Exercise 13: Pricing the Stock Market
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The stand-in household's preferences are ordered by

$$\sum_{t=0}^{\infty} \beta^t (\log c_t + \sigma \log(1 - n_t))$$

The aggregate production function is

$$c_t + x_t \le (1 + \gamma)^{t(1-\theta)} k_t^{\theta}\ h_t^{1-\theta}$$

Further,

$$k_{t+1} \le (1 - \delta)\, k_t + x_t$$

The parameters γ and σ are positive and $\beta, \delta \in (0,1)$.

There is one corporation and it operates this technology. The stand-in household

owns this corporation. Date t dividends are tax at rate τ and all tax revenues are

distributed lumped sum back to the household.

(i)   Specify dividends, d_t, in terms of the variables used in the above equations and

        inequalities.

(ii)   Establish that the steady state does not depend upon the dividend tax rate.

(iii)   Write the household's period budget constraint. Use s_t to denote beginning of

        period stock holdings in the budget constraint.

(iv)   Determine the steady state value of the stock market as a function of k and τ.