

Econ 4310

Problem Set 5 Kjetil Storesletten

For sessions on November 8-10, 2004.

1 Labor supply (from last year's exam)

Consider the savings and labor effort problem of an agent who lives for two periods and earns a wage of w_1 when young and w_2 when old. The interest rate is r and the agent maximizes

$$\max_{c_1, c_2, h_1, h_2} \{u(c_1, h_1) + \beta u(c_2, h_2)\},$$

subject to

$$c_1 + \frac{c_2}{r} \leq w_1 h_1 + \frac{w_2 h_2}{r},$$

where c_t is consumption and h_t is labor supply. Assume that the utility function is given by

$$u(c, h) = \frac{c^{1-\gamma}}{1-\gamma} + \frac{(1-h)^{1-\sigma}}{1-\sigma}.$$

1. Suppose, first, that $w_2 = 0$, so that individuals work only when young. What is the effect of the wage rate on labor supply? Is it the workers with high wages or the workers with low wages who work more?
2. Over the last 100 years, wages have increased a lot, while labor effort has declined (on average, we have substantially more leisure than our grandparents). What does this tell us about the parameters of the utility function above?
3. Suppose now that individuals work in both periods of life. All workers earn the same wage when young ($w_1 = 1$). However, when old, some workers have a steep upwards age-profile of wages ($w_2 > 1$), while others have a decreasing age-profile of wages ($w_2 < 1$). What will their age-profile of labor supply look like?

2 Chapters 4 and 5 in M&W

- **Chapter 4:** Do exercise 4.1 and 4.2.
- **Chapter 5:** Do exercises 5.3; 5.5; 5.6; 5.7; 5.8; 5.10; and 5.11.