Optimal Taxation with Heterogeneous Rates of Return
Returns to Scale
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1 Constant and Decreasing Returns to Scale

I consider again a two-type version of the model, where $\theta \in \{\underline{\theta}, \bar{\theta}\}$. I compare two specifications for the production function: $y = \theta k$ and $y = \theta k^{\alpha}$, where $\alpha < 1$. In both specifications, agents can borrow and lend in the first period at rate $R > 1$. I assume that $\theta_L < R < \theta_H$.

The first case, wherein production exhibits constant returns to scale, is identical to the previous two-type case. With this specification, both the individual agents in the non-distorted equilibrium and the planner with information and resource constraints found it optimal to set $k(\theta_L) = 0$, and have the θ_L-type agents lend to the θ_H-types. The second case, in which production exhibits *decreasing* returns to scale, admits a different solution. In this case, in the non-distorted competitive equilibrium, both types will be on their Euler equations for capital and bonds; denoting $f(k) = \theta k^{\alpha}$, an agent of type θ will choose k and b such that $f'(k) = R$. Denoting the optimal tax schedule over capital income as $T(f(k), Rb)$, and T_1 and T_2 its first and second partial derivatives respectively, this system will be such that the after-tax returns are equated,

$$(1 - T_1)f'(k) = (1 - T_2)Rb \tag{1}$$

2 Computational Results