**Labor Economics and Employment Policies**

**Pierre Cahuc, Milan**

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**Lecture 2: Job search, unemployment insurance and training policies**

*Basic facts*

- Unemployment:

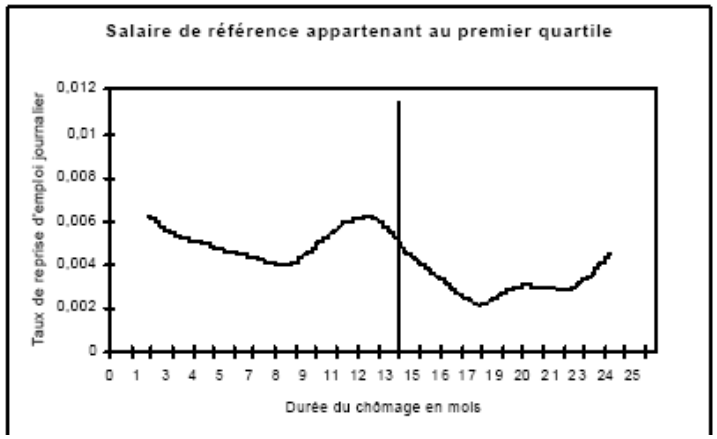
  active individuals

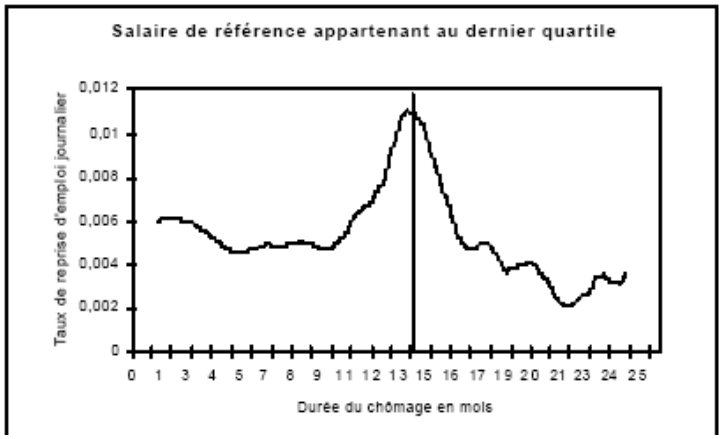
  looking for a job

  hope to find a job

- Unemployment rates are high: 5% of labor force considered as low

- Relation between exit rate out of unemployment and unemployment benefits (Dormont et al. 2001)



Study of job search activity:

- Optimal design of unemployment insurance (moral hazard, selection...)
- Impact of counseling and training policies
- Unemployment benefits versus employment protection
- Flexicurity
- Impact of frictions and search activities on
    - wages
    - employment,
    - labor market discrimination,
    - labor market efficiency

**Contents:**

**1.** Basic job search theory

**2.** Optimum unemployment insurance

**3.** Counseling, training policies

# 1. Basic job search theory

- Behavior of a person looking for work in a situation of imperfect information
- Stationary environment.
- Exogenous arrival rate of job offers, $0 < \lambda < 1$
- At most, only one offer per unit of time
- $H(.)$ cumulative distribution function of all possible wages
- Job offer: draw in a distribution of wage.
- cdf denoted by $H$
- Job offer: constant real wage $w$ which the worker will receive on each date as long as she remains with the firm that makes the offer

- Jobs destroyed at rate $0 < q < 1$
- *Instantaneous* utility equals income
  - $w$ for employee
  - $z$ for unemployed workers
- Discount rate $r > 0$
- Discounted expected utility of an employed person receiving wage $w$: denoted by $V_e(w)$
- Discounted expected utility of an unemployed person: denoted by $V_u$
- $V_e(w)$ satisfies

$$V_e(w) = \frac{1}{1+r}\left[w + (1-q)V_e(w) + qV_u\right]$$

can be rewritten as:

$$rV_e(w) = w + q[V_u - V_e(w)] \tag{1}$$

and

$$V_e(w) - V_u = \frac{w - rV_u}{r + q} \tag{2}$$

implies that $V_e'(w) > 0$.

*The optimal search strategy*

Previous equations imply that optimal job-search strategy is defined as follows:

1. If the job-seeker receives no offer on date $t$, he or she continues looking. This behavior results from the stationarity of intertemporal utility $V_u$.

2. If the job-seeker receives a wage offer $w$ , he or she accepts if $V_e(w) > V_u$. If not, he or she continues looking.

"Stoping rule"

- Accept job offer if $V_e(w) > V_u$, or

$$w > x = rV_u \tag{3}$$

- $x$: *reservation wage*

*The discounted expected utility of a job-seeker*

- At any moment the status of a job-seeker may change with rate $\lambda$.
- Offer accepted if $w > x$.
- The discounted utility $V_\lambda$ expected upon receiving an offer of employment

$$V_\lambda = \int_0^x V_u \mathrm{d}H(w) + \int_x^{+\infty} V_e(w) \mathrm{d}H(w)$$

- Conversely, if the job-seeker receives no offers, he or she keeps looking, which procures for him or her a discounted expected utility equal to $V_u$
- $V_u$ satisfies

$$V_u = \frac{1}{1+r} \left[ z + \lambda V_\lambda + (1-\lambda) V_u \right]$$

which can be written as

$$rV_u = z + \lambda \int_x^{+\infty} [V_e(w) - V_u] \, \mathrm{d}H(w)$$

*Reservation wage, hazard rate, and average duration of unemployment*

- Definitions of $V_u$ with $x = rV_u$ implies

$$x = z + \lambda \int_x^{+\infty} [V_e(w) - V_u] \, \mathrm{d}H(w)$$

with

$$V_e(w) - V_u = \frac{w - rV_u}{r + q}$$

yields

$$x = z + \frac{\lambda}{r + q} \int_x^{+\infty} (w - x) \mathrm{d}H(w)$$

$$x = z + \frac{\lambda}{r+q} \int_{x}^{+\infty} (w - x) \mathrm{d}H(w)$$

- Defines **one** optimal value for $x$
- $x$ maximizes the intertemporal utility of a job-seeker
- Exit rate from unemployment

$$\lambda[1 - H(x)]$$

- Averate duration of unemployment

$$D = \frac{1}{\lambda[1 - H(x)]}$$

*Comparative statics of the basic model*

- Reservation wage:

  increases with $z, \lambda$

  decreases with $q, r$

- Exit rate out of unemployment

  increases with $z$

  decreases with $q, r$

  ???? with $\lambda$

The basic model is grounded on over-simple hypotheses

- unemployed do not select the intensity of their search
- employees cannot look for (another) job
- all unemployed workers get the same income
- stationary environment

- Different levels of search intensity: the frontier between unemployment and inactivity is fuzzy

| Country | Discouraged workers | Job-seekers |
|---|---|---|
| Denmark | 0.2 | 4.5 |
| Spain | 0.8 | 13.9 |
| France | 0.1 | 10.1 |
| Sweden | 1.7 | 5.9 |
| United States | 0.4 | 4.0 |
| Japan | 3.1 | 5.0 |

Discouraged workers and job-seekers in 2000 (as a percentage of the labor force)

| From To $\longrightarrow$ $\downarrow$ | Employed | Unemployed | Non-participant +Marginally attached |
|---|---|---|---|
| Unemployed | 0.112 (0.004) | 0.708 (0.005) | 0.180 (0.005) |
| Marginally attached | 0.098 (0.005) | 0.171 (0.007) | 0.731 (0.008) |
| Non-participant | 0.026 (0.001) | 0.030 (0.001) | 0.944 (0.002) |

The transition matrix between different states in the labor market. Monthly rates for the year 1992 in Canada (standard errors are in parentheses). Source: Jones and Riddell (1999)

*Conclusions of the search model*

- Increase in $z$ implies
  - higher unemployment spell for eligible unemployed workers
  - lower unemployment spell for non-eligible unemployed workers
- What about facts?
- Empirical studies, individual data, aggregate data

| Authors | Data | Elasticity Unempl. benefits | Elasticity Duration of benefits |
|---|---|---|---|
| Lancaster (1979) | UK, not specified | 0.43–0.6 | |
| Narendranathan et al. (1985) | UK., men | 0.08–0.65 | |
| Moffit (1985) | US, men | | 0.16–0.36 |
| Meyer (1990) | US, men | | 0.60–0.88 |
| Katz and Meyer (1990) | US, men | 0.8–0.9 (youth) | 0.36–0.48 |

Empirical findings: the impact of unemployment benefits on unemployment spell

- Macroeconomic studies find little correlation between unemployment benefits and unemployment
- In most countries, many people are not eligible for unemployment benefits

| | | | |
|---|---|---|---|
| Austria | 66 | Belgium | 81 |
| Denmark | 66 | Finland | 73 |
| France | 45 | Germany | 70 |
| Greece | 9 | Ireland | 67 |
| Italy | 7 | Netherlands | 50 |
| Portugal | 27 | Spain | 24 |
| Sweden | 70 | | |

Percentages of unemployed persons qualifying for unemployment insurance benefits in 1995

## 2. Optimal unemployment insurance

- Optimal level of unemployment benefits
- Optimal time sequence of unemployment benefits (constant, decreasing...)

## 2.1. Optimal level of unemployment benefits

- Martin Baily, 1978, Journal of Public Economics, Raj Chetty, 2006, Journal of Public Economics
- Robert Shimer and Ivan Werning, 2007, Quarterly Journal of Economics
- Optimal level depends on:

  - Risk aversion

  - Elasticity of unemployment duration with respect to unemployment benefits (moral hazard)

- The gap between consumption of an employed worker paid at the reservation wage and an unemployed worker

  - increases with the elasticity of the unemployment spell with respect to unemployment benefits (incentive motive)

  - decreases with the degree of risk aversion (insurance motive)

## 2.2. Optimal time sequence of unemployment benefits

- Assume that unemployment benefits can change during the unemployment spell
- Shavell, S. and Weiss, L. (1979), "The Optimal Payment of Unemployment Benefits over Time", *Journal of Political Economy,* 87, pp. 1347-1362.
- Hopenhayn, H. and Nicolini, J. (1997), "Optimal Unemployment Insurance", *Journal of Political Economy,* 105, pp. 412-438.

| | System with tax on wages | | System without tax |
|---|---|---|---|
| Weeks of unemployment | Replacement rate (%) | Tax on wages (%) | Replacement rate without tax on wages (%) |
| 1 | 99.0 | -0.5 | 85.8 |
| 2 | 98.9 | -0.4 | 80.8 |
| 3 | 98.8 | -0.3 | 76.3 |
| 6 | 98.5 | 0.0 | 64.7 |
| 12 | 97.9 | 0.6 | 48.2 |
| 26 | 96.5 | 2.0 | 27.7 |
| 52 | 94.0 | 4.5 | 13.4 |

The optimal profile of the replacement rate in presence of moral hazard (Hopenhayn and Nicolini, 1997).

## 3. Counseling and training policies

- Increases in $\lambda$, in the level of wages

- Justification of public interventions
  - redistribution
  - moral hazard
  - externalities

- Methodological issues: find a good counterfactual
- 3 methods
    1. Compare individuals with identical observable characteristics
    2. Natural experiment
    3. Social experiment

# 3.1. Counseling policies

| Place | Type of help |
|---|---|
| Nevada (1977-78) | Weekly interviews, checks on eligibility |
| Charleston (1983) | 2 in-depth interviews and a 3-hour session on job searching |
| New Jersey (1986-87) | Obligation to contact the employment agency regularly, offer of training |
| Nevada (1988-89) | Improved counseling by permanent personnel |
| Minnesota (1988-90) | Intensive help from permanent personnel |

| Place | Weeks of benefits |
|---|---|
| Nevada (1977-78) | −3.90 |
| | (0.41) |
| Charleston (1983) | −0.70 |
| | (0.39) |
| New Jersey (1986-87) | −0.50 |
| | (0.22) |
| Nevada (1988-89) | −1.60 |
| | (0.30) |
| Minnesota (1988-90) | −4.32 |
| | (0.16) |

# 3.2. Training policies

| Measure | Cost[(1)] | Δ employment[(2)] | Δ wages[(3)] |
|---|---|---|---|
| *JSA* | | | |
| Arkansas WORK | 244 | 6.2* | 487* |
| Louisville (WIN-1) | 206 | 5.3* | 643* |
| *JSA + WE* | | | |
| Virginia ES | 631 | 4.6* | 387* |
| Baltimore | 1407 | 0.4 | 764* |
| *WE + Training* | | | |
| NSW | 8614 | 7.1 | 1062 |
| NJS (JTPA) | 1028 | – | 441* |

Table 4: The results of some social experiments in the United States, on economically disadvantaged women.

Legend: JSA = Job Search Assistance; WE = Work Experience; JPTA = Job Training Partnership Act; NJS = National JTPA Study; NSW = National Supported Work demonstration; * = a significant effect at the 10% threshhold.

(1) marginal cost of treatment for one person for one year in 1997 dollars. (2) difference in employment rates between the treated group and the control group in the last quarter of the year subsequent to the experiment. (3) Difference in annual average wages between the treated group and the control group in the third, fourth, and fifth years subsequent to the experiment, in 1997 dollars.

Source: Heckman et al. (1999, table 22, pp. 2057-2059).

| Measure | Cost[1] | Δ employment[2] | Δ wages[3] |
|---|---|---|---|
| NSW | 9314 | 0.3 | -79 |
| JOBSTART | 6403 | -0.9 | -721 |
| NJS (JTPA) | | | |
| Women | 1116 | – | 133 |
| Men | 1731 | – | -553 |

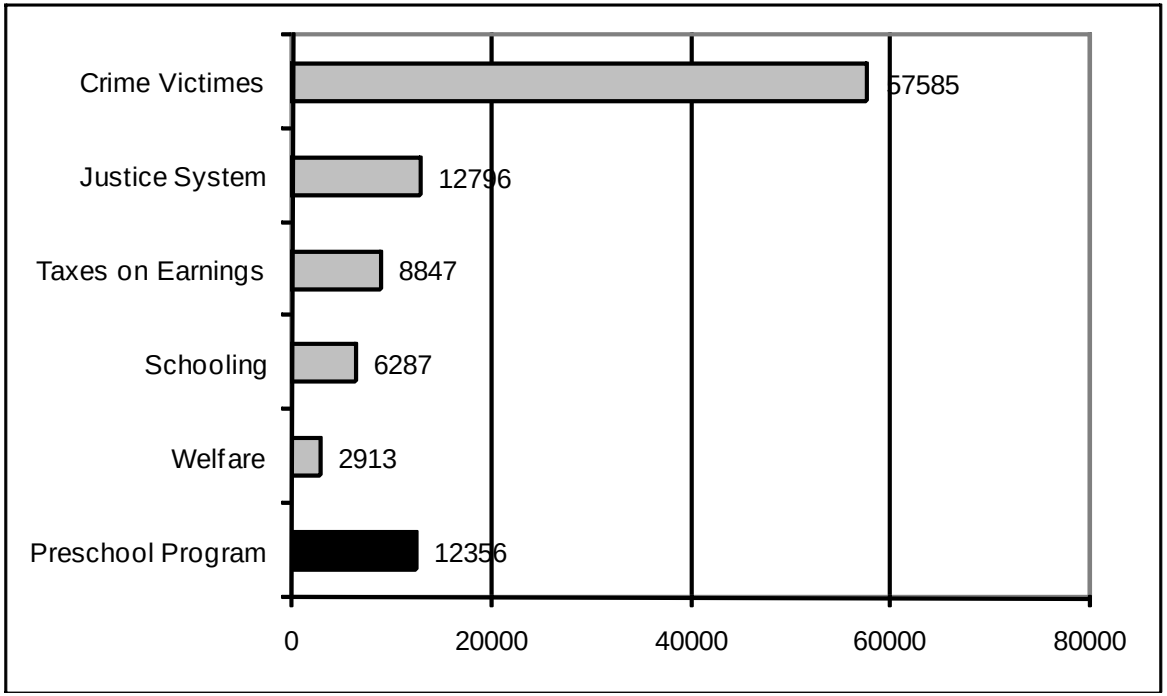
Table 5: The results of some social experiments in the United States, on economically disadvantaged youth.

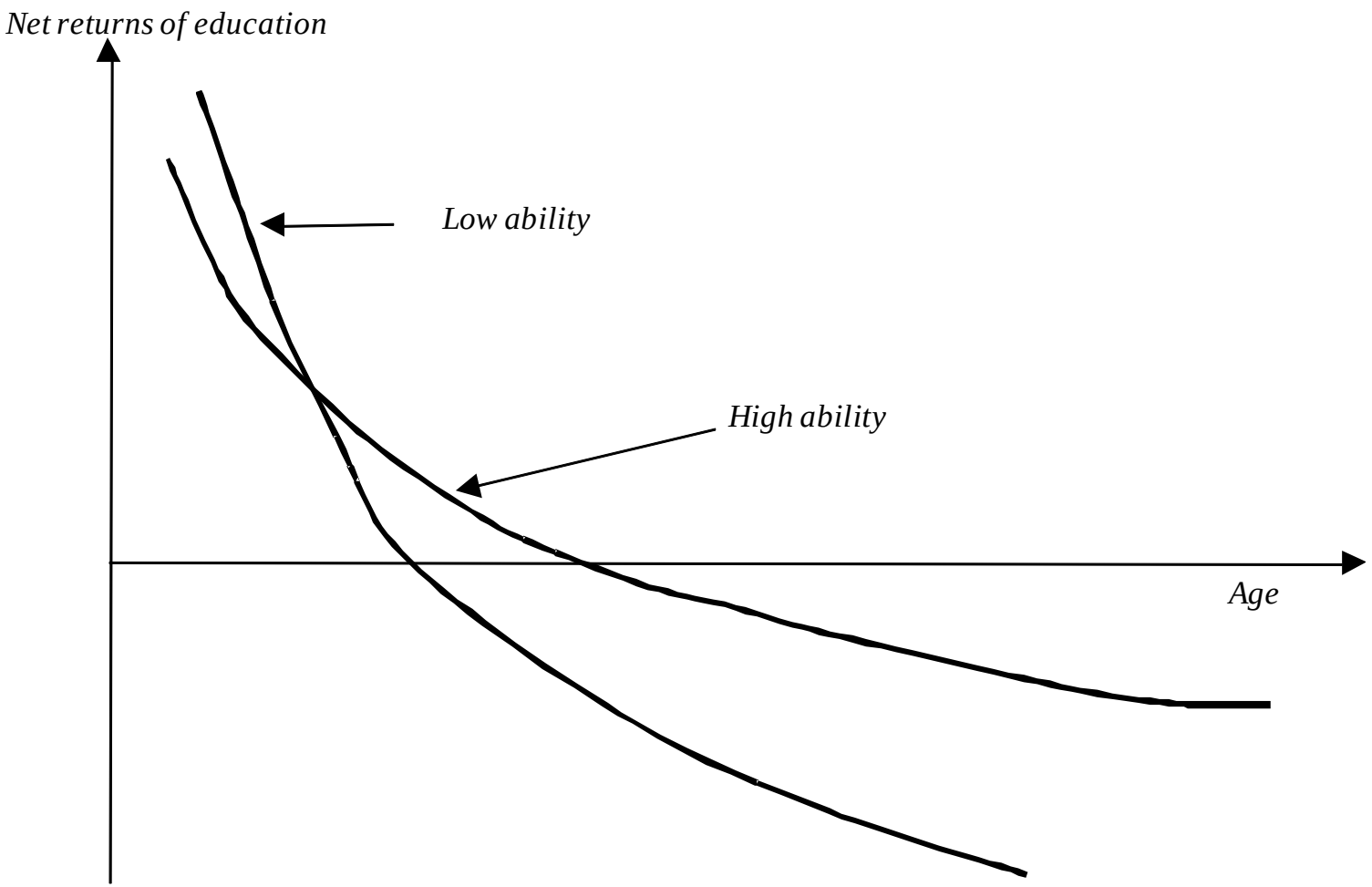
Legend: the programs tested are ones combining training and subsidy. JPTA = Job Training Partnership Act; NJS = National JTPA Study; NSW = National Supported Work demonstration.

1) marginal cost of treatment for one person for one year in 1997 dollars. (2) difference in employment rates between the treated group and the control group in the last quarter of the year subsequent to the experiment. (3) Difference in annual average wages between the treated group and the control group in the first or second year subsequent to the experiment, in 1997 dollars.

- Partial equilibrium effects of training policies for disadvantageous people: low in general
- What about general equilibrium effects?
  - impact on wage
  - lower effect
- *High quality pre-school Experiment*
- Michigan, 1962
- 123 children from disadvantaged background, aged 3-4
- low IQ test
- 58 children benefit from special classes, 2,5 hours a day, 2 years, 1 teacher for 6 children

# Cost benefit analysis of the *High quality pre-school Experiment* in 1992




Net returns of education
Low ability
High ability
Age

## Further readings

Atkinson, A. and Mickelwright, J. (1991), "Unemployment compensation and labor market transitions : a critical review", *Journal of Economic Literature*, 29, pp. 1679-1727.

Cahuc, P. and Zylberberg, A. (2004), *Labor Economics,* MIT Press.

Carneiro, P. and Heckman, J. (2003), "Human Capital Policy", NBER working paper 9495.