Prep Questions for Exam #2: Answers

1. *Briefly explain the difference between adverse selection and moral hazard. How does the government help reduce the adverse selection and moral hazard problems for publicly-traded companies? How do financial intermediaries reduce the adverse selection problem without generating a free-rider problem?*

   Adverse selection is an asymmetric information problem that occurs *before* a transaction takes place, while Moral hazard is an asymmetric information problem that occurs *after* a transaction takes place. The government reduces the adverse selection and moral hazard problems in the securities market by requiring publically-traded firms to provide certain information about themselves free of charge. Banks avoid the free-rider problem (non-paying people who use information other people have paid for.) by directly lending to firms and consumers with good credit risks.

2. *What are collateral and restrictive covenants, and how do they reduce the moral hazard problem in debt contracts?*

   Collateral is property pledged to the lender in the event the borrower defaults. It reduces the consequences of the moral hazard problem by imposing a greater cost on the borrower in the event of a default. Restrictive covenants are provisions in debt contracts that discourage undesirable behavior, encourage desirable behavior, keep collateral valuable, and provide information to the lender. These provisions reduce the moral hazard problem by encouraging the borrow to act in the lender's best interest and providing the lender with more information on the activities of the borrower.

3. *Consider a bank with the following balance sheet (in millions of $). You may assume the reserves-to-deposits ratio is 10% and the bank's net after-tax profits are $5 million.*

Assets		*Liabilities/Equity*	
Reserves	*30*	*Checkable deposits*	*160*
Business loans	*240*	*Nontransaction deposits*	*200*
Residential mortgages	*75*	*Borrowings (other banks)*	*15*
U.S. Treasury securities	*55*	*Borrowings (the Fed)*	*5*
		Bank equity	*20*

a. *Calculate the equity multiplier for this bank.*

Equity multiplier (EM) = assets/bank capital

Since total assets equal 400 and bank capital equals 20,

$$EM = 400/20$$
$$EM = 20$$

b. *Calculate the return on equity for this bank.*

Return on equity (ROE) = net profit after taxes/bank capital

Since net profit after taxes equal 5 and bank capital equal 20,

$$ROE = 5/20$$
$$ROE = 0.25$$

c. *Calculate the return on assets for this bank.*

Return on assets (ROA) = net profit after taxes/total assets

Since net profit after taxes equal 5 and total assets capital equal 400,

ROA = 5/400
ROA = 0.0125

d. *Calculate the leverage ratio for this bank.*

Leverage ratio = bank capital/total assets

Since bank capital equals 20 and total assets equal 400,

Leverage ratio = 20/400
Leverage ratio = 5%

e. *Calculate the Basal Accord's risk-weight measure of assets for this bank.*

RWA = 0.0*R&GS + 0.2*B + 0.5* MB&RM + 1.0*L

Since reserves and government securities (R&GS) equal 85, claims on banks in OCED countries (B) equal 0, municipal bonds and residential mortgages (MB$RM) equal 75, and loans (L) equal 240,

RWA = 0*85 = 0.2*0 + 0.5*75 + 1*240

RWA = 0*85 = 0.2*0 + 37.5 + 240

RWA = 277.5

f. *Use a T-account to show how the balance sheet changes when $1 million is deposited into checkable deposits.*

Assets		Liabilities	
Reserves	+ 1 million	Check. Dep.	+ 1 million

g. *Use a T-account to show how the balance sheet changes when the bank makes a $3 million business loan.*

Assets		Liabilities	
Loans	+ 3 million		
Reserves	– 3 million		

h. *Use a T-account to show how the balance sheet changes when the bank writes off $5 million in residential mortgages.*

Assets		Liabilities
Mortgages	– 5 million	Bank Equity – 5 million

i. *Suppose reserves and U.S. Treasury Securities are short-term assets, while checkable deposits and borrowings from the Fed and other banks are short-term liabilities. If the interest rate rises by 2%, how much do bank profits change?*

$$\Delta \text{Profits} = [\text{Assets(st)} - \text{Liabilities(st)}] \times \Delta R$$

Since short-term assets equal 85, short-term liabilities equal 180, and the change in the interest rate (ΔR) is 2%,

$$\Delta \text{Profits} = [85 - 180] \times 0.02$$
$$\Delta \text{Profits} = -95 \times 0.02$$
$$\Delta \text{Profits} = -1.9 \text{ million}$$

j. *If the average duration of a bank's assets is 4 years and the average duration of the bank's liabilities is 2 years, how much does the bank's market value change when the interest rate rises by 2%.*

$$\Delta\text{Market value} = [(\text{Assets}\times D_A) - (\text{Liabilities}\times D_L)]\times[-\Delta R]$$

Since assets equal 400, liabilities equal 380, average duration of assets (D_A) equal 4, average duration of liabilities (D_L) equal 2, and the change in the interest rate (ΔR) is 2%,

$$\Delta\text{Market value} = [(400\times4) - (380\times2)]\times[-0.02]$$

$$\Delta\text{Market value} = [1600 - 760]\times[-0.02]$$

$$\Delta\text{Market value} = 840\times[-0.02]$$

$$\Delta\text{Market value} = -16.8 \text{ million}$$

4. *Name and briefly describe the two key financial innovations in the 1960s that led banks to place more emphasis on liability management.*

   The two key financial innovation in the 1960s that precipitated a greater emphasis on liability management where: 1) Large banks developed new financial instruments like negotiable CDs that gave banks a way to acquire new funds; and 2) The development of the overnight lending market (ex., the federal funds market) gave banks an ability to immediately raise funds to meet their reserve needs.

5. *Discuss compensating balances and how they are a form of collateral.*

   Compensating balances are a form of collateral in which the bank requires the borrower to keep a minimum amount in a checking account with the bank in exchange for a loan.

6. *Name and briefly describe the two ways the Federal Deposit Insurance Corporation (FDIC) can respond to an insolvent bank. How does FDIC insurance impact the adverse selection and moral hazard problems of a financial institution? If the insolvent bank is "too big to fail," which of the two methods does the FDIC use?*

   The FDIC can respond to a bank by either the payoff method or the purchase and assumption method. The payoff method allows the bank to fail and then the FDIC immediately pays off the depositors up to the $250,000 limit. After liquidation, the remaining creditors (including deposits over $250,000) are paid their shares from the sale of the bank's assets. The purchase and assumption method reorganizes the bank usually by finding a partner willing to merge with the bank and assume all of its liabilities.

This is the method the FDIC uses if a bank is considered "too big to fail."

FDIC insurance impacts the bank's moral hazard problem by giving banks more of an incentive take on additional risk than they otherwise would. FDIC insurance also impacts the bank's adverse selection problem by making the financial industry attractive to risk-loving entrepreneurs who realize depositors have no incentive to monitor them since FDIC insurance will cover any losses if the bank becomes insolvent.

7. *What is meant when a financial firm is "too big to fail?" Briefly discuss how the designation of being a "too big to fail" firm affects the incentive structure of the firm's management. What are the three approaches to solving the "too big to fail" problem? Briefly discuss.*

   "Too big to fail" is an implicit guarantee that the government will repay uninsured creditors of large banks or financial institutions that if allowed to fail might precipitate a financial crisis. Giving de facto deposit insurance to nonbank financial institutions incentivizes those firms to engage in riskier activities. Three approaches to solving the "too big to fail" problem include 1) breaking up large financial firms, 2) imposing higher capital requirements on the "too big to fail' firms, because it reduces their incentive to take on risk, and 3) making no more changes because the Dodd-Frank Act addressed the "too big to fail" problem.

8. *Briefly discuss the <u>dual banking system</u> in the U.S. What role did the National Banking Act of 1863 play in the development of the dual banking system in the U.S.?*

   The dual banking system is a market structure where some banks are chartered by the federal government (national banks) and some banks are chartered by the states (state banks). The National Banking Act of 1863 created a new system of federally-chartered banks. This Act tried to drive state-chartered banks out of business taxing banknotes issued by state banks which was their primary source of funds. State banks remained in business by acquiring funds via deposits instead.

9. *What did the Glass-Steagall Act of 1933 do? What legislation repealed the Glass-Steagall Act, and in what year was the repeal enacted?*

   The <u>Glass-Steagall Act of 1933</u> separated banking from other financial services like securities, insurance, and real estate. The <u>Gramm-Leach-Bliley Act of 1999</u> repealed the Glass-Steagall Act and allowed financial institutions to operate both commercial and investment banks.

10. *What is securitization? Name and briefly describe the four steps of the securitization process.*

Securitization is the process of bundling, otherwise, small and illiquid assets (ex., mortgages, and car loans) into marketable securities. The 4 steps of the securitization process are 1) The loan originator arranges the loan for the servicer; 2) The servicer collects the loan payments but sells the loan to a bundler; 3) The bundler combines the loan with other like loans and then presents a portfolio of loans to a distributor; and 4) The distributor designs a security around that portfolio of loans and then sells that security to customers.

11. *What is a financial crisis? Briefly discuss the role of the credit boom and bust and the asset price boom and bust in a financial crisis. How can those stages of a financial crisis precipitate a banking crisis? Briefly discuss the three causes of the 2008 Financial Crisis. Discuss three ways the government responded to the 2008 Financial Crisis.*

    A financial crisis is a major disruption in which financial markets cease to provide an efficient flow of funds from savers to productive investment opportunities. When banks go on a lending spree, a credit boom can occur which can fuel a rise in asset prices. When an asset-price bubble bursts, the value of the collateral that companies can pledge falls, so financial institutions are less likely to lend to them. An asset-price burst also reduces the value of a bank’s assets, which incentivizes the bank to deleverage.

Three causes of the 2008 Financial Crisis are: 1) Financial innovation via the development of the subprime mortgage market started a credit boom; 2) Mortgage brokers, real estate speculators, and commercial and investment banks, had no incentive to evaluate borrower quality because they did not intend to hold the mortgage loans long term and the development of credit default swaps (insurance) meant the insurance companies would absorb the losses; and 3) The credit-rating agencies compromised their ability to accurately assess the risk of certain securities because those agencies were also advising those same financial companies on how to structure their financial instruments.

Three ways the government responded to the 2008 Financial Crisis: 1) The Fed lowered the federal funds rate to zero, implemented a large scale asset purchasing program (QE), and developed new lending programs; 2) The fiscal authorities passed the Troubled Asset Relief Program (TARP); and 3) Congress passed the Bush Administration's $78 billion stimulus in 2008, and then passed the Obama Administration's $787 billion stimulus in 2009.

12. *What are two possible causes of a credit boom?*

    A credit boom can be caused by financial innovation and/or financial liberalization (the elimination of restrictions on financial markets).

13. *Name the legislation that was enacted to modernize regulations of the financial industry after the 2008 Financial Crisis? What are the major features of that legislation?*

The Dodd-Frank Act of 2010 modernized the regulations of the financial industry. This legislation 1) established the Consumer Financial Protection Bureau; 2) gave the U.S. government the authority to rescue any failing financial firm whose failure could pose a risk to the overall financial system; 3) created the Financial Stability Oversight Council; 4) established the Volcker Rule which allows banks to only invest 3% of their equity into hedge funds and private equity funds; and 5) required derivatives to be traded on exchanges and cleared through clearinghouses.