

EC303: Money and Banking

In-class exercise 10

Spring 2022

Exercise 1

Jimmy is a young doctor who lives in a country with a relatively inefficient legal and financial system. When Jimmy applied for a mortgage, he found that banks usually required collateral for up to 400% of the amount of the loan. Why might banks require that much collateral in a financial system like Jimmy's country?

Exercise 2

You are in the market for a used car. At a used car lot, you know that the blue book value for the cars you are looking at is between \$5,000 and \$10,000. If you believe the dealer knows more about the cars than you, how much are you willing to pay? Assume that you care only about the expected value of the car you buy and that the car values are symmetrically distributed.

Exercise 3

Explain the following terms in the context of financial system

- Free-rider problem
- Principal-agent problem

Exercise 4

You are a policymaker responsible for developing financial system in Wakanda, a developing country with a weak financial system. Based on what you have learned in this chapter, what problems would you want to address? How would you go about address those problems?

Exercise 5

Equity contracts account for a small fraction of external funds raised by American businesses. Why?

exercise 6

You own a house worth \$400,000 that is located on a river. If the river floods moderately, the house will be completely destroyed. Moderate flooding happens about once every 50 years. If you build a seawall, the river would have to flood heavily to destroy your house, and such heavy flooding happens only about once every 200 years. What would be the annual premium for a flood insurance policy that offers full insurance? For a policy that pays only 75% of the home value, what are your expected costs with and without a seawall? Do the different policies provide an incentive to be safer (i.e., to build the seawall)?

Exercise 7

You wish to hire Ron to manage your Dallas operations. The profits from the operations depend partially on how hard Ron works, as follows.

	Profit Probabilities	
	Profit = \$10,000	Profit = \$50,000
Lazy	60%	40%
Hard worker	20%	80%

If Ron is lazy, he will surf the Internet all day, and he views this as a zero cost opportunity. However, Ron views working hard as a “personal cost” valued at \$1,000. What fixed percentage of the profits should you offer Ron to induce him to work hard? Assume Ron cares only about his expected payment less any “personal cost.”

Answer:

Let P be the percent of profits you pay Ron. If Ron is lazy, his expected payment is

$$0.60 \times 10,000P + 0.40 \times 50,000P = 26,000P$$

If Ron works hard, his expected payment is

$$0.20 \times 10,000P + 0.80 \times 50,000P - 1,000 = 42,000P - 1,000 \text{ (recall that if he works hard, he incurs the "personal cost" worth \$1000)}$$

To induce Ron to work hard, you need

$$42,000P - 1,000 = 26,000P$$

Solving this, we get, $P = 0.0625$ or, 6.25% profit. If you give him 6.25% profit, Ron will be indifferent between working hard and being lazy. To induce him to work hard, you should give him slightly more than 6.25% profit. This ensures “incentive compatibility”, which means that he works hard.