CHARTA LEARNING · LESSON NOTES

Liquidity and Reserves Management

FRM Part II

1 A story: Monday morning at Halden Bank

- Depositors withdraw; firms ask for new loans
- Customers draw on promised credit lines
- A borrowing of Halden's falls due
- Meanwhile: deposits arrive, loans are repaid
- Question: is there enough cash this week?

IN THE LESSON

- Picture Monday morning at Halden Bank, a mid sized lender.
- Some depositors are withdrawing money, and several firms are asking for new loans.
- Other customers draw on credit lines that Halden has already promised them.
- And one of Halden's own borrowings from another bank falls due and must be repaid.
- Meanwhile, cash is also coming in.
- New deposits arrive and borrowers repay their loans.
- The treasurer's question is simple.
- Over this week, will enough cash come in, or can enough be raised, to meet everything that goes out?
- Answering it is the job of liquidity management, and the first tool is a single number, the net liquidity position.

2 The net liquidity position

Net liquidity position = Supply − Demand
Over a stated horizon

Liquidity supply	Cash the bank can count on
Liquidity demand	Calls on the bank's cash
Net liquidity position	+ surplus; − deficit to fund
Horizon	State it: a week, a month

IN THE LESSON

- Here is that number.
- The net liquidity position is liquidity supply minus liquidity demand, measured over a stated horizon.
- Now the terms.
- Liquidity supply is the cash the bank can count on in that period, from inflows and from assets or credit it can turn into cash.
- Liquidity demand is all the calls on the bank's cash in the same period.
- The net liquidity position is the difference.
- A positive figure is a surplus, which the bank can invest.
- A negative figure is a deficit, which must be funded.
- And the horizon must always be stated, such as a week or a month, because a bank can have a surplus over one week and a deficit over one month.

3 What raises liquidity supply

Supply: cash in, or cash the bank can raise, within the horizon

Supply item	Example at Halden
New deposits	Customers pay money in
Loan repayments	Borrowers repay on schedule
Sales of liquid securities	Halden sells government bonds
Maturing assets	An interbank placement ends
Unused borrowing capacity	Only the part it can really draw

IN THE LESSON

- Supply first, which is cash coming in, or cash the bank can raise, within the horizon.
- New deposits add to supply, when customers pay money in.
- Loan repayments add to it, as borrowers repay on schedule.
- Sales of liquid securities add to it, for example when Halden sells government bonds.
- Maturing assets add to it.
- When a short loan that Halden made to another bank, called an interbank placement, ends, the cash comes back.
- Last, unused borrowing capacity counts, meaning credit lines from other lenders that Halden has not yet used.
- But it counts only for the part the bank can really draw.
- A line that the lender can refuse, or that needs collateral Halden does not have, is worth less than its headline amount.

4 What raises liquidity demand

Demand: calls on the bank's cash within the horizon

Demand item	Example at Halden
Deposit withdrawals	Savers take money out
New loan requests	Firms ask for credit
Drawdowns on committed lines	Customers use promised credit
Repaying maturing borrowings	Halden repays a lender
Trap	Drawdowns, repayments: outflows

IN THE LESSON

- Now demand, which is every call on the bank's cash within the horizon.
- Deposit withdrawals raise demand, when savers take money out.
- New loan requests raise it, when firms ask for credit that the bank wants to grant.
- Drawdowns on committed lines raise it.
- A committed line is a promise to lend up to a limit, so when a customer uses promised credit, cash leaves the bank.
- And repayment of maturing borrowings raises demand, when Halden repays a lender.
- The last row is the trap.
- Drawdowns and repayments are both outflows.
- A drawdown is money going out to the customer, so it is demand, not supply.
- And repaying borrowings takes cash out, even though the word borrowing sounds like a source of cash.

5 What lowers supply: prices and haircuts

- Securities fall in market value: supply falls
- Haircut: counted at less than full value
- Usable value = market value × (1 − haircut)
- $100m of bonds, 10% haircut: supply only $90m
- Borrowing lines: count only the drawable part

IN THE LESSON

- Some factors push supply down.
- If the securities a bank plans to sell fall in market value, they raise less cash, so supply falls.
- A haircut does the same.
- A haircut is a percentage cut that a lender applies to the value of an asset pledged as collateral, because its price could fall.
- When an asset is sold outright, the same idea appears as a discount on the sale price.
- The usable value is the market value times one minus the haircut.
- So bonds worth one hundred million dollars with a haircut of ten per cent supply only ninety million.
- Borrowing lines work the same way: count only the drawable part, not the headline limit.
- Put together, supply is often less than it looks on paper, and the exam tests exactly this.

6 Example 1: Halden's supply this week

Coming week, $m. Securities worth 60, haircut 10%. Line 50, only 30 drawable

New deposits + repayments	40 + 25	**$65m**
Securities, after haircut	60 × (1 − 10%)	**$54m**
Maturing assets	interbank placement	**$15m**
Borrowing line	drawable part only	**$30m**
Total supply	40 + 25 + 54 + 15 + 30	**$164m**

IN THE LESSON

- Let us compute Halden's position for the coming week, in millions of dollars.
- Its securities are worth sixty million and carry a haircut of ten per cent.
- It has a borrowing line of fifty million, but only thirty million can really be drawn.
- Now the supply items.
- New deposits expected this week are forty million.
- Scheduled loan repayments bring in twenty five million.
- The securities, after the haircut, are sixty times ninety per cent, which is fifty four million.
- An interbank placement matures, returning fifteen million.
- And the borrowing line counts for its drawable part only, thirty million.
- Adding up, total supply is forty plus twenty five plus fifty four plus fifteen plus thirty, which is one hundred and sixty four million dollars.

7 Example 1: Halden's demand this week

Same week, $m. Sort each outflow into demand

Deposit withdrawals	expected this week	**$70m**
New loan requests	to be granted	**$45m**
Drawdowns on committed lines	customers use promises	**$20m**
Maturing borrowings	Halden repays a lender	**$35m**
Total demand	70 + 45 + 20 + 35	**$170m**

IN THE LESSON

- Now the same week's demand, sorting each outflow into demand.
- Deposit withdrawals expected this week are seventy million.
- New loan requests that Halden plans to grant come to forty five million.
- Customers will draw twenty million on committed lines, using the credit Halden promised them.
- And a borrowing of thirty five million matures, so Halden repays a lender.
- Total demand is seventy plus forty five plus twenty plus thirty five, which is one hundred and seventy million dollars.
- Notice that the twenty million of drawdowns and the thirty five million repayment both sit on the demand side, because cash leaves the bank in each case.
- We keep the two sides separate, and subtract only at the end.

8 Example 1: the net liquidity position

Net liquidity position = supply − demand, coming week

Liquidity supply	from the first slide	**$164m**
Liquidity demand	from the second slide	**$170m**
Net liquidity position	164 − 170	**−$6m**
Verdict	negative	**Deficit: fund it**

IN THE LESSON

- Now subtract.
- The net liquidity position is supply minus demand for the coming week.
- Supply, from the first slide of the example, is one hundred and sixty four million.
- Demand, from the second slide, is one hundred and seventy million.
- The net liquidity position is one hundred and sixty four minus one hundred and seventy, which is minus six million dollars.
- The verdict: the figure is negative, so Halden has a deficit of six million that it must fund this week.
- A deficit is not a disaster in itself.
- Banks fund small deficits every day.
- The danger is a deficit the bank has not seen coming, or one it cannot fund.
- And as we see next, this answer is easy to get wrong.

9 Mistakes to avoid: four wrong answers

Same week. The correct answer is −$6m, and each error flatters Halden

Ignore the haircut	170 − 170	**$0m**
Count the full line of 50	184 − 170	**+$14m**
Drawdowns as an inflow	184 − 150	**+$34m**
Reverse the sign	170 − 164	**+$6m**
Correct	164 − 170	**−$6m**

IN THE LESSON

- Here are four wrong answers to the same question.
- The correct answer is minus six million, and every error flatters Halden.
- Ignore the haircut, and the securities count at sixty instead of fifty four, so supply is one hundred and seventy and the position looks like zero.
- Count the full borrowing line of fifty instead of the drawable thirty, and supply becomes one hundred and eighty four, a false surplus of fourteen million.
- Treat the twenty million of drawdowns as an inflow, and it moves from demand to supply: supply is one hundred and eighty four, demand one hundred and fifty, a false surplus of thirty four million.
- Reverse the sign, taking demand minus supply, and plus six reads as a surplus.
- Only one hundred and sixty four minus one hundred and seventy gives the right deficit.

10 Which way does it push?

Sort the event first, then decide the direction

Event	Effect
Depositors bring in new money	Supply up
Bond prices fall or haircuts rise	Supply down
A lender cuts Halden's credit line	Supply down
Customers draw on committed lines	Demand up
A borrowing falls due for repayment	Demand up

IN THE LESSON

- Let us practise the direction of each factor.
- The rule is to sort the event first, and then decide the direction.
- Depositors bring in new money: that is supply, and it goes up.
- Bond prices fall, or haircuts rise: the securities raise less cash, so supply goes down.
- A lender cuts Halden's credit line: the drawable capacity shrinks, so supply goes down.
- Customers draw on committed lines: cash goes out, so demand goes up.
- A borrowing falls due for repayment: again cash goes out, so demand goes up.
- The exam method is the same every time.
- Sort every item into supply or demand before you add, and only then subtract demand from supply.

11 Covering a shortfall: three routes

- Halden's forecast: a need of $20m, taken as a full year
- Asset liquidity management: sell or run down assets
- Liability management: borrow purchased funds
- Balanced liquidity management: combine the two
- Compare total cost, and availability under stress

IN THE LESSON

- Suppose Halden's forecast, which we will build later in the lesson, shows a need for twenty million dollars of extra liquidity, which for simplicity we treat as lasting a full year.
- A bank short of liquidity can follow three broad routes.
- The first is asset liquidity management: meet the need by selling or running down liquid assets, such as securities and cash.
- The second is liability management: meet the need by borrowing, which bankers call raising purchased funds.
- The third is balanced liquidity management, which combines the two.
- To choose between them, a bank compares the total cost of each route, and it weighs whether the money will still be available under stress.
- Let us take each route in turn.

12 Route one: asset liquidity management

Meet the need from the bank's own liquid assets

Feature	Asset liquidity management
How it works	Sell or run down securities and cash
Main advantage	Independent of markets and lenders
Cost	Forgone yield; may sell at a loss
Balance sheet	Shrinks, as cash leaves

IN THE LESSON

- Route one, asset liquidity management, meets the need from the bank's own liquid assets.
- How it works: the bank sells securities, or lets them mature without reinvesting, and runs down its cash.
- Its main advantage is independence.
- The bank does not depend on markets or lenders being willing to deal with it.
- The cost comes in two forms.
- First, forgone yield: the securities were earning interest, and once sold they earn nothing.
- Second, the bank may have to sell at a loss, if prices have fallen or if it must sell quickly.
- And the balance sheet shrinks, as cash leaves the bank to meet withdrawals.
- If the cash funds new loans instead, it only swaps one asset for another.

13 Route two: liability management

Meet the need by raising purchased funds

Feature	Liability management
Sources	Interbank, repos, CDs, central bank
Main advantage	Assets stay intact
Cost	Interest and fees
Balance sheet	Grows
Main risk	Funds vanish or cost more in stress

IN THE LESSON

- Route two, liability management, meets the need by raising purchased funds.
- The sources are interbank loans from other banks, repos, certificates of deposit, and credit from the central bank.
- A repo, or repurchase agreement, is a loan secured on securities: the bank sells them and agrees to buy them back later at a fixed price.
- The main advantage is that the bank's assets stay intact, so it keeps their yield.
- The cost is the interest paid, plus fees.
- The balance sheet grows, since new liabilities are added while the assets stay.
- And the main risk is serious.
- These funds can vanish, or cost much more, exactly when the bank's own credit standing weakens, which is just when it needs them most.

14 Route three: balanced liquidity management

- Hold liquid assets for predictable needs
- Keep borrowing capacity for unexpected needs
- Halden: $12m predictable, from liquid assets
- Halden: $8m uncertain, from a committed line
- 12 + 8 = $20m, and no reliance on one source

IN THE LESSON

- Route three, balanced liquidity management, combines the two.
- The bank holds liquid assets for its predictable needs, such as seasonal loan demand that it can see coming.
- And it keeps borrowing capacity for unexpected needs, which may never arrive, so the bank does not tie up assets for them.
- Halden splits its need this way.
- Twelve million is predictable, so Halden covers it from liquid assets.
- Eight million is uncertain, so Halden arranges a committed line from another bank, which it can draw if the need appears.
- Twelve plus eight covers the twenty million, and the bank does not rely on one source alone.
- Most banks use some form of this balanced approach.

15 Example 2: total cost in normal times

$20m for one year. Bonds yield 4.5%; sale loss 1%. Borrow at 5% plus $0.15m fees

Assets: forgone yield	20 × 4.5%	**$0.90m**
Assets: loss on sale	20 × 1%	**$0.20m**
Asset route: total	0.90 + 0.20	**$1.10m**
Liability route: total	20 × 5% + 0.15	**$1.15m**
Cheaper in normal times	1.15 − 1.10	**Assets, by $0.05m**

IN THE LESSON

- Now compare costs for Halden's twenty million for one year.
- The bonds Halden would sell yield four and a half per cent, and selling them now loses one per cent of the amount raised.
- Borrowing costs five per cent, plus fees of point one five million.
- The asset route first.
- The forgone yield is twenty times four and a half per cent, point nine zero million.
- The loss on sale is twenty times one per cent, point two zero million.
- So the asset route costs one point one zero million in total.
- The liability route costs twenty times five per cent, which is one million, plus fees of point one five, so one point one five million.
- In normal times the asset route is cheaper, by point zero five million.
- Comparing only the rates, four and a half against five per cent, would miss both the loss on sale and the fees.

16 Example 3: the same choice under stress

Halden's rating is cut. Borrow at 7% plus $0.25m fees; sale loss now 2.5%

Assets: forgone yield	20 × 4.5%	**$0.90m**
Assets: loss on sale	20 × 2.5%	**$0.50m**
Asset route: total	0.90 + 0.50	**$1.40m**
Liability route: total	20 × 7% + 0.25	**$1.65m**
Asset route cheaper by	1.65 − 1.40; was 0.05	**$0.25m**

Under stress, purchased funds may disappear altogether

IN THE LESSON

- Now suppose Halden's credit rating is cut.
- Lenders want seven per cent plus fees of point two five million, and in a falling market the loss on selling bonds rises to two and a half per cent.
- The forgone yield on the bonds is unchanged at point nine zero million.
- The loss on sale is twenty times two and a half per cent, point five zero million.
- So the asset route costs one point four zero million.
- The liability route costs twenty times seven per cent, one point four million, plus point two five, so one point six five million.
- So the asset route is cheaper by point two five million, and its advantage has widened from point zero five.
- And this assumes lenders still lend at all.
- Under stress, purchased funds may simply disappear, which is the strongest argument for holding some liquid assets.

17 Mistakes to avoid: choosing a route

- Comparing rates only: add forgone yield, losses, fees
- Assuming purchased funds are always there
- Balance sheet: asset route shrinks it, borrowing grows it
- Treating liquid assets as free: they give up yield
- Rule: total cost first, then availability under stress

IN THE LESSON

- Let us collect the mistakes to avoid when choosing a route.
- First, comparing rates only.
- The true cost of the asset route adds forgone yield and any loss on sale, and the true cost of borrowing adds fees.
- Second, assuming purchased funds are always there.
- They are least available when the bank is weakest.
- Third, mixing up the balance sheet effects.
- The asset route, asset liquidity management, shrinks the balance sheet, while borrowing, through liability management, makes it grow.
- Fourth, treating liquid assets as free.
- Holding them gives up the higher yield the bank could earn on loans, which is why no bank holds only cash.
- The rule for the exam: compute total cost first, then weigh availability under stress.
- A cheap route that vanishes in a crisis is no route at all.

18 Forecasting the need: three techniques

- Sources and uses of funds: project loans and deposits
- Structure of funds: sort liabilities by how likely to leave
- Liquidity indicators: ratios that signal more or less
- Each helps answer: how much liquidity will we need?
- Use them together, and check each result

IN THE LESSON

- Where did Halden's twenty million come from?
- A bank forecasts the liquidity it will require, and there are three techniques.
- The sources and uses of funds approach projects changes in deposits and loans, and asks whether the new loans can be funded by the new deposits.
- The structure of funds approach sorts the bank's liabilities by how likely they are to leave, and holds more liquidity against the money most likely to go.
- Liquidity indicators are ratios, taken from the balance sheet, that signal more or less liquidity.
- Each helps answer the same question: how much liquidity will we need?
- A careful treasurer uses them together, and checks each result against the others.

19 Sources and uses of funds

Gap = Loan growth − Deposit growth
Requirement = Gap + Buffer

Loan growth	Projected change in loans
Deposit growth	Projected change in deposits
Buffer	Extra cushion the bank wants
Requirement	+ raise funds; − surplus

IN THE LESSON

- The sources and uses approach rests on one idea.
- Loans use funds, and deposits supply them.
- So the gap is projected loan growth minus projected deposit growth.
- Then the liquidity requirement is the gap plus any desired buffer.
- Look at the terms.
- Loan growth is the projected change in loans over the period.
- Deposit growth is the projected change in deposits.
- The buffer is the extra cushion the bank wants to hold on top.
- And the requirement: when it is positive, the bank must raise funds.
- When it is negative, deposits are growing faster than loans, and the bank has a surplus to invest.
- Watch the order of subtraction, because it decides the sign.

20 Example 4: Halden's requirement for next year

Loans $500m → $540m; deposits $600m → $625m; desired buffer $5m

Projected loan growth	540 − 500	**$40m**
Projected deposit growth	625 − 600	**$25m**
Gap	40 − 25	**$15m**
Requirement	15 + 5	**$20m**
Meaning	positive	**Raise $20m**

IN THE LESSON

- Here is Halden's forecast for next year.
- Loans are projected to grow from five hundred to five hundred and forty million dollars, and deposits from six hundred to six hundred and twenty five million.
- Halden wants a buffer of five million.
- Projected loan growth is five hundred and forty minus five hundred, forty million.
- Projected deposit growth is six hundred and twenty five minus six hundred, twenty five million.
- The gap is forty minus twenty five, fifteen million.
- The requirement adds the buffer: fifteen plus five, twenty million.
- The meaning: the figure is positive, so Halden must raise twenty million dollars.
- That is exactly the need we costed earlier, when we compared selling assets with borrowing.

21 Example 5: the timing inside the year

$m. First half: loans +10, deposits +18. Second half: loans +30, deposits +7

First-half gap	10 − 18	**−$8m**
First half: meaning	negative gap	**Surplus $8m**
Second-half gap	30 − 7	**+$23m**
Second half: meaning	positive gap	**Need $23m**
Check: full year	−8 + 23	**$15m**

IN THE LESSON

- A yearly figure can hide the timing.
- Halden's half year forecasts, in millions, show loans up ten and deposits up eighteen in the first half, and loans up thirty and deposits up seven in the second.
- The first half gap is ten minus eighteen, minus eight million.
- The meaning: a negative gap is a surplus of eight million, because deposits supply more than new loans use.
- The second half gap is thirty minus seven, plus twenty three million.
- A positive gap means Halden needs twenty three million in that half, and must raise it all unless it keeps the earlier surplus liquid.
- Check the full year: minus eight plus twenty three is fifteen million, the same gap as before.
- So forecast by period, and keep the sign straight.

22 Structure of funds

Reserve = Σ (each class × its reserve %)
Hot money % > Vulnerable % > Core %

Hot money	Rate-sensitive; leaves fast
Vulnerable funds	A large part may leave
Core funds	Stable; unlikely to leave

IN THE LESSON

- The second technique is the structure of funds approach.
- It sorts the bank's liabilities by how likely they are to leave, and applies a reserve percentage to each class.
- The liquidity reserve is the sum, over the classes, of each class times its reserve percentage.
- The percentages fall as the money becomes more stable: hot money gets the highest, vulnerable funds less, and core funds the least.
- Now the three classes.
- Hot money is very sensitive to interest rates and leaves fast, for example large deposits that chase the best rate.
- Vulnerable funds are those where a substantial part may leave during the period.
- Core funds are stable and unlikely to leave, such as the everyday accounts of loyal customers.
- Each bank sets its own percentages.

23 Example 6: Halden's liquidity reserve

Deposits $600m: hot 80, vulnerable 150, core 370. Rates 90%, 30%, 10%

Hot money	80 × 90%	**$72m**
Vulnerable funds	150 × 30%	**$45m**
Core funds	370 × 10%	**$37m**
Liquidity reserve	72 + 45 + 37	**$154m**
Liquid assets of 160	160 − 154	**$6m to spare**

IN THE LESSON

- Halden's deposits of six hundred million are its only short term funding, since its other borrowings are long term.
- They split into hot money of eighty, vulnerable funds of one hundred and fifty, and core funds of three hundred and seventy.
- The bank's reserve rates are ninety, thirty and ten per cent.
- Hot money needs eighty times ninety per cent, seventy two million.
- Vulnerable funds need one hundred and fifty times thirty per cent, forty five million.
- Core funds need three hundred and seventy times ten per cent, thirty seven million.
- The liquidity reserve is seventy two plus forty five plus thirty seven, one hundred and fifty four million.
- Halden holds liquid assets of one hundred and sixty million, so it covers the reserve, with one hundred and sixty minus one hundred and fifty four, six million, to spare.

24 Example 7: the mix shifts

$50m moves from core funds to hot money. Total deposits stay $600m

Hot money	130 × 90%	**$117m**
Vulnerable funds	150 × 30%	**$45m**
Core funds	320 × 10%	**$32m**
Liquidity reserve	117 + 45 + 32	**$194m**
Liquid assets of 160	160 − 194	**−$34m short**

IN THE LESSON

- Now suppose a rival bank offers a high rate, and fifty million moves from core funds to hot money, as loyal customers start chasing rates.
- Total deposits stay at six hundred million.
- Hot money is now one hundred and thirty, and needs one hundred and thirty times ninety per cent, one hundred and seventeen million.
- Vulnerable funds are unchanged, needing forty five million.
- Core funds fall to three hundred and twenty, needing thirty two million.
- The reserve is one hundred and seventeen plus forty five plus thirty two, one hundred and ninety four million, up forty million.
- Against liquid assets of one hundred and sixty, Halden is now thirty four million short.
- Total deposits did not change at all.
- The mix drives the requirement, not the total.

25 Liquidity indicators: which way is safer?

Check the direction of each ratio before you judge

Ratio	As it rises, liquidity is
Loans ÷ deposits	Lower
Loans ÷ total assets	Lower
Volatile liabilities ÷ liquid assets	Lower
Core deposits ÷ total assets	Higher
Liquid assets ÷ total assets	Higher

IN THE LESSON

- The third technique uses liquidity indicators, which are ratios, and the key skill is to check the direction of each ratio before you judge.
- As loans divided by deposits rises, liquidity is lower, because more of the deposits are tied up in loans.
- As loans divided by total assets rises, liquidity is lower, because loans are hard to turn into cash quickly.
- As volatile liabilities divided by liquid assets rises, liquidity is lower.
- Volatile liabilities are funds likely to leave, such as hot money and short term borrowings, so more of them backed by fewer liquid assets is worse.
- Then the two that work the other way.
- As core deposits divided by total assets rises, liquidity is higher, because stable funding grows.
- And as liquid assets divided by total assets rises, liquidity is higher.

26 Example 8: Halden's indicators this year

$m: loans 500, deposits 600, assets 750, liquid 160, core 370, volatile (hot money) 80

Loans ÷ deposits	500 ÷ 600	**83.3%**
Loans ÷ total assets	500 ÷ 750	**66.7%**
Volatile ÷ liquid assets	80 ÷ 160	**0.50**
Core deposits ÷ assets	370 ÷ 750	**49.3%**
Liquid assets ÷ assets	160 ÷ 750	**21.3%**

IN THE LESSON

- Let us read Halden's indicators this year, in millions of dollars.
- Loans are five hundred, deposits six hundred and total assets seven hundred and fifty.
- Liquid assets are one hundred and sixty and core deposits three hundred and seventy.
- Volatile liabilities are eighty, the hot money alone, because Halden's borrowings are long term.
- Loans to deposits is five hundred over six hundred, eighty three point three per cent.
- Loans to total assets is five hundred over seven hundred and fifty, sixty six point seven per cent.
- Volatile liabilities to liquid assets is eighty over one hundred and sixty, point five zero.
- Core deposits to assets is three hundred and seventy over seven hundred and fifty, forty nine point three per cent.
- Liquid assets to assets is one hundred and sixty over seven hundred and fifty, twenty one point three per cent.

27 Example 9: a year later, which way?

$m: loans 540, deposits 625, assets 790, liquid 150, core 360, volatile 105. All five: less

Loans ÷ deposits	540 ÷ 625; was 83.3%	**86.4%: less**
Loans ÷ total assets	540 ÷ 790; was 66.7%	**68.4%: less**
Volatile ÷ liquid assets	105 ÷ 150; was 0.50	**0.70: less**
Core deposits ÷ assets	360 ÷ 790; was 49.3%	**45.6%: less**
Liquid assets ÷ assets	150 ÷ 790; was 21.3%	**19.0%: less**

IN THE LESSON

- A year later, Halden has grown as forecast.
- Loans are five hundred and forty, deposits six hundred and twenty five, total assets seven hundred and ninety, liquid assets one hundred and fifty, core deposits three hundred and sixty and volatile liabilities one hundred and five.
- Loans to deposits is now eighty six point four per cent, up from eighty three point three: less liquid.
- Loans to total assets is sixty eight point four per cent, up from sixty six point seven: less liquid.
- Volatile to liquid assets is point seven zero, up from point five zero: less liquid.
- Core deposits to assets is forty five point six per cent, down from forty nine point three.
- That ratio signals more liquidity when it rises, so a fall means less.
- Liquid assets to assets is nineteen per cent, down from twenty one point three: less.
- All five point the same way: Halden is less liquid.

28 Mistakes to avoid: forecasting

- Gap = loan growth − deposit growth, not the reverse
- Add the desired buffer to the gap
- Higher reserve % for hot money, lower for core funds
- Watch the mix of funds, not just the total
- Core, liquid ÷ assets: higher is safer; other three, lower

IN THE LESSON

- Here are the forecasting mistakes to avoid.
- First, the gap is loan growth minus deposit growth, not the reverse, and a positive gap means the bank must raise funds.
- Second, add the desired buffer to the gap, because the gap alone is not the requirement.
- Third, apply a higher reserve percentage to hot money and a lower one to core funds, never one flat rate.
- Fourth, watch the mix of funds, not just the total: Halden's reserve rose by forty million with no change in total deposits.
- Fifth, check the direction of each indicator.
- Core deposits to assets and liquid assets to assets are safer when higher, while the other three ratios are safer when lower.

29 Recap: the main ideas

- Net liquidity position = supply − demand, over a horizon
- Haircuts, price falls, weak lines cut supply
- Withdrawals, loans, drawdowns, repayments raise demand
- Assets, liabilities or balanced: total cost and stress
- Forecast: gap + buffer; % by class; ratio directions

IN THE LESSON

- Let us recap the main ideas.
- The net liquidity position is supply minus demand over a stated horizon; positive is a surplus, and negative is a deficit to fund.
- Haircuts, falls in market value and borrowing lines that cannot really be drawn all cut supply, while withdrawals, new loans, drawdowns and maturing borrowings raise demand.
- To cover a need, a bank can use its assets, its liabilities, or a balanced mix, comparing total cost and availability under stress.
- To forecast, the sources and uses approach adds a buffer to the gap between loan and deposit growth, and the structure of funds approach applies a reserve percentage to each class of funds.
- Finally, read the liquidity indicators, checking the direction of each ratio.

30 Try three quick questions

1. In 30; bonds 40, haircut 5%; line 25, 10 drawable; out 55 + drawdowns 15. Net?
   Answer: Supply 30 + 38 + 10 = 78; demand 70: +$8m surplus.
2. Loans to grow $25m, deposits $32m, buffer $4m. Requirement?
   Answer: Gap 25 − 32 = −7; −7 + 4 = −3: a $3m surplus.
3. A bank's rating is cut. Which route for covering a shortfall is most exposed?
   Answer: Liability management: purchased funds vanish or cost more.

IN THE LESSON

- Now try three quick questions.
- Pause the video, think, then listen to the answers.
- Question one.
- Over a week, inflows are thirty million dollars.
- Bonds worth forty million carry a five per cent haircut.
- A borrowing line of twenty five million can really be drawn for ten.
- Outflows are fifty five million, plus fifteen million of drawdowns.
- What is the net liquidity position?
- Supply is thirty plus thirty eight plus ten, seventy eight.
- Demand is seventy.
- The position is a surplus of eight million dollars.
- Question two.
- Loans are projected to grow by twenty five million, deposits by thirty two million, and the buffer is four million.
- What is the requirement?
- The gap is minus seven, and adding four gives minus three: a surplus of three million.
- Question three.
- A bank's credit rating is cut.
- Which route for covering a shortfall is most exposed?
- Liability management, because purchased funds can vanish or cost more.