Credit spreads and credit default swaps

Fixed Income

1 A story: the price tag that moved

- A credit spread is the price tag on credit risk
- A wider spread does not always mean a riskier firm
- Several different causes sit behind one number
- Some causes last, some fade by themselves

IN THE LESSON

- Imagine a shop that sells a jacket.
- One morning the price tag goes up by eighty.
- You could ask why in a lazy way, and assume the shop thinks the jacket is better.
- But there are other reasons.
- The cost of making it may have risen.
- Or the shop may simply have fewer jackets left, or fewer customers walking in.
- A credit spread is the price tag on a bond's risk.
- When it widens, the lazy reading is that the company got riskier.
- A good analyst takes the move apart and asks which part of the price tag changed, because some causes last and some fade away.

2 What is inside a credit spread

- Part one: pay for expected loss
- Hazard rate times loss given default
- Part two: pay for liquidity and risk appetite
- A move in any part moves the whole spread

IN THE LESSON

- You already know from Level One that a credit spread is the extra yield over a safe benchmark.
- Now look inside it.
- The first part pays for expected loss.
- That is the chance the company fails to pay, multiplied by how much you lose when it does.
- The chance is called the probability of default, and over a year it is the hazard rate.
- The loss when it happens is the loss given default, which is one minus the recovery rate.
- The second part pays for things that are not expected loss: the difficulty of selling the bond quickly, and extra reward for bearing risk when markets are nervous.

3 The spread approximation

Spread ≈ hazard × LGD + other premia
LGD = 1 − recovery rate

Credit spread	What you see on the screen
Hazard rate	Yearly chance of default
Loss given default	Share lost if default happens
Recovery rate	Share you get back
Liquidity and risk premia	Liquidity and risk appetite

IN THE LESSON

- Here is the working rule.
- The credit spread is roughly the hazard rate multiplied by the loss given default, plus the other premia.
- Loss given default is one minus the recovery rate.
- So if a bond has a two per cent hazard rate and you expect to recover forty per cent, the loss given default is sixty per cent, and the credit part of the spread is two per cent times sixty per cent, which is one point two per cent, or one hundred and twenty basis points.
- Notice that two different things can push this up: a higher hazard rate, or a lower recovery.
- Those are two different stories about the company, and the rule keeps them apart.

4 Example 1: an 80 basis point widening

Harlow: spread 150bp to 230bp, hazard rate 2% throughout

Credit part before	2% × 60%	**120bp**
Credit part after	2% × 75%	**150bp**
Recovery effect	150 − 120	**+30bp**
Other part: 30 to 80	80 − 30	**+50bp**

30bp is about recovery, 50bp is liquidity and risk appetite

IN THE LESSON

- Example one.
- Harlow Packaging has unsecured bonds with a spread of one hundred and fifty basis points.
- Over a quarter the spread widens to two hundred and thirty.
- The analyst's default estimate has not moved: two per cent a year.
- But Harlow has just issued secured debt that ranks ahead, so expected recovery on the unsecured bonds drops from forty per cent to twenty five.
- Before, the credit part was two per cent times sixty per cent, which is one hundred and twenty.
- After, it is two per cent times seventy five per cent, which is one hundred and fifty.
- So thirty basis points are recovery.
- The other part went from thirty to eighty, so fifty basis points come from outside expected loss.

5 Taking the 80bp apart

Spread (basis points)

Old spread	**150**
Recovery	**+30**
Other premia	**+50**
New spread	**230**

The recovery piece lasts; the other piece can reverse

IN THE LESSON

- Let's see the same example as a picture.
- The bars run from left to right in the order the move happens.
- The first bar is the old spread, one hundred and fifty basis points.
- The next bar is the thirty from lower recovery.
- It is a credit story, and it should stay for as long as the secured debt stays.
- The third bar is the fifty from everything else: thinner trading and a less willing market.
- And the last bar is the new spread, two hundred and thirty.
- On a screen the two pieces look identical.
- But the third can shrink back on its own when dealers return, even though nothing changed at Harlow.

6 Which cause moves the spread which way

Cause and its effect on the spread

Cause	Spread
Default more likely	Wider
Recovery expected lower	Wider
More secured, higher recovery	Narrower
Thinner trading	Wider

IN THE LESSON

- Let's collect the causes in one place.
- If the market thinks default is more likely, the spread widens.
- If expected recovery falls, perhaps because debt that ranks ahead of yours has been added, the spread widens too.
- If the bond becomes secured, or the market thinks recovery will be higher, the spread narrows.
- If trading in the bond thins out, so that it is harder to sell in a hurry, the spread widens even with no change at the company.
- There is one more driver, which is the economic cycle.
- In a downturn, or when investors turn cautious, spreads widen across the whole market together.

7 Example 2: did the credit change at all

Spread 100bp to 140bp; hazard 1.5%, recovery 40% unchanged

Credit part, both dates	1.5% × 60%	**90bp**
Other part before	100 − 90	**10bp**
Other part after	140 − 90	**50bp**
Careless default read	1.67% to 2.33%	**wrong**

The move is liquidity or risk appetite, and can reverse

IN THE LESSON

- Example two is about reversal.
- A bond's spread widens from one hundred to one hundred and forty basis points.
- The analyst's hazard rate estimate is still one and a half per cent, with recovery at forty per cent.
- So the credit part stays at one and a half per cent times sixty per cent, which is ninety basis points, on both dates.
- The whole forty basis point move is the other part, which went from ten to fifty.
- Now see what a careless reading does.
- Treat all of the spread as credit, and divide by sixty per cent.
- The default chance seems to jump from one point six seven to two point three three per cent.
- That jump is not there.

8 Example 3: market-wide or issuer-specific

Issuer 120bp to 180bp; similar-rated index 100bp to 155bp

Issuer change	180 − 120	**+60bp**
Peer index change	155 − 100	**+55bp**
Issuer-specific part	60 − 55	**+5bp**
Share from the market	55 ÷ 60	**92%**

IN THE LESSON

- Example three asks whether the whole market moved.
- An issuer's spread widens from one hundred and twenty to one hundred and eighty basis points, up sixty.
- Over the same period an index of bonds with a similar rating widens from one hundred to one hundred and fifty five, up fifty five.
- So the part of the move that belongs to this issuer alone is just sixty minus fifty five, which is five basis points.
- The share explained by the market is fifty five over sixty, about ninety two per cent.
- Before you write that the company deteriorated, compare it with its peers.
- Most of this move came from the cycle and risk appetite, not from the issuer.

9 A story: when will the trouble arrive

- A spread curve shows risk against time
- Strong borrower: safe now, more doubt later
- Weak borrower: danger now, calmer if it survives
- Measure from zero-coupon curves, not coupon bonds

IN THE LESSON

- Picture two people borrowing money.
- One is a steady, well paid doctor.
- The other is a shopkeeper whose big loan is due next spring and who has no savings.
- Ask each how risky a loan is over one year, and then over ten years.
- For the doctor, the next year is almost certainly fine, but ten years is a long time and a lot can change.
- For the shopkeeper, the next year is the danger.
- If he gets through it, he is in much better shape afterwards.
- A curve of credit spreads across maturities is the market telling you when it thinks trouble is most likely, and the answer differs by borrower.

10 Two shapes, two stories

Chart: Credit spread vs Maturity

- Highly rated: upward
- Distressed: inverted

IN THE LESSON

- Here are two illustrative spread curves.
- Maturity runs along the bottom, and the credit spread goes up the side.
- The lower line is a highly rated issuer.
- It starts low, because near term default is very unlikely, and rises with maturity, because there is more time for things to go wrong, and a top quality company has more room to fall than to rise.
- The upper line is a distressed issuer.
- It starts very high, because the danger is concentrated in the near term, and then falls with maturity, because a company that survives the early years is by then a safer one.
- So the first curve is upward sloping and the second is inverted.

11 Curve shape follows credit quality

- Highly rated: upward
- Middle: flatter
- Distressed: inverted

IN THE LESSON

- It helps to see the shapes on one line, from strong credits on the left to weak ones on the right.
- A very highly rated issuer sits on the left, with a clearly upward sloping curve.
- As quality slips to the middle, the curve flattens, since near term risk is no longer negligible and the long end is not much higher.
- At the far right the distressed issuer has an inverted curve.
- So shape is a clue to where an issuer sits on the quality line.
- But it is the level and shape together that matter, not one alone.

12 What shapes the curve

- The issuer's own credit quality
- The economic outlook and the cycle
- Liquidity and supply at each maturity
- Zero-coupon curves for issuer and benchmark

IN THE LESSON

- So what drives the shape?
- First, the issuer's own quality, as we just saw.
- Second, the macro outlook.
- If the economy is expected to weaken, the market asks more for the longer maturities.
- Third, liquidity.
- Some maturities trade more actively than others, and thin parts of the curve carry a higher premium.
- Fourth, supply.
- A heavy wave of issuance at one maturity can push its spread up relative to its neighbours.
- And one technical point is easy to forget.
- Spreads should be measured from zero coupon curves, for both the issuer and the benchmark, at each maturity.
- A coupon bond mixes several maturities into one number, which blurs the picture.

13 Example 4: Calder Utilities, a strong credit

Calder zero rate minus government zero rate

Maturity	Spread
1 year	55bp
3 years	70bp
5 years	80bp
10 years	100bp

IN THE LESSON

- Example four.
- An analyst has zero coupon rates for Calder Utilities and for the government.
- The government rates are three per cent at one year, three point two at three years, three point four at five, and three point six at ten.
- Calder's rates are three point five five, three point nine, four point two and four point six.
- Subtract at each maturity.
- The spreads are fifty five, seventy, eighty and one hundred basis points.
- They rise steadily with maturity.
- That is the upward shape we expect from a highly rated issuer: the next year is quite safe, and the market wants more for the long wait.

14 Example 5: Orrin Retail, a distressed credit

Orrin zero rate minus government zero rate

1 year	10.00 − 3.00	**700bp**
3 years	8.80 − 3.20	**560bp**
5 years	8.00 − 3.40	**460bp**
10 years	7.40 − 3.60	**380bp**

Inverted: the near term carries the danger

IN THE LESSON

- Example five is Orrin Retail, which has a big loan due within a year and is talking to its lenders.
- Its zero coupon rates are ten per cent at one year, eight point eight at three years, eight at five years and seven point four at ten.
- Use the same government rates as before.
- The spreads are seven hundred, five hundred and sixty, four hundred and sixty, and three hundred and eighty basis points.
- The curve slopes down.
- An inverted shape is not a feature of the numbers being wrong.
- It is how a distressed issuer looks, because the market is paying for the risk in the first year.

15 From a spread to a default probability

Average hazard ≈ spread ÷ (1 − recovery)
Default by T = 1 − e^(−hazard × T)

Credit spread	Spread at that maturity
Recovery rate	Share recovered
Average hazard rate	Spread ÷ loss given default
Maturity T in years	Years to the date
Default probability by T	Chance of default by T

IN THE LESSON

- We can read the curve in more detail with the same approximation as before, turned around.
- The average hazard rate over a maturity is roughly the spread divided by the loss given default.
- Then the chance of defaulting by time T years is one minus e to the power of minus the hazard rate times T.
- That e is the usual exponential number, about two point seven one eight, and your calculator has the button.
- This uses a constant hazard over the period, which is a simplification.
- But it lets you turn a spread curve into default probabilities, and compare what the market is pricing at different horizons for the same issuer.

16 Example 6: what the Orrin curve prices

Orrin, recovery 40%: loss given default 60%

1-year hazard	7.00% ÷ 0.60	**11.7%**
5-year average hazard	4.60% ÷ 0.60	**7.7%**
Hazard in years 2 to 5	(5×7.67 − 11.67) ÷ 4	**6.7%**
Default within 1 year	1 − e^(−0.1167)	**11.0%**
Default within 5 years	1 − e^(−0.3833)	**31.8%**

IN THE LESSON

- Example six uses Orrin, with recovery of forty per cent, so loss given default is sixty.
- The one year spread of seven per cent gives an average hazard of seven over sixty, which is eleven point seven per cent.
- The five year spread of four point six per cent gives an average of seven point seven per cent over the five years.
- For the years two to five alone, take five times seven point six seven, subtract eleven point six seven, and divide by four.
- That is six point seven per cent.
- So the market sees roughly an eleven per cent chance of default in year one, and about thirty two per cent within five years.

17 Four mistakes to avoid so far

- 1. Wider spread read as a weaker firm, always
- 2. Whole spread treated as default risk
- 3. Inverted curve read as credit improving today
- 4. Spreads measured from coupon bonds, not zeros

IN THE LESSON

- Before we move on, here are the common slips.
- One.
- Reading a wider spread as always meaning a weaker company, when it may be recovery, liquidity or the whole market.
- Two.
- Treating all of a spread as default risk, and dividing by one instead of by loss given default.
- Three.
- Reading an inverted curve as a sign that credit quality is improving today.
- The curve falls because surviving the early years is good news, not because the company is getting stronger now.
- The market still prices a high chance of default this year.
- Four.
- Measuring spreads from coupon bond yields rather than from zero coupon curves for both issuer and benchmark.

18 A story: the company or the pool

- Corporate bond: paid by the whole firm
- Securitised bond: paid by a pool of assets
- The pool sits in a bankruptcy-remote entity
- So we study the pool and the structure

IN THE LESSON

- Suppose you lend money to a baker, and she runs a bakery.
- To judge your risk you study the bakery: its sales, its debts, its manager.
- Now suppose instead that a bank has made ten thousand small loans to car buyers and sold you a share of the money those loans pay.
- You do not care much about the bank any more.
- You care about the car buyers and how the money is divided.
- That is the difference at the heart of this topic.
- A corporate bond is paid from the firm's overall business.
- A securitised bond is paid from a ring fenced pool of assets, so the analysis moves to the pool and the structure.

19 Two different questions to ask

What the analyst studies

Corporate bond	The firm
Securitised bond	Pool and structure
Corporate: main risk	Firm fails to pay
Securitised: main risk	Pool loses money
Also check	The servicer

IN THE LESSON

- Here are the two analyses side by side.
- For a corporate bond you study the company: its business, its cash flow, its debt, and its own record of paying.
- The main question is whether this company will pay.
- For a securitised bond you study the collateral, meaning the quality and behaviour of the loans in the pool.
- You also study the structure: the tranches, the order in which cash and losses are shared, and the credit enhancement.
- And you check the servicer, who collects the payments.
- The originator's own balance sheet matters much less, because the pool has been moved out of its reach.

20 Granular or lumpy, static or revolving

- Granular: many small loans, use statistics
- Lumpy: few large loans, analyse each one
- Static pool: the loans only run off
- Revolving pool: needs eligibility tests

IN THE LESSON

- The type of pool decides the method.
- A granular pool has many small, similar loans, such as car loans or mortgages.
- No single loan matters, so the analyst can use statistics and historical default and loss data.
- A lumpy pool has a few large exposures, such as twenty commercial property loans, and statistics are unreliable, so each loan must be analysed one by one.
- Pools also differ over time.
- A static pool never changes: the loans run off and are paid.
- A revolving pool adds new loans as old ones are repaid, so the analyst also needs eligibility tests that say what kind of loan may be added, because the pool can drift towards weaker loans.

21 Example 7: why granular pools suit statistics

Both pools: $500m, 6% default rate, 40% recovery

Swing, 10,000 loans	√(6%×94% ÷ 10,000)	**0.24%**
Swing, 20 loans	√(6%×94% ÷ 20)	**5.31%**
No default in 20 loans	0.94 to the 20th	**29%**
Loss per default, 20 loans	$25m × 60%	**$15m**

IN THE LESSON

- Example seven compares two pools of five hundred million, each with a six per cent expected default rate.
- The first has ten thousand small loans.
- The second has twenty loans of twenty five million each.
- The typical swing around the expected rate is the square root of six per cent times ninety four per cent, divided by the number of loans.
- For ten thousand loans that is only point two four per cent.
- For twenty loans it is five point three one per cent, more than twenty times larger.
- There is a twenty nine per cent chance that none of the twenty defaults.
- One default would cost fifteen million, so an average tells you little.

22 How cash and losses move

Cash in

Borrowers pay loans → Servicer collects → Entity holds pool

Cash out, in order

Senior tranche → Mezzanine tranche → Equity: the rest

IN THE LESSON

- Here is how the pool works.
- Look at the top row first, which follows the cash in.
- Borrowers pay their loans.
- The servicer collects those payments.
- They land in the special purpose entity that holds the pool, which is legally separate from the originator.
- Now the bottom row, which is where the cash goes out.
- Payments go first to the senior tranche, then to the mezzanine tranche, and whatever is left goes to the equity tranche.
- This order is the waterfall.
- Losses run the other way: the equity tranche takes them first, then mezzanine, and the senior tranche last.
- That is credit enhancement by subordination, and it is why seniority matters so much.

23 Example 8: who absorbs the loss

Senior $425m, mezzanine $50m, equity $25m; pool $500m

Expected loss	6% × 60% × 500	**$18m**
Stressed loss	15% × 60% × 500	**$45m**
Equity tranche	first loss	**all $25m**
Mezzanine tranche	$20m ÷ $50m	**40% lost**
Senior tranche	$75m below it	**no loss**

IN THE LESSON

- Example eight.
- A static pool of ten thousand car loans totals five hundred million dollars.
- It backs a senior tranche of four hundred and twenty five million, a mezzanine tranche of fifty million, and equity of twenty five million.
- History says six per cent default and forty per cent recovery, so expected loss is six per cent times sixty per cent times five hundred, which is eighteen million.
- The analyst stresses defaults to two and a half times history, fifteen per cent, so the loss is forty five million.
- Equity loses all twenty five.
- The remaining twenty falls on mezzanine, which loses forty per cent.
- The senior tranche loses nothing, with seventy five million beneath it.

24 The stressed loss by tranche

Stressed loss ($m)

Equity	**25**
Mezzanine	**20**
Senior	**0**

Total loss $45m; senior has $75m beneath it

IN THE LESSON

- Here are the stressed losses as bars.
- Read them from left to right, which is the order in which losses arrive.
- The first bar is the equity tranche, which loses twenty five million, the whole of it.
- The second bar is mezzanine, which loses twenty million out of fifty.
- The third bar is the senior tranche, which loses nothing, because the loss of forty five million is smaller than the seventy five million of cushion beneath it.
- Notice what is missing from this picture.
- Nothing in it depends on how well the car maker itself is doing.
- Its creditors cannot reach the pool, and the pool's investors do not need the car maker to pay them.

25 The servicer and the traps

- Servicer weakness raises losses on a sound pool
- Do not rely on the originator's own accounts
- Statistics only for granular pools
- Scores describe borrowers at origination
- Wider spread may be thin trading, not collateral

IN THE LESSON

- There is one part of the originator that does still matter, and that is the servicer.
- The servicer collects payments, chases late borrowers and sells repossessed cars.
- If it is badly run, collections weaken and losses rise, even though no borrower has changed.
- So you assess the servicer's staff, systems and record, and whether a back up servicer is in place.
- The exam traps follow.
- First, do not judge a securitisation mainly from the originator's rating or accounts.
- Second, do not use statistics on a lumpy pool.
- Third, remember that credit scores describe borrowers at origination, not the pool today.
- And fourth, a wider spread may reflect thin trading in the market for securitised debt, not worse collateral.

26 A story: insurance on a loan

- Buyer pays a premium, like an insurance policy
- Seller pays out if a credit event happens
- The reference entity is the borrower insured
- Neither side needs to own the bond

IN THE LESSON

- Think of buying fire insurance on a neighbour's house.
- You do not own the house, but you pay a small amount each year, and if it burns down, the insurer pays you.
- A credit default swap works much the same way.
- The protection buyer pays a regular premium.
- The protection seller promises to pay out if the borrower, called the reference entity, suffers a credit event, such as failing to pay.
- Neither side has to own the bond.
- The buyer can be hedging a loan or just betting that the credit will get worse, and the seller is taking credit risk to earn the premium, a position much like owning the bond.

27 Two legs, one trigger

No credit event

Buyer pays coupon → Seller keeps it → Contract matures

Credit event

Event declared → Seller pays the loss → Premium stops

IN THE LESSON

- This picture shows the two possible outcomes.
- Read the top row first, which is what usually happens.
- The buyer pays a coupon on the notional.
- The seller keeps it and pays nothing.
- This goes on until maturity, when the contract ends.
- Now the bottom row, which is why the contract exists.
- A credit event is declared, for instance a failure to pay.
- The seller then pays the buyer the loss on the notional.
- That loss is worked out from the price of the cheapest obligation of the covered seniority, because the buyer can choose what to deliver.
- And for a single name contract, the premium stops and the contract ends.

28 The terms that define the contract

Example: protection on Larkfield Steel

Notional	**$10 million**
Maturity	5 years
Standard coupon	1% a year
Seniority covered	Senior unsecured
Credit events	Listed in contract

IN THE LESSON

- A contract has to be specific, so look at the terms.
- Here is an example: protection on Larkfield Steel.
- The notional is ten million dollars, the amount of debt being protected, and it drives both the premium and the payout.
- The maturity is five years.
- The standard coupon is one per cent a year, a fixed figure that is the same for all contracts of that kind.
- The seniority says which debt is covered, such as senior unsecured, and it is set by the reference obligation named in the contract.
- The credit events covered are listed too, usually failure to pay, bankruptcy and sometimes restructuring.

29 Example 9: a single name payout

$10m notional, 1% coupon, credit event after 2 years

Annual premium	1% × $10m	**$100,000**
Quarterly instalment	$100,000 ÷ 4	**$25,000**
Payout at 35 per 100	$10m × 65%	**$6.5m**
Premium received	2 × $100,000	**$200,000**
Net cost to seller	6.5m − 0.2m	**$6.3m**

IN THE LESSON

- Example nine uses that contract.
- The coupon is one per cent on ten million, so the buyer pays one hundred thousand dollars a year, in quarterly instalments of twenty five thousand.
- After two years, Larkfield fails to pay, and the credit event is declared.
- An auction sets the price of the cheapest senior bond at thirty five per hundred of face value.
- So the payout is ten million times sixty five per cent, which is six and a half million dollars.
- The seller had received two years of premium, two hundred thousand, so the net cost to the seller is six point three million.
- The contract then ends.

30 Upfront payment: the gap between spread and coupon

Upfront ≈ (CDS spread − coupon) × duration × notional

CDS spread	Market price of protection
Standard coupon	Fixed premium rate
CDS duration	Sensitivity of the contract
Notional	Amount of debt covered
Upfront payment	Cash settled at the start

IN THE LESSON

- The coupon is standard, but the market spread is not.
- If Larkfield's market spread is three per cent and the coupon is one per cent, the buyer is getting more protection than the coupon pays for.
- So the two sides settle the gap with an upfront payment.
- It is approximately the spread minus the coupon, multiplied by the duration of the contract, times the notional.
- When the spread is above the coupon the buyer pays, and when it is below, the buyer receives.
- The same sum tells you the gain or loss when the spread changes.
- The protection buyer gains when spreads widen, and loses when they narrow.

31 Example 10: upfront and mark to market

$10m, coupon 1%, duration 4.2; spread 3.00% then 2.40%

Spread minus coupon	3.00% − 1.00%	**2.00%**
Times duration	2.00% × 4.2	**8.40%**
Upfront paid by buyer	8.40% × $10m	**$840,000**
Value at 2.40% spread	1.4% × 4.2 × $10m	**$588,000**
Buyer's loss on the move	840,000 − 588,000	**$252,000**

IN THE LESSON

- Example ten.
- The market spread is three per cent, the coupon is one per cent, and the duration of the contract is four point two.
- The gap is two per cent, and two times four point two is eight point four per cent.
- On ten million dollars, the buyer pays eight hundred and forty thousand upfront.
- Later the market spread narrows to two point four per cent.
- The gap is now one point four per cent, times four point two, which is five point eight eight per cent, worth five hundred and eighty eight thousand.
- The value of the buyer's protection has fallen by two hundred and fifty two thousand dollars.
- The buyer lost, and the seller gained that much.

32 Example 11: an index swap after one default

Index of 100 names, $200m notional, 1% coupon, one default

Notional per name	$200m ÷ 100	**$2m**
Payout to buyer	$2m × 65%	**$1.3m**
Notional remaining	$200m − $2m	**$198m**
New yearly premium	1% × $198m	**$1.98m**
Same loss, single name	$200m × 65%	**$130m**

IN THE LESSON

- Example eleven.
- A fund sells protection on an index of one hundred equally weighted names, with a notional of two hundred million dollars.
- Each name therefore carries two million.
- One name defaults, and the auction recovery is thirty five per cent.
- The seller pays that name's share of the notional times its loss, two million times sixty five per cent, which is one point three million.
- The contract does not end.
- It carries on with ninety nine names and a notional of one hundred and ninety eight million, so the yearly premium at one per cent falls from two million to one point nine eight.
- For a single name contract on the same two hundred million, the payout would have been one hundred and thirty million.

33 Recap: the ideas to remember

- Spread ≈ hazard × LGD + liquidity and risk premia
- Upward curve: strong credit; inverted: distressed
- Securitised: pool, structure, servicer, not originator
- Index swap carries on, smaller after each default

IN THE LESSON

- Let's pull it together.
- A spread is roughly the hazard rate times the loss given default, plus liquidity and risk premia, so a change can come from any of the three.
- Split the move before you judge the credit.
- A highly rated issuer has an upward sloping spread curve, while a distressed issuer has an inverted one, and an inverted curve does not mean things are improving today.
- A securitisation is analysed through its pool, its tranches and its servicer, not the originator, and granular pools suit statistics.
- A credit default swap is a premium paid for a payout on a credit event, and an index swap carries on after a default, with a smaller notional.

34 Try three quick questions

1. Hazard rate 3%, recovery 40%. Credit part of the spread?
   Answer: 3% × 60% = 1.8%, or 180bp.
2. Five-year spread 4.5%, recovery 25%. Average hazard rate?
   Answer: 4.5% ÷ 75% = 6.0% a year.
3. Index of 50 names, $100m; one defaults, recovery 40%. Payout?
   Answer: $2m × 60% = $1.2m.

IN THE LESSON

- Now try three quick questions yourself.
- Pause after each one.
- Question one.
- A bond has a three per cent hazard rate and forty per cent recovery.
- What is the credit part of its spread?
- Loss given default is sixty per cent, and three per cent times sixty is one point eight per cent, or one hundred and eighty basis points.
- Question two.
- A five year spread is four point five per cent and recovery is twenty five per cent.
- What is the average hazard rate?
- Four point five divided by seventy five per cent is six per cent.
- Question three.
- An index of fifty names has a notional of one hundred million, and one name defaults with forty per cent recovery.
- What does the seller pay?
- Two million times sixty per cent is one point two million dollars.