Question 1

Lesson Reference: Lesson 1: Swap Rates and Forward Rates
Difficulty: medium

The one-year spot rate is 5%, while the two-year spot rate is 6%. A firm is hoping to issue a one-year note exactly one year from today to finance working capital needs. The forward price on the note assuming $100 par value is *closest to*:

○ $89.00

◉ $93.45

○ $94.79

Rationale
❌ **$89.00**

The forward price is simply a ratio of the discount factors computed using spot rates. The discount factors are:

$$P(T) = \frac{1}{[1+r(T)^T]}$$

$$P(1) = \frac{1}{(1+0.05)^1} = 0.95238$$

$$P(2) = \frac{1}{(1+0.06)^2} = 0.89000$$

The forward price is then calculated as follows:

$$P(T*+T) = P(T*) \times F(T*,T)$$
$$P(1+1) = P(1) \times F(1,1)$$
$$0.89000 = 0.95238 \times F(1,1)$$
$$F(1,1) = 0.89000 \div 0.95238 = 0.9345 \text{ (per \$1 of par)}$$

For $100 of par, the forward price is $93.45 ($100 × 0.9345)

Rationale
✅ **$93.45**

The forward price is simply a ratio of the discount factors computed using spot rates. The discount factors are:

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$$P(1) = \frac{1}{(1+0.05)^1} = 0.95238$$

$$P(2) = \frac{1}{(1+0.06)^2} = 0.89000$$

The forward price is then calculated as follows:

$$P(T*+T) = P(T^*) \times F(T^*,T)$$
$$P(1+1) = P(1) \times F(1,1)$$
$$0.89000 = 0.95238 \times F(1,1)$$
$$F(1,1) = 0.89000 \div 0.95238 = 0.9345 \text{ (per \$1 of par)}$$

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Rationale
❌ **$94.79**

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$$F(1,1) = 0.89000 \div 0.95238 = 0.9345 \text{ (per \$1 of par)}$$

For $100 of par, the forward price is $93.45 ($100 × 0.9345)

Question 2

When performing fixed income valuation, the Z-spread is defined as:

○ Spread paid by the fixed-rate payer of an interest rate swap over the rate of "on-the-run" government Treasury with the same maturity as the swap.

◉ The constant basis point spread that would need to be added to the implied spot yield curve so that the discounted cash flows of a bond are equal to its current market price.

○ The difference between LIBOR and the overnight indexed swap rate.

Rationale

✅ **This Answer is Correct**

The first option is incorrect since it describes the swap spread. The third option is incorrect since it describes the LIBOR-OIS spread. The second option correctly describes the Z-Spread.

Question 3

L2AI-PQ4211-1501

LOS: LOS-9410

Lesson Reference: Lesson 4: Modern Term Structure Theories

Difficulty: hard

Which of the following is *least* likely regarding the Cox-Ingersoll-Ross (CIR) model?

○ The model uses just the short-term interest rate to determine the entire term structure of interest rates.

○ The interest rate is modeled as mean-reverting.

◉ The stochastic term makes volatility inversely proportional to the short-term rate.

Rationale

✅ **This Answer is Correct**

The stochastic term makes volatility **directly** proportional to the short-term rate; i.e., interest rate volatility increases with the level of interest rates.

Question 4

A four-year, annual-pay bond has a 6.2% yield to maturity and it pays a 6.1% coupon rate. The yield to maturity (YTM) is *most likely* computed as a:

○ simple average of four spot rates on 6.1% coupon-paying bonds.

○ weighted average of four spot rates of zero-coupon bonds with all of the spot rates having to be equal to 6.2%.

◉ weighted average of four spot rates on zero-coupon bonds with some spot rates possibly being greater than 6.2% and some possibly being less than 6.2%.

Rationale

❌ **simple average of four spot rates on 6.1% coupon-paying bonds.**

The yield to maturity on a bond is the expected return on the bond if it is held to maturity and it is computed as the weighted average of zero-coupon bond spot rates, some of which may exceed the yield to maturity and some of which may be less than the yield to maturity, depending on the shape of the yield curve.

Rationale

❌ **weighted average of four spot rates of zero-coupon bonds with all of the spot rates having to be equal to 6.2%.**

The yield to maturity on a bond is the expected return on the bond if it is held to maturity and it is computed as the weighted average of zero-coupon bond spot rates, some of which may exceed the yield to maturity and some of which may be less than the yield to maturity, depending on the shape of the yield curve.

Rationale

✅ **weighted average of four spot rates on zero-coupon bonds with some spot rates possibly being greater than 6.2% and some possibly being less than 6.2%.**

The yield to maturity on a bond is the expected return on the bond if it is held to maturity and it is computed as the weighted average of zero-coupon bond spot rates, some of which may exceed the yield to maturity and some of which may be less than the yield to maturity, depending on the shape of the yield curve.

Question 5

L2AI-PQ4216-1501

LOS: LOS-9420

Lesson Reference: Lesson 5: Yield Curve Factor Models

Difficulty: hard

Consider a portfolio whose key rate changes are considered to be changes in the yield on 1-year, 5-year, and 10-year securities. Estimated key rate durations are $D_1 = 0.55$, $D_5 = 0.80$, and $D_{10} = 0.95$. The percentage change in the value of the portfolio in response to a 25-bps upward parallel shift in the yield curve is *closest* to:

○ 0.58%

◉ –0.58%

○ –5.75%

Rationale

✓ **This Answer is Correct**

An increase in interest rates would lead to a decrease in bond portfolio value of – 0.55(0.0025) – 0.80(0.0025) – 0.95(0.0025) = –0.00575 = –0.575%.

Question 6

L2FI-TBB204-1412

LOS: LOS-9410

Lesson Reference: Lesson 4: Modern Term Structure Theories

Difficulty: medium

Which of the following stochastic short-term interest rate models is *most likely* to be arbitrage free?

○ Cox-Ingersoll-Ross (CIR).

○ Vasicek.

◉ Ho-Lee.

Rationale

✅ **This Answer is Correct**

Both the CIR and Vasicek models use only one source of randomness when generating the future paths of interest rates, which is unlikely to generate model prices that correspond with market prices. This problem is overcome with models that allow parameters to change over time, such as the Ho-Lee Model.

Question 7

An analyst collects the following data on the par curve for government securities:

Maturity (years)	Par rate
1	4.00%
2	6.00%
3	8.00%

Which of the following is closest to the two-year spot rate in this market?

○ 5.00%.

○ 6.00%.

◉ 6.03%.

Rationale

✅ **This Answer is Correct**

Using bootstrapping:

$$100 = (6 / 1.04) + (106 / (1 + r_2)^2)$$

Where r_2 is the two-year spot rate.

Question 8

L2FI-TBX101-1502

LOS: LOS-9410

Lesson Reference: Lesson 4: Modern Term Structure Theories

Difficulty: easy

Which of the following term structure models is designed to be arbitrage free?

○ Cox-Ingersoll-Ross.

○ Vasicek.

◉ Ho-Lee.

Rationale

✅ **This Answer is Correct**

The Cox-Ingersoll-Ross model and the Vasicek model are both single-factor equilibrium models that frequently generate term structures that are not consistent with observed market data. The Ho-Lee model is calibrated to the current term structure of interest rates and hence will be arbitrage free—that is, the model generates prices that match current market prices.

Question 9

Consider the following statements:

Statement 1: The greater the volatility of interest rates, the poorer the performance of the YTM in estimating the expected return on a bond.

Statement 2: The flatter the yield curve, the poorer the performance of the YTM in estimating the expected return on a bond.

Which of the following is *most* likely?

- ● Only Statement 1 is correct.
- ○ Only Statement 2 is correct.
- ○ Both statements are incorrect.

Rationale

✅ **This Answer is Correct**

The YTM is a poor estimate of the expected return on a bond if (1) interest rates are volatile, (2) the yield curve has a steep slope, (3) there is significant risk of default, and (4) the bond contains embedded options.

Question 10

Use the following information to answer the next 4 questions:

A one-year zero-coupon bond yields 3%, while two- and three-year zero-coupon bonds yield 4% and 5%, respectively.

i.

The rate that can be locked in for a one-year loan beginning in one year is *closest* to:

⦿ 5.01%

◯ 7.04%

◯ 6.01%

Rationale
✓ **This Answer is Correct**

$(1 + {_2}s_0)^2 = (1 + {_1}s_0)^1 (1 + {_1}f_1)^1$

${_1}f_1 = 5.01\%$

---

ii.

The rate that can be locked in for a one-year loan beginning in two years is *closest* to:

◯ 6.03%

⦿ 7.03%

◯ 5.01%

Rationale
✓ **This Answer is Correct**

$(1 + {_3}s_0)^3 = (1 + {_2}s_0)^2 (1 + {_1}f_2)^1$

${_1}f_2 = 7.03\%$

---

iii.

The rate that can be locked in for a two-year loan beginning in one year is *closest* to:

⦿ 6.01%

◯ 7.03%

◯ 12.4%

Rationale

✅ **This Answer is Correct**

$(1 + {_3}s_0)^3 = (1 + {_1}s_0)^1 (1 + {_2}f_1)^2$

${_2}f_1 = 6.01\%$

iv.

Given that the forward price for a two-year zero-coupon bond beginning in three years is 0.859, the current price of a five-year zero-coupon bond is *closest* to:

○ 0.687

⦿ 0.742

○ 0.864

Rationale

✅ **This Answer is Correct**

$P(3) = 1/1.05^3 = 0.8638$

Using the forward-pricing model:

$P(T^* + T) = P(T^*)F(T^*, T)$

$P(5) = P(3)F(3,2) = 0.8638 \times 0.859 = 0.742$

Question 11

L2R43TB-AC023-1512
LOS: LOS-9400
Lesson Reference: Lesson 4: Modern Term Structure Theories
Difficulty: medium

An economist expects short-term rates to remain unchanged over the next several years. The economist would *most likely* predict an upward sloping yield curve if he believes which term structure theory applies?

○ Local expectations theory.
⦿ Liquidity preference theory.
○ Unbiased expectations theory.

Rationale

❌ **Local expectations theory.**

The liquidity preference theory is premised on the belief that since longer- term investors give up more liquidity with their investments, a premium should be attached to the yield derived from the expectations models. This means that yield curves will be upward sloping when investors expect yields to rise or remain flat. This perfectly fits what the economist is predicting.

Rationale

✅ **Liquidity preference theory.**

The liquidity preference theory is premised on the belief that since longer- term investors give up more liquidity with their investments, a premium should be attached to the yield derived from the expectations models. This means that yield curves will be upward sloping when investors expect yields to rise or remain flat. This perfectly fits what the economist is predicting.

Rationale

❌ **Unbiased expectations theory.**

The liquidity preference theory is premised on the belief that since longer- term investors give up more liquidity with their investments, a premium should be attached to the yield derived from the expectations models. This means that yield curves will be upward sloping when investors expect yields to rise or remain flat. This perfectly fits what the economist is predicting.

Question 12

Which of the following would *most likely* preclude coupon payments received from a fixed-income security from being reinvested at or near the bond's yield to maturity?

○ The bond has an AA rating.

⦿ The yield curve has a significant positive slope.

○ The bond has a call option that is deep out-of-the-money.

Rationale

❌ **The bond has an AA rating.**

If the yield curve has either a significant positive or negative slope, then interest rates are expected to change dramatically in the future. The implication is that any coupons reinvested will earn quite a different return than the bond's yield to maturity. Default risk or embedded options that have little chance of exercise have much less effect, if any, on reinvestment rates.

Rationale

✅ **The yield curve has a significant positive slope.**

If the yield curve has either a significant positive or negative slope, then interest rates are expected to change dramatically in the future. The implication is that any coupons reinvested will earn quite a different return than the bond's yield to maturity. Default risk or embedded options that have little chance of exercise have much less effect, if any, on reinvestment rates.

Rationale

❌ **The bond has a call option that is deep out-of-the-money.**

If the yield curve has either a significant positive or negative slope, then interest rates are expected to change dramatically in the future. The implication is that any coupons reinvested will earn quite a different return than the bond's yield to maturity. Default risk or embedded options that have little chance of exercise have much less effect, if any, on reinvestment rates.

Question 13

L2R43TB-AC025-1512

LOS: LOS-9400

Lesson Reference: Lesson 4: Modern Term Structure Theories

Difficulty: medium

Two investors expect five-year and ten-year spot rates to remain at 10% for the next year. The second investor, however, is requiring 10.5% to make a ten-year loan. The second investor is *most likely*:

- ⦿ demanding a liquidity premium.
- ○ predicting a higher forward rate.
- ○ reacting to a decrease in demand for ten-year securities.

Rationale

✅ **demanding a liquidity premium.**

Many investors require a liquidity premium for making longer-term loans, even if rates are expected to remain at their same levels.

Rationale

❌ **predicting a higher forward rate.**

Many investors require a liquidity premium for making longer-term loans, even if rates are expected to remain at their same levels.

Rationale

❌ **reacting to a decrease in demand for ten-year securities.**

Many investors require a liquidity premium for making longer-term loans, even if rates are expected to remain at their same levels.

Question 14

L2FI-TB0001-1412
LOS: LOS-9320
Lesson Reference: Lesson 1: Swap Rates and Forward Rates
Difficulty: medium

If the spot rate curve is upward sloping, then:

- ◉ The forward curve lies above the spot curve and the yield to maturity will be lower than the spot rate with the same maturity.

- ○ The forward curve lies below the spot curve and the yield to maturity will be lower than the spot rate with the same maturity.

- ○ The forward curve lies above the spot curve and the yield to maturity will be higher than the spot rate with the same maturity.

Rationale

✅ **This Answer is Correct**

Spot rates are geometric averages of the periodic forward rates that apply up to their maturity. In order for spot rates to be rising, the forward rate must be higher than the spot rate curve. Similarly, yield to maturities are averages of spot rates and must, therefore, be below a spot rate for a particular maturity if the spot curve is rising.

Question 15

L2R43TB-AC019-1512

LOS: LOS-9370

Lesson Reference: Lesson 2: The Swap Rate Curve

Difficulty: medium

The following is a list of details regarding yields and five-year swap rates: fixed rate on the swap is 4.2%; the swap's floating rate is LIBOR + 80 BP; LIBOR is 3.4%; and the five-year Treasury yield is 3.9%. The swap spread is *closest to*:

🔘 30 BP.

⚪ 50 BP.

⚪ 80 BP.

Rationale

✅ **30 BP.**

The swap spread is defined as the difference between the fixed leg of the swap and the corresponding yield on a Treasury security (both are five-year instruments). So, 4.2% – 3.9% = 0.30% or 30 basis points.

Rationale

❌ **50 BP.**

The swap spread is defined as the difference between the fixed leg of the swap and the corresponding yield on a Treasury security (both are five-year instruments). So, 4.2% – 3.9% = 0.30% or 30 basis points.

Rationale

❌ **80 BP.**

The swap spread is defined as the difference between the fixed leg of the swap and the corresponding yield on a Treasury security (both are five-year instruments). So, 4.2% – 3.9% = 0.30% or 30 basis points.

Question 16

Which of the following results in a forward rate yield curve that is more steeply sloped than the spot rate curve?

- ⦿ An increase in the initiation date.
- ○ The yield to maturity equals the expected return on the bond.
- ○ The coupons are reinvested at a rate less than the yield to maturity.

Rationale

✅ **An increase in the initiation date.**

When the yield curve is upward sloping, investors expect interest rates to rise in the future. Therefore, loans that are initiated farther out on the yield curve will have higher rates, resulting in yield curve slopes with higher levels of steepness.

Rationale

❌ **The yield to maturity equals the expected return on the bond.**

When the yield curve is upward sloping, investors expect interest rates to rise in the future. Therefore, loans that are initiated farther out on the yield curve will have higher rates, resulting in yield curve slopes with higher levels of steepness.

Rationale

❌ **The coupons are reinvested at a rate less than the yield to maturity.**

When the yield curve is upward sloping, investors expect interest rates to rise in the future. Therefore, loans that are initiated farther out on the yield curve will have higher rates, resulting in yield curve slopes with higher levels of steepness.

Question 17

L2AI-PQ4215-1501

LOS: LOS-9420

Lesson Reference: Lesson 5: Yield Curve Factor Models

Difficulty: hard

Assume that the yield curve is initially flat. The yields for short- and long-maturity sectors increase by 75 bps and 60 bps, respectively, but the intermediate-maturity yield increases by 10 bps. This yield curve movement is *most* likely a change in:

○ Level only.

○ Curvature only.

◉ Level and curvature.

Rationale

✅ **This Answer is Correct**

Since both short-term and long-term rates have increased, there has been a change in level. Further, since intermediate-term yields have risen by less, there has been a change in curvature as well.

Question 18

L2FI-TBB202-1412

LOS: LOS-9390

Lesson Reference: Lesson 2: The Swap Rate Curve

Difficulty: medium

An increase in the TED spread is *most likely* an indication of:

◉ Deteriorating credit conditions.

◯ Improving credit conditions.

◯ Falling Treasury bill prices.

Rationale

✅ **This Answer is Correct**

The TED spread is the difference between LIBOR and the yield on a T-bill of matching maturity. An increase in the TED spread is a sign that lenders believe that the risk of default in the interbank loan market is increasing.

Question 19

An analyst observes the following:

Time Period	Spot Rate
1-year	3.0%
2-year	4.0%
3-year	4.5%
4-year	6.0%
5-year	7.0%

The forward rate on a two-year bond issued three years from today is *closest to*:

◉ 10.9%

◯ 9.0%

◯ 4.3%

Rationale

✅ **10.9%**

This question is asking for *f*(3,2), the three-year forward rate, two years from now:

$$[1 + r(5)]^5 = [1 + r(3)]^3 \times [(1 + f(2,3)]^2$$
$$(1 + 0.07)^5 = (1 + 0.045)^3 \times [(1 + f(2,3)]^2$$
$$f(1, 2) = 0.1086 \text{ or } 10.86\%$$

Rationale

❌ **9.0%**

This question is asking for *f*(3,2), the three-year forward rate, two years from now:

$$[1 + r(5)]^5 = [1 + r(3)]^3 \times [(1 + f(2,3)]^2$$
$$(1 + 0.07)^5 = (1 + 0.045)^3 \times [(1 + f(2,3)]^2$$
$$f(1, 2) = 0.1086 \text{ or } 10.86\%$$

Rationale

❌ **4.3%**

This question is asking for $f(3,2)$, the three-year forward rate, two years from now:

$$[1 + r(5)]^5 = [1 + r(3)]^3 \times [(1 + f(2,3)]^2$$
$$(1 + 0.07)^5 = (1 + 0.045)^3 \times [(1 + f(2,3)]^2$$
$$f(1, 2) = 0.1086 \text{ or } 10.86\%$$

Question 20

Which of the following spread measures is *most* likely an indicator of the risk and liquidity of money-market securities?

◉ LIBOR-OIS spread.

○ TED spread.

○ I-spread.

Rationale

✅ **This Answer is Correct**

The LIBOR–OIS spread is an indicator of the risk and liquidity of money-market securities.

The TED spread is a reflection of risk in the banking system.

The I-spread is calculated as the difference between the yield on a corporate bond and the swap rate on a swap with the same tenure as the bond.

Question 21

L2R43TB-AC018-1512
LOS: LOS-9330
Lesson Reference: Lesson 1: Swap Rates and Forward Rates
Difficulty: medium

Granite Securities Industries (GSI) buys a forward contract for $96.21. GSI will *most likely* realize a capital gain if future spot rates are:

○ equal to the rate predicted by current forward rates.

◉ less than the rate predicted by current forward rates.

○ greater than the rate predicted by current forward rates.

Rationale

❌ **equal to the rate predicted by current forward rates.**

The contract price of $96.21 will increase if the expected spot rates are lower than forward rates predicted by the forward rate model. The lower discount rate will cause the forward price to rise.

Rationale

✅ **less than the rate predicted by current forward rates.**

The contract price of $96.21 will increase if the expected spot rates are lower than forward rates predicted by the forward rate model. The lower discount rate will cause the forward price to rise.

Rationale

❌ **greater than the rate predicted by current forward rates.**

The contract price of $96.21 will increase if the expected spot rates are lower than forward rates predicted by the forward rate model. The lower discount rate will cause the forward price to rise.

Question 22

L2R43TB-AC021-1512
LOS: LOS-9390
Lesson Reference: Lesson 3: Traditional Term Structure Theories
Difficulty: medium

Jonathan Hart is an economist who uses spread analysis. Hart observes that LIBOR has increased by 25 basis points and the overnight indexed swap rate (OIS) has increased the same day by 20 basis points. Based on this observation, Hart will *most likely* predict a(n):

🔘 liquidity decrease in the money market.

⭕ rise in interest rates in the inter-bank market.

⭕ increase in the willingness to lend by large financial institutions.

Rationale

✅ **liquidity decrease in the money market.**

The LIBOR-OIS spread is defined as the difference between LIBOR and an indexed swap rate, which reflects the rate on unsecured overnight loans. This is a measure of the level of credit risk and liquidity risk in money market securities. If LIBOR increases by 25 basis points and the indexed swap rate increases by 20 basis points, there is a widening of the LIBOR-OIS spread. Consequently, liquidity in the money market is declining or credit risk is rising.

Rationale

❌ **rise in interest rates in the inter-bank market.**

The LIBOR-OIS spread is defined as the difference between LIBOR and an indexed swap rate, which reflects the rate on unsecured overnight loans. This is a measure of the level of credit risk and liquidity risk in money market securities. If LIBOR increases by 25 basis points and the indexed swap rate increases by 20 basis points, there is a widening of the LIBOR-OIS spread. Consequently, liquidity in the money market is declining or credit risk is rising.

Rationale

❌ **increase in the willingness to lend by large financial institutions.**

The LIBOR-OIS spread is defined as the difference between LIBOR and an indexed swap rate, which reflects the rate on unsecured overnight loans. This is a measure of the level of credit risk and liquidity risk in money market securities. If LIBOR increases by 25 basis points and the indexed swap rate increases by 20 basis points, there is a widening of the LIBOR-OIS spread. Consequently, liquidity in the money market is declining or credit risk is rising.

Question 23

L2FI-TB0007-1412
LOS: LOS-9360
Lesson Reference: Lesson 2: The Swap Rate Curve
Difficulty: medium

An investor is holding a $1 million par investment in HR Capital with a coupon rate of 1 3/8% paid semiannually and two years to maturity. The swap rate for maturity of two years is 4% and the swap spread for the same maturity is 0.827%. The bond has a value closest to:

○ $853,000.

◉ $935,000.

○ $1 million.

Rationale

✅ **This Answer is Correct**

The cash flows from the bond will be four coupons of 1.375%/2 $1,000,000 = $6875 plus par paid back after two years.

The YTM of the bond will be the swap rate plus swap spread = 4% + 0.827% = 4.827%. Hence cash flows will be discounted at 4.827% / 2 = 2.4135% every six months, and the fair value of the bond is:

$6,875/(1.024135) + $6,875 / (1.024135)^2 + $6875 / (1.024135)^3 + $1006875 / (1.024135)^4

= $934,933

Question 24

L2FI-TB0005-1412

LOS: LOS-9350

Lesson Reference: Lesson 1: Swap Rates and Forward Rates

Difficulty: medium

A fixed-income portfolio manager will *most likely* execute the strategy of riding the yield curve when yield curves are:

◉ Normal.

○ Inverted.

○ Flat.

Rationale

✅ **This Answer is Correct**

The strategy of riding the yield curve involves purchasing bonds with maturities that are longer than the investment horizon. In a normal upward sloping yield curve environment, the yield of the bond will fall and the manager can sell the bond at their investment horizon and realize a capital gain.

Question 25

To determine the forward price on a three-year bond to be issued in one year's time, an analyst today would *most likely* need the:

- ● one-year discount factor and the four-year discount factor.
- ○ one-, two-, three-, and four-year discount factors.
- ○ one-, two-, and three-year discount factors.

Rationale

✓ **one-year discount factor and the four-year discount factor.**

The analyst would only need the one-year discount factor and the four-year discount factor to determine he forward price on a three-year bond to be issued in one year.

Rationale

✗ **one-, two-, three-, and four-year discount factors.**

The analyst would only need the one-year discount factor and the four-year discount factor to determine he forward price on a three-year bond to be issued in one year.

Rationale

✗ **one-, two-, and three-year discount factors.**

The analyst would only need the one-year discount factor and the four-year discount factor to determine he forward price on a three-year bond to be issued in one year.

Question 26

L2AI-PQ4208-1501

LOS: LOS-9400

Lesson Reference: Lesson 3: Traditional Term Structure Theories

Difficulty: hard

Under the liquidity preference theory, if the yield curve is flat, we can *most* likely conclude that:

- ● Short-term interest rates are expected to fall.
- ○ Short-term interest rates are expected to remain at the same level.
- ○ Short-term interest rates are expected to rise.

Rationale

✅ **This Answer is Correct**

Under the liquidity preference theory, if the yield curve is flat or downward sloping, we can conclude that short-term interest rates are expected to fall, as yields are influenced by (1) expected short-term interest rates and (2) a yield premium for investing in longer-term instruments.

Question 27

An investor states that she will be successful in riding the yield curve if interest rates remain stable. This belief is *most likely* accurate:

○ at all times.

◉ only if the yield curve remains upward sloping.

○ only if the yield curve remains downward sloping.

Rationale

❌ **at all times.**

Riding the yield curve requires the purchase of bonds with a longer maturity than the investment horizon. This strategy can be successful if interest rates do not change much over the horizon, but an additional requirement is that the yield curve is upward sloping. This allows the investor to purchase the longer-term bonds at a lower price/higher yield to maturity and then earn a greater total return when they are sold at the end of the investment horizon.

Rationale

✅ **only if the yield curve remains upward sloping.**

Riding the yield curve requires the purchase of bonds with a longer maturity than the investment horizon. This strategy can be successful if interest rates do not change much over the horizon, but an additional requirement is that the yield curve is upward sloping. This allows the investor to purchase the longer-term bonds at a lower price/higher yield to maturity and then earn a greater total return when they are sold at the end of the investment horizon.

Rationale

❌ **only if the yield curve remains downward sloping.**

Riding the yield curve requires the purchase of bonds with a longer maturity than the investment horizon. This strategy can be successful if interest rates do not change much over the horizon, but an additional requirement is that the yield curve is upward sloping. This allows the investor to purchase the longer-term bonds at a lower price/higher yield to maturity and then earn a greater total return when they are sold at the end of the investment horizon.

Question 28

Carlos Ayeira, CFA, is discussing the traditional theories of the term structure of interest rates with a work colleague, Steven Cage. Cage makes the following two statements:

Statement 1:

"The liquidity preference theory asserts that liquidity premiums exist to compensate investors for the added interest rate risk they face when lending long term. As such forward rates derived from current yield curve provide an upwardly biased estimate of expected future spot rates."

Statement 2:

"Segmented markets theory simply states that yields are a reflection of the supply and demand for funds at a particular maturity. Yields at different maturities are determined independently of the yields that prevail in other maturity segments."

How many of Cage's comments are accurate?

○ Neither comment is accurate.

○ Only one comment is accurate.

◉ Both comments are accurate.

Rationale

✅ **This Answer is Correct**

Both of the statements are accurate definitions of the respective theories of the term structure of interest rates.

Question 29
L2FI-TB0006-1412
LOS: LOS-9360
Lesson Reference: Lesson 2: The Swap Rate Curve
Difficulty: medium

Fixed-income market participants are *least likely* to favor swap curves to government spot curves when performing fixed-income valuation due to which of the following factors?

○ Liquidity.

◉ Transparency.

○ Regulation.

Rationale

✅ **This Answer is Correct**

Many countries do not have a liquid government bond market with maturities longer than one year. The swap curve is a necessary market benchmark for interest rates in these countries. The swaps market is an unregulated OTC market and as such is not controlled by governments, and hence more comparable across international markets. It is unlikely that swaps market will be more transparent than government bond markets.

Question 30

L2AI-PQ4205-1501
LOS: LOS-9370
Lesson Reference: Lesson 2: The Swap Rate Curve
Difficulty: hard

Given that the price of a three-year plain-vanilla interest rate swap is 5%, the three-year Treasury is yielding 4.55%, and the LIBOR is 4.25%, the swap spread is *closest* to:

- ● 45 bps.
- ○ 30 bps.
- ○ 75 bps.

Rationale

✅ **This Answer is Correct**

The swap spread is defined as the difference between the swap fixed rate on a swap and the rate on the "on-the-run" government security with the same maturity/tenure as the swap.

Question 31

L2FI-TB0004-1412

LOS: LOS-9340

Lesson Reference: Lesson 1: Swap Rates and Forward Rates

Difficulty: medium

A fixed-income portfolio manager holding long positions in default-free zero-coupon bonds will have positive active returns when spot rates evolve over the holding period to be:

○ Equal to rates implied by the forward curve.

◉ Less than the rates implied by the forward curve.

○ Greater than the rates implied by the forward curve.

Rationale

✅ **This Answer is Correct**

If the spot rates evolve to be equal to the original forward rates then the manager will not earn any active return. In order for the manager to earn excess returns they require spot rates to fall relative to the levels implied by forward rates, then the manager can sell the bond for a higher price and earn excess returns.

Question 32

Consider the following statements:

Statement 1: If actual future spot rates will turn out to be the same as forward rates predicted by current spot rates, the expected return on a bond will equal its YTM.

Statement 2: If a trader expects that the future spot rate will be lower than what is predicted by the prevailing forward rate, he would buy the forward contract because he expects its value to increase.

Which of the following is *most* likely?

○ Only Statement 1 is correct.

◉ Only Statement 2 is correct.

○ Both statements are incorrect.

Rationale

✅ **This Answer is Correct**

Even if we make the assumption that actual future spot rates will turn out to be the same as forward rates (that are based on current spot rates), the expected return on a bond still will not equal its YTM. This is because the YTM implicitly assumes that the yield curve is flat (the same discount rate is applied to each cash flow regardless of its maturity).

A change in the forward rate (and the forward price) reflects a deviation of the spot curve from that predicted by today's forward curve. If a trader expects that the future spot rate will be lower than what is predicted by the prevailing forward rate, he would buy the forward contract because he expects its value to increase. Stated differently, if the trader expects that interest rates in the future will actually be lower than the rates anticipated by the market, she would buy a bond.

Question 33

An analyst is *most likely* correct when stating that:

○ the forward curve always lies above the spot curve.

○ the yield to maturity will never be identical to the expected return on a fixed income security.

◉ an increase in the initiation date of a forward rate loan will move the forward curve away from the spot curve.

Rationale

❌ **the forward curve always lies above the spot curve.**

The analyst is correct in making this statement because the farther out the loan is being made in a forward contract, the greater will be the distance between the spot and forward curves.

Choice A is incorrect because the forward curve will lie above the spot curve if it is upward sloping (yields are expected to rise in the future), but will lie below the spot curve if it is downward sloping (yields are expected to fall). Choice B is incorrect because the yield to maturity will be identical to the expected return if yields are stable and constant, if the bond has low default risk, and if there are no embedded options.

Rationale

❌ **the yield to maturity will never be identical to the expected return on a fixed income security.**

The analyst is correct in making this statement because the farther out the loan is being made in a forward contract, the greater will be the distance between the spot and forward curves.

Choice A is incorrect because the forward curve will lie above the spot curve if it is upward sloping (yields are expected to rise in the future), but will lie below the spot curve if it is downward sloping (yields are expected to fall). Choice B is incorrect because the yield to maturity will be identical to the expected return if yields are stable and constant, if the bond has low default risk, and if there are no embedded options.

Rationale

✅ **an increase in the initiation date of a forward rate loan will move the forward curve away from the spot curve.**

The analyst is correct in making this statement because the farther out the loan is being made in a forward contract, the greater will be the distance between the spot and forward curves.

Choice A is incorrect because the forward curve will lie above the spot curve if it is upward sloping (yields are expected to rise in the future), but will lie below the spot curve if it is downward sloping (yields are expected to fall). Choice B is incorrect because the yield to maturity will be identical to the expected return if yields are stable and constant, if the bond has low default risk, and if there are no embedded options.

Question 34

L2R43TB-AC022-1512
LOS: LOS-9370
Lesson Reference: Lesson 2: The Swap Rate Curve
Difficulty: medium

Marlene Phillips is an economist who uses spread analysis. Phillips predicts the federal government will pursue policies that increase the supply of capital available for banks. Philips will *most likely* predict:

○ an increase in the TED spread.

◉ a reduction in the swap spread.

○ no change in the LIBOR-OIS spread.

Rationale

❌ **an increase in the TED spread.**

An increase in the supply of funds will affect many variables in the financial industry, but will most likely reduce swap spreads. Swap spreads are differences between the fixed rate on an interest rate swap and the yield on a similar maturity Treasury security. More capital generally means less risk so the spread will most likely become narrower.

Rationale

✅ **a reduction in the swap spread.**

An increase in the supply of funds will affect many variables in the financial industry, but will most likely reduce swap spreads. Swap spreads are differences between the fixed rate on an interest rate swap and the yield on a similar maturity Treasury security. More capital generally means less risk so the spread will most likely become narrower.

Rationale

❌ **no change in the LIBOR-OIS spread.**

An increase in the supply of funds will affect many variables in the financial industry, but will most likely reduce swap spreads. Swap spreads are differences between the fixed rate on an interest rate swap and the yield on a similar maturity Treasury security. More capital generally means less risk so the spread will most likely become narrower.

Question 35

Use the following information to answer the next 3 questions:

Matthew Winger, CFA, a research analyst with AC Securities, has been asked to estimate forward rates for the active fixed-income managers at AC. Winger observes the following spot rates:

Time Period	Spot Rate
1-year	2.8%
2-year	3.9%
3-year	4.8%
4-year	6.1%

AC Securities has the following three clients:

- Fine Carpet Company (FCC), which expects to finance an expansion in one year by issuing a two-year note.
- Howard Foundation (HF), which expects to receive a large donation in two years and will not likely need the funds until two years after the donation is received. HF has asked AC Securities to estimate the rate it will receive on a two-year zero-coupon bond bought when the donation is received.
- Karen Camp is a wealthy investor who has had considerable success with riding the yield curve. Camp has an investment horizon of three years and hopes to generate a relatively high total return. Camp believes the yield curve will maintain its current level and shape.

i.
The best estimate for the loan rate that Fine Carpet Company will have to pay when it issues the two-year note in one year is *closest to*:

- ○ 4.4%
- ● 5.8%
- ○ 6.6%

Rationale

✅ **This Answer is Correct**

What is required is the forward rate on a two-year security issued in one year, which is $f(1,2)$. The calculation is as follows:

$$[1 + r(3)]^3 = [1 + r(1)]^1 \times [(1 + f(1,2)]^2$$
$$(1 + 0.048)^3 = (1 + 0.028)^1 \times [(1 + f(1,2)]^2$$
$$f(1,2) = 0.0581$$

Rationale

✅ **This Answer is Correct**

What is required is the forward rate on a two-year security issued in one year, which is $f(1,2)$. The calculation is as follows:

$$[1 + r(3)]^3 = [1 + r(1)]^1 \times [(1 + f(1,2)]^2$$
$$(1 + 0.048)^3 = (1 + 0.028)^1 \times [(1 + f(1,2)]^2$$
$$f(1,2) = 0.0581$$

Rationale

✅ **This Answer is Correct**

What is required is the forward rate on a two-year security issued in one year, which is $f(1,2)$. The calculation is as follows:

$$[1 + r(3)]^3 = [1 + r(1)]^1 \times [(1 + f(1,2)]^2$$
$$(1 + 0.048)^3 = (1 + 0.028)^1 \times [(1 + f(1,2)]^2$$
$$f(1,2) = 0.0581$$

ii.

Based on current rates, the rate that Howard Foundation will *most likely* receive on its investment made when the donation is received is *closest to*:

○ 5.45%

◉ 8.35%

○ 8.92%

Rationale

❌ **This Answer is Incorrect**

What is required is the forward rate on a two-year security issued in two years, which is $f(2,2)$. The calculation is as follows:

$$[1 + r(4)]^4 = [1 + r(2)]^2 \times [(1 + f(2,2)]^2$$
$$(1 + 0.061)^4 = (1 + 0.039)^2 \times [(1 + f(2,2)]^2$$
$$f(2,2) = 0.0835$$

Rationale

❌ **This Answer is Incorrect**

What is required is the forward rate on a two-year security issued in two years, which is *f*(2,2). The calculation is as follows:

$$[1 + r(4)]^4 = [1 + r(2)]^2 \times [(1 + f(2,2)]^2$$
$$(1 + 0.061)^4 = (1 + 0.039)^2 \times [(1 + f(2,2)]^2$$
$$f(2,2) = 0.0835$$

Rationale

✖ This Answer is Incorrect

iii.

Camp will *most likely* execute her strategy by purchasing a:

○ two-year bond.

○ three-year bond.

◉ four-year bond.

Rationale

✖ This Answer is Incorrect

Describe the strategy of riding the yield curve LOS-9350

Riding the yield curve involves buying a bond with a longer maturity than the investment horizon when the yield curve is upward sloping. This longer-term bond has more capital appreciation if rates do not change than buying a bond maturing at the investment horizon. Given her three-year investment horizon, she should buy the four-year bond in order to ride the yield curve.

Rationale

✖ This Answer is Incorrect

Describe the strategy of riding the yield curve LOS-9350

Riding the yield curve involves buying a bond with a longer maturity than the investment horizon when the yield curve is upward sloping. This longer-term bond has more capital appreciation if rates do not change than buying a bond maturing at the investment horizon. Given her three-year investment horizon, she should buy the four-year bond in order to ride the yield curve.

Rationale

❌ **This Answer is Incorrect**

Describe the strategy of riding the yield curve LOS-9350

Riding the yield curve involves buying a bond with a longer maturity than the investment horizon when the yield curve is upward sloping. This longer-term bond has more capital appreciation if rates do not change than buying a bond maturing at the investment horizon. Given her three-year investment horizon, she should buy the four-year bond in order to ride the yield curve.

Question 36

Lauren Peters is an economist who uses spread analysis. Peters observes the TED spread becoming narrower and would *most likely* attribute this change to a(n):

○ increase in counterparty risk in the swap market.

◉ reduction in default risk in the bank to bank overnight loan market.

○ reduction in default risk and liquidity of securities traded in the money market.

Rationale

❌ **increase in counterparty risk in the swap market.**

TED spread is the difference between LIBOR and the yield on the same maturity Treasury security. As such, it measures general default risk in the banking system and the general credit risk in the economy. A narrowing of the spread would indicate risks are falling in the overnight loan market.

Rationale

✅ **reduction in default risk in the bank to bank overnight loan market.**

TED spread is the difference between LIBOR and the yield on the same maturity Treasury security. As such, it measures general default risk in the banking system and the general credit risk in the economy. A narrowing of the spread would indicate risks are falling in the overnight loan market.

Rationale

❌ **reduction in default risk and liquidity of securities traded in the money market.**

TED spread is the difference between LIBOR and the yield on the same maturity Treasury security. As such, it measures general default risk in the banking system and the general credit risk in the economy. A narrowing of the spread would indicate risks are falling in the overnight loan market.

Question 37

L2FI-TBX102-1502

LOS: LOS-9420

Lesson Reference: Lesson 5: Yield Curve Factor Models

Difficulty: easy

The Litterman and Scheinkman yield curve multifactor model has three factors. Which of the following factors is *not* part of the model?

○ Level.

◉ Maturity.

○ Steepness.

Rationale

✓ **This Answer is Correct**

The three factors of the Litterman and Scheinkman yield curve multifactor model are Level, Steepness, and Curvature.

Question 38

L2AI-PQ4214-1501

LOS: LOS-9420

Lesson Reference: Lesson 5: Yield Curve Factor Models

Difficulty: hard

Assume that the yield curve is initially flat. The short-term rate increases by 250 bps, and the long rate increases by 150 bps. This yield curve movement is *most* likely a:

○ Flattening of the yield curve resulting from changes in level and steepness.

◉ Steepening of the yield curve resulting from changes in level and steepness.

○ Steepening of the yield curve resulting from changes in steepness alone.

Rationale

✅ **This Answer is Correct**

Both the short-term and long-term rates have increased, which means that there is a change in the level of the yield curve. Further, short-term rates have increased more than long-term rates, which means that the yield curve has steepened as well.

Question 39

The realized rate of return on a bond is *least* likely a function of:

○ Actual coupon reinvestment rates.

○ The yield curve at the end of the investment horizon.

◉ Interest rate volatility during the investment horizon.

Rationale

✅ **This Answer is Correct**

The realized rate of return is the actual return earned by a bond investor over the holding period. It is based on (1) actual reinvestment rates and (2) the yield curve at the end of the holding period. Interest rate volatility **during** the holding period does not make a difference to the realized return.

Question 40

An analyst anticipates the yield to maturity and the actual return on a bond issued by a large conglomerate to be similar. For the analyst to be accurate, *most likely* the:

○ bond must be of investment grade.

◉ level of interest rates must be stable.

○ bond must be free of embedded options.

Rationale

❌ **bond must be of investment grade.**

The only way that yield to maturity and actual return will be identical or even similar is during a stable interest rate environment.

Rationale

✅ **level of interest rates must be stable.**

The only way that yield to maturity and actual return will be identical or even similar is during a stable interest rate environment.

Rationale

❌ **bond must be free of embedded options.**

The only way that yield to maturity and actual return will be identical or even similar is during a stable interest rate environment.

Question 41

L2R43TB-AC026-1512

LOS: LOS-9430

Lesson Reference: Lesson 5: Yield Curve Factor Models

Difficulty: medium

A fixed-income portfolio manager expects short-term rates to increase from 2% to 3% and long-term rates to increase from 6% to 6.5%. To manage the yield curve risk in his portfolios for the predicted changes, the manager should *most likely* use:

🔘 key rate duration.

⚪ effective duration.

⚪ effective convexity.

Rationale

✅ **key rate duration.**

Key rate duration should be used in managing yield curve risk when there are nonparallel shifts in the yield curve, such as the change predicted. Key rate duration measures the change in the bond's price when key rates along the maturity scale change and is used to manage shaping risk.

Rationale

❌ **effective duration.**

Key rate duration should be used in managing yield curve risk when there are nonparallel shifts in the yield curve, such as the change predicted. Key rate duration measures the change in the bond's price when key rates along the maturity scale change and is used to manage shaping risk.

Rationale

❌ **effective convexity.**

Key rate duration should be used in managing yield curve risk when there are nonparallel shifts in the yield curve, such as the change predicted. Key rate duration measures the change in the bond's price when key rates along the maturity scale change and is used to manage shaping risk.

Question 42

L2AI-PQ4207-1501

LOS: LOS-9400

Lesson Reference: Lesson 3: Traditional Term Structure Theories

Difficulty: hard

The fact that short-term returns on longer-maturity bonds exceed those on shorter-maturity bonds *most* likely serves as an argument against:

⦿ Local expectations theory.

○ Liquidity preference theory.

○ Segmented markets theory

Rationale

✅ **This Answer is Correct**

Local expectations theory requires that there be no-risk premiums for very short holding periods. However, it is often observed that short-term returns on longer-maturity bonds exceed those on shorter-maturity bonds (as higher demand for short-term securities lowers their yields).

Question 43

L2FI-TB0003-1412
LOS: LOS-9340
Lesson Reference: Lesson 1: Swap Rates and Forward Rates
Difficulty: medium

An investor collects the following term structure of spot rates and forward rates:

$$r(1) \quad 10.00\%$$
$$r(2) \quad 12.00\%$$
$$r(3) \quad 14.00\%$$
$$f(1,1) \ 14.04\%$$
$$f(1,2) \ 16.05\%$$

They purchase a two-year zero-coupon bond and after one year they sell the bond. If the spot rate in the second year turns out to be the original forward rate for the second year, $f(1,1)$, the investor will earn a holding period return of:

- ● 10.00%.
- ○ 12.00%.
- ○ 14.04%.

Rationale

✓ **This Answer is Correct**

Without doing any complicated calculations, it can be said that if spot rates turn out to be equal in the future to the values that forward rates implied, then the investor will earn the spot return for the period that they hold the bond (in this case the first year).

Question 44
L2AI-PQ4210-1501
LOS: LOS-9410
Lesson Reference: Lesson 4: Modern Term Structure Theories
Difficulty: hard

Consider the following statements:

Statement 1: Equilibrium term structure models typically require more parameters to be estimated than arbitrage-free term structure models.

Statement 2: Unlike most equilibrium term structure models, arbitrage-free term structure models do not make a term premium assumption.

Which of the following is *most* likely?

○ Only Statement 1 is correct.

◉ Only Statement 2 is correct.

○ Both statements are incorrect.

Rationale
✅ **This Answer is Correct**

Equilibrium term structure models typically require estimation of **fewer** parameters than arbitrage-free term structure models, but this comes at the cost of less precision in modeling the observed yield curve.

Equilibrium term structure models typically make an assumption regarding the term premium, i.e., the additional return required by lenders to invest in long-term securities. Arbitrage-free models do not make a term premium assumption.

Question 45
L2R43TB-ITEMSET-AC004-1512
LOS: LOS-9370
LOS: LOS-9380
LOS: LOS-9390
Lesson Reference: Lesson 2: The Swap Rate Curve
Difficulty: N/A

Use the following information to answer the next 3 questions:

Devon Green, CFA, is an analyst for a pension fund that allocates 50% of its capital to fixed-income securities. Green has been evaluating spreads to identify mispriced bonds and to quantify risk in the fixed-income market.

Beginning in three years, the pension fund will have a significant increase in the number of retirees drawing payments. Green is considering the purchase of three-year, 4.1% annual-pay coupon bonds issued by Snow Corp with a yield to maturity of 4.4%. Green makes a note that he should use the Z-spread to evaluate both the credit risk and the liquidity risk of the Snow bonds. Green makes a second note that TED spreads have been approximately 85 basis points during the last six months.

Green collects the following information:

Three-year Treasury note yield:	2.9%
Fixed swap rate with three-year tenor:	3.1%
Fixed swap rate with five-year tenor:	3.3%
Three-month LIBOR:	2.2%
Three-month Treasury note yield:	1.8%

i.
The swap spread is *closest to*:

◉ 20 basis points.

○ 40 basis points.

○ 70 basis points.

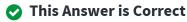**Rationale**

✅ **This Answer is Correct**

The swap spread is the difference between the interest rate paid by the fixed-rate payer in an interest rate swap and the yield on a risk-free government security with an identical maturity date. Therefore, the swap spread is 3.1% – 2.9% = 0.2% or 20 basis points.

Rationale

✅ **This Answer is Correct**

The swap spread is the difference between the interest rate paid by the fixed-rate payer in an interest rate swap and the yield on a risk-free government security with an identical maturity date. Therefore, the swap spread is 3.1% – 2.9% = 0.2% or 20 basis points.

Rationale

✅ **This Answer is Correct**

The swap spread is the difference between the interest rate paid by the fixed-rate payer in an interest rate swap and the yield on a risk-free government security with an identical maturity date. Therefore, the swap spread is 3.1% – 2.9% = 0.2% or 20 basis points.

ii.

Is Green's comment regarding the Z-spread *most likely* correct?

🔘 Yes.

⚪ No because the Z-spread fails to consider credit risk.

⚪ No because the Z-spread fails to consider liquidity risk.

Rationale

❌ **This Answer is Incorrect**

The Z-spread is the constant basis point spread that when added to the spot rates forces the present value of the cash flows to be equal to the bond's market value. The process of determining the Z-spread ensures that credit risk and liquidity risk are considered because both risks are reflected in the market price of the bond. Bonds with higher credit risk and less liquidity will have higher Z-spreads.

Rationale

❌ **This Answer is Incorrect**

The Z-spread is the constant basis point spread that when added to the spot rates forces the present value of the cash flows to be equal to the bond's market value. The process of determining the Z-spread ensures that credit risk and liquidity risk are considered because both risks are reflected in the market price of the bond. Bonds with higher credit risk and less liquidity will have higher Z-spreads.

Rationale

❌ **This Answer is Incorrect**

The Z-spread is the constant basis point spread that when added to the spot rates forces the present value of the cash flows to be equal to the bond's market value. The process of determining the Z-spread ensures that credit risk and liquidity risk are considered because both risks are reflected in the market price of the bond. Bonds with higher credit risk and less liquidity will have higher Z-spreads.

iii.

As part of his spread analysis, Green would *most likely* conclude the TED spread is:

○ 70 basis points and counterparty risk has increased.

○ 40 basis points and counterparty risk has increased.

◉ 40 basis points and counterparty risk has decreased.

Rationale

❌ **This Answer is Incorrect**

The TED spread is the difference between LIBOR and the yield to maturity on a Treasury security with the same maturity date. Using the data, the TED spread is currently 40 basis points (2.2% – 1.8% = 0.4%). The TED spread measures general default risk in the banking system and the general credit risk in the economy. The TED spread has narrowed from 85 basis points to 40 basis points, which indicates lowered default risk in the banking system and/or lower general credit risk in the economy. Thus, counterparty risk is lower.

Rationale

❌ **This Answer is Incorrect**

The TED spread is the difference between LIBOR and the yield to maturity on a Treasury security with the same maturity date. Using the data, the TED spread is currently 40 basis points (2.2% – 1.8% = 0.4%). The TED spread measures general default risk in the banking system and the general credit risk in the economy. The TED spread has narrowed from 85 basis points to 40 basis points, which indicates lowered default risk in the banking system and/or lower general credit risk in the economy. Thus, counterparty risk is lower.

Rationale

❌ **This Answer is Incorrect**

The TED spread is the difference between LIBOR and the yield to maturity on a Treasury security with the same maturity date. Using the data, the TED spread is currently 40 basis points (2.2% – 1.8% = 0.4%). The TED spread measures general default risk in the banking system and the general credit risk in the economy. The TED spread has narrowed from 85 basis points to 40 basis points, which indicates lowered default risk in the banking system and/or lower general credit risk in the economy. Thus, counterparty risk is lower.

Question 46

L2R43TB-AC013-1512
LOS: LOS-9330
Lesson Reference: Lesson 1: Swap Rates and Forward Rates
Difficulty: medium

An analyst observes the following:

Time Period	Spot Rate
1-year	3.0%
2-year	4.0%
3-year	4.5%
4-year	6.0%
5-year	7.0%

The forward rate on a one-year bond issued one year from today is *closest to*:

○ 3.5%

○ 4.0%

◉ 5.0%

Rationale

❌ **3.5%**

The spot curve is given as being upward sloping, so the forward rate curve must lie above it. The only possible one-year forward rate that exceeds the spot rates given is 5.0%. Therefore, this answer could have been selected without doing the math. The calculation of this rate, $f(1,1)$, is as follows:

$$[1 + r(2)]^2 = [1 + r(1)]^1 \times [(1 + f(1,1)]^1$$
$$(1 + 0.04)^2 = (1 + 0.03)^1 \times [(1 + f(1,1)]^1$$
$$f(1,1) = 0.0501 \text{ or } 5.01\%$$

Rationale

❌ **4.0%**

The spot curve is given as being upward sloping, so the forward rate curve must lie above it. The only possible one-year forward rate that exceeds the spot rates given is 5.0%. Therefore, this answer could have been selected without doing the math. The calculation of this rate, $f(1,1)$, is as follows:

$$[1 + r(2)]^2 = [1 + r(1)]^1 \times [(1 + f(1,1)]^1$$
$$(1 + 0.04)^2 = (1 + 0.03)^1 \times [(1 + f(1,1)]^1$$
$$f(1,1) = 0.0501 \text{ or } 5.01\%$$

Rationale

✅ **5.0%**

The spot curve is given as being upward sloping, so the forward rate curve must lie above it. The only possible one-year forward rate that exceeds the spot rates given is 5.0%. Therefore, this answer could have been selected without doing the math. The calculation of this rate, $f(1,1)$, is as follows:

$$[1 + r(2)]^2 = [1 + r(1)]^1 \times [(1 + f(1,1)]^1$$
$$(1 + 0.04)^2 = (1 + 0.03)^1 \times [(1 + f(1,1)]^1$$
$$f(1,1) = 0.0501 \text{ or } 5.01\%$$

Question 47

Jolene Grubbs is a fixed-income research analyst who is evaluating the difference between various modern term structure models. Grubbs prefers a model that allows volatility of interest rates to change and therefore would *least likely* select the:

○ Ho-Lee model.

⦿ Vasicek model.

○ Cox-Ingersoll-Ross model.

Rationale

❌ **Ho-Lee model.**

The Cox-Ingersoll-Ross model allows interest rate volatility to increase with interest rates, whilst the Ho-Lee model allows for interest rate volatility to change over time. In the Vasicek model, volatility is assumed to be constant over the time period, which introduces the possibility of negative interest rates.

Rationale

✅ **Vasicek model.**

The Cox-Ingersoll-Ross model allows interest rate volatility to increase with interest rates, whilst the Ho-Lee model allows for interest rate volatility to change over time. In the Vasicek model, volatility is assumed to be constant over the time period, which introduces the possibility of negative interest rates.

Rationale

❌ **Cox-Ingersoll-Ross model.**

The Cox-Ingersoll-Ross model allows interest rate volatility to increase with interest rates, whilst the Ho-Lee model allows for interest rate volatility to change over time. In the Vasicek model, volatility is assumed to be constant over the time period, which introduces the possibility of negative interest rates.

Question 48

Under which of the following term structure models can interest rates *least* likely be negative?

○ The Ho-Lee model.

○ The Vasicek model.

◉ The Cox-Ingersoll-Ross (CIR) model.

Rationale

✓ **This Answer is Correct**

The Cox-Ingersoll-Ross (CIR) model precludes the possibility of negative interest rates. Under both the Vasicek and Ho-Lee models, negative interest rates are theoretically possible.

Question 49

L2FI-TBX103-1502

LOS: LOS-9430

Lesson Reference: Lesson 5: Yield Curve Factor Models

Difficulty: easy

The volatility term structure of interest rates typically shows that long-term interest rate volatility is:

○ Higher than short-term interest rate volatility.

○ Similar to short-term interest rate volatility.

◉ Lower than short-term interest rate volatility.

Rationale

✅ **This Answer is Correct**

In normal market conditions, the actions of central banks enacting monetary policy at the short end of the curve tends to lead to higher interest rate volatility than the longer end of the curve, which is driven by more stable factors such as long-term economic conditions and inflation.

Question 50

L2R43TB-AC008-1512
LOS: LOS-9350
Lesson Reference: Lesson 2: The Swap Rate Curve
Difficulty: medium

An analyst is *least likely* to be correct when stating that if:

○ the spot rate exceeds the current forward rate, a bond will be overvalued.

◉ future spot rates are below what is predicted by the current forward rates, then the forward contract price will decrease.

○ an investor will successfully ride the yield curve by buying a longer maturity bond than the investment horizon when the yield curve is upward sloping and interest rates remain steady at current levels over the investment horizon.

Rationale
❌ **the spot rate exceeds the current forward rate, a bond will be overvalued.**

This statement is incorrect. If the future spot rates are below what is predicted by the prevailing forward rate (calculated using the forward rate model), then the forward contract will increase (not decrease) because a lower discount rate is being used than originally predicted.

Choice A is correct in that this condition implies that the discount rate is higher than the forward rate, which means the present value of the bond is less than its market value—the bond is overvalued. Choice C is correct because the investor will benefit from future spot prices being lower than what was implied by the forward curve at the time the bond was purchased. In other words, the bond price will be higher than par value at the end of the investment horizon because the discount rate at that time is less than what was implied by the forward curve.

Rationale
✅ **future spot rates are below what is predicted by the current forward rates, then the forward contract price will decrease.**

This statement is incorrect. If the future spot rates are below what is predicted by the prevailing forward rate (calculated using the forward rate model), then the forward contract will increase (not decrease) because a lower discount rate is being used than originally predicted.

Choice A is correct in that this condition implies that the discount rate is higher than the forward rate, which means the present value of the bond is less than its market value—the bond is overvalued. Choice C is correct because the investor will benefit from future spot prices being lower than what was implied by the forward curve at the time the bond was

purchased. In other words, the bond price will be higher than par value at the end of the investment horizon because the discount rate at that time is less than what was implied by the forward curve.

Rationale

❌ **an investor will successfully ride the yield curve by buying a longer maturity bond than the investment horizon when the yield curve is upward sloping and interest rates remain steady at current levels over the investment horizon.**

This statement is incorrect. If the future spot rates are below what is predicted by the prevailing forward rate (calculated using the forward rate model), then the forward contract will increase (not decrease) because a lower discount rate is being used than originally predicted.

Choice A is correct in that this condition implies that the discount rate is higher than the forward rate, which means the present value of the bond is less than its market value—the bond is overvalued. Choice C is correct because the investor will benefit from future spot prices being lower than what was implied by the forward curve at the time the bond was purchased. In other words, the bond price will be higher than par value at the end of the investment horizon because the discount rate at that time is less than what was implied by the forward curve.