



标题: Reading 69: Forward Markets and Contracts-LOS g 习题精选

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Session 17: Derivatives

Reading 69: Forward Markets and Contracts

LOS g: **Calculate** and **interpret** the payoff of an FRA, and **explain**
each of the component terms.

Consider a forward rate agreement (FRA) that expires/settles in 90 days. The agreement is based on the 180-day LIBOR. The long position agrees to borrow \$10,000,000 from the short position (i.e. the dealer). The dealer quotes this instrument at 6 percent. Today, the 90-day LIBOR is 5.5 percent. If the 180-day LIBOR in 90 days is quoted at 5 percent, compute the amount of the cash settlement payment made or received by the borrower at expiration. The borrower will:

- A) receive a payment of \$48,543.
 - B) make a payment of \$48,780.
 - C) make a payment of \$48,543.
-

At expiration, from the borrower's perspective, the payment will be calculated as: > >

$$\$10,000,000 \times (0.05 - 0.06)(180/360) / (1 + 0.05 \times 180/360) = -\$50,000/1.025 = -\$48,780 > >$$

Because the amount is negative, it reflects a cash outflow, or a payment made, by the borrower.

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When calculating the settlement payment on a long position in a London Interbank Offered Rate (LIBOR)-based forward rate agreement, the denominator is best described as:

- A) a discount factor based on the contract LIBOR rate.
- B) a discount factor based on LIBOR at settlement.

- C)** the interest differential between a loan made at the contract rate and one made at the market rate at contract expiration.

Since the interest differential between a loan made at the contract rate and one made at the market rate would be realized at the end of a loan period beginning at the settlement date, it must be discounted to get the value at the settlement date. The correct rate for this discounting is the actual rate (market rate) at the settlement date. The interest differential is the numerator of the formula for calculating the settlement value.

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Consider a \$1 million 90-day forward rate agreement based on 60-day London Interbank Offered Rate (LIBOR) with a contract rate of 5%. If, at contract expiration, 60-day LIBOR is 6%, the short must pay:

- A)** \$1,652.89.
B) \$1,666.67.
C) \$1,650.17.

$$[(0.06 - 0.05)(60 / 360)(1,000,000)] / [1 + 0.06(60 / 360)] = 1,650.17.$$

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A 60-day \$10 million forward rate agreement (FRA) on 90-day London Interbank Offered Rate (LIBOR) (a 2X5 FRA) is priced at 4%. If 90-day LIBOR at the expiration date is 4.1%, the long:

- A)** receives \$2,500.00.
B) receives \$2,474.63.
C) pays \$2,474.63.

$$[(0.041 - 0.040)(90/360)(10,000,000)] / [1 + 0.041(90/360)] = \$2,474.63.$$

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The following data applies to a forward rate agreement that settles in 60 days:

- It is based on 180-day LIBOR
- The notional principal amount is \$15 million
- It calls for a forward rate of 6.5%
- In 30 days, 180-day LIBOR will be 6.2%
- In 60 days, 180-day LIBOR will be 7.0%
- In 180 days, 180-day LIBOR will be 7.5%

The short's cash payment at settlement is *closest* to:

- A)** \$36,232.
- B)** \$37,500.
- C)** the short will not have to make a payment.

Settlement payment from short = notional principal \times ((forward LIBOR at settlement \pm agreed forward rate) \times (180/360)) / (1 + (floating \times 180/360))
Payment = \$15 million \times ((7.0% \pm 6.5%) \times (180/360)) / (1 + (0.07 \times 180/360))
Payment = \$36,231.88

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thanks a lot