ECON 4002.01 Problem Set 3

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Question 1

Consider a model that is **similar to** (not exactly!) the Lecture 14 Consumer Problem, but there are three differences:

1. Consumers' utility function is given by $U(C, C', N_S, N'_S) = \log C - bN_S + \log C' - bN'_S$
2. Consumers do **not** own the whole firm; instead, they buy shares of the firm s in date 0 to achieve intertemporal saving at per-unit price q. At date 1, consumers redeem their share to the firm and get s of reward.
3. Consumers are **not** subject to the lump-sum tax.

Firstly, let's follow the slide and think about the consumer's budget constraint, you can refer to Lecture 14, slide 4.

(1) there are __A__ choice variables,

(A) 5 (B) 3 (C) 2 (D) 4

(2) and they are $\{C, C', N_S, N'_S,$ __C__ $\}$

(A) S (B) S' (C) s (D) s'

(3) consumers own **part** of the firm and get __B__ of reward

(A) π (B) s (C) π' (D) S

(4) and they are taken the equilibrium price $\{w, w',$ __D__ $\}$ as given.

(A) r (B) r' (C) q' (D) q

After defining all of the variables, consumer's budget constraints in each period are

5 date 0 budget constraints is *A*

(A) $C + qs = wN_S$ (B) $C + S = wN_S + \pi - T$

(C) $C = wN_S + qs$ (D) $C = wN_S + \frac{s}{q} + \pi - T$

6 date 1 budget constraints is *C*

(A) $C' = wN_S + \pi' - T' + (1+r)S$ (B) $C' = w'N'_S + qs$

(C) $C' = w'N'_S + s$ (D) $C' = w'N'_S + \frac{s'}{q'} + \pi' - T'$

7 The lifetime budget constraint by combining date 0 and date 1 budget constraints is *D*

(A) $C + \frac{C'}{1+r} = wN_S + \frac{w'N'_S}{1+r}$

(B) $C + \frac{C'}{1+r} = wN_S + \pi - T + \frac{w'N'_S + \pi' - T'}{1+r}$

(C) $C - qC' = wN_S - qw'N'_S$

(D) $C + qC' = wN_S + qw'N'_S$

Some calculation details:

$s = C' - w'N'_S \Rightarrow C + q(C' - w'N'_S) = wN_S$

$\Rightarrow C + qC' = wN_S + qw'N'_S$

After finishing consumer's budget constraint, let's turn to the analysis preference:

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