CHARTA LEARNING · LESSON NOTES

Working capital, liquidity and the cash cycle

CFA Level I · Corporate Issuers

You will learn: How a company keeps paying its bills: measure liquidity, work out the cash conversion cycle, invest spare cash in the right order of priorities, and compare the effective cost of short-term funding.

Running example: Examples follow Brightline Stores ($ millions, made-up figures): current assets 740, current liabilities 420, revenue 3,650, cost of goods sold 2,555, and a short-term borrowing rate of 6%.

1. Working capital and liquidity ratios

- A firm can be profitable but illiquid: liquidity means having enough cash, or things quickly turned into cash, to pay what is due. Managing that gap day to day is working capital management.
- Current assets turn into cash within a year: cash, marketable securities, receivables (what customers owe) and inventory. Current liabilities are due within a year: payables (owed to suppliers), accrued expenses and short-term borrowing. Net working capital is current assets minus current liabilities.
- The current ratio is current assets ÷ current liabilities. The quick ratio is stricter and leaves out inventory, which can be slow and cheap to sell in a hurry. The cash ratio counts only cash and securities. Order of strictness: current, quick, cash.
- A high current ratio is not automatically good (idle cash, slow stock) and a low one is not automatically bad (a supermarket collects at the till). Compare with peers and the firm's own history.

Current ratio = current assets ÷ current liabilities; Quick ratio = (cash + securities + receivables) ÷ current liabilities

BRIGHTLINE: CASH 100, SECURITIES 50, RECEIVABLES 450, INVENTORY 140; PAYABLES 210, BORROWING 150, ACCRUALS 60

Current ratio	740 ÷ 420	**1.76**
Quick ratio	(100 + 50 + 450) ÷ 420	**1.43**
Cash ratio	(100 + 50) ÷ 420	**0.36**
Net working capital	740 − 420	**$320m**

Watch out: Putting inventory into the quick ratio; reading a higher current ratio as always better.

2. The trade-off and the aims

- A firm with piles of cash, stock and generous customer credit is safe but earns little on idle money. A lean firm earns more on each dollar but one late customer or delayed delivery can leave it unable to pay.
- Most firms aim for the middle; the right spot depends on how predictable the business is and how easily it can borrow in an emergency.
- Three aims: meet obligations as they fall due; do it at the lowest cost (no more cash and stock than needed, sensible borrowing); earn the best return on spare cash.

3. The cash conversion cycle

- Each part uses the average balance over the year (start plus end, divided by two), not the year-end figure. Days of inventory on hand (DIO) and days payables outstanding (DPO) use cost of goods sold; days sales outstanding (DSO) uses revenue. Each is multiplied by 365.
- DIO plus DSO is the operating cycle: from buying stock until the customer pays. Subtract DPO, because the supplier funds part of that time. The result is the number of days the firm's own cash is tied up. Shorter is better; it can even be negative (suppliers fund the business).
- Shorter means less to finance and more cash for growth. It shortens by selling stock faster, collecting faster or paying suppliers later, but stretching suppliers too far can damage relationships or lose discounts.
- Compare within the industry and check each of the three parts, since a flat total can hide one improving and one worsening.

> **DIO = avg inventory ÷ COGS × 365; DSO = avg receivables ÷ revenue × 365; DPO = avg payables ÷ COGS × 365; CCC = DIO + DSO − DPO**

BRIGHTLINE AVERAGES: INVENTORY 126, RECEIVABLES 420, PAYABLES 196

DIO	126 ÷ 2,555 × 365	**18 days**
DSO	420 ÷ 3,650 × 365	**42 days**
DPO	196 ÷ 2,555 × 365	**28 days**
Operating cycle	18 + 42	**60 days**
Cash conversion cycle	60 − 28	**32 days**

Watch out: Using the wrong base (DSO uses revenue); adding DPO instead of subtracting it.

4. Shortening the cycle

- Tighter customer terms free cash from receivables. Longer supplier terms add supplier funding. Each freed dollar saves interest at the borrowing rate.
- The money to finance in operations is average inventory plus receivables minus payables. The risks: losing customers when terms tighten, and giving up any discount for early payment when suppliers are stretched.

REVENUE $10M A DAY, COGS $7M A DAY, BORROWING AT 6%

Customers pay in 30 days: new receivables	30 × 10 = 300 (was 420)	**cash freed $120m**
Interest saved	120 × 6%	**$7.2m a year**
New cycle	18 + 30 − 28	**20 days**
Suppliers wait 45 days: new payables	7 × 45 = 315 (was 196)	**extra funding $119m**
Interest saved; new cycle	119 × 6%; 18 + 30 − 45	**$7.14m; 3 days**
Cash to finance: today / 30-day customers / and 45-day suppliers	126 + 420 − 196; 126 + 300 − 196; 126 + 300 − 315	**350 / 230 / 111**

5. Managing spare cash

- A treasurer runs three pots: operating balances (next few weeks of bills), reserve balances (against surprises, slightly longer maturities) and investment balances (not needed for a known period, can reach further for yield).
- Three goals in this order of priority: safety of principal (get every dollar back), liquidity (turn it into cash quickly at close to its value), then yield (the return while it waits). The failure is reaching too far, into something hard to sell in a crisis.
- A written investment policy approved by the board sets allowed instruments, the longest maturity, minimum issuer credit quality, limits per bank or issuer, and who may trade. It is backed by a weekly cash forecast, otherwise a firm hoards cash or runs short and borrows dear.
- Instruments from safest to more yield and risk: bank deposit, treasury bill (government loan up to a year), money market fund (pooled very short, high-quality loans), repurchase agreement (short loan to a bank secured by securities), commercial paper (short-term unsecured company debt), short-dated corporate bonds.

$20M IDLE FOR 30 DAYS: TREASURY BILL 3.0%, COMMERCIAL PAPER 3.4% A YEAR

Treasury bill interest	20m × 3.0% × 30/365	**$49,315**
Commercial paper interest	20m × 3.4% × 30/365	**$55,890**
Extra for taking more risk	55,890 − 49,315	**$6,575**

6. Short-term borrowing and its true cost

- From informal to negotiated: trade credit (buy now, pay later; looks free but giving up an early-payment discount has a price) and a bank line of credit.
- A committed line is a promise to lend up to a limit for a fee; an uncommitted line can be refused when needed most.
- Commercial paper is unsecured, for strong credits only, with a rate usually below bank borrowing.
- Borrowing against or selling receivables (factoring) costs more but is open to weaker companies; check whether the sale is with recourse.
- Compare effective annual costs. Money market quotes use a 360-day year; annualise on 365 days. While the cost of skipping a discount is above the bank rate, borrow from the bank and take the discount.

Cost of forgoing a discount = [1 + d ÷ (1 − d)]^(365 ÷ (N − t)) − 1

TERMS 2/10 NET 30 (D = 2%, N = 30, T = 10), AND THREE FUNDING OPTIONS

Forgoing the discount	2 ÷ 98 = 2.04% per 20 days; 1.0204^18.25 − 1 (simple 37.2%)	**44.6%**
Cost if you pay on day 20 / day 60		**109% / 15.9%**
Bank line: $8m, 90 days, 6% on 360, fee 0.5%	interest 120,000 + fee 40,000 = 160,000 ÷ 7,960,000 = 2.01%; 1.0201^(365/90) − 1	**8.41%**
Commercial paper: $10m face, 90 days, 5.6% on 360	discount 140,000; 140,000 ÷ 9,860,000 = 1.42%; 1.0142^(365/90) − 1	**5.88%**
Factoring: $1m invoices due in 60 days sold for 98%	fee 20,000 ÷ 980,000 = 2.04%; 1.0204^(365/60) − 1	**13.08%**

Key takeaways

- A profitable firm can run out of cash: liquidity is a separate question from profit.
- Current ratio = current assets ÷ current liabilities; the quick ratio leaves out inventory.
- CCC = DIO + DSO − DPO, using average balances; DIO and DPO use COGS, DSO uses revenue.
- A shorter cycle frees cash and saves interest, but tightening customers or stretching suppliers has costs.
- Invest spare cash in the order safety, liquidity, then yield, under a written policy and a cash forecast.
- Compare short-term funding by effective annual cost; skipping a 2/10 net 30 discount costs 44.6%.

Quick check

1. Current assets 300, inventory 120, current liabilities 150. Current and quick ratios?
   Answer: Current 2.0. Quick (300 − 120) ÷ 150 = 1.2.
2. DIO 30 days, DSO 40 days, DPO 50 days. Cash conversion cycle?
   Answer: 30 + 40 − 50 = 20 days.
3. Unsecured short-term notes, cheaper than a bank, strong credits only?
   Answer: Commercial paper.

Summary notes for the Charta whiteboard lesson. Examples use made-up figures. Watch the full lesson at charta-learning.com.