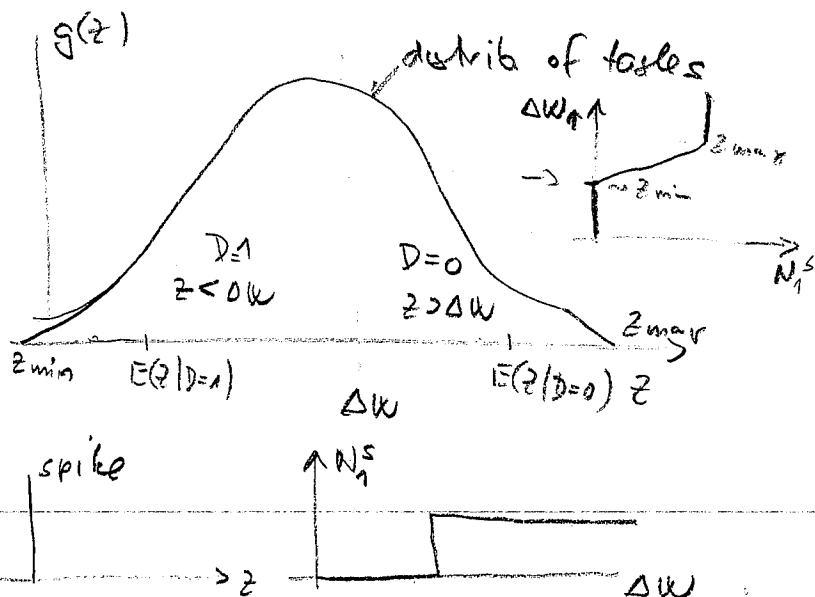
$z$  — the tastes

$g(z)$  ... density of workers

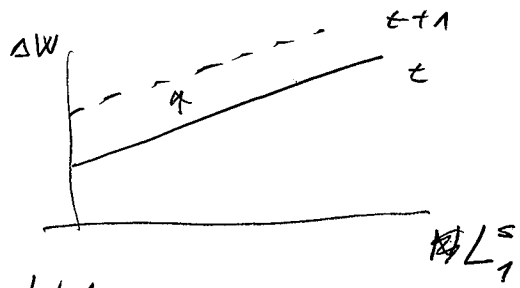
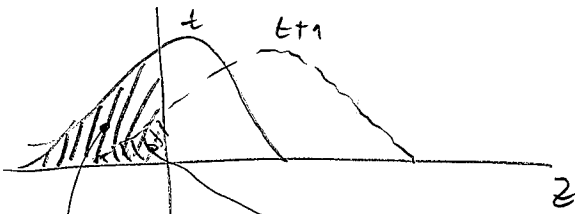
$G(z)$  ... cumulative density

$$N_1^S = \int_0^{\Delta w} g(z) dz = G(\Delta w)$$

$$N_0^S = \int_{\Delta w}^{\infty} g(z) dz = 1 - G(\Delta w)$$



(CASE) shift in taxes



$\Delta w$  would in dirt at  $t+1$   
 $z < \Delta w \rightarrow$  would in dirt at  $t$

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# LABOR DEMAND - firm's choice

cleaning = additional costs (equip, clothing)

What is cleaner: pay  $\Delta w$  premium & not clean?

not pay  $\Delta w$  & clean?

Simple technology:

$$a_1 > a_0$$

$$x = a_1 L \quad \text{if } D = 1$$

$$\rightarrow VMP_1 = a_1$$

$$x = a_0 L \quad \text{if } D = 0$$

$$VMP_0 = a_0$$

$$\left. \begin{array}{l} VMP_1 = a_1 \\ VMP_0 = a_0 \end{array} \right\} \Delta VMP = a_1 - a_0 > 0$$

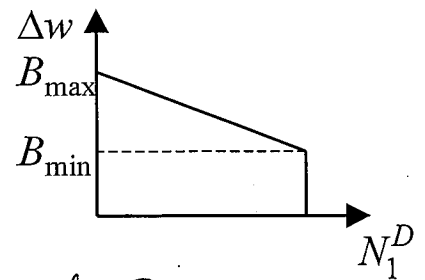
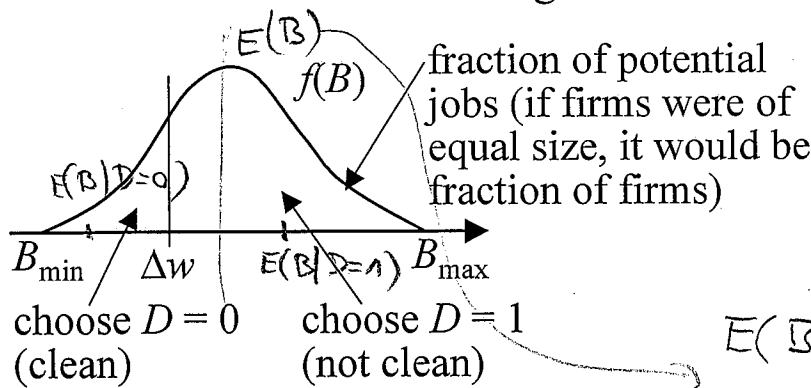
choose  $D < 1$  depending on  $\Delta MC = w_1 - w_0 = \Delta w$

$$D = 1 \quad \text{if } \Delta w < B$$

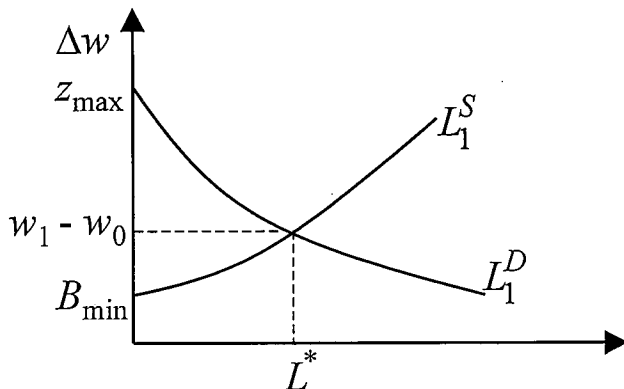
$$0 \quad \text{if } \Delta w > B$$

$D = 1$  if  $B > \Delta w$  - foregone costs of cleaning are less than the incremental labor costs

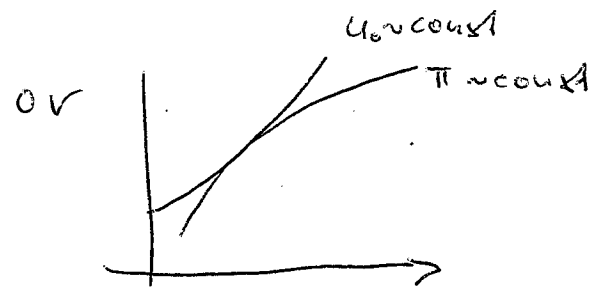
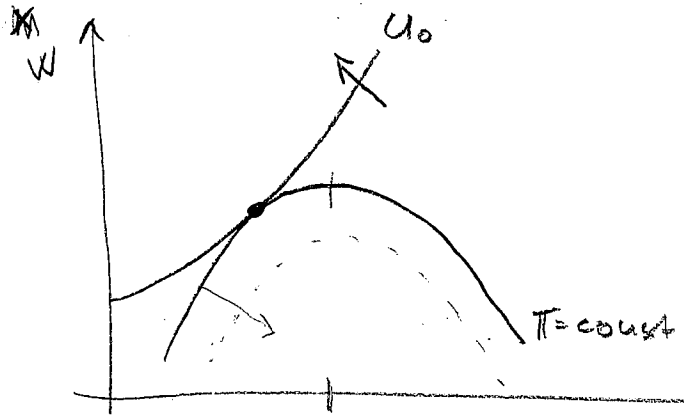
$D = 0$  if  $B < \Delta w$  - cleaning costs are less than the wage premium



$$E(B) = \int B f(B) dB$$

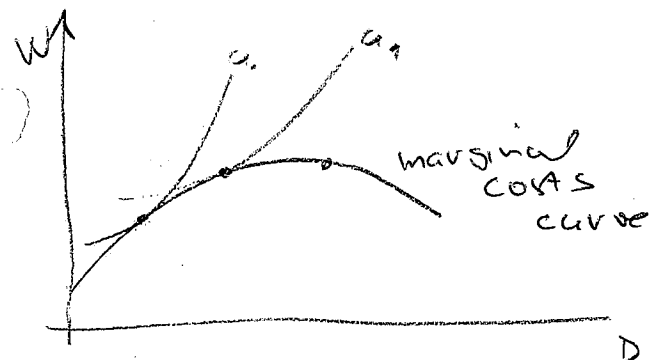


POT IT TOGETHER

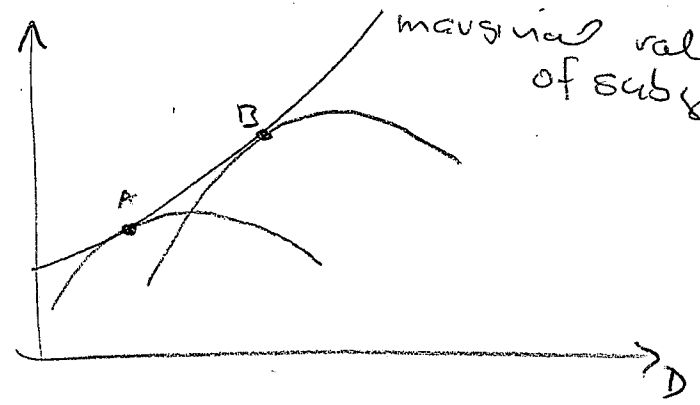


negative impact of D on productivity dominates

IF ALL FIRMS IDENTICAL

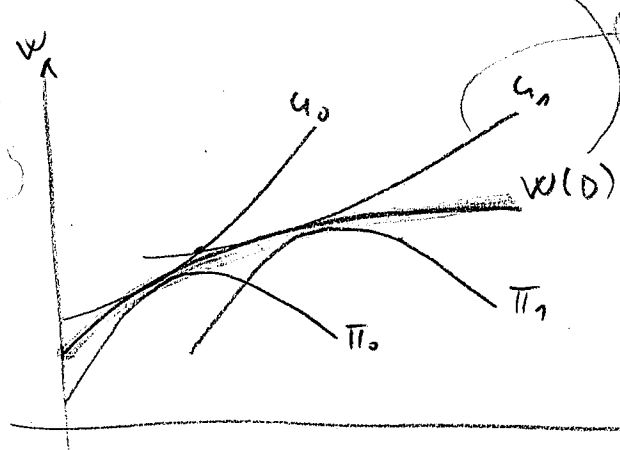


IF ALL WORKERS IDENTICAL



different tastes

$$\frac{U_D}{U_W} = \frac{\pi_D}{\pi_W}$$



HEDONIC CURVE  
envelope curve equalizing the wage differentials

COSTS OF LIFE

$$W_i = \beta D_i + \alpha Rev_i$$

$$W_i = \beta p_i + \alpha Rev_i$$

$\beta$  estimate

$$\underbrace{\Delta W * L}_{\text{costs expenditure}} = \underbrace{N^* * L * p}_{\text{total value}}$$

p... prob. death  
L... workers  
 $\Delta W$ ... tid prem.

$$N^* = \frac{\Delta W * L}{L * p} = \frac{\Delta W}{p}$$

L value of 1 life

$\Delta W * L =$  statistical value of life

Policy: seatbelts  $TC \approx N^*$

READ Rosen #160 : Exercises wage differentials

unobservable

• Negative relation between  $\Delta w$  &  $D$

- some people enjoy risk

- unobservable  $A_i$ :  $\text{cov}(A_i, D_i) < 0$

$\text{cov}(A_i, w_i) > 0$

} downward  
bias

• Legoffe