

Homework Assignment 8 solution.

1. (2 point) Describe the asymmetric information problems that an employer faces when hiring a new employee. How can this employer try to solve these problems?

There are two main asymmetric information problems – adverse selection and moral hazard. Adverse selection happens if employer doesn't know the true quality (productivity) of the potential employees (which is always true to some extent). If employer posts a job ad with some salary numbers in it, very high quality (very productive) individuals will not apply because they know that they are very good (employer doesn't know that) and can, therefore, count on a much higher salary. People that are not very productive will apply because they know the salary that the employer intends to pay is better than what they can expect if their true productivity was known. So the quality of the applicant pool that the employer will face for any given salary will be lower than the average quality of all existing applicants because only the lower-than-average people apply (adverse selection). There are many ways the employer can deal with this problem – collect information (analyze Resumes, conduct extensive interviews, and ask for letters of recommendation); it is also possible to make a contract that specifies some trial period after which it is easy to lay an employee off if the employee doesn't meet certain standards.

Moral hazard happens if an employee doesn't have an incentive to work hard. It typically happens if the salary of the employee doesn't depend on any measure of his/her output. Then it doesn't make sense to exert any effort whatsoever – you're going to get paid anyway. This problem happens because employer doesn't have a way to monitor what the employee is doing. There are multiple ways to deal with moral hazard problem – the employer can tie the salary to some performance measures, the employer can also try to monitor what the employee is doing.

2. (1 point) Explain how a sharp rise in interest rates can reduce the average quality of credit card applications?

It can happen because of adverse selection. Different people have different default risks (which they themselves know better than credit card companies). People with higher risk would be willing to pay a higher interest rate because the risk premium is higher for them. Credit card companies cannot perfectly observe the quality of each applicant (they do collect some information about applicants and charge different rates to different people). For any given interest rate offered by the credit card company, only those applicants that have high enough default risk would apply (the interest rate can be too high for good risks). If interest rates go up – a lot of relatively good risks may find new interest rates too high and leave the market (do not apply). The resulting pool of applicants will have a much lower quality because

of that (it may consist of people that do not plan to pay back at all – these people wouldn't care about interest rates).

3. (1 point) It is a well-known fact that one can get health insurance at a much cheaper price if one gets it as a part of large group (through employer, for example) as opposed to getting it individually. Why?

There are a couple of reasons for this. The reason that is relevant to what we are covering in this class is adverse selection – people that apply for insurance tend to be of lower-than-average health because they benefit from insurance the most. If you get your insurance as a part of a group the adverse selection problem is less severe. As a result, the insurance company can afford to charge lower premiums. For example, if you get your health insurance from your employer, the average health of all employees is not necessarily lower than the average person in the population because people choose jobs based on many characteristics, not just whether the job offers health insurance or not.

4. (1 point) Explain how restrictive covenants reduce moral hazard in debt contracts?

The restrictive covenants restrict undesirable behavior, which is the source of moral hazard. For example, a loan contract may specify that the borrowed money can only be used to pay for certain goods/services. This eliminates the possibility that the borrower would just cash the loan and leave the country.

5. (2 points) Explain the relationship between return on assets and return on equity. What incentives does this relationship give a bank manager? Is this the desired outcome preferred by regulators? Discuss.

$ROE = (\text{after-tax profit}) / (\text{capital}) = ROA * EM = [(\text{after-tax profit}) / (\text{total assets})] * [(\text{total assets}) / (\text{capital})]$,

So, the return-on-equity (ROE) is the product of the return-on-assets (ROA) and equity multiplier (EM). ROA provides a measure of the profitability of assets. For any given level of ROA the bank manager can increase the profitability of the bank to its equity-holders (ROE) by increasing leverage (EM). Regulators wouldn't want this to happen because high values of EM imply high levels of risk (risk of insolvency). Bank's capital serves as a buffer against potential losses on the bank's loan investments. If bank doesn't have sufficient capital, even minor amount of defaults on its loans (which are written off against capital) can lead to bankruptcy.

6. (2 points) Assume that a customer deposits \$1000 in her bank. Show in a T-account the effect of this deposit. If the bank is subject to reserve requirements, show in a second T-account the bank's balance sheet indicating required and excess reserve. In a third T-account, show the change in the bank's balance sheet when the bank makes loans with the excess reserves.

A	L
Cash items in the process of collection +\$1000	Deposits +\$1000

A	L
Cash items in the process of collection -\$1000	
Required Reserves +\$100	
Excess Reserves +\$900	

A	L
Excess Reserves -\$900	
Loans +\$900	

7. (1 point) What is the impact of the Internet on asymmetric information problems?

Internet reduced asymmetric information problems. It is now easier to collect information about companies that you consider investing in – you can see not only officially released financial information very quickly and regularly, but also get more insight into what a company is doing (for example, by reading blogs of employees).