

**Question 53 (21 July 2009, Q4).**

Suppose you sign a *forward* contract with maturity of one year on an asset which does not pay any income until maturity. Suppose the current price of the underlying asset is €40, while the continuously compounding interest rate is 10 percent.

1. What is the *forward* price and the initial value of the *forward* contract?
2. Six months later the price of the underlying asset has reached €45, while the interest rate is still 10 percent. What is now the *forward* price for the same delivery date? What is the value of the *forward* contract you signed six months before?

**Question 58 (9 September 2013, Q2).**

Assume the spot price for a *commodity* is \$100, while the price of a *futures* contract with maturity of 1 year is \$105. Assume the continuously compounding interest rate for the yearly maturity is 10 percent.

1. Show that there is an inconsistency in the *futures* price.
2. Describe an arbitrage strategy which allows to exploit such inconsistency and calculate the corresponding arbitrage profits.

**Question 55 (13 October 2010, Q3).**

Consider a *futures* contract on gold which matures in 6 months. Assume the current spot price of gold is \$600 per ounce. Let the interest rate, with a monthly compounding frequency, be equal to 6% (on a per annum basis). Assume the current futures price is \$617 per ounce.

1. Show there exists an arbitrage opportunity.
2. Explain how you can build an arbitrage portfolio.
3. Indicate what profit can be gained using such an arbitrage portfolio.