

Interest rate floor

Situation

The treasurer of ABC Inc. expects to receive a significant cashflow in three months. He thinks interest rates may be lower when the time comes to invest the funds.

Objective

In order to ensure a minimum investment rate, he decides to buy OBX slightly out-of-the-money calls. By purchasing OBX call options with a strike price of 95, he will receive at least a 5% return on the expected funds (minus the premium) and still enjoy the possibility of higher yields. If interest rates have risen above 5% at maturity, his calls will expire worthless since there is no reason to lock-in the funds at 5% when he can get better rates (the initial premium will be his insurance cost). Depending on how volatile the treasurer perceives the market to be, he may choose different strike prices. Remember, the higher the volatility, the higher the premiums. Three possible scenarios will be considered:

- A decrease in short-term interest rates
- An increase in short-term interest rates
- Short-term interest rates remain the same

Strategy

INITIAL DATA

Date :	December 15
Three-month bankers' acceptances rate:	5.50%
BAX, March contract:	94.75
OBX March call:	0.27

The contracts are held until expiry, March 14.

AS EXPECTED, SHORT-TERM INTEREST RATES HAVE DECREASED TO 4.40%

Three-month bankers' acceptances rate:	4.40%
BAX, March contract:	95.60
OBX March call:	0.60

Since short-term rates have dropped to 4.40%, he can exercise the calls and invest his funds at an effective rate of 4.73% or if the funds didn't come in as was previously expected, receive the call premium.

PROFIT	EFFECTIVE RATE
= Call premium at expiration – Initial call premium	= Three-month bankers' acceptances rate + Call premium at expiration – Initial call premium
= 0.60 – 0.27	= 4.40 + 0.60 – 0.27
= 0.33 or \$825 per contract (0.33 x 100 basis points per contract x \$25 per basis point)	= 4.73%

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SHORT-TERM INTEREST RATES HAVE INCREASED TO 6.60%

Three-month bankers' acceptances rate:	6.60%
BAX, March contract:	93.40
OBX March call:	0.00

Since the short-term rates have increased above 5%, the calls are worthless. The loss on the premium represents the insurance cost, reducing the investment rate from 6.60% to 6.33%.

LOSS

= Initial call premium
= 0.27 or \$675 per contract (0.27 x 100 basis points per contract x \$25 per basis point)

EFFECTIVE RATE

= Three-month bankers' acceptances rate + Call premium at expiration – Initial put premium
= 6.60 + 0.00 – 0.27
= 6.33%

SHORT-TERM INTEREST RATES REMAIN UNCHANGED AT 5.50%

Three-month bankers' acceptances rate:	5.50%
BAX, March contract:	94.50
OBX March call:	0.00

Even unchanged, the rates are above the 5% floor. Once again, the calls expire worthless and will reduce the effective rate from 5.50% to 5.23%.

LOSS

= Initial call premium
= 0.27 or \$675 per contract

EFFECTIVE RATE

= Three-month bankers' acceptances rate + Call premium at expiration – Initial call premium
= 5.50 + 0.00 – 0.27
= 5.23%
