Optimal Government Spending

Pascal Michaillat
https://pascalmichaillat.org/c2/

Optimal public expenditure maximizes $\mathcal{U}(c(g), g)$

Assumption: $g \mapsto \mathcal{U}(c(g), g)$

is well behaved: admits a unique extremum

& the extremum is an interior maximum.

[strictly concave function w/ interior extremum]

$\Rightarrow$ FOC is necessary & sufficient to find the solution of planner's problem

Take FOC: $\dfrac{d\mathcal{U}}{dg} = 0$

$$\Rightarrow 0 = \frac{\partial \mathcal{U}}{\partial g} - \frac{\partial \mathcal{U}}{\partial c} + \frac{\partial \mathcal{U}}{\partial c} \times [-\overset{+}{u'}(g)] \times [1 - (-\overset{+}{v'}(u))]$$

$$\Rightarrow \cancel{\frac{\partial \mathcal{U}}{\partial c}} = \frac{\partial \mathcal{U}}{\partial g} \Big/ \frac{\partial \mathcal{U}}{\partial c} + \cancel{\frac{\partial \mathcal{U}}{\partial c}} \times [-u'(g)] \times [1 - (-v'(u))]$$

$$-\frac{du}{dg} = m$$

$$\Rightarrow 1 = MRS_{gc} + [-u'(g)][1 - (-v'(u))]$$

$$\Rightarrow \boxed{\underbrace{1 = MRS_{gc}}_{} + \underbrace{m \times [1 - (-v'(u))]}_{}}$$

Samuelson rule (neoclassical)

$$MRS_{gc} = 1 \Leftrightarrow \frac{\partial \mathcal{U}}{\partial c} = \frac{\partial \mathcal{U}}{\partial g}$$

$m \times [1 - (-v'(u))] = m \times [1 - \text{Beveridge slope}]$

<u>correction</u> term that appears in a model w/ inefficient slack, w/ productive inefficiencies

↳ <u>stabilization</u> <u>term</u> → appears b/c economy is not stabilized at efficient unemployment u^*