Optimal Deviation from the Samuelson Rule

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Optimal public expenditure.

$$1 = MRS_{gc} + m \times \left[1 - \left(- v'(u) \right) \right]$$

$$\underbrace{1 - MRS_{gc}}_{\frac{1}{\varepsilon} \times \frac{g/c - g/c^*}{g/c^*}} = \underbrace{m}_{} \times \underbrace{\left[1 - \left(- v'(u) \right) \right]}_{2 \times \frac{u - u^*}{u^*}}$$

Samuelson spending ($1 = MRS_{gc}$)

elasticity of substitution b/w g & c

Formula in sufficient statistics.

$$\frac{1}{\varepsilon} \frac{g/c - g/c^*}{g/c^*} = 2 \times m \times \frac{u - u^*}{u^*}$$

$$\Rightarrow \boxed{\frac{g/c - g/c^*}{g/c^*} = \underbrace{2\varepsilon}_{(+)} \times \underbrace{m}_{} \times \underbrace{\frac{u - u^*}{u^*}}_{}}$$

depends on g/c: implicit formula

↳ Formula tells us how public expenditure g/c should deviate from benchmark given by Samuelson (1954) rule, g/c^*

Unemployment multiplier, m

Unemployment gap, $u - u^*$

	$m < 0$	$m = 0$	$m > 0$ (more realistic)
$u - u^* < 0$ (too tight) (boom)	$g/c > g/c^*$	$g/c = g/c^*$	$\boxed{g/c < g/c^* \text{ (negative stimulus)}}$
$u - u^* = 0$ (efficient)	$g/c = g/c^*$	$g/c = g/c^*$	$g/c = g/c^*$
$u - u^* > 0$ (too slack) (slump)	$g/c < g/c^*$	$g/c = g/c^*$	$\boxed{g/c > g/c^* \text{ (positive stimulus)}}$

⚠ Never optimal to deviate from Samuelson enough so as to eliminate unemployment gap: only optimal to reduce $u - u^*$