Exponential discounting

Notes on Behavioural Economics

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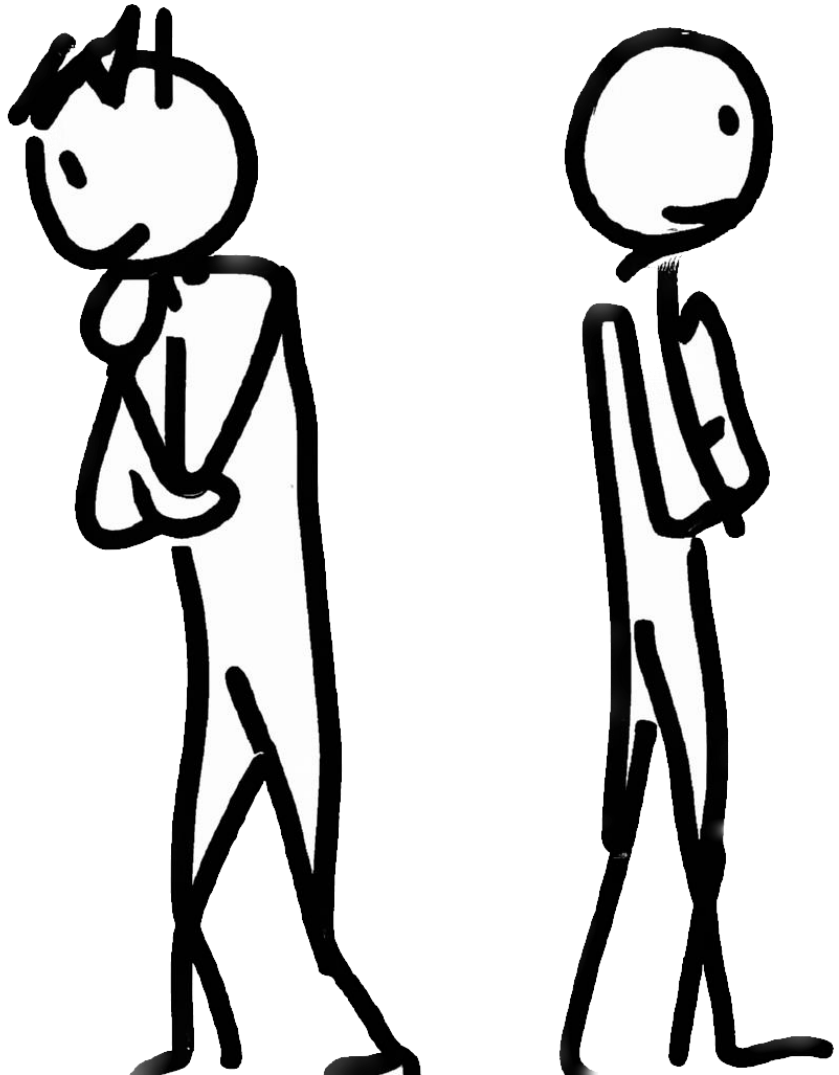

Discount factor:

δ

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δ

$0 \leq \delta \leq 1$

Discount rate:

r

Discount rate:

r

$$\delta = \frac{1}{1 + r}$$

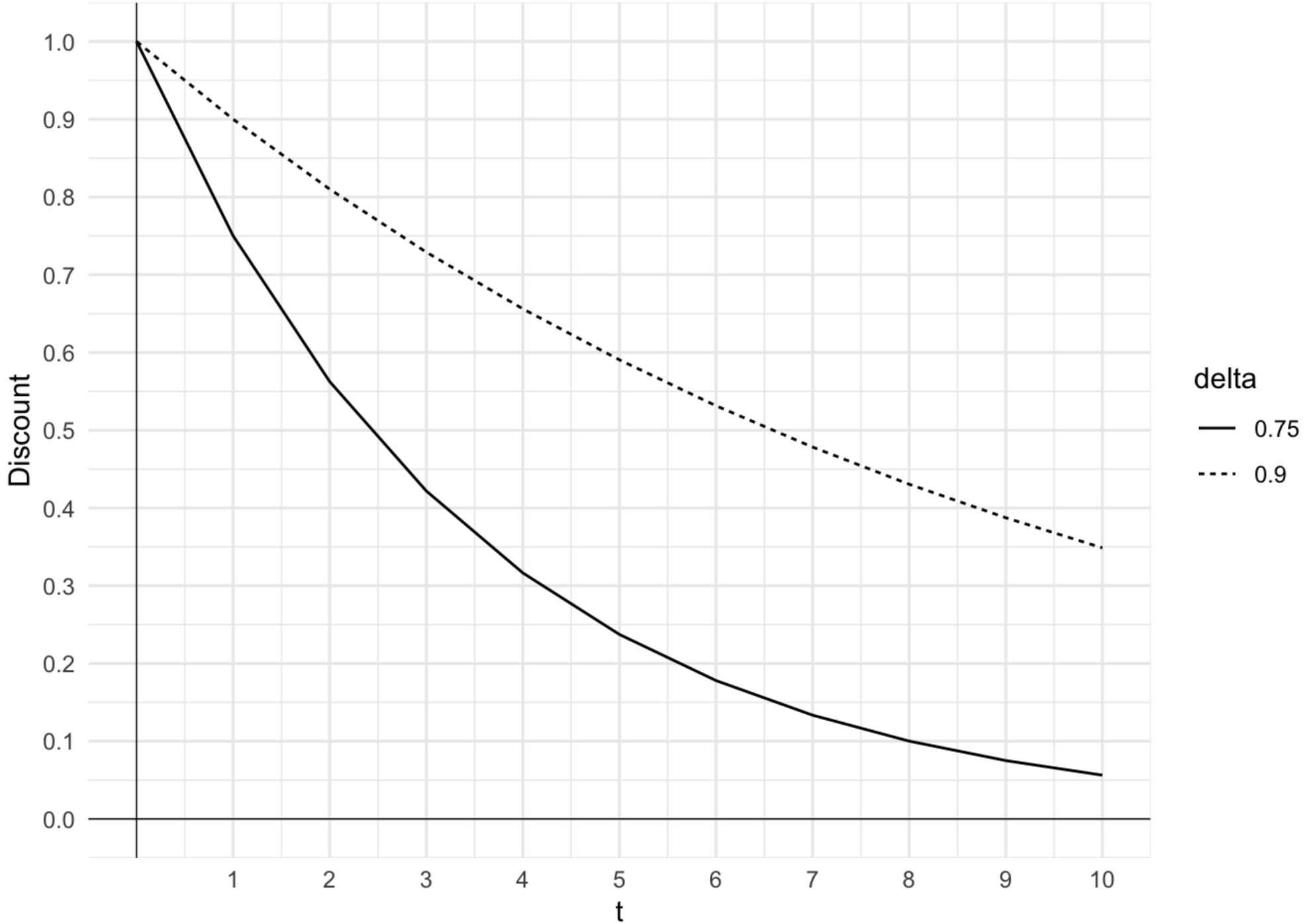
$$U_0 = u(x_0) + \delta u(x_1) + \delta^2 u(x_2) + \delta^3 u(x_3) + \cdots + \delta^T u(x_T)$$

$$= \sum_{t=0}^{t=T} \delta^t u(x_t)$$

$$0 \leq \delta \leq 1$$

Discount progression:

$1, \delta, \delta^2, \delta^3, \delta^4$


1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Discount
1
2
3
4
5
6
7
8
9
10
t
delta
0.75
0.9

Assumptions

- Time−consistency
- Consumption independence
- Stationary preferences
- Utility Independence

Time-consistency

Would you like $100 today or $110 next week?

Would you like $100 next week or $110 in two weeks?

Consumption independence

$$x = x_1 + x_2 + x_3 + \cdots + x_n$$

Stationary preferences

$$U_t = U_{t+k}$$

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