CHARTA LEARNING · LESSON NOTES

Operational Risk Capital under Basel III

FRM Part II

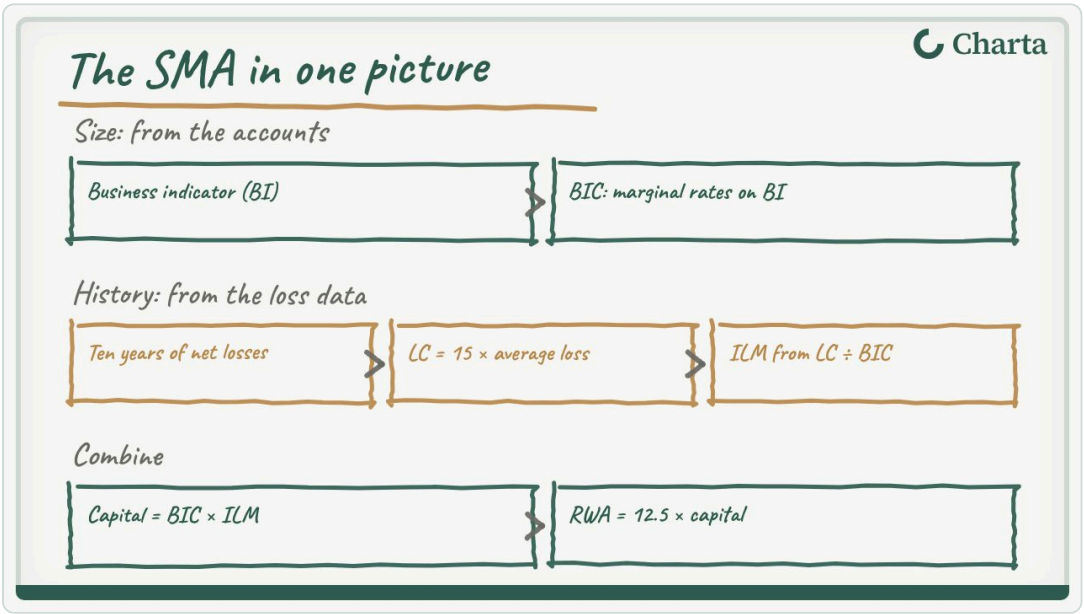
1 A story: three methods, one problem

- Simple methods: a share of income, own losses ignored
- Advanced models: similar banks, very different capital
- Hard to compare across banks, hard to check
- Answer: one formula for every bank, the SMA
- Size from the accounts, adjusted for own losses

IN THE LESSON

- Picture Halden Bank some years ago.
- Its regulator allowed several ways to measure operational risk capital.
- The simple methods charged a fixed share of income, and ignored the losses the bank had actually suffered.
- The advanced method let a bank build its own model, and two banks with similar risks could arrive at very different capital.
- Supervisors found the numbers hard to compare across banks, and the models hard to check.
- The Basel Committee's answer, in the final Basel three package, was one formula for every bank, called the standardised measurement approach.
- It measures the size of the business from the accounts, and then adjusts for the bank's own history of losses.

2 The SMA in one picture



IN THE LESSON

- Here is the whole method on one board, and the rest of this part fills in each box.
- The first row measures size from the accounts.
- We build the business indicator, B I, a measure of how big the bank's business is.
- Then we apply marginal rates to it, which gives the business indicator component, B I C.
- The second row brings in history from the loss data.
- We take ten years of net operational losses.
- The loss component, L C, is fifteen times the average annual loss.
- Dividing L C by B I C gives a ratio, and from that ratio comes the internal loss multiplier, I L M.
- The last row combines them.
- Capital is B I C times I L M, and risk weighted assets, R W A, are twelve point five times capital.

3 The business indicator: three components

Each component is built from the income statement

Component	What goes in
Interest	|Margin| (cap 2.25% of assets) + dividends
Services	Larger fee item + larger other operating item
Financial	|Trading book result| + |banking book result|
All three	Three-year averages

IN THE LESSON

- The business indicator is built from the income statement, in three components.
- The first is interest, leases and dividends.
- It takes the interest margin, meaning the absolute value of interest income minus interest expense, capped at two point two five per cent of interest earning assets, and then adds dividend income.
- The second is services.
- It takes the larger of fee income and fee expense, plus the larger of other operating income and other operating expense.
- The third is financial.
- It is the absolute value of the net result of the trading book, plus the absolute value of the net result of the banking book.
- Absolute means that a loss counts just as much as a profit.
- The last row reminds you that every component is a three year average.

4 Adding up the business indicator

BI = ILDC + SC + FC
each part a three-year average

Interest, leases and dividends	Capped margin plus dividends
Services component	Larger of income or expense
Financial component	Absolute trading and banking P&L

IN THE LESSON

- In symbols, B I equals I L D C plus S C plus F C.
- I L D C is the interest, leases and dividends component: the capped margin plus dividends.
- S C is the services component, which takes the larger of income or expense on each line.
- F C is the financial component, the absolute results of the trading and banking books.
- Each part is an average over three years, which smooths out a single good or bad year.
- Notice what the indicator is.
- It is a proxy for size, not a measure of risk.
- The idea is that a bigger and busier bank has more processes, people and systems that can fail.
- Notice too that services and financial use gross or absolute amounts, so a loss cannot be netted against a gain to shrink the indicator.

5 Example 1: the interest component

Halden, 3-year averages, €m: interest income 3,000, expense 1,800, earning assets 50,000

Interest margin	3,000 − 1,800	**€1,200m**
Cap: 2.25% of earning assets	2.25% × 50,000	**€1,125m**
Margin used	smaller of the two	**€1,125m**
Add dividend income		**€50m**
ILDC	1,125 + 50	**€1,175m**

IN THE LESSON

- Let us build Halden Bank's business indicator.
- All figures are three year averages in millions of euros.
- Interest income is three thousand and interest expense one thousand eight hundred, so the interest margin is one thousand two hundred.
- Interest earning assets are fifty thousand, and two point two five per cent of that is one thousand one hundred and twenty five.
- The margin is above the cap, so the smaller of the two, one thousand one hundred and twenty five, is used.
- Next we add dividend income of fifty.
- The interest, leases and dividends component is one thousand one hundred and seventy five million euros.
- A common slip is to forget the cap and use the full margin, which would overstate this component by seventy five million.

6 Example 2: services, financial and the total

€m: fees in 900, out 400; other income 100, other expense 175; trading −200, banking +50

Fees: the larger	of 900 and 400	**€900m**
Other operating: the larger	of 100 and 175	**€175m**
Services component	900 + 175	**€1,075m**
Financial component	|−200| + |+50|	**€250m**
Business indicator	1,175 + 1,075 + 250	**€2,500m**

IN THE LESSON

- Now the other two components, again in millions of euros.
- Fee income is nine hundred and fee expense four hundred, so the larger, nine hundred, is used.
- Other operating income is one hundred and other operating expense one hundred and seventy five, so here the larger is the expense, one hundred and seventy five.
- The services component is nine hundred plus one hundred and seventy five, which is one thousand and seventy five.
- The trading book lost two hundred and the banking book made fifty.
- The financial component adds the absolute values, two hundred plus fifty, which is two hundred and fifty.
- Netting them would wrongly give minus one hundred and fifty.
- The business indicator is one thousand one hundred and seventy five, plus one thousand and seventy five, plus two hundred and fifty: two thousand five hundred million euros.

7 Example 3: why a three-year average

Halden's business indicator in each of the last three years, €m

Year 1		**€2,300m**
Year 2		**€2,450m**
Year 3		**€2,750m**
Three-year average	(2,300+2,450+2,750) ÷ 3	**€2,500m**
Slip: latest year alone	overstates the size	**€2,750m**

IN THE LESSON

- Why average over three years?
- Here is Halden's business indicator year by year, in millions of euros.
- In year one it was two thousand three hundred.
- In year two it was two thousand four hundred and fifty.
- In year three, a strong year, it was two thousand seven hundred and fifty.
- The three year average is the sum of the three divided by three, which is two thousand five hundred, the figure we have just built.
- If a student used the latest year alone, the indicator would be two thousand seven hundred and fifty, and capital would jump with one good year.
- Averaging makes the charge steadier, and harder to move by timing income from one year into the next.

8 The BIC: marginal rates by bucket

Each slice of BI is charged its own rate, like income tax bands

Slice of BI	Marginal rate	BIC at top of slice
Up to €1bn	12%	€0.12bn
€1bn to €30bn	15%	€4.47bn
Above €30bn	18%	no upper end

IN THE LESSON

- Now we turn the indicator into a capital base, the business indicator component, B I C.
- It works like income tax bands.
- Each slice of the indicator is charged its own rate, called a marginal rate.
- Basel calls these slices buckets.
- The first slice, up to one billion euros, is charged twelve per cent, so a bank with exactly one billion has a B I C of point one two billion.
- The slice from one to thirty billion is charged fifteen per cent.
- A bank at exactly thirty billion has point one two, plus fifteen per cent of twenty nine billion, which is four point four seven billion.
- Anything above thirty billion is charged eighteen per cent, with no upper end.
- So larger banks pay a higher average rate.
- The bands are set in euros in the Basel text.

9 Example 4: Halden's BIC, and the flat-rate slip

Halden's business indicator is €2,500m

First €1,000m at 12%	12% × 1,000	**€120m**
Next €1,500m at 15%	15% × 1,500	**€225m**
BIC	120 + 225	**€345m**
Slip: flat 12% on all	12% × 2,500	**€300m**
Slip: flat 15% on all	15% × 2,500	**€375m**

IN THE LESSON

- Halden's business indicator is two thousand five hundred million euros.
- The first one thousand million is charged twelve per cent, which is one hundred and twenty million.
- The next one thousand five hundred million falls in the second band and is charged fifteen per cent, which is two hundred and twenty five million.
- The B I C is one hundred and twenty plus two hundred and twenty five, which is three hundred and forty five million euros.
- Now the usual slip.
- Applying a flat twelve per cent to all of the indicator gives three hundred million, too low.
- Applying a flat fifteen per cent to all of it gives three hundred and seventy five million, too high.
- The right answer sits between them, because each slice keeps its own rate.

10 Bringing in losses: the loss component

LC = 15 × average annual net loss (10 years)
Ratio = LC ÷ BIC

Loss component	History: 15 × average loss
Loss to size ratio	Above 1: lost more than size
Business indicator component	Size: BI through the bands

IN THE LESSON

- So far only size has counted.
- The bank's own history enters through its losses.
- The loss component, L C, is fifteen times the average annual net operational loss over the past ten years.
- Net means after recoveries, such as insurance payouts.
- Then we compare history with size.
- Dividing the loss component by the business indicator component gives the ratio of losses to size.
- A ratio above one says the bank has lost more than a bank of its size would be expected to lose.
- A ratio below one says it has lost less.
- The B I C, as we saw, is the size measure from the marginal bands.
- The ratio is what drives the multiplier on the next board.

11 The internal loss multiplier and the capital

ILM = ln(e − 1 + Ratio^{0.8})
Capital = BIC × ILM; RWA = 12.5 × Capital

Internal loss multiplier	Equals 1 when LC = BIC
Operational risk capital	Size scaled by history
Risk-weighted assets	12.5 times capital

IN THE LESSON

- The internal loss multiplier, I L M, turns the ratio into a scaling factor.
- It is the natural log of, e minus one, plus the ratio raised to the power nought point eight.
- Here e is the familiar constant, about two point seven one eight.
- The formula is built so that when L C equals B I C, the ratio is one, the bracket is just e, and the log of e is one.
- So the multiplier is one, and capital equals the B I C.
- Heavier losses push the multiplier above one, and lighter losses push it below one.
- Capital is the B I C times the I L M.
- For the smallest banks, with a business indicator up to one billion euros, the multiplier is simply set to one, and national supervisors may set it to one for all banks.
- Risk weighted assets are twelve point five times capital, which converts the charge into the same units as credit and market risk.

12 Example 5: Halden's loss component

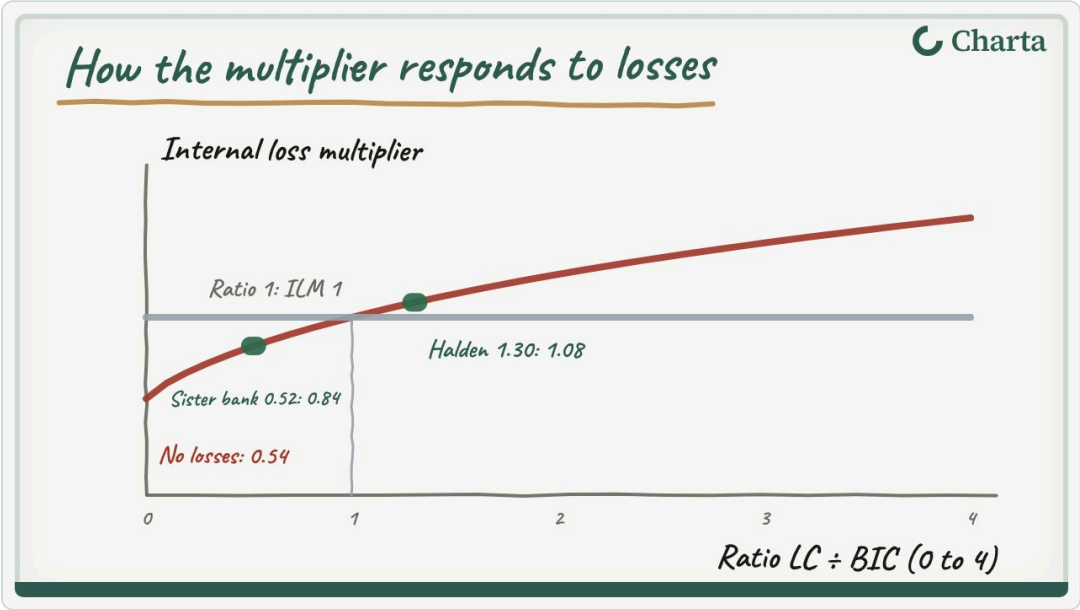
Halden's net operational losses over ten years total €300m

Ten-year total	net of recoveries	**€300m**
Average a year	300 ÷ 10	**€30m**
Loss component	15 × 30	**€450m**
Ratio	450 ÷ 345	**1.304**

IN THE LESSON

- Back to Halden.
- Its net operational losses over the last ten years, after recoveries, add up to three hundred million euros.
- The average a year is three hundred divided by ten, which is thirty million.
- The loss component is fifteen times thirty, which is four hundred and fifty million.
- Its business indicator component is three hundred and forty five million.
- The ratio of losses to size is four hundred and fifty divided by three hundred and forty five, which is about one point three zero four.
- So Halden has lost more than a bank of its size would be expected to, and its multiplier will be above one.
- A common slip is to multiply the ten year total, rather than the yearly average, by fifteen.

13 How the multiplier responds to losses



IN THE LESSON

- This chart shows the multiplier as a picture.
- Along the bottom is the ratio of the loss component to the business indicator component, from zero to four.
- Up the side is the internal loss multiplier.
- The grey line marks a multiplier of one.
- The red curve is the formula.
- With no losses at all it starts at about point five four, so even a spotless record cannot remove more than about half of the charge.
- It crosses one exactly where the ratio is one.
- Halden, at a ratio of about one point three, has a multiplier of about one point zero eight.
- Its sister bank, which we meet next, sits at about point eight four.
- The curve flattens as it rises: doubling the ratio raises the multiplier by much less than double.

14 Example 6: Halden's capital requirement

Halden: BIC €345m, LC €450m, ratio 1.304

Ratio to the power 0.8	1.304^{0.8}	**1.2368**
Add e − 1	1.2368 + 1.7183	**2.9551**
ILM	ln(2.9551)	**1.0835**
Capital	345 × 1.0835	**€373.8m**
RWA	12.5 × 373.8	**€4,672.5m**

IN THE LESSON

- Now the multiplier for Halden.
- With a B I C of three hundred and forty five million and a loss component of four hundred and fifty million, the ratio is about one point three zero four.
- Raise it to the power nought point eight, which gives about one point two three six eight.
- Add e minus one, which is about one point seven one eight three.
- The total inside the bracket is about two point nine five five one.
- The natural log of that is about one point zero eight three five, so the multiplier is just above one.
- Capital is the B I C times one point zero eight three five, which is about three hundred and seventy three point eight million euros.
- Risk weighted assets are twelve point five times capital, about four thousand six hundred and seventy two point five million euros.

15 Example 7: a sister bank with fewer losses

Fenwick: same BIC of €345m; average net loss only €12m a year

Loss component	15 × 12	**€180m**
Ratio	180 ÷ 345	**0.522**
ILM	ln(e − 1 + 0.522^{0.8})	**0.8383**
Capital	345 × 0.8383	**€289.2m**
Halden minus Fenwick	373.8 − 289.2	**€84.6m**

IN THE LESSON

- Now take Fenwick Bank, a sister bank of exactly the same size, so its B I C is also three hundred and forty five million euros.
- Fenwick has averaged only twelve million euros of net losses a year.
- Its loss component is fifteen times twelve, which is one hundred and eighty million.
- The ratio is one hundred and eighty divided by three hundred and forty five, about point five two two.
- The multiplier is the log of e minus one plus point five two two to the power nought point eight, about point eight three eight three.
- Capital is three hundred and forty five times point eight three eight three, about two hundred and eighty nine point two million.
- Halden holds about eighty four point six million euros more, purely because of its loss history.

16 Mistakes to avoid with the SMA

- One flat rate on all of BI: use the marginal bands
- Netting trading and banking results: use absolute values
- Forgetting the 2.25% cap on the interest margin
- LC is 15 × the average annual loss, not the total
- ILM = 1 when LC = BIC; RWA = 12.5 × capital

IN THE LESSON

- Before we leave the formula, here are the slips examiners look for.
- The first and most common is applying one flat rate to all of the business indicator.
- Use the marginal bands, slice by slice.
- Second, netting a trading loss against a banking book gain.
- The financial component adds absolute values.
- Third, forgetting the two point two five per cent cap on the interest margin.
- Fourth, multiplying the ten year total of losses by fifteen.
- The loss component uses the average annual loss.
- Last, keep two anchors in mind.
- The multiplier equals one exactly when the loss component equals the business indicator component, and risk weighted assets are twelve point five times capital.

17 From simple to advanced, then back to one formula

Earlier methods rose in sophistication; the SMA replaced all three

Method	Base	How capital is set
Basic indicator	Gross income	15% of average positive GI (3 years)
Standardised	Gross income by line	Betas: 12%, 15%, 18%
Advanced (AMA)	Internal model	99.9%, one year
SMA	Business indicator	One formula, with ILM

IN THE LESSON

- To see why the S M A looks the way it does, we need the methods it replaced.
- They rose in sophistication.
- The basic indicator approach used gross income as its base, and charged fifteen per cent of the average of the positive years over the last three.
- The standardised approach also used gross income, but split it into business lines, each with its own rate, called a beta, of twelve, fifteen or eighteen per cent.
- The advanced measurement approach, the A M A, let approved banks use an internal model, set at a ninety nine point nine per cent confidence level over one year.
- Finally, the S M A uses the business indicator as its base and sets capital with one formula, including the multiplier.

18 The basic indicator approach

Capital = 15% × (sum of positive GI) ÷ (number of positive years)

Gross income	Gross income, positive years only
Positive years	Positive years, out of three
Fixed rate	Fixed 15% for every bank

IN THE LESSON

- The basic indicator approach is the simplest.
- Capital is fifteen per cent of the average annual gross income over the last three years.
- Gross income is, broadly, net interest income plus net non interest income.
- There is one rule to remember.
- A year with negative or zero gross income is dropped from both the numerator and the denominator.
- So you add up only the positive years and divide by how many positive years there were, not by three.
- The fifteen per cent is a fixed rate for every bank, whatever its business.
- The method never looks at the bank's own losses, which is one reason it was replaced.

19 Example 8: the basic indicator with a loss year

Halden's gross income, €m: year 1 1,300; year 2 −100; year 3 1,100

Positive years only	1,300 + 1,100	**€2,400m**
Average of positive years	2,400 ÷ 2	**€1,200m**
Capital	15% × 1,200	**€180m**
Slip: keep year 2, divide by 3	15% × 2,300 ÷ 3	**€115m**

IN THE LESSON

- Years ago, Halden's gross income was one thousand three hundred million euros in year one, minus one hundred million in year two, and one thousand one hundred million in year three.
- Year two is negative, so it is dropped from the numerator and the denominator.
- The positive years sum to two thousand four hundred, over two years, an average of one thousand two hundred.
- Capital is fifteen per cent of one thousand two hundred, which is one hundred and eighty million euros.
- The usual slip is to keep the negative year and divide by three.
- That gives an average of about seven hundred and sixty six point seven, and capital of only one hundred and fifteen million, which understates the charge.

20 The standardised approach: eight lines, three betas

Gross income is split into eight business lines

Beta	Business lines
12%	Retail banking; asset management; retail brokerage
15%	Commercial banking; agency services
18%	Corporate finance; trading and sales; payment and settlement

IN THE LESSON

- The standardised approach splits gross income into eight business lines, and applies a beta to each.
- Lines thought to be less risky carry twelve per cent: retail banking, asset management and retail brokerage.
- Two lines carry fifteen per cent: commercial banking, and agency services.
- The three thought riskiest carry eighteen per cent: corporate finance, trading and sales, and payment and settlement.
- A good way to remember the split is that the twelve per cent lines serve many small customers or manage other people's money, while the eighteen per cent lines handle large, fast moving transactions.
- Like the basic indicator, this method still ignores the bank's own loss history.

21 Example 9: the standardised approach for Halden

Gross income of €1,200m a year (no negative years), split by business line

Retail banking	500 × 12%	**€60m**
Commercial banking	400 × 15%	**€60m**
Trading and sales	200 × 18%	**€36m**
Asset management	100 × 12%	**€12m**
Total charge	60 + 60 + 36 + 12	**€168m**

IN THE LESSON

- Take a gross income of one thousand two hundred million euros a year, with no loss years, split by business line.
- Retail banking earns five hundred at a beta of twelve per cent, giving sixty million.
- Commercial banking earns four hundred at fifteen per cent, also sixty million.
- Trading and sales earns two hundred at eighteen per cent, giving thirty six million.
- Asset management earns one hundred at twelve per cent, giving twelve million.
- The total charge is one hundred and sixty eight million euros.
- Under the basic indicator, fifteen per cent of one thousand two hundred would be one hundred and eighty.
- Halden pays less here because much of its income sits in the twelve per cent lines.
- One more rule: in the standardised approach a negative year's charge is set to zero but still counted, so you always divide by three.

22 The advanced measurement approach

- Approved banks used their own internal models
- Inputs: internal and external losses, scenarios, controls
- 99.9% confidence level, one-year horizon
- Diversification credit; insurance up to 20%
- Flexible, but complex and not comparable

IN THE LESSON

- The advanced measurement approach was the most sophisticated.
- Banks that a supervisor approved could use their own internal models.
- The inputs were four: internal loss data, external loss data from other banks, scenario analysis of severe but plausible events, and business environment and internal control factors.
- The model had to measure losses at a ninety nine point nine per cent confidence level over a one year horizon.
- Banks could recognise some benefit from diversification across operational risk categories, such as business lines and event types, and some reduction for insurance, up to twenty per cent of the charge.
- This was flexible and risk sensitive.
- But it was complex, and two banks with similar risks could produce very different capital, so the results were not comparable.

23 Why the SMA replaced all three

- BIA and TSA ignored the bank's own loss history
- AMA was complex and not comparable across banks
- SMA: one regulatory formula, no internal model
- Size from the business indicator
- Past losses enter only through the ILM

IN THE LESSON

- So why did the Basel Committee replace all three with the S M A?
- The simple methods, the basic indicator and the standardised approach, ignored the bank's own loss history.
- A bank with a terrible loss record paid the same as a careful one of the same size.
- The A M A had the opposite problem.
- It was complex, and its results were not comparable across banks.
- The S M A takes a middle path.
- It is one regulatory formula for every bank, with no internal model.
- Size is measured by the business indicator.
- Past losses enter only through the internal loss multiplier, so history counts, but in a fixed and comparable way.

24 AMA versus SMA, side by side

An exam favourite: what changed from the AMA to the SMA

Feature	AMA	SMA
What sets capital	Bank's own model	Regulatory formula
Confidence level	99.9%, one year	None: not a model
Loss history	One model input	Only via the ILM
Diversification	Some recognised	None
Insurance	Some recognised	None

IN THE LESSON

- Here are the two side by side, the way an exam question contrasts them.
- What sets capital?
- Under the A M A, the bank's own model.
- Under the S M A, a regulatory formula.
- The confidence level: the A M A targeted ninety nine point nine per cent over one year, while the S M A has no confidence level at all, because it is not a model.
- Loss history: in the A M A it was one model input among four, while in the S M A it enters only through the multiplier.
- Diversification: some benefit was recognised under the A M A, and none under the S M A.
- Insurance: likewise, some recognition under the A M A, and none under the S M A.

25 Loss data: the general criteria

- Bad data in, wrong capital out: losses drive the LC
- Comprehensive: all material activities and exposures
- From all sub-systems and all geographic locations
- Documented procedures: identify, collect, treat
- Every loss mappable to the Level 1 event types

IN THE LESSON

- The loss component makes Halden's own loss data part of its capital.
- Bad data in means wrong capital out, so the Basel Committee sets criteria for how losses are identified, collected and treated.
- The general criteria come first.
- The loss database must be comprehensive.
- It must capture all material activities and exposures, from all sub systems and all geographic locations, so that no branch or business can quietly leave its losses out.
- The procedures for identifying, collecting and treating losses must be documented.
- And every loss must be mappable to the Level one event types, the broad categories such as internal fraud, external fraud, or business disruption and system failures, so supervisors can compare banks.

26 Loss data: the specific criteria

- Ten years of high-quality loss data
- Five years allowed at first adoption
- Each loss: gross amount and recoveries, separately
- Dates: occurrence, discovery and accounting
- Losses from one common or related event grouped as one

IN THE LESSON

- The specific criteria cover the data itself.
- A bank needs ten years of high quality loss data, which matches the ten year average in the loss component.
- At first adoption of the S M A, five years are allowed.
- For each loss, the bank records the gross loss amount, and separately any recoveries, such as insurance payouts, so that net loss can be calculated and checked.
- It also records three dates: the date the event occurred, the date it was discovered, and the date it was booked in the accounts.
- Those dates can be far apart.
- A fraud may run for years before anyone finds it.
- Finally, losses from one common or related event are grouped and treated as one loss.

27 Boundary cases: credit and market risk

Where a loss that touches another risk is counted

Case	Treatment
Credit-related loss	Credit risk framework
Market-related op loss	Operational: in the data
Losses from one event	Grouped as a single loss

IN THE LESSON

- Some losses sit on a boundary with other risks, and the rules settle where they go.
- First, a credit risk related loss.
- Suppose a loan defaults and the bank finds that the collateral paperwork was never completed, so it recovers less.
- The failure was operational, but the loss stays in the credit risk framework, and it is not added to the operational loss component.
- Second, a market risk related operational loss, such as a trade booked in the wrong direction.
- Here the rule is the opposite.
- It stays operational and goes into the loss data.
- Third, several losses from one common event, such as one system outage that hits many branches, are grouped into a single loss.

28 Costs that are not operational losses

These look like losses but are kept out of the loss data

Item	Why it is excluded
General maintenance contracts	Ordinary running cost
Upgrades after a loss	Business enhancement spending
Insurance premiums	Price of protection, not a loss

IN THE LESSON

- Some costs look like losses but are not, and the exam likes to test them.
- General maintenance contracts on systems and buildings are not operational losses.
- They are ordinary running costs, not the result of an event going wrong.
- Spending to improve the business after a loss, for example upgrading a system after it failed, is business enhancement spending, and it is excluded too.
- The loss was the failure, not the upgrade.
- And insurance premiums are not operational losses.
- They are the price of protection.
- Insurance recoveries, by contrast, are recorded, because they reduce the net loss.
- Keeping these items out stops a bank's ordinary spending from inflating its loss component.

29 Example 10: cleaning one year of Halden's data

Halden's raw list for one year, €m. What enters the loss data?

Outage: 3 branch losses	0.4 + 0.3 + 0.5, one event	**€1.2m**
Card fraud	gross 2.0, insurance 0.8	**€1.2m net**
Trade booked wrongly	market-related: stays	**€1.5m**
Loan loss; premium; upgrade	3.0 credit; 0.6, 0.9 not losses	**excluded**
Net loss for the year	1.2 + 1.2 + 1.5	**€3.9m**

IN THE LESSON

- Here is Halden's raw list for one year, in millions of euros.
- A single system outage caused three branch losses of point four, point three and point five.
- They come from one event, so they are grouped as one loss of one point two.
- A card fraud cost two point zero gross, and insurance recovered point eight, so the record shows both, with a net loss of one point two.
- A trade booked in the wrong direction lost one point five.
- It is market related, so it stays operational.
- A loan loss of three point zero, caused by incomplete collateral paperwork, belongs to the credit framework and is excluded.
- An insurance premium of point six and an upgrade after the outage of point nine are not losses.
- The year's net loss is three point nine million euros.

30 Example 11: why the cleaning matters

If Halden wrongly counted the €4.5m of excluded items every year

Average annual loss	30 + 4.5	**€34.5m**
Loss component	15 × 34.5	**€517.5m**
Ratio and ILM	517.5 ÷ 345 = 1.5	**ILM 1.1319**
Capital	345 × 1.1319	**€390.5m**
Extra capital from bad data	390.5 − 373.8	**€16.7m**

IN THE LESSON

- Suppose Halden got the rules wrong, and every year it also counted the excluded items: the credit related loss of three point zero, the premium of point six and the upgrade of point nine.
- That adds four point five million a year.
- The average annual loss rises from thirty to thirty four point five million.
- The loss component becomes fifteen times thirty four point five, which is five hundred and seventeen point five.
- The ratio becomes exactly one point five, and the multiplier rises to about one point one three one nine.
- Capital would be about three hundred and ninety point five million euros, about sixteen point seven million more than the correct figure, just from poor data.

31 Exam traps on loss data

- Not losses: premiums, maintenance, upgrades after a loss
- Group losses from one common event
- Credit-related: credit; market-related: operational
- Gross and recoveries separately, with the three dates
- Ten years needed; five allowed at first adoption

IN THE LESSON

- Exam questions on loss data usually test an exclusion or the grouping rule, so here is the checklist.
- First, premiums, maintenance contracts and upgrades after a loss are not operational losses.
- Second, losses from one common event are grouped as one, not counted separately.
- Third, a credit related loss stays in the credit framework, while a market related operational loss stays operational.
- Watch the direction, because it is easy to swap them.
- Fourth, record the gross loss and the recoveries separately, with the three dates of occurrence, discovery and accounting.
- Fifth, ten years of data are required, but five years are allowed when a bank first adopts the S M A.

32 Try three quick questions

1. BI is €6bn. What is the BIC?
   Answer: 12% × 1 + 15% × 5 = 0.12 + 0.75 = €0.87bn = €870m.
2. BIA: gross income €600m, −€150m, €300m. Capital charge?
   Answer: Drop the negative year: 15% × 450 = €67.5m.
3. Flood: losses €0.2m, €0.3m, €0.1m; then €0.5m on barriers. Loss data?
   Answer: One grouped loss of €0.6m; barriers excluded.

IN THE LESSON

- Now try three quick questions.
- Pause, think, then listen.
- Question one.
- A bank's business indicator is six billion euros.
- What is its business indicator component?
- Twelve per cent of the first billion is point one two billion, and fifteen per cent of the next five is point seven five billion, so the B I C is eight hundred and seventy million euros.
- Question two.
- Under the basic indicator approach, gross income over three years was six hundred million, minus one hundred and fifty million, and three hundred million euros.
- What is the capital charge?
- Drop the negative year.
- The average of six hundred and three hundred is four hundred and fifty, and fifteen per cent of that is sixty seven point five million euros.
- Question three.
- A flood causes three losses of point two, point three and point one million euros, and the bank then spends point five million on new flood barriers.
- What enters the loss data?
- One grouped loss of point six million.
- The barriers are business enhancement spending, and are excluded.