

# Elasticity of Substitution Between Public and Private Goods

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Sufficient statistic # 1: Elasticity of substitution  
b/w public & private goods,  $\epsilon$

Definition:

$$\frac{1}{\epsilon} = - \frac{\partial \ln(MRS_{gc})}{\partial \ln(g/c)}$$

•  $MRS_{gc} \downarrow$  in  $g/c$  so  $\epsilon > 0$

• 3 different cases

•  $\epsilon < 1$ : public & private goods are gross complements

•  $\epsilon = 1$ : public & private goods are independent

•  $\epsilon > 1$ : public & private goods are gross substitutes

• 3 special cases

•  $\epsilon \rightarrow 0$ : perfect complements

ex. Leontief:  $U(c, g) = \min(c, g)$

•  $\epsilon = 1$ : independent

ex.,  $U(c, g) = c^{1-\sigma} g^{\sigma}$ : Cobb-Douglas

•  $\mathbb{Z} \rightarrow \mathbb{Q}$ : perfect substitute

ex: linear •  $U(c, g) = c + g$