CHARTA LEARNING · LESSON NOTES

Credit Risk Governance

FRM Part II

1 A story: the loan nobody questioned

- Team paid for volume writes, rates and approves
- Nobody outside the team ever looks again
- The shipping market turns and the loan goes bad
- Governance divides the work between different people

IN THE LESSON

- Imagine a lending team at Harbourline Bank that is paid a bonus for every loan it signs.
- A shipping company, Tidewater Freight, asks for ten million dollars.
- The team likes the client, so it writes the proposal, rates the borrower itself, approves the loan, and no one outside the team ever looks at it again.
- Two years later the shipping market turns, the loan goes bad, and it emerges that nobody was ever in a position to say no.
- Nothing about this story needs a villain.
- It only needs a structure in which the person who earns from the risk is also the person who judges it.
- Governance exists to prevent exactly that.
- Its answer is to divide the work, so that taking risk, challenging risk and checking the whole system sit with different people.

2 Who is responsible for risk

- Everyone manages risk, but accountability is layered
- Board: sets risk appetite, oversees the framework
- Senior management: carries the framework out
- Three lines of defense divide the work

IN THE LESSON

- Start with who is responsible.
- In a sense, risk management is everyone's job, because every employee who handles money, customers or data can create or prevent risk.
- But accountability is layered.
- At the top, the board of directors sets the risk appetite, which is the amount and type of risk the organisation is willing to accept in pursuit of its goals.
- The board also oversees the risk management framework, the set of policies, limits, processes and reports that control risk.
- Senior management, meaning the chief executive and the executives who report to them, carries the framework out day to day.
- They turn the board's appetite into limits, structures and people.
- The board sets and oversees.
- Management executes.
- The three lines of defense model then divides the execution between three groups.

3 The three lines of defense

Own it. Challenge it. Assure it.

Line	What it does
1st: business units	Own the risk and controls
2nd: risk, compliance	Set limits, challenge, report
3rd: internal audit	Assure the board

IN THE LESSON

- Here is the model.
- The first line is the business units, such as the lending teams at Harbourline.
- They take the risk, they own it, and they run their own controls day to day.
- The second line is the independent risk management and compliance functions.
- They design the framework, set and monitor limits, challenge the first line, and report on risk to management and the board.
- The third line is internal audit.
- It gives the board independent assurance that the first two lines are working, by testing them from outside both.
- Notice the three verbs.
- The first line owns the risk.
- The second line challenges it.
- The third line assures the board that the whole system works.
- Exams ask exactly this: who owns, who challenges and who assures.

4 Example 1: who does what at Harbourline

Tidewater loan: which line does each task?

Sells and structures the loan	lending team	**1st line**
Sets the lending limits	risk function	**2nd line**
Challenges the team's rating	risk function	**2nd line**
Tests that controls work	internal audit	**3rd line**
Sets the risk appetite	board	**Board**

IN THE LESSON

- Let us sort the tasks of the Tidewater loan.
- Selling and structuring the ten million dollar loan is done by the lending team, which is the first line, because it takes and owns the risk.
- Setting the limits within which lending may happen is a second line task, done by the independent risk function.
- So is challenging the lending team's rating of Tidewater, because the second line exists to question the first.
- Testing that the controls really work is the job of internal audit, the third line, which then reports to the board.
- And setting the overall risk appetite sits above all three lines, with the board.
- Now see how the model can go wrong.
- If audit had designed the controls it later tests, it would be marking its own homework.

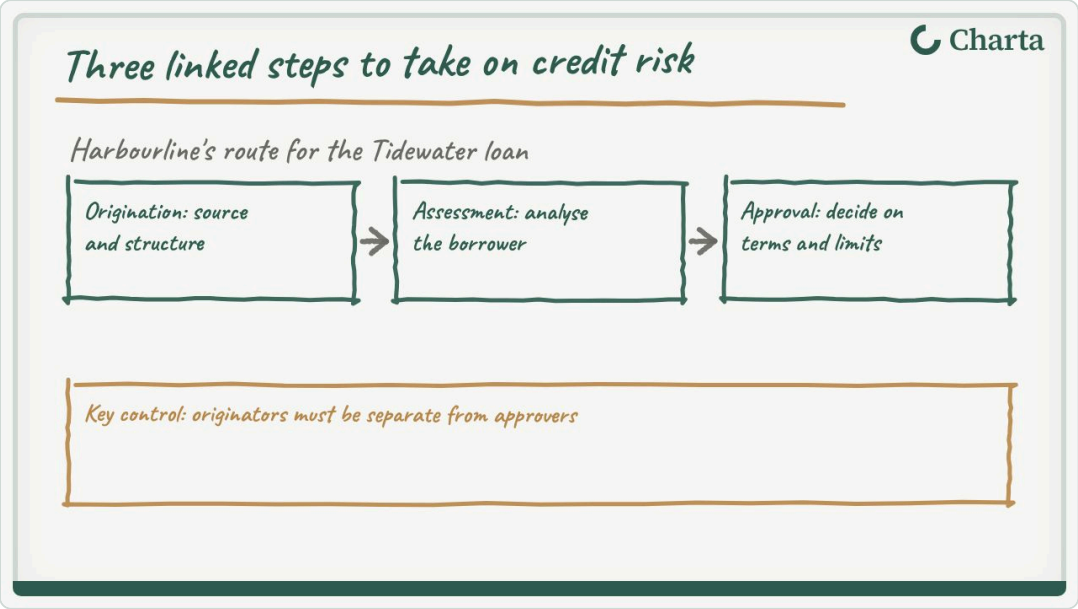
5 Mistakes to avoid: lines swapping jobs

- Audit designs controls it later tests: no independence
- Sales signs off its own clients' ratings: no challenge
- Risk function makes the commercial call: no clear owner
- Ask: who owns, who challenges, who assures?

IN THE LESSON

- The usual mistake is to let one line do another's job.
- Suppose internal audit designs the controls it later tests.
- Then it is assuring its own work, and the board has no independent view.
- Suppose the sales team signs off the ratings of its own clients.
- Then the second line's challenge has vanished, and the person who earns from the loan is the one who judges it, just as in our opening story.
- The same goes for a risk function that takes the commercial decision itself, because then nobody clearly owns the risk.
- Each line has to stay in its own role for the model to work.
- When you meet an exam question, ask three things: who owns this risk, who challenges it, and who assures the board that the system works.

6 Three linked steps to take on credit risk



IN THE LESSON

- Credit risk is taken on through three linked steps.
- The first is credit origination.
- This is sourcing and structuring new business: finding borrowers inside the bank's target market, taking their request, and shaping it into a proposal.
- The second is credit risk assessment, the analysis of the borrower and the deal.
- The third is credit approval, the formal decision to accept the exposure on stated terms and within limits.
- The sequence matters.
- Approval needs a finished assessment, because you cannot sensibly decide on a loan you have not yet analysed, and assessment needs a proposal to analyse.
- One control sits across all three steps.
- The people who originate the business must be kept separate from the people who approve it, to avoid a conflict of interest.
- We now take each step in turn.

7 Step one: origination

- Find borrowers inside the target market
- Take the request: Tidewater wants $10m for 5 years
- Shape it into a proposal: amount, term, security
- Done by relationship managers, rewarded for volume
- So origination cannot judge the risk objectively

IN THE LESSON

- Origination is where Tidewater Freight enters the story.
- A relationship manager at Harbourline meets the company, which sits inside the bank's target market of shipping and trade finance, and takes its initial request: ten million dollars over five years, to buy a second hand vessel.
- The manager then shapes a proposal, deciding the amount, the term, the repayment pattern and what security to ask for.
- Notice who does this work.
- Relationship managers are usually rewarded for volume, for the number and size of the deals they bring in.
- That is natural, and it is useful, because a bank needs business.
- But it means origination cannot be trusted to judge the risk objectively.
- Its job is to find and shape business, and the later steps exist to test it.

8 Step two: assessment, Example 2

Tidewater: $10m, secured on a vessel worth $6m after haircut

Accounts and cash flow	analyst's review	**Grade 5**
Default probability	grade 5 maps to	**2%**
Loss given default	loss $4m of $10m	**40%**
Expected loss	2% × 40% × 10m	**$80,000**

IN THE LESSON

- Now the assessment step, with made up numbers.
- The credit analyst studies Tidewater's accounts and cash flows.
- From that analysis comes an internal rating, grade five on Harbourline's ten grade scale, which is linked to an estimate of default probability of two per cent over a year.
- Next, the effect of collateral and structure.
- The loan is secured on the vessel, whose value after a prudent haircut is six million dollars.
- If Tidewater defaults and nothing else is recovered, the loss is four million, so the loss given default is forty per cent of the ten million dollar exposure.
- Multiply: two per cent times forty per cent times ten million is eighty thousand dollars, the expected loss for a year.
- The assessment is now finished, and the approvers have something to decide on.

9 Step three: approval, and who decides

- Formal decision to accept exposure on stated terms
- Taken within limits, under delegated authority
- Needs the finished assessment first
- Originators must be separate from approvers
- Reason: avoids a conflict of interest

IN THE LESSON

- Approval is the formal decision to accept the exposure, on stated terms and within limits.
- It is taken by an individual or a committee holding the right delegated authority, which means authority passed down from the board and senior management to specific people or bodies.
- For Tidewater, the decision covers the amount, the term, the price, the security and any conditions.
- The approver must see the finished assessment first.
- If approval comes before assessment, the decision is a guess.
- The key control is the separation between those who originate and those who approve.
- A relationship manager who could approve their own proposal would be rewarded for volume and also holding the pen on risk, which is a conflict of interest.
- So at Harbourline, the manager proposes and someone independent decides.

10 Why a bank writes its rules down

- Many people, offices, years: good intent is not enough
- No rules: every office lends differently
- No skilled people: rules applied badly
- No caps or no monitoring: risk piles up unseen
- Four principles: Guidelines, Skills, Limits, Oversight

IN THE LESSON

- Why do good banks put their governance in writing?
- Because credit risk is taken on by many people, in many places, over many years, and good intentions are not enough.
- A bank with no written rules lends differently in each office.
- A bank with rules but no trained people applies them badly.
- A bank with rules and people but no caps on exposure can pile up one risk without noticing.
- And a bank with all three but no independent monitoring may not find out until the losses arrive.
- From this comes a four part description of best-practice credit risk governance, remembered by the first letters of its parts: Guidelines, Skills, Limits and Oversight.
- Each principle answers a different question, and a weakness is usually best placed in just one of them.

11 Guidelines, Skills, Limits and Oversight

Four principles of best-practice governance

Principle	What it covers
Guidelines	Policies, standards, appetite
Skills	Trained people, good tools
Limits	Exposure caps, authority levels
Oversight	Independent monitoring

IN THE LESSON

- Here are the four principles.
- Guidelines are the written policies: target markets, underwriting standards, which collateral is acceptable, and the risk appetite that all of these express.
- Skills mean the organisation has enough trained, experienced people, and adequate tools, to apply those guidelines properly.
- Limits are caps on exposure, set by obligor, by sector, by country or by rating, together with the levels of delegated approval authority, all consistent with the risk appetite.
- Oversight is independent monitoring and reporting.
- It tracks how much of each limit is used, escalates breaches and exceptions, reviews the portfolio, and makes sure the framework itself is reviewed.
- Notice that the first three set up how credit is granted, while the fourth watches whether it is being done.

12 One question for each principle

- Guidelines: what is written down?
- Skills: are there enough trained people and tools?
- Limits: how much is allowed, and who may approve?
- Oversight: who tracks use, breaches, exceptions?
- A weakness usually sits best in one principle

IN THE LESSON

- To keep the principles apart, ask one question for each.
- For Guidelines, ask: what is written down?
- At Harbourline, the policy says that shipping loans must be secured on the vessel being financed.
- For Skills, ask: are there enough trained people and tools?
- Harbourline needs analysts who can value vessels and read a shipping company's cash flows.
- For Limits, ask: how much is allowed, and who may approve it?
- That means the cap on shipping and the level of approval authority for each officer.
- For Oversight, ask: who tracks the use, the breaches and the exceptions?
- That is the independent function that reports to management and the board.
- And remember the point from the start: a weakness is usually best placed in one principle.

13 Example 3: a limit and how much is used

Loan book $2,000m. Shipping cap 25%. Shipping lending $540m

Shipping limit	25% × 2,000m	**$500m**
Shipping exposure today	from the books	**$540m**
Utilisation of the limit	540m ÷ 500m	**108%**
Excess over the limit	540m − 500m	**$40m**

Cap existed (Limits); breach not escalated = Oversight

IN THE LESSON

- Let us put numbers on a limit.
- Harbourline's loan book totals two thousand million dollars, that is two billion.
- Its policy caps lending to the shipping sector at twenty five per cent of the book, which is five hundred million dollars.
- Today the shipping exposure is five hundred and forty million.
- Utilisation of the limit is five hundred and forty over five hundred, which is one hundred and eight per cent.
- The excess over the limit is forty million dollars.
- Now think about which principle this tests.
- The limit exists, so the Limits principle did its job in setting the cap.
- If nobody reported or escalated the breach, the failure is in Oversight.
- And any new shipping loan now needs an exception, which belongs to the approving body.

14 Mistakes to avoid: which principle is weak?

Place each weakness in one principle

Weakness	Principle
No written ship-lending rule	Guidelines
Analysts cannot value vessels	Skills
No cap on shipping at all	Limits
Breach known, never escalated	Oversight

IN THE LESSON

- Now the exam skill.
- A weakness is usually best placed in one principle, and questions ask which one.
- A missing written rule about lending against vessels is a Guidelines weakness.
- Analysts who cannot judge a vessel's value are a Skills weakness.
- No cap on shipping at all is a Limits weakness.
- A breach that everyone knew about but nobody escalated is an Oversight weakness.
- The common error is to confuse the principles, for example calling a limit framework a guideline.
- A limit is a number that caps exposure and sets who may approve.
- A guideline is a written standard or policy.
- Another trap is to call a breach a Limits failure when the cap existed and was simply not monitored.
- That is Oversight.

15 A story: the loan on one page

- Imagine the loan on one page: the term sheet
- A few parameters fix the risk the lender takes
- Credit-sensitive: value depends on borrower paying
- Some set exposure, some the loss, some warn early

IN THE LESSON

- Picture Tidewater's finished loan on a single sheet of paper, the term sheet.
- If you wanted to explain to a colleague how risky it is, you would not need the whole file.
- A small set of facts would do.
- Who is borrowing, and how good is their credit?
- How much, and how much is actually drawn?
- For how long?
- What kind of loan, and what for?
- How is it repaid?
- How much are we paid for the risk?
- What do we hold if it goes wrong, and where do we rank?
- What promises must the borrower keep?
- Together these parameters fix the risk the lender takes.
- A credit-sensitive transaction is simply one whose value depends on the borrower's ability to pay, and these are the dials that define it.

16 Parameters that set the exposure

Who, how much, how long, what for, how repaid

Parameter	What it fixes
Obligor	Credit quality
Amount	Commitment and drawn
Tenor	Time at risk
Facility type, purpose	Source of repayment
Repayment profile	Bullet or amortising

IN THE LESSON

- Start with the parameters that set the exposure.
- The obligor is the borrower, and its credit quality drives the chance of default.
- The amount has two parts: the commitment, which is what the bank has promised to lend, and how much is drawn, meaning actually borrowed so far.
- The tenor is the maturity, how long the bank stays exposed.
- The type of facility and its purpose, for example a term loan to buy a vessel or a revolving line for working capital, tell you what the money is for and where repayment will come from.
- The repayment profile is either bullet, where all the principal is repaid at the end, or amortising, where it is repaid gradually.
- Amount, tenor and repayment profile together drive how exposure behaves over time.

17 Parameters that shape reward, loss and warning

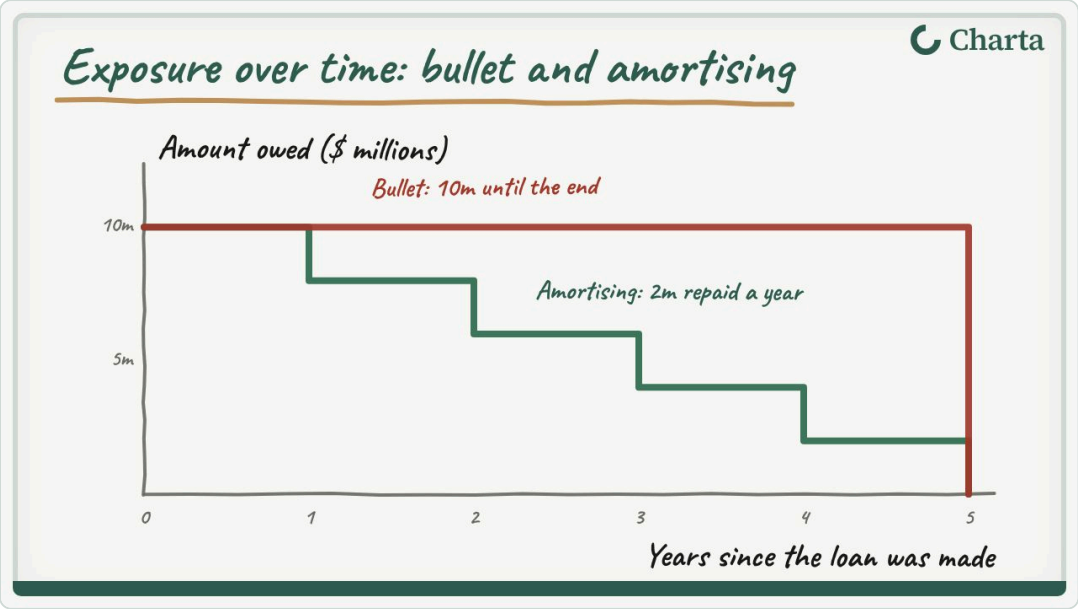
The rest of the term sheet

Parameter	Main effect
Pricing: margin, fees	Pays for the risk
Collateral, guarantees	Lower the loss
Seniority of the claim	Recovery ranking
Covenants	Early warning, control
Other terms: currency	Extra risks

IN THE LESSON

- The rest of the parameters shape reward, loss and early warning.
- Pricing comes as a margin over the base rate, plus fees, and it pays the lender for the risk taken.
- Collateral is an asset pledged against the loan, and a guarantee is a promise by a third party to pay if the borrower cannot.
- Seniority is the ranking of the claim in a default: a senior claim is paid before a subordinated one.
- Covenants are promises the borrower makes in the loan agreement, such as keeping cash flow above a minimum level.
- They give early warning, and a right to step in when they are broken.
- Finally there are other terms, such as the currency of the loan.
- The central point is that collateral, guarantees and seniority mainly affect the loss if default occurs, not the probability that it occurs.

18 Exposure over time: bullet and amortising



IN THE LESSON

- Here is how the repayment profile changes exposure over time.
- Along the bottom are the five years of Tidewater's loan.
- Up the side is the amount owed, in millions of dollars.
- The red line is a bullet loan.
- Ten million dollars stays outstanding throughout, and everything is repaid at the end.
- The green staircase is an amortising loan, which repays two million dollars every year, so the balance falls from ten to eight, then six, four and two million.
- The two start in the same place, but after the first year the amortising borrower owes less, so the lender has less at risk at every later point.
- Amount, tenor and repayment profile together draw this picture, and the exposure over time is what the lender really carries.

19 Example 4: bullet against amortising

Tidewater, $10m, 5 years. PD 2% a year, LGD 40%. Exposure-years in $m

Bullet exposure-years	10 × 5	**50**
Amortising exposure-years	10 + 8 + 6 + 4 + 2	**30**
Loss rate per exposure-year	2% × 40%	**0.8%**
Bullet expected loss	0.8% × 50m	**$400,000**
Amortising expected loss	0.8% × 30m	**$240,000**

IN THE LESSON

- Let us price the difference with a rough method.
- Add up the balance owed at the start of each year.
- The bullet loan has ten million for five years, which is fifty million dollar years.
- The amortising loan has ten plus eight plus six plus four plus two, which is thirty.
- With a two per cent default probability and a loss given default of forty per cent, each dollar of exposure carries an expected loss of point eight per cent a year.
- For the bullet, point eight per cent of fifty million is four hundred thousand dollars.
- For the amortising loan, point eight per cent of thirty million is two hundred and forty thousand.
- This simple method ignores that a borrower who defaults early cannot default later, so treat it as a guide.
- Same amount, same tenor, same borrower: the repayment profile alone cut the expected loss by forty per cent.

20 Example 5: seniority moves the loss

Same borrower, same $10m, PD 2%. Only the claim differs

PD, senior secured loan	set by the borrower	**2%**
PD, subordinated loan	set by the borrower	**2%**
Senior secured, LGD 40%	2% × 40% × 10m	**$80,000**
Subordinated, LGD 75%	2% × 75% × 10m	**$150,000**

IN THE LESSON

- Now see which parameters move the probability and which move the loss.
- Take Tidewater again, with ten million dollars and a two per cent default probability.
- Suppose Harbourline can lend either as a senior secured loan, backed by the vessel, or as a subordinated loan with no security that ranks behind other lenders.
- The default probability depends on the borrower, so it is two per cent either way.
- The loss given default differs.
- The senior secured loan is expected to lose forty per cent, the subordinated loan seventy five per cent.
- Expected loss is eighty thousand dollars for the first and one hundred and fifty thousand for the second.
- Collateral and seniority changed the loss, not the chance of default.
- Covenants work earlier still: they warn the lender before default and give a right to intervene.

21 Mistakes to avoid: probability or loss?

- Collateral and guarantees lower the loss, not the PD
- Seniority changes recovery, not the chance of default
- Amount, tenor, repayment profile: exposure over time
- Covenants: early warning and a right to intervene
- Sort each: how likely, how big, how much is lost

IN THE LESSON

- The trap in this outcome is a simple mix-up, and candidates fall into it often.
- They attribute collateral to default probability.
- Collateral does not make a borrower more likely to pay.
- A secured borrower with the same cash flows is exactly as likely to default as an unsecured one.
- What collateral changes is how much the lender loses if default happens.
- The same is true of guarantees and of seniority.
- By contrast, the obligor's credit quality drives the probability, while amount, tenor and repayment profile drive the exposure over time, and covenants give early warning and a right to intervene.
- A good habit is to sort every parameter into three buckets: how likely, how big, and how much is lost.
- Then the exam question usually answers itself.

22 A story: the file reaches the committee

- Tidewater's $10m is above one officer's authority
- So the file goes to the credit committee
- Committee: credit decisions made or reviewed together
- Different members see different weaknesses
- It decides: it does not originate or audit

IN THE LESSON

- Back at Harbourline, Tidewater's proposal has been assessed, and now someone must decide.
- The amount is ten million dollars, above what any single officer may approve alone.
- So the file goes to the credit committee.
- A credit committee is a body that makes or reviews credit decisions collectively, instead of leaving them to one person.
- Collective decisions have a clear advantage, because different people see different weaknesses.
- The member from the business sees the relationship, the credit officer sees the cash flows, and the risk specialist sees how much shipping the bank already holds.
- The committee is a decision body inside the risk-taking process.
- It does not originate business, and it does not give audit assurance.
- Let us see what it actually does.

23 What the credit committee does

- Approves above individual delegated authority
- Approves large, complex deals and policy exceptions
- Reviews portfolio, concentrations, watchlist, problems
- Recommends changes to policy and limits
- Members: credit, risk, business, maybe finance

IN THE LESSON

- A credit committee does two main things.
- First, it approves exposures above individual delegated authority, and large, complex or non-standard proposals, including exceptions to policy.
- Second, it supports the framework.
- It reviews the quality of the portfolio, looks at concentrations, at the watchlist, which is the list of borrowers showing signs of stress, and at problem exposures, and it recommends changes to policy and limits.
- Its members come from credit and risk, from the business, and sometimes from finance.
- The crucial quality is that it must be able to challenge the business instead of rubber-stamping proposals.
- A committee that always says yes adds a signature but no control.

24 Delegated authority at Harbourline

Who may approve, per borrower group

Request	Who decides
Small, in policy, up to $5m	Credit officer
Above $5m	Credit committee
Large, complex, non-standard	Credit committee
Any exception to policy	Credit committee

IN THE LESSON

- Not everything goes to the committee.
- Routine, in-policy and small credits are normally approved under delegated individual authority, because a committee that debated every small loan would be slow and would waste its time.
- At Harbourline, with made up figures, a credit officer may approve in-policy exposures up to five million dollars per borrower group.
- Anything above that goes to the committee, and so does anything large, complex or non-standard, and any exception to policy, whatever the size.
- Tidewater's ten million dollars is above five million, so the committee decides.
- Notice that the limit applies to the borrower's total, not to each separate facility.
- That sets up the trap in the next example.

25 Example 6: splitting a deal

Tidewater asks $10m. Officer limit: $5m per borrower group

Facility A	under the $5m limit	**$3.5m**
Facility B	under the $5m limit	**$3.5m**
Facility C	under the $5m limit	**$3.0m**
Total for Tidewater	3.5 + 3.5 + 3.0	**$10.0m**
Decided by	10.0m is above 5m	**Committee**

IN THE LESSON

- Here is the usual mistake.
- Suppose a relationship manager, keen to close the deal quickly, splits Tidewater's ten million dollar request into three facilities: three and a half million, three and a half million, and three million.
- Each is under the five million officer limit, so each could be approved without the committee.
- But all three are exposure to the same borrower.
- Added up, they come to ten million dollars, double the officer limit, so the committee must decide.
- Splitting a deal to get under an approval limit is a control failure, and a sign of the very conflict of interest that separating origination from approval is meant to prevent.
- The remedy is to measure exposure by borrower group, in total.

26 Mistakes to avoid: the committee

- Splitting a deal to get under an approval limit
- Rubber-stamping instead of challenging the business
- Committee originating business or giving assurance
- Sending every small, in-policy credit to committee
- It is a decision body inside risk-taking

IN THE LESSON

- Four things to avoid.
- First, splitting a deal to get under an approval limit, which we just saw.
- Second, rubber-stamping, where the committee approves whatever the business brings and so adds no challenge.
- Third, confusing the role.
- The committee is a decision body inside the risk-taking process.
- It does not originate business, so it is not the sales force, and it does not give audit assurance, so it is not the third line.
- Fourth, the opposite error, sending every small, in-policy credit to the committee, which clogs the process.
- A last caution: institutions differ on committee membership and on whether the risk function holds a veto, so exam questions stay with the generic role of a collective decision body.

27 Recap: the main ideas

- Own, challenge, assure: three lines of defense
- Origination, then assessment, then approval
- Guidelines, Skills, Limits, Oversight
- Collateral and seniority change LGD, not PD
- Committee: decides big credits, challenges business

IN THE LESSON

- Let us pull it together.
- The board sets risk appetite and oversees the framework, and senior management carries it out.
- In the three lines of defense, the business owns risk, the independent risk and compliance functions challenge it, and internal audit assures the board.
- Credit is taken on through origination, assessment and approval, in that order, with originators kept apart from approvers.
- Best-practice governance rests on Guidelines, Skills, Limits and Oversight.
- A credit transaction is defined by obligor, amount, tenor, facility, repayment profile, pricing, collateral, seniority and covenants, and collateral and seniority affect the loss, not the probability.
- A credit committee decides large, complex and exceptional credits, and challenges the business.

28 Try three quick questions

1. Loan $8m, PD 1.5%, collateral $6m after haircut. Expected loss?
   Answer: LGD = 2 ÷ 8 = 25%. 1.5% × 25% × 8m = $30,000.
2. Officer limit $5m per group; $12m split into 3 × $4m. Who decides?
   Answer: Total is $12m, above $5m: the credit committee.
3. Sales team signs off its own clients' ratings. Whose job is it doing, and what is lost?
   Answer: It does the second line's job: challenge is lost.

IN THE LESSON

- Now try three quick questions.
- Pause the video, think, then listen to the answers.
- Question one.
- A loan of eight million dollars has a default probability of one point five per cent, and collateral worth six million dollars after haircut.
- What is the expected loss?
- The loss is two million, so loss given default is twenty five per cent, and one point five per cent times twenty five per cent times eight million is thirty thousand dollars.
- Question two.
- An officer may approve up to five million dollars per borrower group, and a twelve million dollar request is split into three facilities of four million each.
- Who decides?
- The total is twelve million, so the credit committee.
- Question three.
- A sales team signs off the ratings of its own clients.
- Whose job is it doing, and what is lost?
- The second line's job, so independent challenge is lost.