

# How to Reduce Unemployment Without Creating Poverty

2014 Summer Term

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## Problem Set 3

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Pissarides: Unemployment, Vacancies, and Real Wages (1985)

### Question 1

a) Interpret the Bellman equations of a worker:

$$rU - \dot{U} = b + ap(W^e - U), \quad (1)$$

$$rW(y) - \dot{W}(y) = w(y) + s(U - W(y)), \quad (2)$$

where  $b$  denotes the worker's benefit when he is not working.

b) Let wage be set by Nash bargaining. Derive the link between the worker's net surplus from a job match and value loss from job separation:

$$W(y) - U = \frac{\beta}{1 - \beta} [J(y) - V], \quad (3)$$

where  $0 \leq \beta \leq 1$  shows how the surplus of a job match is split between a firm and a worker.

*Hint: Maximize the weighted surplus:*

$$S = (W(y) - U)^\beta (J(y) - V)^{1-\beta} \quad (4)$$

### Question 2

Using equations (2) – (4) from Problem Set 2 and (1) – (3), obtain the wage equation

$$w(y) = (1 - \beta)b + \beta(y + \theta k), \quad (5)$$

and give an interpretation to it.