

Effects of Public Expenditure on Welfare

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Social planner's problem

$$\max U(c, g)$$

influenced by g

labor force

private sector

unproductive

public sector

public

$$c = 1 - (u + v) - g \quad (\text{resource})$$

Planner's problem

$$\max_g U(1 - (u + v) - g, g)$$

public employment
crowds out

private employment (mechanical)

public goods (+)

Stabilization assumption • unemployment rate depends

$$\text{on } g : u = u(g)$$

• recruiting rate depends on

g through Beveridge curve, $v = v(u(g))$

Planner's problem

$$\max_g U(1 - (u(g) + v(u(g))) - g, g)$$

Take derivative of social welfare wrt g =

$$\frac{\partial u}{\partial g} + \frac{\partial u}{\partial c} \times \left[-u'(g) - v'(u) \times u'(g) - 1 \right]$$

$$= \frac{\partial u}{\partial g} - \frac{\partial u}{\partial c} - \frac{\partial u}{\partial c} \times u'(g) \times (1 + v'(u))$$

productive workers

$$= \frac{\partial u}{\partial g} - \frac{\partial u}{\partial c} + \frac{\partial u}{\partial c} \times [-u'(g)] \times [1 + v'(u)]$$

↑
more public goods
↳ more welfare

more public workers
↳ less private workers
↳ less welfare
(crowding out)

more public workers
↳ less unemployment

public econ.
(Samuelson 1954)

Stabilization $g \rightarrow u$
(Michaillat & Sala-i-Martin 2019)