

Two more Exercises on Consumption (one corrected thanks to Federico et al)

1: Consider a consumer who chooses consumption in period t (C_t) for $t = 1, 2, 3 \dots$ to maximize the Sum from $t = 1$ to infinity of $-(C_t)^{-1}/(1.10)^t$ subject to the budget constraint that the present discounted value of consumption is equal to initial wealth (K_1) plus the present discounted value of wages (w_t) where wages and consumption are discounted at a constant rate r

so $K_1 =$ the sum from 1 to infinity of $(C_t - w_t)/(1+r)^{t-1}$

If initial wealth $K_1 = 10$ and wages are zero what is C_1 as a function of r

2) Consider an agent who lives two periods and earns $w=1.5$ in period 1. The agent has no initial wealth so at the end of period 1, her total wealth is 1.5. In period 2 the agent has a 50% chance of earning $1/6$ and a 50% chance of earning 1.5 again. Assume the agent maximizes $\ln(c_1) + \ln(c_2)/1.1$ and faces a real interest rate of 0.1.

a) is $c_1 = 1.5$ so saving = 0 optimal

b) is $c_1 = 1$ so saving = 0.5 optimal

c) now assume the agent earns $5/6$ for sure in period 2 (note $5/6 = 0.5(1/6 + 9/6)$). In that case what is $c_1 =$