Practice problems for Lecture 1. Answers.

1. Suppose we have a capital budgeting project that costs \$100K now and will pay \$55K a year from now and will be liquidated for \$72.6K two years from now. The riskfree rate is 10%.

a. What is the net present value of the project?

$$-100 + \frac{55}{1.1} + \frac{72.6}{1.1^2} = 10$$

b. How should we arrange financing if we want to the entire NPV right now?

	now	1 year out	2 years out
project	\$(100K)	\$55K	\$72.6K
borrow		66K	(72.6K)
borrow	110K	(121K)	
net	\$10K	-	-

c. How should we arrange financing if we want the entire NPV one period from now?

	now	1 year out	2 years out
project	\$(100K)	\$55K	\$72.6K
borrow	100K	(110K)	
borrow		66K	(72.6K)
net	-	11K	-

d. How should we arrange financing if we want \$5K up front and the remainder at the end?

	now	1 year out	2 years out
project	\$(100K)	\$55K	\$72.6K
borrow	105K	(115.5K)	
borrow		60.5K	(66.55)
lend			
net	\$5K	-	\$6.05K

2. Following hurricane damage, there is a large difference in price between the spot price \$0.80/pound of frozen concentrated orange juice (FCOJ on the New York Board of Trade: *http:www.nybot.com*) and the futures price one year out \$0.90/pound. Assume that we can enter a forward contract at this futures price (this allows us to do the problem without understanding yet exactly how futures work). The riskfree rate for one year is 5% (simple interest) and you know someone who is willing to store frozen concentrated orange juice for a year in his refrigerated warehouse for the price of \$0.03/pound, payable at the end of the year. Set up an arb , at the scale of 10K pounds, to exploit the high futures price.

	\$ now	FCOJ now	\$ 1 year out	FCOJ 1 year out
buy oj spot	\$(8,000)	10K lbs		
store oj		(10K) lbs	\$(300)	10K lbs
sell oj forward			9,000	(10K) lbs
borrow	\$8,000		(8,400)	
net	-	-	\$300	-