

Midterm 1 Solutions

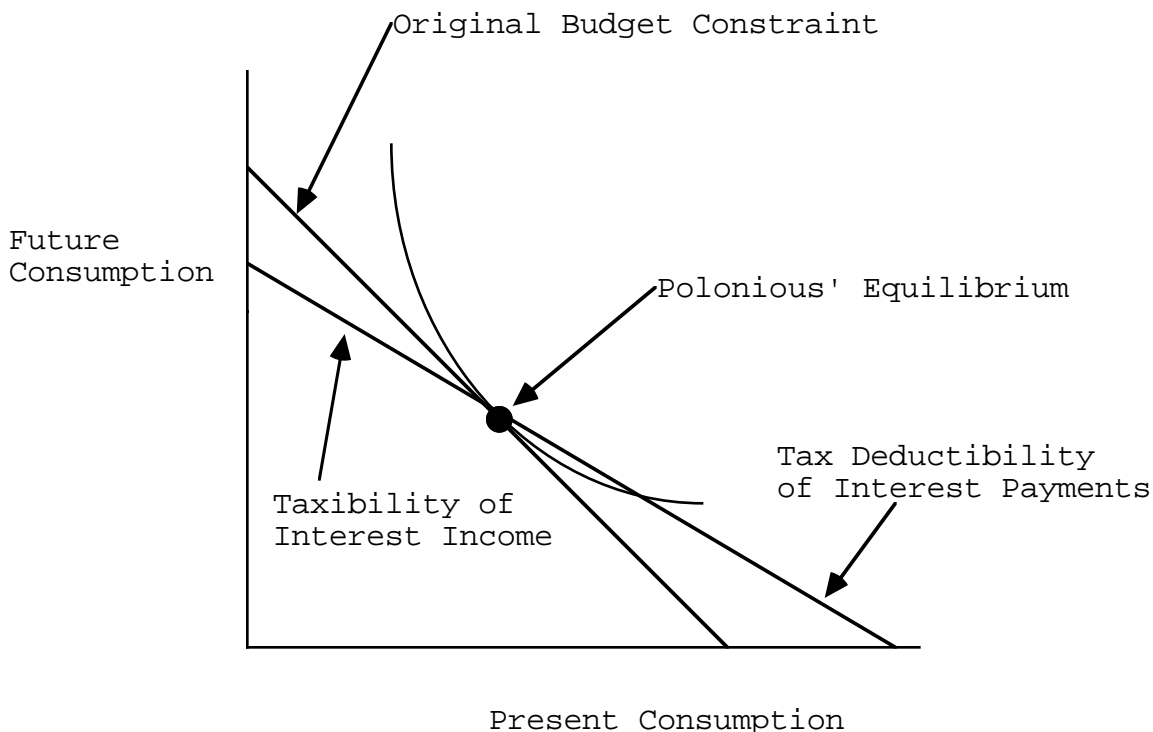
Part I. Multiple Choice (70 points):

1. Suppose $x = (x_1, x_2)$ and $y = (y_1, y_2)$. The nonsatiation principle tells us that when $x_1 > y_1$ and $x_2 > y_2$ then x is preferred to y . The correct answer is (c).
2. When one commodity is a bad and the other a good, you need more of the good to compensate you for consuming more of the bad. Thus, indifference curves slope up. The correct answer is (a).
3. Since E is optimal on the budget line and both A and C are on the budget line, E is preferred to A and C. B and D lie outside the budget set and on a higher indifference curve than E. The correct answer is (a).
4. At the optimal bundle, E, the MRS equals the relative price of custard tarts, 2. The bundle C is on the same indifference curve as E. Because of diminishing marginal rate of substitution, the MRS at C is less than 2. The correct answer is (c).
5. Total expenditure by consumers equals total revenue by the transit authority. When demand is inelastic expenditure increases with price. The correct answer is (b).
6. If farmers are earning higher profits then they must be getting higher revenues. Since the price has gone up, this must mean demand is inelastic. The correct answer is (c).
7. $E = \frac{\% \Delta q}{\% \Delta p} = - \frac{4\%}{2\%} = - 2$. The correct answer is (d).
8. The sign of the income effect depends on two things. First, the direction of the price change. If the price has gone up real income has gone down and vice versa. Second, whether the good in question is normal or inferior. The correct answer is (c).
9. Since the compensated demand curve measures just the substitution effect while the ordinary demand measures the sum of the substitution and income effects, the ordinary demand is more elastic than the compensated demand when the income effect supports the substitution effect. This happens when the good is normal. The correct answer is (b).
10. For a borrower, a fall in the interest rate is like a fall in the price of current consumption. When current consumption is normal, this means current consumption and, hence, the amount borrowed, will increase. The correct answer is (b).
11. As the wage increases, the intercept on the weekly consumption axis increases. The budget line gets steeper. If the labor supply curve slopes up, less leisure is consumed at higher wages. The correct answer is (b).

12. If the labor supply curve is perfectly inelastic, the amount of leisure consumed does not vary with the wage. The correct answer is (d).
13. The substitution effect says that as the wage goes up, less leisure and more consumption. The correct answer is (b).
14. An increase in the wage is an increase in real income. Assuming leisure is normal, the income effect implies more leisure. The correct answer is (a).
15. Mutual funds allow investors to diversify. Diversification is valuable when you are risk-averse. The correct answer is (b).
16. If insurance is biased in favor of the insurance company a risk-averse investor demands less than full coverage. The correct answer is (c).
17. Alex maximizes expected utility. The correct answer is (a).

Part II. Problem (30 points):

The ideas that I wanted you to recognize are first, tax deductibility of interest payments is like a fall in the interest rate, if you are a borrower, but has no effect on the interest rate, if you are a saver and second, tax on interest income is like a fall in the interest rate, if you are a saver, but has no effect on the interest rate, if you are a borrower. The entire problem asks whether Polonius is affected when the interest rate falls.



In the diagram, Polonius' Equilibrium under the original budget line is depicted. Since that equilibrium point involves neither borrowing nor saving, just consuming the endowment, this

point is unaffected by any of the tax policies and is still available to Polonius.

Under policy (i), the borrowing portion of the budget line becomes flatter. As you can see from the diagram, this new budget line cuts the indifference curve through Polonius' equilibrium. As a result, Polonius can do better by borrowing a little. Polonius is wrong in this case.

Under policy (ii), the saving portion of the budget line becomes flatter. The borrowing portion remains unchanged. The budget set actually shrinks in this case. However, the endowment point is still in the budget set. Since the endowment point was optimal in the larger budget set, it must still be optimal in the smaller budget set. In this case, Polonius is right.

The analysis for policy (iii) is the same as the analysis for policy (i).