Commodity futures returns

Alternative Investments

1 Two shapes of the futures curve

Chart: Futures price vs Delivery date

- Spot today
- Contango
- Backwardation

IN THE LESSON

- Meet Priya Nair, an analyst at a made-up firm called Ridgeway Funds.
- She looks at a screen of oil prices.
- Each contract is a promise to buy oil on a set future date, so each date has its own price.
- Along the bottom is the delivery date.
- Up the side is the price.
- Every curve starts at the spot price, the price for oil today.
- The upper curve rises.
- Later dates cost more.
- That shape is called contango.
- The lower curve falls.
- Later dates cost less.
- That shape is called backwardation.
- Same spot price, two very different price lists.

2 Why the curve slopes: the cost of carry

F = S × (1 + r) + storage − convenience yield

F: futures price	The futures price
S: spot price	Price for delivery today
r: interest rate	Cost of money to the delivery date
Storage cost	Tanks, insurance, handling
Convenience yield	Benefit of holding real stock

IN THE LESSON

- Why would a later date cost more?
- Think of a shop that could buy oil today and keep it until delivery.
- To agree a later price, it needs to be paid for three things.
- The money tied up, which is interest.
- The tanks, which is storage.
- And the other side of the coin: owning real oil now has a benefit, because you can use it if supplies run short.
- That benefit is called the convenience yield.
- So the futures price equals spot times one plus the interest rate, plus storage, minus the convenience yield.
- This is the theory of storage.
- Interest and storage push the price up.
- Convenience yield pulls it down.

3 Example 1: building both shapes

Spot 80, one year, interest 3%, storage 2.00

Spot price today	per barrel	**80.00**
Interest for a year	80 × 3%	**2.40**
Storage for a year	given	**2.00**
Plentiful stock, yield 0	80 + 2.40 + 2.00	**84.40**
Scarce stock, yield 6.00	84.40 − 6.00	**78.40**

IN THE LESSON

- Let us put numbers in.
- Spot oil is eighty per barrel.
- The interest rate for a year is three per cent, so interest on eighty is two point four zero.
- Storage for the year costs two.
- When stocks are plentiful, nobody values extra oil in the shed, so the convenience yield is zero.
- The futures price is eighty plus two point four plus two, which is eighty four point four zero.
- Contango.
- Now suppose a shortage hits.
- Refiners will pay a lot to have oil right now, and the convenience yield jumps to six.
- The futures price becomes eighty four point four minus six, which is seventy eight point four zero.
- Backwardation.

4 Example 2: the trap, contango is not a forecast

Bought at 84.40; spot unchanged at expiry

Buy futures today	contango price	**84.40**
Spot price at expiry	unchanged	**80.00**
Futures price at expiry	converges to spot	**80.00**
Loss per barrel	80.00 − 84.40	**−4.40**
Loss as a share	−4.40 ÷ 84.40	**−5.21%**

IN THE LESSON

- Here is the trap.
- Many students read contango as the market predicting that oil will rise.
- It does not.
- The extra eighty four forty is just carrying cost.
- Whatever the shape, a futures price converges to the spot price on the expiry date.
- Suppose Priya buys the contract at eighty four point four zero and, at expiry, spot oil is still eighty.
- The futures price must also be eighty then.
- She loses four point four zero per barrel, which is five point two one per cent of what she paid, even though oil did not move.
- Contango means a holder of futures needs the spot price to rise just to break even.

5 Who gets paid for holding futures?

- Long futures: no cash paid, no interest paid
- Question: futures price versus expected spot price
- Hedgers sell or buy to lock in a price
- Three theories give three answers

IN THE LESSON

- Now a deeper question.
- A long futures position costs nothing to enter and pays nothing along the way.
- So why should an investor earn anything?
- The answer depends on whether the futures price sits below or above the spot price the market expects at expiry.
- Think of a farmer who fears a price fall.
- She sells futures to lock in a price, which is hedging.
- Someone must take the other side, and they will want paying for the risk, like an insurance company.
- Three theories use this idea differently: insurance theory, the hedging pressure hypothesis, and the theory of storage.
- Let us take them in turn.

6 Insurance theory and hedging pressure

Insurance theory

Producers sell futures → Futures below expected spot → Longs earn a premium

Consumer pressure

Consumers buy futures → Futures above expected spot → Longs earn less

IN THE LESSON

- The first theory is insurance theory, also called normal backwardation, an idea from the economist Keynes.
- Producers, like oil drillers, hedge by selling futures.
- Speculators take the other side, the long side, and need a reward.
- So the futures price sits below the expected spot price, and as expiry nears it drifts up.
- Longs earn a risk premium.
- The hedging pressure hypothesis adds the other side.
- Consumers, like airlines, hedge by buying futures.
- If their buying dominates, the futures price sits above the expected spot price, and longs earn less, even a loss.
- So it is a tug of war between producers and consumers.

7 Comparing the three theories

Which theory explains which curve?

Theory	Where the futures price sits
Insurance theory	Below expected spot; longs paid
Hedging pressure: consumers	Above expected spot; longs earn less
Storage theory	Scarce stock: backwardation
Storage theory	Plentiful stock: contango

IN THE LESSON

- Here are the three side by side.
- In the first row, insurance theory: futures are priced below the expected spot price, so a long investor is paid for bearing the risk.
- In the second row, hedging pressure when consumers dominate: futures are above expected spot, and longs earn less.
- Of course, if producers dominate, we are back to insurance theory.
- The third row is the theory of storage, which looks at inventories, not at hedgers.
- When stocks are scarce, the convenience yield is high and the curve slopes down, backwardation.
- When stocks are plentiful, it slopes up.
- The trap is thinking backwardation is the natural state for every commodity.
- It is not.
- It depends on stocks and on who is hedging.

8 Example 3: what a long can expect

Expected spot price at expiry = 80.00

Producers dominate: futures	below expected spot	**78.00**
Long expects to gain	(80 − 78) ÷ 78	**+2.56%**
Consumers dominate: futures	above expected spot	**83.00**
Long expects to lose	(80 − 83) ÷ 83	**−3.61%**

IN THE LESSON

- Let us try the first two theories with numbers.
- Suppose the market expects spot oil to be eighty at expiry.
- In a market where producers dominate, the futures price is seventy eight.
- A long investor who buys at seventy eight and sees spot at eighty expects to gain two, which is two point five six per cent of seventy eight.
- That is the risk premium.
- Now a market where airlines dominate, and the futures price is eighty three.
- The same expected spot of eighty means the long expects to lose three, which is minus three point six one per cent of eighty three.
- Same oil, same expectation, opposite reward, purely because of who is hedging.

9 Three pockets of return

- Fully collateralised: whole notional held in cash
- Pocket one: price return
- Pocket two: roll return
- Pocket three: collateral return (interest)

IN THE LESSON

- Now let us measure what a futures investor actually earns.
- Priya runs a fully collateralised programme.
- That means a client who wants a hundred of oil exposure sets aside the full hundred in cash or Treasury bills, safe short-term government debt.
- The futures contract itself needs no payment, so that cash just sits there earning interest.
- Her month then has three pockets.
- First, the price return: did the contract she holds go up or down.
- Second, the roll return: the gain or loss when she sells the expiring contract and buys the next one.
- Third, the collateral return: interest on the cash.
- The total return is the three added together.

10 Price return and roll return

Price = P now ÷ P before − 1
Roll = (near − far) ÷ near × share

Price return	Percentage change in contract held
Roll return	Gain or loss from switching
Near (expiring) price	Price of the contract expiring
Next (new) price	Price of the contract bought
Share of position rolled	Often all of it: 100%

IN THE LESSON

- Here are the first two formulas.
- The price return is the price now divided by the price at the start, minus one.
- It is the ordinary percentage change in the contract you held.
- The roll return compares the two contracts at the moment of the switch.
- Take the near price, the one expiring, subtract the farther price, the one you buy, and divide by the near price.
- Then multiply by the share of the position you rolled.
- Watch the order.
- Near minus far.
- If the new contract costs more, the answer is negative.
- If it costs less, positive.
- The sign takes care of itself, as long as you keep that order.

11 Collateral return and the total

Collateral = annual rate × part of year
Total = price + roll + collateral

Collateral return	Interest on the cash
Annual bill rate	Quoted per year
Part of a year held	One month is one twelfth
Total return	Sum of the three parts

IN THE LESSON

- Now the other two formulas.
- Collateral return is the interest on the cash.
- Rates are quoted as annual figures, so you must scale the annual rate to the period you hold.
- For one month, divide by twelve.
- For a quarter, divide by four.
- A common slip is to use the full annual rate on a one-month period, which overstates the return twelve times.
- Finally the total return is simple addition: price return plus roll return plus collateral return.
- Keep each part separate on the way.
- Each tells the investor something different: the market view, the shape of the curve, and the interest rate.

12 Example 4: price and roll for one month

Bought near contract at 70.00; whole position rolled

Price return	71.40 ÷ 70.00 − 1	**+2.00%**
Near minus next	71.40 − 72.10	**−0.70**
Roll return	−0.70 ÷ 71.40 × 100%	**−0.98%**

IN THE LESSON

- Example four.
- At the start of the month Priya bought the near oil contract at seventy.
- At month end it trades at seventy one point four.
- She sells it and rolls the whole position into the next contract at seventy two point one.
- First, the price return.
- Seventy one point four divided by seventy, minus one, is two per cent.
- Next, the roll return.
- The near price minus the next price is seventy one point four minus seventy two point one, which is minus zero point seven.
- Divide by the near price, seventy one point four, and we get minus zero point nine eight per cent.
- The new contract was dearer, so rolling cost her.
- That is contango at work.

13 Example 4 continued: collateral and total

Bill rate 3.60% a year, held for one month

Collateral return	3.60% ÷ 12	**+0.30%**
Price + roll	2.00% − 0.98%	**+1.02%**
Total return	1.02% + 0.30%	**+1.32%**

IN THE LESSON

- Now the third pocket.
- Treasury bills yielded three point six per cent a year.
- A month is one twelfth of a year, so the collateral return is three point six divided by twelve, which is zero point three per cent.
- Add the three parts.
- Price return, two per cent.
- Roll return, minus zero point nine eight.
- Collateral return, plus zero point three.
- Two minus zero point nine eight is one point zero two, plus zero point three, gives a total of one point three two per cent.
- Notice the story.
- Oil prices rose two per cent, but the roll took almost half of that away.
- An investor who watched only the oil price would have overstated the return.

14 One month, three pockets

Return in the month (%)

Price return	**+2.00%**
Roll return	**−0.98%**
Collateral	**+0.30%**
Total	**+1.32%**

Roll return took almost half the price gain

IN THE LESSON

- Here is the month as a picture.
- Up the side is the return in the month, in per cent.
- The first bar is the price return, plus two per cent.
- It is the biggest, because the oil price rose.
- The second bar is the roll return.
- It is a cost, so read it as minus zero point nine eight.
- The bar is drawn in red, but its length shows the size of the loss.
- The third bar is collateral, plus zero point three, small but never to be forgotten.
- The last bar is the total, plus one point three two per cent.
- Price move, add the roll cost, add the interest, and you reach the total.

15 Rolling: swapping tickets

- Futures expire, so a long investor must roll
- Sell the expiring contract, buy the next one
- New one dearer: fewer contracts, roll return negative
- New one cheaper: more contracts, roll return positive

IN THE LESSON

- Why does roll return exist at all?
- Futures expire.
- A contract is like a ticket for one month, and when the ticket runs out, an investor who wants to stay in the market must sell it and buy a ticket for the next month.
- That swap is called a roll.
- Imagine selling a ticket for eighty and buying the next one.
- If the next one costs more, your money buys fewer tickets, so your exposure shrinks.
- If it costs less, your money buys more tickets.
- Fewer tickets or more tickets, from the shape of the curve alone.
- And the effect repeats every month, so it can matter more than the price move over the years.

16 One roll on two curves

Chart: Futures price vs Contract month

- Sell at 80.00
- Buy at 81.20
- Buy at 78.80

IN THE LESSON

- Here is one roll drawn on the price list.
- Delivery month along the bottom, futures price up the side.
- At the left edge the expiring contract is worth eighty.
- That is where the investor sells.
- The upper curve is contango.
- One step along, the next contract costs eighty one point twenty.
- The investor buys there, and the new contract costs more.
- The lower curve is backwardation.
- One step along, the next contract costs seventy eight point eighty.
- The investor buys there, and it costs less.
- Same sale price, two different purchase prices, and the gap between the sale and the purchase is the roll.

17 Example 5: the same roll, two curves

Sell 1,000 barrels at 80.00 = 80,000 to reinvest

Contango: buy at 81.20	(80 − 81.20) ÷ 80	**−1.50%**
Barrels bought	80,000 ÷ 81.20	**985**
Backwardation: buy at 78.80	(80 − 78.80) ÷ 80	**+1.50%**
Barrels bought	80,000 ÷ 78.80	**1,015**

IN THE LESSON

- Let us work it out.
- Priya sells one thousand barrels of the expiring contract at eighty, so she has eighty thousand to reinvest.
- In contango, the next contract is eighty one point twenty.
- The roll return is eighty minus eighty one point twenty, divided by eighty, which is minus one point five per cent.
- Her eighty thousand buys about nine hundred and eighty five barrels.
- In backwardation, the next contract is seventy eight point eighty.
- The roll return is eighty minus seventy eight point eighty, over eighty, plus one point five per cent.
- Now her money buys about one thousand and fifteen barrels.
- That is the sign rule in action, and it needs no guessing.

18 Example 6: a year of rolls compounds

Roll return only; the curve keeps its shape

Monthly roll, contango	(80 − 81.20) ÷ 80	**−1.50%**
Twelve rolls compounded	0.985 multiplied 12 times − 1	**−16.59%**
Monthly roll, backwardation	(80 − 78.80) ÷ 80	**+1.50%**
Twelve rolls compounded	1.015 multiplied 12 times − 1	**+19.56%**

IN THE LESSON

- One roll looks small.
- But it repeats.
- Suppose the curve keeps its shape, and the investor rolls every month.
- In contango, each roll costs one point five per cent.
- Twelve rolls compound to zero point nine eight five multiplied by itself twelve times, minus one, which is minus sixteen point five nine per cent, with no change in the oil price at all.
- In backwardation, the roll gains one point five per cent each month, and twelve of them compound to plus nineteen point five six per cent.
- This is why roll return can dominate long-run results, especially in energy, where contango can be steep for long stretches.
- It is also why backwardation helps, as the cheaper deferred contract tends to rise towards spot.

19 Mistakes the exam loves

- Contango is not a forecast of a rising spot price
- Backwardation is not the natural state for all goods
- Collateral: scale the annual rate to the period
- Roll sign: (expiring − new) ÷ expiring
- Roll is real money, not bookkeeping

IN THE LESSON

- Let us pause on the common mistakes, because they are the marks people lose.
- One: reading contango as a forecast that spot prices will rise.
- It is mostly carrying cost and hedging demand, and the futures price converges to spot anyway.
- Two: thinking backwardation is natural for every commodity.
- Three: forgetting the collateral return, or using the full annual rate for a one-month period.
- Divide first.
- Four: getting the sign of the roll backwards.
- Always near minus new, over near.
- And five: dismissing roll as bookkeeping.
- It is real money, and for a long investor in a steep contango market, it can be the biggest part of the story.

20 Getting exposure without the hassle

- Swap: exchange two payments on a notional amount
- The notional itself is never handed over
- One leg follows a commodity, the other is simpler
- Dealer handles the futures and the rolling

IN THE LESSON

- Now an alternative route.
- Picture a pension fund that wants oil and metal exposure but has no desk to trade futures, no time to roll them every month, and no wish to hold the contracts itself.
- A bank, called the dealer, can offer a commodity swap.
- A swap is an agreement to exchange two payments over a set time, based on an amount called the notional, which is never handed over.
- One payment depends on a commodity.
- The other is something simpler.
- Swaps let investors and hedgers take on or adjust exposure in one contract.
- The dealer does the rolling.
- Different swaps move different risks, so the skill is choosing by the risk you want.

21 Four kinds of commodity swap

Match the swap to the risk to be moved

Swap	What it delivers
Total return	Index return for bill rate + spread
Excess return	Gain above a fixed level, for a fee
Basis	One price for a related liquid one
Variance or volatility	Realised minus agreed

IN THE LESSON

- Here are the four main swaps.
- A total return swap: the receiver gets the full return on a commodity index and pays a floating rate, such as the Treasury bill rate plus a spread.
- This suits a pension fund wanting passive exposure.
- An excess return swap pays the index's change above a fixed level, for a fixed fee.
- A basis swap exchanges the price of one commodity for the price of a related, more liquid one.
- An airline might use it to hedge jet fuel against a liquid crude oil price.
- And variance and volatility swaps pay the gap between how much prices actually moved and what was agreed.
- The trap is to choose a swap by its name, instead of by the risk you want to move.

22 How a total return swap works

Fund pays the dealer

Pension fund → Bill rate plus spread → Dealer

Dealer pays the fund

Dealer → Commodity index return → Pension fund

IN THE LESSON

- Let us follow the money in a total return swap.
- The pension fund is the receiver.
- Every period, it pays the dealer a floating rate.
- That is the Treasury bill rate plus a spread, which is the dealer's fee.
- In return, the dealer pays the pension fund the return on the commodity index.
- If the index rose, that is a payment to the fund.
- If the index fell, the payment flips, and the fund pays the dealer the fall as well.
- In practice, the two flows are netted, so only the difference moves.
- Compare this with the collateralised futures portfolio.
- The fund earns bill interest on its own cash, and the swap gives it the index.
- Nearly the same position, without running the futures.

23 Example 7: a total return swap for a year

Notional 40 million; bill rate 3.00% plus spread 0.50%

Fund pays: bill + spread	3.00% + 0.50% = 3.50%	**1.40 m**
Index +5.00%: fund receives	40 m × 5.00%	**+2.00 m**
Net, index up	2.00 − 1.40	**+0.60 m**
Index −2.00%: fund pays	40 m × 2.00%	**−0.80 m**
Net, index down	−0.80 − 1.40	**−2.20 m**

IN THE LESSON

- Numbers now.
- The pension fund takes a total return swap on a notional of forty million for one year.
- It pays the bill rate of three per cent plus a spread of half a per cent, which is three point five per cent.
- On forty million, that is one point four million.
- In the first case, the index rises five per cent.
- The fund receives two million, pays one point four, and nets plus zero point six million.
- In the second case, the index falls two per cent.
- The fund must pay the fall, zero point eight million, and still pays one point four, a net of minus two point two million.
- Notice the fund's cash stayed invested elsewhere, while the swap carried the index risk.

24 Two baskets, two results

- Weights: how much of each commodity
- Roll rules: which contracts are held and rolled
- Rebalancing: resetting weights to targets
- Eligible contracts and governance

IN THE LESSON

- Last idea.
- Two commodity indexes can both be called broad, passive and fully collateralised, and still finish a year many points apart.
- Think of two shopping baskets that both say groceries.
- One is mostly oil, the other a balanced mix of oil, farm goods and metals.
- They will not behave the same.
- Four building choices drive the difference.
- Weighting, which sets how much of each commodity is held.
- Rolling rules, which set which contracts are bought.
- Rebalancing, which resets the weights.
- And the list of eligible contracts, together with the governance of the index.
- Before comparing any two index returns, check these rules.

25 Weighting sets the exposure

Energy weight (%)

Production-weighted	**60%**
Liquidity-weighted	**45%**
Sector-capped	**33%**

Illustrative weights, not real data

IN THE LESSON

- Look at weighting first.
- Up the side is the weight in energy, in per cent, and these are made-up round numbers.
- The first bar is a production-weighted index, where each commodity is held according to the value produced worldwide.
- Energy output is huge, so energy takes sixty per cent.
- Such an index behaves much like an oil fund.
- The second bar is an index using liquidity weights, which follow how heavily each contract trades, at forty five per cent.
- The third is an index with sector caps, which stops any one sector growing too large, at thirty three.
- The more diversified indexes are less tied to oil, which makes their results differ.

26 Example 8: same markets, different weights

Energy −12%, farm +5%, metals +8%, livestock +3%

Energy part, production	60% × −12%	**−7.20%**
Production-weighted index	60/20/14/6	**−4.90%**
Energy part, capped	33% × −12%	**−3.96%**
Sector-capped index	33/29/30/8	**+0.13%**
Gap from weights alone	0.13 − (−4.90)	**5.03 points**

IN THE LESSON

- Let us see it work.
- Say in one year energy falls twelve per cent, farm goods rise five, metals rise eight, and livestock rises three.
- The production-weighted index holds sixty, twenty, fourteen and six per cent.
- Energy contributes sixty per cent times minus twelve, minus seven point two per cent.
- The whole index returns minus four point nine zero per cent.
- The sector-capped index holds thirty three, twenty nine, thirty and eight.
- Energy now contributes only minus three point nine six, and the whole index returns plus zero point one three per cent.
- Same markets, same year, a gap of five point zero three points, entirely from the weights.

27 Roll rules, rebalancing and the rest

Check these rules before comparing two indexes

Build choice	Why it matters
Weighting	Sets exposure: oil heavy or spread
Roll rule	Front month or the cheapest contract
Rebalancing	Helps if prices revert, hurts if trend
Eligible contracts	Different lists, different returns

IN THE LESSON

- Now the other building choices.
- Rolling rules.
- An index that always rolls into the next front-month contract earns whatever the curve gives.
- An index that picks the contract with the most favourable roll can soften the losses in contango.
- Rebalancing.
- Resetting to fixed weights adds value when prices mean-revert, meaning they drift back, and costs value when prices trend.
- Last, eligible contracts and governance: indexes differ in which markets they include and in who decides when the rules change.
- The trap is comparing index returns without checking weights, the roll method and the rebalancing rules.
- Same label, different engine.

28 Example 9: the roll rule changes the answer

Steady contango; no change in the spot price

Front-month rule, monthly	given	**−1.50%**
Front-month rule, one year	0.985 multiplied 12 times − 1	**−16.59%**
Optimised rule, monthly	given	**−0.50%**
Optimised rule, one year	0.995 multiplied 12 times − 1	**−5.84%**
Difference	−5.84% − (−16.59%)	**10.75 points**

IN THE LESSON

- Let us test the roll rule.
- Take two indexes on the same market in steady contango.
- The first always rolls to the next front-month contract, and loses one point five per cent each month.
- The second looks along the curve and picks a contract that costs only zero point five per cent to roll into.
- Over twelve months, the first compounds to minus sixteen point five nine per cent.
- The second compounds to minus five point eight four per cent.
- The gap is ten point seven five points a year, and it comes from the roll rule, not from the price of the commodity.
- A smart rule softens the damage of contango.
- It cannot remove it.

29 Example 10: rebalancing helps or hurts

Year one: A +20%, B −10%. Year two: reverse, or repeat

After year one	A 60 + B 45	**105.00**
Reverses: no rebalance	54 + 54	**108.00**
Reverses: rebalanced	47.25 + 63	**110.25**
Trend: no rebalance	72 + 40.5	**112.50**
Trend: rebalanced	63 + 47.25	**110.25**

IN THE LESSON

- Last example: rebalancing.
- A fund holds two sectors, fifty each.
- In year one sector A rises twenty per cent and sector B falls ten.
- Now A is sixty and B is forty five, total one hundred and five.
- Case one: prices reverse in year two, with A down ten and B up twenty.
- Without rebalancing the total is fifty four plus fifty four, a hundred and eight.
- If the index first reset to fifty two and a half each, it ends at forty seven twenty five plus sixty three, a hundred and ten twenty five.
- Rebalancing wins.
- Case two: the trend continues.
- Without rebalancing the total is a hundred and twelve and a half.
- With rebalancing it is a hundred and ten twenty five.
- Rebalancing loses.

30 Recap: what to remember

- Contango: later dearer. Backwardation: later cheaper
- Total = price + roll + collateral return
- Roll = (expiring − new) ÷ expiring
- Swaps and index rules change what you really earn

IN THE LESSON

- Let us pull it together.
- Contango means later futures cost more than spot, usually because of interest and storage.
- Backwardation means they cost less, usually because scarce stock gives a high convenience yield.
- Neither is a forecast.
- Insurance theory says producers pay speculators, so futures sit below expected spot.
- Hedging pressure adds consumers, who push them up.
- A fully collateralised return is price return plus roll return plus collateral return.
- Roll return is near minus new, divided by near: negative in contango, positive in backwardation.
- Swaps move exposure without trading futures, and an index's weights, roll rule and rebalancing change what it earns.

31 Try three quick questions

1. Expiring 50.00, next 51.00, whole position rolled. Roll return?
   Answer: (50 − 51) ÷ 50 = −2.00%
2. Bill rate 2.40% a year, held one quarter. Collateral return?
   Answer: 2.40% ÷ 4 = 0.60%
3. Producers hedge heavily by selling futures. Which theory? Premium?
   Answer: Insurance theory: futures below expected spot; longs earn a premium

IN THE LESSON

- Now try three quick questions yourself.
- Pause after each one.
- Question one.
- The expiring contract is fifty and the next is fifty one, and the whole position is rolled.
- What is the roll return?
- Fifty minus fifty one is minus one, divided by fifty, so minus two per cent.
- Question two.
- The annual bill rate is two point four per cent and the position is held for one quarter.
- What is the collateral return?
- Divide by four, so zero point six per cent.
- Question three.
- Producers hedge heavily by selling futures.
- Which theory is this, and do longs earn a premium?
- Insurance theory.
- Futures sit below expected spot, so yes, longs are paid a premium.