CHARTA LEARNING · LESSON NOTES

Managing Non-Deposit Liabilities

FRM Part II

1 A story: loans outrun deposits

- Kestrel Bank: loans growing faster than deposits
- The rest must come from non-deposit liabilities
- Ask of each source: secured or unsecured?
- Who lends it, and for how long?

IN THE LESSON

- Kestrel Bank is a regional bank with a busy loan team.
- Businesses in its area are expanding, and loan demand is rising faster than its depositors are adding money.
- Kestrel does not want to turn good borrowers away, so the rest must come from somewhere other than deposits.
- Those borrowings are its non deposit liabilities, sometimes called wholesale or borrowed funds.
- Ask three things of every source.
- First, is the money secured, meaning backed by collateral the lender can keep if the bank fails to repay, or is it unsecured?
- Then, who lends it: another bank, an investor, or an official body?
- And for how long, from overnight to many years?
- Let us meet the sources one by one.

2 Federal funds purchased

- Overnight loans of reserve balances from other banks
- Unsecured: the lender relies on the borrower's credit
- "Purchased" means borrowed
- Kestrel borrows $18m overnight at 4.0% a year
- Interest: 18m × 4.0% ÷ 360 = $2,000

IN THE LESSON

- The first source is federal funds purchased, usually shortened to fed funds.
- These are overnight loans of reserve balances from other banks.
- Banks keep balances, called reserves, at the central bank, and a bank with spare reserves can lend them overnight to a bank that is short.
- The loans are unsecured.
- No collateral changes hands, so the lender relies entirely on the borrower's credit.
- The word purchased is market jargon, and it simply means borrowed.
- Suppose Kestrel borrows eighteen million dollars overnight at four per cent a year.
- On a three hundred and sixty day year, the usual money market basis, one night's interest is eighteen million times four per cent, divided by three hundred and sixty, which is two thousand dollars.

3 Repurchase agreements: secured borrowing

Cash = Collateral × (1 − haircut)
Interest = buy-back price − sale price

Cash received	What the bank gets
Collateral value	Market value of the securities
Haircut	Lender's cushion against a fall

IN THE LESSON

- The second source is the repurchase agreement, or repo.
- Kestrel sells securities, such as government bonds, to a lender for cash, and agrees at the same time to buy them back later at a higher price.
- In substance it is a loan secured by the securities.
- The lender does not hand over the full market value of the collateral.
- It applies a haircut, a percentage taken off as a cushion in case the securities fall in value.
- So the cash Kestrel receives equals the collateral value times one minus the haircut.
- And the interest is the buy back price minus the sale price.
- Now the terms.
- Cash received is what the bank gets.
- Collateral value is the market value of the securities.
- The haircut is the lender's cushion against a fall in that value.

4 Example 1: a repo for Kestrel

Kestrel puts $50m of government bonds into a 30-day repo; haircut 4%, repo rate 4.5%

Cash received	50 × (1 − 4%)	**$48m**
Cushion kept by the lender	50 − 48	**$2m**
Interest for 30 days	48m × 4.5% × 30 ÷ 360	**$180,000**
Buy-back price	48m + 0.18m	**$48.18m**

The $50m of bonds is encumbered: tied up, not free to sell

IN THE LESSON

- Kestrel puts fifty million dollars of government bonds into a thirty day repo, with a haircut of four per cent and a repo rate of four point five per cent.
- The cash received is fifty times one minus four per cent, which is forty eight million dollars.
- The cushion kept by the lender is fifty minus forty eight, two million.
- Interest for thirty days is forty eight million times four point five per cent, times thirty over three hundred and sixty, which is one hundred and eighty thousand dollars.
- So the buy back price is forty eight million plus point one eight million, or forty eight point one eight million dollars.
- Now the note at the bottom.
- While the repo runs, the fifty million of bonds is encumbered, meaning tied up as collateral and not free to sell or pledge elsewhere.

5 Commercial paper

- Short-term unsecured paper sold to investors
- Usually issued by the holding company
- Holding company: the parent that owns the bank
- Supported by a back-up credit line
- Line repays investors if new paper cannot be sold

IN THE LESSON

- The third source is commercial paper.
- This is short term, unsecured paper, sold directly to investors.
- In banking it is usually issued by the holding company rather than the bank itself.
- A holding company is the parent that owns the bank.
- Investors buying unsecured paper want comfort that they will be repaid, so the paper is supported by a back up credit line, a committed line of credit from other banks.
- If the issuer cannot sell new paper to repay the old paper when it matures, it draws on the line, and the line repays the investors.
- That line is not free, a point we return to when we look at cost.

6 Loans from official lenders

- Federal Home Loan Bank (FHLB) advances
- Discount window loans from the central bank
- Both are collateralised loans
- Lenders are official or quasi-official bodies

IN THE LESSON

- The fourth group are loans from official or quasi official lenders.
- Federal Home Loan Bank advances, or F H L B advances, are loans from the Federal Home Loan Banks, a system of lenders set up with government backing to support housing finance, whose members include many commercial banks.
- Discount window loans come straight from the central bank.
- Both are collateralised loans, so the bank must pledge assets it owns before it can borrow.
- And the lenders are official or quasi official bodies, not ordinary market investors.
- Quasi official means set up or sponsored by government without being an ordinary part of it.

7 Longer-term funding: subordinated debt and notes

- Medium-term notes: bonds of several years' maturity
- Subordinated debt: repaid after senior creditors
- Subordinated debt also counts as regulatory capital
- Both: longer funding, normally unsecured

IN THE LESSON

- The last group gives longer funding.
- Medium term notes are bonds the bank sells to investors, with maturities of several years.
- Subordinated debt is debt that ranks behind depositors and senior creditors, so if the bank fails, its holders are repaid only after those others.
- Because it can absorb losses ahead of depositors, subordinated debt also counts toward regulatory capital, the cushion of loss absorbing funds that regulators require a bank to hold.
- Both kinds give the bank money for years rather than overnight or for a few weeks, and both are normally unsecured.
- We now have all the sources.
- Next, we sort them.

8 Classifying the sources: money markets

Three questions for every source: collateral, lender, maturity

Source	Secured?	Lender	Maturity
Fed funds purchased	No	Other banks	Overnight
Repo	Yes: securities	Cash investors	Overnight or term
Commercial paper	No	Investors	Short term

IN THE LESSON

- Now put the sources side by side, with three questions for every source: collateral, lender and maturity.
- Fed funds purchased are not secured, the lender is another bank, and the maturity is overnight.
- A repo is secured by securities, the lender is a cash investor, and the maturity is overnight or a fixed term.
- Commercial paper is not secured, it is bought by investors, and its maturity is short term.
- The note below the table adds a point.
- Repo stays open to weaker banks with good collateral: a bank that is struggling to borrow on its name alone may still use the repo market, because the lender is protected by the collateral and the haircut rather than by trust in the bank.

9 Classifying the sources: official and long-term

The same three questions, for the remaining sources

Source	Secured?	Lender	Maturity
FHLB advances	Yes	FHLB (quasi-official)	Short to long
Discount window	Yes	Central bank	Short term
Subordinated debt	No	Bond investors	Long term
Medium-term notes	Usually no	Bond investors	Medium term

IN THE LESSON

- The same three questions apply to the remaining sources.
- Federal Home Loan Bank advances are secured, the lender is a Federal Home Loan Bank, a quasi official body, and maturities run from short to long.
- Discount window loans are secured, the lender is the central bank, and the maturity is short term.
- Subordinated debt is not secured, it is bought by bond investors, and its maturity is long term.
- Medium term notes are usually not secured, they are also bought by bond investors, and their maturity is medium term, a few years.
- So the official lenders take collateral, while the longer term market sources rely on the bank's name.

10 Mistake to avoid: wholesale is not all unsecured

- Trap: treating all wholesale money as unsecured
- Secured: repo, FHLB advances, discount window
- Unsecured: fed funds, paper, sub debt; notes usually
- Secured funding uses up collateral
- Exam: classify by security, lender and maturity

IN THE LESSON

- Here is the usual mistake: treating all wholesale money as unsecured.
- Because wholesale money comes from professional lenders rather than ordinary depositors, students often assume none of it is backed by collateral.
- Not so.
- Repos, Federal Home Loan Bank advances and discount window loans are all secured.
- Fed funds, commercial paper and subordinated debt are unsecured, and medium term notes usually are.
- The difference matters because secured funding uses up collateral, which the bank may need later, while unsecured funding depends on lenders' confidence in the bank, which can vanish quickly.
- On the exam, when you are given a source, classify it by security, by lender and by maturity, and the right answer usually follows from those three labels.

11 The available funds gap

- How much must Kestrel borrow from non-core sources?
- Needed: projected loans plus reserves and liquid assets
- Core: stable, rate-insensitive deposits
- From small retail and local business customers

IN THE LESSON

- We now know the sources.
- The next question is how much Kestrel must borrow from them.
- The available funds gap answers exactly that: how much must Kestrel borrow from non core sources?
- Two quantities go into it.
- Funds needed are the loans the bank expects to hold, meaning the current balance plus the growth it expects, plus the reserves and liquid assets it wants to keep as a safety buffer.
- Core deposits are the stable balances that stay put and do not chase higher rates elsewhere, which is what rate insensitive means.
- They come from small retail customers and local business customers, whose accounts tend to stay with the bank year after year.
- Whatever the core deposits do not cover must come from the market.

12 The gap formula

Gap = Needed − Core
Needed = loans now + loan growth + liquid buffer

Funds needed	Projected loans plus buffer
Core deposits	Stable retail and local balances
Funds gap	Amount to raise in the market
Positive gap	Borrow or sell liquid assets
Negative gap	Surplus funds to invest

IN THE LESSON

- Here is the formula.
- The gap equals funds needed minus core deposits.
- And funds needed equals the loans on the books now, plus the expected loan growth, plus the liquid buffer, meaning the reserves and liquid assets the bank wants to hold.
- Read the terms.
- Funds needed are projected loans plus the buffer.
- Core deposits are the stable retail and local balances.
- The funds gap is the amount to raise in the market.
- A positive gap means the bank must borrow, or sell some of its liquid assets, to cover the shortfall.
- A negative gap means core deposits exceed what is needed, so the bank has surplus funds to invest.

13 What counts as core?

Stable, rate-insensitive balances count; volatile money does not

Small retail accounts	Core
Local business accounts	Core
Large negotiable CDs	Not core
Brokered funds	Not core
Other volatile liabilities	Not core

IN THE LESSON

- Which deposits count as core?
- The rule is that stable, rate insensitive balances count, and volatile money does not.
- Small retail accounts are core.
- Local business accounts, held by firms that bank with Kestrel for their everyday payments, are core too.
- Large negotiable certificates of deposit are not core.
- These are big fixed term deposits that the holder can sell to someone else, and their holders are rate sensitive investors who move when a better rate appears.
- Brokered funds, deposits placed by a broker on behalf of its clients, are not core, because the broker will move them for a better rate.
- Other volatile liabilities are not core either.
- The test is behaviour: would the money stay if Kestrel paid a little less than its rivals, or if it hit trouble?

14 Example 2: what Kestrel needs

Projections for next quarter-end: loans $800m today, growth $60m, buffer $140m

Loans today	on the books	**$800m**
Expected loan growth	to quarter-end	**+$60m**
Projected loans	800 + 60	**$860m**
Reserves and liquid assets	buffer wanted	**$140m**
Funds needed	860 + 140	**$1,000m**

IN THE LESSON

- Here are Kestrel's projections for the end of next quarter.
- Loans today, on the books, are eight hundred million dollars.
- Expected loan growth to the quarter end is sixty million.
- So projected loans are eight hundred plus sixty, eight hundred and sixty million.
- On top of that, Kestrel wants to hold reserves and liquid assets of one hundred and forty million as its buffer.
- Funds needed are eight hundred and sixty plus one hundred and forty, which is one thousand million dollars.
- Both the loan growth and the buffer are part of what is needed.

15 Example 2: core deposits and the gap

Quarter-end deposits, $m: retail 560, local business 160, large CDs 120, brokered 60

Core deposits	560 + 160	**$720m**
Not core: volatile	120 + 60	**$180m**
Available funds gap	1,000 − 720	**$280m**
Sign of the gap	positive	**Must borrow**

$280m to fund in the market: volatile deposits plus borrowing

IN THE LESSON

- Now the deposits, projected to the same quarter end: retail five hundred and sixty million, local business one hundred and sixty, large certificates of deposit one hundred and twenty, and brokered funds sixty.
- Core deposits are retail plus local business, five hundred and sixty plus one hundred and sixty, which is seven hundred and twenty million.
- The volatile money, large certificates plus brokered funds, is one hundred and twenty plus sixty, one hundred and eighty million, and it is not core.
- The available funds gap is funds needed minus core, one thousand minus seven hundred and twenty, which is two hundred and eighty million dollars.
- The sign is positive, so Kestrel must borrow.
- The note says it: two hundred and eighty million has to be funded in the market, from the volatile deposits plus other borrowing.

16 Example 2: the usual errors

Same projections: needed $1,000m, core $720m, correct gap $280m

Count volatile as core	1,000 − (720 + 180)	**$100m**
Leave out the buffer	(1,000 − 140) − 720	**$140m**
Leave out loan growth	(1,000 − 60) − 720	**$220m**
Reverse the sign	720 − 1,000	**−$280m**

Each error hides some or all of the funding need

IN THE LESSON

- Keep the same projections: funds needed of one thousand million, core deposits of seven hundred and twenty, and a correct gap of two hundred and eighty.
- Now see what the common errors do.
- Count the volatile deposits as core, and core becomes nine hundred, so the gap shrinks to one hundred million.
- Leave out the liquidity buffer, and funds needed fall to eight hundred and sixty, giving a gap of one hundred and forty.
- Leave out the loan growth, and needed falls to nine hundred and forty, giving two hundred and twenty.
- Reverse the sign, subtracting needed from core, and you get minus two hundred and eighty, which looks like a surplus to invest when Kestrel is in fact short.
- Each error hides some or all of the real funding need.

17 A negative gap: surplus funds

A later year: loans of $800m shrink by $40m; core deposits reach $950m; buffer $140m

Projected loans	800 − 40	**$760m**
Funds needed	760 + 140	**$900m**
Core deposits, same date	projected	**$950m**
Available funds gap	900 − 950	**−$50m**
Meaning	core exceeds need	**Surplus to invest**

Project every item to the same date before subtracting

IN THE LESSON

- Take a later year.
- Starting again from loans of eight hundred million, loans shrink by forty million, while core deposits reach nine hundred and fifty million, and the buffer stays at one hundred and forty.
- Projected loans are eight hundred minus forty, seven hundred and sixty million.
- Funds needed are seven hundred and sixty plus one hundred and forty, nine hundred million.
- Core deposits, projected to the same date, are nine hundred and fifty.
- The gap is nine hundred minus nine hundred and fifty, which is minus fifty million.
- The meaning is that core exceeds the need, so Kestrel has a surplus of fifty million to invest, and no market borrowing is needed.
- The note gives the exam rule: project every item to the same date before subtracting.

18 Choosing among non-deposit sources

- Cost: the all-in expense, not the quoted rate
- Risk: interest rate, credit and above all rollover
- Availability: can the amount be raised when needed?
- Regulation and speed of execution
- Weigh them together, never the rate alone

IN THE LESSON

- Kestrel must fund a gap of two hundred and eighty million.
- Which sources should it use?
- The answer comes from weighing several influences together.
- Cost means the all in expense of a source, not the quoted rate.
- Risk covers interest rate risk, credit risk and, above all, rollover risk, the danger that funding cannot be renewed when it falls due.
- Availability asks whether the amount can actually be raised when it is needed.
- Regulation matters, because some sources come with rules or a capital treatment, and the speed of execution matters, because some money arrives within hours while a bond issue takes longer to arrange.
- The last line is the point to remember.
- A bank weighs these influences together, never the rate alone.

19 Example 3: quoted rate versus all-in cost

Kestrel needs $50m for a year: roll holding-company paper, or a 1-year FHLB advance?

Paper: quoted rate	sold to investors	**4.30%**
Paper: dealer fee	to place the paper	**+0.10%**
Paper: back-up line fee	paid to other banks	**+0.30%**
Paper: all-in cost	4.30 + 0.10 + 0.30	**4.70%**
FHLB advance: all-in	no extra fees assumed	**4.50%**

Paper: cheaper quoted (4.30% vs 4.50%), dearer all-in (4.70% vs 4.50%)

IN THE LESSON

- Kestrel needs fifty million dollars for a year.
- It compares commercial paper, issued by its holding company, with a one year Federal Home Loan Bank advance.
- The paper is short term, so it would have to be rolled over during the year.
- The paper's quoted rate, the rate paid to the investors it is sold to, is four point three per cent.
- A dealer fee to place the paper adds point one per cent.
- The back up line fee, paid to the other banks that provide the line, adds point three per cent.
- So the paper's all in cost is four point three plus point one plus point three, which is four point seven per cent.
- The one year F H L B advance costs four point five per cent all in, with no extra fees assumed.
- The note says it all.
- The paper has the cheaper quoted rate, four point three against four point five, but the dearer all in cost, four point seven against four point five.

20 Risk: rollover and maturity matching

- Interest rate risk: funding cost moves with rates
- Credit risk: a counterparty may fail, e.g. a repo lender
- Rollover risk: funding may not be renewed
- Match funding maturity to asset maturity
- And to how often the assets reprice

IN THE LESSON

- Next comes risk, in three parts.
- Interest rate risk means the cost of funding moves with market rates, and short funding reprices quickly.
- Credit risk means a counterparty may fail.
- For example, a repo lender holds more collateral than the cash it lent, so if it failed, Kestrel could lose that two million dollar cushion.
- Rollover risk is the danger that funding is not renewed when it matures, either at all or at a sensible price, and it is the most important of the three.
- The remedy is to set funding maturity against asset maturity, and against how often the assets reprice.
- A three year fixed rate loan funded overnight carries both rate risk and rollover risk.

21 Example 4: overnight money for fixed-rate loans

Kestrel funds $40m of 3-year fixed-rate loans with fed funds at 4.0%

Funding cost today	40 × 4.0%	**$1.6m a year**
Overnight rate rises	4.0% + 1.5%	**5.5%**
New funding cost	40 × 5.5%	**$2.2m a year**
Extra cost	2.2 − 1.6	**$0.6m a year**
Rollovers	every business day	**Lenders may refuse**

A matched 3-year fixed-rate borrowing would lock the cost

IN THE LESSON

- Suppose Kestrel funds forty million dollars of three year fixed rate loans with fed funds at four per cent.
- The funding cost today is forty times four per cent, one point six million dollars a year.
- Now the overnight rate rises by one and a half points, from four per cent to five point five per cent.
- The new funding cost is forty times five point five per cent, two point two million a year.
- The loans' income is fixed, so the extra cost, two point two minus one point six, which is point six million a year, comes straight out of profit.
- The money must be rolled over every business day, and on any of those days lenders may refuse.
- The note gives the remedy: a matched three year fixed rate borrowing would lock the cost and end the daily rollover.

22 Availability: can the money be raised?

- Depends on credit rating and market access
- And on the stock of unencumbered collateral
- Weaker credit pushes a bank towards secured sources
- Heavy repo use encumbers assets
- So the liquidity buffer shrinks

IN THE LESSON

- The third influence is availability: can the amount be raised when it is needed?
- That depends on the bank's credit rating and on its access to the market.
- It also depends on the stock of unencumbered collateral, meaning assets not already pledged, because secured borrowing needs something to pledge.
- Under stress these pull against each other.
- A weaker credit standing pushes a bank towards secured sources, since unsecured lenders demand more or simply refuse.
- But heavy repo use encumbers assets and so shrinks the liquidity buffer, the very assets the bank would sell or pledge in an emergency.
- Our next example shows how fast that can happen.

23 Example 5: a downgrade and the buffer

Buffer $140m: reserves $15m, bonds $125m. After a downgrade, $120m of large CDs leave

Cash to replace the CDs	by repo, haircut 4%	**$120m**
Bonds needed as collateral	120 ÷ (1 − 4%)	**$125m**
Unencumbered bonds left	125 − 125	**$0m**
Unencumbered buffer	140 falls to 15 + 0	**$15m**

Secured funding kept Kestrel going, but used up its buffer

IN THE LESSON

- Kestrel's buffer of one hundred and forty million is fifteen million of reserves and one hundred and twenty five million of bonds.
- After a downgrade of its credit rating, the holders of one hundred and twenty million of large certificates of deposit leave.
- So Kestrel raises the cash to replace the deposits by repo, one hundred and twenty million, with the same four per cent haircut.
- Rearranging the repo formula, the bonds needed as collateral are one hundred and twenty divided by one minus four per cent, which is one hundred and twenty five million.
- That is every bond it has, so the unencumbered bonds left are one hundred and twenty five minus one hundred and twenty five, zero.
- The unencumbered buffer falls from one hundred and forty to just the fifteen million of reserves.
- Secured funding kept Kestrel going, but used up its buffer.

24 Weighing Kestrel's options

Every source has a strength and a weakness

Source	For	Against
Fed funds	Fast; no collateral	Overnight rollover; needs trust
Commercial paper	Low quoted rate	Line and dealer fees; rollover
Repo	Open to weaker banks	Encumbers the buffer
FHLB advance	Term funding; low all-in	Needs collateral
Subordinated debt	Long; counts as capital	Ranks last, so priced higher

IN THE LESSON

- Here is the whole picture as a table, because every source has a strength and a weakness.
- Fed funds are fast and need no collateral, but they must be rolled overnight and depend on other banks' trust.
- Commercial paper has a low quoted rate, but carries line and dealer fees and rollover risk.
- Repo is open even to weaker banks, but encumbers the buffer.
- A Federal Home Loan Bank advance offers term funding at a low all in cost, but needs collateral.
- Subordinated debt is long and counts as capital, which helps on the regulation side, but because it ranks last its investors demand a higher rate.
- That is why the choice is a judgement that weighs the influences together.

25 Exam trap: the cheapest quoted rate

- Trap: pick the cheapest quoted rate
- Ignores fees, back-up lines and reserves
- Ignores availability and rollover risk under stress
- Exam: justify a choice with at least two influences
- Kestrel: FHLB term advance, on cost and rollover risk

IN THE LESSON

- The usual exam trap is to pick the source with the cheapest quoted rate.
- That ignores the fees, back up lines and reserves that make up the all in cost, as the commercial paper example showed.
- It also ignores availability and rollover risk under stress, which the downgrade example showed can matter far more than a fraction of a per cent.
- On the exam, expect to justify a choice with at least two influences.
- For example, Kestrel might fund part of its gap with a term Federal Home Loan Bank advance, and justify it on cost, because its all in cost of four point five per cent beat the paper's four point seven, and on rollover risk, because a term advance does not need renewing every night.

26 All-in cost of one source

All-in cost = (Interest + Other costs) ÷ Usable funds
Usable funds = Funds raised × (1 − reserve ratio)

Interest	Rate × amount raised
Other costs	Processing, marketing, insurance
Reserve ratio	Share held back as reserve

IN THE LESSON

- Now to the numbers behind cost.
- The all in cost of a funding source is its interest cost plus its other, non interest costs, divided by the usable funds it provides.
- Usable funds are the funds raised times one minus the reserve ratio, because money held as a required reserve cannot be lent.
- Read the terms.
- Interest is the rate times the amount raised.
- Other costs are the non interest costs, such as processing, marketing and insurance premiums.
- The reserve ratio is the share held back as a reserve.
- Where no reserve requirement applies, the ratio is zero.
- In our example we assume one, simply to show how it works.
- Dividing by usable funds, not total funds, raises the cost.

27 Example 6: all-in cost of the large CDs

$120m of large CDs at 4.5%; other costs $0.42m a year; assumed reserve 3%

Interest	120 × 4.5%	**$5.40m**
Other costs	processing, marketing, insurance	**$0.42m**
Total cost	5.40 + 0.42	**$5.82m**
Usable funds	120 × (1 − 3%)	**$116.4m**
All-in cost	5.82 ÷ 116.4	**5.00%**

Quoted 4.5%, all-in 5.0%. $3.6m (120 × 3%) is held as reserve

IN THE LESSON

- Kestrel has one hundred and twenty million dollars of large certificates of deposit at four point five per cent.
- Its other costs are point four two million a year, and we assume a reserve requirement of three per cent.
- Interest is one hundred and twenty times four point five per cent, five point four million.
- Other costs, for processing, marketing and insurance, are point four two million.
- Total cost is five point four plus point four two, five point eight two million.
- Usable funds are one hundred and twenty times one minus three per cent, one hundred and sixteen point four million.
- The all in cost is five point eight two divided by one hundred and sixteen point four, exactly five per cent.
- So the quoted rate of four point five per cent becomes five per cent all in.
- The note adds that the reserve itself, one hundred and twenty times three per cent, is three point six million.
- It is held as a reserve, so it cannot be lent.

28 Two ways to average: pooled and historical

Pooled = Cost ÷ Funds
Historical = Σ(A × c) ÷ ΣA

Cost	Total $ cost, all sources
Funds	Total usable funds
A	Amount of a tranche
c	Cost when originally raised

IN THE LESSON

- A bank uses many sources at once, so it needs one cost for the whole mix, and there are two ways to average.
- The pooled funds method treats every source as one pool.
- Write Cost for the total cost of all sources, and Funds for the total usable funds raised.
- Pooled cost equals Cost divided by Funds, which is the same as averaging the source costs weighted by balance.
- The historical average method weights the cost at which each tranche, or batch of borrowing, was originally raised by its amount.
- Historical cost equals the sum of A times see, divided by the sum of A.
- Now the terms.
- Cost is the total dollar cost, interest plus other costs, of every source.
- Funds are the total usable funds.
- A is the amount of a tranche, and see is the cost at which it was originally raised.

29 Example 7: Kestrel's pooled cost

Kestrel funds its $280m gap at today's all-in costs; reserve on the CDs only

Large CDs	5.0% on 116.4 usable	**$5.82m**
Brokered funds	60 × 5.25%	**$3.15m**
Fed funds	40 × 4.0%	**$1.60m**
FHLB advances	60 × 4.5%	**$2.70m**
Pooled cost	13.27 ÷ 276.4	**4.80%**

Funds: 116.4 + 60 + 40 + 60 = 276.4. Costs: 5.82 + 3.15 + 1.60 + 2.70 = 13.27

IN THE LESSON

- Kestrel funds its gap of two hundred and eighty million from four sources, at today's all in costs, with the assumed reserve on the certificates of deposit only.
- The large certificates cost five per cent on one hundred and sixteen point four million usable, five point eight two million.
- Brokered funds are sixty million at five point two five per cent, three point one five million.
- Fed funds are forty million at four per cent, one point six million.
- F H L B advances are sixty million at four point five per cent, two point seven million.
- Pooled cost is total cost over total funds, thirteen point two seven divided by two hundred and seventy six point four, about four point eight zero per cent.
- The note shows the working: funds of one hundred and sixteen point four, plus sixty, plus forty, plus sixty, make two hundred and seventy six point four, and the four costs add to thirteen point two seven million.

30 Example 8: Kestrel's historical cost

Kestrel's $60m of FHLB advances were taken in three tranches

Two years ago	30 × 2.5%	**$0.75m**
Last year	20 × 3.0%	**$0.60m**
This quarter	10 × 4.5%	**$0.45m**
Historical cost	1.80 ÷ 60	**3.00%**
Cost of new money today	latest tranche	**4.50%**

Rates have risen: historical cost understates new money by 1.5 points

IN THE LESSON

- Kestrel's sixty million of F H L B advances were taken in three tranches.
- Two years ago it borrowed thirty million at two point five per cent, a cost of point seven five million.
- Last year it borrowed twenty million at three per cent, point six million.
- This quarter it borrowed ten million at four point five per cent, point four five million.
- The historical cost is the total, one point eight million, divided by sixty, which is three per cent.
- But the cost of new money today, shown by the latest tranche, is four point five per cent.
- Because it uses old costs, the historical average lags current conditions.
- Rates have risen, so it understates what new money costs by one and a half points.

31 Mistakes to avoid in funding cost

Correct: CDs 5.00% all-in, pool 4.80%, historical 3.00%, new money 4.50%

Interest only, CDs	5.40 ÷ 120	**4.50%**
Forget the reserve	5.82 ÷ 120	**4.85%**
Simple average, pool	(5 + 5.25 + 4 + 4.5) ÷ 4	**4.69%**
Simple average, tranches	(2.5 + 3.0 + 4.5) ÷ 3	**3.33%**
Historical for pricing	3.00% vs 4.50% today	**Underprices**

Exam: compute the weighted figure, then say which cost is meant

IN THE LESSON

- Here are the correct figures: five per cent all in for the certificates, four point eight zero for the pool, three per cent historical, and four point five for new money.
- Now the usual mistakes.
- Using interest only for the certificates gives five point four over one hundred and twenty, four point five per cent.
- Forgetting the reserve gives five point eight two over one hundred and twenty, four point eight five per cent.
- A simple average for the pool, five plus five point two five plus four plus four point five, divided by four, gives four point six nine, because it ignores the weights.
- A simple average of the tranches, two point five plus three plus four point five, over three, gives three point three three.
- And using the historical cost for pricing underprices, three per cent against four point five today.
- On the exam, compute the weighted figure, then say which cost is meant.

32 Try three quick questions

1. $80m of bonds used as repo collateral, 5% haircut. Cash received?
   Answer: 80 × (1 − 5%) = $76m.
2. Loans $470m, growth $30m, buffer $90m, core deposits $420m. Gap?
   Answer: Needed 470 + 30 + 90 = 590. Gap 590 − 420 = $170m.
3. $50m raised at 2%, $150m at 4%. Historical average cost?
   Answer: (1 + 6) ÷ 200 = 3.5%, not the simple 3%.

IN THE LESSON

- Now try three quick questions.
- Pause the video, think, then listen to the answers.
- Question one.
- Bonds worth eighty million dollars are used as repo collateral with a five per cent haircut.
- How much cash is received?
- Eighty times one minus five per cent, which is seventy six million dollars.
- Question two.
- Loans are four hundred and seventy million, expected growth is thirty million, the buffer wanted is ninety million, and core deposits are four hundred and twenty million.
- What is the available funds gap?
- Funds needed are four hundred and seventy plus thirty plus ninety, five hundred and ninety, so the gap is five hundred and ninety minus four hundred and twenty, one hundred and seventy million dollars.
- Question three.
- Fifty million was raised at two per cent and one hundred and fifty million at four per cent.
- What is the historical average cost?
- One plus six, which is seven million, divided by two hundred million, is three point five per cent, not the simple average of three.