CHARTA LEARNING · LESSON NOTES

Country Risk

FRM Part I

1 A story: the factory abroad

- A good project can still sit in a risky country
- Four sources: growth, politics, law, economic structure
- They are linked, but each has its own logic

IN THE LESSON

- Let's begin with a story.
- A company builds a factory in a country we will call Norland.
- The factory is well run and the product sells.
- Yet the investors worry, and the worries are not about the factory.
- Will the economy keep growing, so that customers keep buying?
- Will the government change the tax rules next year, or take the factory over?
- If a supplier breaks a contract, will a court actually enforce it?
- And if the whole economy depends on one export, what happens when its price collapses?
- These four worries are the four sources of country risk we will study: growth, politics, the law, and the structure of the economy.
- They are linked, so let us take them one at a time.

2 Source one: the growth stage

- Young: fast growth, but volatile, thin institutions
- Mature economies: slower, steadier, more predictable
- Growth stage sets size and stability of cash flows
- High growth is not the same as low risk

IN THE LESSON

- The first source is growth.
- Young, fast developing economies can grow quickly, but the growth tends to be bumpy, because their institutions are thin and a single bad harvest or policy mistake can swing the whole economy.
- Mature economies grow slowly, but steadily and predictably.
- So the stage of growth shapes two things about the cash flows you expect from a country: how big they are, and how stable they are.
- Notice that fast growth is not the same as low risk.
- A country growing at a high rate with wild swings may be riskier than a slow, steady one.
- The common error is to judge a country on its growth rate alone, and we will return to it.

3 Source two: political risk

- Continuity: rules change inside the system (tax)
- Discontinuity risk: expropriation, nationalization, war
- Corruption: a hidden extra tax, and more uncertainty

IN THE LESSON

- The second source is political risk, and it comes in two kinds.
- Continuity risk means the system stays in place but the rules change: a new government raises taxes, tightens regulation, or alters a subsidy.
- Business can adapt, but the surprise costs money.
- Discontinuity risk is far more violent: the system itself breaks.
- Expropriation means the state seizes property.
- Nationalization means it takes over an entire industry.
- War and violence destroy assets and trade.
- Corruption is also part of political risk.
- It works like an extra tax that nobody announces, and it adds uncertainty, because you cannot know who must be paid, or how much, next year.

4 Sorting political risk

Which type of political risk is it?

Event	Type
Corporate tax rate goes up	Continuity
Banks must hold more capital	Continuity
Mine seized without fair payment	Discontinuity
Civil war closes the ports	Discontinuity
Bribe needed for a permit	Corruption

IN THE LESSON

- Let me give you a quick sorting exercise, because the exam likes to ask which type a described event belongs to.
- A government raises the corporate tax rate: that is continuity risk, since the system carries on.
- A new rule forces banks to hold more capital: continuity again.
- The state takes over a foreign owned mine without fair payment: discontinuity, because the property is simply seized.
- A civil war closes the ports: discontinuity.
- An official demands a payment before approving a permit: corruption, the hidden tax.
- Notice the test.
- Ask whether the rules of the game changed, or whether the game itself was broken.
- Changed rules are continuity.
- A broken game is discontinuity.

5 Sources three and four: law and structure

- Legal risk: are contracts really enforced?
- What matters: an independent, predictable judiciary
- One commodity, sector or buyer: one shock hits all
- A diversified economy absorbs the same shock

IN THE LESSON

- The third source is legal risk.
- The question is not what the law says on paper, but whether contracts and property rights are really enforced, by a judiciary that is independent and predictable.
- A country with beautiful statutes and a court that can be leaned on offers little protection.
- The fourth source is the structure of the economy.
- If the economy, or the tax base, depends on one commodity, one sector, or one big buyer, then a single shock hits everything at the same time.
- A diversified economy absorbs the same shock because other parts keep earning.
- This is just the idea of diversification, applied to a whole country rather than to a portfolio.

6 Match the description to the risk

Growth alone is never enough: check all four

Description	Risk source
Lives on copper exports	Economic structure
Courts decide for whoever pays	Legal
Growth swings from 9% to 1%	Growth
Largest bank declared state property	Political

IN THE LESSON

- Here is a final matching table for this first outcome.
- A country lives on copper exports and copper prices fall: economic structure.
- A government promises fair treatment of foreign investors, but judges decide for whoever pays them: legal risk, as the law is not enforced.
- A young economy grows at nine per cent one year and at one per cent the next: the growth source.
- A new president announces that the country's biggest bank is now state property: political, and discontinuity.
- Remember the usual error.
- Judging a country on growth alone ignores the other three.
- A booming economy with weak courts and a single export is still a risky place to put your money.

7 From many facts to one number

- Composite: component scores, fixed weights, one number
- Best known: the ICRG of the PRS Group
- Political out of 100; financial and economic out of 50 each
- Benefit: simple and broad

IN THE LESSON

- Investors compare dozens of countries, and nobody can hold all four sources in their head for each.
- So providers build composite country risk measures.
- A composite takes several components, typically a political score, a financial score and an economic score, and combines them into a single number using fixed weights.
- The best known example is the I C R G, the International Country Risk Guide, produced by a firm called the P R S Group.
- It scores political risk out of one hundred, and financial risk and economic risk out of fifty each.
- The benefit is obvious: one figure, broad coverage, easy ranking.
- The costs come later.
- First, let us see how the figure is built.

8 The ICRG composite

Composite = (Political + Financial + Economic) ÷ 2

Political score	Out of 100
Financial score	Out of 50
Economic score	Out of 50
Composite	0 to 100: higher means safer

IN THE LESSON

- The composite is simple arithmetic.
- Add the political score, the financial score and the economic score, then divide by two.
- Why two?
- The three maximums add up to two hundred, and dividing by two squeezes the result onto a scale from zero to one hundred.
- Now the crucial point is the direction.
- In this index a higher score means lower risk, so one hundred is the safest possible country.
- Some other providers do the opposite, with a higher number meaning more risk.
- So before comparing countries from different sources, always check which way the scale points.
- Mixing the directions is the quickest way to reach exactly the wrong conclusion.

9 Example 1: two countries, one score

Illustration: scores out of 100, 50 and 50

Country A: sum	72 + 38 + 34	**144**
Country A: composite	144 ÷ 2	**72**
Country B: sum	80 + 30 + 34	**144**
Country B: composite	144 ÷ 2	**72**

IN THE LESSON

- Take two countries.
- Country A has a political score of seventy two, a financial score of thirty eight and an economic score of thirty four.
- Add them: seventy two plus thirty eight is one hundred ten, plus thirty four is one hundred forty four.
- Divide by two and the composite is seventy two.
- Country B has a political score of eighty, a financial score of thirty and an economic score of thirty four.
- Add them: eighty plus thirty is one hundred ten, plus thirty four is again one hundred forty four, so the composite is also seventy two.
- The two countries tie, yet B is politically safer and financially weaker.
- Equal scores hide very different risk profiles.

10 What a composite cannot tell you

- Offsetting components hide different risk profiles
- Weights and scoring are subjective choices
- A score ranks countries; it gives no default probability
- It gives no required premium or return either

IN THE LESSON

- Example one already showed the main weakness: offsetting components.
- A strong political score can cancel a weak financial score, so the same total can hide very different countries.
- A second weakness is subjectivity.
- Someone chose the weights and decided how to score each component, and a different choice would reorder the countries.
- Third, and most important for a risk manager, a score ranks countries but does not price them.
- It gives you no probability of default and no required return or premium.
- A country scoring seventy two is safer than one scoring sixty, but how much extra yield should you demand?
- The score is silent.
- For that, we need market prices, which come later.

11 Two currencies, two kinds of default

- Foreign currency debt: needs exports or reserves
- A falling currency makes it heavier in local terms
- Local currency debt: can always be paid by creating money
- The cost shows up as inflation and a weaker currency

IN THE LESSON

- Now to governments that cannot pay.
- A government can borrow in two kinds of currency, and the risk differs sharply.
- Foreign currency debt, say dollars borrowed by a country whose own money is not dollars, must be repaid in money the government cannot print.
- It has to earn it from exports, draw it from reserves, or borrow more.
- And if its own currency falls, the burden grows in local terms.
- Local currency debt is different.
- The government can always create the money to pay the nominal amount.
- But the price is paid by holders, through inflation and a falling currency, which cut the real value of what they receive.
- So paying is possible, but not free.

12 Foreign against local currency debt

Same government, two different risks

	Foreign / Local currency debt
Source of money	Exports, reserves / taxes, printing
Falling currency	Heavier burden / lower real value
Default frequency	More common / rarer
Rating	Same or lower / same or higher
Euro area member	Behaves like foreign debt

IN THE LESSON

- Put the two side by side.
- Where does the money come from?
- For foreign currency debt, from exports, reserves or fresh loans; for local currency debt, from taxes, or from creating money.
- What does a falling currency do?
- It raises the burden of foreign debt, while for local debt it cuts the real value that lenders receive.
- How often do defaults happen?
- Defaults on local currency debt are rarer, and ratings on it are usually the same as, or higher than, ratings on foreign currency debt.
- One exception matters.
- A government that cannot create its currency, such as a member of the euro area, is in effect in the same position as a borrower in foreign currency, and carries similar risk.

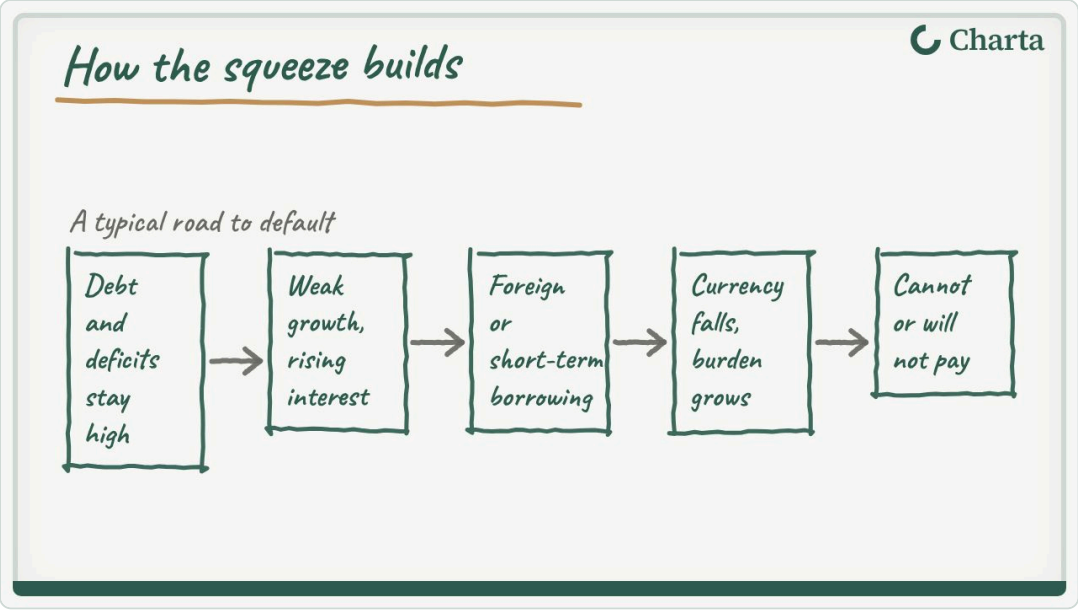
13 Why governments default

- Large and rising debt, big deficits
- Weak growth shrinks the tax base
- Foreign currency or short-term borrowing
- Inability to pay is not the same as unwillingness

IN THE LESSON

- What typically pushes a government over the edge?
- The usual causes arrive together.
- Debt that is large and rising.
- Big, persistent deficits, so that new borrowing is needed just to pay old interest.
- Weak growth, which shrinks the tax base that must pay the bill.
- Borrowing in foreign currency, or at short maturity, which exposes the government to a falling currency and to the risk that lenders refuse to roll over their loans.
- And there is a more subtle cause: unwillingness.
- A government may be able to pay but decide the political cost of paying is too high.
- Keep inability and unwillingness separate in your mind, because the warning signs, and the responses, differ.

14 How the squeeze builds



IN THE LESSON

- Here is how those causes feed one another.
- Read the boxes from left to right.
- First, debt is high and deficits persist, so each year the government borrows more.
- Second, growth is weak, so tax revenue does not keep pace with the interest bill.
- Third, lenders notice, and demand higher interest rates, or refuse to lend for long, which pushes the government toward foreign or short term borrowing.
- Fourth, a currency fall raises the burden of the foreign debt.
- Finally, the government decides it can no longer, or will no longer, pay in full.
- History offers examples.
- Argentina defaulted on its foreign debt in two thousand one, and Russia in nineteen ninety eight defaulted even on rouble debt, so local currency default, though rare, is not impossible.

15 No bankruptcy court for a country

- No court can liquidate a country: talks decide
- Haircut: lenders accept a smaller claim
- Longer maturities or lower coupons are also common
- Talks can take years

IN THE LESSON

- Suppose a sovereign does default.
- What happens?
- Here is the first surprise.
- There is no bankruptcy court for countries.
- Creditors cannot seize and sell the nation, as they could with a failed company.
- So the outcome is a negotiation.
- Lenders and the government agree a restructuring.
- Lenders may accept a haircut, which means a cut in what they are owed.
- They may accept longer maturities, so the money comes back later.
- Or they may accept lower coupons, so less interest is paid along the way.
- The government also agrees to something in return, usually reforms, but in practice each case is different and the talks can take years, with bondholders anxious throughout.

16 The true loss: the haircut in present value

Haircut = 1 − Value of new claim ÷ Value of old claim

Haircut	Share of value lost
Value of the new claim	New payments at market yield
Value of the old claim	What was owed

IN THE LESSON

- How big is the loss?
- Not simply the cut in face value.
- The true haircut is measured in present value.
- Take the new bond or bonds that lenders receive, and discount their promised payments at the yield the market now demands from this borrower.
- That gives the value of the new claim.
- Compare it with the old claim, taken at the amount owed, and the haircut is one minus the ratio.
- The key insight is that the true loss is bigger than the nominal cut when the new coupons are below the market yield, which they usually are after coupon cuts and longer maturities.
- A lender can be told that face value falls only a little, yet lose a large share of its money.

17 Example 2: a restructuring

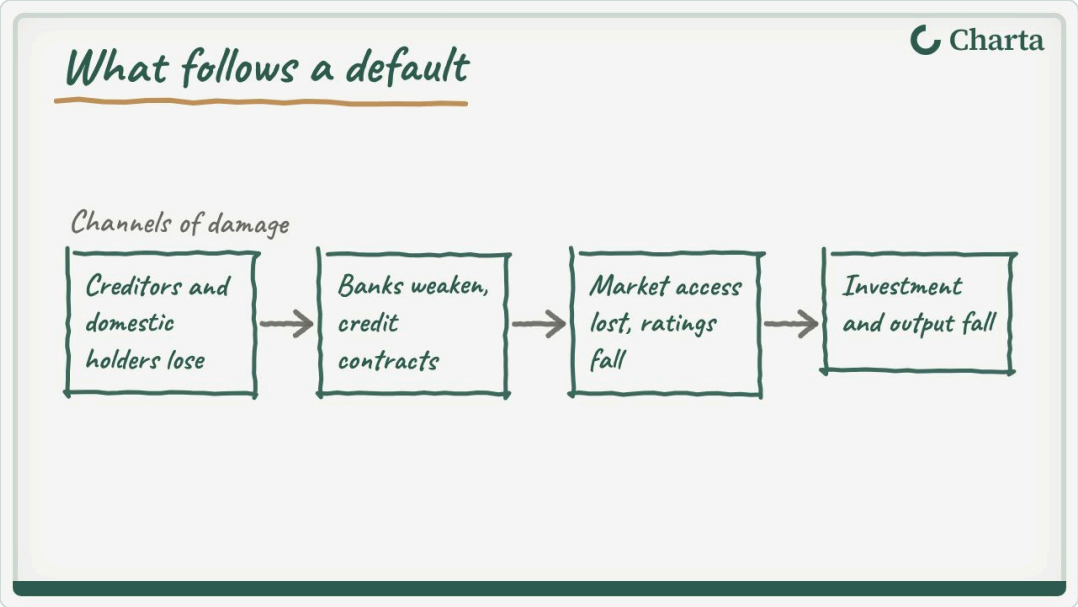
Illustration: old claim 100; new 5-year bond, face 80, coupon 3%, market yield 10%

PV of coupons	2.4 × 3.791	**9.10**
PV of the 80 repayment	80 ÷ 1.10^5	**49.67**
Value of new claim	9.10 + 49.67	**58.77**
True haircut	1 − 58.77 ÷ 100	**41.2%**

IN THE LESSON

- Here is a worked case, per one hundred of the old bond.
- Lenders are owed one hundred.
- The restructuring gives them a new five year bond with a face value of eighty, which is a nominal cut of twenty per cent, and a coupon of three per cent, so two point four a year.
- The market yield for this borrower is ten per cent.
- Discount the coupons: two point four times the five year annuity factor of three point seven nine one gives about nine point one.
- Discount the eighty repayment: eighty divided by one point six one zero five one is about forty nine point seven.
- The new claim is worth about fifty eight point eight.
- So the true haircut is about forty one point two per cent, double the nominal twenty.

18 What follows a default



IN THE LESSON

- A default does not stay inside the government.
- It spreads along several channels.
- Read the boxes from left to right.
- First come the creditors: foreign investors take the haircut, and so do domestic banks and pension funds that hold the government's bonds, so their capital shrinks.
- Second, the banking system weakens, and credit contracts, because banks lend less.
- Third, financing costs rise: the country is shut out of the bond market for a time, its ratings fall to default categories, and borrowing later costs more.
- Fourth, growth suffers, as investment, trade finance and capital inflows dry up and output falls.
- Exclusion is not forever, though.
- Defaulters usually return to the markets in time.

19 What decides the chance of default

- Debt against GDP and against government revenue
- Interest burden, maturity and currency of the debt
- Tax base, growth, pension and social commitments
- Institutions, willingness to pay, implicit backing

IN THE LESSON

- Now the key question for a risk manager: how likely is a default?
- It depends on the government's ability and willingness to pay.
- The main influences are the size of debt compared with the economy and with government revenue, the interest burden, how long the debt lasts and which currency it is in, and how stable and wide the tax base is.
- Growth matters.
- So do commitments such as pensions and social spending, the quality of politics and institutions, and any implicit backing from a stronger entity, such as a richer partner expected to step in.
- There is a simple piece of arithmetic that ties several of these together, called the debt dynamics, and we turn to it now.

20 Debt dynamics

d1 = d0 × (1 + i) ÷ (1 + g) + p

Debt, d0	This year, share of GDP
Interest, i	Rate paid on the debt
Growth, g	Nominal growth of GDP
Deficit, p	Deficit before interest
Ratio, d1	Next year's ratio

IN THE LESSON

- Here is the arithmetic.
- Let d zero be this year's debt as a share of the economy's output, G D P.
- Let i be the interest rate on the debt, g the growth rate of the economy in nominal terms, and p the primary deficit, meaning the deficit before interest, as a share of G D P.
- Next year's debt ratio equals d zero times one plus i, divided by one plus g, plus p.
- Read it in words.
- Debt grows with interest, the economy grows with growth, so when interest exceeds growth the ratio drifts upward by itself, and any primary deficit pushes it up further.
- That is why interest above growth is the warning sign.

21 Example 3: one year of debt

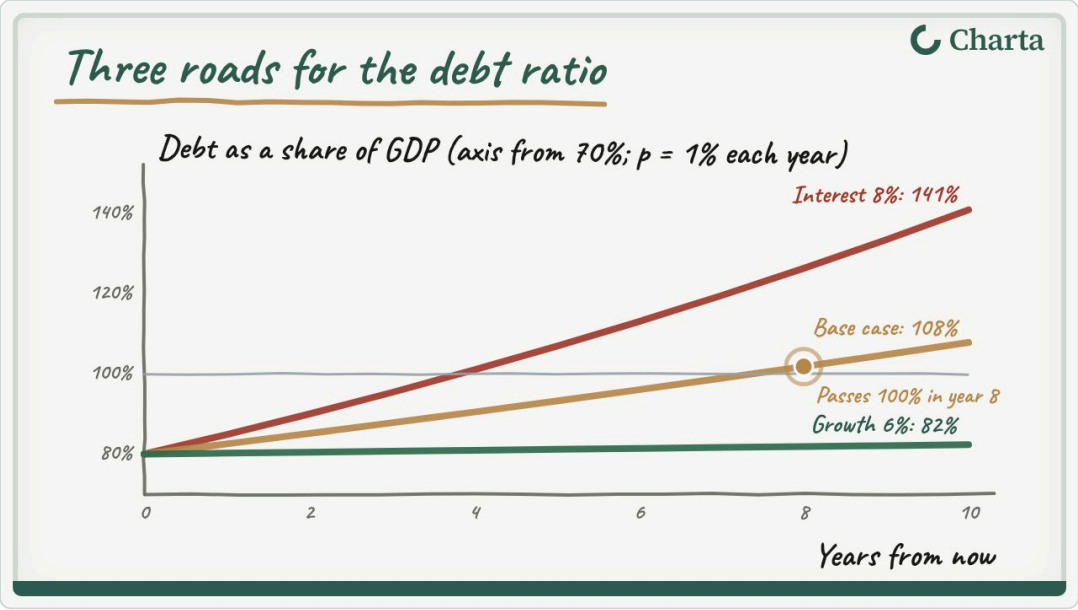
Illustration: d0 = 80%, i = 5%, g = 3%, p = 1% of GDP

Debt plus interest	0.80 × 1.05	**0.84**
Adjust for growth	0.84 ÷ 1.03	**0.8155**
Add primary deficit	0.8155 + 0.01	**0.8255**
Debt ratio next year	as % of GDP	**82.55%**

IN THE LESSON

- Let's run it.
- A country has debt equal to eighty per cent of G D P.
- It pays five per cent interest, its economy grows three per cent in nominal terms, and it runs a primary deficit of one per cent of G D P.
- Multiply the starting debt by one plus the interest rate: point eight times one point zero five is point eight four.
- Divide by one plus growth: point eight four over one point zero three is about point eight one five five.
- Add the primary deficit of point zero one, and the new ratio is about eighty two point five five per cent.
- In one year the debt ratio rose by about two and a half points, even though the deficit was small, because interest exceeded growth.

22 Three roads for the debt ratio



IN THE LESSON

- Now see what the same formula does over ten years, starting from eighty per cent, with a primary deficit of one per cent every year.
- Along the bottom are the years, up the side the debt ratio.
- The middle line is our base case, five per cent interest and three per cent growth: the ratio creeps up and passes one hundred per cent in year eight, ending near one hundred eight.
- The top line is a shock, where interest jumps to eight per cent: the ratio snowballs to about one hundred forty one.
- The flat green line is the good case, with growth at six per cent, above the interest rate: debt ends near eighty two.
- The gap between interest and growth decides everything.
- Small differences compound.

23 How rating agencies judge sovereigns

- Moody's, S and P and Fitch rate sovereigns
- Numbers and judgement, summed up as a letter grade
- An ordinal scale: a ranking, not a probability
- The investment grade line matters to many investors

IN THE LESSON

- Most investors do not run debt dynamics themselves.
- They lean on rating agencies, mainly Moody's, S and P, and Fitch.
- An agency combines quantitative factors, such as debt, deficits and growth, with qualitative ones, such as the strength of institutions and the political outlook, and expresses the verdict on an ordinal scale, meaning a ranking of letter grades.
- Each step on the scale means less safe than the one above, but the steps are not equal distances, and the grade is not a probability.
- It is an opinion about relative risk.
- The grade that matters most in practice is the line between investment grade and the speculative categories below it, since many investors are barred from holding the latter.

24 Reading the rating scale

Simplified scale: Moody's and S&P

Grade	Moody's / S&P
Highest quality	Aaa / AAA
Strong	Aa to A / AA to A
Lowest investment grade	Baa3 / BBB−
Speculative (junk)	Ba1 / BB+ and below
In or near default	C / D

IN THE LESSON

- Here is a simplified version of the scale.
- At the top are the highest grades, written triple A.
- Below come the strong grades, double A and single A.
- The lowest investment grade is Baa three in Moody's notation, or triple B minus at S and P.
- Remember that exact pair, because it is the dividing line.
- Below it lie the speculative grades, often called junk or high yield, which start at Ba one, or double B plus.
- And at the very bottom, ratings of C or D mean the borrower is in or near default.
- Each agency uses slightly different letters, but the order is the same, and the key fact to remember is where the line sits.

25 Criticisms of ratings

- Ratings lag market prices
- They move in steps, slowly then abruptly
- Possible bias and herding between agencies
- A rating is an opinion on relative risk, not a probability

IN THE LESSON

- Ratings are useful, but they have well known weaknesses.
- First, they lag the market.
- When trouble builds, bond prices usually fall before the agency changes its grade.
- Second, they move in steps, often one notch at a time, so they can be slow to signal sudden danger and can change abruptly when they do.
- Third, critics point to possible bias, for example the agency being paid by the issuer in some markets, and to herding, where agencies tend to follow one another rather than disagree.
- Finally, the grade is a ranking of relative risk, not a number you can multiply.
- So a rating helps you sort countries, but alone it does not give you a default probability.

26 Reading risk from market prices

- Spread: bond yield minus risk-free rate, same currency
- CDS: the buyer pays a premium, the CDS spread
- After a credit event the seller pays par minus recovery
- Both are market prices, updated every day

IN THE LESSON

- Markets offer a second way to read sovereign risk.
- The first tool is the sovereign credit spread.
- It is the yield on the government's bond minus the risk free rate in the same currency.
- For a dollar bond issued by an emerging country, that means its yield over the yield on a United States Treasury bond.
- The bigger the spread, the more compensation investors demand for risk.
- The second tool is the sovereign credit default swap, or C D S.
- The buyer of protection pays a regular premium, quoted as the C D S spread in basis points, one basis point being one hundredth of one per cent.
- If a credit event such as failure to pay or a restructuring occurs, the seller pays the buyer par minus the recovery value.

27 From a spread to a default chance

Default chance ≈ Spread ÷ (1 − R)

Default chance	Yearly, roughly
Spread	Bond yield or CDS spread
Recovery rate, R	Share of the claim recovered

IN THE LESSON

- A spread can be turned into a rough default probability.
- The idea is that the spread pays you for the expected loss.
- Each year, the chance of default times the share you lose if it happens equals the spread.
- The share you lose is one minus the recovery rate, R, the fraction of the claim you get back.
- Rearrange, and the annual default probability is roughly the spread divided by one minus R.
- This is only an approximation, because it treats the whole spread as compensation for default.
- In reality part of it pays for risk aversion and for illiquidity, so the true default chance is usually lower than the number this gives you.

28 Example 4: a default chance and a payout

Illustration: spread 3%, recovery 40%; CDS of $10 million at 300 bp

Loss if default	1 − 0.40	**0.60**
Yearly default chance	0.03 ÷ 0.60	**5%**
Yearly premium	3% × $10m	**$300,000**
Payout on default	(1 − 0.40) × $10m	**$6,000,000**

IN THE LESSON

- Two quick cases.
- First, a government bond yields three per cent more than the risk free rate, so the spread is point zero three.
- Investors expect to recover forty per cent.
- One minus point four is point six.
- Point zero three over point six is point zero five: about a five per cent chance of default each year.
- Second, take a C D S on ten million dollars at three hundred basis points.
- The premium is three per cent of ten million, three hundred thousand dollars a year.
- If the government defaults and the bonds are worth forty per cent of par, the seller pays sixty per cent of ten million, six million dollars.
- The buyer pays three hundred thousand a year only because default could bring six million.

29 Spreads against ratings

Two indicators, each with strengths and flaws

Feature	Spreads and CDS / Ratings
Speed	Daily / slow
Scale	Continuous / ordinal
Nature	Market price / agency opinion
Flaw	Premia, liquidity, noise / lag
CDS extra flaw	Counterparty risk

IN THE LESSON

- Now we can contrast the two indicators.
- Market spreads and C D S are prices, so they are forward looking, continuous, and update every day.
- Ratings are opinions, so they are ordinal, slow, and written by an agency.
- But the market has its own faults.
- Spreads include risk premia and liquidity effects, not just default risk, so they can overstate it, and they can be volatile when markets panic.
- C D S has a further problem, counterparty risk: the seller may fail to pay, especially if the seller is closely tied to the sovereign it insures.
- The sensible conclusion is to use both.
- Ratings give a stable, comparable view of fundamentals, and market prices show what investors believe today.

30 Four mistakes to avoid

- Growth alone is not country risk
- Check the scale's direction; a score is not a probability
- Measure the haircut in present value, not face value
- A rating or spread is a clue, not an exact probability

IN THE LESSON

- Here are four mistakes to avoid.
- First, judging a country on growth alone: weigh political risk, legal enforcement and economic structure too.
- Second, comparing composite scores without checking the direction of the scale, or reading a score as if it were a default probability or a premium.
- Third, measuring a restructuring loss by the nominal cut in face value, when the real loss is the haircut in present value at the market yield.
- Fourth, treating a rating or a spread as an exact probability.
- A rating is an opinion on relative risk.
- A spread includes premia and liquidity, so dividing by one minus the recovery rate gives only a rough, upper estimate.
- Treat each as a clue, and combine them.

31 Recap: the main ideas

- Four sources: growth, politics, law, economic structure
- Composite: simple, subjective, no default probability
- Foreign debt riskier; default means restructuring
- Debt dynamics: watch interest against growth
- Ratings: slow opinions. Spreads, CDS: market prices

IN THE LESSON

- Let's pull it together.
- Country risk has four linked sources: the stage and stability of growth, political risk, including continuity, discontinuity and corruption, legal risk, meaning real enforcement, and the structure of the economy.
- A composite such as the I C R G combines them into one number, simple but subjective and silent about default probability.
- Sovereign debt in foreign currency is riskier than debt in local currency, because the government cannot print foreign money.
- Default leads to a negotiated restructuring, where the true loss is the haircut in present value.
- The chance of default depends on debt dynamics and on willingness to pay.
- Ratings, spreads and C D S each give a view, and we should use them together.

32 Try three quick questions

1. Political 60, financial 40, economic 30. Composite?
   Answer: (60 + 40 + 30) ÷ 2 = 65.
2. d0 = 100%, i = 6%, g = 4%, p = 0. Next year's ratio?
   Answer: 1.00 × 1.06 ÷ 1.04 = 101.9%.
3. Spread 2%, recovery 50%. Default chance?
   Answer: 0.02 ÷ 0.50 = 4% a year.

IN THE LESSON

- Now try three quick questions.
- Pause the video after each one, think, then listen to the answer.
- Question one.
- Political risk is sixty, financial risk is forty and economic risk is thirty on the I C R G scale.
- What is the composite?
- Sixty plus forty plus thirty is one hundred thirty, divided by two is sixty five.
- Question two.
- Debt is one hundred per cent of G D P, interest is six per cent, nominal growth is four per cent and the primary deficit is zero.
- What is next year's ratio?
- One times one point zero six over one point zero four is about one hundred one point nine per cent.
- Question three.
- A bond spread is two per cent and recovery is fifty per cent.
- What is the default probability?
- Point zero two over point five is four per cent a year.