Assignment 1

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1. a) One USD = 110 Yen

The trader gain $0.9 million

b) One USD = 90¥

1. a) Convertible bonds are regular bonds that can be exchanged for equity at certain times in the future according to a predetermined exchange ratio.

b) Short selling involves selling securities that do not own, which means you have to return the securities later.

1. Initial margin:

Maintenance margin:

Initial margin – maintenance margin:

2 contracts delivery 15000 pound, $1.6 per pound:

To lead a margin call:

per pound

If the future price of orange juice decreases to $1.5 per pound, the investor will receive a margin call.

$2000 withdrawn from margin account:

If the investor wants to withdrawn $2000 from margin account, the price of orange juice has to be $1.67 per pound.

The farmer can short a cattle future contract.

|  |  |
| --- | --- |
| **Pros** | **Cons** |
| * To lock the position * Secure if the cattle price drop in the future | * To give up the future gain |

Proportion of the exposure that should optimally be hedge, which means it is the size of the future position, should be 64% of the size of the company exposure in 3 months.

1. The company can short a future contract to minimize the risk.

a)

The company has to short 88 contracts to minimize the risk

b) = 44 contracts

The company has to short 44 contracts to reduce the risk to 0.6

There is an arbitrage opportunity if:

* At lock the position to long , short
* At, we have to borrow money from the bank, also is time to buy at price.
* At , we have to sell at price, return the money that we borrow at to the bank , and we still makes profit.

There will be no arbitrage opportunity.

a) There is an arbitrage opportunity if the call price is 3.5:

* At short a call $3.5, borrow and invest, long put option at $1.26, buy stock at spot price $31.
* After 3 months

Call exercise, put expire, sell the stock at $30, pay the debt $30

Put exercise, call expire, sell stock at $30, and pay the debt $30

b) There is an arbitrage opportunity if the call price is 2.5:

* At short a put $3.5, long at call $2.5, save.
* After 3 months

Call exercise, put expire, use saving to buy the stock

Put exercise, call expire, use saving to buy stock

1. 1) D

2) A

The volatility of a stock price is a measure of how uncertain about the future stock price movement. A call option has a benefit when the price increases, but the stock price drop and the investor will lose the premium. A put option has benefit when the price decrease, but when the stock price increases the investor will lose the premium. When the volatility decrease the call and put option will also decrease.

3) D

According to the Put Call Parity formula, we have short selling. We have to rearrange the formula to make it which means we receive the money from short selling. On the other side of the equation shows the action when accomplish the same payoff as the original strategy, is short a call option and long a put option.

4) B

If ignore time value of money, the money got at time zero is $4 from short a put. The exercise price is $45, assume the price of the stock drop to zero, the one who took the long put position exercise the option, we have to sell the stock at exercise price $45, minus the premium we got at time zero, our maximum possible loss is 41.

There is an arbitrage opportunity if:

* Buy forward lock the position, short sell , get the money invest on
* When the time mature, get the money out to buy at the forward price, cover short.

There is an arbitrage opportunity if:

* Short a forward contract, borrow the money from bank, and buy at.
* When the time mature, sell at the forward contract price, return the money to the bank

If both cases have arbitrage opportunity, is true.