**Investments Seminar 12**

**Theoretical questions**

1. **(551/2.)** What must be the net inflow or outlay from marking the market for the clearinghouse?

**Key:**

The clearinghouse has a zero net position in all contracts. Its long and short positions are offsetting, so that net cash flow from marking the market must be zero.

1. **(556/4.)** What are the sources of risk to an investor who uses stock index futures to hedge an actively managed stock portfolio?

**Key:**

The risk would be that the index and the portfolio do not move perfectly together. Thus, risk involving the spread between the futures price and the portfolio value could persist even if the index futures price were set perfectly relative to index itself.

1. **(571/7.)** What is the difference in cash flow between short-selling an asset and entering a short futures position?

**Key:**

Short selling results in an immediate cash inflow, whereas the short futures position does not:

|  |  |  |
| --- | --- | --- |
| Action | Initial Cash Flow | Cash Flow at Time T |
| Short sale | +P0 | –PT |
| Short futures | 0 | F0 – PT |

1. **(572/18.)** What type of interest rate swap would be appropriate for a speculator who believes interest rates soon will fall?

**Key:**

The speculator who believes interest rates will fall wants to pay the floating rate and receive the fixed rate. This investor will benefit if the short-term reference rate does in fact fall, resulting in an increase in the net cash flow from the swap.

1. **(570/1)** On January 1, you sold one March maturity S&P 500 Index futures contract at a futures price of 800. If the futures price is 850 on February 1, what is your profit? The contract multiplier is $250.

**Key:**

Selling a contract is a short position. If the price rises, you lose money.

Loss = (850 – 800) x 250 = $12,500

1. **(573/4)** In each of the following cases, discuss how you, as a portfolio manager, could use financial futures to protect a portfolio.
2. You own a large position in a relatively illiquid bond that you want to sell.
3. You have a large gain on one of your Treasuries and want to sell it, but you would like to defer the gain until the next year.
4. You will receive a large contribution next month that you hope to invest in long-term corporate bonds on a yield bases as favourable as is now available.

**Futures on stock and stock indices**

1. **(571/8.)** Suppose the value of the S&P 500 Stock Index is currently $800. If the one-year interest rate is 3% and the expected dividend yield on the S&P 500 is 2%, what should be the one-year maturity futures price be?

**Key:**

F0 = S0(1 + rf ) = 3800 × (1 + 0.03) = 3914

1. **(571/13.)** One Chicago has just introduced a new single-stock futures contract on the stock of Brandex, a company that currently pays no dividends. Each contract calls for delivery of 1,000 shares of stock in one year. The T-Bill rate is 6% per year.
2. If Brandex stock now selling at $120 per share, what should the futures price be?
3. If the Brandex price drops by 3%, what will be the change in the futures price and the change in the investor’s margin account?
4. If the margin on the contract is $12,000, what is the percentage return on the investor’s position?

**Key:**

* 1. F0 = S0( 1 + rf) = $120 × 1.06 = $127.20
  2. The stock price falls to: $120 × (1 – 0.03) = $116.40

The futures price falls to: $116.40 × 1.06 = $123.384

The investor loses: ($127.20 – $123.384) × 1,000 = $3,816.00

* 1. The percentage return is: (–$3,816/$12,000) = –31.8%

1. **(572/19.)** The margin requirement on the WIG index futures contracts is 10%, and the stock index is currently 800. Each contract has a multiplier of $250. How much margin must be put up for each contract sold? If the futures price falls by 1% to 792, what will happen to the margin account of an investor who holds one contract? What will be the investor’s percentage return based on the amount put up as margin?

**Key:**

The dollar value of the index is: $250 × 800 = $200,000

Therefore, the position requires margin of $20,000.

If the futures price decreases by 1% to 792, then the decline in the futures price is 8. The decrease in the margin account would be: 8 × $250 = $2,000

This is a percent return of: –$2,000/$20,000 = –10%

Cash in the margin account is now: $20,000 – $2,000 = $18,000

**Futures on commodities**

1. **(571/9)** It is now January. The current interest rate is 4%, The June futures price for gold is $946.30, while the December futures price is $952. Is there an arbitrage opportunity here? If so, how would you explore it?

**Key:**

According to the parity relationship, the proper price for December futures is:

FDec = FJune × (l + rf)l/2 = $946.30 × (1.04)1/2 = $965.04

The listed futures price for December is too low relative to the June price. You should long the December contract and short the June contract.