

Public Economics (ECON 131)  
Section #8: Savings and Corporate Taxation

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## Contents

	Page
<b>1 Savings Taxation (Cont.)</b>	<b>1</b>
1.1 Practice problems . . . . .	1
1.1.1 Gruber, Ch. 22, Q.13 (Modified) . . . . .	1
1.1.2 Adding labor decisions (Model with 3 variables) . . . . .	4
<b>2 Business Taxation</b>	<b>5</b>
2.1 Key Concepts . . . . .	5
2.2 Business Taxation and Investment . . . . .	5
2.3 Practice Problem . . . . .	6

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## 1 Savings Taxation (Cont.)

### 1.1 Practice problems

#### 1.1.1 Gruber, Ch. 22, Q.13 (Modified)

Consider again the model covered in Section 7 in which individuals live for two periods and have utility functions of the form  $U(C_1, C_2) = \ln C_1 + \ln C_2$ , but now we won't fix the parameters, but solve for a more general case: Individuals earn some income  $W$  in the first period and save with an interest rate  $r$  to finance consumption in the second period.

- (a) Set up the individual's lifetime utility maximization problem. Solve for the optimal  $C_1$  and  $C_2$ .  
(Hint: Rewrite  $C_2$  in terms of income,  $C_1$ , and  $r$ .)

- (b) Again, the government imposes a 20% tax on interest income. Solve for the new optimal levels of  $C_1$  and  $C_2$ .

**1.1.2 Adding labor decisions (Model with 3 variables)**

Consider again the model covered in Section 7 in which individuals live for two periods, but now we will add labor supply to the individuals decisions. So let's assume that individuals have now utility functions of the form  $U(C_1, C_2, l_1) = \ln C_1 + \ln C_2 + \ln(L - l)$  and earn a wage  $w$  for each unit of  $l$  supplied in period one. They again can save for their retirement with an interest rate  $r$ .

- (a) Set up the individual's lifetime utility maximization problem. Solve for the optimal  $C_1$ ,  $C_2$  and  $l$ .

## 2 Business Taxation

### 2.1 Key Concepts

- Choice of entity: Business owners can choose between forming their business as a C-corporation, or as a pass-through (S-Corporations and Partnerships).
- C-corporations and pass-throughs are taxed in different ways:

	C-Corporation	Pass-through
Tax on \$1 of business income		
Tax on \$1 distributed to the owners		
Total after-tax income to owner		

### 2.2 Business Taxation and Investment

- An important question is how business taxation and the existence of deductions influences investment.
- In lecture, we assume a simple functional form based on Hall & Jorgenson (1967), where a firm earns profits as a function of capital,  $F(K)$ , and also faces a cost for using capital  $r$ , resulting in capital cost  $rK$ .
- Thus, the firm chooses capital to maximize  $F(K) - rK$ , yielding the first order condition  $F'(K) = r$ .
- A tax will distort the investment decision if it causes the firm to choose capital  $K$  such that  $F'(K) \neq r$ .

### 2.3 Practice Problem

- (a) An entrepreneur decides to start a new business. The gross profit function is  $F(K) = pY - wL$  with  $Y = L^{1/2}K^{1/2}$ . Assume she'll hire just one employee and will have a fixed labor input  $L = 1$  with  $w = 2$ . The market price is  $p = 2$ . Her cost of capital is  $r = .25$ .

Solve for her optimal investment  $K$ .

- (b) Is there any pure profit?

- (c) Let's say she forms the business as an S-corporation. The personal tax rate is  $\tau_p = 25\%$ , and *no deduction is allowed* for capital expenditures. Solve for her optimal investment  $K$ . Is there pure profit?

(d) Graph the two solutions (with x-axis  $K$  and y-axis  $rK$ ) on the same graph.

(e) Now assume that a deduction is allowed for capital expenditures (i.e. that  $rK$  can be deducted from the firm's tax liability). What is the optimal  $K$  now?