

Review Questions for Midterm 1
ECON 217 Money and Banking
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Spring 2001

Review Questions for Midterm 1

This document contains the questions and answer keys for previous midterm questions relevant to your upcoming midterm exam. It contains questions from the last four times I taught this course. It is suggested that you try these questions *before looking at the answers*. You may also wish to read through the directions of the exam now, to save time later:

Directions

- Do not put your name on any page except for this cover page.
- You have 50 minutes to complete this exam. Make sure to skim through the exam before you start so you can budget your time.
- The exam has a total of 100 points, and is worth 20% of your final grade. Point values for individual questions are given in parentheses after each question.
- Answer all of the questions.
- Unless otherwise directed, explain all your answers fully. In other words, define all terms you use, give all formulas used, and provide any graphs needed. Make sure your graphs are large enough to understand, and make sure that all your axes, curves, etc. are clearly labeled.
- The “check all that apply” questions may have one, several, or no correct answers. You do not have to explain your answers to check all that apply questions.
- Partial credit is freely available, so answer all questions to the best of your ability. Always provide at least some insight into the question.
- If you do not have a calculator, you may leave any of your numerical answers in the form of a fraction.
- If you think a question is unclear or ambiguous, please raise your hand and I will address your concern.

Spring 2000

1. Which of the following is an element of M2? Check all that apply. (5)

- Bankers acceptances
 Small time deposits
 Commercial paper
 Negotiable CDs
 Treasury bills

2. Which of the following is an example of direct finance? Check all that apply. (8)

- A bank arranges a mortgage agreement, and sells the mortgage agreement to an individual investor. *Since an individual investor holds the IOU issued by the borrower, it is direct finance. This type of example actually takes place; it is called "securitization".*
 Kevin buys 50 shares of Siebel Corp. on the secondary market with the help of his broker. *No finance is done; this is a secondary market transaction.*
 Fannie Mae Inc. sells bonds to the public and loans the funds individuals as mortgages. *From the description, Fannie Mae is a finance company, an intermediary; this is indirect finance.*
 A mutual fund buys shares of Apple Inc. *Mutual funds are intermediaries; this is indirect finance.*

3. On Thursday, February 17, 2000, Federal Reserve Board Chair Alan Greenspan indicated to Congress and the nation that the Fed would probably act to increase interest rates during the next six months. Assuming this would represent an unexpected increase in the real interest rate, rank the expected (percent) impact of this event on the prices for each of the following securities from 1 (largest) to 5 (smallest). If any are impossible to tell, leave it blank. (5)

The key was term to maturity: the longer the term to maturity, the larger the reaction.

- 5 Overnight repurchase agreements of Treasury bills
 1 Shares of common stock
 2 Treasury bonds
 3 Treasury notes
 4 Treasury bills

4 (a) In any market, what is the bid price of an asset? Check which most correctly defines the concept. (4)

- The posted price at which someone is offering to buy the asset
 The posted price at which someone is offering to sell the asset
 The price at which someone just bought the asset
 The price at which someone just sold the asset
 None of above

(b) In any market, which must be higher, the bid or ask price? Check which applies. (3)

- Bid price Ask price Either They must be equal

If bid > ask, someone is offering to buy the asset for more than someone else is offering to sell it. One should buy at the ask, and sell at the bid for an instant "arbitrage" profit. A bidder or asker would be a fool to post a bid or an ask such that the bid > ask.

(c) Define "liquidity" carefully. (6)

Answer: Liquidity is the ability to sell an asset quickly for its full value. "At full value" is a key part of the definition; nearly any asset can be sold for some value less than full value.

4 (d) Fully explain how the difference between the bid and ask price is a measure of the liquidity of an asset. (6)

Answer: If the ask price is the price one pays to buy an asset quickly, and the bid price is the price at which one sells an asset quickly, the difference between the two measures liquidity. This “spread” is how much value one loses if one sells an asset one just bought, essentially the definition of liquidity.

5. Suppose a one year zero coupon bond from Switzerland with a face value of 10,000 Swiss francs (SF) costs 9,524 SF. Also suppose that currently, the exchange rate for the Swiss franc in terms of the Canadian dollar (C\$) is 0.25 C\$/SF. In one year, the exchange rate is expected to be 0.30 C\$/SF. How much would you expect a one year Canadian bond with a face value of 5,000 C\$ to cost? Assume the bonds have the same liquidity, risk, and information costs. Show all your work and explain your answer. (16)

Answer: This is a complex, multi-part problem. The goal is to find the price of a Canadian bond. To determine this, you need to know the bond’s interest rate. The Canadian bond should pay the same return as the Swiss bond, once expected changes in the Swiss-Canadian exchange rate are taken into account.

Step 1: Find the interest rate on the Swiss bond.

$$P = F/(1+i) \Rightarrow \text{SF } 9,524 = \text{SF}10,000/(1+i) \Rightarrow i = \text{SF}10,000/\text{SF}9,524 - 1 = 5\%$$

Step 2: Find the interest rate on the Canadian bond using interest rate parity, $i_f = (EX^e - EX)/EX$. Assume that i is the interest rate on the Swiss bond, and i_f is the interest rate on the Canadian bond. Then, $(EX^e - EX)/EX$ is the expected appreciation of the Swiss franc.

$$(EX^e - EX)/EX = (0.30\text{C}\$/\text{SF} - 0.25\text{C}\$/\text{SF})/0.25\text{C}\$/\text{SF} = 20\% \Rightarrow 5\% = i_f - 20\% \Rightarrow i_f = 25\%$$

Step 3: Find the price of the Canadian bond.

$$P = F/(1+i) = \text{C}\$5,000/(1+0.25) = \text{C}\$4000$$

6. Consider a three year coupon bond with a face value of \$100,000 and an annual coupon payment of \$5,000. The current price is \$90,000.

(a) What is the approximate interest rate on the bond? Provide an equation and make the calculation. (6)

$$\text{Answer: } i_{\text{approx}} = C/P + [(F-P)/P](1/n) = \$5,000/\$90,000 + [(\$100,000-\$90,000)/\$90,000](1/3) = 9.3\%$$

(b) What is the coupon rate of the bond? Provide an equation and make the calculation. (4)

$$\text{Answer: } C/F = \$5,000/\$10,000 = 5\%$$

(c) Provide an equation that defines the exact interest rate on the bond. Do not solve this equation. (6)

$$\text{Answer: } P = C/(1+i) + C/(1+i)^2 + C/(1+i)^3 + F/(1+i)^3 \Rightarrow$$

$$\$90,000 = \$5,000/(1+i) + \$5,000/(1+i)^2 + \$5,000/(1+i)^3 + \$100,000/(1+i)^3 \text{ (Solve for } i)$$

7. A share of common stock issued by Dr. Worm Drum Co. just made its annual dividend payment, of \$1.25. Dividends are expected to grow at a rate of 3% in the future. The rate of return (interest rate) on the stock is 9%.

(a) What is the price today of one share of the Dr. Worm stock? Show your work. (5)

$$\text{Answer: } P = D(1+g)/(i-g) = \$1.25(1+0.03)/(0.09-0.03) = \$21.46 \text{ (rounded to the nearest penny)}$$

(b) If you buy the share of stock today and sell it in one year, what is the holding period yield? Provide an equation and calculation or logic to fully explain your answer. (7)

Answer: There are two answers. The easy way is to note it is simply $i=9\%$. The interest rate is the annual rate of return you get for holding a stock as long as expectations hold true. The complicated way is using the holding period yield formula. First determine the price of the stock in one year. In one year, the stock will make a dividend payment of $(1+0.03)1.25 = \$1.29$ (rounded to the nearest penny) Therefore, the stock will value at $1.29 \cdot (1+0.03)/(0.09-0.03) = \22.10 (using unrounded numbers; if your calculations are based on rounded numbers, you get \$22.14.) The holding period yield is:

$$R = D/P_{\text{purchase}} + (P_{\text{sale}} - P_{\text{purchase}})/P_{\text{purchase}} = 1.2875/\$21.46 + (\$22.10-\$21.46)/\$21.46 = 9\% \text{ (using unrounded numbers; with rounding you would get } 9.2\%)$$

8. A bond issued by a company named Factory Showroom, Inc. is now trading at an interest rate of 12%. However, there is a 5% chance that Factory Showroom will go bankrupt; in such a case, the rate of return would be -40%. If the inflation rate is 3%, and the tax rate is 1/3, what is the expected after tax real rate of return? Assume there is no tax deduction (but no taxes are paid) for losses. Show all your work clearly. You will not get full credit without showing your work. (11)

Answer: The basic idea is to determine the after tax real rate of return for each state (the nominal rate less taxes paid less inflation) and multiply this return by the probability of each state and sum the results. This is easiest shown on a table similar to one we used in class:

State	Probability of state	After tax real return in state	(Pr)·(return)
No bankruptcy	0.95	$12\%(1-1/3)-3\%=5\%$	4.75%
Bankruptcy	0.05	$-40\% - 3\% = -43\%$	-2.15%
Expected after tax real rate of return:			2.60%

Note that if you claimed a tax deduction for the loss (e. g., the after tax nominal rate was $-40\%(2/3) = -26.7\%$), no credit was deducted.

9. Which of the following is true about risk? Check all that apply. (8) *None*

- Diversification decreases the riskiness of a portfolio, but always at the expense of a decreased expected average rate of return. *You can decrease risk without sacrificing return.*
- Risk is defined as the probability that an asset will not make at least some of its promised payments. *Risk is also due to inflation and real interest rate changes.*
- The risk premium measures systematic risk but not idiosyncratic risk. *Since T-bonds contain systematic risk, the risk premium cannot measure systematic risk.*
- Risk averse investors always prefer safe assets to risky assets. *Only if they have the same expected rate of return; they might prefer a risky asset with a higher expected rate of return.*

Spring 1999

1. Classify the following securities as being in M1, M2, and/or M3. Place check marks where appropriate. (You do not have to explain.) (6)

M1	M2	M3	
<u>X</u>	<u>X</u>	<u>X</u>	Travelers checks <i>Everything in M2 is in M2 and M3</i>
_____	_____	_____	Bankers acceptances <i>In L</i>
_____	_____	<u>X</u>	Term Eurodollar deposits
<u>X</u>	<u>X</u>	<u>X</u>	Interest bearing checking accounts

2. If the inflation rate were to rise, which of the following would likely happen as a result, all else held constant? Check all that apply. (8)

- _____ The real exchange rate would fall. *As P increases, $EX P/P_w$ increases*
- _____ The nominal interest rate would fall. *$i = r + \text{inflation}$*
- X The price of discount bonds would fall. *As i increased*
- X The real after tax rate of return would fall, when taxes are on nominal returns *Taxes rise*

3. Which of the following would likely cause the exchange rate for the Virgin Islands Dollar (V\$) to appreciate in relation to the Jamaican dollar (J\$)? Check all that apply. (6)

- _____ The Jamaican government buys V\$ (in order to affect its own exchange rate). *This would be revaluing, not appreciating*
- X The growth rate of Jamaica rises above the growth rate of the Virgin Islands. *Demand for VI imports (in Jamaica) and thus V\$ increases faster than demand for Jamaican exports (and thus J\$) to VI*
- X The Virgin Islands places quotas on Jamaican imports, which restricts the amount of Jamaican goods that can be imported. *Demand for J\$ falls while demand for V\$ stays the same*

4. When the exchange rate of a country appreciates, who is hurt? Name one general group, and briefly explain why they are hurt. (8)

Exporters in the country whose currency appreciates. If a currency appreciates, it costs more foreign currency to buy that currency, and thus more foreign currency to buy that country's exports. Demand for that country's exports fall as a result. Importers in the other country will also be hurt, as they have to pay more for imports.

5. Some American businessmen worry that the European Monetary Union will give European businesses an advantage over American businesses in international trade.

(a) Is this likely true for, say, a U. S. brewery that is competing with a French brewer in exporting beer to Belgium (Belgium and France are both in the European Monetary Union)? Give (and explain) one reason why the French brewer has an advantage, or briefly explain why not. Assume the quality of the products are about equal, and ignore transportation costs. (7)

Yes, the French brewer has an advantage (if they can sell for the same price). The U. S. brewer (and Belgian beer consumers) have to worry about the dollar-euro exchange rate fluctuating. If the dollar appreciates, the U. S. brewer will be able to sell less beer; if the dollar depreciates, it can sell more beer. Thus, the U. S. brewer faces risk. One would expect that the U. S. brewer will charge a higher price for beer to compensate for this risk (or be more nervous), causing it to lose demand. In addition, the U. S. brewer has to exchange the euros it earns for dollars, at a cost (a fee), or force French beer drinkers to do so. This also raises the cost for the U. S. brewer.

(b) Does the answer you gave in (a) apply to the U. S. brewer who is competing with the French brewer in selling beer to Slovenia, which is not in the European Monetary Union? Briefly explain. (4)

No. Both have the same costs as both must contend with exchange rate risk and exchanging currencies.

6. Currently, 1 year bonds in the U. S. pay a 6% interest rate. Bonds with the same risk, liquidity, information costs, and other attributes in Luxembourg also pay a 6% interest rate.

(a) You read that the exchange rate for the dollar in terms of Luxembourg Francs (LF) is 40 LF/\$. What do you expect the exchange rate for the dollar in terms of Luxembourg Francs to be in one year? Explain, and show all your work. (6)

$i = i_f - (EX^e - EX)/EX$. Since $i = i_f = 6\%$, $(EX^e - EX)/EX = 0$, so $EX^e - EX = 0$, or $EX^e = EX$. The exchange rate is not expected to change. $EX^e = 40\text{LF}/\$$.

(b) Suppose the Grand Duke of Luxembourg increases interest rates in Luxembourg to 9%. What would you expect would happen to the exchange rate for the dollar in terms of Luxembourg Francs in the short run? (You do not have to explain.) (5)

 X Increase Decrease Not be affected *To keep $i = i_f - (EX^e - EX)/EX$ when $i_f = 9\%$ and $i = 6\%$, EX today will have to decrease. (A falling EX makes the RHS of the equation fall.) Another way to look at it is the demand for Luxembourg's bonds will rise, causing the demand for LF to rise, making the value of the dollar vs. the LF fall. Remember that EX^e does not change; it is determined by factors like relative growth rates, inflation, productivity, etc.*

(c) Again consider the event in (b). After the event in (b) occurs (and the exchange rate adjusts according to your answer), what would you expect would happen to the exchange rate for the dollar in terms of Luxembourg Francs over the next year? (You do not have to explain.) (4)

 X Increase Decrease No change *Now EX is less than EX^e , so EX will rise over the next year. It is the rising value of the dollar that makes U. S. assets equally attractive to investors.*

(d) Suppose the Grand Duke is overthrown by a coup. This has made the Luxembourg bond more risky. If the interest rate stays at 9%, how would you expect this event to affect the exchange rate for the dollar in terms of Luxembourg Francs in the short run (compared to your answer in (b))? (You do not have to explain.) (3)

 X Increase Decrease Not be affected *Now the demand for Luxembourg's bonds fall, and demand for U. S. assets rise, making the dollar more valuable. Because LF assets are more risky, the LF has a "currency premium" so that $i = i_f - (EX^e - EX)/EX - h_{f,d}$, $h_{f,d} > 0$.*

7. Which of the following are surplus units? Check all that apply. (6)

 X Tom, who earned \$40,000 in income; spent \$30,000 on food, rent and other goods and services; and paid \$12,000 back in car and school loans. He increased his Visa card balance by \$2,000 to meet all these financial demands. *Since Tom paid back more funds than he borrowed, he is a surplus unit. Another way to look at it is that he earned more than he spent on goods and services.*

 X The U.S. government; Congress sold \$10 billion in bonds to the public to finance defense expenditures, and the Social Security Administration (also part of the government) purchased \$25 billion in bonds. *The U. S. government saved more than it borrowed, so it is a surplus unit.*

8. Which of the following are depository institutions? Check all that apply. (8)

 Mutual funds *Intermediary, but not depository*

 X Commercial banks *Only banks and "thrifts"*

 Finance companies *Intermediary, but not depository*

_____ Stock and bond dealers *Market specialist, not even an intermediary*

9. After you graduate, an old college friend calls you up and offers to sell you a Treasury bond that matures in 2 years with a face value of \$5000 and makes two annual coupon payments (the first to be made in 1 year) of \$100 for a “special” price of \$4500.

(a) Set up, but do not solve, an equation that will determine the exact annual interest rate on the bond. (6)

$$P = C/(1+i) + C/(1+i)^2 + F/(1+i)^2 \Rightarrow \$4500 = \$100/(1+i) + \$100/(1+i)^2 + \$5000/(1+i)^2$$

(b) You happen to know that currently, 2 year Treasury bonds pay a return of 5%. Should you buy the bond from your friend? Use a method other than solving your equation in (a) to figure out the best choice. (An approximate answer is acceptable.) (6)

There are many ways to answer this. Method 1: compute the expected return of your friend's bond offer: $i_{approx} = C/P + [(F-P)/P] \times (1/n) = \$100/\$4500 + [(\$5000 - \$4500)/\$4500] \times (1/2) = 2.2\% + 5.5\% = 7.7\%$. Method 2: compute the PV of your friend's bond payments at a 5% rate: $P = \$100/(1 + 0.05) + \$100/(1+0.05)^2 + \$5000/(1 + 0.05)^2 = 4740.63$. The market price of the bond would be \$240 more than your friend is selling it for; you should buy the bond and sell it to the market for a \$240 profit. Method 3: Find what \$4500 returns at 5% over two years: $FV = 4500(i+0.05) = \$4961.25$ Investing \$4500 at a 5% interest rate wouldn't earn all the face value or any of the coupon payments of your friend's bond.

10. In class, we learned a formula to compute the price on a share of stock. If interest rates rise, what will happen to stock prices, all else equal? (You do not have to explain.) (4)

 X fall _____ rise _____ not be affected $P = D(1+g)/(i-g)$

11. Which of the following securities would you expect to have a higher interest rate than a 5 year zero coupon U. S. Treasury Note with a face value of \$10,000? Check all that apply. (5)

 Treasury Bills (zero coupon) with a face value of \$10,000 *Bills have a shorter maturity*
 X Treasury Bonds (zero coupon) with a face value of \$10,000 *Bonds have a longer maturity*
 Overnight repurchase agreements (of 5 year Treasury securities) *ORPs have a shorter maturity*
 X 5 year zero coupon corporate bonds with a face value of \$10,000 *More default risk*
 X 5 year zero coupon U. S. Treasury Notes with face value of \$100,000 *Less divisibility*

12. In the 1980s, Michael Milken make enormous amounts of money by setting up a “junk bond” market. Before Milken, there was no organized secondary market for trading high risk corporate bonds.

(a) Milken sold the idea of junk bonds by pointing out that the expected after tax real return on junk bonds is higher than on lower risk corporate bonds. Is this to be expected, or is it likely that Milken discovered an unusual profit opportunity? (You do not have to explain.) (4)

 X To be expected _____ Unusual profit opportunity *Risk averse investors demand the expected return be higher for risky assets. Milken sold it as an unusual profit opportunity, but it wasn't necessarily so!*

(b) After Milken set up the market, what would you expect to happen to the price of junk bonds? (You do not have to explain.) (4)

 X rise _____ fall _____ remain the same *Rise; greater marketability increases liquidity which is more desirable. The interest rate falls as the price rises.*

Spring 1997

1. (a) Give the definition of an overnight repurchase agreement (RP). (6 points)

Answer: An RP is a contract where one individual (usually a bank) sells a security (usually a Treasury bond) to another individual (usually a large corporation) at the end of the business day, and has agreed to purchase back the security the next morning (before the opening of the business day) at a prespecified price, above the initial selling price. The bank withdraws the funds to purchase the security from the corporation's demand deposit account, and places funds in the corporation's account the next morning to cover the repurchase price.

(b) How can banks use RPs to get around interest rate restrictions on demand deposits? Explain. (5)

Answer: RPs allow the bank to give interest to its large customers. The difference between the initial selling price and repurchase price (a capital gain) is interest. However, the interest paid is not officially on the demand deposit. Note that since the funds are taken out only overnight, the depositor (purchaser of the RP) loses no liquidity – they can essentially earn interest on their demand deposit without sacrificing its pure liquidity.

2. Rank the following securities from longest maturity (5) to shortest maturity (1). Do not explain. (5)

- 2 U. S. Treasury bills (short term)
 4 U. S. Treasury bonds (long term)
 3 U. S. Treasury notes (intermediate term)
 5 Shares of stock (infinite maturity)
 1 Interest-bearing checking account balances (zero maturity)

3. True or false and explain briefly: M2 only contains assets that have zero maturity. (6)

Answer: False. M2 contains small time deposits, or CDs, which have a maturity that may be several weeks, or even several months or more than a year. "MZM" (from a homework question) includes only zero maturity assets.

4. Lando needs \$2 million to finance a new mine at Cloud City. He has two options: (i) hire and investment banker to help him sell a two year bond with a face value of \$2.2 million and two annual coupon payments of \$100,000, or (ii) borrow \$2 million from Palpatine Bank for two years at 8% interest, making the full interest and principal payment in two years to the bank. Use this information to answer parts (a) - (d).

(a) Which is direct (rather than indirect) financing? Check all that apply. (Neither may be correct.) (6)

 X The bond *If Lando sells a bond, it is direct financing, as the lender will get the security issued by Lando.*

 The bank loan *The lender (depositors) get a different security than issued by Lando (the loan).*

(b) Set up (but do not solve) a formula that allows you to exactly calculate the interest rate of the bond, assuming it does indeed sell for \$2 million. Make sure to explain all the terms in your formula. (7)

Answer: Use the present value formula: $P_{bond} = C/(1+i) + C/(1+i)^2 + F/(1+i)^2$; plugging in the values: (\$2 million) = (\$0.1 million)/(1+i) + (\$0.1 million)/(1+i)² + (\$2.2 million)/(1+i)²

Solving for i will yield the interest rate. However, it is not possible to do so without a computer.

(c) Give a formula that allows you to approximate the interest rate on the bond, again assuming it sells for \$2 million. Make sure to explain all terms in your formula. Solve, showing all your work. (6)

Answer: $i_{approx} = (\text{Annual payment})/(\text{Current price}) +$
 $[(\text{Final Payment} - \text{Current price})/(\text{Current price})](1/\text{number of years until maturity})$
 $i_{approx} = (0.1/2) + [(2.2-2)/2](1/2) = 0.05 + 0.05 = 0.10 = 10\%$

(d) Suppose Lando decided to sell the bond, and Boba Fett buys it for \$2 million. One year later, just after the first coupon payment was made, Cloud City underwent a hostile takeover. Darth Vader, the new CEO, paid Boba \$1.5 million in exchange for the bond as part of the restructuring. Calculate Boba's total rate of return, or holding period yield for the year. (6)

Answer: Total Rate of Return = $R = (\text{Annual payment})/(\text{Purchase price}) +$
 $(\text{Selling price} - \text{Purchase price})/(\text{Purchase price})$
 $R = (0.1/2) + (1.5 - 2)/2 = 0.05 - 0.25 = -0.20 = -20\%$

5. Which of the following individuals will be hurt if inflation unexpectedly rises this year from 3% to 4%? Check all that apply. (10)

- Jerry, who just loaned George \$1,000 for one year at a fixed 5% nominal interest rate. *His real interest return fell from 5% - 3% = 2% to 5% - 4% = 1%*
- Kosmo, who just bought a discount bond from Kenny Rogers Roasters Inc. for \$1,000. *The real value of the discount bond falls with inflation*
- Elaine who just financed a new Urban Sombrero factory by borrowing \$8million from a bank for five years at a fixed 8% nominal interest rate. *Elaine's real interest payments fell 1%*
- Newman, who keeps his savings in U. S. government inflation-indexed bonds that pay a rate of return fixed by 3.5% above the inflation rate (he pays taxes on his nominal interest returns) *His taxes went up with inflation*
- J. Peterman, who has a fully diversified portfolio of coupon bonds. *Diversifying will not protect him from systematic risk*

6. Identify the following as being in either the capital account (KA) or current account (CA) of the U. S., and as a credit (+) or a debit (-) by circling the proper symbols. (8)

- KA CA + ± Netscape Inc., based in Illinois, buys all the shares of stock of Nutscape, a Brazilian competitor. *Shares are assets, and Netscape paid out money*
- KA CA ± - Lars, who lives in Norway, buys 100 Tickle Me Elmo dolls, which are produced in the U. S. *Dolls are goods, and money came into U. S. possession*
- KA CA + ± Matt buys a Volkswagen Passat, which is produced in Germany. *Cars are goods, and Matt paid out money*
- KA CA ± - Ben and Jerry's Inc. sells all its ice cream stands in Russia to a Russian ice cream company. *Stands are assets and B&Js earned money.*

7 (a) Which of the following will cause the (nominal) exchange rate for the Barbados dollar (B\$) in terms of the Jamaican dollars (J\$) depreciate in the short and/or long run? Check all that apply. (9)

Note: interest rate parity shows that anything that affects the long run affects the short run in the same way. 1 point was awarded to every answer that had a short run change when a long run change was marked (even if the long run change was wrong).

Short run Long run

- | | | |
|--------------|--------------|--|
| <u> X </u> | <u> X </u> | The people of Barbados go through a Bob Marley fad, and import more CDs from Jamaica. <i>Supply of B\$ increases</i> |
| _____ | _____ | The growth rate of income in Jamaica is higher than in Barbados. <i>Demand for B\$ increases more than supply of B\$</i> |
| <u> X </u> | <u> X </u> | The inflation rate in Barbados is higher than in Jamaica. <i>Demand for B\$ decreases and supply of B\$ increases</i> |

(b) Who will benefit from the depreciation of the Barbados dollar versus the Jamaican dollar? Check all that apply. (6)

- _____ Barbadian consumers *The B\$ buys fewer J\$, and less Jamaican stuff. Further, Barbadian producers will sell more to Jamaica, and less in Barbados*
- _____ Barbadian producers of goods that are exported to Martinique (another country) *Not relevant*
- X Jamaican candy businesses who rely on imports of Barbadian sugar cane for production *The B\$ gets cheaper, and thus, Barbadian sugar gets cheaper*

(c) Suppose the expected depreciation of the Barbados dollar relative to the Jamaican dollar is 5%. Currently, a Barbadian security called the “Anton Bond” pays a 6% nominal interest rate. Calculate the interest rate for a security in Jamaica that is otherwise identical to the Anton Bond. Show any equation you use. (6)

Answer: Interest rate parity states that $i = i_f - (EX^e - EX)/EX$, so $i_f = i + (EX^e - EX)/EX = 6\% - 5\% = 1\%$

8. In the early 1990s, the U. S. Treasury department started selling fewer 30 year bonds and instead more 1 and 10 year bonds. At the time, the Treasury claimed that this would lower the government’s interest costs. Is this claim likely valid? Explain **fully**. Hint: use the concepts of asset demand (portfolio choice) and risk aversion in your answer. (14)

Answer: Interest rate risk increases as the term to maturity of a security increases. That is, when the interest rate changes, the prices of longer term securities changes more than shorter term securities. To see this, is to note that if you buy a 30 year bond, you have locked yourself in to nominal payments for 30 years. If interest rates rise, you’re still stuck with 30 years of the old payments, and can’t take advantage of the new higher interest rates. With a 1 or 10 year bond, you can take advantage of the new rates after the bonds mature. Thus, the present value of 30 year bonds is more sensitive to interest rate changes than 1 or 10 year bonds. (Note that if inflation or interest rates fall, being locked in to a 30 year bond is good.) Thus, 30 year bonds are more risky than 1 or 10 year bonds, where risk is defined as the probability the price will rise or fall, and by how much the price may rise or fall. A risk averse investor is someone who requires compensation (in terms of a higher expected return) for holding extra risk. Since investors are generally risk averse, they will not choose to hold a 30 year bond versus a 1 or 10 year bond that pay the same interest rate. The government will have to pay a higher interest rate on the 30 year securities than on the 1 or 10 year securities in order for any investors to buy the 30 year securities. Thus, the government can save itself interest costs by selling more short and intermediate term securities in place of long-term securities.

Spring 1996

1. Sometimes, people deride financial intermediaries as being a drain on society, taking up resources but producing nothing. As money and banking students you know this is not true (right????). What is the main function (and contribution) of financial intermediaries? Explain. (7)

Answer: Financial intermediaries bring together borrowers and savers, lowering the search costs of both. They attract savers because they find borrowers for lenders, offer information to lenders on prospective borrowers, allow many lenders to share the risk of single risky individual borrowers, and provide liquidity to lenders. Likewise, they attract borrowers by finding lenders for borrowers, and in fact increase the number of lenders by providing the services of information, liquidity, etc. Because they increase the amount of borrowing and lending, they increase the amount of investment, and thus output and output growth.

2. Suppose the following data describes the total value of assets in the economy

\$1 million in currency held by households and firms ($M1, M2, M3, L$)

\$10 million in overnight RP's ($M2, M3, L$)

\$100 million in checking accounts ($M1, M2, M3, L$)

\$200 million in savings accounts ($M2, M3, L$)

\$20 million in commercial paper (held by households) (L)

\$2 million in money market mutual funds held by households ($M2, M3, L$)

\$5 million in corporate stock held by households (*none*)

Calculate $M1, M2, M3$ and L below (making it clear how you arrived at your answer). (10)

$M1 = \$101M, M2 = \$313M, M3 = \$313M, L = \$333M$

3. Money Market Mutual Funds (MMMF's) pool together investors' money to purchase Money Market securities (and only Money Market securities). Which of the following assets is it possible for a MMMF to buy? Check all that apply. (5)

Answer: Check all securities with maturity of less than one year: T-bills, Commercial paper, and Negotiable CD's.

4. Which of the following is likely to make the exchange rate for the U. S. dollar (\$) in terms of the Deutsche Mark (DM) (the currency of Germany) appreciate? Check all that apply. (6)

_____ The U. S. government purchases \$5 million dollars (in exchange for DM) to directly affect the exchange rate. *This will revalue, but not appreciate the dollar.*

_____ The inflation rate in the U. S. is greater than the inflation rate in Germany *This will cause the dollar to depreciate.*

_____ Nominal interest rates in the U. S. fall after the Fed conducts an expansionary monetary policy. *This will cause the dollar to depreciate.*

5. It was recently reported that last year the Current Account Balance rose, although it was still negative. Given this, which of the following statements must be true? Check all that apply. (6)

_____ The Capital Account must also have risen *The capital Account must have fallen as $CA + KA = 0$*

_____ Americans must (net) purchased more foreign assets than foreigners (net) purchased in the U. S. *When the $KA > 0$, (as $CA > 0$), there must be a capital inflow: foreigners are purchasing more US assets than Americans purchasing foreign assets.*

_____ Imports into the U. S. must have fallen *Although imports might have fallen, the CA will get larger if exports increase as well.*

6. Which describes the European Monetary System (EMS)? Check all that apply. (4)

_____ Members of the EMS have the value of their currencies fixed on a gold standard *Members of the EMS fix their value relative to each other, but all currencies are fiat.*

_____ The British Pound is the most important currency, as Britain has the lowest inflation rate *The German Mark (DM) is the most important currency because Germany has the lowest inflation rate.*

8. Consider a coupon bond that has three years to maturity, makes a \$75 coupon payment each year, has a \$1500 face value, and currently sells for \$1600. Use this information to answer parts (a) - (c) below.

(a) Set up the calculation to figure out the yield to maturity, but do not calculate this yield. (6)

Answer: The present value formula is needed to find the yield to maturity, where the price equals the present value. The formula is:

$$P = \frac{C}{(1+i)} + \frac{C}{(1+i)^2} + \frac{C}{(1+i)^3} + \frac{F}{(1+i)^3}, \text{ filling on the}$$

appropriate values: $\$1600 = \frac{\$75}{(1+i)} + \frac{\$75}{(1+i)^2} + \frac{\$75}{(1+i)^3} + \frac{\$1500}{(1+i)^3}$

(b) Calculate the coupon rate of this bond. (4)

Answer: The coupon rate is C/F , or $\$75/\$1500 = 0.05 = 5\%$.

(c) Is the coupon rate greater than or less than the yield to maturity? Explain. (5)

Answer: The yield to maturity includes returns from coupon payments, and returns for capital gains. Here, there is a capital loss, which brings down the yield to maturity. Thus, the yield to maturity is less than the coupon rate.