Economics 102
Introduction to Macroeconomics
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Midterm Exam 1 Solutions

	Form A	Form B
1.	e	b
2.	a	a
3.	d	e
4.	c	a
5.	c	b
6.	d	c
7.	e	e
8.	a	a
9.	c	b
10.	d	a
11.	b	b
12.	b	c
13.	d	b
14.	b	e
15.	a	a
16.	e	d
17.	a	c
18.	b	c
19.	c	d
20.	e	e
21.	a	a
22.	b	c
23.	a	d
24.	b	b
25.	c	b
26.	b	d

Part B: Written Answers(4 points each—8 points total for B1)

B1. Suppose you are given the following information about a closed economy:

Y = $10,500	Real GDP = Income
T = $1,000	Total Tax Collections
S = $1,600 + 0.1(Y-T) + 2000r	(Total) National Savings Function (includes government savings) (r = real interest rate)
I = $2,700 - 3000r	(Total) Investment Function
G = $800	Government Purchases

(a) Calculate the equilibrium real rate of interest in this economy.

To solve for the equilibrium interest rate, just solve for r after setting S=I, our equilibrium condition in the market for loanable funds.

S=I
1,600 + 0.1(Y - T) + 2000r=$2,700 - 3000r
1,600 + 0.1(10500-1000) + 2000r=$2,700 - 3000r
1,600 + 950 + 2000r=$2,700 - 3000r
-150=-5000r
r=.03, so we have an interest rate of 3%

(b) What is the total level of saving and investment at this rate of interest? How much of the total savings is comprised of government savings and how much is private savings?

S = $1,600 + 0.1(Y - T) + 2000r=1,600 + 0.1(10500- 1000) + 2000(.03)=2610
I = $2,700 - 3000r=2700-3000(.03)=2610
Government Saving=T-G=1000-800=200
Private Saving=Total Saving-Govt. Saving=2610-200=2410

So, 200/2610=7.6% is the percent of saving comprised of govt. saving
And 2410/2610=92.4 is the percent of saving comprised of private saving.

B2.(True/False/Uncertain—Explanation Determines your grade.)

4 points each—12 points total for part B2

(a) Bond prices increase with increases in interest rates.

This is false. To receive full credit you must show some form of the bond pricing relationship from the handout. For example, for a zero coupon bond in one period, where P_b is the price of the bond, M is the total return to the bond, and i is the nominal interest rate, the relationship is:

$P_b=M/(1+i)$

From this pricing relationship, one can see that if i goes up, P_b goes down (i.e. increasing the denominator will lower the value of the quotient).

(b) Mr. Soprano decides to take 300 dollars out of his wallet and deposit it into the local Bank of America. If the reserve requirement for banks in the US is 20%, then if we assume banks lend all excess reserves and every individual deposits her/his cash into the banking system, there will be a total change in the money supply of $1500.

This is also false. Mr. Soprano's cash is already counted in the money supply, so if an individual decides to place their cash into the banking system, then the total change in deposits will be different than the total change in the money supply. Our money multiplier is 5, so the initial transaction will change deposits by $1500 (5*$300). Since we know that Tony's cash is already counted in the money supply, then the total change in the money supply is $1200=$1500-$300.

(c) Private saving is always equal to investment if the government has a balanced budget.

Uncertain. This question depends on whether or not we have an open economy.

If we are in a closed economy, then when I=S, I=(Y-T-C)+(T-G). If the government budget is balanced, then (T-G)=0, which simplifies out identity to I=(Y-T-C), which states that investment is equal to private saving (Y-T-C). The result will be true in this case.

In an open economy we get a different result assuming NX ¹ 0, where I+NX=(Y-T-C)+(T-G), which simplifies to I+NX=(Y-T-C). So, with nonzero net exports, we get investment plus net exports is equal to private saving, so in this case, investment is not the same as private saving. The result will be false in this case. If we do not assume that net exports is nonzero, we can actually get investment equal to private saving, making the result true in the open economy case.