

Midterm Exam 2: Answer Sheet

1. (8 points each) True, False, Uncertain, and Explain. Explain whether the statement is true, false, or uncertain.

- (a) "The fact that 'markets can remain irrational longer than you can remain solvent' goes a long way to explain why bubbles may persist."

brief answer *True. This is the basic limits to arbitrage problem. If there are noise traders who move prices away from fundamentals, and if arbitrageurs have to finance their positions, they may go broke before their trades move into the black.*

- (b) "The problem with securitized assets is that they were too opaque and too complex to serve as collateral in the shadow banking system."

brief answer *False. Assets can be opaque and complex and yet be liquid. Lack of transparency \nRightarrow lack of liquidity. Example is the DeBeers diamond box. Or ABS. Tranches of ABS were used as collateral. Debt is informationally insensitive when cash flows are far from the default boundary. And we know this must be false since such debt was the collateral used in shadow banking.*

- (c) "The growth in shadow banking was, in part, the result of deregulation of the banking system."

brief answer *True. Deregulation of commercial banking reduced their profit margins by increasing competition on the asset side, and allowing entry of competitors for liabilities (i.e., money market funds that paid interest). With profit margins squeezed, banks looked to off-load assets from their balance sheets.*

- (d) "The Modigliani-Miller theorem suggests that there is no benefit from securitization. It thus follows that there is no economic benefit from securitization."

brief answer *False. It implies that some conditions of the theorem are not satisfied. For example, regulatory arbitrage leads to securitization if bank capital standards are higher than market capital demands. And securitization reduces bankruptcy risks. Moreover, with imperfect information about loan quality, securitization can be beneficial if tranching is effective. It reduces the hazard from imperfect information. In MM the investors know as much about future profitability as the firm managers.*

2. (23 points) Consider a conventional bank run. Can a bank run occur if the bank is solvent? Explain.

brief answer *There is some subtlety here. A bank run can occur at a solvent bank. The problem is that bank debt is short-term and its assets are longer term. Bank runs occur because the liquidation value of the assets cannot cover all withdrawals. Of course, in a*

run a bank becomes insolvent. The fear that the bank will become insolvent causes the run. If patient investors knew that the bank would recover and their deposits would be safe they would not panic. But fear that the run converts the bank from illiquidity to insolvency makes the run an equilibrium.

- (a) Why were conventional bank runs relatively frequent in the US prior to 1934 and infrequent since then? What explains the "quiet period" regarding bank runs between 1934 and the financial crisis?

brief answer *Before 1934 there was no deposit insurance. When there was uncertainty about the solvency or even liquidity of banks, panics ensued. In addition, until 1913 there was no central bank acting as a lender of last resort. Without deposit insurance once a panic starts it is hard to stop. The biggest change in 1934 is deposit insurance. This reduces the incentive of patient agents to run. If the government insures deposits then there is less fear. In addition, the government regulated banks, limiting competition on the asset side, and limiting the interest that they could pay. This made banking profitable and increased the franchise value of being a bank which reduces the risks they take. But insurance is the big key.*

- (b) What is the role of the sequential service constraint in generating a bank run? If banks did not have to meet this constraint what would happen in a potential crisis situation? Explain.

brief answer *The SSR means that it is important to get to the front of the line. Without it, there would be less panic. For example, if a bank could temporarily suspend payments, then patient depositors could wait and confidence in the bank could be restored. The SSR means that everybody gets their deposit until the bank runs out of funds. It is what causes patient investors to become impatient. If the bank could pay less than the full deposit to each depositor in a panic, patient investors may prefer not to withdraw early.*

- (c) How does a shadow bank run differ from a conventional bank run? What are the most important differences? Explain.

brief answer *In a shadow bank run there is no sudden heading for the exits. Moreover, the shadow bank substitutes collateralized lending for deposit insurance. So when there is a run on shadow banks it takes the form of larger haircuts on collateral. This raises the cost of raising funds and reduces the liquidity in the shadow banking sector. But it is not a sudden panic so much as a steady rise in fragility. The reason for the difference is that there is no reason for the depositors to rush to the front of the line as in a conventional bank run. Indeed, it is the shadow banks that try to get to the potential borrowers first, to borrow with smaller haircuts!*

3. (22 points) What is the difference between informationally sensitive and informationally insensitive assets?

brief answer *The value of IS assets are very sensitive to changes in public information. The value of IIS assets are less sensitive to such changes. Debt, for example, has a fixed return when it is far from the default boundary. So changes in firm profitability, if the firm is far from default, have little effect on the value of debt.*

- (a) Why are informationally insensitive assets important? What makes an asset informationally insensitive?

brief answer *IIS assets are easy to trade. They can be used in transactions at low cost – they are very liquid. Using IIS assets reduces the need to invest resources to estimate the value of the asset. This is a net social saving. I explained above what makes an asset informationally insensitive.*

- (b) Why is debt more likely to be used as collateral than equity? Explain.

brief answer *Debt payoffs are roughly constant far from the default boundary, but equity payoffs are not. The value of equity varies with information. If the firm's profitability rises so does the value of equity. So you need to invest a lot to know the value of equity. If the value of equity varies then it is poor instrument for collateral. You would have to post a lot of equity so that it even if its value fell it would protect the loan. Since the value of debt varies little most of the time, especially if high quality debt, then you have to post less to cover the same loan. Moreover, the lender need not know that much about the debt to take it as collateral, but would need to learn a lot more about equity, even if both were issues from the same firm. Another way to see this is that lenders would rather have AAA assets as collateral than junior tranches of the same security. But the more junior the tranche the more it performs like equity.*

- (c) Why are haircuts low when there is little financial stress? Why did haircuts rise significantly when the financial crisis began? Explain.

brief answer *Haircuts are protection against the default of collateral. The repo rate is the price that deals with the credit risk of the borrower. So when times are good and collateral is secure there is little need for a haircut. If the borrower posts good collateral then I am secure. If I know I can sell the bonds in case of default with ease I do not need to charge much of haircut. I want to make the deposit to earn the repo interest. But if times are rough, I may be unsure if I could sell the collateral if I had to. In that case I impose a haircut to make sure that even if I have to sell at a discount my loan is protected.*

4. (23 points) Describe the process of creating a mortgage backed security from the origination to the sale of securities. What are the critical steps in the process? You may use a diagram to illustrate the steps in the process. Try to explain the importance of the steps.

- (a) **brief answer** *Originator makes loans and sells them to the bank or other institution. They are pooled together, often in a SPV. Then the pool is tranced into levels with different levels of exposure to defaults. The tranches are rated and then sold. The key important parts are pooling, which introduced diversification, and tranching, which allocates the risk so that securities with different ratings can be established.*

- (b) Describe the process of going from a mortgage backed security to a CDO. What is a CDO²? Explain. What is the point of creating a CDO?

brief answer *A CDO is a security that takes tranches from a mortgage backed security and repackages them into a new security. A new SPV is created and it is tranced*

to produces different risky assets. The lower tranches bear more risk than the senior tranches. Recall the waterfall. A CDO² is a security where the underlying assets are tranches of CDOs. For example, a pool of BBB-rated tranches of a CDO are collected and put into a SPV which is then tranced. The CDO² creates highly rated securities out of a pool of rather lower rated securities.

- (c) What, if anything, is distinctive about a CDO² (from the point of view of thinking about the financial crisis)?

brief answer *The most distinctive point is that the tranches of the CDO² are very sensitive to small changes in the underlying default levels of the original securities. So when default rates on mortgages started to rise the riskiness of CDO²s was greatly impacted. The percentage increase in default risk of a tranche of a CDO² can be orders of magnitude higher than for a CDO when the underlying default risk rises.*