Country Risk

FRM Part II

1 A story: two identical factories

- Same factory, same profit, two countries
- Montavia: young economy, less certainty
- Country risk: extra doubt from where cash is earned
- Larkspur must price it, or it will overpay

IN THE LESSON

- Larkspur Capital is looking at two identical factories.
- Each makes the same product, with the same costs, and promises the same profit each year.
- One is in a steady European country.
- The other is in Montavia, a young economy that is growing fast.
- Would Larkspur pay the same price for both?
- Almost certainly not.
- The Montavian profit might be taxed differently next year, the courts might not enforce a contract, or the whole economy might lurch if one export price falls.
- The same cash flow is worth less when it carries more doubt.
- Country risk is exactly that extra uncertainty, caused by where a cash flow is earned.

2 Four origins of country risk

Four origins: they overlap, but each is distinct

Origin	What drives it
Economic life cycle	Young economy: short history, volatile
Political risk	Policy shifts up to seizure
Legal risk	Weak contract and property rights
Economic structure	One commodity, sector or partner

IN THE LESSON

- Country risk has four main origins.
- First, the stage of the economic life cycle.
- A young, fast-growing economy has a short history and thin information, and its earnings are volatile.
- Second, political risk, which is the chance that government actions or instability change the value of an investment.
- Third, legal risk, which is how well the courts enforce contracts and protect property rights.
- Fourth, economic structure.
- An economy that depends on one commodity, one sector or one trading partner is hostage to a single shock.
- The four overlap, but each is distinct, and the usual error is to treat one of them as the whole story.

3 Political risk: continuous or discontinuous

Two kinds of political risk, two ways to handle them

	Continuous	Discontinuous
Examples	Tax, rules	Seizure, violence
Pattern	Gradual	Sudden, rare, severe
Handled by	Cash flows, rate	Scenarios, insurance

IN THE LESSON

- Political risk comes in two kinds, and the difference decides how you handle it.
- Continuous political risk is the ongoing drift of tax, regulation and policy.
- Taxes rise, a licence rule changes, a price is controlled.
- These changes are gradual and they happen to many firms.
- Discontinuous political risk is the sudden, rare and severe event: expropriation, which is the government taking property, nationalisation, violence or a change of regime.
- Continuous risk goes into the expected cash flows or into the discount rate.
- Discontinuous risk is usually handled by probability-weighted scenarios, or by buying insurance, because a small discount rate adjustment cannot capture an event that wipes the investment out.

4 Legal risk, economic structure and overlap

- Legal: do courts enforce contracts and property?
- Legal risk is separate from political stability
- Structure: one commodity or partner = one shock
- Origins overlap but are distinct: use all four

IN THE LESSON

- Now the other origins.
- Legal risk is not the same as political stability.
- A country can have a calm, stable government and still have courts that are slow, biased or unable to enforce a contract.
- If Larkspur cannot enforce its rights, a safe looking profit may never be collected.
- Economic structure is the fourth origin.
- If Montavia earns most of its income from selling copper, a fall in the copper price hits the government, the banks, the workers and the currency together.
- Because the origins overlap, a good analysis looks at all four.
- Arguing that a country is safe because its government is stable ignores the other three.

5 Example 1: handling a sudden event

Project $50m if all goes well. 4% chance of nationalisation, 25% compensation

Value if all goes well		**$50.0m**
Value after nationalisation	25% × 50m	**$12.5m**
Probability-weighted value	96% × 50 + 4% × 12.5	**$48.5m**
Shortfall	50 − 48.5	**$1.5m = 3%**

IN THE LESSON

- Here is how to handle discontinuous risk.
- Larkspur values its Montavian project at fifty million dollars if all goes well.
- Suppose there is a four per cent chance of nationalisation, and that if it happens, compensation would be only a quarter of the value, which is twelve and a half million.
- Do not hide this inside a vague discount rate.
- Weight the two scenarios by their probabilities.
- Ninety six per cent of fifty million plus four per cent of twelve and a half million is forty eight point five million dollars.
- The expected value is one and a half million, or three per cent, below the fifty million.
- Insurance could remove that gap for a fee.

6 Three ways to measure country risk

- Sovereign ratings and attached default spreads
- Composite scores: PRS Group (ICRG), Euromoney, EIU
- Market-based premiums
- Bond spread to equity premium: scale up
- Equity is riskier than the bond

IN THE LESSON

- How do analysts put a number on all this?
- There are three broad ways.
- The first is the sovereign rating of the country's government, and the default spread attached to that rating.
- The second is a composite risk score from a commercial service.
- The PRS Group, with its I C R G score, Euromoney and the Economist Intelligence Unit each blend political, economic and financial factors into one number.
- The third is a market based premium, taken from prices.
- Analysts often want an extra return on shares, not on bonds, so a common way to convert a bond default spread into an equity premium is to scale it up.
- Equity is riskier than the bond, so the spread is multiplied by a volatility ratio.

7 From default spread to equity premium

CRP = Default spread × (σ equity ÷ σ bond)

Country risk premium	Extra return demanded on equity
Default spread	Sovereign bond spread
Volatility ratio	Equity vol ÷ bond vol

IN THE LESSON

- Here is the scaling in symbols.
- The country risk premium, or C R P, equals the default spread times the ratio of two volatilities.
- The first volatility is that of the country's equity market.
- The second is that of the sovereign bond.
- Volatility is the standard deviation of returns, a measure of how much the price bounces around.
- If shares bounce twice as much as the government's bond, then the extra return that shares should demand is twice the bond's default spread.
- The logic is that equity holders sit behind the bondholders and are hit harder, so the same worry about the country needs a bigger reward on equity than on debt.

8 Example 2: a Montavian equity premium

Spread 3.0%. Equity volatility 24%, bond volatility 12%. Mature-market cost of equity 8%

Volatility ratio	24% ÷ 12%	**2.0**
Country risk premium	3.0% × 2.0	**6.0%**
Fully Montavian business	8.0% + 6.0%	**14.0%**

IN THE LESSON

- Montavia's dollar bonds trade at a default spread of three per cent.
- The Montavian stock market has a volatility of twenty four per cent a year, and the sovereign bond has a volatility of twelve per cent.
- The ratio is two.
- So the country risk premium is three per cent times two, which is six per cent.
- Larkspur adds this to the cost of equity it would demand in a mature market.
- If that is eight per cent, then a business that earns everything inside Montavia should be valued with a cost of equity of fourteen per cent.
- Notice that the premium is twice the bond spread, not the same as it.
- Using the bond spread alone would understate the risk of owning shares.

9 Weaknesses of the measures

Four weaknesses to know

Weakness	Why it matters
Subjective and ordinal	Ranks, but not how much return
Different weights and scales	Providers cannot be compared
Lag behind events	Updated after the news
Country-level premium	Firms exposed via operations

IN THE LESSON

- None of these measures is perfect, and the exam asks for the weaknesses.
- Scores and ratings are subjective and ordinal.
- Ordinal means they rank countries but do not say how much more return to demand: a score of seventy is better than sixty, but by how many percentage points?
- Providers use different weights, and some scales run up while others run down, so you cannot compare one service with another.
- Ratings and scores also lag events, because they are updated after the news.
- Finally, a country level premium ignores how companies are actually exposed.
- A firm is exposed through its operations and revenues, not through the place where it is incorporated.

10 Example 3: weighting by exposure

Kestrel Foods: 60% of revenue from Montavia (premium 6%), 40% from Europe (0%)

Weighted premium	60% × 6.0% + 40% × 0%	**3.6%**
Cost of equity	8.0% + 3.6%	**11.6%**
Wrong: by incorporation	8.0% + 6.0%	**14.0%**

IN THE LESSON

- Take Kestrel Foods, a company incorporated in Montavia.
- But look at where it sells.
- Sixty per cent of its revenue comes from Montavia, and forty per cent from Europe.
- Assume the European markets carry no country premium.
- The right premium is the exposure weighted one: sixty per cent of six per cent plus forty per cent of zero, which is three point six per cent.
- Added to the eight per cent mature market cost of equity, the cost of equity is eleven point six per cent.
- The tempting mistake is to charge the full six per cent because the head office is in Montavia.
- That would give fourteen per cent, and Larkspur would undervalue a company that earns much of its income abroad.

11 Borrowing in its own money or someone else's

- Foreign currency debt: a currency the state cannot print
- Reserves and export earnings decide if it can pay
- Local currency debt: can always be paid by creating money
- So formal default on local debt is rarer

IN THE LESSON

- Now a key distinction.
- A government can borrow in two kinds of currency.
- Suppose Montavia issues bonds in its own currency, the lira, and also bonds in U S dollars.
- The dollar bonds must be repaid in dollars, and Montavia cannot print dollars.
- It must earn them from exports or hold them in reserves, so if reserves and export earnings run short, default is a real possibility.
- The lira bonds are different.
- Montavia can always create lira, so it can always pay the nominal amount owed.
- Formal default on local currency debt is therefore rarer.
- But there is a catch, and it is that printing money has a price, which we look at in a moment.

12 Foreign versus local currency default

Same government, two kinds of debt

	Foreign	Local
Repaid in	Cannot print it	Its own money
Formal default	A real possibility	Rarer
Cost shows up as	Default	Inflation, weak currency
Rating	Lower or equal	Equal or higher
Default spread	Larger	Smaller

IN THE LESSON

- Here are the two cases side by side.
- With foreign currency debt, default is a real possibility and shows up as a missed payment and a restructuring.
- With local currency debt, the government avoids a formal default, but the cost is paid in another way: inflation and a falling currency.
- This is a hidden default, because holders are repaid the full nominal amount in money that buys less.
- For this reason a sovereign's local currency rating is typically equal to or above its foreign currency rating, and the local currency default spread is smaller.
- A country rated lower on its dollar debt than on its lira debt is not being inconsistent.
- It is reflecting the different power to pay.

13 Example 4: the spread in the right currency

Dollar bond 7.0%, dollar risk-free 4.0%. Lira bond 11.0%, lira risk-free 9.0%

Foreign currency spread	7.0% − 4.0%	**3.0%**
Local currency spread	11.0% − 9.0%	**2.0%**
Wrong: mixed currencies	11.0% − 4.0%	**7.0%**

IN THE LESSON

- To estimate a local currency default spread, subtract the right risk free rate.
- Montavia's dollar bond yields seven per cent, and the dollar risk free rate is four per cent.
- The foreign currency spread is three per cent.
- Now take the lira bond, which yields eleven per cent.
- The lira has its own risk free rate, which includes the local inflation expectation.
- Suppose it is nine per cent.
- The local currency spread is eleven minus nine, which is two per cent, smaller than the foreign one, as expected.
- The usual error is to subtract the dollar risk free rate from the lira yield.
- That gives seven per cent and mixes currencies, so it counts inflation as if it were default risk.

14 Example 5: the hidden default

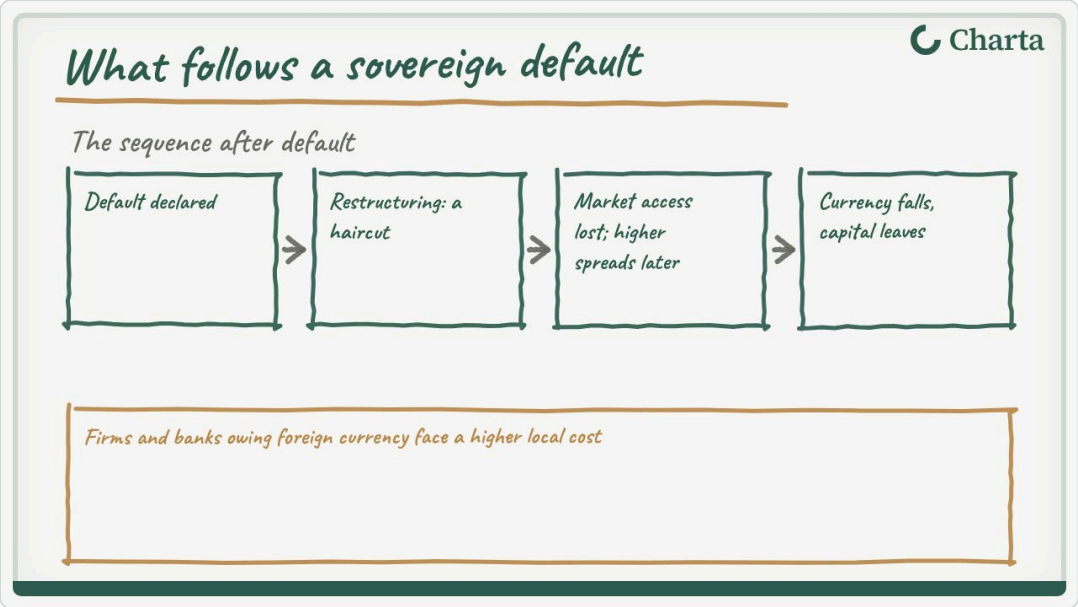
Bond repays 100 lira in full. Prices rise 25% over its life

Nominal repayment	paid in full	**100 lira**
Price level	rises 25%	**× 1.25**
Real value	100 ÷ 1.25	**80**
Hidden loss	1 − 80 ÷ 100	**20%**

IN THE LESSON

- Why is printing money a default in disguise?
- Imagine a holder of a lira bond that repays one hundred lira in full on the due date.
- Nothing was missed, so there is no formal default.
- But suppose that over the life of the bond, the government created so much money that prices rose by twenty five per cent.
- The hundred lira now buys what eighty would have bought at the start.
- The real value of the holder's claim has fallen by twenty per cent.
- A currency fall does the same job for foreign holders.
- This is why Larkspur cannot treat a local currency bond as free of default risk just because the government can always print.

15 What follows a sovereign default



IN THE LESSON

- Suppose Montavia does default.
- What happens next?
- A government cannot be liquidated like a company.
- Nobody can seize the country and sell it.
- So default is followed by a negotiated restructuring.
- Creditors accept an exchange of their bonds for new ones, with longer maturities or lower coupons, and the loss they bear is often called a haircut.
- Follow the boxes.
- The country usually loses access to international capital markets for a period, and when it returns it pays higher spreads.
- The currency typically falls and capital leaves.
- That raises the local cost of foreign currency debts, which hurts firms and banks that borrowed in dollars.

16 The damage spreads through the economy

- No liquidation: creditors negotiate a haircut
- Banks: bond losses, less lending
- Firms are rarely rated above their sovereign: downgrades
- Output usually contracts; political change often follows
- Size and length of the damage vary by episode

IN THE LESSON

- The effects do not stop at the government.
- Banks hold large amounts of their own government's bonds, so when those bonds lose value the banks suffer capital losses, and they cut lending.
- Firms are hit twice.
- Their bank credit shrinks, and their credit ratings are pulled down, because firms are rarely rated above their sovereign.
- Real output usually contracts, and political change often follows, as voters punish the government.
- We have deliberately not given numbers for the size of the output loss, the usual haircut, or the length of market exclusion.
- They vary widely between studies and between eras, so treat any single figure with suspicion.

17 Expected loss on a sovereign exposure

EL = PD × LGD × exposure
LGD = 1 − recovery rate

Expected loss	Average loss over the horizon
Probability of default	Chance the sovereign defaults
Loss given default	Share not recovered
Exposure at default	Amount Larkspur is owed

IN THE LESSON

- To turn a default risk into dollars, use expected loss.
- It is the product of three things.
- The probability of default, written P D, is the chance that the government defaults over the horizon.
- Loss given default, written L G D, is the share of the exposure that is lost if it does.
- It equals one minus the recovery rate, where the recovery rate is the share that creditors get back after the restructuring.
- The exposure is the amount Larkspur is owed.
- The common mistake is to forget the recovery rate altogether, or to use the recovery rate in place of the loss rate.
- They are opposites: forty per cent recovery means sixty per cent loss.

18 Example 6: expected loss on Montavian bonds

Exposure $20m, PD 5%, recovery 40%

Loss given default	1 − 40%	**60%**
Loss if default occurs	60% × 20m	**$12m**
Expected loss	5% × 60% × 20m	**$600,000**
Wrong: recovery for LGD	5% × 40% × 20m	**$400,000**

IN THE LESSON

- Larkspur holds twenty million dollars of Montavian dollar bonds.
- It puts the probability of default at five per cent, and it expects to recover forty per cent in a restructuring.
- So loss given default is sixty per cent.
- If Montavia defaults, Larkspur expects to lose sixty per cent of twenty million, which is twelve million dollars.
- Expected loss weights that by the five per cent chance, giving point oh five times point six times twenty million, which is six hundred thousand dollars.
- A careless analyst who used the recovery rate in place of the loss rate would get four hundred thousand dollars, a third too low.
- That error would leave Larkspur under-reserved.

19 How sovereign default risk is measured

- Agency ratings: letter grades built from analysis
- Market prices: sovereign CDS spread, bond yield spread
- Spread = bond yield minus risk-free yield, same currency
- Fundamentals: the data behind ability to pay
- Spread is roughly annual PD × LGD

IN THE LESSON

- How do we get a probability of default for a government in the first place?
- There are three routes.
- The first is agency ratings: letter grades built from analysis.
- The second is market prices.
- The two main ones are the sovereign C D S spread, which is the price of insurance against the government's default, and the yield spread of a government bond over a risk free bond.
- The risk free bond must be in the same currency and of the same maturity, or the comparison is meaningless.
- The third route is fundamentals, the economic data that sits behind a country's ability and willingness to pay.
- A market spread approximates the annual default probability times the loss given default.

20 What goes into a sovereign rating

Quantitative and qualitative inputs

Input	What it shows
Government debt	Size, currency, maturity, holders
Fiscal deficits	How fast debt is growing
Growth and inflation	Strength of the economy
External position, reserves	Access to foreign currency
Political, institutions	Willingness and stability

IN THE LESSON

- Rating agencies combine quantitative and qualitative inputs.
- On the numbers side, they look at the size and composition of government debt: how much, in which currency, with what maturity, and who holds it.
- They look at fiscal deficits, which show how fast debt is growing, and at growth and inflation.
- They look at the external position and reserves, which show whether the country can find foreign currency.
- On the qualitative side, they judge political and institutional strength.
- There is no published formula that turns these into a letter.
- Analysts weigh them, and a weakness in one area, such as thin reserves, can outweigh strength elsewhere.

21 Default probability from a spread

PD = Spread ÷ (1 − recovery rate)

Probability of default	Rough annual default chance
Spread	Yield minus risk-free yield
Loss rate	One minus recovery rate

IN THE LESSON

- Now the key rule of thumb.
- A market spread compensates the investor for the expected annual loss, which is the default probability times the loss given default.
- Rearrange it.
- Divide the spread by the loss rate and you get a rough annual default probability.
- The loss rate is one minus the recovery rate.
- The word rough matters.
- This ignores risk premia and liquidity, which we discuss shortly, and it works best for small spreads.
- The exam trap is to divide by the recovery rate instead of the loss rate.
- Keep the memory simple: the spread pays for losses, so divide by the loss.

22 Example 7: Montavia's implied default chance

Dollar bond 7.0%, Treasury 4.0%, recovery 40%

Spread (both in dollars)	7.0% − 4.0%	**3.0%**
Loss rate	1 − 40%	**60%**
Implied annual PD	3.0% ÷ 60%	**5.0%**
Wrong: divide by recovery	3.0% ÷ 40%	**7.5%**

IN THE LESSON

- Montavia's dollar bond yields seven per cent, and a United States Treasury bond of the same maturity yields four per cent.
- Both are in dollars, so the spread is three per cent, or three hundred basis points.
- With forty per cent recovery, the loss rate is sixty per cent.
- The implied probability of default is three per cent divided by sixty per cent, which is five per cent a year.
- This is the five per cent we used in the expected loss example.
- The wrong answer divides by the recovery rate, three over forty, which is seven and a half per cent, far too high.
- Another wrong answer compares yields in different currencies, which makes the spread meaningless.

23 Shortcomings of sovereign ratings

Five shortcomings

Shortcoming	In brief
Lag; multi-notch jumps	Spreads move first; crisis amplified
Ordinal letters	Not PDs; silent on LGD
Backward-looking data	Misses contingent liabilities
Agencies disagree	Judgement, no formula
Spread tables are averages	Calm and stress differ

IN THE LESSON

- Agency ratings have five chief shortcomings.
- First, they lag the market.
- Spreads widen well before a downgrade, and when ratings do move they often move several notches at once, which can amplify a crisis.
- Second, they are ordinal letter grades, not default probabilities, and they say nothing about loss given default.
- Third, they rest heavily on reported, backward looking data and can miss contingent liabilities, such as guarantees the government has given to its banks.
- Fourth, different agencies may split on the same country, and judgement, not a published formula, closes the gap.
- Fifth, a table of default spreads by rating is an average over history, so the same rating can trade at very different spreads.

24 Why it matters: slow but steady

- Illustration: same rating, 3% average spread
- Calm markets may price it near 2%; stress near 5%
- Ratings: stable and informative about the long run
- But slow: do not use alone for quick decisions

IN THE LESSON

- Why does the last point matter in practice?
- Suppose Larkspur's table says that Montavia's rating has averaged a three per cent spread over many years.
- In calm markets, that rating might trade at two per cent, and in a stressed market at five.
- Using three per cent in both would misstate the price of risk.
- The exam point is balanced.
- Ratings are stable, and informative about the long run.
- That stability is a virtue for someone who needs a steady anchor, such as a regulator or a rule in a loan contract.
- But the same stability makes them slow, so a risk manager should never rely on a rating alone for a quick decision.

25 Ratings, bond spreads and CDS compared

Three competing predictors of default

	Ratings	Bond and CDS spreads
Speed	Slow	Fast, moves first
Basis	Analysis	Market prices
Noise	Low	High
Short-horizon power	Weaker	Usually better

IN THE LESSON

- Now we weigh the three predictors of sovereign default against one another.
- Ratings are stable and based on analysis, but they are slow.
- Bond yield spreads and C D S spreads are market based.
- They update continuously and usually move before downgrades, so they tend to predict better over short horizons.
- Their weakness is noise.
- A spread reflects many things besides the chance of default.
- And sovereign C D S markets can be thin, with few trades, so a quoted price may reflect a few participants rather than the market as a whole.
- Bond spreads need a clean risk free comparison in the same currency.
- Which one is more reliable depends on the horizon and on how liquid the market is.

26 What is inside a spread

- Spread = expected loss + risk premium + liquidity premium
- Plus counterparty and contagion effects
- So the implied PD usually exceeds the real-world PD
- Sovereign CDS markets can be thin

IN THE LESSON

- Why is a spread noisy?
- Because it contains more than the expected loss.
- It includes a risk premium, the extra return investors require for bearing default risk, which is uncertain and tends to bite in bad times.
- It includes a liquidity premium, the extra yield for assets that are hard to sell.
- And it includes counterparty and contagion effects: a C D S seller might itself be weakened if the sovereign defaults, and a crisis in a neighbouring country can push spreads wider without any change in Montavia's own default chance.
- As a result, the default probability implied by the spread usually exceeds the real world one.
- It is a market price of risk, not a forecast.

27 Hazard rate and cumulative probability

h = Spread ÷ (1 − recovery rate)
Pcum = 1 − e^(−h × T)

Spread	Market spread
Hazard rate	Annual default intensity
Years, T	Horizon in years
Cumulative probability	Chance of default by year T

IN THE LESSON

- To look beyond one year, assume a constant hazard rate.
- The hazard rate, written h, is the annual intensity of default, and it comes from the spread in the way we have just seen: the spread divided by one minus the recovery rate.
- The cumulative probability of default over T years, written P cum, then follows.
- It is one minus e raised to the power of minus h times T, where e is the exponential constant, about two point seven one eight.
- Do not simply multiply the annual probability by the number of years.
- Defaults cannot be counted twice.
- The exponential form shrinks the growth as the chance of already having defaulted builds up.

28 Example 8: five years ahead

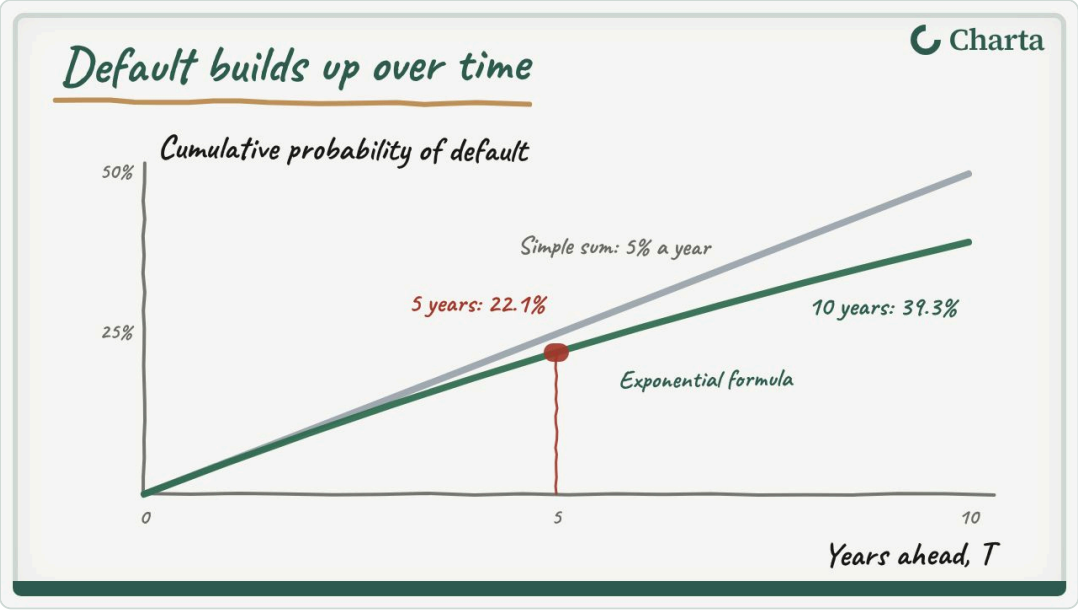
Spread 3.0%, recovery 40%, constant hazard rate

Hazard rate h	3.0% ÷ 60%	**5.0%**
1-year probability	1 − e^(−0.05)	**4.88%**
5-year probability	1 − e^(−0.25)	**22.12%**
Wrong: simple sum	5 × 5.0%	**25.0%**

IN THE LESSON

- Use Montavia's three per cent spread and forty per cent recovery.
- The hazard rate is three per cent divided by sixty per cent, or five per cent.
- Over one year the cumulative probability is one minus e to the minus point oh five, which is about four point eight eight per cent, a little below the rough five per cent.
- Over five years, the exponent is minus point two five, and the cumulative probability is one minus e to the minus point two five, about twenty two point one per cent.
- A simple sum of five times five per cent would give twenty five per cent, an overstatement.
- Remember that this probability is still the one implied by the market, which usually exceeds the real world one.

29 Default builds up over time



IN THE LESSON

- Here is the cumulative probability as a picture.
- Along the bottom is the horizon in years, from zero to ten.
- Up the side is the chance of default by that date, for a hazard rate of five per cent.
- The grey straight line is the naive sum, five per cent for each year.
- It reaches fifty per cent at ten years.
- The green curve is the exponential formula.
- It starts at the same slope, but it bends away from the line, because each year only the survivors can still default.
- At five years it is twenty two point one per cent, and at ten years it is thirty nine point three per cent, well below the straight line.
- A longer horizon gives a higher probability, but never a straight multiple.

30 Which predictor to trust, and the traps

- Market spreads: the more timely signal
- Ratings: the anchor
- Neither should be read alone
- Errors: divide by recovery; mix currencies; ignore exposure
- Do not treat one origin as the whole story

IN THE LESSON

- So which should Larkspur trust?
- The sensible conclusion is that market spreads are the more timely signal, ratings are the anchor, and neither should be read alone.
- When a spread jumps while the rating is unchanged, ask what the market knows.
- When a spread moves but the fundamentals have not, ask whether it is just a liquidity or contagion effect.
- Keep the common errors in mind.
- Dividing by the recovery rate instead of the loss rate.
- Mixing currencies when computing a spread.
- Taking the rating as a probability.
- Applying a country premium by place of incorporation instead of by exposure.
- And treating one origin of country risk as the whole story.

31 Recap: the main ideas

- Four origins; continuous vs discontinuous political risk
- CRP = spread × (equity vol ÷ bond vol), weight by exposure
- Foreign default is real; local default hides in inflation
- EL = PD × LGD × exposure; PD = spread ÷ (1 − recovery)
- Spreads are timely, ratings are the anchor: use both

IN THE LESSON

- Let us pull it together.
- Country risk is extra uncertainty from where cash is earned.
- It has four origins: the life cycle, political risk, legal risk and economic structure.
- Continuous risk goes into cash flows or discount rates, and discontinuous risk into scenarios or insurance.
- It is measured with ratings and spreads, scores and market premiums, and the country premium is the default spread times the volatility ratio, weighted by exposure.
- Foreign currency default is real, and local currency default is hidden in inflation.
- After default, creditors take a haircut and the economy suffers.
- Probability of default is the spread over the loss rate, and spreads beat ratings for speed.

32 Try three quick questions

1. Spread 2.4%, recovery 20%. Rough annual PD?
   Answer: Loss rate 80%. 2.4% ÷ 80% = 3.0%.
2. Spread 1.8%, recovery 40%. 2-year cumulative PD?
   Answer: h = 3%. 1 − e^(−0.06) = 5.8%.
3. Why is local currency rated at or above foreign?
   Answer: The state can create its own currency.

IN THE LESSON

- Now try three quick questions.
- Pause the video, think, then listen to the answers.
- Question one.
- A sovereign bond has a spread of two point four per cent over a risk free bond in the same currency, and recovery is expected to be twenty per cent.
- What is the rough annual default probability?
- The loss rate is eighty per cent, so two point four divided by eighty per cent is three per cent.
- Question two.
- With a spread of one point eight per cent and recovery of forty per cent, what is the two year cumulative probability of default?
- The hazard rate is three per cent, and one minus e to the minus point oh six is about five point eight per cent.
- Question three.
- Why is a country usually rated higher on local currency debt than on foreign currency debt?
- Because it can create its own currency, so formal default is rarer.