**Multiple Choice**

1) d  2) c  3) b  4) c  5) a  6) c  7) b  8) c  9) a  10) d
11) b  12) b  13) a  14) a  15) a  16) b  17) c  18) d  19) a  20) b

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**Problem 1: Short Run and Long Run**

The cut taxes raises consumption and hence overall demand at any interest rate: this is a rightward shift in the IS curve and AD curve in the short run. In the long run, the rise in price lowers real money supply: this is the leftward shift in the LM curve in the long run.

b) **Short run:** Y rises, r rises, I falls, C rises, saving falls

c) **Long run:** Y original, r higher, I lower, C higher, saving lower

d) In brief, the long run result here is identical to the neoclassical model. The induced rise in consumption raises the interest rate, which reallocates the economy’s resources away from use for investment.

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**Problem 2: IS/LM**

A fall in money supply shifts the LM curve left, raising interest rates and lowering investment demand. This lowers output.

Y falls

r rises

b) The IS curve is steeper, so Y falls less and r rises more. Output falls less because investment demand is crowded out less, but the smaller fall income means money demand falls less, so the interest rate must rise more to clear the money market.

c) If investment were a positive function of income, the IS curve would be flatter. This means that as output falls, investment falls more, which would in turn make output fall more. Money demand then falls more, so the interest rate rises less and still can clear the money market.
d) If money demand falls more, then the interest rate doesn’t need to rise as much. So investment and output fall less.

e) Consumption now falls, so overall demand and output falls more. Interest rate again needs to fall less.

Problem 3: Consumption Theory

a) The intertemporal budget constraint is:
\[ C_1 + C_2/(1+r) = (Y_1-T_1) + (Y_2-T_2)/(1+r) \]
\[ 100 + 100/(1+r) = (145-65) + (145-20) /(1+r) \]
\[ 20 = 25/(1+r) \]
\[ r = (25-20)/20 = 0.25 \text{ or } 25\% \]

b) Because the government implicitly must raise taxes in period 2, there is no change in the household budget constraint, so there is no change in the level of consumption chosen by the household. Private saving simply rises by the amount of the tax cut, which cancels out the government dissaving, leaving total national saving unchanged.

c) The consumption behavior differs here in that it responds to permanent/lifetime income, not just current income. While the tax cut raises current disposable income, it does not affect permanent income in the intertemporal budget constraint. So consumption does not rise here, and national saving does not fall. In the Keynesian case, the rise in current disposable income raises consumption and lowers national saving.

Three reasons why this model may not apply in reality

1) Myopia: short-sighted. People may not understand the future implications of a tax cut today.

2) Borrowing constraints: Imperfect financial markets may limit people from borrowing to consume out of their permanent income – so they are limited to consume just their current income. In this case, the tax cut makes more of the intertemporal budget constraint feasible for the person, so they may change their consumption.

3) Short lifetime / future generations: If a person may die before the future period comes, he may not care about the tax rise that must come then. The tax cut then is a rise in his lifetime income.

d) Given that your consumption in period 1 exceeds your disposable income (Y1-T1), you are a borrower. So the rise in the interest rate makes you worse off, and has the following effects on consumption:

<table>
<thead>
<tr>
<th></th>
<th>C1</th>
<th>C2</th>
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<tbody>
<tr>
<td>substitution effect:</td>
<td>fall</td>
<td>rise</td>
</tr>
<tr>
<td>income effect:</td>
<td>fall</td>
<td>fall</td>
</tr>
<tr>
<td>net effect:</td>
<td>fall</td>
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